An assessment of JSE listed companies' stock performance in a pugnacious South African macroeconomic environment.

Wynand C F Herbst

UP Student number: 91058326

A research project submitted to the Gordon Institute of Business Science, University of Pretoria, in partial fulfilment of the requirements for the degree of Master of Business Administration.

07 November 2016

Abstract

As South Africa moves through a turbulent period, with an economic landscape filled with landmines in a pugnacious environment, we as a nation need to have a better understanding of all the economic building blocks and its impact on our daily lives. The research paper found the interaction between five macroeconomic citadels which forms the backbone and support structure in every modern economy in the world.

1. Exchange rate
2. Government debt
3. GDP growth
4. Inflation
5. Unemployment

The research found a connection, correlation and impact regarding each of these elements. Its broader economic impact on the stock market performance for various size companies are also determined. This was achieved by conducting research on the market performance in the last 15 years and to evaluate through a quantitative study the performance under various conditions.

The purpose of the research was to create an economic model that will be a tool for business executives to form part of a strategy towards growth and sustainability. The momentum curve was designed to create economic mass that gives weight to the importance of each element and to guide the economic velocity to the optimum economic momentum, to become a model for government, business and labour to set out a strategic economic plan based on academic research.

Keywords

Economic mass

Economic velocity

Economic momentum

© University of Pretoria

Declaration

I declare that this research project is my own work. It is submitted in partial fulfilment of the requirements for the degree of Master of Business Administration at the Gordon Institute of Business science, University of Pretoria. It has not been submitted before for any degree or examination in any other University. I further declare that I have obtained the necessary authorisation and consent to carry out this research.

Wynand Herbst

____

07 November 2016

Acknowledgements

First of all, I would like to thank my supervisor Dr Mncube, for giving me the confidence early on to proceed with my passion and to give me the freedom in advancing my affection for economics. I would also like to thank all the lecturers at GIBS who has given me the knowledge to expand my wings to pursue this great journey of self-discovery. Some special thanks must go out to Mike Holland and Adrian Saville for rekindling my love for the world of micro and macroeconomics, and to be the giants this paper is built upon.

It is with great sadness that I have to say good bye to Margie Sutherland, which as a lecture, opened my eyes to the world, and as a person given me the support and to become my rudder in the stormy seas this last two years. Her calmness inspired me to go beyond my limits and to push myself towards the impossible.

To all my classmates I would like to send out a warm thank you, for giving me endless enjoyment in deep discussions and to give me a new outlook in life. This MBA has given me more than just knowledge, but a deeper understanding of the psyche of the human spirit.

Most importantly I would like to thank Yolanda, my wife. She is my rock, on which my life is built upon. She gives me the strength, to overcome the worst times, and a smile during the good times. I thank you from the bottom of my heart.

Eternal, love, forever.

© University of Pretoria

Table of Contents

© University of Pretoria

List of Tables

© University of Pretoria

List of Figures

List of Equations

CHAPTER 1. Introduction to the research problem

1.1. Research title

An assessment of JSE listed companies' stock performance in a pugnacious South African macroeconomic environment.

1.2. Introduction

The Johannesburg Stock Exchange (JSE) is characterised by a quagmire of companies representing a wide range of diversified portfolios of the South African economy. A quick review on the performance of the JSE over the last few decades would conclude that the country's economy is on a strong footing (Muller & Ward, 2016). More recent evidence would argue that the countries macroeconomic environment (Statistics South Africa, 2015a), is presenting a far weaker depiction of this narrative (Statistics South Africa, 2015b).

The biggest economic catastrophe to hit South Africa was followed by the firing of the Finance Minister Nhlanhla Nene, on Wednesday evening, on the 9th of December 2015. This act will go down in the annals of history as a defining moment for our young democracy. This political interference, would wipe out more than $8.6 billion (R 132 billion) of the JSE market capitalisation, with the banking sector, considered one of the strongest and most stable in the world, taking the brunt of the shock. FirstRand Ltd, Africa's largest bank by market value, fell by 15 percent and Standard Bank Group Ltd, the biggest by assets, dropping 14 percent. Barclays Plc's South African unit slumped by 15 percent and Nedbank Group Ltd, retreated 11 percent (*JSE 2015 December Quarterly Index Review Paper Market*, 2015).

Evidence therefore exists of a potential catastrophic collapse of some of the critical citadels of the South African economy of which the financial institutions are considered to be critical. The South African economy, once considered the corner stone of the African continent, has become unstable with high risk volatility becoming the norm due to political (with the governing party losing control) and social (in the shape of student unrest experienced in the last two years, as part of the “fees must fall” campaign) constraints. Over and above the banking sector, the socio-economic needs of society places an imperious strain on the state (Industrial Development Corporation, 2015) by an ever-growing societal demands from its citizens, which will require a perspicacious and clear policy framework (Segal, Shaliastovich, & Yaron, 2015), with an excogitated mind set, if a prosperous nation were to rise out of the phoenix's ashes. Evidence of this has involved for example, stock price shocks that translate to significant spill over into reduced consumption, which have been found to be very negative for the economy at large (Aye, Gupta, & Modise, 2015).

A negative sentiment around an extremely volatile currency, especially one that is as fluid, and actively traded, as the South African Rand (ZAR), can create additional unpredictability (de Zwart, Markwat, Swinkels, & van Dijk, 2009), translating into a strong association with perceived weakness . A dilemma can occur if a bi-directional causal relationship potentially exist between exchange rate and stock market indices (Aydemir & Demirhan, 2009), and therefore by association within the wider economy (Miles, Scott, & Breedon, 2012). Similarly, a unidirectional causality can present itself between the Gross Domestic Product (GDP) and exports. Those organisations that can recognise these opportunities will have the ability to expand into foreign markets and will gain a competitive advantage above its competitors (Ajmi, Aye, Balcilar, & Gupta, 2015).

The rationale for this research was therefore to determine the causality that existed between the potential advantage industry could take and the economic situation that plays itself out in front of us. Sustainability can be achieved In the current weak economic atmosphere and poor business growth environment through the expansion of the domestic economy, by exporting increased volumes of diversified goods and services (Ajmi et al., 2015). South Africa needs to move beyond the boundaries of history, to break its constraints and to develop the structural transformation the economy will need (Adejumobi, 2016).

South Africa must rise above petty internal conflict, and will need to take the first steps towards a true African renaissance (Mngomezulu, 2016) and build on a foundation of social justice, proficuous to all stakeholders, and magnanimous in its fortitude to its humility and character.

Unless urgent action is taken today, headlines around the world will systematically report an ever-increasing negative narrative around South Africa, influencing the fundamental principles of our economy and our everyday lives. The Wall Street Journal in 2015 reported that "South Africa Unemployment Hits 11-Year High - Power outages, drought and widespread pessimism weigh on economic growth" (McGroarty, 2015). This will become the norm, and diminish South Africa's economy to the proverbial rubbish heap, unless we as a collective become involved and speak up for the voiceless. This narrative is playing out in the headlines of today, which symbolise the characteristic of a country in turmoil, with schools being burned down in response to communities not given a voice, to students being teargassed and shot with rubber bullets during an uprising for free education.

1.3. The relevance of this research in a South African context

In 1994, the first democratic government of South Africa, historically communists have become bourgeois nationalists, by employing a very conservative monetary policy, under the leadership of Nelson Mandela and further entrenched by Thabo Mbeki. This created an economy with a nominal growth rate averaging 3.3 percent annually between 1995 and 2006 (Stokes, 2007).

The South African economic landscape however will be marred with anomalistic challenges. Firstly, Moody's Investors Services (Lindow, 2014) have downgraded the South Africa's government debt rating to Baa2 (see Appendix 9.4) on November 6, 2014. In addition, a provisional Prime-2 (P-2) debt rating was allocated to short-term government debt. Finally, Moody's also downgraded to Baa2 the rating assigned to the debt issued by the ZAR Sovereign Capital Fund Propriety Limited. Standard & Poor's Financial Services LLC (S&P), another ratings agency, also downgraded South Africa's credit rating to BBB, which is just one notch above 'junk' status (non-investment or speculative-grade). The South African government, needed to react, because of an ever-increasing debt-ridden economy and society. These actions will have been preceded by wildcat strikes in the platinum industry resulted in the notorious Marikana massacre on August 16, 2012, when 34 mineworkers at a Lonmin mine, during unrest were allegedly killed by police (Bond, 2013).

Secondly, in light of the ever-changing world economic order, South Africa joined other developing countries, Brazil, Russia, India and China as a junior partner on July 15, 2014 to create an independent banking system mechanism referred to as the New Development Bank (Asongu, 2016), quickly dubbed the BRICS bank (Ross, 2015) to challenge the status quo. The bank will primarily focus on financing infrastructure development that will place an additional expense on the fiscus that will have been already under strain due to an ever-increasing budget deficit. This major shift in global monetary structure will set in motion to challenge the dominance of the United States (US), and to replace the US dollar, as the preferred currency for trade between the developing economies of the world (Ismi, 2014).

Lastly, the official unemployment rate will therefore linger at 26% (first quarter of 2015), and including discouraged work seekers, the rate will have increased to 34% (Altieri et al., 2016). According to the International Monetary Fund (IMF) International Jobs Report of January 2015, South Africa will have one of the worst unemployment rates in the world. In comparison, the G20 economies (which represent the 20 biggest economies in the world, including South Africa) will have only an unemployment rate of 4.8% (2014). Furthermore the global rate at the same time will have been merely 5.6% (Abruzzese, Loungani, Bandura, & Ferguson, 2015).

1.4. Research purpose

The purpose of this research was to establish a connection between macroeconomic forces and the effect it will have on certain company's performance on the stock market. As evidence of contagion starts to appear among the developed markets around the world, the need for diversification of long-term exposure in more emerging equity markets, like South Africa, will become a necessity (Galagedera, 2012).

Galagedera (2012) also pointed out that even with additional liquidity and improved regulation, the predominance of developed markets will show a continuing decline in comparative performances over the interlude of 2003 to 2010, compared with emerging markets. Developing economies will become a more attractive option for investors, as all economic markets today can be accessed at a low cost (Galagedera, 2012). The use of peer-appraised efficiency scores of equity markets and their respective sponsorship in clusters will become important factors when asset managers construct international portfolios (Galagedera, 2013).

The purpose of this research will also assist companies, with strategic planning, in a volatile macroeconomic environment, by establishing causality between the various fundamentals of the economy and its impact on the share performance of different groups of companies. Policies will also improve the imbalance of historical misrepresentation on the JSE. For example, through Black Economic Empowerment (BEE) deals have become a necessary cost of doing business in South Africa (Ward & Muller, 2010), which can be considered an additional informal tax, making companies less competitive in the global arena. Ward & Muller (2010), also found that larger companies with market capitalisation in excess of R3.5bn (55% of companies on the JSE as of December 2015) and operating in the resource industry (representing 11% of the overall market capitalisation of the JSE), subsequently will have a negative impact on its share performance (*JSE 2015 December Quarterly Index Review Paper Market*, 2015).

1.5. Research objectives

The research objectives will give context as well as convergence and transient construct of five components that represent some of the fundamental elements of macroeconomics.

- Exchange Rate against the US Dollar and the Euro
- Government Debt measured by the15-year and 30-year Bond Rate
- Gross Domestic Product Growth Rate (GDP)
- Inflation Rate measured by CPI and PPI
- Unemployment Rate as measured by the Quarterly Labour Survey

These elements will be analysed in pursuit of finding association and causality with that of business performance by reviewing its stock market growth (Galagedera, 2013).

The economic goals is predominantly determined by the generation of economic growth (Segal et al., 2015), utilising near full employment (Jakiela & Ozier, 2016; Selgin, 2015), generating sufficient economic efficiency as to ensure affective productivity (Beber, Brandt, & Luisi, 2015; Holmes, McGrattan, & Prescott, 2015; Subrahmanyam & Titman, 2013; van der Berg, 2014), to ensure the countries survival in a globalised economic environment.

A countries economy functions on a basic economic concept based on the fundamental principles of achieving economic goals, solving economic problems and recognising resources that are focused on a variety of factors of production.

The research will also attempt to reflect on the industries that move against the grain (Baghai, Smit, & Viguerie, 2007), and achieve above trend line growth (Bauman, Conover, & Miller, 1998), and to understand why some organisations can outperform under adverse conditions (Capaul, Rowley, & Sharpe, 1993).

Six specific project goals were presented:

Figure 1: Research goals

Goal 1:	To provide an overview and analysis of the national and international context related to business growth within a South African macroeconomic environment.
Goal 2:	To provide and examine the potential relationship that exist between the size of businesses and the direct or indirect impact various macroeconomic conditions have on its sustainability.
Goal 3:	To identify any implication or significance that any one subject or combination of components could have on the business model, related to the macroeconomic environment it operates within.
Goal 4:	To recommend ways for businesses to recognise pre-emptive macroeconomic trends and to use it as part of strategic planning to actively set the business vision and goals.
Goal 5:	To recommend ways to understand the intercession between the macro and microenvironment, to understand the conditions that would allow the optimum growth situation to occur and the impact exceptions would have on the model.
Goal 6:	To identify areas in which further development could be supported and provide advice on how this might be achieved.

source: Own research

This can only be achieved in a price-level stable economy with inflation under control (Chernov & Mueller, 2012; De Bondt & Bange, 1992; Fama, 1990; Jaffe, 1985; Kitsul & Wright, 2013). Ensuring a society that consists of businesses, workers and consumers with a high degree of independence in economic activities will allow economic freedom and security for all. These steps will allow the economy to be stable and maintain a strong balance of trade (Cuadra & Sapriza, 2008; Holmes et al., 2015; Yue, 2010) in a globalised world economy, resulting in a wide range of benefits to all South Africans.

The scope of the research is to incorporate as much as possible, the economic goals of the country as defined in the National Development Plan (NDP) and to investigate the implication, correlation and affect each fundamental element will have on the business world, in respect of its ability to grow its stock price.

1.6. The scope of the research

The research scope is focused on actions based on information seeking and usage by the business community in respect to particular resources that is freely available. The overarching aim of the research project was to examine the effect any one of a magnitude of macroeconomic constructs have on the stock performance of a business.

The limitations in the study (Yang & Miller, 2008) consist of the limited data available on most of the macroeconomic elements. The accuracy and reliability of the data in a dynamic environment do not allow for opposing views as related to the composition and calculation of each statistic that governs the macroeconomic space. A limitation exists in having access to all business data thereby limiting the population, as only companies that is trading on the JSE are being considered in the study. Time is another limitation, as data is continuously produced, and therefore the study only reflects a snapshot dependent on conditions occurring during a specific period.

The delimitations in the study (Leedy & Ormrod, 2010), that limits the scope and defining the boundaries of the study, consist of the selection of the macroeconomic elements, which is the best known to researchers and businesses. These elements drive the objectives of the study; promote the research questions; set theoretical perspectives adopted and finally determine the population to be used. Another delimitating factor is the selection of the four main groups of stocks, representing a wide array of business sizes, which ensures strong diversity, representing every economic sector that makes up the majority of the South African economy. The impact of the study will answer several questions relating to the policy framework that will envisage a strong economy build upon principles of social responsibility, economic freedom, in the pursuit of happiness for every person willing to contribute to the sustainability of the South African economy.

CHAPTER 2. Literature Review

2.1. Introduction

The majority of literature on equity markets in developing economies is either focused on looking at the difference between emerging markets and that of more developed economies or a study on financial development in emerging market.

The literature review is rather structured around some of the major components that makes up the macroeconomic space and the inter alia connection to various mechanisms within the global economic structure.

The review focuses on the following fundamental blocks of macroeconomics:

- Exchange rate - The connection, correlation and impact on the performance of firms within a highly volatile exchange rate.
- Government debt - The shock that mismanagement of government debt has on the corporate performance.
- GDP growth - The relationship and correlation of GDP growth and that of business performance.
- Inflation - The negative impact of inflation on the real performance of firms and its ability to outperform negative trends.
- Unemployment - A unique South African context looking at government policy frameworks causing the undermining of company performances.

The literature review will conclude with an overarching synopsis of the various elementary constructs that at a quantum level have a major impact on the performance of businesses considering the pugnacious macroeconomic environment the South African economy currently find itself in.

2.2. Exchange Rate

The currency of a developing country like South Africa will experience far greater volatility (see Figure 2 and Figure 3) since high interest rates are associated with high-risk premiums found in option markets. Within this environment traders would often take advantage of the volatility in the exchange rate, interest rates, carry trade returns, yield curves, forward premium puzzle coefficients, option prices and stocks (Farhi & Gabaix, 2016).

Farhi & Gabaix (2016) would further obtain a parsimonious model of exchange rates, interest rates, options, and stocks that equivocate with the volatility of the exchange rate and the high returns found. This allows a co-movement structure to exist.

The positive covariance between high interest rate currencies co-moving negatively with low interest rate currencies, as well as a positive correlation with stock market returns exist, even if challenging domestic moments in high-equity premium and excess volatility in stocks continue to exist (Farhi & Gabaix, 2016).

By applying a disaster paradigm framework, Farhi & Gabaix (2016) would argue that the volatility of a bilateral exchange rate will generate the right amount of excess volatility in the currency exchange rate, which will lead to an increase in risk reversals associated with the depreciation of the exchange rate. By recognising the benefit of the carry trade, investments in countries with high-risk reversals can generate high-expected returns.

International liquidity is another dynamic that generates volatility in exchange rates. Capital flows drive an exchange rate by adjusting the balance sheet of those organisations that carry the risks, resulting in the creation of an international imbalance in the demand for financial assets. By demanding increased compensation, these organisations would inflate both the level and volatility of the exchange rate, resulting in an empirical disconnect between macroeconomic fundamentals and the exchange rate (Gabaix & Maggiori, 2015).

Figure 2: Exchange rate: ZAR / EURO 2001-01-01 to 2016-03-19

source: (iNET-BFA, 2016)

Gabaix & Maggiori, (2015) would also conclude that the debt of a country highlights a valuation channel towards the external adjustment needed to move an exchange rate, as to facilitate the re-equilibration of the external imbalance adjusting for both the currencies composition made up of its gross external assets and liabilities.

An increasing risk-taking channel can occur, with the appreciation of a currency during high volatility, resulting in the loosening of financial conditions, increased leveraging of the banking sector and subsequent increase in debt, causing a currency mismatch. Under these circumstances, companies would increase debt, resulting in a stronger balance sheet, lower credit risk, causing a potential link between exchange rates and financial stability (Bruno & Shin, 2015).

Bruno & Shin (2015) would in addition also indemnify the monetary policy spill over effect will have on global financial conditions caused by low borrowing rates. The growth of the global banking system is only constraint by the degree of its contemporaneous fundamental risks and its elasticity in the countenance of submissive elementary risks.

Figure 3: Exchange rate: ZAR / US$ 2001-01-01 to 2016-03-19

source: (iNET-BFA, 2016)

Foreign exchange rates can easily force firms to enter a risky foreign market, especially if the prospects of organic growth exist associated with entry profitability and low sunk costs. Any negative impact at the start of a project would be overlook, as to accommodate the sunk cost investment as well as the foreign direct investment (FDI) made (Fillat & Garetto, 2015).

Fillat & Garetto (2015) proposes that a model endogenously determines cross-sectional divergence in financial variables and provide a corresponding explanation for the cross segment of returns developing the international dimensions between exports and FDI participation. This structural framework constructed a relationship between heterogeneous agents (firms) and different types of risk apatite associated with idiosyncratic, firm specific, country-specific or aggregate, that exist in terms of both real and financial variables (Fillat & Garetto, 2015).

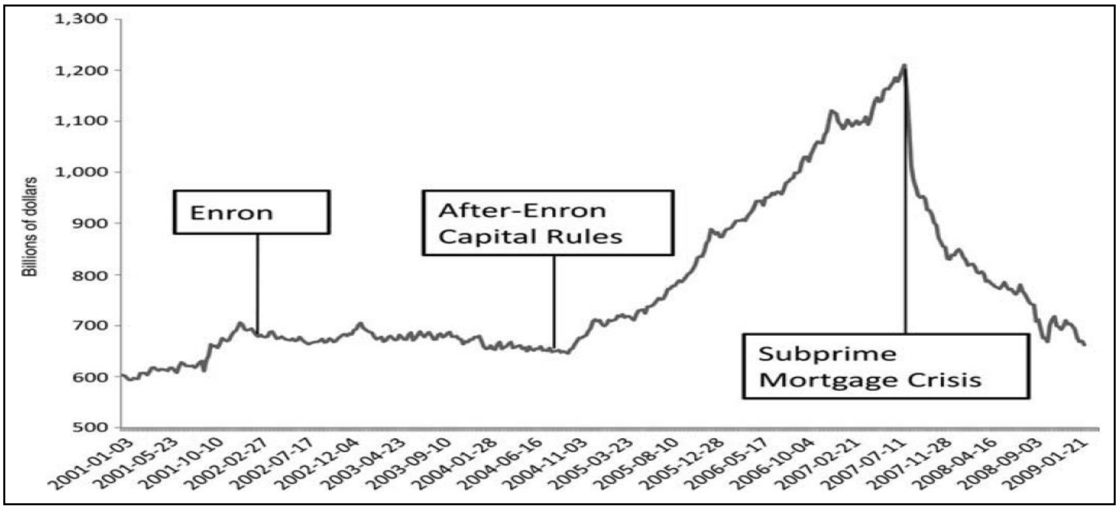
The impact of currency fluctuations is a stark reality in a globalised world economy with many firms trying to adopt a currency regime for their products dependent on the market segmentation rather than on transport costs, taxes or consumer preferences. The dynamics of external adjustments due to international transmission of shocks will drive the optimal currency regime build on the firm organisational structure and customer psychology (Cavallo, Neiman, & Rigobon, 2014), which is an important business cycle feature of emerging markets (Aguiar & Gopinath, 2006).

2.3. Government Debt

In economics, risk-free assets back the current account balance of a country. Historically, the era of the gold standard, representing a commodity currency, started in the 19th century until its abolishment in 1973 (M. D. Bordo & Kydland, 1995; Diebold, Husted, & Rush, 1991). However, fiat currency replaced the commodity gold currency in 1973. By January 2007, asset-backed commercial paper (ABCP) was the largest short-term debt mechanism in the United States, constituting over $1.2 trillion of debt (see Figure 4). The second biggest group, Treasury bills, reached $940 billion. The ABCP instruments were considered risk-free, and became the preferred vehicle for commercial banks to use off-balance-sheet instruments to purchase long-term assets, financed with short-term debt (Gabaix & Maggiori, 2015).

Unlike other forms of securitisation, such as mortgage-backed securities (MBS) or collateralised debt obligations (CDO), banks in effect reserved the credit risk, which were associated with these financial tributary assets. This implied that, as long as the banks maintained sufficient surety and stayed solvent, these instruments would be risk-free to any outside investors. This however, generated significant risks to banks (Acharya & Schnabl, 2010).

Figure 4: The Rise and Collapse of Asset-Backed Commercial Paper (ABCP): 2001 to 2009



source: (Acharya & Schnabl, 2010)

The majority of the ABCP conduits were kept in the hands of money market funds, which were risk-averse financiers. Most of the earnings were re-invested in current account debit countries, like the United States (US) and the United Kingdom (UK) that had long-term financial resources available. With the declining quality of subprime assets in the US, the risk-averse shareholders stopped refinancing maturing ABCP's (Acharya & Schnabl, 2010). The result was a sharp decrease in outstanding ABCP's in August 2007 (see Figure 4), resulting in a massive augmentation in the cost of the ABCP relative to the US Federal Reserve Funds rate by 150 points (1.5 percent) within one day. Banks provided credit assurances of more than three times their equity principal in order to issue the ABCP, however since they couldn't fulfil their promises, were rendered insolvent. Banks like IKB Deutsche Industriebank and Sachsen Landesbank collapsed and had to be bailed out by the German government. Banks like ABN Amro (Netherlands), RBS (United Kingdom) and Citibank (United States) suffered significant losses (Acharya & Schnabl, 2010).

The net international investment position (NIIP) is defined as the summation of all claims by residents on foreign residents less the claims of foreign residents on the country (Bertaut, Kamin, & Thomas, 2009). The NIIP and the rates of return (RR) are key elements in determining a countries net investment income. Analysts therefore look for a stable NIIP/GDP ratio, to determine if a current account is sustainable (Bertaut et al., 2009; Bozoklu & Yilanci, 2014).

The NIIP however cannot be judged as the only measure for sustainability.

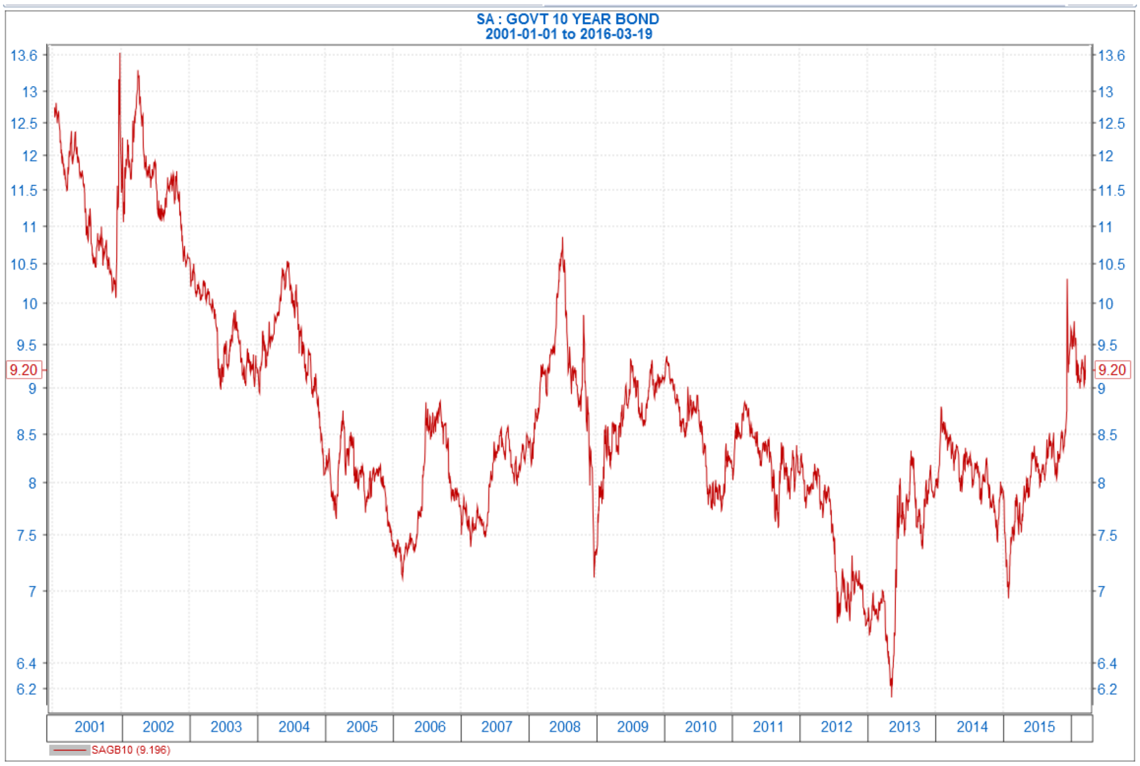
- Depending on the RR, the same NIIP may be related to very different net venture income flows.

- Secondly, the appraisal of assets can affect the NIIP, without changing the underlying capability of the economy to service the external debt situation.

- Thirdly, the NIIP does not reflect the net wealth of an economy's residents, since the ability to repay external debt (see Figure 5 and Figure 6 representing the government bond rate), is not only depended on the GDP, but also the total net wealth of the country.

- Lastly, the aggregate NIIP will only tentatively relate to a country's residents to repay their external liabilities. This is because most liabilities are domesticated and do not affect the foreign credit base. The ability to diversify and distribute the creditworthiness across a wide spectrum of borrowers, will influence the credit risks faced by foreign shareholders (Bertaut et al., 2009).

Figure 5: South Africa Government - 10 Year Bond rate: 2001-01-01 to 2016-03-19

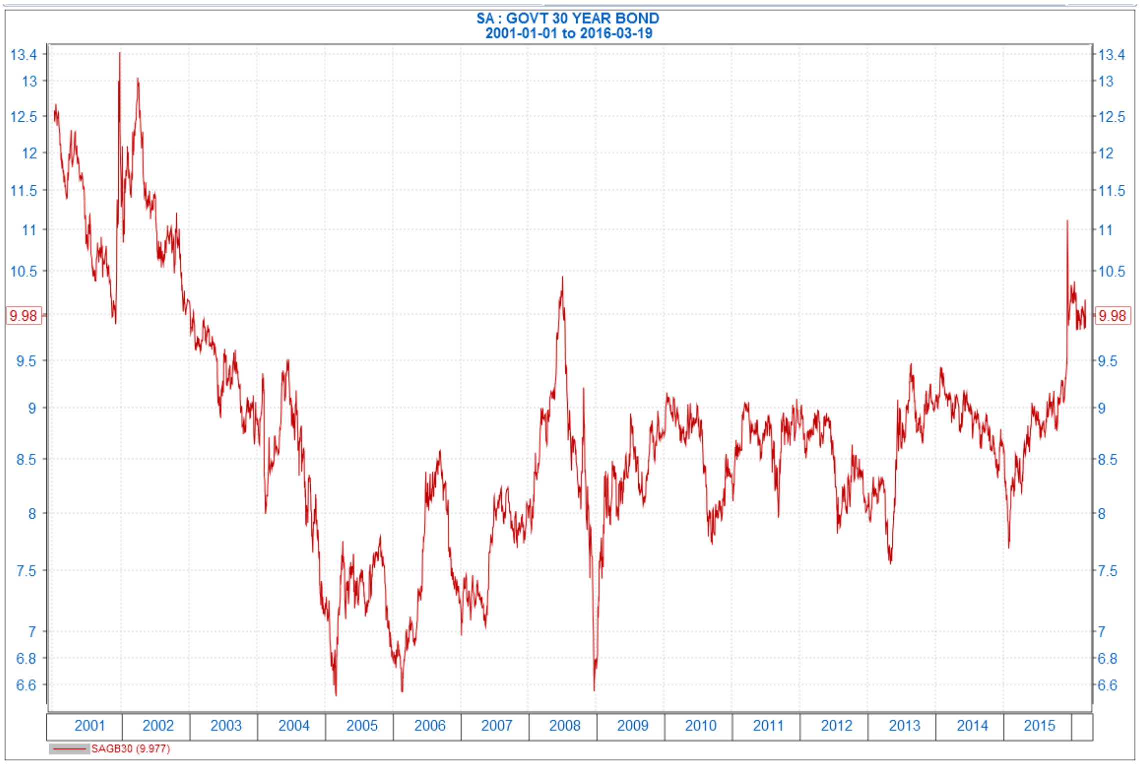


source: (iNET-BFA, 2016)

A country with an increasing account deficit can therefore expect an increase in diverse instruments of net indebtedness and subsequent peripheral imbalances between asset prices and the current account. Several factors can expedite an amendment, including, inter alia, decline in GDP growth and increased concerns about the current account sustainability (Bertaut et al., 2009). Long-term current account deficits (see Figure 7) within emerging market economies are in all probability not on a sustainable path (Bozoklu & Yilanci, 2014).

The World Bank and IMF identified 41 countries in the world as "heavily indebted poor countries" (HIPC's), in 1996. Sub-Saharan Africa (SSA) accounts for 32 countries out of all HIPC's. The debt of these countries have accelerated from \$55 billion in 1980 to \$215 billion in 1995 (Boafo-Arthur, 2003). To place this in perspective, in 1995 the debt stock of SSA countries represented 434 percent of exports and 111 percent of Gross National Product (GNP) (Kohli, 1978). Other developing countries, however were only sitting at 130 percent of exports and 30 percent of GNP (Boafo-Arthur, 2003).

Figure 6: South Africa Government - 30 Year Bond rate: 2001-01-01 to 2016-03-19



source: (iNET-BFA, 2016)

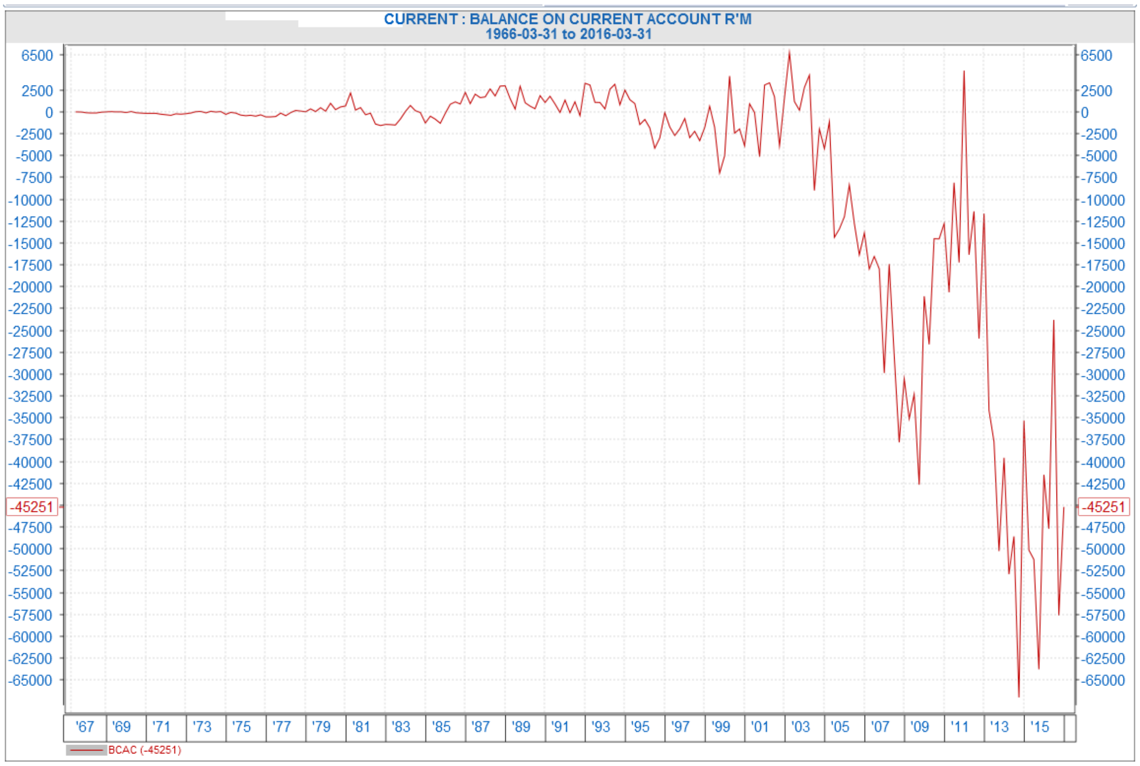
The effect of globalisation (Bond, 2016) on SSA countries, can be best described as a debt trap, as it created an economic dislocation and externalisation, manifesting into a lopsided integration into the global economy. An example of this is in 1996 when Ethiopia spent 45% of its approximate $783 million export income on debt repayments (Boafo-Arthur, 2003). Clift & Tomlinson (2008) described the decentralised globalisation of credit formation and the effect on the balance of payment performance evaluation as "a combination of shifting, conjunctural, constructions rooted in underlying political economic assumptions" (p. 625). Clift & Tomlinson (2008) also revealed that, "the Polanyian notion of congruence between domestic policies and institutions and global political economic conditions explains the rise and decline of an 'embedded liberal' view of the balance of payments" (p. 626).

A study by Peleg & Arieli (2006), found that growing globalisation created serious problems, by quantifying and examining the national accounts. The consequence of this method is an out of date system that needs to recognise the impact that international joint activities have on domestic production.

The monetarist model of the balance of payment, according to Farhadian & Dunn Jr.

(1986), "concludes that payment disequilibria or exchange rate volatility are solely monetary in cause and therefore the result of inappropriate domestic monetary policies" (p. 66). Central banks in developing countries, are more likely influenced and even dominated by their government's borrowing needs and deficits, rather than focused on independent fiscal policy (Farhadian & Dunn Jr., 1986).

Figure 7: South Africa Government - Balance on current account R'M: 2001-01-01 to 2016-03-19



source: (iNET-BFA, 2016)

It is common practice to place prerequisites of conditionality arrangements like reduced government deficits on governments, prior to any borrowing (Farhadian & Dunn Jr., 1986). However, contraction of fiscal policy resulted in a more probable payment deficit or reduction, rather than being superfluous or appreciated. Fiscal policy should be recognised as an independent tool, while large budget deficits build on growth will improve the balance of payments of developing economies over time (Farhadian & Dunn Jr., 1986; Lee & Wang, 2012).

2.4. Growth in gross domestic product (GDP)

At a fundamental level, Gross Domestic Product is the net contribution of four main elements consisting of consumption, investment, government expenditure and net exports (Miles et al., 2012). The circular flow diagram (see Figure 10) (Cooper & John, 2011), creates an elementary construct of the position government, financial institutions, firms, households and the global economy have within the GDP framework.

Equation 1: GDP equation

$GDP = C + I + G + (X - M)$ **(Miles et al., 2012)**

C = Consumption which refers to the total consumption spending by households on final goods and services. Consumption consists of three classes:

- **Services** (restaurant meals, hotel nights, legal services, movies etc.),
- **Nondurable goods** (tangible products with a relative short and limited lifespan, for example groceries, DVD's and clothing) and
- **Durable goods** (items like automobiles and "white goods" like stoves, refrigerators and computers) (Cooper & John, 2011).

I = Investment which refers to the purchase of new goods that increase the capital value, as to allow for future increased output. Investment consists of three classes:

- **Business fixed investment** (purchases of physical capital like plants, machines etc., that produces goods and services),
- **New residential construction** (building of new homes) and
- **Inventory investment** (change in inventories of final goods) (Cooper & John, 2011).

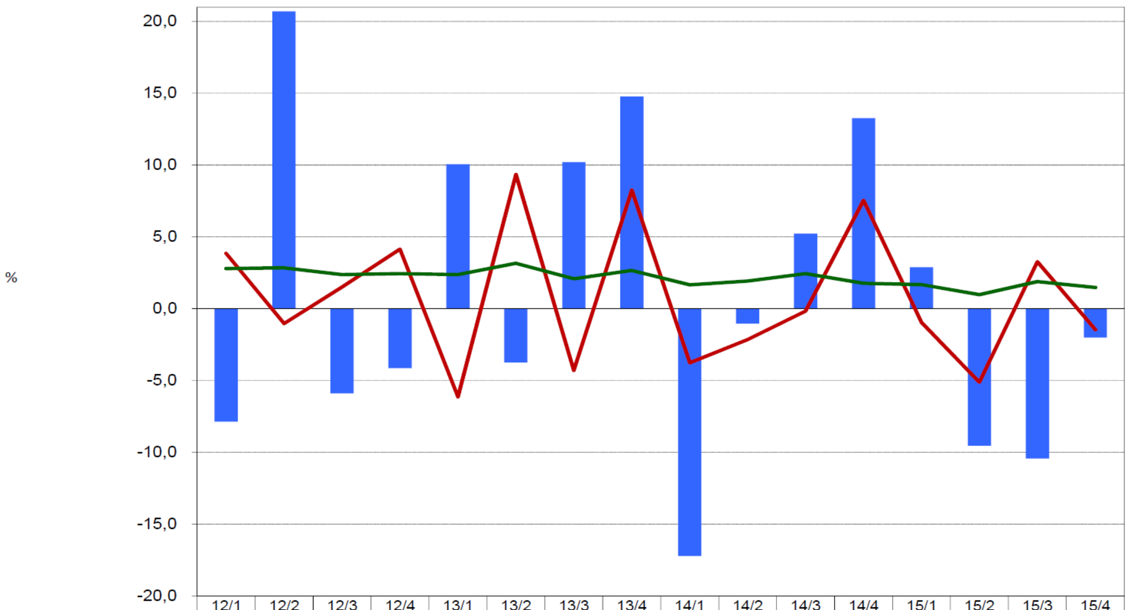
G= Government expenditure relates to all purchases of goods and services by the government, at all levels of government, from national government to local municipalities. The transfers made by government, for example unemployment insurance, social grants, etc. are not counted in GDP (Cooper & John, 2011).

X - M = Net exports which refers to the exports minus imports of goods and services, correcting the expenditure flows associated with the global economy (Cooper & John, 2011; Miles et al., 2012).

Kung, (2015) shows that an endogenous growth framework of vertical innovations can be embedded into a standard new Keynesian dynamic stochastic general equilibrium (DSGE) model. This results in households having recursive inclinations towards long-term growth and that their sensitivity towards uncertainty within this construct would have been extracted.

Within this environment, central banks would target short-term nominal interest rates to manage inflation as well as output divergences. As expected inflation and growth outlook are related, to a company's ability to produce under a degree of uncertainty liaised in productivity and time constraints. The model endogenises the growth dynamics between inflation and consumption which is connected to a company's production assessments (Kung, 2015). The nature of the industries (see Figure 8) plays a significant role in the sustainability (see Figure 9) of the GDP growth rate and its overall impact on the circular flow (see Figure 10).

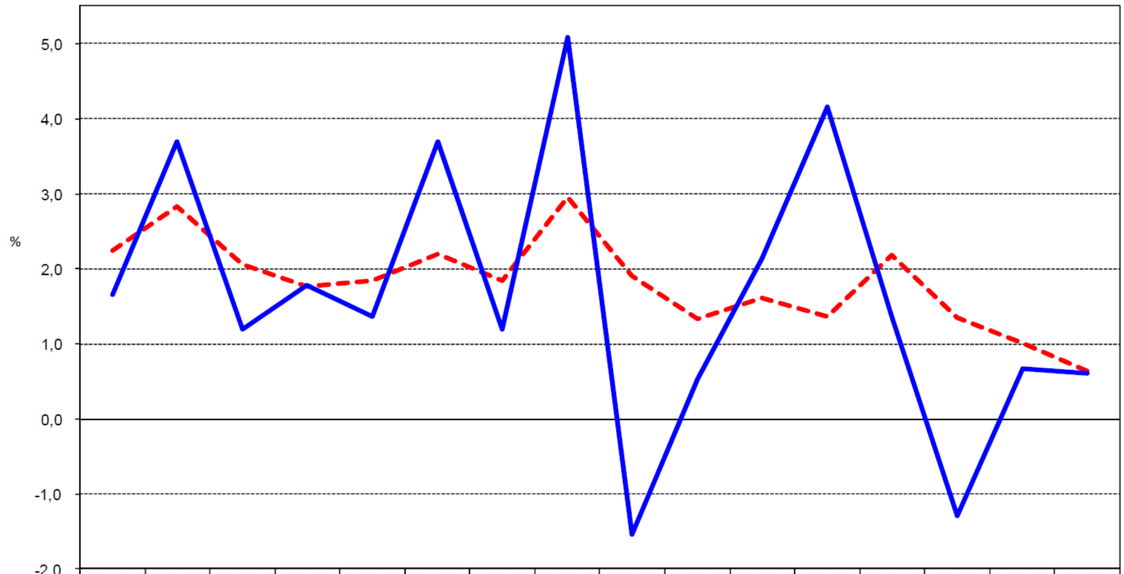
Figure 8: South Africa GDP value added growth rates in various sectors (seasonally adjusted and annualised): 2012Q1 to 2015Q4



	12/1	12/2	12/3	12/4	13/1	13/2	13/3	13/4	14/1	14/2	14/3	14/4	15/1	15/2	15/3	15/4
Primary industries	-7,9	20,7	-5,9	-4,1	10,1	-3,7	10,2	14,8	-17,2	-1,0	5,2	13,3	2,9	-9,5	-10,4	-2,0
Secondary industries	3,8	-1,0	1,5	4,1	-6,1	9,3	-4,3	8,2	-3,8	-2,1	-0,2	7,5	-1,0	-5,1	3,3	-1,5
Tertiary industries	2,8	2,8	2,4	2,4	2,4	3,2	2,1	2,7	1,7	1,9	2,4	1,8	1,7	1,0	1,9	1,5

source: (Statistics South Africa, 2015b)

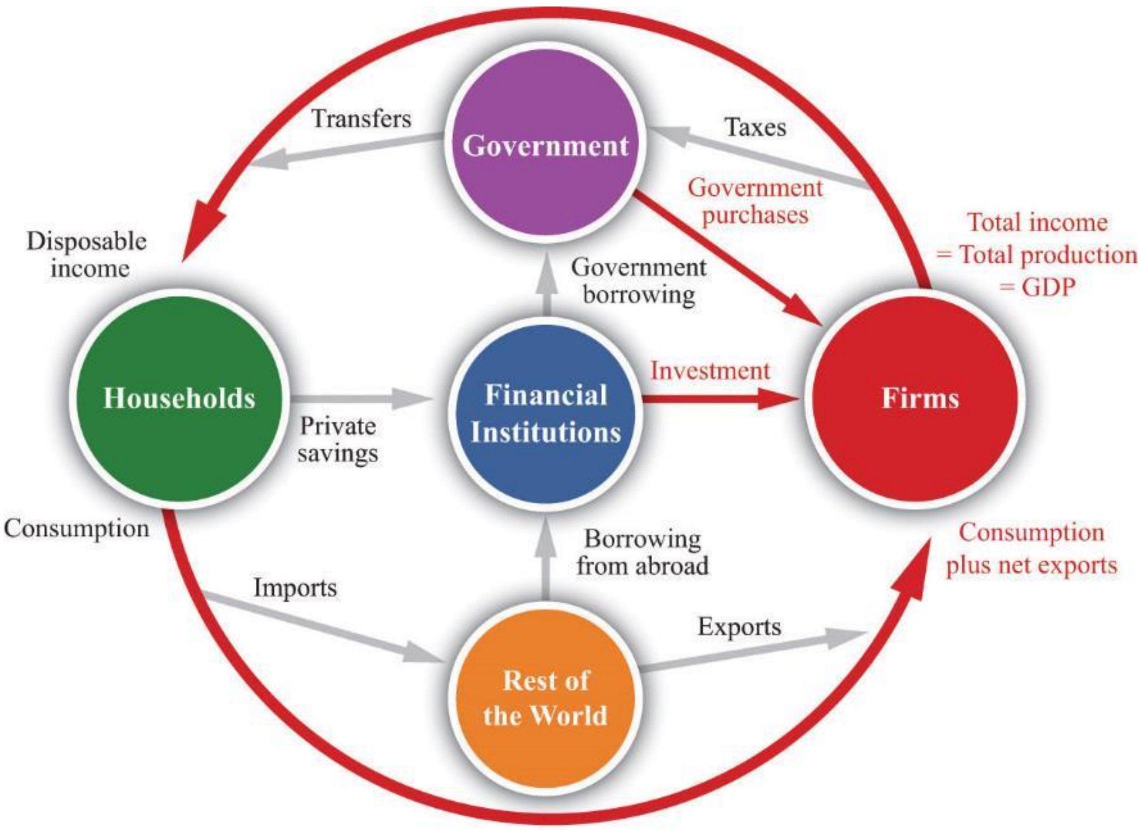
Figure 9: South Africa GDP growth year-on-year (Y/Y) (seasonally adjusted Q/Q and annualised Q/Q): 2012Q1 to 2015Q4



	12/1	12/2	12/3	12/4	13/1	13/2	13/3	13/4	14/1	14/2	14/3	14/4	15/1	15/2	15/3	15/4
Y/Y	2,2	2,8	2,1	1,8	1,8	2,2	1,8	2,9	1,9	1,3	1,6	1,4	2,2	1,3	1,0	0,6
Q/Q	1,7	3,7	1,2	1,8	1,4	3,7	1,2	5,1	-1,5	0,5	2,1	4,2	1,4	-1,3	0,7	0,6

source: (Statistics South Africa, 2015b)

Figure 10: The Firm Sector in the Circular Flow

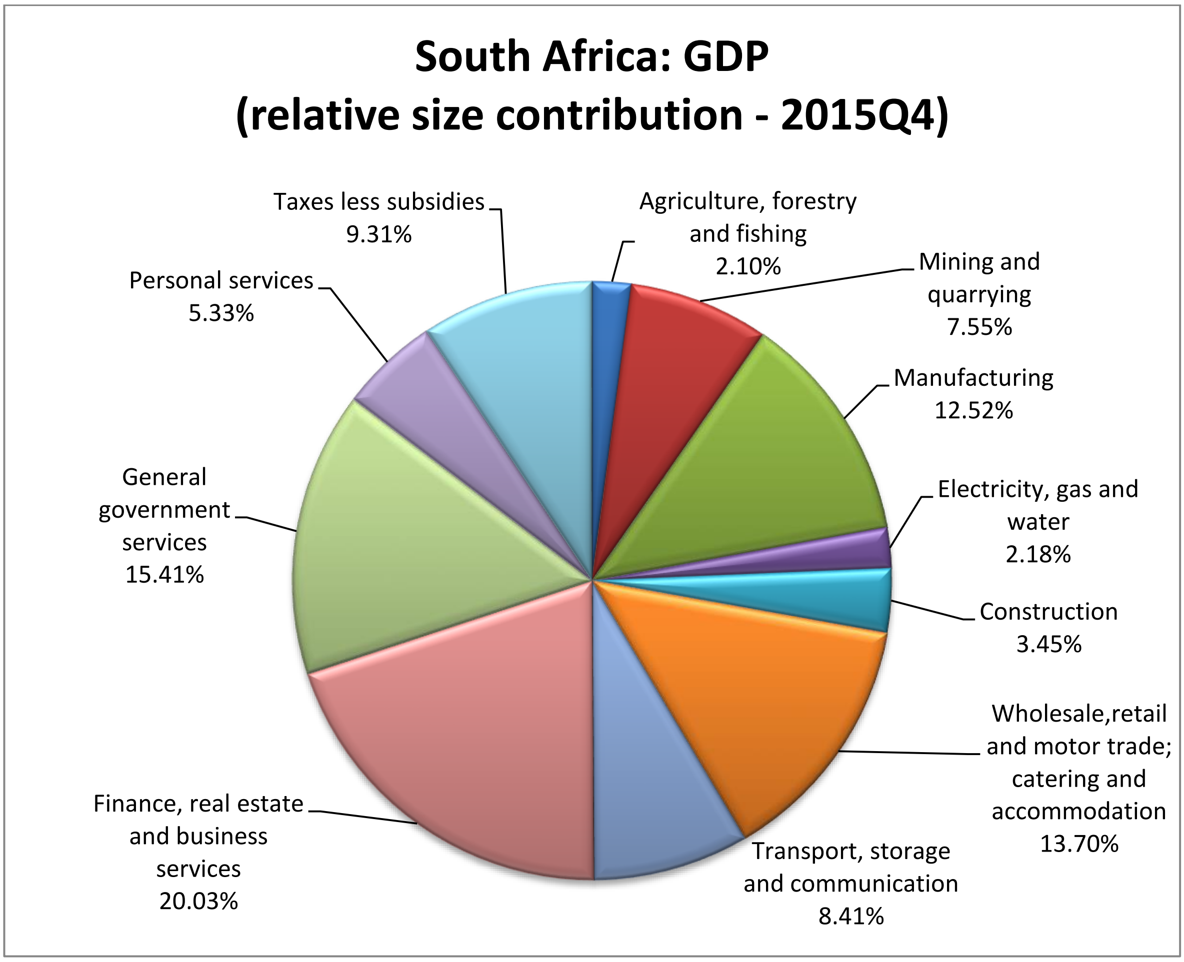


source: (Cooper & John, 2011)

To take advantage of these dynamics, firms must upgrade its technology by investing in research and development (R&D) as to improve the firm's cumulative technology. The resultant spill over effects are crucial for producing a sustainable growth in the economy. The R&D investment using the final goods will capture the adjustment costs in the investments that will lead to more elasticity within the potential return on the investment (Kung, 2015).

Positive and negative shocks create volatility that consequently delivers fluctuations within the distribution of the consumption growth. Some will influence the cash flow and risk uncertainty that directly move and give rise to insecurity in the macroeconomic fundamentals, driving future growth across a wide spectrum of sub components of the GDP equation. Depraved uncertainty and future growth rates have a negative relationship that affects the consumption, investment, R&D, market performance and output generated within an economy (Segal et al., 2015).

Figure 11: Contributions of the annualised percentage change in seasonally adjusted real value added by industry to the annualised percentage change in seasonally adjusted real GDP.



source: (Statistics South Africa, 2015a)

Segal et al. (2015), also found quantitatively, that the impact of uncertainty has a massive economic influence on the macro variables. Respectable uncertainty, and the positive effect it provides, can extend the growth, persistence, and longevity of the GDP by several years; however, the inverse is also true, in which depraved uncertainty equally can extend negative sediment for a very long time. This gives rise to a stochastic volatility in consumption growth, based on the volatile measurements of a macro collective attributed to a persistent and predictable variation. Evidence further exists on time-varying volatility within uncertainty in a DSGE production model whereby an immediate drop in consumption and output growth rates are connected to businesses delaying investment decisions (Segal et al., 2015).

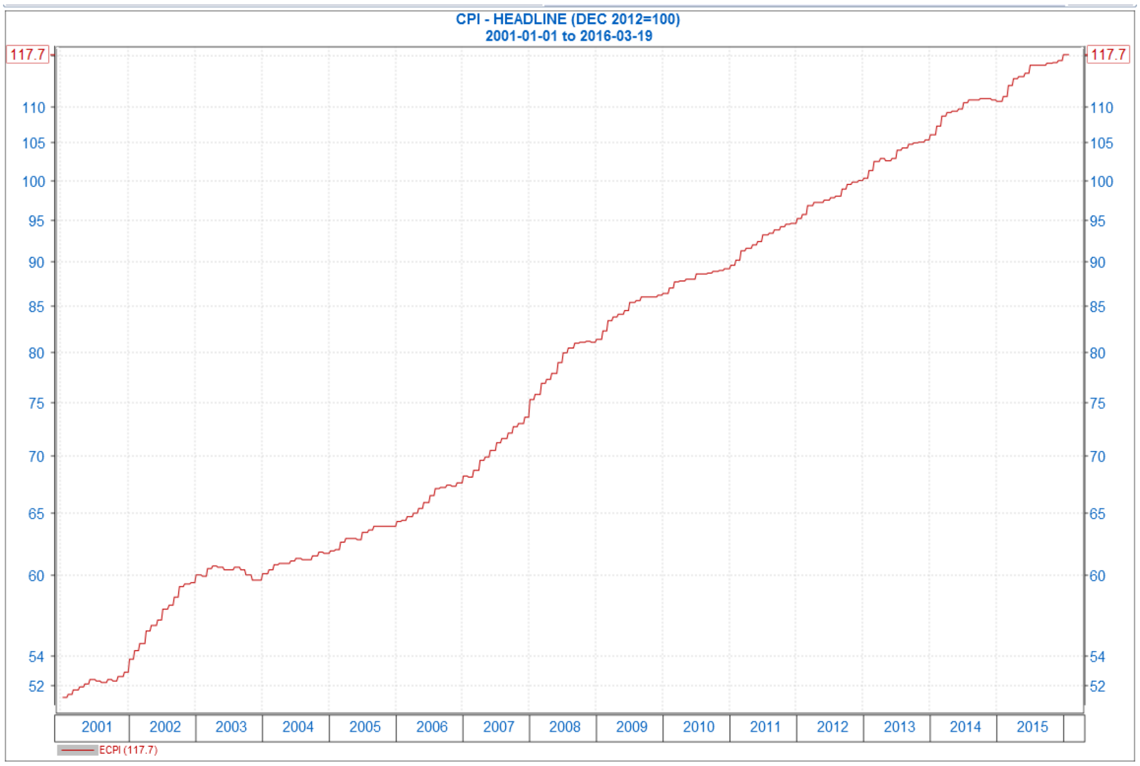
Companies sensitivity levels increase in an environment in which disaster risks and shocks to the equilibrium of the economic mechanism becomes the norm, as it directly encroaches on the appraisal of the business cash flow and sunk cost in the form of foreign direct investment (FDI) (Fillat & Garetto, 2015). This also has an impact on the ability to generate excess capacity, to allow exports to grow, resulting in a heterogeneous exposure to the volatility with consumption growth being seriously impacted. Companies will only enter a risky foreign market if the exposure to the risk apatite equation is positive with the prospects of growth and profitability (Fillat & Garetto, 2015). An unhealthy reliance on government services (see Figure 11) to support GDP growth can therefor develop.

2.5. Inflation

Monetary policy around the world tries to minimise the macroeconomic shock through targeting short-term rates, as a policy tool, in order to manage inflationary pressures but not at the expense of domestic growth. However research has found that a correlation exist between short-term rates and inflation, which would explain the inflation risk premium relationship with the variation in long-term bond yields as well as cross-country covariance's with the bond yields (Jotikasthira, Le, & Lundblad, 2015).

On the other hand, faster growing developing economies tend to have a greater demand for credit that fuels higher inflation, which in turn limit the supply of credit. Another factor that can potentially influence the credit conditions is the ability for a government to manage its gross debt in relation to its GDP. A negative impact that could arise from higher inflation (see Figure 12 and 13) is a deterioration of lending by the banking system, resulting in an increased public debt condition. This will result in reduced monetary flows, causing an amplified apprehension by banking institutions to maintain a positive money flow within the national financial system (Bruno & Shin, 2015).

Figure 12: South Africa - CPI - Headline: 2001-01-01 to 2016-03-19

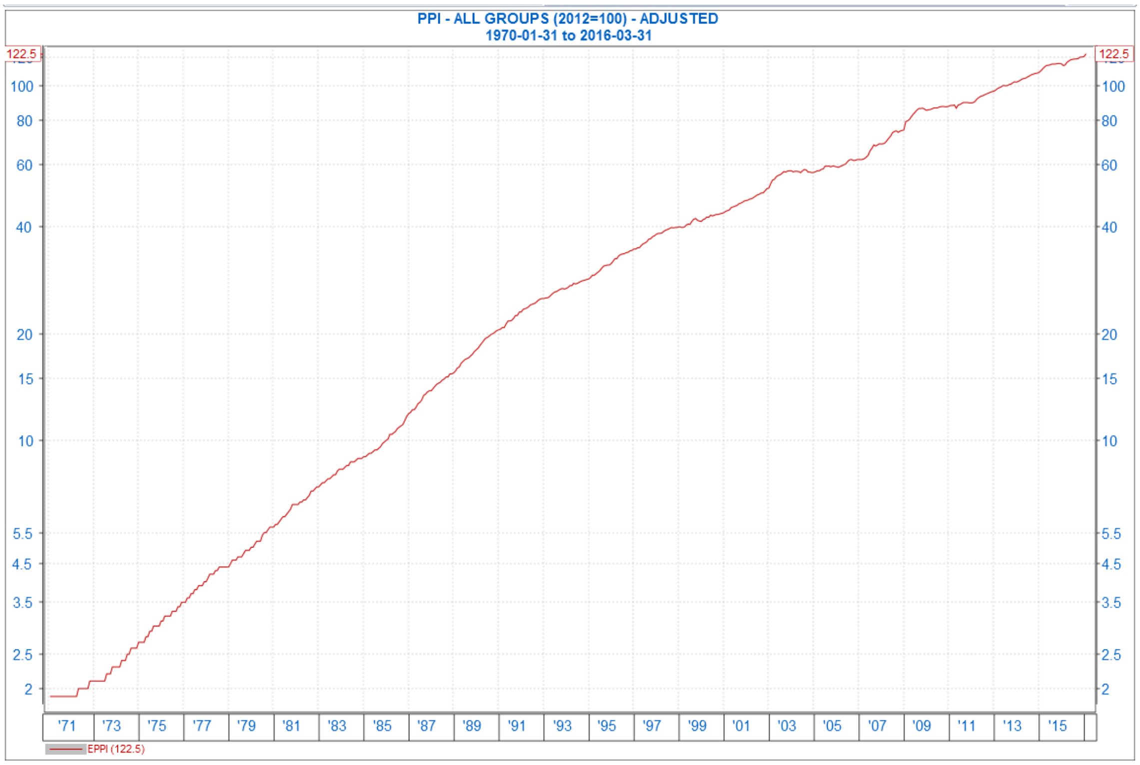


source: (iNET-BFA, 2016)

Inflation does not function in isolation, since aggressive inflation targeting would reduce nominal risks, which in turn will lower the average nominal term spread. The consequence is an amplification of real risks, and a resultant increase in the equity premium with associated volatility. A negative relationship therefore exists between the expected growth and the underlining inflation, which carries an expected future and real marginal cost. This increased risk will transfer to long-maturity nominal bonds, and create a far lower and reduced return on the investments due to suppressed bond yields (Kung, 2015).

Inflation uncertainty drives risk aversion, which places a premium around the forecast of inflation especially in a volatile environment. Inflation expectations are therefore found to correlate closely with long-term interest rates (Bauer, Rudebusch, & Wu, 2014) and has a negative impact on the output growth of an economy (Tarawally, Sun, Kargbo, & Kargbo, 2015).

Figure 13: South Africa - PPI - All groups: 2001-01-01 to 2016-03-19



source: (iNET-BFA, 2016)

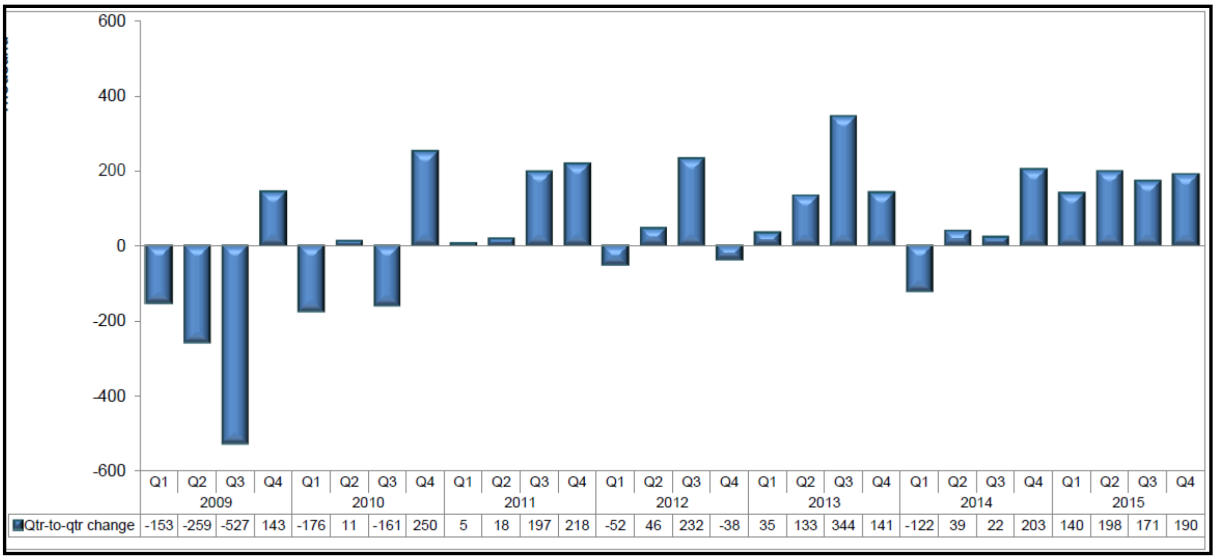
2.6. Unemployment

The financial crisis of 2007 (Mclean & Zhao, 2014) became the catalyst for one of the biggest contractions in world history, with small and medium firms taking the brunt of the liquidity freeze and the resultant increased unemployment (see Figure 14 reflecting 2009 data). The unwillingness of the financial institutions to lend money caused a massive blockage and shock (Paravisini, Rappoport, Schnabl, & Wolfenzon, 2015) to the financial arteries, which carries the lifeblood of the global economy, resulting in a disastrous shock to the system, which manifested in a worldwide recession (Chodorow-Reich, 2014).

If governments could strive to attain a more efficient digitised financial system policy framework, then it could lead into a more positive impact on economic growth and result in increasing employment and economic growth which would reduce poverty, and therefore achieve one of its core goals of eradicating high unemployment (Tarawally et al., 2015).

The youth has become the biggest assemblage of sufferers, and by 2015, has still not recovered from the crisis creating a time bomb among students with increasing debt awaiting them at the gates of adulthood with reduced prospects and probability for employment (Gelber, Isen, & Kessler, 2016).

Figure 14: South Africa - Quarter-to-quarter changes in employment, Quarter 1:2009 to Quarter 4:2015



source: (Statistics South Africa, 2015c)

A positive correlation exists between the demand curve and employment, however real-wage rigidity plays an important role as a buffer in the propagation of demand shocks which in turn impacts labour demand which depress employment. The resultant labour market tightness (see Figure 14 and Table 1) therefore has a very strong correlation with the employment rate (Michaillat & Saez, 2015).

Table 1: South Africa - Employment by industry: 4th quarter 2015

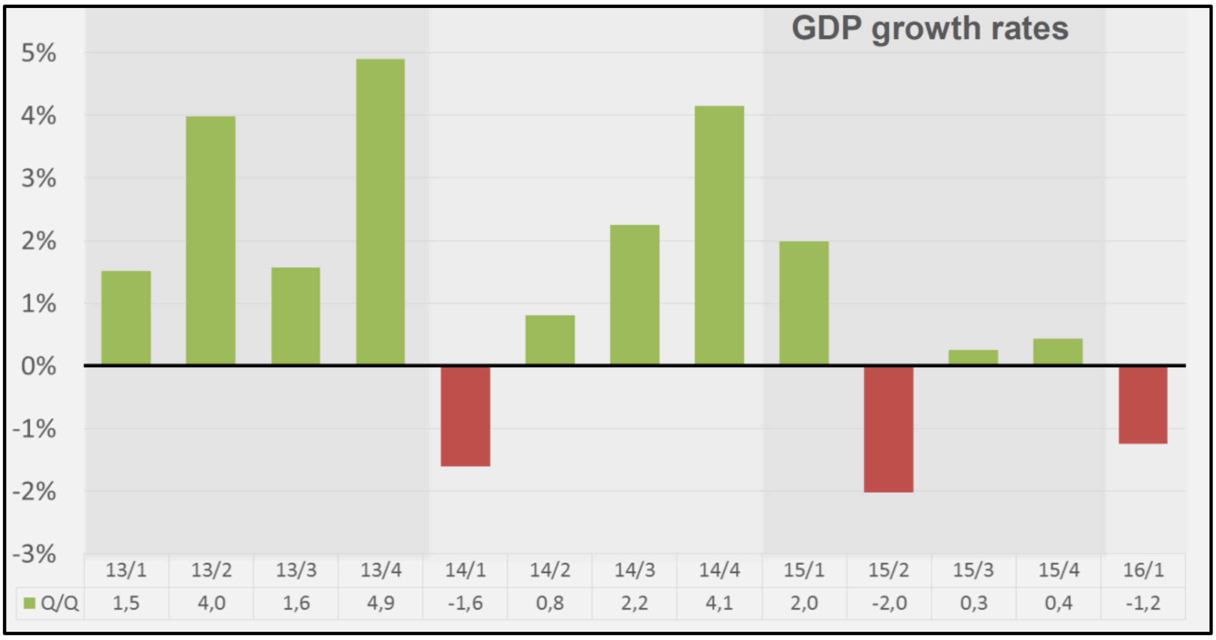
Industry	Oct-Dec 2014	Jul-Sep 2015	Oct-Dec 2015	Qtr-to-qtr change	Year-on-year change	Qtr-to-qtr change	Year-on-year change
			Thousand			Per cent	
Total*	**15 320**	**15 828**	**16 018**	**190**	**698**	**1,2**	**4,6**
Agriculture	742	897	860	-37	118	-4,1	16,0
Mining#	427	446	483	37	56	8,4	13,1
Manufacturing	1 749	1 774	1 738	-36	-11	-2,0	-0,6
Utilities	104	127	123	-4	20	-2,9	19,1
Construction	1 334	1 460	1 438	-21	105	-1,5	7,8
Trade	3 247	3 200	3 280	80	33	2,5	1,0
Transport	952	898	900	2	-52	0,2	-5,4
Finance and other business services	2 039	2 160	2 273	113	234	5,2	11,5
Community and social services	3 501	3 582	3 624	42	123	1,2	3,5
Private households	1 219	1 280	1 294	13	75	1,0	6,2

Note: Total includes 'other' industry.
#Mining is a very clustered industry, hence the industry might not have been adequately captured by the QLFS sample. For more robust mining estimates, please use the Quarterly Employment Statistics (QES).
Q3: 2015 estimates (column Jul-Sep 2015) and Q4: 2015 estimates (column Oct-Dec 2015) are from the 2013 Master Sample.
Due to rounding, numbers do not necessarily add up to totals.

source: (Statistics South Africa, 2015c)

Unemployment is complemented through deficient cumulative demand, exceedingly high wages and a frictional component caused by employment costs. An increase in the combined demand would therefore result in an increased output curve associated with market tightness, labour market tightness and a decreased rate of idleness witch would cause a decrease in unemployment (Michaillat & Saez, 2015).

Figure 15: South Africa - Quarter-to-quarter changes in GDP growth, Quarter 1:2013 to Quarter 1:2016

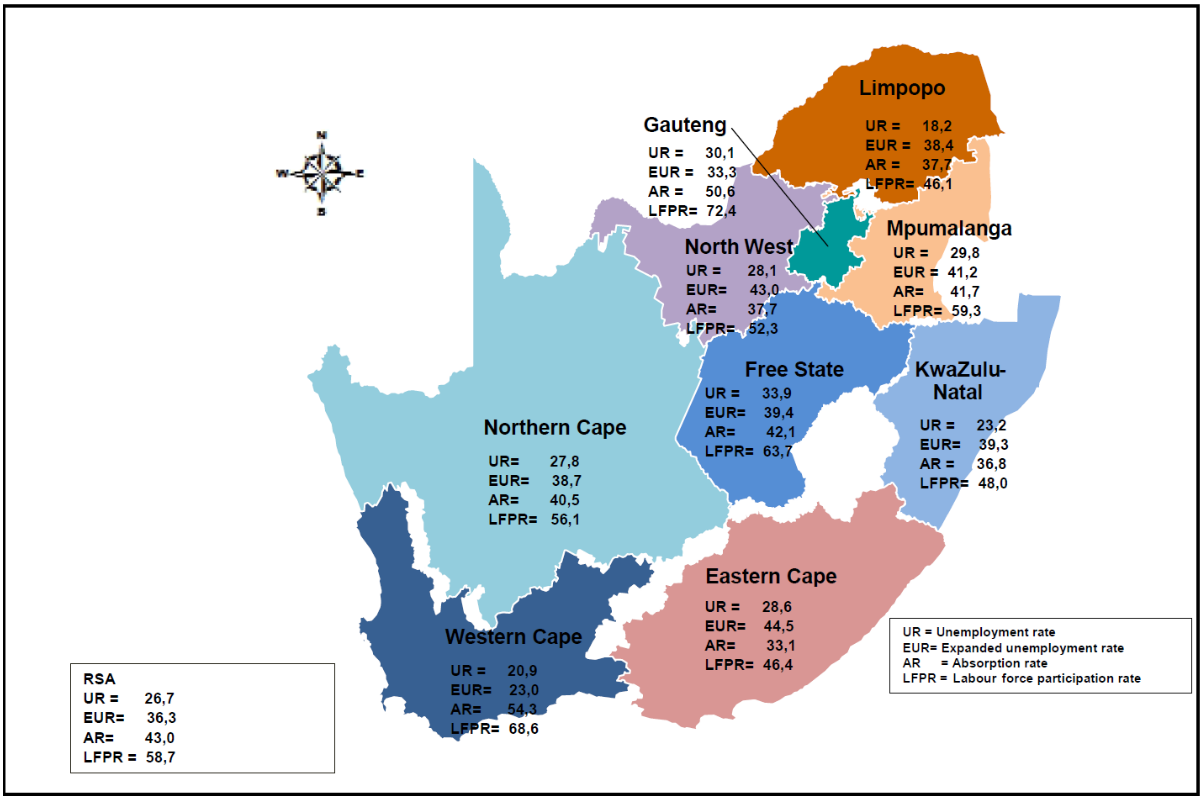


source: (Statistics South Africa, 2016a)

However, in this increased knowledge based economy, a substantial productivity heterogeneity will develop. Employment would actually fall as the economy grows (Sampson, 2016). Researchers have created forecasting models for unemployment taking into account several factors, like growth (see Figure 15) and inflation with limited success (Coibion & Gorodnichenko, 2012).

For businesses the macroeconomic growth rate, relating to real consumption, real GDP, industrial production, employment, capacity utilisation and real labour income in the form of real wage growth (Campante & Yanagizawa-Drott, 2015) has a direct relationship with expected excess profits over the following year. Both stocks and bonds will have a positive trend linked to risk aversion associated with economic growth (Møller & Rangvid, 2015).

Figure 16: South Africa – Quarterly Labour Force Survey: Unemployment rate Q1:2016



source: (Statistics South Africa, 2016e)

As the South African population is growing, while in a stagnating economic growth environment, unemployment has reached epidemic levels at 26.7% with the expanded unemployment rate currently at 36.3% (see Figure 16). The need for both digital and spatial knowledge management in a more urbanised society needs to be developed as the expanded unemployment rate in Gauteng is now above 30% (Statistics South Africa, 2016e) with Ekurhuleni, the manufacturing hub, at 37.4% (Statistics South Africa, 2016e). With the net migration of people towards the economic hubs (Gauteng and Western Cape), additional strain has been placed on the government resources and the need to improve proficiencies in local government structures with accountability ostensibly.

According to Baud, Scott, Pfeffer, Sydenstricker-Neto, & Denis (2015) this can be achieved through knowledge construction, circulation and utilisation while still addressing social inequalities with economic growth at its core. This can still be achieved while operating in a context of environmental and economic uncertainty.

Political driven policies have created a pro-growth and pro-poor agenda in the form of social grants to a large portion of the population. This process however was constructed on an institutional restructuring operation, which caused a massive lack of capacity at local level (Baud et al., 2015), which had a direct impact on service delivery resulting in major unrest. The South African economy is built on a primary sector consisting of mining and agriculture.

For primary industries GDP contracted by 15.5%, while Mining reduced by 18.1% which contributed a -1.5% to the GDP growth rate (Statistics South Africa, 2016a). The only sector that showed any reasonable growth is tertiary industries (0.8% growth), with Finance (sharing 22% of the nominal GDP) expanding 1.9% which contributed 0.4% to the GDP growth rate (Statistics South Africa, 2016a). It is therefore possible to have an immediate impact with digitisation in this sector, that we will be able to realise an immediate GDP growth potential as to drive the supply side of the economy (see appendix 8.2.3). The finance sector has been consistent in contributing a positive impact on growth over a period of time, for the last six quarters (Statistics South Africa, 2016a).

2.7. Synopsis

The macroeconomic engine of a country is a finely balanced piece of equipment that relies on a continuous servicing and maintenance in order to operate at optimum efficiency.

The literature review found that any shock to the economic fundamentals could have disastrous results for any one of the components that drive the economy. In today's interconnected and dynamic market driven economies, any negative shocks can cause an economic system meltdown while firms under pressure to drive profits could be caught in the approaching train wreck.

For the survival of companies, businesses would need to take the macroeconomic conditions in which they operate, extremely seriously, as it will influence and leave an everlasting impact on the sustainability of the business.

CHAPTER 3. Research Hypotheses

Following the literature review, in the preceding chapter, the study looked to measure the extrapolative nature of growth predictability regression model (Farhi & Gabaix, 2016; Kung, 2015) within the sphere of influence that macroeconomic uncertainty has on stock performance.

The research focuses on the contemporaneous correlation that exists between the following macroeconomic forces and stock price movement:

- Exchange rate
- Debt rate
- Gross Domestic Product (GDP) growth rate
- Inflation rate
- Unemployment rate

The period of research focuses on the performance of various individual stocks, as well as indices (which represent groups of stocks) during three distinctive time eras equal in size over a 15-year episode. The research hypotheses focus on the question whether the macroeconomic elements have a significant influence on the stock price performance. The research also analyses if any combination of macroeconomic elements has a stronger correlation with testing the regression significance.

All hypotheses testing will follow the following basic principle of a two-tailed hypothesis:

- Whereby, the standard simple regression model (Chatterjee & Hadi, 2015; Wegner, 2014) is defined as:

Equation 2: Simple regression

$\mathbf{Y_i = \beta_0 + \beta_1 X_1 + \varepsilon_i}$ (Chatterjee & Hadi, 2015; Wegner, 2014)

Null hypothesis: $H_0 : \beta_1 = 0$

Alternate hypothesis: $H_1 : \beta_1 \neq 0$

- Whereby, the multiple regression model (Yang & Miller, 2008) is defined as:

Equation 3: Multiple regression

$\mathbf{Y_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_t X_t}$ (Yang & Miller, 2008)

Null hypothesis: $H_0 : \beta_1 = 0 \quad \beta_2 = 0 \quad \beta_3 = 0 \quad \beta_t = 0$

Alternate hypothesis: $H_1 : \beta_1 \neq 0 \quad \beta_2 \neq 0 \quad \beta_3 \neq 0 \quad \beta_t \neq 0$

A correlation analysis is conducted to determine the strength of the linear relationship, through determining the Pearson's correlation coefficient (Wegner, 2014). A coefficient of determination is calculated to measure the amount of variation in the dependent variable elucidated by the independent variable. Finally the regression model is tested for significance by applying a 5% ($\alpha = 0.05$) level of significance (Wegner, 2014).

A check to establish whether a linear correlation between the independent variables and the dependent variable exist is done through scatter plots. This is followed by a check for multivariate normality to test for normal distribution by using a quantile-quantile (Q-Q plot) and normal probability (P-P plot) analysis to indicate possible tendency in the error terms (Chatterjee & Hadi, 2015; Montgomery, Peck, & Vining, 2015; Yang & Miller, 2008). Collinearity diagnostic is conducted to determine the variance inflation factor (VIF) and eigenvalue as to detect the presence of multicollinearity (Yang & Miller, 2008). Finally, a test to determine the assumption of homoscedasticity and normality of residuals are conducted (Yang & Miller, 2008).

All these tests are needed to allow some assumptions of multiple regressions to be made. They are:

- Variables are normally distributed with independence of observations and multivariate normality
- Normal distribution of errors, with variables considered without error (reliably)
- Supposition of a linear relationship between the independent and dependent variable
- Reliability and simple or multiple regression
- Assumption of homoscedasticity with no or little multicollinearity and no auto-correlation (Yang & Miller, 2008)

3.1. Hypothesis 1: Exchange Rate

Research question one (RQ1): Can you predict with reasonable accuracy, that a correlation exists between the countries exchange rate and stock market performance?

- **Null hypothesis one ($H_0$1):** No significant correlation exists between exchange rate and a change in market capitalisation of the majority of stocks listed on the stock exchange.
- **Alternate hypothesis one ($H_1$1):** A significant correlation exists between the exchange rate and a change in market capitalisation of the majority of stocks listed on the stock exchange.

3.2. Hypothesis 2: Debt Rate

Research question two (RQ2): Can you predict with reasonable accuracy, that a correlation exists between the countries debt rate and stock market performance?

- **Null hypothesis two ($H_0$2):** No significant correlation exists between debt rate and a change in market capitalisation of the majority of stocks listed on the stock exchange.
- **Alternate hypothesis two ($H_1$2):** A significant correlation exists between the debt rate and a change in market capitalisation of the majority of stocks listed on the stock exchange.

3.3. Hypothesis 3: Gross Domestic Product growth rate

Research question three (RQ3): Can you predict with reasonable accuracy, that a correlation exists between the countries GDP rate and stock market performance?

- **Null hypothesis three ($H_0$3):** No significant correlation exists between GDP rate and a change in market capitalisation of the majority of stocks listed on the stock exchange.
- **Alternate hypothesis three ($H_1$3):** A significant correlation exists between the GDP rate and a change in market capitalisation of the majority of stocks listed on the stock exchange.

3.4. Hypothesis 4: Inflation Rate

Research question four (RQ4): Can you predict with reasonable accuracy, that a correlation exists between the countries inflation rate and stock market performance?

- **Null hypothesis four ($H_0$4):** No significant correlation exists between inflation rate and a change in market capitalisation of the majority of stocks listed on the stock exchange.
- **Alternate hypothesis four ($H_1$4):** A significant correlation exists between the inflation rate and a change in market capitalisation of the majority of stocks listed on the stock exchange.

3.5. Hypothesis 5: Unemployment Rate

Research question five (RQ5): Can you predict with reasonable accuracy, that a correlation exists between the countries unemployment rate and stock market performance?

- **Null hypothesis five ($H_0$5):** No significant correlation exists between unemployment rate and a change in market capitalisation of the majority of stocks listed on the stock exchange.
- **Alternate hypothesis five ($H_1$5):** A significant correlation exists between the unemployment rate and a change in market capitalisation of the majority of stocks listed on the stock exchange.

CHAPTER 4. Research Methodology

In support of the hypotheses stated in Chapter 3, the research methodology is designed to measure changes in the different market attributes as to evaluate the effect different macroeconomic forces have on South Africa's equity market behaviour qualified to the size of the company and the sector it resides in.

The intension is to create a linear regression model (Everitt & Skrondal, 2010; Kabacoff, 2015; Montgomery et al., 2015; Yang & Miller, 2008) to measure the influence of various macroeconomic elements have on the company stock performance (Bollerslev, Marrone, Xu, & Zhou, 2014; Holan, Yang, Matteson, & Wikle, 2012; Pettenuzzo, Timmermann, & Valkanov, 2014; Polakow & Flint, 2015; Schrimpf, 2010; Van Binsbergen & Koijen, 2010).

4.1. Research design

The research focuses on over 200 individual companies share performances against macroeconomic influences between 2001 and 2015 for shares listed on the JSE. The source of the data is from iNET BFA (McGregor BFA and I-Net Bridge merged in 2013) as well as the JSE, which track historical share prices (iNET-BFA, 2016), which is widely used in both the investment community and in academic research (Hall & Millard, 2002).

The macroeconomic data was sourced from Statistics South Africa (Stats-SA), which is accountable for the compilation, construction and distribution of all official and other statistics. The purpose of the official statistics is to assist organs of state, businesses, other organisations or the public at large in having access to objective and comprehensive data under the auspices of the Statistician-General of South Africa (Statistics South Africa, 2016f).

Additional supporting data was also collected and sourced from the Industrial Development Corporation (IDC), which is a national development finance institute set up to encourage economic growth and industrial development. The organisation is owned by the South African government under the administration of the Economic Development Department (IDC, 2016).

The period 2001 to 2015 encompass a large variety of macroeconomic scenarios, allowing sufficient data to test the performance under different market conditions. For this purpose, the period is separated into three sub-categories (see Table 2), consisting of:

Table 2: Time period analysis

Period	Date - Start	Date - End	Active days
1	02-January-2001	30-December-2005	1255 days
2	03-January-2006	31-December-2010	1250 days
3	03-January-2011	31-December-2015	1249 days

source: Own research

This will allow for a time-varying covariate (Almeida, Kim, & Kim, 2015; Arikan & Stulz, 2016) to be evaluated in the study.

4.2. Population and sampling

The JSE represent the only listed equity market in South Africa. The JSE is at present ranked the 19th largest stock exchange in the world by market capitalisation ($ 1,007bn at end-2013), and the leading exchange in Africa (JSE, 2016). The maximum possible population for the study would therefore be all companies listed on the JSE. However, due to unavailability of historical data or poor trading activity among some individual shares, this study chose to focus only on those shares included in Appendix 9.2, as it represents more than 95% of the market capitalisation.

The JSE equity market consists of two trading platforms, the Main Board (JSE, 2016) and AltX (World Federation of Exchanges, 2015). As of 31 December 2015, 334 listings make up the Main Board on the JSE. These listings on the JSE is categorised in four main indices (see Table 3):

Table 3: JSE Indices

Index Code	Sharenet Code	Name
J200	JH-ALSI40	FTSE/JSE Top 40 Index
J201	JH-MIDCAP	FTSE/JSE Mid Cap Index
J202	JH-SMALL	FTSE/JSE Small Cap Index
J204	JH-FLED	FTSE/JSE Fledgling Index

source: (Johannesburg Stock Exchange Limited, 2014)

The FTSE/JSE All Share Index (JSE-ALSH Index Code: J203) covers 99% (Johannesburg Stock Exchange Limited, 2014) of the JSE full market capital value (JSE, 2016).

4.3. Unit of analysis

As the study utilises multiple research tests there are multiple units of analysis (Wegner, 2014). The unit of analysis per experiment are listed below in Table 4.

Table 4: Unit of analysis for each of the research tests

Research test	**Unit of analysis**
Correlation with individual stock price	Closing daily stock values for the individual company stock
Correlation with J200 index	Closing daily stock values for the FTSE/JSE Top 40 index
Correlation with J201 index	Closing daily stock values for the FTSE/JSE Mid Cap index
Correlation with J202 index	Closing daily stock values for the FTSE/JSE Small Cap index
Correlation with J203 index	Closing daily stock values for the FTSE/JSE All Share index
Correlation with J204 index	Closing daily stock values for the FTSE/JSE Fledgling index
Correlation with Consumer Price Index (CPI)	Closing weekly values for the Headline CPI (December 2012 = 100)
Correlation with Producer Price Index (PPI)	Closing monthly values for the Adjusted PPI (2012 = 100)
Correlation with Euro / SA Rand exchange rate	Closing daily values for the EURO / ZAR exchange rate (1 € = x Rand)
Correlation with USD / SA Rand exchange rate	Closing daily values for the USD / ZAR exchange rate (1 $ = x Rand)
Correlation with SA Government 30-year Bond	Closing daily values for the SAGB30 rate
Correlation with SA Government 10-year Bond	Closing daily values for the SAGB10 rate
Correlation with SA Balance on current account	Closing quarterly values for the BCAC
Correlation with SA Labour Force Employment	Closing quarterly values taken from the Labour Force Survey

source: Own research

4.4. Data collection Process

Quantitative data (Farhi & Gabaix, 2016; Fillat & Garetto, 2015; Jotikasthira et al., 2015; Kung, 2015) was collected from secondary data sources. As the constituents of the various indices on the JSE do not remain constant over the selected period, it was necessary to account for the addition and removal of individual shares from the selected index during the sample periods. The following rules were applied:

- **Rule 1:** Shares, which were added or removed during the various sample periods, from a specific index due to changes in the relative market capitalisation, were kept in the list of shares for that sample.
- **Rule 2:** Shares for which either data was not available due to a merger, demerger, listing, delisting, or action by the JSE (in a form of failed liquidity test, non-adherence to the rules and regulations or suspension), were excluded from the sample to avoid bias due to insufficient data.

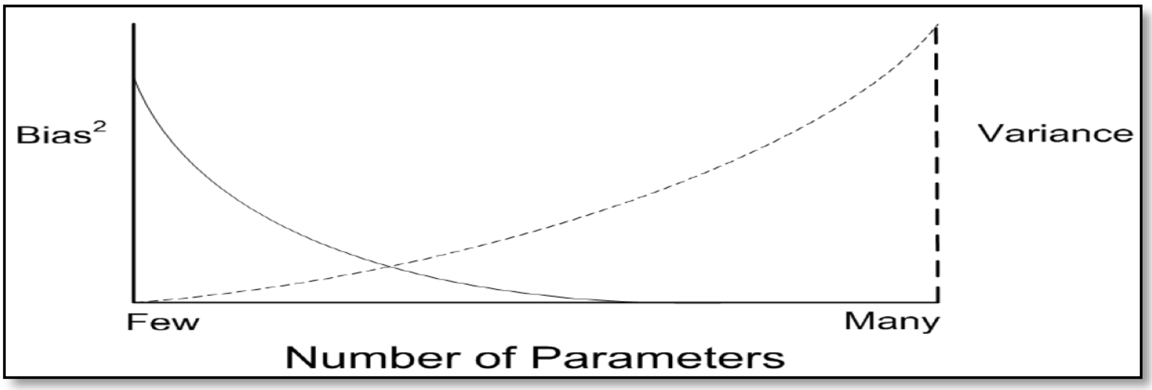
4.5. Data analysis approach

All statistical data analysis was performed using IBM SPSS Statistics Version 23 software. The approach used for analysing the data consisted of an initial descriptive statistical analysis (Luo & Bu, 2016; Yang & Miller, 2008), as to determine a minimum skewness as well as the standard error of skewness of the various data sets (Anderson, 1994). This was followed by a univariate analysis of variance (Chkili & Nguyen, 2014; Sensoy & Sobaci, 2014). A bivariate test consisting of a Pearson correlation analysis (Bruno & Shin, 2015; Farhi & Gabaix, 2016; Fillat & Garetto, 2015; Kung, 2015; Segal et al., 2015) is conducted between each index and macroeconomic element. In some cases both a Kendall's tau b test and Spearman's rho correlation tests were conducted (Anderson, 1994; Everitt & Skrondal, 2010; Mertens, 2014). A multivariate analysis completed the initial phase of testing. A combination of various independent variables were combined to determine if a stronger correlation can be modelled. A linear regression model (Chatterjee & Hadi, 2015; Norman R Draper & Smith, 1998; Norman Richard Draper, Smith, & Pownell, 1966; Montgomery et al., 2015) is formulated (applying an Akaike Information Criterion (Akaike, 1973)) to use as a predictive tool for companies to forecast stock performance based on macroeconomic elements (Andrieș, Ihnatov, & Tiwari, 2014; Du & Hu, 2012; Fadiran & Edun, 2013; Mclean & Zhao, 2014; Møller & Rangvid, 2015; Segal et al., 2015; Shahbaz, Afza, & Shabbir, 2013; Ye, Hutson, & Muckley, 2014).

a) Akaike Information Criterion

A principle of parsimony exists between the bias, variance and the number of parameters with the same data set.

Figure 17: Akaike Information Criterion



source: (Hu, 1987)

The Akaike Information Criterion (AIC), was developed by Hirotugu Akaike in 1973 (Akaike, 1973, 1976, 1981; Cavanaugh, 2012; Hu, 1987). AIC is generally regarded as the first model selection criterion (see Figure 17), and is widely used as a model selection tool. AIC attempts to bridge the divide that exist between the Kullback-Leibler (Kullback & Leibler, 1951) information (distance between two models) and the maximised log-likelihood (parameter estimation). The Kullback-Leibler information (see Figure 18) is defined as the information lost when an approximating model is used to approximate the full reality.

Figure 18: Kullback-Leibler information

$$
\begin{aligned}
I(f, g(\cdot|\theta)) &= \int_\Omega f(x) \log\left(\frac{f(x)}{g(x|\theta)}\right) dx \\
&= \int_\Omega f(x)\log(f(x))dx - \underbrace{\int_\Omega f(x)\log(g(x|\theta))dx}_{\text{relative K-L information}}
\end{aligned}
$$

- ▼ f: full reality or truth in terms of a probability distribution.
- ▼ g: approximating model in terms of a probability distribution.
- ▼ θ: parameter vector in the approximating model g.

source: (Cavanaugh, 2012; Hu, 1987; Kullback & Leibler, 1951)

In the above equation, we can remark on the following:

I (f, g) ≥ *0*, with *I (f, g) = 0* (only if *f* = *g* is almost everywhere)
I (f, g) ≠ *I (g , f)*, which would imply that the K-L information is not the real "distance".

The reality is that *f* is unknown and that the parameter *θ* in *g* needs to be estimated from the empirical data *y*. Data *y* is generated from *f(x)*, i.e. realisation for random variable *X*. Also *θ (y)* : estimator of *θ*, is a random variable and *I (f, g (· | θ (y)))* is also a random variable. The AIC rather uses expected K-L information (see Figure 19) E_y [*I (f, g (· | θ (y)))*] to measure the "distance" between *g* and *f*. (Hu, 1987)

Figure 19: Kullback-Leibler information - expected

$$\underset{g \in G}{\text{Minimizing}}\ E_y[I(f, g(\cdot|\hat{\theta}(y)))]$$

- $E_y[I(f, g(\cdot|\hat{\theta}(y)))] = \int_\Omega f(x)\log(f(x))dx - \underbrace{\int_\Omega f(y)\left[\int_\Omega f(x)\log(g(x|\hat{\theta}(y)))dx\right]dy}_{E_yE_x[\log(g(x|\hat{\theta}(y)))]}.$
- G: collection of "admissible" models (in terms of probability density functions).
- $\hat{\theta}$ is MLE estimate based on model g and data y.
- y is the random sample from the density function $f(x)$.

source: (Akaike, 1973; Hu, 1987)

The effect of the AIC is as follows (see Figure 20):

Figure 20: AIC influence on the K-L information

An approximately unbiased estimate of $E_yE_x[\log(g(x|\hat{\theta}(y))]$ for large samples and "good models" is $\log(\mathcal{L}(\hat{\theta}|y)) - k$

- $\mathcal{L}$: likelihood function.
- $\hat{\theta}$: maximum likelihood estimate of θ.
- k: number of estimated parameters (including the variance)

source: (Akaike, 1973; Hu, 1987)

© University of Pretoria

A "good model" in this case is defined as a model that is close to f with the ability of having a very small K-L value, thereby significantly improving the model.

Figure 21: AIC bias and variance component

$$AIC = \underbrace{-2\log\mathcal{L}(\hat{\theta}|y)}_{\textbf{bias}} + \underbrace{2k}_{\textbf{variance}}$$

source: (Akaike, 1973; Hu, 1987)

The AIC therefore manages to control both the bias and variance (see Figure 21) thereby optimising the model.

In the case of a multivariate case the function can be expressed as follows (see Figure 22):

Figure 22: AIC format for a multivariate case

$$AIC_c = AIC + 2\frac{k(\tilde{k}+1+p)}{n-\tilde{k}-1-p}$$

- Applying to the multivariate case:

$$Y = TB + \epsilon, \text{ where } Y \in \mathbb{R}^{n\times p}, T \in \mathbb{R}^{n\times\tilde{k}}, B \in \mathbb{R}^{\tilde{k}\times p}.$$

- p: total number of components.
- n: number of independent multivariate observations, each with p nonindependent components.
- k: total number of unknown parameters and $k = \tilde{k}p + p(p+1)/2$.

Source: (Akaike, 1973; Hu, 1987)

By applying the AIC (as per Figure 22) on the automatic linear model construct, a stronger and more reliable and repeatable information criterion can be applied with a best fit outcome. A transformed field selection with trim outliers on the predictor scale improves the model strength.

4.6. Research limitations

The research has various limitations, which include:

- The use of only 15 years of data limits the research to only a small period, in which the market generally only had a positive trend.
- The shares that make up the index do not all have the same amount of data, for example, the Top 40 index contains 12 listings that didn't exist on the 1 January 2001. Similarly, the Mid Cap index contains 31 listings. Therefore, the total amount of data points will vary depending on the start date of the listing.
- A survivorship bias tendency exists by excluding failed companies from performance studies because they no longer survived, and cannot accumulate additional data. This will cause the results to skew higher because only businesses that endured and were successful as at the end of the test period, are included.
- All the indices are governed by the JSE rules and regulations (Johannesburg Stock Exchange Limited, 2014), whereby listings were removed, moved in or out, or included on a market capitalisation ranking basis. The study used the official data that represents a specific index. The study made no changes to any index, even if specific listings fulfil regulations as to be included or excluded based on its market capitalisation. Secondary listings were considered part of the main listing.
- The FTSE/JSE All-Share Index will represent 99% of the full market capital worth i.e. before the submission of any investability weightings, of all ordinary securities listed on the Main Board of the JSE. The Top 40 Index will consist of the largest 40 businesses ranked by full market value. The number of constituents is maintained at a constant level. The Mid Capitalisation Index will consist of the next 60 biggest companies. The Small Capitalisation Index consists of shares that are part of the FTSE/JSE All-Share Index, but are not large enough to qualify for the Top 40 Index or Mid Cap Index. The Fledgling Index will consist of all ordinary securities listed on the JSE which qualify as eligible for insertion in an index, but are too small to be included in the FTSE/JSE All-Share Index (Johannesburg Stock Exchange Limited, 2014).

© University of Pretoria

CHAPTER 5. Results

5.1. Introduction

All data was analysed and mapped as follows:

Each individual research question consists of a section (applied over the full research period of 2001 to 2015) describing in detail the correlation product for the J200 index followed by a table which described the various factors applied for the remaining indices including that of the J200 index (for reference). The correlation section was followed by a simple linear regression model, described in detailed for the J200 index. This was followed by a tabulated summary for the remaining indices. The J200 index was included in the table for easy reference. This procedure was followed for each research question, in numerical sequence with exactly the same layout. Each individual time period (with period one consisting of 2001 to 2005, period two consisting of 2006 to 2010 and lastly period three consisting of 2011 to 2015) followed, applying the same methodology as above. The last section consisted of an extensive research model development analysis applying firstly an enter method, followed by a stepwise method and lastly applying an automatic linear modelling scenario build on a multiple regression philosophy. A detailed matrix can be found in Appendix 9.3.

5.2. Research Question 1: Exchange Rate

a) Correlation

A Pearson's product-moment correlation was run for the period 2001 to 2015, to assess the relationship between the exchange rate (ZAR/EUR) and the JSE Top 40 index (J200). There was a very strong positive correlation between ZAR/EUR rate and the J200 index, $r(3797) = .812$, $p < .001$, with ZAR/EUR rate explaining 66.0% of the variation in the J200 index. A Pearson's product-moment correlation was also run for the period 2001 to 2015, to assess the relationship between the exchange rate (ZAR/USD) and the JSE Top 40 index (J200). There was a moderate positive correlation between ZAR/USD rate and the J200 index, $r(3797) = .502$, $p < .001$, with ZAR/EUR rate explaining 25.2% of the variation in the J200 index. In all cases the correlation was significant at $\alpha = 0.05$ level.

However, since the descriptive analysis revealed that a positive skewness coefficient exists in the data, and that the absolute value is more than two times their standard errors, one needs to assume that the data does not represent a normal distribution. Therefore, the test failed one of the key assumptions in a Pearson's correlation test that the data needs to be bivariate normally distributed. As such, a Spearman's rho correlation coefficient was measured to determine the monotonic relationship between the paired data.

A Spearman's rho correlation revealed a strong, positive monotonic correlation between ZAR/EUR exchange rate and the J200 index (r_s = .762, n = 3797, p < .001). A Spearman's rho correlation also revealed a weak, positive monotonic correlation between ZAR/USD rate and the J200 index, (r_s = .383, n = 3797, p < .001). In all cases the correlation was significant at α = 0.05 level.

Since the p-value for each test is below 0.05, one can say that very strong evidence exists to agree with the alternative hypothesis ($H_1$1), and to reject the null hypothesis ($H_0$1), whereby the exchange rate and the JSE 200 index are monotonically correlated in the population.

Table 5: Exchange Rate (ZAR/EUR) Correlation results summary for 2001 - 2015

	Pearson's coefficient					Spearman's rho			
Index	**r**	**deg**	**n**	**p**	**r^2**	**r_s**	**deg**	**n**	**p**
J200	.812	v-s	3797	< 0.001	.660	.762	s	3797	< 0.001
J201	.777	s	3797	< 0.001	.603	.731	s	3797	< 0.001
J202	.789	s	3797	< 0.001	.622	.723	s	3797	< 0.001
J203	.808	v-s	3797	< 0.001	.653	.756	s	3797	< 0.001
J204	.640	s	3547	< 0.001	.409	.632	s	3547	< 0.001

Degree of correlation (deg): v-w (very weak) ; w (weak) ; m (moderate) ; s (strong) ; v-s (very strong)

source: own research

Table 6: Exchange Rate (ZAR/USD) Correlation results summary for 2001 - 2015

	Pearson's coefficient					Spearman's rho			
Index	**r**	**deg**	**n**	**p**	**r^2**	**r_s**	**deg**	**n**	**p**
J200	.502	m	3797	< 0.001	.252	.383	w	3797	< 0.001
J201	.469	m	3797	< 0.001	.220	.336	w	3797	< 0.001
J202	.462	m	3797	< 0.001	.214	.322	w	3797	< 0.001
J203	.497	m	3797	< 0.001	.247	.372	w	3797	< 0.001
J204	.328	w	3547	< 0.001	.107	.371	w	3547	< 0.001

Degree of correlation (deg): v-w (very weak) ; w (weak) ; m (moderate) ; s (strong) ; v-s (very strong)

source: own research

A similar correlation test was conducted between the Mid Cap Index (J201), Small Cap Index (J202), All Share Index (J203) and the Fledgling Index (J204) with the exchange rate (ZAR/EUR and ZAR/USD). Since the p-value for each test is below 0.05 (see Table 5 and Table 6), one can say that very strong evidence exists to agree with the alternative hypothesis ($H_1$1), and to reject the null hypothesis ($H_0$1), whereby the exchange rate and the various indices are monotonically correlated in the population. By combining both the exchange rates the model fitment improves (see Table 7)

Table 7: Exchange Rate (ZAR/USD + ZAR/EUR) Correlation results summary for 2001 - 2015

	Pearson's coefficient				
Index	r	deg	n	p	r^2
J200	.829	v-s	3796	< 0.001	.687
J201	.796	s	3796	< 0.001	.634
J202	.813	v-s	3796	< 0.001	.661
J203	.826	v-s	3796	< 0.001	.682
J204	.719	s	3546	< 0.001	.516

Degree of correlation (deg): v-w (very weak) ; w (weak) ; m (moderate) ; s (strong) ; v-s (very strong)

source: own research

b) Linear Regression Model

A simple linear regression was calculated to predict the J200 index based on the ZAR/EUR exchange rate. A significant regression equation was found, ($F(1, 3797) = 7367.908$, $p < .001$), with an R^2 of .660.

Equation 4: Simple regression (J200 – ZAR/EUR)

$Y_i = \beta_0 + \beta_1 X_1 + \varepsilon_i$

J200 = -24301.772 + 4666.844 (ZAR/EUR exchange rate) index number when the exchange rate was measured in Rand per Euro.

Table 8: Exchange Rate (ZAR/EUR) Simple Linear Regression Model results summary for 2001 - 2015

Index	F	p	R^2	DW	β_0	β_1	ε_i
J200	7367.908	< .001	.660	.007	-24301.772	4666.844	54.369
J201	5773.240	< .001	.603	.005	-40968.889	7213.862	94.942
J202	6241.252	< .001	.622	.005	-35206.133	6087.835	77.060
J203	7157.950	< .001	.653	.007	-27877.897	5266.195	62.245
J204	2455.868	< .001	.409	.003	-1869.205	574.981	11.602

source: own research

A similar simple regression can be created for the J201, J202, J203 and J204 indices applying the relevant factors in Table 8.

A simple linear regression was calculated to predict the J200 index based on the ZAR/USD exchange rate. A significant regression equation was found, ($F(1, 3797) = 1281.477$, $p < .001$), with an R^2 of .252.

Equation 5: Simple regression (J200 – ZAR/USD)

$Y_i = \beta_0 + \beta_1 X_1 + \varepsilon_i$

J200 = -5367.637 + 3500.944 (ZAR/USD exchange rate) index number when the exchange rate is measured in Rand per US Dollar.

A similar simple regression can be created for the J201, J202, J203 and J204 indices applying the relevant factors in Table 9.

A multiple linear regression was calculated to predict the J200 index based on both the ZAR/EUR and ZAR/USD exchange rate. A significant regression equation was found ($F(2, 3796) = 4170.713$, $p < .001$), with an R^2 of .687.

Table 9: Exchange Rate (ZAR/USD) Simple Linear Regression Model results summary for 2001 - 2015

Index	F	p	R^2	DW	β_0	β_1	ε_i
J200	1281.477	< .001	.252	.002	-5367.637	3500.944	97.798
J201	1069.351	< .001	.220	.001	-10622.837	5281.967	161.523
J202	1032.887	< .001	.214	.001	-8548.730	4331.434	134.774
J203	1247.315	< .001	.247	.002	-6342.647	3930.182	111.282
J204	427.500	< .001	.107	.001	1342.960	339.444	16.417

source: own research

Equation 6: Multiple regression (J200 – ZAR/USD+ZAR/EUR)

$Y_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2$

J200 = -20926.111 – 1749.242 (ZAR/USD) + 5751.743 (ZAR/EUR) index number.

Both the ZAR/USD and ZAR/EUR exchange rates were significant predictors of the J200 index.

Table 10: Exchange Rate (ZAR/USD + ZAR/EUR) Multiple Linear Regression Model results summary for 2001 - 2015

Index	F	p	R^2	DW	VIF	β_0	β_1(USD)	β_2(EUR)
J200	4170.713	< .001	.687	.012	2.305	-20926.111	-1749.242	5751.743
J201	3288.686	< .001	.634	.009	2.305	-35174.091	-3002.820	9076.244
J202	3704.217	< .001	.661	.010	2.305	-29755.166	-2824.649	7839.713
J203	4066.124	< .001	.682	.011	2.305	-23978.062	-2020.865	6519.558
J204	1895.580	< .001	.516	.010	2.936	-1344.556	-581.711	985.251

source: own research

A similar multiple regression can be created for the J201, J202, J203 and J204 indices applying the relevant factors in Table 10.

From the above, it is clear that in all cases a multiple regression had a better fit in the model, ranging from 51.6% (J204) to 68.7% (J200) compared to only using an individual exchange rate. The variance inflation factors (VIF) ranging from 2.305 to 2.936 would indicate only a small degree of inflation between the regression coefficients and therefore represent a low degree of multicollinearity.

The VIF measures the degree of multicollinearity of the i^{th} independent variable (ZAR/USD exchange rate in this case) with the other independent variables (ZAR/EUR exchange rate in this case) in a regression model. A threshold value of VIF of less than ten (tolerance level of >0.10) was applied in this study (O'Brien, 2007).

The Durbin-Watson (DW) statistic does however detect the presence of autocorrelation, which would imply that a relationship exist between the values separated by a time lag in the residual prediction errors (Durbin & Watson, 1951). The low DW statistic therefore imply that a very strong autocorrelation exists in all the models.

5.3. Research Question 2: Debt Rate

a) Correlation

A Pearson's product-moment correlation was run for the period 2001 to 2015, to assess the relationship between the debt rate (SAGB30) and the JSE Top 40 index (J200). There was a weak negative correlation between SAGB30 rate and the J200 index, $r(3749) = -.250$, $p < .001$, with SAGB30 rate explaining 6.2% of the variation in the J200 index. A Pearson's product-moment correlation was also run for the period 2001 to 2015, to assess the relationship between the debt rate (SAGB10) and the JSE Top 40 index (J200). There was a strong negative correlation between ZAR/USD rate and the J200 index, $r(3749) = -.612$, $p < .001$, with SAGB10 rate explaining 37.4% of the variation in the J200 index. In all cases the correlation was significant at $\alpha = 0.05$ level.

However, since the descriptive analysis revealed that a positive skewness coefficient exists in the data, and that the absolute value is more than two times their standard errors, we need to assume that the data does not represent a normal distribution. Therefore, the test failed one of the key assumptions in a Pearson's correlation test that the data needs to be bivariate normally distributed. As such, a Spearman's rho correlation coefficient is measured to determine the monotonic relationship between the paired data.

A Spearman's rho correlation revealed a very weak, negative monotonic correlation between SAGB30 debt rate and the J200 index (r_s = -.180, n = 3749, p < .001). A Spearman's rho correlation also revealed a strong, negative monotonic correlation between SAGB10 rate and the J200 index, (r_s = -.639, n = 3749, p < .001). In all cases the correlation was significant at α = 0.05 level.

Since the p-value for each test is below 0.05, one can say that very strong evidence exists to agree with the alternative hypothesis ($H_1$2), and to reject the null hypothesis ($H_0$2), whereby the debt rate and the JSE 200 index are monotonically correlated in the population.

Table 11: Debt Rate (SAGB30) Correlation results summary for 2001 - 2015

	Pearson's coefficient					Spearman's rho			
Index	r	deg	n	p	r^2	r_s	deg	n	p
J200	-.250	w	3749	< 0.001	.062	-.180	v-w	3749	< 0.001
J201	-.301	w	3749	< 0.001	.090	-.237	w	3749	< 0.001
J202	-.329	w	3749	< 0.001	.108	-.256	w	3749	< 0.001
J203	-.260	w	3749	< 0.001	.068	-.192	v-w	3749	< 0.001
J204	-.322	w	3500	< 0.001	.104	-.143	v-w	3500	< 0.001

Degree of correlation (deg): v-w (very weak) ; w (weak) ; m (moderate) ; s (strong) ; v-s (very strong)

source: own research

Table 12: Debt Rate (SAGB10) Correlation results summary for 2001 - 2015

	Pearson's coefficient					Spearman's rho			
Index	r	deg	n	p	r^2	r_s	deg	n	p
J200	-.612	s	3749	< 0.001	.374	-.639	s	3749	< 0.001
J201	-.673	s	3749	< 0.001	.453	-.697	s	3749	< 0.001
J202	-.669	s	3749	< 0.001	.447	-.693	s	3749	< 0.001
J203	-.624	s	3749	< 0.001	.389	-.652	s	3749	< 0.001
J204	-.702	s	3500	< 0.001	.492	-.630	s	3500	< 0.001

Degree of correlation (deg): v-w (very weak) ; w (weak) ; m (moderate) ; s (strong) ; v-s (very strong)

source: own research

Table 13: Debt Rate (SAGB30 + SAGB10) Correlation results summary for 2001 - 2015

	Pearson's coefficient				
Index	r	deg	n	p	r^2
J200	.827	v-s	3748	< 0.001	.683
J201	.876	v-s	3748	< 0.001	.767
J202	.834	v-s	3748	< 0.001	.695
J203	.835	v-s	3748	< 0.001	.697
J204	.814	v-s	3499	< 0.001	.663

Degree of correlation (deg): v-w (very weak) ; w (weak) ; m (moderate) ; s (strong) ; v-s (very strong)

source: own research

A similar correlation test was conducted between the Mid Cap Index (J201), Small Cap Index (J202), All Share Index (J203) and the Fledgling Index (J204) with the debt rate (SAGB30 and SAGB10). Since the p-value for each test is below 0.05 (see Table 11 and Table 12), one can say that very strong evidence exists to agree with the alternative hypothesis ($H_1 2$), and to reject the null hypothesis ($H_0 2$), whereby the debt rate and the various indices are monotonically correlated in the population. By combining both the debt rates the model fitment improves (see Table 13).

b) Linear Regression Model

A simple linear regression was calculated to predict the J200 index based on the SAGB30 debt rate. A significant regression equation was found,
($F(1, 3749) = 249.595$, $p < .001$), with an R^2 of .062.

Equation 7: Simple regression (J200 – SAGB30)

$Y_i = \beta_0 + \beta_1 X_1 + \varepsilon_i$

J200 = 45654.030 – 2521.913 (SAGB30 debt rate) index number when the debt rate was measured in percentage.

Table 14: Debt Rate (SAGB30) Simple Linear Regression Model results summary for 2001 - 2015

Index	F	p	R^2	DW	β_0	β_1	ε_i
J200	249.595	< .001	.062	.001	45654.030	-2521.913	159.629
J201	373.654	< .001	.090	.001	76121.332	-4917.657	254.404
J202	453.892	< .001	.108	.001	66429.206	-4468.844	209.758
J203	272.534	< .001	.068	.001	52244.403	-2980.335	180.532
J204	405.791	< .001	.104	.001	9182.675	-586.740	29.127

source: own research

A similar simple regression can be created for the J201, J202, J203 and J204 indices applying the relevant factors in Table 14.

A simple linear regression was calculated to predict the J200 index based on the SAGB10 debt rate. A significant regression equation was found,
($F(1, 3749) = 2240.624$, $p < .001$), with an R^2 of .374.

Equation 8: Simple regression (J200 – SAGB10)

$Y_i = \beta_0 + \beta_1 X_1 + \varepsilon_i$

J200 = 72140.078 – 5539.616 (SAGB10 debt rate) index number when the debt rate was measured in percentage.

A similar simple regression can be created for the J201, J202, J203 and J204 indices applying the relevant factors in Table 15.

A multiple linear regression was calculated to predict the J200 index based on both the SAGB30 and SAGB10 debt rate. A significant regression equation was found (F(2, 3748) = 4040.612, p < .001), with an R^2 of .683.

Table 15: Debt Rate (SAGB10) Simple Linear Regression Model results summary for 2001 - 2015

Index	F	p	R^2	DW	β_0	β_1	ε_i
J200	2240.624	< .001	.374	.004	72140.078	-5539.616	117.029
J201	3111.096	< .001	.453	.004	119585.07	-9870.361	176.960
J202	3034.525	< .001	.447	.004	98824.332	-8160.935	148.148
J203	2385.143	< .001	.389	.004	82306.749	-6405.602	131.160
J204	3395.156	< .001	.492	.005	13676.276	-1110.169	19.053

source: own research

Equation 9: Multiple regression (J200 – SAGB10+SAGB30)

$Y_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2$

J200 = 50069.651 – 14213.421 (SAGB10) + 11177.541 (SAGB30) index number.

Both the SAGB10 and SAGB30 debt rates were significant predictors of the J200 index.

A similar multiple regression can be created for the J201, J202, J203 and J204 indices applying the relevant factors in Table 16.

Table 16: Debt Rate (SAGB10 + SAGB30) Multiple Linear Regression Model results summary for 2001 - 2015

Index	F	p	R^2	DW	VIF	β_0	β_1(B10)	β_2(B30)
J200	4040.612	< .001	.683	.006	3.967	50069.651	-14213.421	11177.541
J201	6188.071	< .001	.767	.006	3.967	83583.292	-24019.267	18233.059
J202	4268.439	< .001	.695	.004	3.967	72213.530	-18619.132	13477.009
J203	4322.156	< .001	.697	.006	3.967	57288.915	-16237.754	12670.252
J204	3445.657	< .001	.663	.005	2.869	10386.598	-2004.143	1274.406

source: own research

From the above, it is clear that in all cases a multiple regression had a better fit in the model, ranging from 66.3% (J204) to 76.7% (J201) compared to only using an individual debt rate. The variance inflation factors (VIF) ranging from 2.869 to 3.967 would indicate only a small degree of inflation between the regression coefficients and therefore represent a low degree of multicollinearity.

The VIF measures the degree of multicollinearity of the i^{th} independent variable (SAGB30 debt rate in this case) with the other independent variables (SAGB10 debt rate in this case) in a regression model. A threshold value of VIF of less than ten (tolerance level of >0.10) was applied in this study (O'Brien, 2007).

© University of Pretoria

The Durbin-Watson (DW) statistic does however detect the presence of autocorrelation, which would imply that a relationship exist between the values separated by a time lag in the residual prediction errors (Durbin & Watson, 1951). The low DW statistic therefore imply that a very strong autocorrelation exists in all the models.

5.4. Research Question 3: GDP Growth Rate

a) Correlation

A Pearson's product-moment correlation was run for the period 2001 to 2015, to assess the relationship between the GDP growth rate and the JSE Top 40 index (J200). There was a weak negative correlation between GDP growth rate and the J200 index, $r(58) = -.307$, p .017, with GDP rate explaining 7.8% of the variation in the J200 index. The correlation was significant at α = 0.05 level.

However, since the descriptive analysis revealed that a negative skewness coefficient exists in the data, and that the absolute value was more than two times their standard errors, one need to assume that the data does not represent a normal distribution. Therefore, the test failed one of the key assumptions in a Pearson's correlation test that the data needs to be bivariate normally distributed. As such, a Spearman's rho correlation coefficient is measured to determine the monotonic relationship between the paired data.

A Spearman's rho correlation revealed a very weak, negative monotonic correlation between GDP rate and the J200 index ($r_s = -.308$, n = 58, p .017). The correlation was significant at α = 0.05 level.

Since the p-value is below 0.05, we can say that very strong evidence exists to agree with the alternative hypothesis ($H_1$3), and to reject the null hypothesis ($H_0$3), whereby the GDP rate and the JSE 200 index are monotonically correlated in the population.

A similar correlation test was conducted between the Mid Cap Index (J201), Small Cap Index (J202), All Share Index (J203) and the Fledgling Index (J204) with the GDP rate.

Since the p-value for each test is below 0.05 (see Table 17), one can say that very strong evidence exists to agree with the alternative hypothesis ($H_1$3), and to reject the null hypothesis ($H_0$3), whereby the GDP rate and the various indices are monotonically correlated in the population. In the case of the Fledgling Index (J204), the p-value is greater than 0.05 (p = 0.094), and therefore not significant. However, since the p-value according to the Spearman rho test is less than 0.05 (p = 0.029), one can say that very strong evidence exists to agree with the alternative hypothesis ($H_1$3), and to reject the null hypothesis ($H_0$3).

Table 17: GDP Rate (GDP) Correlation results summary for 2001 - 2015

	Pearson's coefficient					Spearman's rho			
Index	**r**	**deg**	**n**	**p**	**r^2**	**r_s**	**deg**	**n**	**p**
J200	-.307	w	58	0.017	.062	-.308	w	58	0.017
J201	-.311	w	58	0.016	.090	-.335	w	58	0.009
J202	-.287	w	58	0.026	.108	-.294	w	58	0.023
J203	-.307	w	58	0.017	.068	-.308	w	58	0.017
J204	-.226	w	54	**0.094***	.104	-.293	w	54	0.029

Degree of correlation (deg): v-w (very weak) ; w (weak) ; m (moderate) ; s (strong) ; v-s (very strong)

*The correlation is not significant at the 0.05 level (2-tailed).

source: own research

b) Linear Regression Model

A simple linear regression was calculated to predict the J200 index based on the GDP rate. A significant regression equation was found,
($F(1, 58) = 6.017$, p .017), with an R^2 of .078.

Equation 10: Simple regression (J200 – GDP)

$Y_i = \beta_0 + \beta_1 X_1 + \varepsilon_i$

J200 = 28158.097 – 1484.281 (GDP rate) index number when the GDP rate was measured in percentage.

A similar simple regression can be created for the J201, J202 and J203 indices applying the relevant factors in Table 18. The J204 model was not significant since the p-value is above α=0.05 (p = 0.094), therefore a model cannot be generated.

The Durbin-Watson (DW) statistic does detect the presence of autocorrelation, which would imply that a relationship exist between the values separated by a time lag in the residual prediction errors (Durbin & Watson, 1951). The low DW statistic therefore imply that a very strong autocorrelation exists in all the models.

Table 18: GDP Rate (GDP) Simple Linear Regression Model results summary for 2001 - 2015

Index	F	p	R^2	DW	β_0	β_1	ε_i
J200	6.017	.017	.078	.127	28158.097	-1484.281	605.083
J201	6.195	.016	.081	.127	40410.353	-2424.034	973.890
J202	5.223	.026	.067	.108	32933.694	-1863.172	815.246
J203	6.045	.017	.079	.124	31340.647	-1685.350	685.462
J204	2.910	**.094***	.034	.104	4687.981	-162.699	95.371

*The correlation is not significant at the 0.05 level (2-tailed).

source: own research

5.5. Research Question 4: Inflation Rate

a) Correlation

A Pearson's product-moment correlation was run for the period 2001 to 2015, to assess the relationship between the inflation rate (CPI) and the JSE Top 40 index (J200). There was a very strong positive correlation between CPI rate and the J200 index, $r(178) = .951$, $p < .001$, with CPI rate explaining 90.4% of the variation in the J200 index.

A Pearson's product-moment correlation was also run for the period 2001 to 2015, to assess the relationship between the inflation rate (PPI) and the JSE Top 40 index (J200). There was a very strong positive correlation between PPI rate and the J200 index, $r(178) = .957$, $p < .001$, with PPI rate explaining 91.5% of the variation in the J200 index. In all cases the correlation was significant at $\alpha = 0.05$ level.

However, since the descriptive analysis revealed that a positive skewness coefficient exists in the data, and that the absolute value is more than two times their standard errors, one need to assume that the data does not represent a normal distribution. Therefore, the test failed one of the key assumptions in a Pearson’s correlation test that the data needs to be bivariate normally distributed. As such, a Spearman’s rho correlation coefficient is measured to determine the monotonic relationship between the paired data.

A Spearman's rho correlation revealed a very strong, positive monotonic correlation between CPI rate and the J200 index ($r_s = .955$, n = 178, $p < .001$). A Spearman's rho correlation also revealed a very strong, positive monotonic correlation between the PPI rate and the J200 index, ($r_s = .954$, n = 178, $p < .001$). In all cases the correlation was significant at $\alpha = 0.05$ level.

Table 19: Inflation Rate (CPI) Correlation results summary for 2001 - 2015

	Pearson's coefficient					Spearman's rho			
Index	r	deg	n	p	r^2	r_s	deg	n	p
J200	.951	v-s	178	< 0.001	.904	.955	v-s	178	< 0.001
J201	.968	v-s	178	< 0.001	.937	.980	v-s	178	< 0.001
J202	.943	v-s	178	< 0.001	.889	.954	v-s	178	< 0.001
J203	.955	v-s	178	< 0.001	.912	.961	v-s	178	< 0.001
J204	.841	v-s	178	< 0.001	.705	.878	v-s	178	< 0.001

Degree of correlation (deg): v-w (very weak) ; w (weak) ; m (moderate) ; s (strong) ; v-s (very strong)

source: own research

Since the p-value for each test is below 0.05, one can say that very strong evidence exists to agree with the alternative hypothesis ($H_1$4), and to reject the null hypothesis ($H_0$4), whereby the inflation rate and the JSE 200 index are monotonically correlated in the population.

Table 20: Inflation Rate (PPI) Correlation results summary for 2001 - 2015

	Pearson's coefficient					Spearman's rho			
Index	r	deg	n	p	r^2	r_s	deg	n	p
J200	.957	v-s	178	< 0.001	.915	.954	v-s	178	< 0.001
J201	.966	v-s	178	< 0.001	.932	.979	v-s	178	< 0.001
J202	.947	v-s	178	< 0.001	.896	.952	v-s	178	< 0.001
J203	.960	v-s	178	< 0.001	.920	.960	v-s	178	< 0.001
J204	.855	v-s	178	< 0.001	.729	.876	v-s	178	< 0.001

Degree of correlation (deg): v-w (very weak) ; w (weak) ; m (moderate) ; s (strong) ; v-s (very strong)

source: own research

A similar correlation test was conducted between the Mid Cap Index (J201), Small Cap Index (J202), All Share Index (J203) and the Fledgling Index (J204) with the inflation rate (CPI and PPI). Since the p-value for each test is below 0.05 (see Table 19 and Table 20), one can say that very strong evidence exists to agree with the alternative hypothesis ($H_1$4), and to reject the null hypothesis ($H_0$4), whereby the inflation rate and the various indices are monotonically correlated in the population. By combining both the inflation rates the model fitment improves (see Table 21)

Table 21: Inflation Rate (CPI + PPI) Correlation results summary for 2001 - 2015

	Pearson's coefficient				
Index	r	deg	n	p	r^2
J200	.958	v-s	177	< 0.001	.916
J201	.968	v-s	177	< 0.001	.937
J202	.947	v-s	177	< 0.001	.896
J203	.960	v-s	177	< 0.001	.921
J204	.868	v-s	165	< 0.001	.750

Degree of correlation (deg): v-w (very weak) ; w (weak) ; m (moderate) ; s (strong) ; v-s (very strong)

source: own research

b) Linear Regression Model

A simple linear regression was calculated to predict the J200 index based on the CPI inflation rate. A significant regression equation was found,
($F(1, 178) = 1682.063$, $p < .001$), with an R^2 of .904.

Equation 11: Simple regression (J200 – CPI)

$Y_i = \beta_0 + \beta_1 X_1 + \varepsilon_i$

J200 = -51927.909 + 586.094 (CPI) index number when the CPI rate is measured in percentage.

A similar simple regression can be created for the J201, J202, J203 and J204 indices applying the relevant factors in Table 22.

Table 22: Inflation Rate (CPI) Simple Linear Regression Model results summary for 2001 - 2015

Index	F	p	R^2	DW	β_0	β_1	ε_i
J200	1682.063	< .001	.904	.121	-51927.909	586.094	14.290
J201	2657.618	< .001	.937	.098	-91166.646	964.018	18.700
J202	1427.886	< .001	.889	.047	-73322.853	780.716	20.661
J203	1851.452	< .001	.912	.112	-59838.188	667.456	15.512
J204	399.805	< .001	.705	.024	-6643.669	82.576	4.130

source: own research

A simple linear regression was calculated to predict the J200 index based on the PPI rate. A significant regression equation was found,
($F(1, 178) = 1918.911$, $p < .001$), with an R^2 of .915.

Equation 12: Simple regression (J200 – PPI)

$Y_i = \beta_0 + \beta_1 X_1 + \varepsilon_i$

J200 = -47395.504 + 533.360 (PPI rate) index number when the PPI rate is measured in percentage.

Table 23: Inflation Rate (PPI) Simple Linear Regression Model results summary for 2001 - 2015

Index	F	p	R^2	DW	β_0	β_1	ε_i
J200	1918.911	< .001	.915	.146	-47395.504	533.360	12.176
J201	2473.366	< .001	.932	.109	-82749.941	870.053	17.494
J202	1544.452	< .001	.896	.061	-67121.014	709.236	18.047
J203	2073.502	< .001	.920	.136	-54577.860	606.660	13.323
J204	450.760	< .001	.729	.030	-6148.222	76.178	3.588

source: own research

A similar simple regression can be created for the J201, J202, J203 and J204 indices applying the relevant factors in Table 23.

A multiple linear regression was calculated to predict the J200 index based on both the CPI and PPI inflation rate. A significant regression equation was found ($F(2, 177) = 975.946$, $p < .001$), with an R^2 of .916.

Equation 13: Multiple regression (J200 – CPI+PPI)

$Y_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2$

J200 = -44324.417 – 349.916 (CPI) + 849.048 (PPI) index number.

Both the CPI and PPI inflation rates were significant predictors of the J200 index.

A similar multiple regression can be created for the J201, J202, J203 and J204 indices applying the relevant factors in Table 24.

Table 24: Inflation Rate (CPI + PPI) Multiple Linear Regression Model results summary for 2001 - 2015

Index	F	p	R^2	DW	VIF	β_0	β_1(CPI)	β_2(PPI)
J200	975.946	< .001	.916	.161	184.7	-44324.417	-349.916	849.048
J201	1321.907	< .001	.937	.099	184.7	-90617.750	896.448	61.293
J202	770.910	< .001	.896	.065	184.7	-65238.282	-214.516	902.768
J203	1040.616	< .001	.921	.145	184.7	-52406.680	-247.381	829.844
J204	251.214	< .001	.750	.054	161.7	-4582.138	-184.961	243.435

source: own research

From the above, it is clear that in all cases a multiple regression had a better fit in the model, ranging from 75.0% (J204) to 93.7% (J201) compared to only using an individual inflation rate. The variance inflation factors (VIF) ranging from 161.7 to 184.7 would however indicate a large degree of inflation between the regression coefficients and therefore represent a very high degree of multicollinearity.

The VIF measures the degree of multicollinearity of the i^{th} independent variable (CPI inflation rate in this case) with the other independent variables (PPI inflation rate in this case) in a regression model. A threshold value of VIF of less than ten (tolerance level of >0.10) was applied in this study (O'Brien, 2007). Subsequently, the multiple regression is invalid. This is further confirmed with the fact that a 99.7% correlation exist between the CPI and PPI values.

The Durbin-Watson (DW) statistic does detect the presence of autocorrelation, which would imply that a relationship exist between the values separated by a time lag in the residual prediction errors (Durbin & Watson, 1951). The low DW statistic therefore imply

© University of Pretoria

that a very strong autocorrelation exists in all the models.

5.6. Research Question 5: Unemployment Rate

a) Correlation

A Pearson's product-moment correlation was run for the period 2001 to 2015, to assess the relationship between the unemployment rate (UR) and the JSE Top 40 index (J200). There was a weak negative correlation between unemployment rate and the J200 index, $r(58) = -.230$, p .078, with the unemployment rate explaining 3.6% of the variation in the J200 index. A Pearson's product-moment correlation was also run for the period 2001 to 2015, to assess the relationship between the absorption (employed to population ratio) rate (AR) and the JSE Top 40 index (J200). There was a very weak negative correlation between AR rate and the J200 index, $r(30) = -.169$, p .354, with AR rate explaining only 2.9% (not adjusted, value is -.004 adjusted) of the variation in the J200 index. A Pearson's product-moment correlation was also run for the period 2001 to 2015, to assess the relationship between the labour force participation rate (LFPR) and the JSE Top 40 index (J200). There was a very weak positive correlation between the LFPR and the J200 index, $r(30) = .114$, p .535, with LFPR explaining only 1.3% (not adjusted, value is -.020 adjusted) of the variation in the J200 index. In all cases the correlation was found to be not significant at $\alpha = 0.05$ level.

However, since the descriptive analysis revealed that a positive skewness coefficient exists in the data, and that the absolute value is more than two times their standard errors, one need to assume that the data does not represent a normal distribution. Therefore, the test failed one of the key assumptions in a Pearson's correlation test that the data needs to be bivariate normally distributed. As such, a Spearman's rho correlation coefficient was measured to determine the monotonic relationship between the paired data.

A Spearman's rho correlation revealed a very weak, negative monotonic correlation between unemployment rate and the J200 index ($r_s = -.166$, n = 58, p .205). A Spearman's rho correlation also revealed a very weak, positive monotonic correlation between the absorption rate and the J200 index, ($r_s = .026$, n = 30, p .886). A Spearman's rho correlation also revealed a very weak, positive monotonic correlation between the LFPR and the J200 index, ($r_s = .112$, n = 30, p .543). In all cases the correlation was not significant at α = 0.05 level. Since the p-value for each test is above 0.05, one can say that very strong evidence exists to reject the alternative hypothesis ($H_1$5), and to accept the null hypothesis ($H_0$5), whereby the unemployment rate and the JSE 200 index are not monotonically correlated in the population. The unemployment rate therefore does not impact the J200 index.

Table 25: Unemployment Rate (UR) Correlation results summary for 2001 - 2015

	Pearson's coefficient					Spearman's rho			
Index	**r**	**deg**	**n**	**p**	**r^2**	**r_s**	**deg**	**n**	**p**
J200	-.230	w	58	.078	.036	-.166	v-w	58	.205
J201	-.179	v-w	58	.171	.015	-.114	v-w	58	.387
J202	-.253	w	58	.052	.048	-.164	v-w	58	.211
J203	-.224	w	58	.086	.034	-.157	v-w	58	.232
J204	-.429	m	55	**.001***	.169	-.227	w	55	.090

Degree of correlation (deg): v-w (very weak) ; w (weak) ; m (moderate) ; s (strong) ; v-s (very strong)

source: own research

The J204 study does indicate that a correlation exist since the p-value is below 0.05 (p=.001). However, since a positive skewness coefficient exist in the data, the Pearson's coefficient should not be used. The Spearman's rho coefficient confirmed the result is not significant at α = 0.05 level (p=.090).

A similar correlation test was conducted between the Mid Cap Index (J201), Small Cap Index (J202), All Share Index (J203) and the Fledgling Index (J204) with the unemployment rate (UR), absorption rate (AR) and labour force participation rate (LFPR). Since the p-value for each test is above 0.05 (see Table 25, Table 26 and Table 27) one can say that very strong evidence exists to reject the alternative hypothesis ($H_1$5), and to accept the null hypothesis ($H_0$5).

Table 26: Absorption (employed to population ratio) rate (AR) Correlation results summary for 2001 - 2015

	Pearson's coefficient					Spearman's rho			
Index	**r**	**deg**	**n**	**p**	**r^2**	**r_s**	**deg**	**n**	**p**
J200	-.169	v-w	30	.354	-.004	.026	v-w	30	.886
J201	-.360	w	30	**.043***	.100	-.095	v-w	30	.606
J202	-.200	w	30	.273	.008	-.054	v-w	30	.769
J203	-.198	v-w	30	.278	.039	-.009	v-w	30	.963
J204	-.236	w	30	.193	.024	.054	v-w	30	.770

Degree of correlation (deg): v-w (very weak) ; w (weak) ; m (moderate) ; s (strong) ; v-s (very strong)

* Significant at α = 0.05 level

source: own research

Table 27: Labour force participation rate (LFPR) Correlation results summary for 2001 - 2015

	Pearson's coefficient					Spearman's rho			
Index	r	deg	n	p	r^2	r_s	deg	n	p
J200	.114	v-w	30	.535	-.020	.112	v-w	30	.543
J201	-.080	v-w	30	.662	-.027	-.017	v-w	30	.925
J202	.087	v-w	30	.635	-.025	.036	v-w	30	.843
J203	.087	v-w	30	.637	.008	.078	v-w	30	.670
J204	.034	v-w	30	.852	-.032	.163	v-w	30	.374

Degree of correlation (deg): v-w (very weak) ; w (weak) ; m (moderate) ; s (strong) ; v-s (very strong)

source: own research

In the case of the Mid Cap Index (J201), the p-value is less than 0.05 (p = 0.043), and therefore significant. However, since the p-value according to the Spearman rho test is more than 0.05 (p = 0.606), one can say that very strong evidence exists to reject the alternative hypothesis ($H_1$5), and to accept the null hypothesis ($H_0$5). Therefore, neither the unemployment rate, or absorption rate or labour force participation rate and the various indices are monotonically correlated in the population. By combining all the unemployment related rates the model fitment improves (see Table 28).

Table 28: Unemployment Rate (UR) + Absorption rate (AR) + Labour force participation rate (LFPR) Correlation results summary for 2001 - 2015

	Pearson's coefficient				
Index	r	deg	n	p	r^2
J200	.747	s	28	< 0.001	.510
J201	.761	s	28	< 0.001	.534
J202	.755	s	28	< 0.001	.523
J203	.750	s	28	< 0.001	.516
J204	.730	s	28	< 0.001	.482

Degree of correlation (deg): v-w (very weak) ; w (weak) ; m (moderate) ; s (strong) ; v-s (very strong)

source: own research

b) Linear Regression Model

A simple linear regression was calculated to predict the J200 index based on the unemployment rate (UR). The regression equation was found to be not significant, ($F(1, 58) = 3.230$, p .078), with an R^2 of .036.

Equation 14: Simple regression (J200 – UR)

$Y_i = \beta_0 + \beta_1 X_1 + \varepsilon_i$

J200 = 61506.745 – 1528.586 (UR) index number when the unemployment rate was measured in percentage.

A similar simple regression can be created for the J201, J202, J203 and J204 indices applying the relevant factors in Table 29. All models were not significant at $\alpha = 0.05$ level except for J204 which is significant at α = 0.05 level (p=.001).

Table 29: Unemployment Rate (UR) Simple Linear Regression Model results summary for 2001 - 2015

Index	F	p	R^2	DW	β_0	β_1	ε_i
J200	3.230	.078	.036	.040	61506.745	-1528.586	850.592
J201	1.917	.171	.015	.029	80595.856	-1918.825	1385.875
J202	3.952	.052	.048	.043	83002.713	-2250.805	1132.236
J203	3.053	.086	.034	.036	67989.394	-1686.405	965.188
J204	12.403	**.001***	.169	.112	14891.958	-435.501	123.658

* Significant at α = 0.05 level

source: own research

A simple linear regression was calculated to predict the J200 index based on the Absorption rate (AR). The regression equation was found to be not significant, ($F(1, 30) = .886$, p .354), with an R^2 of -.004.

Equation 15: Simple regression (J200 – AR)

$Y_i = \beta_0 + \beta_1 X_1 + \varepsilon_i$

J200 = 79339.435 – 1088.731 (AR) index number when the AR is measured in percentage.

Table 30: Absorption Rate (AR) Simple Linear Regression Model results summary for 2001 - 2015

Index	F	p	R^2	DW	β_0	β_1	ε_i
J200	.886	.354	-.004	.067	79339.435	-1088.731	1156.491
J201	4.459	**.043***	.100	.055	209227.76	-3753.517	1777.631
J202	1.247	.273	.008	.039	113970.04	-1750.406	1567.464
J203	1.221	.278	.007	.057	98116.152	-1436.754	1300.104
J204	1.777	.193	.056	.073	13841.451	-200.530	150.439

* Significant at α = 0.05 level

source: own research

A similar simple regression can be created for the J201, J202, J203 and J204 indices applying the relevant factors in Table 30. No models are significant except for J201, which is significant at α = 0.05 level (p=.043).

A simple linear regression was calculated to predict the J200 index based on the Labour Force Participation Rate (LFPR). The regression equation was found to be not significant, ($F(1, 30) = .394$, p .535), with an R^2 of -.020.

Equation 16: Simple regression (J200 – LFPR)

$Y_i = \beta_0 + \beta_1 X_1 + \varepsilon_i$

J200 = -11309.302 + 765.664 (LFPR) index number when the LFPR was measured in percentage.

Table 31: Labour Force Participation Rate (LFPR) Simple Linear Regression Model results summary for 2001 - 2015

Index	F	p	R^2	DW	β_0	β_1	ε_i
J200	.394	.535	-.020	.065	-11309.302	765.664	1220.435
J201	.195	.662	-.027	.042	97543.938	-878.549	1987.930
J202	.230	.635	-.025	.041	-7219.184	800.909	1668.247
J203	.227	.637	-.026	.053	-1449.555	659.010	1383.206
J204	.035	.852	-.032	.078	3454.655	30.496	161.987

source: own research

A similar simple regression can be created for the J201, J202, J203 and J204 indices applying the relevant factors in Table 31. No models are found to be significant at $\alpha = 0.05$ level.

A multiple linear regression was calculated to predict the J200 index based on the UR, AR and LFPR. A significant regression equation was found ($F(3, 28) = 11.773$, $p < .001$), with an R^2 of .510.

Equation 17: Multiple regression (J200 – UR+AR+LFPR)

$Y_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3$

J200 = 656049.451 – 32627.447 (UR) – 67274.678 (AR) + 53887.022 (LFPR) index number.

Both the AR ($p = .029$) and LFPR ($p = .021$) were significant predictors ($p < .050$) of the J200 index, while the UR was not significant at $\alpha = 0.05$ level ($p = .066$).

A similar multiple regression can be created for the J201, J202, J203 and J204 indices applying the relevant factors in Table 32.

From the above, it was clear that in all cases a multiple regression had a better fit in the model, ranging from 48.2% (J204) to 55.8% (J200) compared to only using an individual rate (either UR, AR or LFPR). The variance inflation factors (VIF) ranging from 253.9 to 1310.9 would however indicate an extremely high degree of inflation between the regression coefficients and therefore represent a very high degree of multicollinearity. A threshold value of VIF of less than ten (tolerance level of >0.10) was applied in this study (O'Brien, 2007). Subsequently, the multiple regression is invalid.

Table 32: UR+AR+LFPR Multiple Linear Regression Model results summary for 2001 - 2015

Index	F	p	R^2	DW	VIF UR	VIF AR	VIF LFPR
J200	11.773	< .001	.558	1.345	253.929	1310.894	683.580
J201	12.820	< .001	.534	1.291	253.929	1310.894	683.580
J202	12.342	< .001	.523	1.343	253.929	1310.894	683.580
J203	12.023	< .001	.516	1.344	253.929	1310.894	683.580
J204	10.625	< .001	.482	1.159	253.929	1310.894	683.580

Index	β0	β1(UR)	β2(AR)	β3(LFPR)
J200	656049.451	-32627.447	-67274.678	53887.022
J201	989205.240	-45554.866	-97317.309	76551.479
J202	852842.790	-42623.204	-99977.160	71151.761
J203	738008.945	-36352.297	-75300.187	60177.226
J204	98458.315	-4571.655	-9300.028	7352.111

source: own research

The Durbin-Watson (DW) statistic did not detect the presence of autocorrelation, which would imply that no relationship exist between the values separated by a time lag in the residual prediction errors (Durbin & Watson, 1951).

5.7. Summary of Period 1: 2001-2005

a) Correlation

Table 33: Correlation summary for 2001 – 2005

IV (Pearson)	J200	J201	J202	J203	J204
USD/ZAR	-.310	-.690	-.689	-.396	-.718
EUR/ZAR	-.090	-.302	-.350	-.133	-.708
SAGB10	-.568	-.876	-.854	-.647	-.851
SAGB30	-.587	-.896	-.873	-.667	-.870
GDP%	.426	.391	.404	.429	.259
CPI	.540	.812	.765	.610	.831
PPI	.597	.789	.740	.652	.897

IV (P value)	J200	J201	J202	J203	J204
USD/ZAR	< .001	< .001	< .001	< .001	< .001
EUR/ZAR	.001	< .001	< .001	< .001	< .001
SAGB10	< .001	< .001	< .001	< .001	< .001
SAGB30	< .001	< .001	< .001	< .001	< .001
GDP%	**.061**	**.088**	**.077**	**.059**	**.332**
CPI	< .001	< .001	< .001	< .001	< .001
PPI	< .001	< .001	< .001	< .001	< .001

source: own research

A correlation exists between the various macroeconomic elements and indices. All results (see Table 33) are significant at α = 0.05 except for the GDP which is not significant (p value > 0.05) for all the indices.

b) Linear Regression

Table 34: Exchange Rate (USD/ZAR) Simple Linear Regression Model results summary for 2001 - 2005

Index	F	p	R^2	DW	β_0	β_1	ε_i
J200	132.905	< .001	.095	.004	12962.430	-376.437	32.653
J201	1138.066	< .001	.476	.004	23894.804	-1578.703	46.797
J202	1130.209	< .001	.474	.004	21531.051	-1589.867	47.291
J203	232.898	< .001	.156	.003	15126.451	-554.850	36.357
J204	1063.532	< .001	.515	.003	3979.060	-296.027	9.077

source: own research

Table 35: Exchange Rate (EUR/ZAR) Simple Linear Regression Model results summary for 2001 - 2005

Index	F	p	R^2	DW	β_0	β_1	ε_i
J200	10.273	.001	.007	.003	11581.344	-189.126	59.008
J201	125.810	< .001	.091	.002	21470.167	-1193.000	106.361
J202	175.045	< .001	.122	.002	20719.327	-1394.991	105.438
J203	22.630	< .001	.017	.003	13455.570	-322.076	67.705
J204	1003.221	< .001	.500	.016	6612.931	-570.633	18.016

source: own research

Table 36: Debt Rate (SAGB30) Simple Linear Regression Model results summary for 2001 - 2005

Index	F	p	R^2	DW	β_0	β_1	ε_i
J200	656.963	< .001	.344	.007	16938.409	-729.861	28.475
J201	5090.828	< .001	.803	.021	31404.107	-2098.380	29.410
J202	3992.978	< .001	.761	.016	28604.961	-2061.917	32.630
J203	1000.849	< .001	.444	.008	19846.811	-956.054	30.220
J204	3102.516	< .001	.756	.021	5502.023	-419.499	7.531

source: own research

Table 37: Debt Rate (SAGB10) Simple Linear Regression Model results summary for 2001 - 2005

Index	F	p	R^2	DW	β_0	β_1	ε_i
J200	594.431	< .001	.322	.007	18150.012	-813.119	33.351
J201	4118.279	< .001	.767	.020	35137.297	-2362.635	36.816
J202	3359.694	< .001	.729	.016	32291.276	-2323.373	40.084
J203	897.646	< .001	.418	.008	21459.528	-1067.667	35.636
J204	2619.198	< .001	.723	.018	6111.866	-455.461	8.900

source: own research

Table 38: Growth Rate (GDP) Simple Linear Regression Model results summary for 2001 - 2005

Index	F	p	R^2	DW	β_0	β_1	ε_i
J200	3.996	**.061**	.136	.478	7823.637	587.684	293.981
J201	3.246	**.088**	.106	.374	7995.741	938.535	520.900
J202	3.520	**.077**	.117	.340	5373.265	980.533	522.598
J203	4.060	**.059**	.139	.453	8265.595	674.137	334.576
J204	1.009	**.067**	.001	.207	1227.387	123.372	122.803

source: own research

Table 39: Inflation Rate (CPI) Simple Linear Regression Model results summary for 2001 - 2005

Index	F	p	R^2	DW	β_0	β_1	ε_i
J200	23.873	< .001	.279	.100	-21219.157	290.526	59.461
J201	112.187	< .001	.653	.059	-75067.627	805.315	76.032
J202	81.627	< .001	.577	.034	-73069.958	764.018	84.564
J203	34.456	< .001	.362	.089	-29807.535	377.527	64.316
J204	102.828	< .001	.684	.072	-25500.979	249.340	24.589

source: own research

Table 40: Inflation Rate (PPI) Simple Linear Regression Model results summary for 2001 - 2005

Index	F	p	R^2	DW	β_0	β_1	ε_i
J200	32.039	< .001	.345	.102	-24713.559	319.282	56.407
J201	95.477	< .001	.616	.056	-73144.422	778.277	79.650
J202	70.043	< .001	.539	.034	-70904.640	735.233	87.850
J203	42.972	< .001	.416	.090	-32875.580	401.351	61.225
J204	189.813	< .001	.801	.217	-34551.974	328.138	23.817

source: own research

A simple linear regression model can be created using data from Table 34 to Table 40. All models are significant (p-value ≤ 0.05) except for the GDP (see Table 38) due to the fact that the p-value > 0.05.

5.8. Summary of Period 2: 2006-2010

a) Correlation

Table 41: Correlation summary for 2006 – 2010

IV (Pearson)	J200	J201	J202	J203	J204
USD/ZAR	-.245	-.225	-.338	-.252	-.537
EUR/ZAR	.086	-.096	-.112	.061	-.369
SAGB10	.360	-.039	.007	.312	-.150
SAGB30	.481	.190	.130	.450	.120
GDP%	.329	.202	.365	.324	.602
CPI	.273	.495	.098	.309	-.412
PPI	.305	.420	.114	.327	-.366

IV (P value)	J200	J201	J202	J203	J204
USD/ZAR	< .001	< .001	< .001	< .001	< .001
EUR/ZAR	.002	.001	< .001	.032	< .001
SAGB10	< .001	**.173**	**.809**	< .001	< .001
SAGB30	< .001	< .001	< .001	< .001	< .001
GDP%	**.157**	**.392**	**.114**	**.163**	.005
CPI	.035	< .001	**.457**	.016	.001
PPI	.018	.001	**.386**	.011	.004

source: own research

A correlation exists between the various macroeconomic elements and indices. All results (see Table 33) are significant at α = 0.05 except for the items highlighted in red which is not significant (p value > 0.05).

b) Linear Regression

Table 42: Exchange Rate (USD/ZAR) Simple Linear Regression Model results summary for 2006 - 2010

Index	F	p	R^2	DW	β_0	β_1	ε_i
J200	79.610	< .001	.059	.012	29964.379	-892.635	100.044
J201	66.486	< .001	.050	.004	40358.888	-1220.189	149.645
J202	160.661	< .001	.113	.003	39132.871	-1575.200	124.274
J203	84.923	< .001	.063	.011	33158.799	-997.016	108.191
J204	505.721	< .001	.288	.006	8065.905	-487.541	21.680

source: own research

Table 43: Exchange Rate (EUR/ZAR) Simple Linear Regression Model results summary for 2006 - 2010

Index	F	p	R^2	DW	β_0	β_1	ε_i
J200	9.382	.002	.007	.011	21152.872	198.319	64.746
J201	11.667	.001	.008	.003	34510.524	-328.852	96.279
J202	15.922	< .001	.012	.002	30603.640	-329.717	82.631
J203	4.608	.032	.003	.009	24046.254	150.895	70.292
J204	196.323	< .001	.135	.002	6549.424	-210.818	15.046

source: own research

Table 44: Debt Rate (SAGB30) Simple Linear Regression Model results summary for 2006 - 2010

Index	F	p	R^2	DW	β_0	β_1	ε_i
J200	374.795	< .001	.230	.017	3300.853	2442.772	126.179
J201	46.776	< .001	.035	.004	19399.526	1437.949	210.249
J202	21.512	< .001	.016	.002	20300.918	846.637	182.540
J203	317.679	< .001	.202	.015	5392.975	2481.001	139.198
J204	18.167	< .001	.014	.001	5607.355	-151.642	35.578

source: own research

Table 45: Debt Rate (SAGB10) Simple Linear Regression Model results summary for 2006 - 2010

Index	F	p	R^2	DW	β_0	β_1	ε_i
J200	186.247	< .001	.129	.014	6918.247	1927.033	141.203
J201	1.855	**.173**	.001	.003	33704.774	-306.614	225.134
J202	.058	**.809**	-.001	.002	26803.422	46.715	193.686
J203	134.126	< .001	.096	.011	10351.932	1805.122	155.865
J204	28.710	< .001	.022	.001	6059.644	-199.729	37.275

source: own research

Table 46: Growth Rate (GDP) Simple Linear Regression Model results summary for 2006 - 2010

Index	F	p	R^2	DW	β_0	β_1	ε_i
J200	2.183	**.157**	.059	.346	22531.109	341.141	230.872
J201	.770	**.392**	-.012	.227	30442.463	339.748	387.275
J202	2.759	**.114**	.085	.384	25854.349	505.389	304.266
J203	2.114	**.163**	.055	.299	24877.001	367.208	252.531
J204	10.226	.005	.327	.429	3924.098	162.340	50.767

source: own research

Table 47: Inflation Rate (CPI) Simple Linear Regression Model results summary for 2006 - 2010

Index	F	p	R^2	DW	β_0	β_1	ε_i
J200	4.685	.035	.059	.215	8711.454	115.131	53.194
J201	18.839	< .001	.232	.135	-8949.519	317.549	73.161
J202	.561	**.457**	-.008	.101	20510.231	53.192	71.044
J203	6.130	.016	.080	.204	7788.995	141.483	57.146
J204	11.888	.001	.156	.060	9901.986	-43.532	12.625

source: own research

Table 48: Inflation Rate (PPI) Simple Linear Regression Model results summary for 2006 - 2010

Index	F	p	R^2	DW	β_0	β_1	ε_i
J200	5.950	.018	.077	.226	7692.374	118.301	48.498
J201	12.449	.001	.163	.134	-1482.002	248.260	70.362
J202	.764	**.386**	-.004	.103	19720.990	57.074	65.311
J203	6.952	.011	.092	.214	7525.642	137.870	52.291
J204	8.991	.004	.119	.055	9085.672	-35.607	11.875

source: own research

A simple linear regression model can be created using data from Table 42 to Table 48. All models are significant (p-value ≤ 0.05) except for those highlighted in red due to the fact that the p-value > 0.05.

5.9. Summary of Period 3: 2011-2015

a) Correlation

Table 49: Correlation summary for 2011 – 2015

IV (Pearson)	J200	J201	J202	J203	J204
USD/ZAR	.962	.938	.962	.963	.923
EUR/ZAR	.946	.909	.936	.945	.923
SAGB10	.142	-.043	.071	.116	-.061
SAGB30	.272	.086	.191	.246	.114
GDP%	.329	.202	.365	.324	.602
CPI	.965	.951	.973	.968	.936
PPI	.968	.950	.971	.970	.946

IV (P value)	J200	J201	J202	J203	J204
USD/ZAR	< .001	< .001	< .001	< .001	< .001
EUR/ZAR	< .001	< .001	< .001	< .001	< .001
SAGB10	< .001	**.130**	.012	< .001	.032
SAGB30	< .001	.002	< .001	< .001	< .001
GDP%	**.157**	**.392**	**.114**	**.163**	.005
CPI	< .001	< .001	< .001	< .001	< .001
PPI	< .001	< .001	< .001	< .001	< .001

source: own research

A correlation exists between the various macroeconomic elements and indices. All results (see Table 49) are significant at α = 0.05 except for the items highlighted in red which is not significant (p value > 0.05).

b) Linear Regression

Table 50: Exchange Rate (USD/ZAR) Simple Linear Regression Model results summary for 2011 - 2015

Index	F	p	R^2	DW	β_0	β_1	ε_i
J200	15463.074	< .001	.925	.068	295.273	3989.991	32.087
J201	9073.005	< .001	.879	.029	4488.410	5575.531	58.534
J202	15455.973	< .001	.925	.035	-7500.083	5694.758	45.806
J203	16128.842	< .001	.928	.064	523.757	4453.646	35.068
J204	7143.018	< .001	.851	.021	1814.828	434.367	5.139

source: own research

Table 51: Exchange Rate (EUR/ZAR) Simple Linear Regression Model results summary for 2011 - 2015

Index	F	p	R^2	DW	β_0	β_1	ε_i
J200	10535.286	< .001	.894	.052	-6503.804	3657.903	35.638
J201	5928.045	< .001	.826	.022	-4166.794	5040.860	65.471
J202	8832.946	< .001	.876	.026	-16577.148	5168.425	54.993
J203	10339.703	< .001	.892	.047	-6941.240	4072.600	40.051
J204	7176.507	< .001	.852	.024	990.454	405.246	4.784

source: own research

Table 52: Debt Rate (SAGB30) Simple Linear Regression Model results summary for 2011 - 2015

Index	F	p	R^2	DW	β_0	β_1	ε_i
J200	99.444	< .001	.073	.006	-4104.701	4759.174	477.245
J201	9.202	.002	.007	.002	37505.853	2148.688	708.343
J202	47.346	< .001	.036	.002	3726.708	4780.381	694.738
J203	80.515	< .001	.060	.005	12.273	4806.505	535.661
J204	16.408	< .001	.012	.002	3872.841	226.502	55.918

source: own research

Table 53: Debt Rate (SAGB10) Simple Linear Regression Model results summary for 2011 - 2015

Index	F	p	R^2	DW	β_0	β_1	ε_i
J200	25.569	< .001	.019	.003	23837.972	1713.124	338.790
J201	2.296	**.130**	.001	.002	62037.380	-742.759	490.203
J202	6.347	.012	.004	.001	35670.181	1227.529	487.243
J203	17.036	< .001	.013	.003	29541.079	1563.698	378.848
J204	4.599	.032	.003	.001	6496.921	-83.146	38.772

source: own research

Table 54: Growth Rate (GDP) Simple Linear Regression Model results summary for 2011 - 2015

Index	F	p	R^2	DW	β_0	β_1	ε_i
J200	3.442	**.080**	.114	.305	40499.100	-1641.539	884.824
J201	1.959	**.179**	.048	.307	59619.512	-1778.863	1270.975
J202	2.375	**.141**	.068	.263	49028.545	-1929.658	1252.034
J203	3.233	**.089**	.105	.299	45275.722	-1771.192	985.129
J204	2.340	**.143**	.066	.294	6190.582	-156.981	102.625

source: own research

Table 55: Inflation Rate (CPI) Simple Linear Regression Model results summary for 2011 - 2015

Index	F	p	R^2	DW	β_0	β_1	ε_i
J200	780.177	< .001	.930	.623	-93087.114	856.074	30.649
J201	553.597	< .001	.904	.347	-128763.44	1214.045	51.599
J202	1012.775	< .001	.945	.310	-141098.99	1223.585	38.448
J203	864.666	< .001	.936	.602	-104001.16	957.421	32.560
J204	413.389	< .001	.875	.195	-8420.895	93.788	4.613

source: own research

Table 56: Inflation Rate (PPI) Simple Linear Regression Model results summary for 2011 - 2015

Index	F	p	R^2	DW	β_0	β_1	ε_i
J200	850.215	< .001	.935	.663	-83994.374	765.182	26.242
J201	532.756	< .001	.900	.364	-115059.50	1080.048	46.793
J202	960.735	< .001	.942	.314	-127354.16	1088.955	35.132
J203	925.429	< .001	.940	.638	-93724.687	855.093	28.109
J204	491.753	< .001	.893	.243	-7518.739	84.423	3.807

source: own research

A simple linear regression model can be created using data from Table 50 to Table 56. All models are significant (p-value ≤ 0.05) except for those highlighted in red due to the fact that the p-value > 0.05.

In all the studies conducted for period 1 (2001-2005), period 2 (2006-2010) and period 3 (2011-2015), the correlation mirrored the findings from the extended period (2001-2015). The conclusion is therefore that the correlation is independent to the time period. However, it should be noted that the significance on various data is not significant if one evaluate only the shortened time period, hence the time period length is important in the study.

5.10. Research model development analysis

a) Enter method

A multiple linear regression was calculated to predict the J200 index based on the USD/ZAR, EUR/ZAR, SAGB30, SAGB10, GDP%, CPI, PPI and UR using the enter method.

The enter method is the most common method to use when the IV's are simultaneously applied and entered into the equation at the same time. This is often done if the researcher does not know the selection process for the best possible predictors, as is the case in the study (Thompson, 1995).

A significant regression equation was found ($F(8, 3742) = 8604.372$, $p < .001$), with an R^2 of .948 (see Table 57).

Table 57: UR+AR+LFPR Multiple Linear Regression Model results summary for 2001 - 2015

Index	F	p	R^2	DW	VIF USD	VIF EUR	VIF B30	VIF B10
J200	8604.372	< .001	.948	.018	5.033	14.343	14.808	19.376
J201	13222.231	< .001	.966	.013	5.033	14.343	14.808	19.376
J202	7044.227	< .001	.938	.007	5.033	14.343	14.808	19.376
J203	9319.108	< .001	.952	.016	5.033	14.343	14.808	19.376
J204	4686.612	< .001	.915	.016	5.354	13.105	14.990	16.159

Index	VIF GDP	VIF CPI	VIF PPI	VIF UR	β_0	β_1 (USD)	β_2 (EUR)
J200	1.616	459.366	554.941	2.448	-29579.226	877.724	49.240
J201	1.616	459.366	554.941	2.448	-49191.806	1596.475	-468.420
J202	1.616	459.366	554.941	2.448	-27332.344	1653.154	-97.589
J203	1.616	459.366	554.941	2.448	-33585.766	1024.501	-3.584
J204	1.959	499.276	604.594	3.796	1423.696	118.798	-115.663

Index	β_3 (B30)	β_4 (B10)	β_5 (GDP)	β_6 (CPI)	β_7 (PPI)	β_8 (UR)
J200	1683.918	-1883.713	890.235	-302.010	758.115	-709.623
J201	2725.389	-4571.292	1050.991	571.612	242.153	-770.966
J202	856.626	-2601.724	1065.660	-59.117	665.666	-1090.226
J203	1859.144	-2278.724	970.183	-233.828	759.685	-766.337
J204	-107.363	-427.445	217.115	-345.163	392.462	-42.955

source: own research

Equation 18: **Multiple regression (J200 – USD/ZAR + EUR/ZAR + SAGB30 + SAGB10 + GDP% + CPI + PPI + UR)**

$Y_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8$

J200 = -29579.226 + 877.724 (USD/ZAR) + 49.240 (EUR/ZAR) + 1683.918 (SAGB30) – 1883.713 (SAGB10) + 890.235 (GDP%) – 302.010 (CPI) + 758.115 (PPI) – 709.623 (UR) index number.

All independent variables (except EUR/ZAR) were significant predictors ($p < .050$) of the J200 index, while the EUR/ZAR was not significant at $\alpha = 0.05$ level ($p = .546$ as per Appendix 9.3).

A similar multiple regression can be created for the J201, J202, J203 and J204 indices applying the relevant factors in Table 57.

Table 58: Multiple Linear Regression Model Fit percentage (using all IV's) results summary for 2001 - 2015

Index	Model Fit %
J200	94.8
J201	96.6
J202	93.8
J203	95.2
J204	91.5

source: own research

From Table 58, it is clear that in all cases a multiple regression using all the independent variables (IV's) had a better fit in the model for each of the indices.

The variance inflation factors (VIF) would however indicate a high degree of inflation between some of the regression coefficients and therefore represent a high degree of multicollinearity. A threshold value of VIF of less than ten (tolerance level of >0.10) was applied in this study (O'Brien, 2007).

This would imply that some of the IV's should be removed from the model, even if it results in a lower fit. From Table 57, we can determine that only CPI and PPI should be removed, since they have very high VIF's in excess of the threshold for the VIF. By removing the CPI and PPI IV's the statistical analysis will need to be repeated (see Table 59). In this case the VIF's are within the threshold and the model is significant (p-value ≤ 0.05). Equation 19 now describe the model correctly.

Table 59: J200 Multiple Linear Regression Model (removed CPI and PPI) results summary for 2001 – 2015

Model Summary[b]

Model	R	R Square	Adjusted R Square	Change Statistics					Durbin-Watson
				R Square Change	F Change	df1	df2	Sig. F Change	
1	.946[a]	.894	.894	.894	5271.020	6	3744	.000	.022

a. Predictors: (Constant), SAGB10, GDP%, UR, USD/ZAR, EUR/ZAR, SAGB30
b. Dependent Variable: J200

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
1 (Constant)	27393.041	1185.471		23.107	.000		
USD/ZAR	-200.862	80.722	-.028	-2.488	.013	.228	4.391
GDP%	767.315	34.897	.147	21.988	.000	.630	1.587
UR	-1077.188	43.616	-.161	-24.697	.000	.662	1.510
EUR/ZAR	3465.991	64.835	.598	53.458	.000	.226	4.424
SAGB30	8013.770	143.247	.794	55.944	.000	.140	7.123
SAGB10	-9544.506	118.947	-1.054	-80.242	.000	.164	6.100

a. Dependent Variable: J200
source: own research

Equation 19: Multiple regression (J200 – USD/ZAR + EUR/ZAR + SAGB30 + SAGB10 + GDP% + UR)

$Y_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6$

J200 = 27393.041 – 200.862 (USD/ZAR) + 767.315 (GDP%) – 1077.188 (UR) + 3465.991 (EUR/ZAR) + 8013.770 (SAGB30) – 9544.506 (SAGB10) index number.

Table 60: J201 Multiple Linear Regression Model (removed CPI, PPI and USD/ZAR) results summary for 2001 – 2015

Model Summary[b]

Model	R	R Square	Adjusted R Square	Change Statistics					Durbin-Watson
				R Square Change	F Change	df1	df2	Sig. F Change	
1	.950[a]	.903	.903	.903	6951.600	5	3745	.000	.016

a. Predictors: (Constant), SAGB10, GDP%, UR, EUR/ZAR, SAGB30
b. Dependent Variable: J201

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
1 (Constant)	44503.498	1703.209		26.129	.000		
GDP%	898.388	54.082	.107	16.612	.000	.631	1.585
UR	-872.462	65.972	-.081	-13.225	.000	.696	1.436
EUR/ZAR	4489.751	67.956	.479	66.069	.000	.495	2.020
SAGB30	13003.166	210.837	.796	61.674	.000	.156	6.415
SAGB10	-17417.438	184.483	-1.188	-94.412	.000	.164	6.100

a. Dependent Variable: J201
source: own research

All independent variables were significant predictors (p < .050) of the J200 index. All the VIF's are below the threshold of ten, and therefore indicate a low degree of multicollinearity exist in the model. The Durbin-Watson (DW) statistic (.022) do detect the presence of autocorrelation, which would imply that a relationship exist between the values separated by a time lag in the residual prediction errors (Durbin & Watson, 1951).

Table 61: J202 Multiple Linear Regression Model (removed CPI and PPI) results summary for 2001 – 2015

Model Summary[b]

Model	R	R Square	Adjusted R Square	Change Statistics					Durbin-Watson
				R Square Change	F Change	df1	df2	Sig. F Change	
1	.941[a]	.886	.886	.886	4865.418	6	3744	.000	.014

a. Predictors: (Constant), SAGB10, GDP%, UR, USD/ZAR, EUR/ZAR, SAGB30
b. Dependent Variable: J202

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
1 (Constant)	46056.668	1654.999		27.829	.000		
USD/ZAR	333.966	112.693	.034	2.964	.003	.228	4.391
GDP%	923.015	48.719	.132	18.946	.000	.630	1.587
UR	-1409.737	60.891	-.157	-23.152	.000	.662	1.510
EUR/ZAR	4086.889	90.515	.523	45.152	.000	.226	4.424
SAGB30	8953.209	199.983	.658	44.770	.000	.140	7.123
SAGB10	-12535.699	166.058	-1.027	-75.490	.000	.164	6.100

a. Dependent Variable: J202
source: own research

Table 62: J203 Multiple Linear Regression Model (removed CPI and PPI) results summary for 2001 – 2015

Model Summary[b]

Model	R	R Square	Adjusted R Square	Change Statistics					Durbin-Watson
				R Square Change	F Change	df1	df2	Sig. F Change	
1	.947[a]	.897	.897	.897	5423.156	6	3744	.000	.020

a. Predictors: (Constant), SAGB10, GDP%, UR, USD/ZAR, EUR/ZAR, SAGB30
b. Dependent Variable: J203

Coefficients[a]

Model	Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.	Collinearity Statistics Tolerance	Collinearity Statistics VIF
1 (Constant)	31306.127	1327.525		23.582	.000		
USD/ZAR	-180.578	90.394	-.022	-1.998	.046	.228	4.391
GDP%	835.417	39.079	.141	21.378	.000	.630	1.587
UR	-1133.584	48.842	-.150	-23.209	.000	.662	1.510
EUR/ZAR	3815.725	72.605	.580	52.555	.000	.226	4.424
SAGB30	9049.786	160.412	.790	56.416	.000	.140	7.123
SAGB10	-11026.370	133.200	-1.073	-82.780	.000	.164	6.100

a. Dependent Variable: J203
source: own research

Table 63: J204 Multiple Linear Regression Model (removed CPI and PPI) results summary for 2001 – 2015

Model Summary[b]

Model	R	R Square	Adjusted R Square	Change Statistics R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.928[a]	.861	.861	.861	3617.475	6	3494	.000	.015

a. Predictors: (Constant), SAGB10, GDP%, UR, USD/ZAR, EUR/ZAR, SAGB30

b. Dependent Variable: J204

Coefficients[a]

Model	Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.	Collinearity Statistics Tolerance	Collinearity Statistics VIF
1 (Constant)	10642.516	221.590		48.028	.000		
USD/ZAR	-81.263	14.829	-.075	-5.480	.000	.213	4.694
GDP%	154.139	6.584	.198	23.413	.000	.553	1.809
UR	-298.604	8.589	-.299	-34.768	.000	.536	1.865
EUR/ZAR	475.240	13.282	.519	35.781	.000	.188	5.306
SAGB30	1092.427	29.592	.600	36.916	.000	.150	6.655
SAGB10	-1547.056	21.709	-.978	-71.262	.000	.211	4.743

a. Dependent Variable: J204
source: own research

A similar multiple regression can be created for the J201, J202, J203 and J204 indices using data from Table 60 to Table 63. In some cases, additional elements were removed when they indicated no significance.

Equation 20: Multiple regression (J201 – EUR/ZAR + SAGB30 + SAGB10 + GDP% + UR)

$Y_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5$

J201 = 44503.498 + 898.388 (GDP%) – 872.462 (UR) + 4489.751 (EUR/ZAR) + 13003.166 (SAGB30) – 17417.438 (SAGB10) index number.

Equation 21: Multiple regression (J202 – USD/ZAR + EUR/ZAR + SAGB30 + SAGB10 + GDP% + UR)

$Y_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6$

J202 = 46056.668 + 333.966 (USD/ZAR) + 923.015 (GDP%) – 1409.737 (UR) + 4086.889 (EUR/ZAR) + 8953.209 (SAGB30) – 12535.699 (SAGB10) index number.

Equation 22: Multiple regression (J203 – USD/ZAR + EUR/ZAR + SAGB30 + SAGB10 + GDP% + UR)

$Y_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6$

J203 = 31306.127 – 180.578 (USD/ZAR) + 835.417 (GDP%) – 1133.584 (UR) + 3815.725 (EUR/ZAR) + 9049.786 (SAGB30) – 11026.370 (SAGB10) index number.

Equation 23: Multiple regression (J204 – USD/ZAR + EUR/ZAR + SAGB30 + SAGB10 + GDP% + UR)

$Y_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6$

J204 = 10642.516 – 81.263 (USD/ZAR) + 154.139 (GDP%) – 298.604 (UR) + 475.240 (EUR/ZAR) + 1092.427 (SAGB30) – 1547.056 (SAGB10) index number.

Table 64: Multiple Linear Regression Model Fit percentage results summary for 2001 – 2015 (enter method)

Index	Model Fit % with all IV's	Model Fit % with some IV's	IV's removed High VIF
J200	94.8	89.4	CPI, PPI
J201	96.6	90.3	CPI, PPI, USD/ZAR
J202	93.8	88.6	CPI, PPI
J203	95.2	89.7	CPI, PPI
J204	91.5	86.1	CPI, PPI

source: own research

From Table 64, it is clear that in all cases a multiple regression whereby some IV's that represented a high VIF, were removed, resulted in a slight reduction in fit to the model. However, the model is still very strong as it has a fit above 80%, which represent a very strong relationship.

All the variance inflation factors (VIF) now were below the threshold of ten, thereby giving credence to the validity of the model.

The Durbin-Watson (DW) statistic did detect the presence of autocorrelation, which would imply that some relationship exist between the values separated by a time lag in the residual prediction errors (Durbin & Watson, 1951).

b) Stepwise Method

Following the use of the enter method, further analysis was conducted, as to determine if the model can be further improved, by using the stepwise method.

Table 65: R^2 adjusted values using the stepwise method results summary for 2001 - 2015

Index	1	2	3	4	5	6	7	8
J200	.918	.932	.938	.941	.946	.946	.946	.948*1
J201	.939	.951	.954	.960	.962	.966	.966	.966
J202	.899	.915	.925	.930	.937	.938	*2	
J203	.924	.938	.942	.944	.949	.950	.952	*3
J204	.734	.829	.865	.881	.912	.913	.914	.915

*1 Model 9 was rejected, since the p-value > 0.05 (p=.546), removed EUR/ZAR

*2 SPSS automatically removed predictors, EUR/ZAR and CPI

*3 SPSS automatically removed predictor, EUR/ZAR

source: own research

From Table 65, we can deduce that a stronger model fit is possible, by using a stepwise method in approaching the optimum conditions.

Table 66: Multiple Linear Regression Model Fit percentage results summary for 2001 – 2015 (stepwise method)

Index	Model Fit % Enter method	Model Fit % Stepwise method	IV's removed by SPSS
J200	89.4	94.8	none
J201	90.3	96.6	none
J202	88.6	93.8	CPI, EUR/ZAR
J203	89.7	95.2	EUR/ZAR
J204	86.1	91.5	none

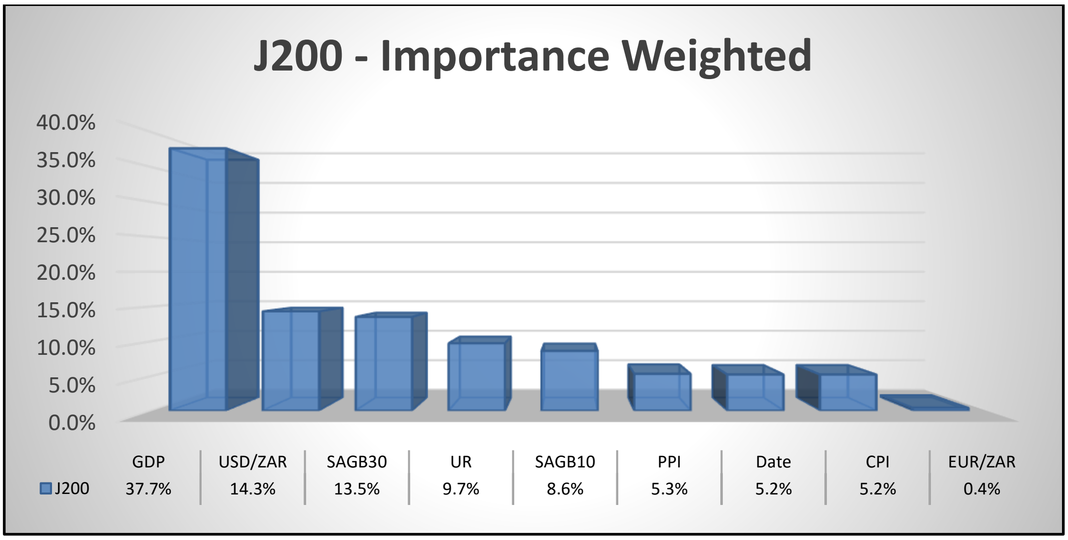
source: own research

An initial study utilising the stepwise method revealed that the VIF values for the CPI and PPI are extremely high, for the model as required for all the dependent variables.

c) Automatic Linear Modelling

SPSS contains a unique function that allows for an automatic linear model to be generated by applying a forward stepwise method with AICc. AICc applies an AIC modelling technique with a correction for a finite sample size (Hurvich & Tsai, 1991). This process creates a near true model with the lowest possible mean squared error.

Figure 23: J200 – Importance Weighted summary for 2001 - 2015



source: own research

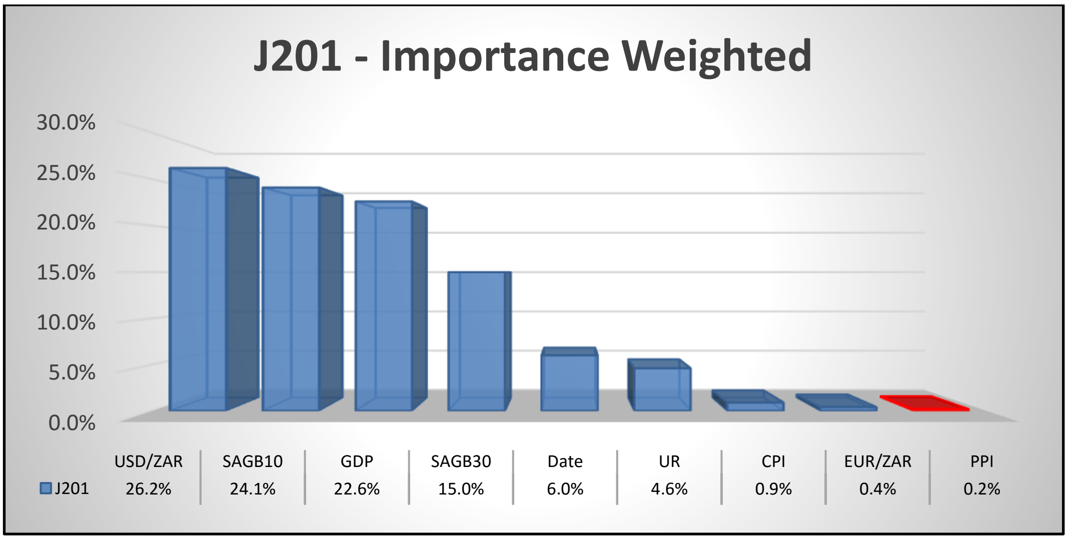
The benefit of automatic linear modelling method over the enter or stepwise method is the fact that multiple combinations and weighted importance are tested (see Table , as to determine the absolute optimum result, thereby creating the best-fit model possible (Akaike, 1973; Cavanaugh, 2012; Hu, 1987).

AIC avoids multiple testing issues and it is possible to compare models with different error distributions. These benefits are valid for both nested and non-nested models (Hu, 1987).

Figure 23 shows the output as derived from SPSS analysis. The importance weighted analysis gives each element a ranking in the model as well as a weighted average thereby creating a unique model for the J200 index that removes outliers automatically. It calculates the best possible combinations with the smallest possible information criterion to allow for the best possible model fit. A similar analysis is conducted for the other indices (see Figure 24 to Figure 27)

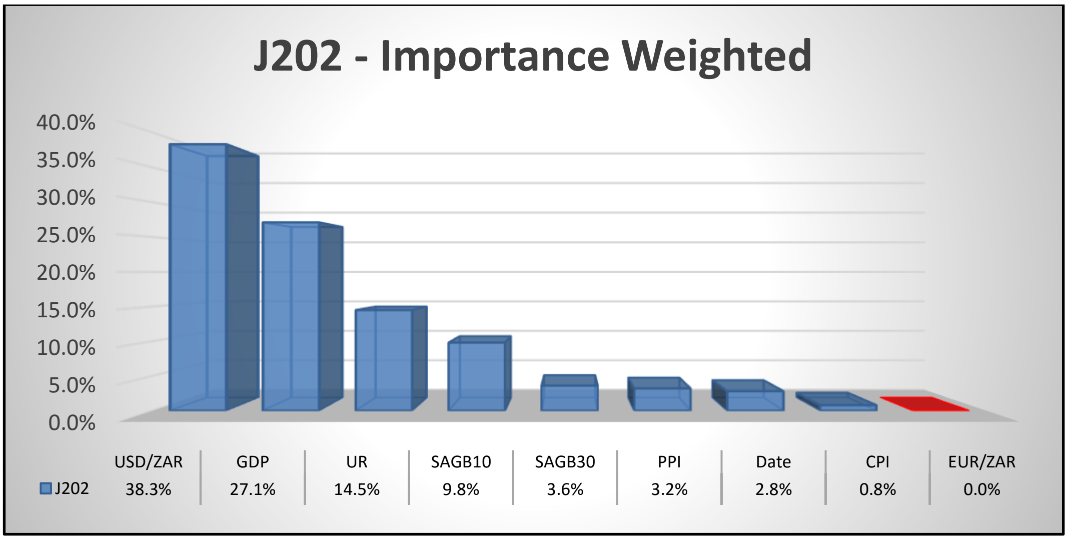
© University of Pretoria

Figure 24: J201 – Importance Weighted summary for 2001 - 2015



source: own research

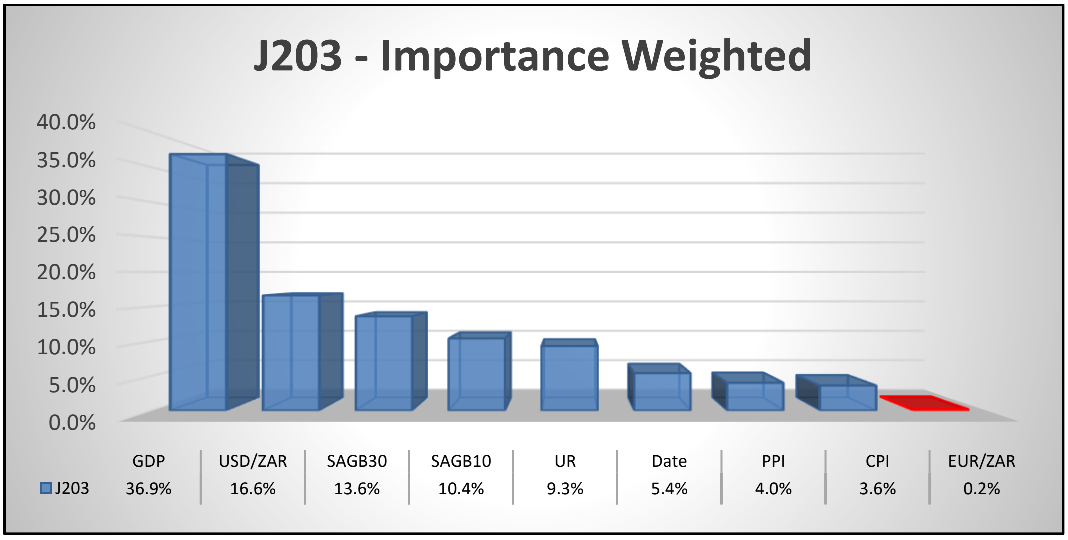
Figure 25: J202 – Importance Weighted summary for 2001 - 2015



source: own research

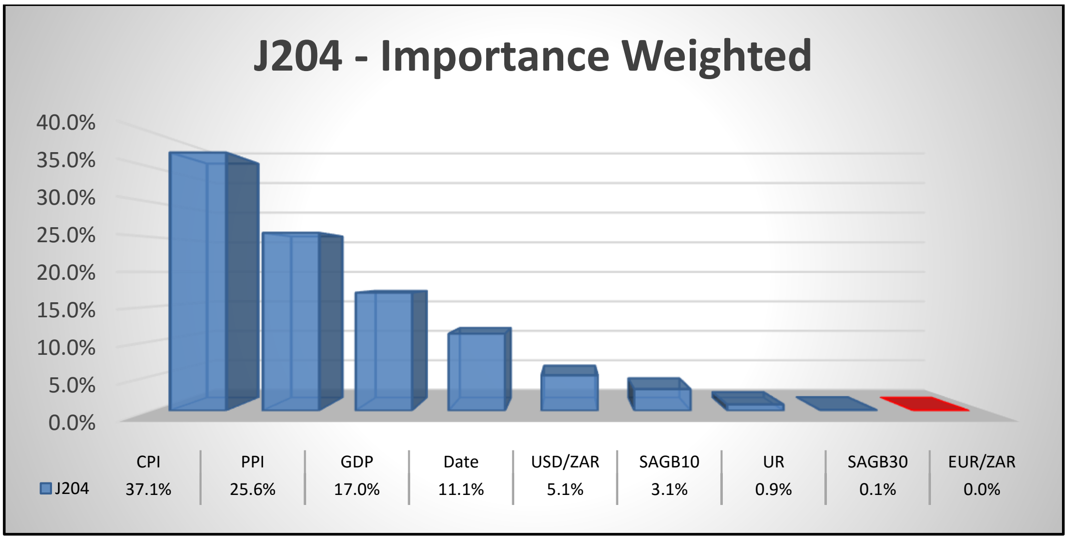
The predictors highlighted in red is excluded from the model as they are not significant (p-value > 0.05). In all cases the importance ranking is also extremely low for these predictors at 0.2% or less.

Figure 26: J203 – Importance Weighted summary for 2001 - 2015



source: own research

Figure 27: J204 – Importance Weighted summary for 2001 - 2015



source: own research

Table 67: Multiple Linear Regression Model Fit percentage results summary for 2001 – 2015 (comparison between stepwise and automatic linear modelling method)

Index	Model Fit % Stepwise method	Model Fit % Forward Stepwise + AICc	IV's removed by SPSS
J200	94.8	94.6	none
J201	96.6	96.5	PPI
J202	93.8	93.5	EUR/ZAR
J203	95.2	95.0	EUR/ZAR
J204	91.5	91.9	EUR/ZAR

source: own research

As per Table 67, the degree of model fit has stayed very consistent for each of the indices.

Equation 24: Multiple regression (J200 – USD/ZAR + EUR/ZAR + SAGB30 + SAGB10 + GDP% + UR + CPI + PPI + Date)

$Y_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9$

J200 = -65671.332 + 754.904 (GDP %) + 944.404 (USD/ZAR) + 2266.642 (SAGB30) – 532.894 (UR) – 1747.546 (SAGB10) + 503.124 (PPI) + 176.863 (Date) – 490.590 (CPI) + 220.315 (EUR/ZAR) index number.

A similar multiple regression can be created for the J201, J202, J203 and J204 indices applying the model coefficients in table 68.

The J201 model should exclude the independent variable PPI, as it is not significant at $\alpha = 0.05$ level ($p = .065$). In the J202 and J204 models, the software excluded the independent variable EUR/ZAR. The J203 model should exclude the independent variable EUR/ZAR, as it is not significant at $\alpha = 0.05$ level ($p = .059$).

Table 68: Multiple Linear Regression Model Coefficients summary for 2001 – 2015 (automatic linear modelling)

Index	β_0	β_1	β_2	β_3	β_4
	Intercept	GDP	USD/ZAR	SAGB30	SAGB10
J200	-65671.332	754.904	944.404	2266.642	-1747.546
J201	-104594.324	827.754	1807.788	3374.731	-4140.632
J202	-64125.848	903.225	1748.555	1327.825	-2346.606
J203	-73947.013	816.740	1109.515	2485.549	-2103.666
J204	-16006.377	165.727	150.376	67.521	-332.713

Index	β_5	β_6	β_7	β_8	β_9
	CPI	UR	Date	PPI	EUR/ZAR
J200	-490.590	-532.894	176.863	503.124	220.315
J201	286.866	-520.173	268.032	**-134.359**	-312.965
J202	-245.569	-908.641	177.525	414.657	**-**
J203	-443.977	-570.575	197.417	475.887	**176.526**
J204	-456.713	67.975	84.500	289.726	**-**

source: own research

CHAPTER 6. Discussion

6.1. Introduction

Each element carries a different importance within the macroeconomic congruency thereby reflecting a dynamic interaction between each independent variable as well as on the market performance. Market volatility due to external factors based on geopolitical tensions creates a unique challenge to businesses and the understanding of the various forces can be a strong competency in becoming sustainable and successful.

The PPI is seen as a leading indicator for the CPI as producers tend to pass on the inflationary pressure to the consumer. This is especially valid due to the oligopolistic nature of most of the business sectors in South Africa. The currency weakness due to resent political interferences has resulted in a degree of risk that created instability that could have a dire consequence in the business potential within the economic landscape.

South Africa is experiencing for the first time since the dawn of democracy the real threat of being downgraded to below investment grade by the credit agencies. If one looks at the consequences similar actions had on Brazil and Russia (also members of BRICS), one can visualise the risk of civil unrest and potential repeated scenes like Marikana into the near future.

Unless we as society and business leaders with the support of government set in motion a plan that will revitalise the economy, we will find ourselves in the same predicament as our greater friends.

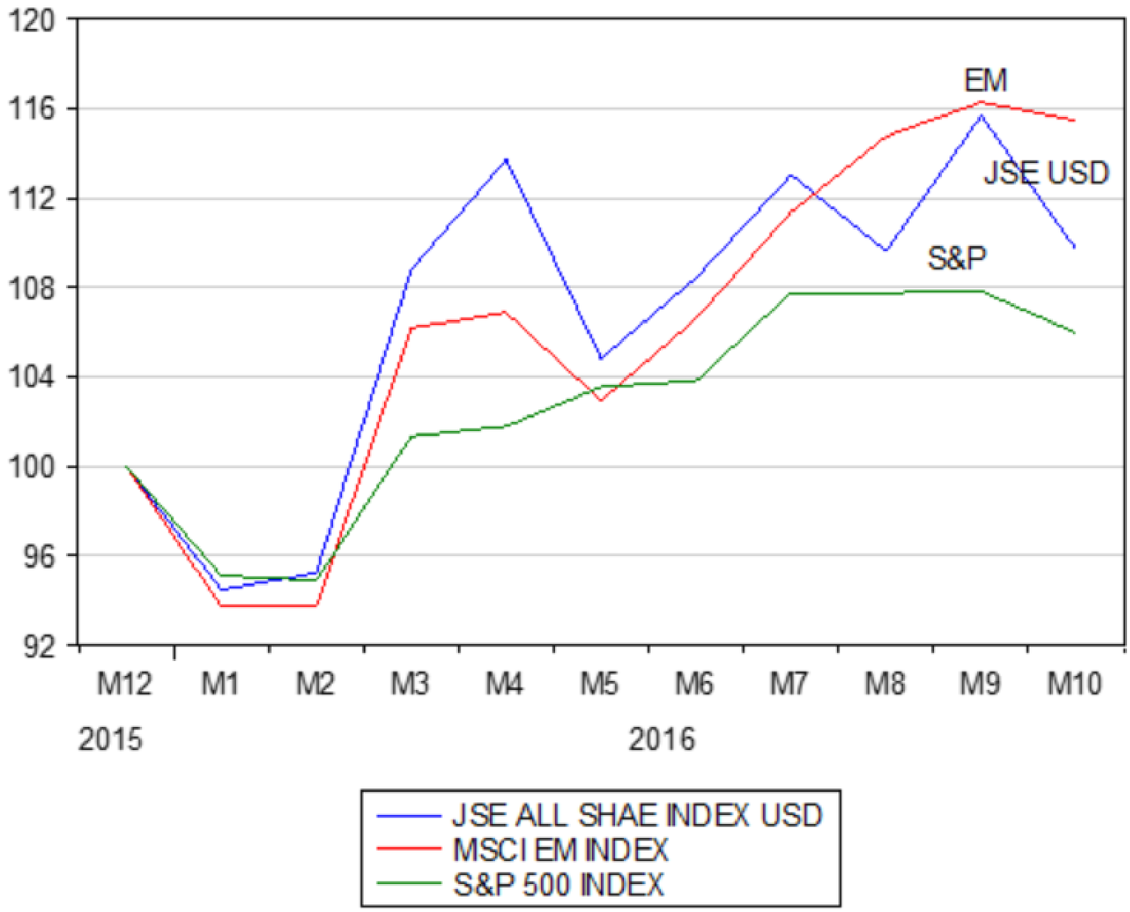
The research attempts to create a basic model to predict and forecast various scenarios that can be used in the planning programs and to build on the Nation Development Plan, focused on the execution and deliver on the promise of the African renaissance.

6.2. Research Macroeconomic Performance

a) Research Question 1: Exchange Rate

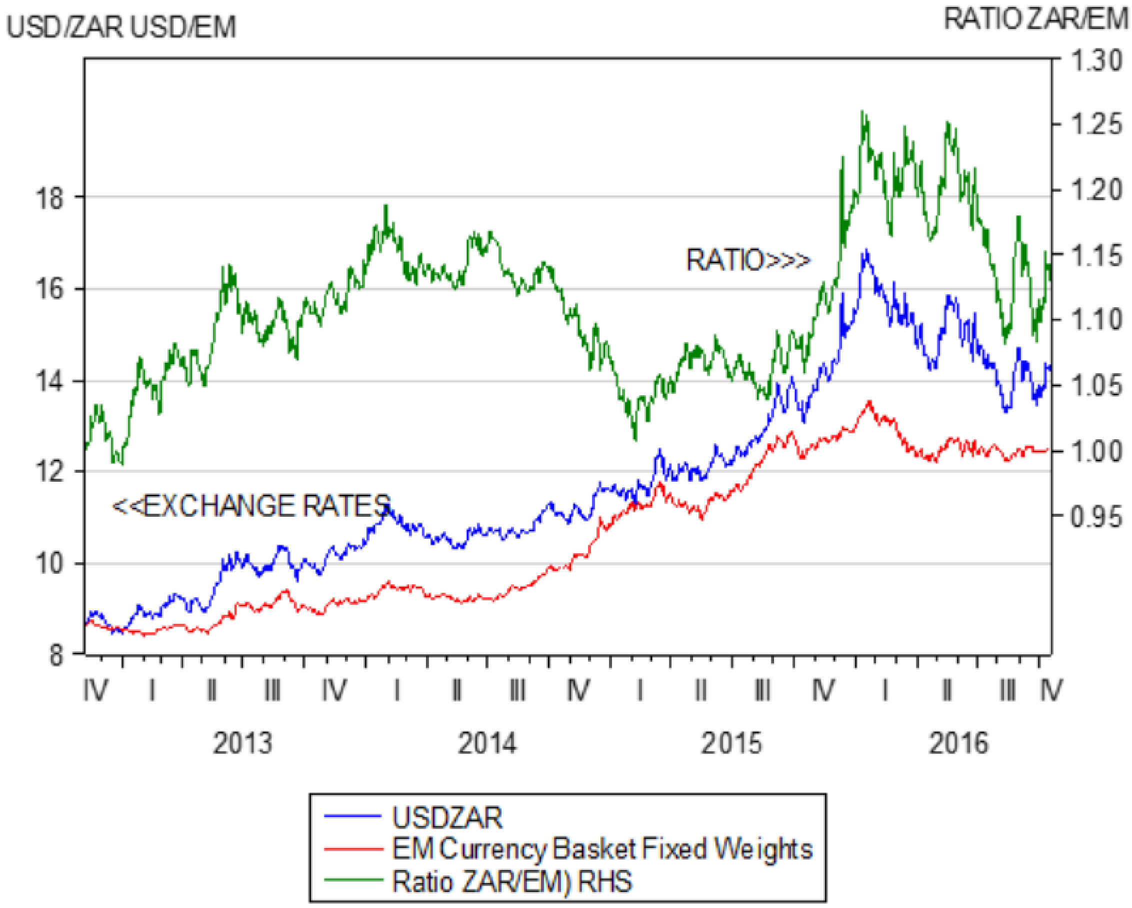
From the research, one can conclude that a predominantly weak currency is preferred as it will assist exports, since moderate positive correlation exist between the USD/ZAR exchange rate and market performance. The research also found that the EUR/ZAR exchange rate was much stronger in its correlation with the market performance. This outcome is as a result that most of South African companies are trading in Euros, and that several of the biggest companies are dual listed on the London exchange. The JSE performance when measured in US dollar terms has performed better than the S&P 500 (US market), however underperformed on the emerging market global index (MSCI EM Index) (see Figure 28).

Figure 28: Total US dollars returns in 2016



source: Retrieved from http://www.zaeconomist.com

Figure 29: Emerging market exchange rate trends (2013 – 2016)



source: Retrieved from http://www.zaeconomist.com

The exchange market has created a far higher risk profile for the South African Rand as a consequence of the political uncertainty and therefore the risk was converted into a much weaker currency when compared with other merging market currencies, as represented in the higher ratio for the Rand (see Figure 29). The research in the paper confirmed that the currency played an integral part in the market, and therefore volatility in the exchange rate will result in market uncertainty, thereby resulting in a risk premium being placed on the stock. Farhi & Gabaix (2016) have showed that stock market returns have a positive covariance with high interest currencies. The paper therefore support this finding. The research also implies that a major market pullback towards the emerging market (EM) currency basket line can be expected once the political risk premium is resolved and the currency ratio returns to normalcy due to evaporated perceived political and economic volatility and risk.

The political uncertainty in the current market can therefore be classified as an inflator of currency weakness thereby placing a disconnect on the fundamentals of the macroeconomic framework (Gabaix & Maggiori, 2015). The paper highlights the importance of both the currency on market volatility and its importance on market performance. Bruno & Shin (2015) makes a case that governments needs to realise the impact that monetary policy has on borrowing rates. The study confirmed that a relationship exists between the various macroeconomic forces, including that of the currency exchange rate (USD/ZAR and EUR/ZAR) and that of the market.

Fillat & Garetto (2015) indicates the importance that FDI has on the market performance and as such this research also reflected the interaction that exist between the currency performance and that of the various market segments. FDI is a crucial enabler for keeping a currency strong; however resent slowdown in FDI has given impetus to a weaker currency. The current purchase of SABMiller (one of the Top 40 companies on the JSE) by Anheuser-Busch InBev for $104 billion (R 1.4 trillion) should however become a significant and crucial boost in helping to reverse the FDI trend.

The business cycle importance in emerging markets (Aguiar & Gopinath, 2006) is a critical component and the relationship with currency volatility should not be underestimated. The research found significance in the market performance independent from the market size. Businesses should therefore adjust its vision statement and forecast models to incorporate the ideal currency, its impact, as well as the customer psychology associated with currency volatility that could impact the business profitability and sustainability (Cavallo et al., 2014).

The current government policy can at best be describe as obfuscating with a caveat of policy frameworks and plans without any execution. With all this cacophony of voices entrenched in the blood of unrest and political mistrust, an urgent realignment will be needed to bring about change for those in business seeking consistency and those in society in need of stability.

© University of Pretoria

b) Research Question 2: Debt Rate

South Africa has always been seen as fiscal conservative regarding the management of its national debt, and as such received consistent praise from the credit agencies for its strong financial infrastructure and frameworks. This is reflected in the excellent debt to GDP ratio achieved in 2008 of only 27.8% (see Figure 30). However, since 2009 we have seen a steady decline culminating in a debt to GDP ratio of 50.1% (see Figure 30). This move is a direct consequence of a similar decline in the GDP growth rate averaging less than two percent since 2009 until now. These actions have been seen as a contributing factor towards the potential down grade by the credit agencies.

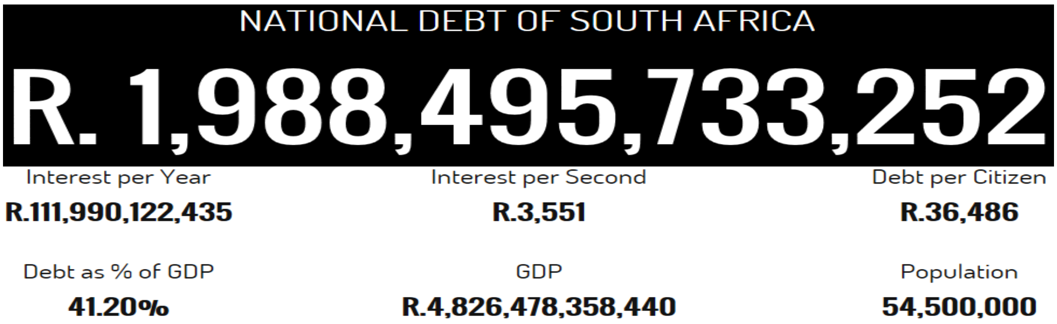
Figure 30: South Africa government debt to GDP ratio (2000 – 2015)

Source: Retrieved from http://www.tradingeconomics.com/south-africa/government-debt-to-gdp

The total national debt of South Africa is about to cross the two trillion Rand mark (see Figure 31). The implication of this debt burden on the state lies in the annual interest payable which currently stands at nearly R 112 billion. This debt trap as described by Bond (2016) creates ever increasing borrowing cost, especially as it is a key aspect under review for the credit agencies decision in a possible downgrade. Social demands like the “fees must fall” campaign which demands free university for the poor has placed on the government additional fiscal constraints adding to the problem of an increased current deficit.

The culmination of all these debt related problems has pushed the yield up on both the 10-year (SAGB10) and 30-year government bond rate (SAGB30). The research proved that a negative correlation exists between the SAGB10 and the market performance, as well as between the SAGB30 and the market performance.

Figure 31: National debt of South Africa – Debt clock 2016



Source: http://www.nationaldebtclocks.org/debtclock/southafrica

The ability for government to use debt as a lever in creating green shoots that give rise to a better environment for growth is dramatically reduced under a reduced global growth position as well as suffering from several geopolitical shocks, internal as well as external (Peleg & Arieli, 2006), at regular intervals. These actions reduce the fiscal space and place a burden on the treasury to reduce fiscal risks within a low growth economy. Clift & Tomlinson (2008) notion on the balance of payment (Farhadian & Dunn Jr., 1986) being affected is therefore amplified by the debt and the impact it has on the market performance as witnessed in the research. The research proves that a 22.1 % combined importance (see Table 69) can be placed on the government bond yield rate in the case of the Top 40 J200 index (see appendix 9.22 i – J200) as found in the automatic linear model created to predict market performance.

Table 69: Automatic Linear Modelling – SAGB10 & SAGB30 Importance %

Index	SAGB10	SAGB30	Combined
J200	8.6 %	13.5 %	22.1 %
J201	24.1 %	15.0 %	39.1 %
J202	9.8 %	3.6 %	13.4 %
J203	10.4 %	13.6 %	24.0 %
J204	3.1 %	0.1 %	3.2 %

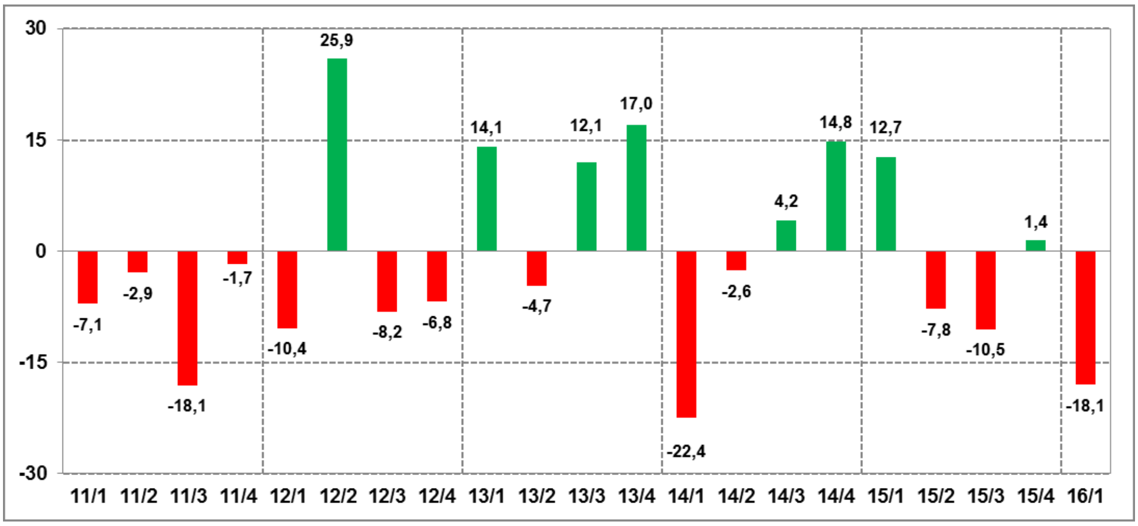
source: own research

The research found a similar picture regarding the other indices with the midcap index (J201) having the strongest combined contribution at 39.1% pertaining to debt and the fledgling index (J204) the weakest combined importance at only 3.2%.

c) Research Question 3: GDP Growth Rate

The research supported the circular flow diagram (Cooper & John, 2011; Miles et al., 2012) whereby a strong link exist between a firm's performance and its macroeconomic GDP growth rate. The overall negative sentiment within the growth rate can be further analysed as to determine the root cause for the significant reduction in the period following the great recession. Figure 32, 33 and 34 give an example of one subsection separated by each sector that forms the basis of the economy. The primary sector, which employs predominantly low skill workers suffered the most, and contributed the most towards the negative trend. The mining sector had a major contraction due to depressed commodity prices, mainly as a result of the slowdown in the Chinese economy. Another component of the primary sector is agriculture, which also contracted due to the drought that plagues the country at the moment.

Figure 32: Primary sector: Mining and quarrying growth rate (%)

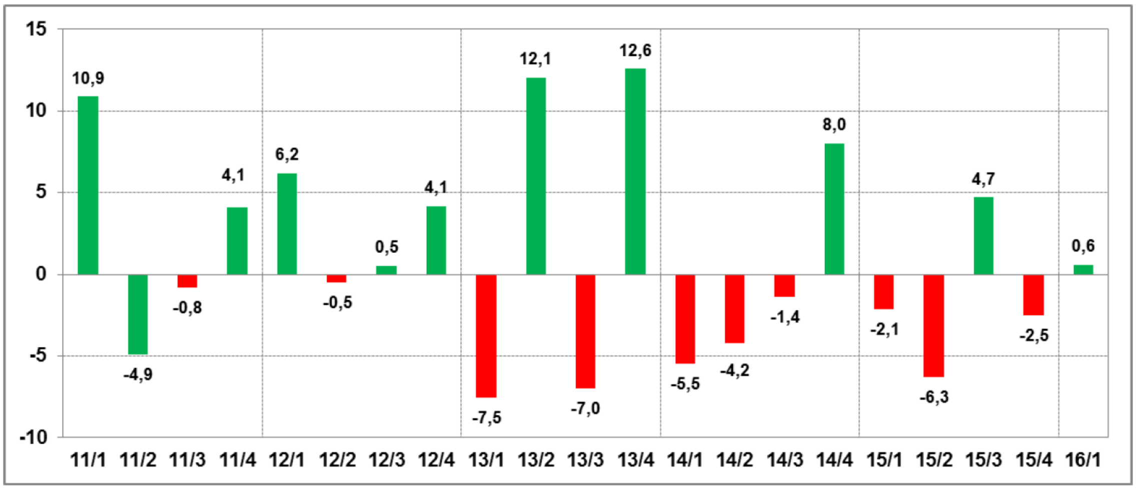


source: (Statistics South Africa, 2016c)

The research conducted by Kung (2015) describe the various industries that drives the GDP growth rate. The research found that a close correlation exists between the various indices that is heavily weighted by a specific sector. This will therefore confirm the fact that the GDP growth rate as a critical key in industry performance and by default the individual business performance.

The uncertainty in the country currently can be found in the political sphere as well in economic policy. This creates a risk premium that translates into volatility which Segal et al. (2015) consider as a primary reason for businesses to delay investments. The research found that the relationship between the GDP growth rate and company performance to be strong. A delay in investment therefore will discourage business growth and therefore GDP growth will be negatively impacted. The FDI into the country is paramount for the future.

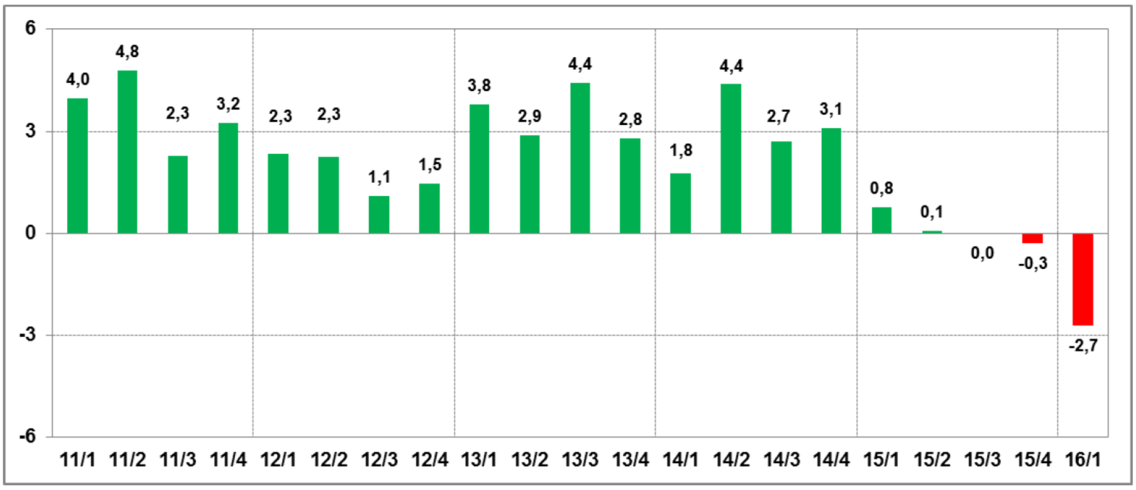
Figure 33: Secondary sector: Manufacturing growth rate (%)



source: (Statistics South Africa, 2016c)

This is amplified through a study by Fillat & Garetto (2015) that support the connection between companies risk appetite and that of the potential profitability that is available. The study supports this as GDP forms the most important component of the automatic linear model that was created for each of the indices.

Figure 34: Tertiary sector: Transport, storage and communication growth rate (%)



source: (Statistics South Africa, 2016c)

As per Equation 1, the GDP is a summation of four primary components consisting of:

- Consumption,
- Investment,
- Government expenditure and
- Net exports (Cooper & John, 2011; Miles et al., 2012)

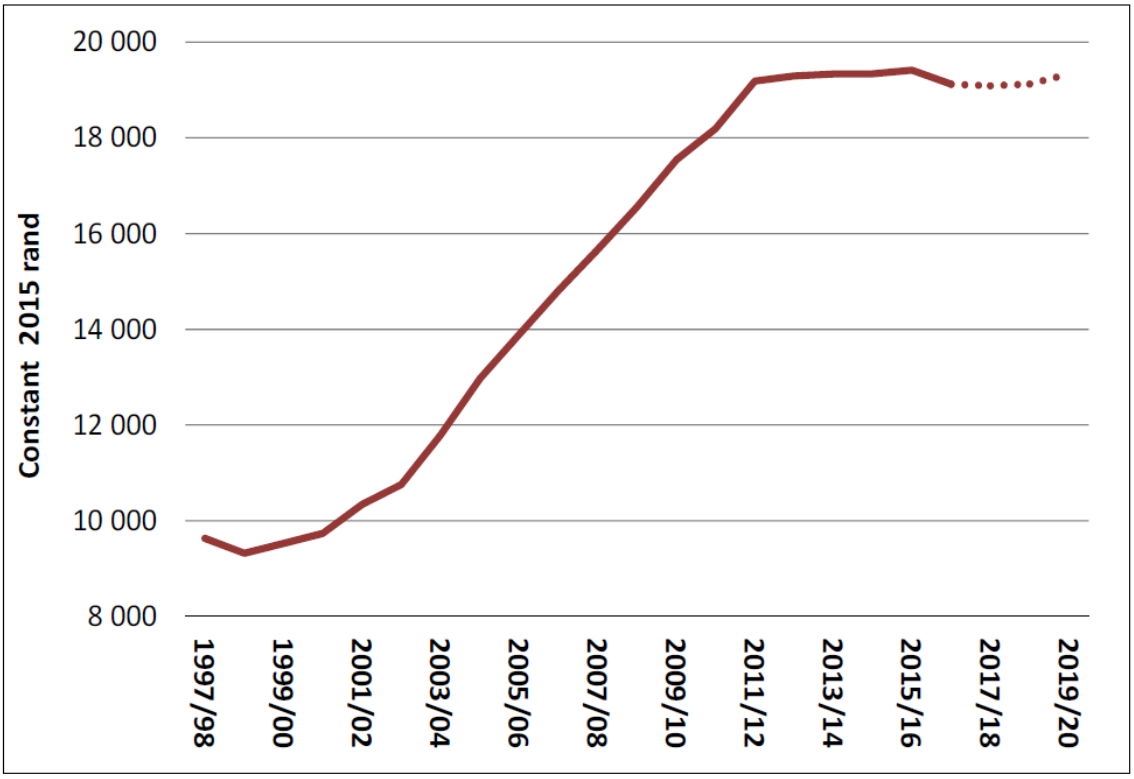
Consumption is under pressure due to consumer behaviour that is negatively impacted by both political as well as economic uncertainty and overall negative sentiment within government policies around taxation. According to the National Association of Automobile Manufacturers of South Africa (NAAMSA) in their latest press statement dated 1 November 2016, vehicle sales in October 2016 have declined 10.1% (compared to October 2015). The automotive sales are a good barometer for durable goods which is a key component of the consumption constituent.

Investments are at an all-time low, as most companies cut back on capital expenditure investment projects due to the political and economic uncertainty as well as increased risk associated with a potential downgrade by the credit agencies. Most companies have strong balance sheets, but is reluctant to do any investment within the borders of the country. Larger companies do however conduct investments outside of South Africa, especially into Africa as a counter to the poor conditions found within the South African economic landscape. Fillat & Garetto (2015) describes the importance of FDI to the overall growth strategy of an economy, however with both FDI and internal investment drying up, the scope for investments to be the driving force for growth diminish rapidly.

Government expenditure has always seen as a historical tool for turning the tide against an underperforming economy. The best case in point is the infrastructure spending boom that was experienced in advancement of the 2010 Soccer World Cup, that boosted the economy (See Figure 35 for the rapid per capita spending increase between 2003 and 2011). However, since the 2009 recession, the fiscal and monetary policy created a low growth scenario with even more deterioration in the last year, resulting in lower tax revenue.

The rapid exchange rate depreciation associated with increased interest rates have resulted in an increased capital flight which puts pressure on the ratings agencies to downgrade the debt. This in turn reduces capital available for current programs, which will in turn require austerity to be brought in to curtail the budget deficit (see Figure 36). The fiscal room to manoeuvre therefore reduces dramatically and therefore government expenditure will need to be targeted to only those programs that deliver on their returns and to cut any fruitless expenditure that is not core to the medium-term policy commitments (National Treasury, 2016).

Figure 35: Main budget spending per capita in 2015 prices



**Non-interest expenditure, excluding financial transactions, deflated by CPI*

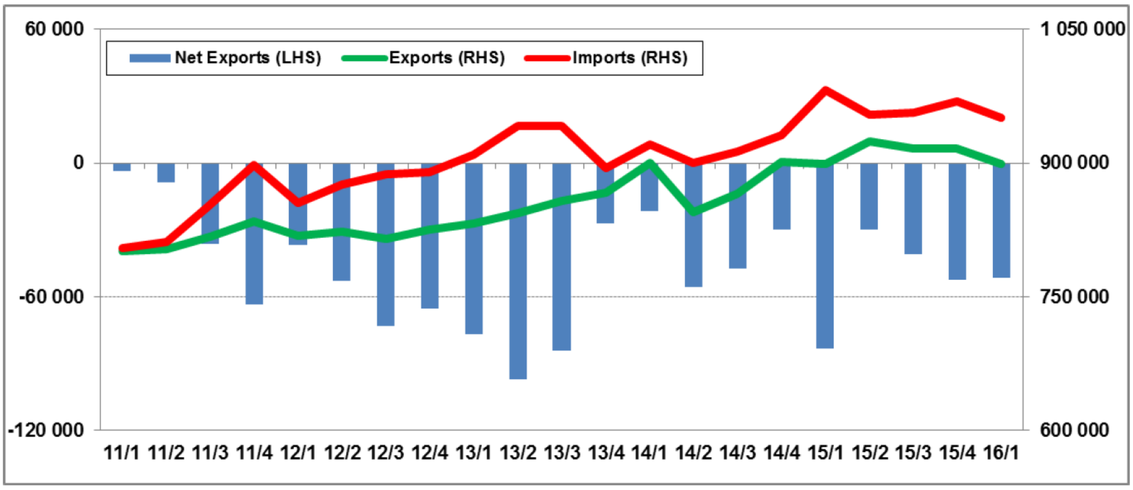
source: (National Treasury, 2016)

Figure 36: Main budget spending per capita in 2015 prices

R billion/Percentage of GDP	2015/16 Outcome	2016/17 Revised	2017/18	2018/19 Medium-term estimates	2019/20
Revenue	**1 220.9**	**1 301.0**	**1 416.9**	**1 537.9**	**1 670.4**
	29.9%	*29.7%*	*30.1%*	*30.3%*	*30.4%*
Expenditure	**1 373.1**	**1 451.5**	**1 564.0**	**1 676.0**	**1 809.4**
	33.6%	*33.1%*	*33.3%*	*33.0%*	*33.0%*
Budget balance	**-152.2**	**-150.5**	**-147.1**	**-138.2**	**-139.0**
	-3.7%	*-3.4%*	*-3.1%*	*-2.7%*	*-2.5%*
Total net loan debt	**1 804.6**	**2 004.4**	**2 209.2**	**2 417.1**	**2 632.4**
	44.2%	*45.8%*	*47.0%*	*47.6%*	*47.9%*

source: (National Treasury, 2016)

Figure 37: Exports and Imports of goods and services (R million, seasonally adjusted and annualised)



source: (Statistics South Africa, 2016c)

Net exports as reflected in Figure 37, has had a negative trend for a substantial period which reflects the importance of creating an export driven economy has on the overall GDP growth rate.

As all the components that forms GDP growth are under pressure, the net effect is that GDP growth will remain constraint into the future. Miles et al. (2012) supports this as the South African model for growth is heavily reliant on the mining sector for export (with gold, platinum, diamonds and iron ore) and the automotive sector. These sectors contribute significantly to keeping the trading balance close to a net zero sum gain position.

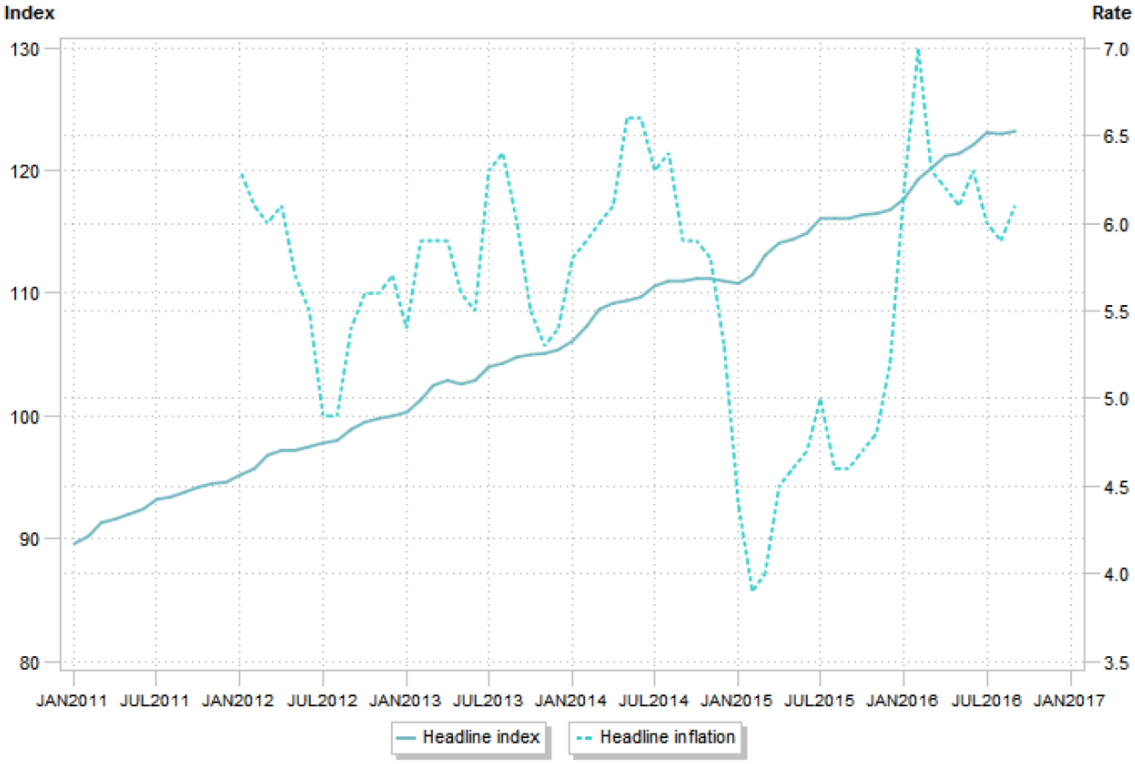
d) Research Question 4: Inflation Rate

Research conducted by Jotikasthira et al. (2015) found that a correlation exist between short term rates and inflation. The research conducted agrees with their findings and noted that the correlation between the inflation parameters and indices are equally strong. The correlation (with a Pearson correlation between .841 for the J204 to .968 for the J201) is proof of this. The interdependent correlation between the CPI and PPI is .997 which also speaks to the fact that either parameter could be used in the study.

Kung (2015) research found that bond yields are a critical factor. The research done confirmed this as both the 10-year bond and 30-year bond had good negative correlation to the market. This support the notion that both monetary as well as fiscal disciplines are needed to steer the ship through the treacherous economic seas. The close connection between growth and rates and the negative impact high rates have on growth as found by Bauer et al. (2014) and Tarawally et al. (2015) was confirmed by the study.

Figure 38 shows how the headline inflation volatility in the short-term creates long-term risk, as policy framework implementations are not giving the resultant outcome. Shocks within the financial system creates risk and political uncertainty impacts the market perception which increases the inflation through secondary effects (for example a weaker currency causes an increase in the import cost of oil, which in turn increases fuel prices that drives food prices higher, resulting in increased food inflation). Segal et al. (2015) points out the link between growth and its effect on consumption. The research found that the inter alia relationship that exist between the various elements all contribute to the growth perspective and the snowball effect towards market performance.

Figure 38: CPI headline index numbers and year-on-year rates (2011-2016)



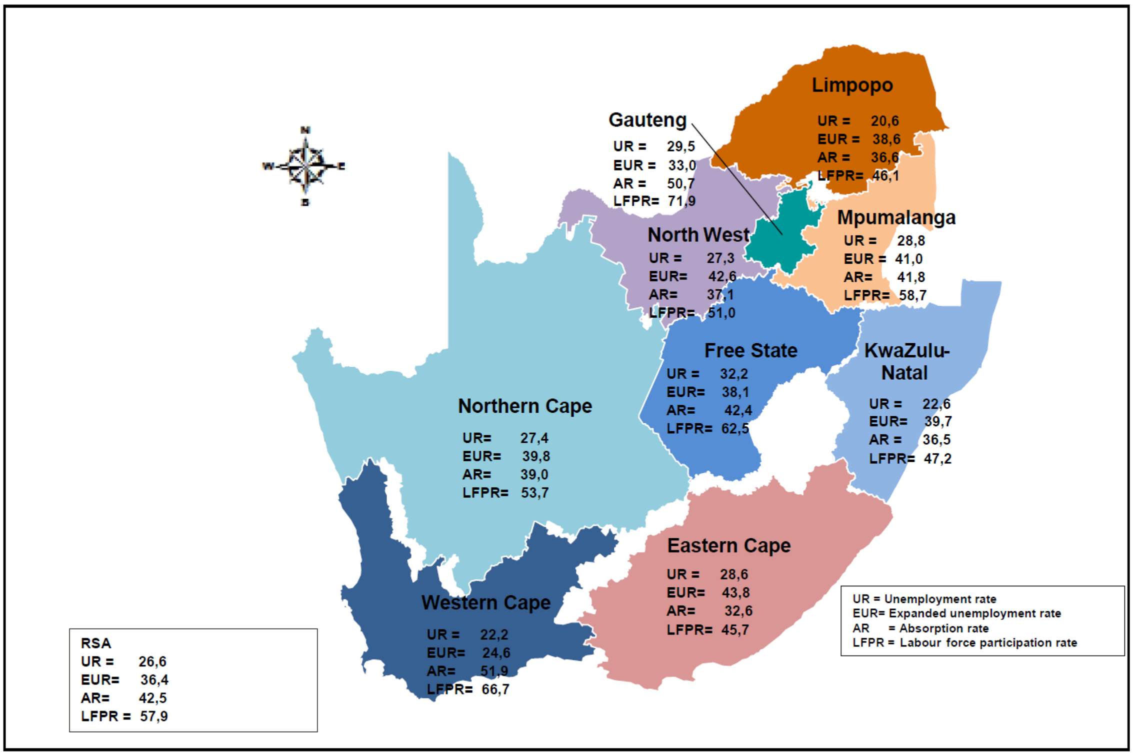
source: (Statistics South Africa, 2016b)

e) Research Question 5: Unemployment Rate

The research found that no significance exists between the unemployment rate or any other construct related to it (absorption rate and labour force participation rate) and how markets perform. From the research, we can determine that company performance is independent from how the unemployment rate moves.

As much as a social responsibility should form part of each business strategy due to the legacy of apartheid, the unemployment condition in the country should be independent from the economic evaluation. It should be noted that the exclusion of the youth in economic activity could potentially create an under skilled generation that would create a void within future company strategies. Figure 39 shows the latest unemployment picture within each province. The unemployment figures should be evaluated in a more clinical way, as it drives emigration from provinces like Limpopo and the Eastern Cape towards Gauteng and the Western Cape placing a heavy constraint on social and physical infrastructures.

Figure 39: South Africa – Quarterly Labour Force Survey: Unemployment rate Q2:2016



source: (Statistics South Africa, 2016d)

6.3. Research Concerns

The biggest concern found is the lack of a coherent ICT program within the various key players (business, government and labour) as to assist in the policy creation.

Baud et al. (2015) identified several benefits, including the possibility to streamline work processes, reduce corruption practices and improve efficiency. The use of a digital feedback system will create more transparency as well as enforcing a degree of accountability thereby increase surveillance with a natural reduction in corruption, resulting in strengthened state competencies.

With geographic information systems both scientific-codified and contextual-embedded knowledge can be incorporated into governance processes using mobile phone networks to map water systems, conduct town planning and evaluate public works, applying several types of ICT modes of communication systems. Another practical application is using the digital spatial planning database to determine municipal boundaries. This follows the policy change towards reducing segregation as to produce cross-subsidisation giving rise to a smooth out of inequalities through a political transformative process (Baud et al., 2015).

The digital evolution has created a divide between the Northern countries (Europe and North America) and that of Africa (especially sub-Saharan Africa – SSA countries) in the area of knowledge resources and the ability to publish scientific research in journals on the African continent (Kanyengo, 2009). Kanyengo (2009), also points out that several problems exist in the digital environment that places electronic libraries at risk on the African continent. These include poor information policies that support the preservation and permanent storage of knowledge resources.

The role that big data can play in the eradication of unemployment should not be underestimated. Historically economically active low-income people as well as small enterprise companies were excluded in being served by financial institutions, however recent advances and innovations in telecommunications technology has transformed this landscape, giving rise to a new breed of customer. The digitisation strategy of financial institutions allowed big data to measure the creditworthiness of potential borrowers and thereby reduce transactional costs resulting in the creation of a more diversified and disruptive internet-only banking industry (Kshetri, 2016).

Kuan, Rombe-Shulman, & Shittu (2015) argues that adopting new technology can be advantageous, however a persistence of traditional practices becomes a hindrance to economic advancement and growth. By embracing new technology, looking at technological competition as well as network externalities, traditional industries can be transformed into becoming more cost effective and drive innovation towards greater growth, even if firms operate in a declining industry (Kuan et al., 2015).

Poor infrastructure whereby most government operations are still done in a paper-based environment further hinders development and evolution of a more efficient system. Financial constraints in addition prevent the training of competent personnel that stay abreast of developments in the ICT industry, as well as making the information accessible to all users within a safe environment (Kanyengo, 2009). Jorgenson & Vu (2016), indicate that this can be overcome by employing an ICT policy framework consisting of the following seven dimensions:

1. ICT connectivity and access
2. ICT usage
3. ICT legal and regulatory framework
4. ICT production and trade
5. ICT skills and human resources
6. Cybersecurity
7. New ICT applications

The dynamic development of mobile coverage within the SSA region with greater competition between operators, has brought greater GDP growth and improved real GDP per capita (Djiofack-Zebaze & Keck, 2009). The liberation of previous monopolistic markets (Horwitz, 1992) have created the catalyst for the evolution of competition in the mobile segment in Africa (Djiofack-Zebaze & Keck, 2009). With the privatisation of the South African telecommunications industry (Makhaya & Roberts, 2003), the need for improved regulation created a restrictive and near monopolistic competition. The mobile industry has become the dominant force in connecting people to the knowledge based industries of today.

By manufacturing a topographic view with spatialised knowledge, opportunities can be created with digitisation and using digital databases and ICT-based systems. This is especially important when knowledge is required around concentrations of inequalities in urban centres as well as getting data applicable to crime, health or environmental vulnerabilities, as to support local government policies in an e-governance framework (Baud et al., 2015).

As the world moves into the fourth evolution of great knowledge expansion, the need to harness the power of quality data becomes a necessity in the era of an ever-increasing digitisation and advanced mega data analytics (Loebbecke & Picot, 2015). Loebbecke & Picot (2015), also points out that both macro and micro-economic empirical studies of digitisation and mega data analytics will drive the future changes in business models with potential societal employment effects, in the form of a labour substitution, with serious detrimental consequences.

On the other hand, through a knowledge management system, ICT can help in bridging the productivity gains needed for emerging economies to close the gap to the digital divide. This will assist emerging companies to succeed in their knowledge catch-up, competence and performance strategy in a globalised competitive world (Luo & Bu, 2016). This would create the ideal environment for knowledge exchange (Munro, 2016), to occur that would generate the breeding ground for think tanks and supportive businesses. One such industry is the health sector that can use a telehealth network that can assist in better health care through applying innovation diffusion theory (Newman, Bidargaddi, & Schrader, 2016) in its framework.
The digital roadmap according to Novak (2015), brings an evolution that will deliver the following:

1. Deliver services more efficiently
2. Give constituents a self-service option
3. Reduce the number of people standing in-line
4. Digitise existing services and processes

This will allow the e-Government to become an on-line service delivery agency. The next part of the evolution will take these principles to a fully-fledged “no-line” digital system, which will create new services (Prins, Broeders, & Griffioen, 2012) with new delivery and business models (Novak, 2015) utilising and adopting digital platforms that will radically transform how we interact and communicate (Sanz & Crosbie, 2016). This however needs to be done in such a way that it will not cause serious harm to the economic, socio-cultural and political life of citizens (Van der Burg & Van den Bulck, 2015) while ensuring a sustainable development that allows for growth in wealth and an improved environment (Swilling, 2013) that our children will inherit.

By increasing the value proposition, the government can apply a servitisation pyramid (Coreynen, Matthyssens, & Van Bockhaven, 2016) to customer (citizen) processes. Through an increased support function, the training of key personnel will lead to an integrated system, improving the efficiency and reduce resource and capital waste, under the auspices of good governance. The practical application requires a transformative digital framework which encompass the citizen's experience with operational processes and the business (government) model employed (Westerman, Calméjane, Bonnet, Ferraris, & McAfee, 2011). These elements are engaged in the digital capabilities created through analytics, IT integration and solution delivery.

Digital engagement is therefore key in achieving a transformative digital vision operating along an iterative transformation roadmap, to drive change management through the KPI's of digital governance utilising strategic assets and digital investments (Westerman et al., 2011). It is critical to ensure that the government roadmap necessitates a comprehensive and all-embracing ICT policy framework, that begins with broadband connectivity through to the development of "smart cities" as to take advantage of big data analysis and to create the necessary building blocks to have an "internet of things" (Jorgenson & Vu, 2016). The digital government analysis framework needs to be implemented in four stages (Janowski, 2015).

In addition the above framework needs to incorporate a transformative road map which can be implemented in three phases (Banfi, Begonha, Hazan, & Zouaoui, 2014):

1. Phase 1: Transparency
2. Phase 2: Strategy
3. Phase 3: Transformation

This program can be tailor-made for government and real benefits can be achieved through applying a front end, back end and big data dimensions, similar to that of large firms. An excellent example of the practical application of a digitisation plan can be found in the health sector, as used in the United States, where a five year plan was created to implement a interoperability of health information through the use of an IT system, creating an improvement of service delivery to its citizens (DeSalvo, 2014). By setting clear goals in the IT strategy plan great advancements can be made to the benefit of all mankind (DeSalvo, 2014).

CHAPTER 7. Conclusion

7.1. Introduction

The macroeconomic landscape is marred with pitfalls and potential explosive risks that could create an unstable economy on the brink of collapse. As we stare into the abyss, standing on the edge of a catastrophic disaster, we will need to create unity and build confidence in the institutions that works, and create leadership that can mitigate fiscal risks and set goals that is measured through actions rather than words.

7.2. Goals achieved

a) Goal 1

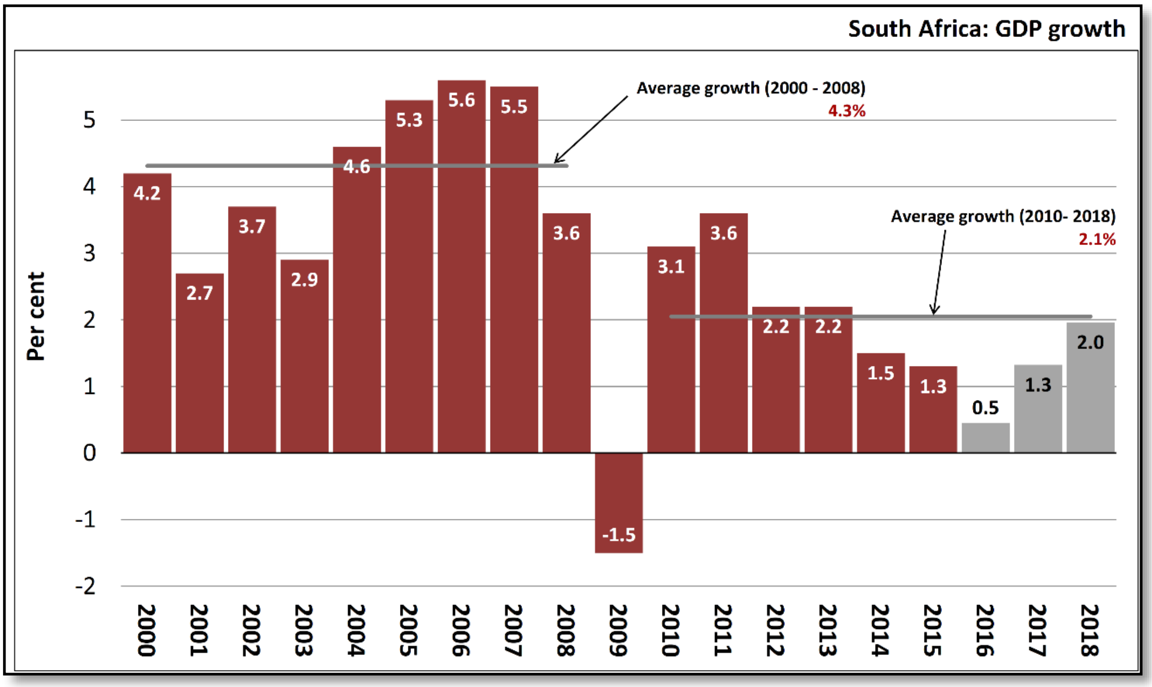
Goal 1:	To provide an overview and analysis of the national and international context related to business growth within a South African macroeconomic environment.

The South African economy has stalled, and the growth engine has run out of gas. The research has showed that GDP growth is the key to every index independent to the size of the company. The automatic linear model for the J203 All Share Index ranks the GDP of South Africa as the number one contributor and gives it an overall importance weightage of 36.9%. The GDP forecast according to the National Treasury predicts a 0.5% growth rate for 2016 (see Figure 40) the lowest since the 2009 great recession which followed the financial crisis of 2007 and subsequent subprime mortgage crisis in the United States.

From a national context, business growth would therefore be negatively impacted, and as such selective strategies should be created that is built around innovation and cost containment to overcome this major constraint. The research confirmed that GDP growth is a critical vehicle for businesses to flourish and be sustainable into the future.

From an international context, leadership within the political as well as fiscal realm builds confidence within the international community which translates into FDI. This could influence the present, thereby changing the path towards the future. Growth combined with the support of institutional strength and structural reforms forms the backbone for credit agencies support. These actions should form part of the national interest, thereby shifting the momentum of policy frameworks beyond that of crisis management. The fiscal framework should be a collective effort between government, business and labour, to drive the contingency liability risk lower (mainly found within SOE's), which in turn release fiscal space towards infrastructure development, that can drive the GDP growth above four percent. This is needed to alleviate poverty and support job creation.

Figure 40: South Africa GDP forecast

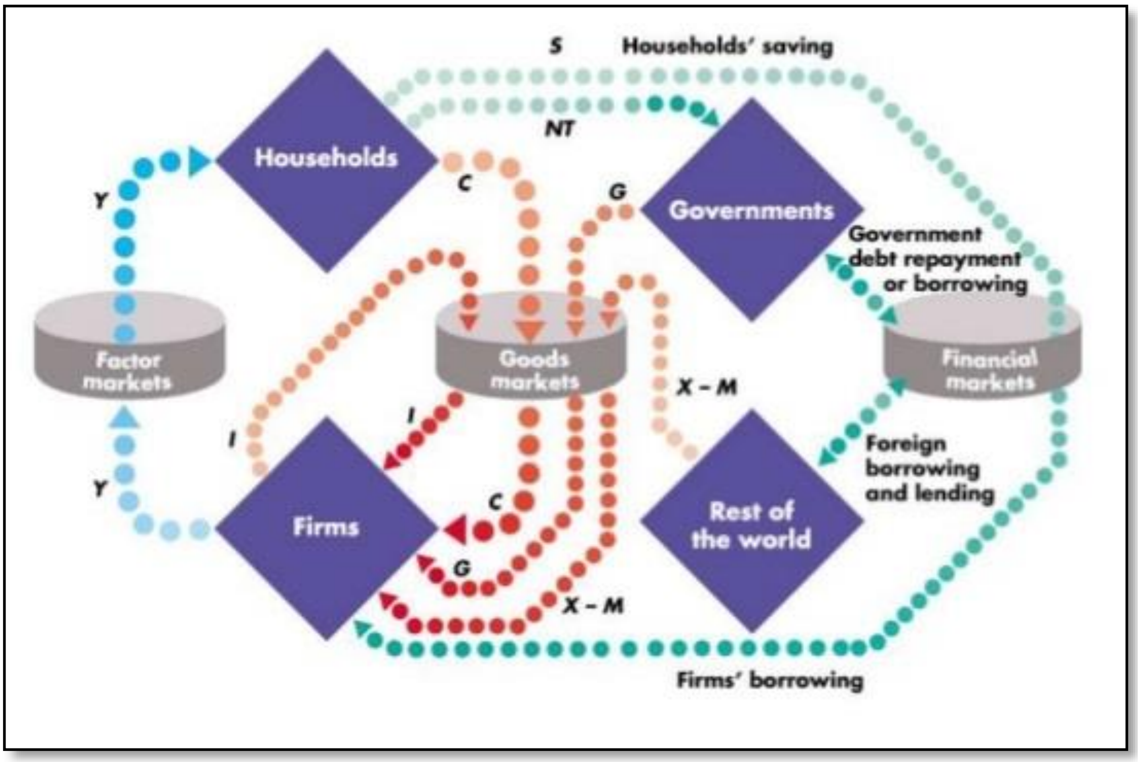


source: (National Treasury, 2016)

From the research the goal to provide an overview and analysis of the national and international context related to business growth within a South African macroeconomic environment was achieved, as it places GDP growth at the centre of the circular flow of expenditure and income (see Figure 41).

As the research confirmed the importance of the GDP growth, businesses, government and labour should speak with one coherent voice under the auspices of a brighter future, the need to cooperate and strengthen the vision, framework and implementation strategies.

Figure 41: The Circular Flow of Expenditure and Income



source: (Parkin et al., 2010)

b) Goal 2

Goal 2:	To provide and examine the potential relationship that exist between the size of businesses and the direct or indirect impact various macroeconomic conditions have on its sustainability.

The research found that the size of the firm doesn't have any influence on the relationship between the market and the macroeconomic elements. From the large cap stocks (J200) through to the fledgling market (J204), all indices were impacted by the various elements to some degree. The size of the stocks reflected in the index, does however constitute different ratings towards each macroeconomic element, and as such becomes important. The research found that inflation (as represented in the CPI and PPI data) is the most important factor for small companies (J204) with a combined importance rating of 62.7% (see Appendix 9.22 i – J204). On the other hand, the research found that inflation played a much smaller importance for large companies (represented by the Top 40 index – J200) with a combined importance of only 10.5% (see Appendix 9.22 i – J200).

The understanding of inflation on the business becomes key, and as such government programs focused on small and medium enterprises (SME's) should understand the impact of inflation, on small companies, and adjust the program structure and support around reducing inflationary contributors away from the sector. This therefore creates both a direct impact scenario whereby most SME's fail within the first 18 months, and if inflationary elements can be reduced, this failure rate can be reduced. Indirect impact should be also considered from a supply chain perspective whereby support in the form of policies and frameworks should be created around removing inflation from the SME supply chain.

Large companies on the other hand are mostly shielded from inflation as economy of scale and scope would result in an oligopolistic environment whereby inflation is merely passed on to the consumer. The research concludes this in the low contribution importance associated with inflation characteristics within the overall economic model. Growth, currency stability and government debt are much more important for large companies, as they require stability, as to allow for a sustainable business model. From large (J200) to medium size companies (J202), the GDP growth is a key component for market performance.

The goal to provide and examine the potential relationship that exist between the size of businesses and the direct or indirect impact various macroeconomic conditions have on its sustainability was therefore achieved.

c) Goal 3

Goal 3:	To identify any implication or significance that any one subject or combination of components could have on the business model, related to the macroeconomic environment it operates within.

From the research a clear picture emerges whereby some macroeconomic elements have far greater significance within the business model. On an individual basis, the currency, debt rate, growth and inflation showed significance (p-value ≤ 0.05) while the unemployment rate, absorption rate and labour force participation rate had showed almost no significance (the exception being the unemployment rate and J204, and the absorption rate and J201, being significant (p-value ≤ 0.05). As much as the unemployment rate is a very serious factor on a social and moral level, the fact that the research showed that it is not significant on the basis of business performance should be considered in how a business drive its economic policy, independent from its social responsibility.

In the combination model reflected in the automatic linear model created, this picture repeats itself with the unemployment rate scoring very low for the J204 index at 0.9% importance to only 14.5% for the J202 index (see Appendix 9.22 i – J202 and J204). The J200 index scored 9.7%, the J201 index scored 4.6% and the J203 index 9.3% (see Appendix 9.22 i – J200, J201 and J203). The data supports the individual performance and reflect the fact that the very high unemployment rate does not impact business directly, and confirms that consequent supply and demand curve dynamic supports business performance on a low labour cost component level.

The goal to identify any implication or significance that any one subject or combination of components could have on the business model, related to the macroeconomic environment it operates within is therefore achieved and supported by the research findings.

d) Goal 4

Goal 4:	To recommend ways for businesses to recognise pre-emptive macroeconomic trends and to use it as part of strategic planning to actively set the business vision and goals.

Business strategy should have a very strong build in program that caters for the various macroeconomic forces. The majority of macroeconomic elements have a certain predictive element as well as independent forecast models derived from contributing factors as well as inter alia basket of goods that is related to the outcome, for example the impact fuel prices have on consumer behaviour, factory output and inflation.

The research found strong correlations between the various macroeconomic elements, and such trend analysis can become a very important tool in the pre-emptive modelling for businesses to derive forecast models that set the vision and goals for planning and to have a sustainable business strategy.

The goal is to recommend ways for businesses to recognise pre-emptive macroeconomic trends and to use it as part of strategic planning to actively set the business vision and goals. This is therefore supported by the data and is achieved through a comprehensive automatic linear model that can be used as a predictive tool for business strategy planning. Probability analysis for various scenarios can therefore be created dependent on the business core competencies as well as long-term strategic business goals set out in a macroeconomic environment.

e) Goal 5

Goal 5:	To recommend ways to understand the intercession between the macro and microenvironment, to understand the conditions that would allow the optimum growth situation to occur and the impact exceptions would have on the model.

Large companies are mostly shielded from inflation as economy of scale and scope would result in an oligopolistic environment whereby inflation in the form of higher labour cost, electricity increases and manufacturing cost are merely passed on to the consumer. The research concludes this in the low contribution importance associated with inflation characteristics within the overall economic model. Growth, currency stability and government debt are much more important for large companies, as they require stability, as to allow for a sustainable business model. From large (J200) to medium size companies (J202), the GDP growth is a key component for market performance.

Microeconomic elements rely heavily on the consumer behaviour which in turn has a direct association with the macroeconomic environment. If inflation increases, the typical consumer will cut down on discretionary spending that will reduce the demand curve thereby push the supply downwards. The GDP rate is directly proportional to consumption (see Equation 1) that is derived from consumer behaviour.

The elasticity that drives both the price, demand and supply side of the equation all are dependent on the economic growth, inflationary environment, taxes (which impact debt repayment) and labour (unemployment). The goal to understand the intercession between the macro and microenvironment, and to comprehend the conditions that would allow the optimum growth situation to occur is clear and achieved through the research analysis. The impact exceptions on the model that was created therefore takes into account the macroeconomic forces while the impact of the microeconomic forces are understood. Consumer demand in the South African context is heavily dependent on the macroeconomic environment, as most South Africans are classified as low to middle income consumers, which is very sensitive to any shock conditions. The relative small consumer market has created a historical oligopoly market which can easily result in collusion and even cartel formation. Strong institutional bodies and regulatory

© University of Pretoria

frameworks are in place to counter this concern. Under the current pugnacious macroeconomic environment, the potential risks for this to take place will however increase.

f) Goal 6

Goal 6:	To identify areas in which further development could be supported and provide advice on how this might be achieved.

The research identified several areas in which further development could be supported and provide advice on how this might be achieved through further research (see 7.7). This goal is therefore supported by the data and is therefore achieved.

7.3. Principal Findings

The principle findings of this research have found that the macroeconomic environment has a real impact on the business performance. The GDP growth of the country has the biggest impact on the economy as well as business performance. The growth is lower because weakness in consumer behaviour due to reduced employment opportunities and higher inflation. The ability to save and invest have been replaced with a highly indebted consumer with low confidence. Electricity constraints in the past few years has resulted in major business investments and growth projects to be cut back, thereby placing even higher risk on the ability to turn the economy around.

The current account deficit is increasing due to increased import volumes (crude oil is more expensive due to currency weakness) and weakness on the export side due to competitiveness in the labour market which in turn caused increased inflation due to excessive wage demands especially in the public sector.

By employing a prudent macroeconomic policy within the three main players (government, business and labour), the space for countercyclical fiscal policies can be developed. This can be achieved through a managed expenditure containment program, which in turn will reduce the budget deficit without curtailing the growth objectives. The debt to GDP should then decline, thereby reducing the risk on a possible down grade by the credit agencies.

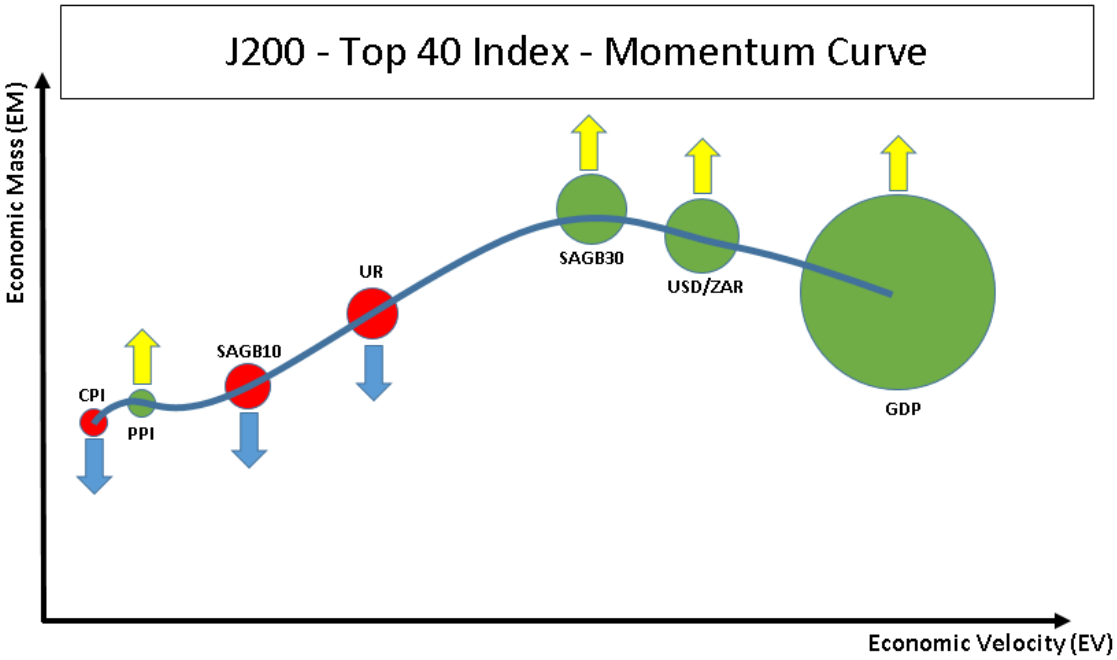
The research also found that the GDP rate in isolation does not have the same impact, as when measured in combination with the other macroeconomic elements. It is therefore imperative that all facets of the economy be addressed in returning the country to a sustainable future.

7.4. Macroeconomic Momentum Curve

The macroeconomic momentum curve (MMC) was created utilising the data generated by the automatic linear modelling program in SPSS. The data consisted of 15 years transposed into the statistical generator. From the output table the economic mass (EM) was constructed using the importance weightage, whereby the sphere diameter is directly proportional to the importance percentage.

The sphere movement is created by an upward motion (depicted by the yellow arrows) if the coefficient constant is positive. Equally the reverse is true for a negative coefficient depicted by a downward movement showed by a blue arrow. The economic velocity (EV) is determined through the rank, whereby the lowest rank is first, with the number one rank position last. The curve is drawn applying both magnitude of weightage (measured in economic mass) and the pulling force (coefficient direction) as well as direction using the economic velocity (EV).

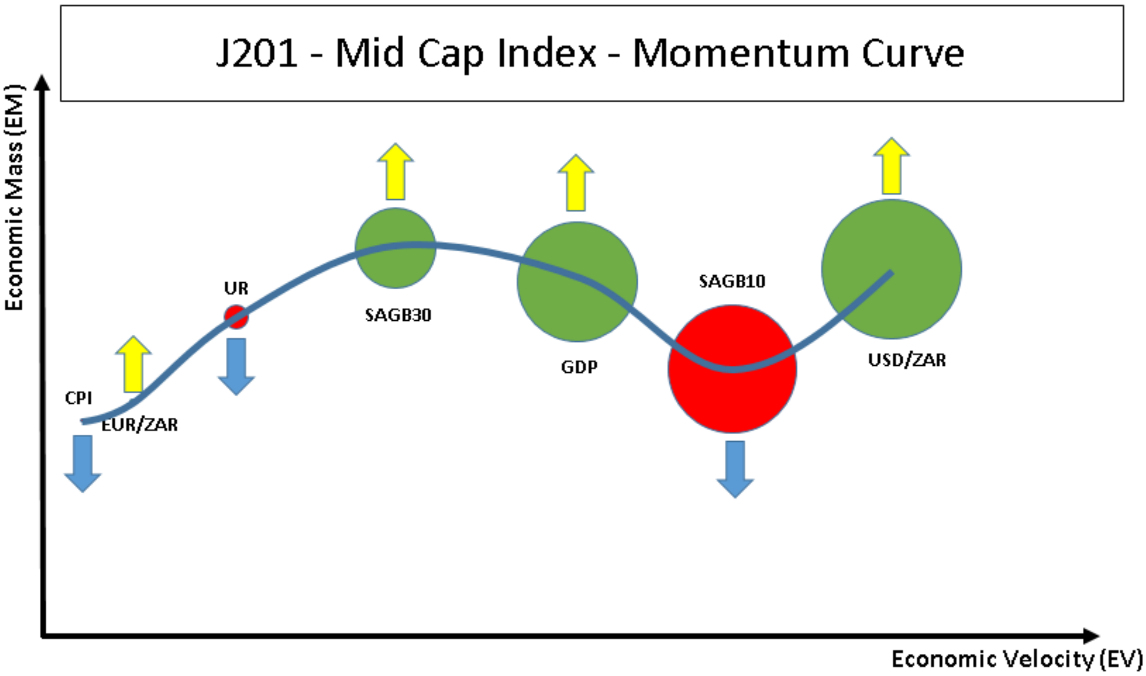
Figure 42: Macroeconomic Momentum Curve – J200



source: Author – own

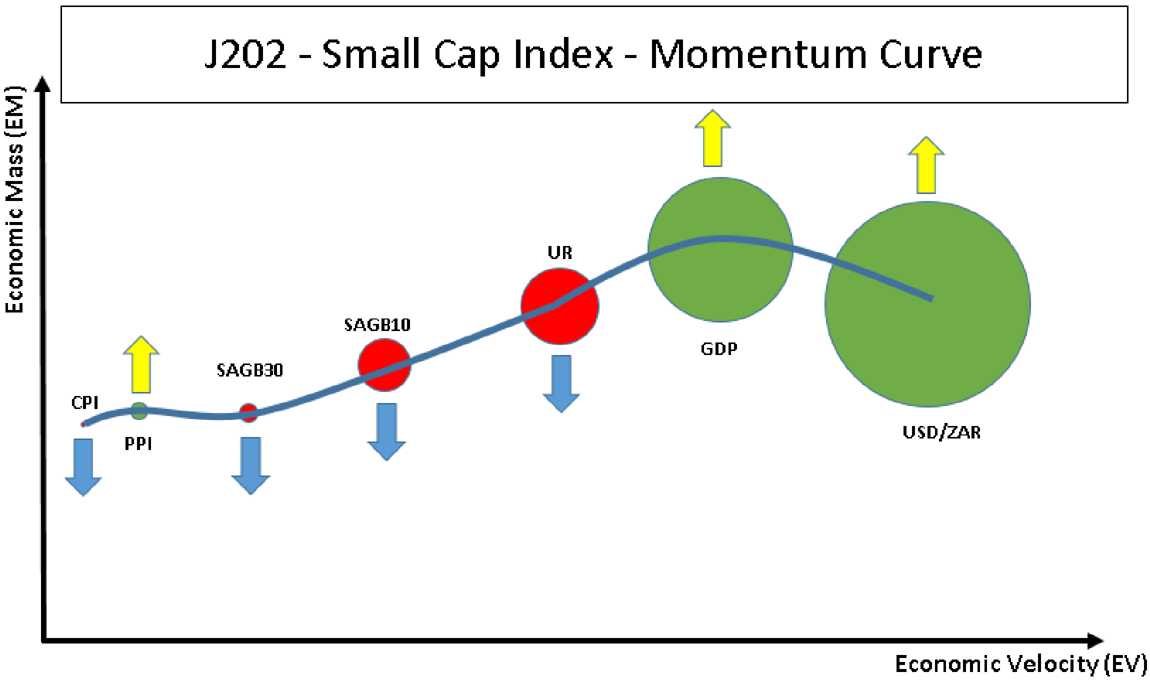
The momentum (MMC) is therefore the product between EM and EV taking into account the directional force set by the coefficient. In the model the intercept coefficient is ignored. Figure 42 to 46 shows the MMC for each index. From the model the importance of the GDP and currency (USD/ZAR) becomes very apparent.

Figure 43: Macroeconomic Momentum Curve – J201



source: Author – own

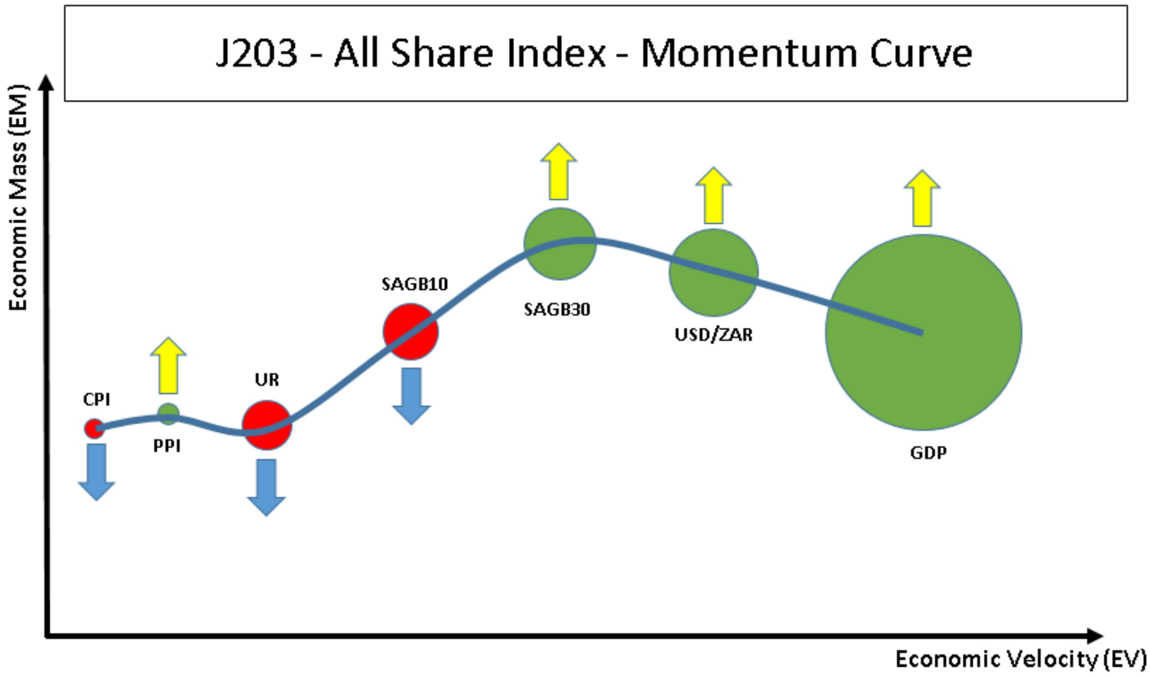
Figure 44: Macroeconomic Momentum Curve – J202



source: Author – own

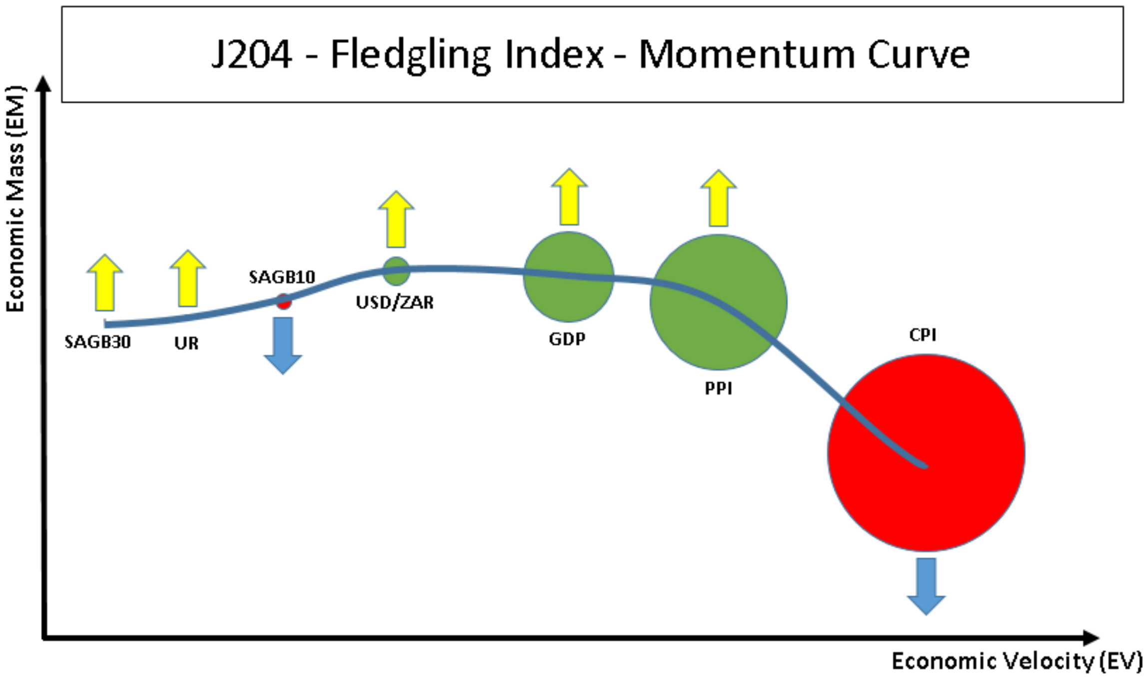
© University of Pretoria

Figure 45: Macroeconomic Momentum Curve – J203



source: Author – own research

Figure 46: Macroeconomic Momentum Curve – J204

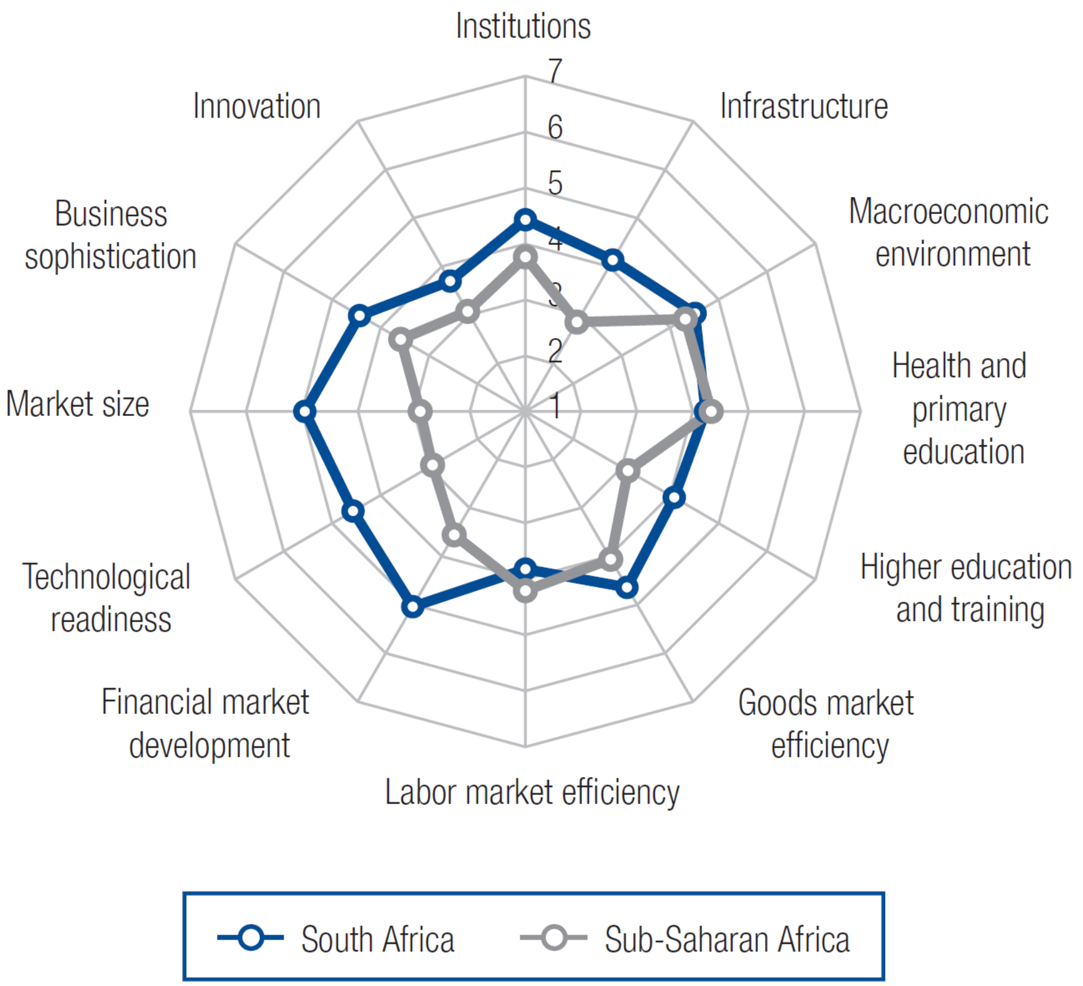


source: Author – own research

7.5. Implications for management

The implication for management is the realisation that business success is not only dependent on strategies towards sustainability but to a far greater inter connected DNA consisting of many gears that can turn against a company's goals. Unless all business leaders accept that they can't and shouldn't stay silent and become part of the bigger solution, they will suffer the consequences of macroeconomic headwinds when it is too late.

Figure 47: South Africa: 2015/16 Global Competitiveness Rating



source: (Schwab, Sala-i-Martin, Samans, & Blanke, 2015)

South Africa is currently ranked 116 out of 140 countries in its macroeconomic environment according to the 2015 global competitiveness report by the WEF (Schwab et al., 2015). If we want to reach our true potential and improve our overall ranking (see Figure 47), we will need to start to work together towards a comprehensive plan and insist on progress towards the NDP goals.

7.6. Limitations of the Research

The research has various limitations, which include:

- The use of only 15 years of data limits the research to only a small period, in which the market generally only had a positive trend.
- The shares that make up the index do not all have the same amount of data, for example, the Top 40 index contains 12 listings that didn't exist on the 1 January 2001. Similarly, the Mid Cap index contains 31 listings. Therefore, the total amount of data points will vary depending on the start date of the listing.
- A survivorship bias tendency exists by excluding failed companies from performance studies because they no longer survived, and cannot accumulate additional data. This will cause the results to skew higher because only businesses that endured and were successful as at the end of the test period, are included.
- All the indices are governed by the JSE rules and regulations (Johannesburg Stock Exchange Limited, 2014), whereby listings are removed, moved in or out, or included on a market capitalisation ranking basis. This study used the official data that represent a specific index. The study made no changes to any index, even if specific listings fulfil regulations as to be included or excluded based on its market capitalisation. Secondary listings were considered part of the main listing.
- The FTSE/JSE All-Share Index represent 99% of the full market capital worth i.e. before the submission of any investability weightings, of all ordinary securities listed on the Main Board of the JSE. The Top 40 Index will consist of the largest 40 businesses ranked by full market value. The number of constituents is maintained at a constant level. The Mid Capitalisation Index will consist of the next 60 biggest companies. The Small Capitalisation Index consists of shares that are part of the FTSE/JSE All-Share Index, but are not large enough to qualify for the Top 40 Index or Mid Cap Index. The Fledgling Index will consist of all ordinary securities listed on the JSE which qualify as eligible for insertion in an index, but are too small to be included in the FTSE/JSE All-Share Index (Johannesburg Stock Exchange Limited, 2014).

7.7. Suggestions for future research

Based on the research limitations as well as findings in this study we propose the following areas for further research:

- The use of only 15 years of data limits the research to only a small period, in which the market generally only had a positive trend. A much larger period could be used, which incorporates also negative trends.
- A survivorship bias excludes failed companies. Further research into failed companies and its performance related to macroeconomic principles should be researched as to determine if it could have been a precursor for the company not performing.
- The FTSE/JSE All-Share Index represent 99% of the full market capital worth i.e. before the submission of any investability weightings, of all ordinary securities listed on the Main Board of the JSE. However, the research does not take into account small and medium size enterprises as well as private companies. Research should be extended into this field.
- Macroeconomic forces are having a massive impact on various economies in the world. The research should extend into both developed and developing markets as to determine if the findings are unique in the South African context.
- Individual stocks should be analysed through the models as to determine fit.

The research is a contribution towards a greater understanding of all the cosmic forces that creates economic momentum through economic velocity and economic mass by applying clear policy frameworks implemented in the knowledge gained from standing on the shoulders of giants.

CHAPTER 8. Reference List

Abruzzese, L., Loungani, P., Bandura, R., & Ferguson, J. (2015). *International Jobs Report January 2015*. *Policy Brief*. Retrieved from http://www.ocppc.ma

Acharya, V. V, & Schnabl, P. (2010). Do Global Banks Spread Global Imbalances? Asset-Backed Commercial Paper during the Financial Crisis of 2007–09. *IMF Economic Review*, *58*(1), 37–73. http://doi.org/10.1057/imfer.2010.4

Adejumobi, S. (2016). Africa needs to go beyong the “rising”. *New African*, (557), 50–51. Retrieved from http://search.ebscohost.com

Aguiar, M., & Gopinath, G. (2006). Defaultable debt, interest rates and the current account. *Journal of International Economics*, *69*(1), 64–83. http://doi.org/10.1016/j.jinteco.2005.05.005

Ajmi, A. N., Aye, G. C., Balcilar, M., & Gupta, R. (2015). Causality between exports and economic growth in South Africa: evidence from linear and nonlinear tests. *Journal of Developing Areas*, *49*(2), 163–181. Retrieved from http://search.ebscohost.com

Akaike, H. (1973). Information theory and an extension of the maximum likelihood principle. *2nd International Symposium on Information Theory*, 267–281. Retrieved from http://link.springer.com/chapter/10.1007%2F978-1-4612-1694-0_15#page-1

Akaike, H. (1976). Canonical Correlation Analysis of Time Series and the Use of an Information Criterion. *Mathematics in Science and Engineering*, *126*, 27–96. http://doi.org/10.1016/S0076-5392(08)60869-3

Akaike, H. (1981). Likelihood of a model and information criteria. *Journal of Econometrics*, *16*(1), 3–14. http://doi.org/10.1016/0304-4076(81)90071-3

Almeida, H., Kim, C.-S., & Kim, H. B. (2015). Internal Capital Markets in Business Groups: Evidence from the Asian Financial Crisis. *Journal of Finance*, *70*(6), 2539–2586. http://doi.org/10.1111/jofi.12309

Altieri, K. E., Trollip, H., Caetano, T., Hughes, A., Merven, B., & Winkler, H. (2016). Achieving development and mitigation objectives through a decarbonization development pathway in South Africa. *Climate Policy*, 1–14. http://doi.org/10.1080/14693062.2016.1150250

Anderson, T. W. (1994). *The statistical analysis of time series* (Vol. 19). New York, NY: John Wiley & Sons.

Andries, A. M., Ihnatov, I., & Tiwari, A. K. (2014). Analyzing time–frequency relationship between interest rate, stock price and exchange rate through continuous wavelet. *Economic Modelling*, *41*, 227–238. http://doi.org/10.1016/j.econmod.2014.05.013

Arikan, A. M., & Stulz, R. M. (2016). Corporate Acquisitions, Diversification, and the Firm’s Life Cycle. *Journal of Finance*, *71*(1), 139–194.

http://doi.org/10.1111/jofi.12362

Asongu, S. A. (2016). Determinants of Growth in Fast-Developing Countries: Evidence from Bundling and Unbundling Institutions. *Politics & Policy*, *44*(1), 97–134. Retrieved from http://0-search.ebscohost.com

Aydemir, O., & Demirhan, E. (2009). The relationship between stock prices and exchange rates evidence from Turkey. *International Research Journal of Finance and Economics*, *23*(2), 207–215. Retrieved from https://www.researchgate.net

Aye, G. C., Gupta, R., & Modise, M. P. (2015). Do Stock Prices Impact Consumption and Interest Rate in South Africa? Evidence from a Time-Varying Vector Autoregressive Model. *Journal of Emerging Market Finance*, *14*(2), 176–196. http://doi.org/10.1177/0972652715584267

Baghai, M., Smit, S., & Viguerie, S. P. (2007). The granularity of growth. *The McKinsey Quarterly*, (7). Retrieved from http://fcollege.nankai.edu.cn

Banfi, F., Begonha, D., Hazan, E., & Zouaoui, Y. (2014). Mobile must migrate: Digital as an imperative, not an option. McKinsey & Company, Inc. Retrieved from http://www.mckinseyonmarketingandsales.com/sites/default/files/pdf/07_Mobile must migrate.pdf

Baud, I., Scott, D., Pfeffer, K., Sydenstricker-Neto, J., & Denis, E. (2015). Reprint of: Digital and spatial knowledge management in urban governance: Emerging issues in India, Brazil, South Africa, and Peru. *Habitat International*, *46*, 225–233. http://doi.org/10.1016/j.habitatint.2015.01.018

Bauer, M. D., Rudebusch, G. D., & Wu, J. C. (2014). Term Premia and Inflation Uncertainty: Empirical Evidence from an International Panel Dataset. *American Economic Review*, *104*(1), 323–337. http://doi.org/10.1257/aer.104.1.323

Bauman, W. S., Conover, C. M., & Miller, R. E. (1998). Growth versus value and large-cap versus small-cap stocks in international markets. *Financial Analysts Journal*, *54*(2), 75–89. http://doi.org/10.2469/faj.v54.n2.2168

Beber, A., Brandt, M. W., & Luisi, M. (2015). Distilling the macroeconomic news flow. *Journal of Financial Economics*, *117*(3), 489–507. http://doi.org/10.1016/j.jfineco.2015.05.005

Bertaut, C. C., Kamin, S. B., & Thomas, C. P. (2009). How Long Can the Unsustainable U.S. Current Account Deficit Be Sustained? *IMF Staff Papers*, *56*(3), 596–632. http://doi.org/10.1057/imfsp.2009.7

Boafo-Arthur, K. (2003). Tackling Africa's developmental dilemmas: Is globalization the answer? *Journal of Third World Studies*, *20*(1), 27–54. Retrieved from http://search.ebscohost.com

Bollerslev, T., Marrone, J., Xu, L., & Zhou, H. (2014). Stock Return Predictability and

Variance Risk Premia: Statistical Inference and International Evidence. *Journal of Financial & Quantitative Analysis*, *49*(3), 633–661. http://doi.org/10.1017/S0022109014000453

Bond, P. (2013). Debt, Uneven Development and Capitalist Crisis in South Africa: from Moody's macroeconomic monitoring to Marikana microfinance mashonisas. *Third World Quarterly*, *34*(4), 569–592. http://doi.org/10.1080/01436597.2013.786283

Bond, P. (2016). BRICS banking and the debate over sub-imperialism. *Third World Quarterly*, *37*(4), 611–629. http://doi.org/10.1080/01436597.2015.1128816

Bordo, D. M., & Kydland, E. F. (1995). The Gold Standard As a Rule: An Essay in Exploration. *Explorations in Economic History*, *32*(4), 423. Retrieved from http://search.ebscohost.com/login.aspx?direct=true&db=bth&AN=9567830&site=ehost-live&scope=site

Bordo, M. D., & Kydland, F. E. (1995). The Gold Standard As a Rule: An Essay in Exploration. *Explorations in Economic History*, *32*(4), 423–464. http://doi.org/10.1006/exeh.1995.1019

Bozoklu, Ş., & Yilanci, V. (2014). Current account sustainability in emerging markets: an analysis with linear and nonlinear panel unit root tests. *Journal of Economics & Administrative Sciences*, *28*(4), 251–264. Retrieved from http://search.ebscohost.com

Bruno, V., & Shin, H. S. (2015). Cross-Border Banking and Global Liquidity. *The Review of Economic Studies*, *82*(2), 535–564. http://doi.org/10.1093/restud/rdu042

Campante, F., & Yanagizawa-Drott, D. (2015). Does Religion Affect Economic Growth and Happiness? Evidence from Ramadan. *The Quarterly Journal of Economics*, *130*(2), 615–658. http://doi.org/10.1093/qje/qjv002

Capaul, C., Rowley, I., & Sharpe, W. F. (1993). International value and growth stock returns. *Financial Analysts Journal*, *49*(1), 27–36. http://doi.org/10.2469/faj.v49.n1.27

Cavallo, A., Neiman, B., & Rigobon, R. (2014). Currency Unions, Product Introductions, and the Real Exchange Rate. *The Quarterly Journal of Economics*, *129*(2), 529–595. http://doi.org/10.1093/qje/qju008

Cavanaugh, J. E. (2012). *The Akaike Information Criterion* (171:290 Model Selection No. Lecture II).

Chatterjee, S., & Hadi, A. S. (2015). *Regression analysis by example* (5th ed.). Hoboken, New Jersey: John Wiley & Sons.

Chernov, M., & Mueller, P. (2012). The term structure of inflation expectations. *Journal of Financial Economics*, *106*(2), 367–394. http://doi.org/10.1016/j.jfineco.2012.06.004

© University of Pretoria

Chkili, W., & Nguyen, D. K. (2014). Exchange rate movements and stock market returns in a regime-switching environment: Evidence for BRICS countries. *Research in International Business and Finance*, *31*, 46–56. http://doi.org/10.1016/j.ribaf.2013.11.007

Chodorow-Reich, G. (2014). The Employment Effects of Credit Market Disruptions: Firm-level Evidence from the 2008–9 Financial Crisis. *The Quarterly Journal of Economics*, *129*(1), 1–59. http://doi.org/10.1093/qje/qjt031

Clift, B., & Tomlinson, J. (2008). Whatever Happened to the Balance of Payments “Problem”? The Contingent (Re)Construction of British Economic Performance Assessment. *British Journal of Politics & International Relations*, *10*(4), 607–629. http://doi.org/10.1111/j.1467-856X.2008.00334.x

Coibion, O., & Gorodnichenko, Y. (2012). What Can Survey Forecasts Tell Us about Information Rigidities? *Journal of Political Economy*, *120*(1), 116–159. Retrieved from http://www.jstor.org/action/showPublication?journalCode=jpoliecon

Cooper, R., & John, A. (2011). *Macroeconomics, Theory through Applications* (1st ed.). Flat World Knowledge. Inc. Retrieved from http://catalog.flatworldknowledge.com

Coreynen, W., Matthyssens, P., & Van Bockhaven, W. (2016). Boosting servitization through digitization: Pathways and dynamic resource configurations for manufacturers. *Industrial Marketing Management*. http://doi.org/10.1016/j.indmarman.2016.04.012

Cuadra, G., & Sapriza, H. (2008). Sovereign default, interest rates and political uncertainty in emerging markets. *Journal of International Economics*, *76*(1), 78–88. http://doi.org/10.1016/j.jinteco.2008.05.001

De Bondt, W. F. M., & Bange, M. M. (1992). Inflation Forecast Errors and Time Variation in Term Premia. *Journal of Financial & Quantitative Analysis*, *27*(4), 479–496. Retrieved from http://search.ebscohost.com

de Zwart, G., Markwat, T., Swinkels, L., & van Dijk, D. (2009). The economic value of fundamental and technical information in emerging currency markets. *Journal of International Money and Finance*, *28*(4), 581–604. http://doi.org/10.1016/j.jimonfin.2009.01.004

DeSalvo, K. B. (2014). *Connecting Health and Care for the Nation: A Shared Nationwide Interoperability Roadmap*. Retrieved from http://www.healthit.gov/sites/default/files/nationwide-interoperability-roadmap-draft-version-1.0.pdf

Diebold, F. X., Husted, S., & Rush, M. (1991). Real Exchange Rates under the Gold Standard. *Journal of Political Economy*, *99*(6), 1252–1271. http://doi.org/10.2307/2937729

© University of Pretoria

Djiofack-Zebaze, C., & Keck, A. (2009). Telecommunications Services in Africa: The Impact of WTO Commitments and Unilateral Reform on Sector Performance and Economic Growth. *World Development*, *37*(5), 919–940. http://doi.org/10.1016/j.worlddev.2008.09.007

Draper, N. R., & Smith, H. (1998). *Applied regression analysis* (3rd ed.). John Wiley & Sons.

Draper, N. R., Smith, H., & Pownell, E. (1966). *Applied regression analysis* (Vol. 3). John Wiley & Sons.

Du, D., & Hu, O. (2012). Exchange rate risk in the US stock market. *Journal of International Financial Markets, Institutions and Money*, *22*(1), 137–150. http://doi.org/10.1016/j.intfin.2011.08.003

Durbin, J., & Watson, G. S. (1951). Testing for serial correlation in least squares regression. II. *Biometrika*, *38*(1–2), 159–178. http://doi.org/10.1093/biomet/38.1-2.159

Everitt, B. S., & Skrondal, A. (2010). *The Cambridge Dictionary of Statistics* (4th ed.). Cambridge University Press. Retrieved from http://0-common.books24x7.com.innopac.up.ac.za/book/id_36106/book.asp

Fadiran, G. O., & Edun, A. (2013). An Overview of the Repo Rate in an Inflation Targeting Economy. *African Development Review*, *25*(4), 621–635. http://doi.org/10.1111/1467-8268.12056

Fama, E. F. (1990). Term-structure forecasts of interest rates, inflation and real returns. *Journal of Monetary Economics*, *25*(1), 59–76. http://doi.org/10.1016/0304-3932(90)90045-6

Farhadian, Z., & Dunn Jr., R. M. (1986). Fiscal Policy and Financial Deepening in a Monetarist Model of the Balance of Payments. *Kyklos*, *39*(1), 66. Retrieved from http://search.ebscohost.com

Farhi, E., & Gabaix, X. (2016). Rare Disasters and Exchange Rates. *The Quarterly Journal of Economics*, *131*(1), 1–52. http://doi.org/10.1093/qje/qjv040

Fillat, J. L., & Garetto, S. (2015). Risk, Returns, and Multinational Production. *The Quarterly Journal of Economics*, *130*(4), 2027–2073. http://doi.org/10.1093/qje/qjv031

Gabaix, X., & Maggiori, M. (2015). International Liquidity and Exchange Rate Dynamics. *The Quarterly Journal of Economics*, *130*(3), 1369–1420. http://doi.org/10.1093/qje/qjv016

Galagedera, D. U. A. (2012). Recent trends in relative performance of global equity markets. *Journal of International Financial Markets, Institutions and Money*, *22*(4), 834–854. http://doi.org/10.1016/j.intfin.2012.05.003

Galagedera, D. U. A. (2013). A new perspective of equity market performance. *Journal of International Financial Markets, Institutions and Money*, *26*, 333–357. http://doi.org/10.1016/j.intfin.2013.07.003

Gelber, A., Isen, A., & Kessler, J. B. (2016). The Effects of Youth Employment: Evidence from New York City Lotteries. *The Quarterly Journal of Economics*, *131*(1), 423–460. http://doi.org/10.1093/qje/qjv034

Hall, J. H., & Millard, S. M. (2002). An assessment of the value of brokerage information for individual investors. *Investment Analysts Journal*, *31*(55), 45–51. http://doi.org/10.1080/10293523.2002.11082436

Holan, S. H., Yang, W.-H., Matteson, D. S., & Wikle, C. K. (2012). An approach for identifying and predicting economic recessions in real-time using time-frequency functional models. *Applied Stochastic Models in Business & Industry*, *28*(6), 485–499. http://doi.org/10.1002/asmb.1954

Holmes, T. J., McGrattan, E. R., & Prescott, E. C. (2015). Quid Pro Quo: Technology Capital Transfers for Market Access in China. *The Review of Economic Studies*, *82*(3), 1154–1193. http://doi.org/10.1093/restud/rdv008

Horwitz, R. B. (1992). The politics of telecommunications reform in South Africa. *Telecommunications Policy*, *16*(4), 291–306. http://doi.org/10.1016/0308-5961(92)90038-Q

Hu, S. (1987). Akaike information criterion statistics. *Mathematics and Computers in Simulation*, *29*(5), 452. http://doi.org/10.1016/0378-4754(87)90094-2

Hurvich, C. M., & Tsai, C. L. (1991). Bias of the corrected aic criterion for underfitted regression and time series models. *Biometrika*, *78*(3), 499–509. http://doi.org/10.1093/biomet/78.3.499

IDC. (2016). Industrial Development Corporation. Retrieved May 2, 2016, from http://www.idc.co.za

Industrial Development Corporation. (2015). National Budget 2015: Addressing fiscal imbalances in a challenging economic environment. *Department of Research and Information*, (February), 1–49. Retrieved from http://www.idc.co.za

iNET-BFA. (2016). INET BFA. Retrieved May 2, 2016, from http://www.inetbfa.com

Ismi, A. (2014). BRICS and the SCO challenge U.S. global dominance. *CCPA Monitor*, *21*(6), 30–31. Retrieved from http://search.ebscohost.com

Jaffe, J. F. (1985). Inflation, the Interest Rate, and the Required Return on Equity. *Journal of Financial and Quantitative Analysis*, *20*(1), 29–44. Retrieved from http://links.jstor.org

Jakiela, P., & Ozier, O. (2016). Does Africa Need a Rotten Kin Theorem? Experimental Evidence from Village Economies. *The Review of Economic Studies*, *83*(1), 231–

268. http://doi.org/10.1093/restud/rdv033

Janowski, T. (2015). Digital government evolution: From transformation to contextualization. *Government Information Quarterly*. http://doi.org/10.1016/j.giq.2015.07.001

Johannesburg Stock Exchange Limited. (2014). JSE Limited Listings Requirements. Retrieved May 2, 2016, from https://www.jse.co.za/content/JSERulesPoliciesandRegulationItems/FTSE JSE Ground Rules .pdf

Jorgenson, D. W., & Vu, K. M. (2016). The ICT revolution, world economic growth, and policy issues. *Telecommunications Policy*, *40*(5), 383–397. http://doi.org/10.1016/j.telpol.2016.01.002

Jotikasthira, C., Le, A., & Lundblad, C. (2015). Why do term structures in different currencies co-move? *Journal of Financial Economics*, *115*(1), 58–83. http://doi.org/10.1016/j.jfineco.2014.09.004

JSE. (2016). JSE: history company overview. Retrieved May 2, 2016, from https://www.jse.co.za/about/history-company-overview

JSE 2015 December Quarterly Index Review Paper Market. (2015). Retrieved from https://www.jse.co.za

Kabacoff, R. (2015). *R in action: data analysis and graphics with R*. Greenwich, CT: Manning Publications Co.

Kanyengo, C. W. (2009). Managing digital information resources in Africa: Preserving the integrity of scholarship. *The International Information & Library Review*, *41*(1), 34–43. http://doi.org/10.1016/j.iilr.2008.08.003

Kitsul, Y., & Wright, J. H. (2013). The economics of options-implied inflation probability density functions. *Journal of Financial Economics*, *110*(3), 696–711. http://doi.org/10.1016/j.jfineco.2013.08.013

Kohli, U. R. (1978). A Gross National Product Function and the Derived Demand for Imports and Supply of Exports. *The Canadian Journal of Economics / Revue Canadienne d'Economique*, *11*(2), 167–182. http://doi.org/10.2307/134342

Kshetri, N. (2016). Big data's role in expanding access to financial services in China. *International Journal of Information Management*, *36*(3), 297–308. http://doi.org/10.1016/j.ijinfomgt.2015.11.014

Kuan, J., Rombe-Shulman, S., & Shittu, E. (2015). The political economy of technology adoption: The case of Saharan salt mining. *The Extractive Industries and Society*, *2*(2), 328–338. http://doi.org/10.1016/j.exis.2015.01.012

Kullback, S., & Leibler, R. A. (1951). On Information and Sufficiency. *The Annals of Mathematical Statistics*, *22*(1), 79–86. http://doi.org/10.1214/aoms/1177729694

Kung, H. (2015). Macroeconomic linkages between monetary policy and the term structure of interest rates. *Journal of Financial Economics*, *115*(1), 42–57. http://doi.org/10.1016/j.jfineco.2014.09.006

Lee, Y.-M., & Wang, K.-M. (2012). Capital Mobility and Current Account Imbalance: Nonlinear Threshold Vector Autoregression Approach. *International Interactions*, *38*(2), 182–217. http://doi.org/10.1080/03050629.2012.657946

Leedy, P. D., & Ormrod, J. E. (2010). *Practical Research: Planning and Design* (9th ed.). New York, NY: Merril.

Lindow, K. (2014). Rating Action : Moody ' s downgrades two South African development institutions to Baa2. Retrieved from https://www.moodys.com

Loebbecke, C., & Picot, A. (2015). Reflections on societal and business model transformation arising from digitization and big data analytics: A research agenda. *The Journal of Strategic Information Systems*, *24*(3), 149–157. http://doi.org/10.1016/j.jsis.2015.08.002

Luo, Y., & Bu, J. (2016). How valuable is information and communication technology? A study of emerging economy enterprises. *Journal of World Business*, *51*(2), 200–211. http://doi.org/10.1016/j.jwb.2015.06.001

Makhaya, G., & Roberts, S. (2003). Telecommunications in developing countries: reflections from the South African experience. *Telecommunications Policy*, *27*(1), 41–59. http://doi.org/10.1016/S0308-5961(02)00090-3

McGroarty, P. (2015, May 26). South Africa Unemployment Hits 11-Year High: Power outages, drought and widespread pessimism weigh on economic growth. *Wall Street Journal*. Retrieved from http://www.wsj.com/articles/south-africa-unemployment-hits-11-year-high-1432640795

Mclean, R. D., & Zhao, M. (2014). The Business Cycle, Investor Sentiment, and Costly External Finance. *Journal of Finance*, *69*(3), 1377–1409. http://doi.org/10.1111/jofi.12047

Mertens, D. M. (2014). *Research and evaluation in education and psychology: Integrating diversity with quantitative, qualitative, and mixed methods*. Sage Publications.

Michaillat, P., & Saez, E. (2015). Aggregate Demand, Idle Time, and Unemployment. *The Quarterly Journal of Economics*, *130*(2), 507–569. http://doi.org/10.1093/qje/qjv006

Miles, D., Scott, A., & Breedon, F. (2012). *Macroeconomics: understanding the global economy* (3rd ed.). Chichester, West Sussex, UK: John Wiley & Sons.

Mngomezulu, B. R. (2016). The South Africa Reader: History, Culture, Politics. *South African Historical Journal*, *68*(1), 142–145.

http://doi.org/10.1080/02582473.2015.1126342

Møller, S. V., & Rangvid, J. (2015). End-of-the-year economic growth and time-varying expected returns. *Journal of Financial Economics*, *115*(1), 136–154. http://doi.org/10.1016/j.jfineco.2014.08.006

Montgomery, D. C., Peck, E. A., & Vining, G. G. (2015). *Introduction to linear regression analysis* (5th Ed.). Hoboken, New Jersey: John Wiley & Sons.

Muller, C., & Ward, M. (2016). The Implied Growth Rate in the Valuation of JSE Listed Companies. *Social Science Research Network*. SSRN. Retrieved from http://0-papers.ssrn.com

Munro, E. (2016). Illuminating the practice of Knowledge Exchange as a "pathway to impact" within an Arts and Humanities Research Council "Creative Economy Knowledge Exchange" project. *Geoforum*, *71*, 44–51. http://doi.org/10.1016/j.geoforum.2016.03.002

National Treasury. (2016). *2016 Medium Term Budget Policy Statement*. Retrieved from www.treasury.gov.za

Newman, L., Bidargaddi, N., & Schrader, G. (2016). Service providers' experiences of using a telehealth network 12 months after digitisation of a large Australian rural mental health service. *International Journal of Medical Informatics*, *94*, 8–20. http://doi.org/10.1016/j.ijmedinf.2016.05.006

Novak, C. (2015). The roadmap to digital government: Follow the Constituent Journey. Retrieved from https://www.pega.com/sites/pega.com/files/docs/2015/Aug/roadmap-to-digital-government-preview.pdf

O'Brien, R. M. (2007). A caution regarding rules of thumb for variance inflation factors. *Quality and Quantity*, *41*(5), 673–690. http://doi.org/10.1007/s11135-006-9018-6

Paravisini, D., Rappoport, V., Schnabl, P., & Wolfenzon, D. (2015). Dissecting the Effect of Credit Supply on Trade: Evidence from Matched Credit-Export Data. *The Review of Economic Studies*, *82*(1), 333–359. http://doi.org/10.1093/restud/rdu028

Parkin, M., Kohler, M., Lakay, L., Rhodes, B., Saayman, A., Schöer, V., … Thompson, K. (2010). *Economics: Global and Southern African perspectives*. (Allison Lamb, Ed.) (1st ed.). Pearson.

Peleg, S., & Arieli, S. (2006). Problems of measurement and analysis in the national accounts under rapidly growing globalization. *Statistical Journal of the UN Economic Commission for Europe*, *23*(2/3), 143–153. Retrieved from http://search.ebscohost.com

Pettenuzzo, D., Timmermann, A., & Valkanov, R. (2014). Forecasting stock returns under economic constraints. *Journal of Financial Economics*, *114*(3), 517–533.

http://doi.org/10.1016/j.jfineco.2014.07.015

Polakow, D. A., & Flint, E. J. (2015). Global risk factors and South African equity indices. *South African Journal of Economics*, *83*(4), 598–616. Retrieved from 10.1111/saje.12065

Prins, J. E. J., Broeders, D., & Griffioen, H. M. (2012). iGovernment: A new perspective on the future of government digitisation. *Computer Law & Security Review*, *28*(3), 273–282. http://doi.org/10.1016/j.clsr.2012.03.010

Ross, J. (2015). BRICS Bank Could Change the World. *China Today*, *64*(7), 56–57. Retrieved from http://search.ebscohost.com

Sampson, T. (2016). Dynamic Selection: An Idea Flows Theory of Entry, Trade, and Growth. *The Quarterly Journal of Economics*, *131*(1), 315–380. http://doi.org/10.1093/qje/qjv032

Sanz, E., & Crosbie, T. (2016). The meaning of digital platforms: Open and closed television infrastructure. *Poetics*, *55*, 76–89. http://doi.org/10.1016/j.poetic.2015.11.002

Schrimpf, A. (2010). International stock return predictability under model uncertainty. *Journal of International Money and Finance*, *29*(7), 1256–1282. http://doi.org/10.1016/j.jimonfin.2010.03.005

Schwab, K., Sala-i-Martin, X., Samans, R., & Blanke, J. (2015). *The global competitiveness report 2015-2016*. *World Economic Forum* (Full Data, Vol. 5). Geneva: Word Economic Forum. http://doi.org/92-95044-35-5

Segal, G., Shaliastovich, I., & Yaron, A. (2015). Good and bad uncertainty: Macroeconomic and financial market implications. *Journal of Financial Economics*, *117*(2), 369–397. http://doi.org/10.1016/j.jfineco.2015.05.004

Selgin, G. (2015). Synthetic Commodity Money. *Journal of Financial Stability*, *17*, 92–99. http://doi.org/10.1016/j.jfs.2014.07.002

Sensoy, A., & Sobaci, C. (2014). Effects of volatility shocks on the dynamic linkages between exchange rate, interest rate and the stock market: The case of Turkey. *Economic Modelling*, *43*, 448–457. http://doi.org/10.1016/j.econmod.2014.09.005

Shahbaz, M., Afza, T., & Shabbir, M. S. (2013). Financial Development, Domestic Savings and Poverty Reduction in Pakistan: Using Cointegration and Granger Causality Analysis. *International Journal of Economics and Empirical Research (IJEER)*, *1*(5), 59–73. Retrieved from http://econpapers.repec.org

Statistics South Africa. (2015a). *South African Statistics, 2015* (29th ed.). Pretoria: Statistics South Africa. Retrieved from www.statssa.gov.za

Statistics South Africa. (2015b). Statistical release: Gross Domestic Product, Fourth Quarter 2015. *Gross Domestic Product*, *P0441*(December), 1–17. Retrieved from http://www.statssa.gov.za/publications/P0441/P04414thQuarter2015.pdf

Statistics South Africa. (2015c). Statistical release: Quarterly Labour Force Survey, Quarter 4:2015. *Quarterly Labour Force Survey*, *P0211*(Quarter 4), 1–79. Retrieved from http://www.statssa.gov.za/publications/P0211/P02114thquarter2015.pdf

Statistics South Africa. (2016a). Gross domestic product, 1st quarter 2016, presentation. *Gross Domestic Product*, *P0441*(1st quarter), 1–41. Retrieved from http://www.statssa.gov.za/publications/P0441/GDP_presentation_Q1_2016.pdf

Statistics South Africa. (2016b). Statistical release: Consumer Price Index, September 2016. *Consumer Price Index*, *P0141*(September), 1–14. Retrieved from http://www.statssa.gov.za/publications/P0141/P0141September2016.pdf

Statistics South Africa. (2016c). Statistical release: Gross Domestic Product, First Quarter 2016. *Gross Domestic Product*, *P0441*(Q1), 1–21. Retrieved from http://www.statssa.gov.za/publications/P0441/P04411stQuarter2016.pdf

Statistics South Africa. (2016d). Statistical release: Quarterly Labour Force Survey, Quarter2:2016. *Quarterly Labour Force Survey*, *P0211*(Quarter 2), 1–134. Retrieved from http://www.statssa.gov.za/publications/P0211/P02112ndQuarter2016.pdf

Statistics South Africa. (2016e). Statistical release: Quarterly Labour Force Survey, Quarter 1:2016. *Quarterly Labour Force Survey*, *P0211*(Quarter 1), 1–70. Retrieved from http://www.statssa.gov.za/publications/P0211/P02111stQuarter2016.pdf

Statistics South Africa. (2016f). Statistics South Africa. Retrieved May 2, 2016, from http://www.statssa.gov.za

Stokes, B. (2007). South Africa Striving. *National Journal*, *39*(5), 28–34. Retrieved from http://0-search.ebscohost.com

Subrahmanyam, A., & Titman, S. (2013). Financial market shocks and the macroeconomy. *Review of Financial Studies*, *26*(11), 2687–2717. http://doi.org/10.1093/rfs/hht058

Swilling, M. (2013). Economic crisis, long waves and the sustainability transition: An African perspective. *Environmental Innovation and Societal Transitions*, *6*, 96–115. http://doi.org/10.1016/j.eist.2012.11.001

Tarawally, I., Sun, Z., Kargbo, A. A., & Kargbo, M. (2015). Modeling the Casual Link between Financial Development and Economic Growth in Sierra Leone. *Journal of Finance and Bank Management*, *3*(2), 49–67. http://doi.org/10.15640/jfbm.v3n2a5

Thompson, B. (1995). *Stepwise regression and stepwise discriminant analysis need not apply*. San Francisco.

Van Binsbergen, J. H., & Koijen, R. S. J. (2010). Predictive Regressions: A Present-Value Approach. *Journal of Finance*, *65*(4), 1439–1471.

http://doi.org/10.1111/j.1540-6261.2010.01575.x

van der Berg, S. (2014). Inequality, poverty and prospects for redistribution. *Development Southern Africa*, *31*(2), 197–218. http://doi.org/10.1080/0376835X.2013.871196

Van der Burg, M., & Van den Bulck, H. (2015). Economic, political and socio-cultural welfare in media merger control: An analysis of the Belgian and Dutch competition authorities' reviews of media mergers. *Information Economics and Policy*, *32*, 2–15. http://doi.org/10.1016/j.infoecopol.2015.07.002

Ward, M., & Muller, C. (2010). The long-term share price reaction to Black Economic Empowerment announcements on the JSE. *Investment Analysts Journal*, *39*(71), 27–36. http://doi.org/10.1080/10293523.2010.11082517

Wegner, T. (2014). *Applied Business Statistics*. (P. Carter, Ed.) (3rd Ed.). Cape Town: Juta & Company Ltd.

Westerman, G., Calméjane, C., Bonnet, D., Ferraris, P., & McAfee, A. (2011). Digital Transformation: A Road-Map for Billion-Dollar Organizations. *MIT Center for Digital Business and Capgemini Consulting*, 1–68. Retrieved from https://www.capgemini.com/resource-file-access/resource/pdf/Digital_Transformation__A_Road-Map_for_Billion-Dollar_Organizations.pdf

World Federation of Exchanges. (2015). *WFE Report on SME Exchanges*. Retrieved from http://www.world-exchanges.org

Yang, K., & Miller, G. (2008). *Handbook of Research Methods in Public Administration*. (E. M. Berman, Ed.) (2nd ed.). Boca Raton, FL: Taylor & Francis Group. Retrieved from http://www.taylorandfrancis.com

Ye, M., Hutson, E., & Muckley, C. (2014). Exchange rate regimes and foreign exchange exposure: The case of emerging market firms. *Emerging Markets Review*, *21*, 156–182. http://doi.org/10.1016/j.ememar.2014.09.001

Yue, V. Z. (2010). Sovereign default and debt renegotiation. *Journal of International Economics*, *80*(2), 176–187. http://doi.org/10.1016/j.jinteco.2009.11.004

© University of Pretoria

CHAPTER 9. Appendices

9.1. Consistency Matrix

HYPOTHESES	LITERATURE REVIEW	DATA COLLECTION TOOL	ANALYSIS METHOD
1. Exchange Rate: **Research question one (RQ1):** Can you predict with a reasonable accuracy, that a correlation exists between the countries exchange rate and stock market performance?	• Farhi & Gabaix, 2016 • Gabaix & Maggiori, 2015 • Bruno & Shin, 2015 • Fillat & Garetto, 2015 • Cavallo et al., 2014 • Aguiar & Gopinath, 2006	• J200 TOP 40 Index • J201 MID CAP Index • J202 SMALL CAP Index • J203 ALL SHARE Index • J204 FLEDGLING Index • ZAR / EURO Exchange rate • ZAR / US$ Exchange rate	• Descriptive statistic • Univariate • Multivariate • ANOVA • Correlation • Regression analysis • Histogram, PP Plot & QQ Plot
2. Debt Rate: **Research question two (RQ2):** Can you predict with a reasonable accuracy, that a correlation exists between the countries debt rate and stock market performance?	• D. M. Bordo & Kydland, 1995 • Diebold et al., 1991 • Gabaix & Maggiori, 2015 • Acharya & Schnabl, 2010 • Bertaut et al., 2009 • Bozoklu & Yilanci, 2014 • Boafo-Arthur, 2003 • Kohli, 1978 • Bond, 2016 • Clift & Tomlinson, 2008 • Peleg & Arieli, 2006 • Farhadian & Dunn Jr., 1986 • Lee & Wang, 2012	• J200 TOP 40 Index • J201 MID CAP Index • J202 SMALL CAP Index • J203 ALL SHARE Index • J204 FLEDGLING Index • SA BOND 30 YR • SA BOND 10 YR	• Descriptive statistic • Univariate • Multivariate • ANOVA • Correlation • Regression analysis • Histogram, PP Plot & QQ Plot

HYPOTHESES	LITERATURE REVIEW	DATA COLLECTION TOOL	ANALYSIS METHOD
3. GDP growth: **Research question three (RQ3):** Can you predict with a reasonable accuracy, that a correlation exists between the countries GDP rate and stock market performance?	• Miles et al., 2012 • Cooper & John, 2011 • Kung, 2015 • Segal et al., 2015 • Fillat & Garetto, 2015	• J200 TOP 40 Index • J201 MID CAP Index • J202 SMALL CAP Index • J203 ALL SHARE Index • J204 FLEDGLING Index • GDP Growth	• Descriptive statistic • Univariate • Multivariate • ANOVA • Correlation • Regression analysis • Histogram, PP Plot & QQ Plot
4. Inflation: **Research question four (RQ4):** Can you predict with a reasonable accuracy, that a correlation exists between the countries inflation rate and stock market performance?	• Jotikasthira et al., 2015 • Bruno & Shin, 2015 • Kung, 2015 • Bauer et al., 2014 • Tarawally et al., 2015	• J200 TOP 40 Index • J201 MID CAP Index • J202 SMALL CAP Index • J203 ALL SHARE Index • J204 FLEDGLING Index • CPI • PPI	• Descriptive statistic • Univariate • Multivariate • ANOVA • Correlation • Regression analysis • Histogram, PP Plot & QQ Plot
5. Unemployment: **Research question five (RQ5):** Can you predict with a reasonable accuracy, that a correlation exists between the countries unemployment rate and stock market performance?	• Mclean & Zhao, 2014 • Paravisini et al., 2015 • Chodorow-Reich, 2014 • Tarawally et al., 2015 • Gelber et al., 2016 • Michaillat & Saez, 2015 • Sampson, 2016 • Coibion & Gorodnichenko, 2012 • Campante & Yanagizawa-Drott, 2015 • Møller & Rangvid, 2015	• J200 TOP 40 Index • J201 MID CAP Index • J202 SMALL CAP Index • J203 ALL SHARE Index • J204 FLEDGLING Index • Labour Survey	• Descriptive statistic • Univariate • Multivariate • ANOVA • Correlation • Regression analysis • Histogram, PP Plot & QQ Plot

9.2. JSE Main Board indices - market capitalisation analysis

Index	Number of Securities	% of total Securities	Total Market Cap	% of total Market Cap	*Note
J200	42	12.6%	R 9,278,797,221,197	81.10%	1
J201	61	18.3%	R 1,320,886,063,037	11.54%	2
J202	66	19.8%	R 290,480,703,629	2.54%	3
J204	94	28.1%	R 75,479,877,422	0.66%	4
TOTAL	**263**	**78.7%**	**R 10,965,643,865,285**	**95.84%**	**5**
Other	71	21.3%	R 475,776,471,998	4.16%	6
TOTAL	**334**	**100.0%**	**R 11,441,420,337,283**	**100.0%**	**7**

<u>*Note 1:</u>

The following shares are dual listed (FTSE and JSE) on the main board. The study allocated the secondary line, towards the main listed security. The result is that the J200 Index, consist of 40 securities only.

Security	Ticker	ISIN	Curr. Index	Mkt Cap (ZAR)	Notes
MONDI PLC	MNP	GB00B1CRLC47	TOPI	R 118,710,590,216.25	
MONDI LTD	MND	ZAE000156550	TOPI	R 38,338,452,066.90	Secondary Line
INVESTEC PLC	INP	GB00B17BBQ50	TOPI	R 71,704,586,109.38	
INVESTEC LTD	INL	ZAE000081949	TOPI	R 33,973,008,119.60	Secondary Line

<u>*Note 2:</u>

The following share contains class A and B shares. The study allocated the secondary line, towards the main listed security. The result is that the J201 Index, consist of 60 securities only.

Security	Ticker	ISIN	Curr. Index	Mkt Cap (ZAR)	Notes
FORTRESS INC FUND LTD B	FFB	ZAE000192795	MIDC	R 42,594,856,616.69	
FORTRESS INC FUND LTD A	FFA	ZAE000192787	MIDC	R 38,338,452,066.90	Secondary Line

<u>*Note 3:</u>

The following shares contain class A and B shares. The study allocated the secondary line, towards the main listed security. The result is that the J202 Index, consist of 63 securities only.

Security	Ticker	ISIN	Curr. Index	Mkt Cap (ZAR)	Notes
ALLIED ELEC CORP N	AEN	ZAE000191359	SMLC	R 1,357,306,061.94	
ALLIED ELECTRONICS CORP A	AEL	ZAE000191342	SMLC	R 560,046,394.30	Secondary Line
ARROWHEAD PROPERTIES A	AWA	ZAE000203105	SMLC	R 4,288,552,598.40	
ARROWHEAD PROPERTIES B	AWB	ZAE000203113	SMLC	R 4,244,791,857.60	Secondary Line
DIPULA INCOME FUND A	DIA	ZAE000203378	SMLC	R 2,223,963,907.00	Failed Liquidity Testing; Secondary Line; Individual security not eligible in its own right
DIPULA INCOME FUND B	DIB	ZAE000203394	SMLC	R 2,200,337,746.20	Individual security not eligible in its own right

<u>*Note 4:</u>

The following shares were removed as noted. The result is that the J204 Index, consist of 92 securities only.

© University of Pretoria

Security	Ticker	ISIN	Curr. Index	Mkt Cap (ZAR)	Notes
SABVEST LTD -N-	SVN	ZAE000012043	FLED	R 866,490,000.00	
SABVEST LTD	SBV	ZAE000006417	FLED	R 596,834,299.80	Secondary Line
GOLIATH GOLD MINING LTD	GGM	ZAE000154753	FLED	R 162,090,395.50	Deleted after cut-date due to Scheme of Arrangement

9.3. Research Question sub-analysis

a) Research Question 1

USD / ZAR	2001-2005	2006-2010	2011-2015	2001-2015
J200	RQ1A-J200.1	RQ1A-J200.2	RQ1A-J200.3	RQ1A-J200.0
J201	RQ1A-J201.1	RQ1A-J201.2	RQ1A-J201.3	RQ1A-J201.0
J202	RQ1A-J202.1	RQ1A-J202.2	RQ1A-J202.3	RQ1A-J202.0
J203	RQ1A-J203.1	RQ1A-J203.2	RQ1A-J203.3	RQ1A-J203.0
J204	RQ1A-J204.1	RQ1A-J204.2	RQ1A-J204.3	RQ1A-J204.0

EURO / ZAR	2001-2005	2006-2010	2011-2015	2001-2015
J200	RQ1B-J200.1	RQ1B-J200.2	RQ1B-J200.3	RQ1B-J200.0
J201	RQ1B-J201.1	RQ1B-J201.2	RQ1B-J201.3	RQ1B-J201.0
J202	RQ1B-J202.1	RQ1B-J202.2	RQ1B-J202.3	RQ1B-J202.0
J203	RQ1B-J203.1	RQ1B-J203.2	RQ1B-J203.3	RQ1B-J203.0
J204	RQ1B-J204.1	RQ1B-J204.2	RQ1B-J204.3	RQ1B-J204.0

b) Research Question 2

SAB30YR	2001-2005	2006-2010	2011-2015	2001-2015
J200	RQ2A-J200.1	RQ2A-J200.2	RQ2A-J200.3	RQ2A-J200.0
J201	RQ2A-J201.1	RQ2A-J201.2	RQ2A-J201.3	RQ2A-J201.0
J202	RQ2A-J202.1	RQ2A-J202.2	RQ2A-J202.3	RQ2A-J202.0
J203	RQ2A-J203.1	RQ2A-J203.2	RQ2A-J203.3	RQ2A-J203.0
J204	RQ2A-J204.1	RQ2A-J204.2	RQ2A-J204.3	RQ2A-J204.0

SAB15YR	2001-2005	2006-2010	2011-2015	2001-2015
J200	RQ2B-J200.1	RQ2B-J200.2	RQ2B-J200.3	RQ2B-J200.0
J201	RQ2B-J201.1	RQ2B-J201.2	RQ2B-J201.3	RQ2B-J201.0
J202	RQ2B-J202.1	RQ2B-J202.2	RQ2B-J202.3	RQ2B-J202.0
J203	RQ2B-J203.1	RQ2B-J203.2	RQ2B-J203.3	RQ2B-J203.0
J204	RQ2B-J204.1	RQ2B-J204.2	RQ2B-J204.3	RQ2B-J204.0

c) Research Question 3

GDP	2001-2005	2006-2010	2011-2015	2001-2015
J200	RQ3-J200.1	RQ3-J200.2	RQ3-J200.3	RQ3-J200.0
J201	RQ3-J201.1	RQ3-J201.2	RQ3-J201.3	RQ3-J201.0
J202	RQ3-J202.1	RQ3-J202.2	RQ3-J202.3	RQ3-J202.0
J203	RQ3-J203.1	RQ3-J203.2	RQ3-J203.3	RQ3-J203.0
J204	RQ3-J204.1	RQ3-J204.2	RQ3-J204.3	RQ3-J204.0

d) Research Question 4

CPI	2001-2005	2006-2010	2011-2015	2001-2015
J200	RQ4A-J200.1	RQ4A-J200.2	RQ4A-J200.3	RQ4A-J200.0
J201	RQ4A-J201.1	RQ4A-J201.2	RQ4A-J201.3	RQ4A-J201.0
J202	RQ4A-J202.1	RQ4A-J202.2	RQ4A-J202.3	RQ4A-J202.0
J203	RQ4A-J203.1	RQ4A-J203.2	RQ4A-J203.3	RQ4A-J203.0
J204	RQ4A-J204.1	RQ4A-J204.2	RQ4A-J204.3	RQ4A-J204.0

PPI	2001-2005	2006-2010	2011-2015	2001-2015
J200	RQ4B-J200.1	RQ4B-J200.2	RQ4B-J200.3	RQ4B-J200.0
J201	RQ4B-J201.1	RQ4B-J201.2	RQ4B-J201.3	RQ4B-J201.0
J202	RQ4B-J202.1	RQ4B-J202.2	RQ4B-J202.3	RQ4B-J202.0
J203	RQ4B-J203.1	RQ4B-J203.2	RQ4B-J203.3	RQ4B-J203.0
J204	RQ4B-J204.1	RQ4B-J204.2	RQ4B-J204.3	RQ4B-J204.0

© University of Pretoria

e) Research Question 5

GDP	2001-2005	2006-2010	2011-2015	2001-2015
J200	RQ5-J200.1	RQ5-J200.2	RQ5-J200.3	RQ5-J200.0
J201	RQ5-J201.1	RQ5-J201.2	RQ5-J201.3	RQ5-J201.0
J202	RQ5-J202.1	RQ5-J202.2	RQ5-J202.3	RQ5-J202.0
J203	RQ5-J203.1	RQ5-J203.2	RQ5-J203.3	RQ5-J203.0
J204	RQ5-J204.1	RQ5-J204.2	RQ5-J204.3	RQ5-J204.0

9.4. Credit Rating agencies rating scale

Figure 6.5.1: Credit Agency comparison scale

source: http://billiontrader.com

<table>
<tr><th colspan="2">Moody's</th><th colspan="2">S&P</th><th colspan="2">Fitch</th><th colspan="2" rowspan="2">Description</th></tr>
<tr><th>Long-term</th><th>Short-term</th><th>Long-term</th><th>Short-term</th><th>Long-term</th><th>Short-term</th></tr>
<tr><td>Aaa</td><td rowspan="6">P-1</td><td>AAA</td><td rowspan="4">A-1+</td><td>AAA</td><td rowspan="4">F1+</td><td>Prime</td><td rowspan="10">Investment-grade</td></tr>
<tr><td>Aa1</td><td>AA+</td><td>AA+</td><td rowspan="3">High grade</td></tr>
<tr><td>Aa2</td><td>AA</td><td>AA</td></tr>
<tr><td>Aa3</td><td>AA−</td><td>AA−</td></tr>
<tr><td>A1</td><td>A+</td><td rowspan="2">A-1</td><td>A+</td><td rowspan="2">F1</td><td rowspan="3">Upper medium grade</td></tr>
<tr><td>A2</td><td>A</td><td>A</td></tr>
<tr><td>A3</td><td rowspan="2">P-2</td><td>A−</td><td rowspan="2">A-2</td><td>A−</td><td rowspan="2">F2</td></tr>
<tr><td>Baa1</td><td>BBB+</td><td>BBB+</td><td rowspan="3">Lower medium grade</td></tr>
<tr><td>Baa2</td><td rowspan="2">P-3</td><td>BBB</td><td rowspan="2">A-3</td><td>BBB</td><td rowspan="2">F3</td></tr>
<tr><td>Baa3</td><td>BBB−</td><td>BBB−</td></tr>
<tr><td>Ba1</td><td rowspan="14">Not prime</td><td>BB+</td><td rowspan="6">B</td><td>BB+</td><td rowspan="6">B</td><td rowspan="3">Speculative</td><td rowspan="14">Non-investment grade</td></tr>
<tr><td>Ba2</td><td>BB</td><td>BB</td></tr>
<tr><td>Ba3</td><td>BB−</td><td>BB−</td></tr>
<tr><td>B1</td><td>B+</td><td>B+</td><td rowspan="3">Highly speculative</td></tr>
<tr><td>B2</td><td>B</td><td>B</td></tr>
<tr><td>B3</td><td>B−</td><td>B−</td></tr>
<tr><td>Caa1</td><td>CCC+</td><td rowspan="5">C</td><td>CCC</td><td rowspan="5">C</td><td>Substantial risks</td></tr>
<tr><td>Caa2</td><td>CCC</td><td></td><td>Extremely speculative</td></tr>
<tr><td>Caa3</td><td>CCC−</td><td></td><td>Default imminent with little</td></tr>
<tr><td rowspan="2">Ca</td><td>CC</td><td></td><td rowspan="2">prospect for recovery</td></tr>
<tr><td>C</td><td></td></tr>
<tr><td>C</td><td rowspan="3">D</td><td rowspan="3">/</td><td>DDD</td><td rowspan="3">/</td><td rowspan="3">In default</td></tr>
<tr><td rowspan="2">/</td><td>DD</td></tr>
<tr><td>D</td></tr>
</table>

© University of Pretoria

9.5. Hypothesis 1A: Exchange Rate (2001-2015)

a) Descriptive statistics

Statistics

		J200	J201	J202	J203	J204	USD/ZAR	EUR/ZAR
N	Valid	3799	3799	3799	3799	3549	3799	3799
	Missing	0	0	0	0	250	0	0
Mean		23741.2041	33294.4442	27465.2768	26335.1228	4159.1101	8.31457	10.29453
Median		24074.1900	31102.7400	27425.4900	26730.0600	4358.5400	7.78350	9.88050
Mode		7571.97[a]	6965.04[a]	5625.86	9089.89[a]	907.52[a]	8.020	9.652[a]
Std. Deviation		12264.26252	19828.14554	16482.33397	13908.18712	1860.81404	1.759725	2.134827
Skewness		.375	.379	.353	.372	-.316	.856	.507
Std. Error of Skewness		.040	.040	.040	.040	.041	.040	.040
Kurtosis		-.943	-.992	-.854	-.949	-1.077	-.141	-.689
Std. Error of Kurtosis		.079	.079	.079	.079	.082	.079	.079
Minimum		6753.06	6772.62	5051.68	7189.99	872.18	5.635	6.776
Maximum		49081.01	76601.28	62435.68	55188.34	7009.86	14.050	15.587
Sum		90192834.32	126485593.66	104340586.50	100047131.45	14760681.71	31587.046	39108.928

a. Multiple modes exist. The smallest value is shown

b) Univariate Analysis of Variance

J200-USD/ZAR

Tests of Between-Subjects Effects

Dependent Variable: J200

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	144150133999.804[a]	1	144150133999.804	1281.477	.000	.252	1281.477	1.000
Intercept	4691440364.290	1	4691440364.290	41.706	.000	.011	41.706	1.000
USD_ZAR	144150133999.797	1	144150133999.797	1281.477	.000	.252	1281.477	1.000
Error	427115155473.290	3797	112487531.070					
Total	2712551775999.591	3799						
Corrected Total	571265289473.094	3798						

a. R Squared = .252 (Adjusted R Squared = .252)
b. Computed using alpha = .05

Parameter Estimates

Dependent Variable: J200

Parameter	B	Std. Error	t	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound	Partial Eta Squared	Noncent. Parameter	Observed Power[a]
Intercept	-5367.637	831.155	-6.458	.000	-6997.192	-3738.083	.011	6.458	1.000
USD_ZAR	3500.944	97.798	35.798	.000	3309.203	3692.686	.252	35.798	1.000

a. Computed using alpha = .05

J200-EUR/ZAR

Tests of Between-Subjects Effects

Dependent Variable: J200

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	376987434390.113[a]	1	376987434390.113	7367.908	.000	.660	7367.908	1.000
Intercept	92482926137.850	1	92482926137.850	1807.502	.000	.323	1807.502	1.000
EUR_ZAR	376987434390.115	1	376987434390.115	7367.908	.000	.660	7367.908	1.000
Error	194277855082.981	3797	51166145.663					
Total	2712551775999.591	3799						
Corrected Total	571265289473.094	3798						

a. R Squared = .660 (Adjusted R Squared = .660)
b. Computed using alpha = .05

Parameter Estimates

Dependent Variable: J200

Parameter	B	Std. Error	t	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound	Partial Eta Squared	Noncent. Parameter	Observed Power[a]
Intercept	-24301.772	571.608	-42.515	.000	-25422.461	-23181.083	.323	42.515	1.000
EUR_ZAR	4666.844	54.369	85.837	.000	4560.249	4773.439	.660	85.837	1.000

a. Computed using alpha = .05

J201-USD/ZAR

Tests of Between-Subjects Effects

Dependent Variable: J201

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	328122560943.362[a]	1	328122560943.362	1069.351	.000	.220	1069.351	1.000
Intercept	18374725291.466	1	18374725291.466	59.883	.000	.016	59.883	1.000
USD_ZAR	328122560943.367	1	328122560943.367	1069.351	.000	.220	1069.351	1.000
Error	1165081479526.456	3797	306842633.533					
Total	5704471585421.020	3799						
Corrected Total	1493204040469.818	3798						

a. R Squared = .220 (Adjusted R Squared = .220)
b. Computed using alpha = .05

Parameter Estimates

Dependent Variable: J201

Parameter	B	Std. Error	t	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound	Partial Eta Squared	Noncent. Parameter	Observed Power[a]
Intercept	-10622.837	1372.739	-7.738	.000	-13314.213	-7931.460	.016	7.738	1.000
USD_ZAR	5281.967	161.523	32.701	.000	4965.286	5598.648	.220	32.701	1.000

a. Computed using alpha = .05

J201-EUR/ZAR

Tests of Between-Subjects Effects

Dependent Variable: J201

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	900774219753.718[a]	1	900774219753.718	5773.240	.000	.603	5773.240	1.000
Intercept	262841571495.288	1	262841571495.288	1684.604	.000	.307	1684.604	1.000
EUR_ZAR	900774219753.715	1	900774219753.715	5773.240	.000	.603	5773.240	1.000
Error	592429820716.100	3797	156025762.633					
Total	5704471585421.020	3799						
Corrected Total	1493204040469.818	3798						

a. R Squared = .603 (Adjusted R Squared = .603)
b. Computed using alpha = .05

Parameter Estimates

Dependent Variable: J201

Parameter	B	Std. Error	t	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound	Partial Eta Squared	Noncent. Parameter	Observed Power[a]
Intercept	-40968.889	998.172	-41.044	.000	-42925.894	-39011.885	.307	41.044	1.000
EUR_ZAR	7213.862	94.942	75.982	.000	7027.720	7400.004	.603	75.982	1.000

a. Computed using alpha = .05

J202-USD/ZAR

Tests of Between-Subjects Effects

Dependent Variable: J202

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	220652110560.968[a]	1	220652110560.968	1032.887	.000	.214	1032.887	1.000
Intercept	11899892322.596	1	11899892322.596	55.704	.000	.014	55.704	1.000
USD_ZAR	220652110560.966	1	220652110560.966	1032.887	.000	.214	1032.887	1.000
Error	811140421165.530	3797	213626658.195					
Total	3897535619687.530	3799						
Corrected Total	1031792531726.498	3798						

a. R Squared = .214 (Adjusted R Squared = .214)
b. Computed using alpha = .05

Parameter Estimates

Dependent Variable: J202

Parameter	B	Std. Error	t	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound	Partial Eta Squared	Noncent. Parameter	Observed Power[a]
Intercept	-8548.730	1145.402	-7.464	.000	-10794.392	-6303.068	.014	7.464	1.000
USD_ZAR	4331.434	134.774	32.139	.000	4067.198	4595.670	.214	32.139	1.000

a. Computed using alpha = .05

J202-EUR/ZAR

Tests of Between-Subjects Effects

Dependent Variable: J202

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	641513785875.613[a]	1	641513785875.613	6241.252	.000	.622	6241.252	1.000
Intercept	194098563085.936	1	194098563085.936	1888.374	.000	.332	1888.374	1.000
EUR_ZAR	641513785875.615	1	641513785875.615	6241.252	.000	.622	6241.252	1.000
Error	390278745850.885	3797	102786080.024					
Total	3897535619687.530	3799						
Corrected Total	1031792531726.498	3798						

a. R Squared = .622 (Adjusted R Squared = .622)
b. Computed using alpha = .05

Parameter Estimates

Dependent Variable: J202

Parameter	B	Std. Error	t	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound	Partial Eta Squared	Noncent. Parameter	Observed Power[a]
Intercept	-35206.133	810.167	-43.455	.000	-36794.537	-33617.729	.332	43.455	1.000
EUR_ZAR	6087.835	77.060	79.002	.000	5936.752	6238.917	.622	79.002	1.000

a. Computed using alpha = .05

J203-USD/ZAR

Tests of Between-Subjects Effects

Dependent Variable: J203

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	181664476539.081[a]	1	181664476539.081	1247.315	.000	.247	1247.315	1.000
Intercept	6550596811.123	1	6550596811.123	44.977	.000	.012	44.977	1.000
USD_ZAR	181664476539.091	1	181664476539.091	1247.315	.000	.247	1247.315	1.000
Error	553011789821.242	3797	145644400.796					
Total	3369429757219.425	3799						
Corrected Total	734676266360.323	3798						

a. R Squared = .247 (Adjusted R Squared = .247)
b. Computed using alpha = .05

Parameter Estimates

Dependent Variable: J203

Parameter	B	Std. Error	t	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound	Partial Eta Squared	Noncent. Parameter	Observed Power[a]
Intercept	-6342.647	945.751	-6.706	.000	-8196.876	-4488.417	.012	6.706	1.000
USD_ZAR	3930.182	111.282	35.317	.000	3712.004	4148.360	.247	35.317	1.000

a. Computed using alpha = .05

J203-EUR/ZAR

Tests of Between-Subjects Effects

Dependent Variable: J203

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	480036504191.748[a]	1	480036504191.748	7157.950	.000	.653	7157.950	1.000
Intercept	121704234688.130	1	121704234688.130	1814.764	.000	.323	1814.764	1.000
EUR_ZAR	480036504191.729	1	480036504191.729	7157.950	.000	.653	7157.950	1.000
Error	254639762168.575	3797	67063408.525					
Total	3369429757219.425	3799						
Corrected Total	734676266360.323	3798						

a. R Squared = .653 (Adjusted R Squared = .653)
b. Computed using alpha = .05

Parameter Estimates

Dependent Variable: J203

Parameter	B	Std. Error	t	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound	Partial Eta Squared	Noncent. Parameter	Observed Power[a]
Intercept	-27877.897	654.410	-42.600	.000	-29160.926	-26594.868	.323	42.600	1.000
EUR_ZAR	5266.195	62.245	84.605	.000	5144.159	5388.232	.653	84.605	1.000

a. Computed using alpha = .05

J204-USD/ZAR

Tests of Between-Subjects Effects

Dependent Variable: J204

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	1321427791.992[a]	1	1321427791.992	427.500	.000	.108	427.500	1.000
Intercept	287033494.118	1	287033494.118	92.859	.000	.026	92.859	1.000
USD_ZAR	1321427791.992	1	1321427791.992	427.500	.000	.108	427.500	1.000
Error	10963979537.919	3547	3091057.101					
Total	73676707576.022	3549						
Corrected Total	12285407329.911	3548						

a. R Squared = .108 (Adjusted R Squared = .107)
b. Computed using alpha = .05

Parameter Estimates

Dependent Variable: J204

Parameter	B	Std. Error	t	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound	Partial Eta Squared	Noncent. Parameter	Observed Power[a]
Intercept	1342.960	139.364	9.636	.000	1069.719	1616.202	.026	9.636	1.000
USD_ZAR	339.444	16.417	20.676	.000	307.256	371.633	.108	20.676	1.000

a. Computed using alpha = .05

J204-EUR/ZAR

Tests of Between-Subjects Effects

Dependent Variable: J204

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	5026153955.615[a]	1	5026153955.615	2455.868	.000	.409	2455.868	1.000
Intercept	465108745.749	1	465108745.749	227.260	.000	.060	227.260	1.000
EUR_ZAR	5026153955.615	1	5026153955.615	2455.868	.000	.409	2455.868	1.000
Error	7259253374.295	3547	2046589.618					
Total	73676707576.022	3549						
Corrected Total	12285407329.911	3548						

a. R Squared = .409 (Adjusted R Squared = .409)
b. Computed using alpha = .05

Parameter Estimates

Dependent Variable: J204

Parameter	B	Std. Error	t	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound	Partial Eta Squared	Noncent. Parameter	Observed Power[a]
Intercept	-1869.205	123.992	-15.075	.000	-2112.309	-1626.101	.060	15.075	1.000
EUR_ZAR	574.981	11.602	49.557	.000	552.232	597.729	.409	49.557	1.000

a. Computed using alpha = .05

c) Bivariate Correlation

Correlations

		J200	J201	J202	J203	J204	USD/ZAR	EUR/ZAR
J200	Pearson Correlation	1	.986**	.991**	1.000**	.942**	.502**	.812**
	Sig. (2-tailed)		.000	.000	.000	.000	.000	.000
	N	3799	3799	3799	3799	3549	3799	3799
J201	Pearson Correlation	.986**	1	.989**	.990**	.928**	.469**	.777**
	Sig. (2-tailed)	.000		.000	.000	.000	.000	.000
	N	3799	3799	3799	3799	3549	3799	3799
J202	Pearson Correlation	.991**	.989**	1	.993**	.958**	.462**	.789**
	Sig. (2-tailed)	.000	.000		.000	.000	.000	.000
	N	3799	3799	3799	3799	3549	3799	3799
J203	Pearson Correlation	1.000**	.990**	.993**	1	.942**	.497**	.808**
	Sig. (2-tailed)	.000	.000	.000		.000	.000	.000
	N	3799	3799	3799	3799	3549	3799	3799
J204	Pearson Correlation	.942**	.928**	.958**	.942**	1	.328**	.640**
	Sig. (2-tailed)	.000	.000	.000	.000		.000	.000
	N	3549	3549	3549	3549	3549	3549	3549
USD/ZAR	Pearson Correlation	.502**	.469**	.462**	.497**	.328**	1	.752**
	Sig. (2-tailed)	.000	.000	.000	.000	.000		.000
	N	3799	3799	3799	3799	3549	3799	3799
EUR/ZAR	Pearson Correlation	.812**	.777**	.789**	.808**	.640**	.752**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	
	N	3799	3799	3799	3799	3549	3799	3799

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

			J200	J201	J202	J203	J204	USD/ZAR	EUR/ZAR
Kendall's tau_b	J200	Correlation Coefficient	1.000	.880**	.880**	.980**	.822**	.296**	.557**
		Sig. (2-tailed)	.	.000	.000	.000	.000	.000	.000
		N	3799	3799	3799	3799	3549	3799	3799
	J201	Correlation Coefficient	.880**	1.000	.926**	.901**	.832**	.256**	.520**
		Sig. (2-tailed)	.000	.	.000	.000	.000	.000	.000
		N	3799	3799	3799	3799	3549	3799	3799
	J202	Correlation Coefficient	.880**	.926**	1.000	.895**	.886**	.237**	.512**
		Sig. (2-tailed)	.000	.000	.	.000	.000	.000	.000
		N	3799	3799	3799	3799	3549	3799	3799
	J203	Correlation Coefficient	.980**	.901**	.895**	1.000	.825**	.288**	.550**
		Sig. (2-tailed)	.000	.000	.000	.	.000	.000	.000
		N	3799	3799	3799	3799	3549	3799	3799
	J204	Correlation Coefficient	.822**	.832**	.886**	.825**	1.000	.266**	.427**
		Sig. (2-tailed)	.000	.000	.000	.000	.	.000	.000
		N	3549	3549	3549	3549	3549	3549	3549
	USD/ZAR	Correlation Coefficient	.296**	.256**	.237**	.288**	.266**	1.000	.552**
		Sig. (2-tailed)	.000	.000	.000	.000	.000	.	.000
		N	3799	3799	3799	3799	3549	3799	3799
	EUR/ZAR	Correlation Coefficient	.557**	.520**	.512**	.550**	.427**	.552**	1.000
		Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.
		N	3799	3799	3799	3799	3549	3799	3799
Spearman's rho	J200	Correlation Coefficient	1.000	.975**	.976**	.999**	.950**	.383**	.762**
		Sig. (2-tailed)	.	.000	.000	.000	.000	.000	.000
		N	3799	3799	3799	3799	3549	3799	3799
	J201	Correlation Coefficient	.975**	1.000	.987**	.982**	.941**	.336**	.731**
		Sig. (2-tailed)	.000	.	.000	.000	.000	.000	.000
		N	3799	3799	3799	3799	3549	3799	3799
	J202	Correlation Coefficient	.976**	.987**	1.000	.981**	.978**	.322**	.723**
		Sig. (2-tailed)	.000	.000	.	.000	.000	.000	.000
		N	3799	3799	3799	3799	3549	3799	3799
	J203	Correlation Coefficient	.999**	.982**	.981**	1.000	.951**	.372**	.756**
		Sig. (2-tailed)	.000	.000	.000	.	.000	.000	.000
		N	3799	3799	3799	3799	3549	3799	3799
	J204	Correlation Coefficient	.950**	.941**	.978**	.951**	1.000	.371**	.632**
		Sig. (2-tailed)	.000	.000	.000	.000	.	.000	.000
		N	3549	3549	3549	3549	3549	3549	3549
	USD/ZAR	Correlation Coefficient	.383**	.336**	.322**	.372**	.371**	1.000	.728**
		Sig. (2-tailed)	.000	.000	.000	.000	.000	.	.000
		N	3799	3799	3799	3799	3549	3799	3799
	EUR/ZAR	Correlation Coefficient	.762**	.731**	.723**	.756**	.632**	.728**	1.000
		Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.
		N	3799	3799	3799	3799	3549	3799	3799

**. Correlation is significant at the 0.01 level (2-tailed).

d) Multivariate analysis

Tests of Between-Subjects Effects

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	J200	3.323E+011[a]	2	1.661E+011	3339.953	.000
	J201	7.753E+011[b]	2	3.877E+011	2538.793	.000
	J202	5.587E+011[c]	2	2.793E+011	2859.687	.000
	J203	4.212E+011[d]	2	2.106E+011	3232.200	.000
	J204	6.348E+009[e]	2	3.174E+009	1895.580	.000
Intercept	J200	6.069E+010	1	6.069E+010	1220.154	.000
	J201	1.646E+011	1	1.646E+011	1078.030	.000
	J202	1.192E+011	1	1.192E+011	1219.991	.000
	J203	7.903E+010	1	7.903E+010	1212.839	.000
	J204	2.342E+008	1	2.342E+008	139.850	.000
USD_ZAR	J200	1.254E+010	1	1.254E+010	252.029	.000
	J201	3.175E+010	1	3.175E+010	207.958	.000
	J202	2.996E+010	1	2.996E+010	306.707	.000
	J203	1.625E+010	1	1.625E+010	249.382	.000
	J204	1.322E+009	1	1.322E+009	789.412	.000
EUR_ZAR	J200	1.772E+011	1	1.772E+011	3561.908	.000
	J201	4.199E+011	1	4.199E+011	2749.536	.000
	J202	3.191E+011	1	3.191E+011	3267.019	.000
	J203	2.255E+011	1	2.255E+011	3461.275	.000
	J204	5.027E+009	1	5.027E+009	3001.970	.000
Error	J200	1.764E+011	3546	4.974E+007		
	J201	5.415E+011	3546	1.527E+008		
	J202	3.464E+011	3546	9.768E+007		
	J203	2.310E+011	3546	6.516E+007		
	J204	5.937E+009	3546	1.674E+006		
Total	J200	2.695E+012	3549			
	J201	5.690E+012	3549			
	J202	3.889E+012	3549			
	J203	3.350E+012	3549			
	J204	7.368E+010	3549			
Corrected Total	J200	5.086E+011	3548			
	J201	1.317E+012	3548			
	J202	9.050E+011	3548			
	J203	6.523E+011	3548			
	J204	1.229E+010	3548			

a. R Squared = .653 (Adjusted R Squared = .653)

b. R Squared = .589 (Adjusted R Squared = .589)

c. R Squared = .617 (Adjusted R Squared = .617)

d. R Squared = .646 (Adjusted R Squared = .646)

e. R Squared = .517 (Adjusted R Squared = .516)

e) Linear Regression

J200

Model Summary[b]

					Change Statistics					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.502[a]	.252	.252	10606.01391	.252	1281.477	1	3797	.000	.002

a. Predictors: (Constant), USD/ZAR
b. Dependent Variable: J200

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.812[a]	.660	.660	7153.05149	.660	7367.908	1	3797	.000	.007

a. Predictors: (Constant), EUR/ZAR
b. Dependent Variable: J200

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	144150133999.804	1	144150133999.804	1281.477	.000[b]
	Residual	427115155473.287	3797	112487531.070		
	Total	571265289473.091	3798			

a. Dependent Variable: J200
b. Predictors: (Constant), USD/ZAR

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	376987434390.113	1	376987434390.113	7367.908	.000[b]
	Residual	194277855082.978	3797	51166145.663		
	Total	571265289473.091	3798			

a. Dependent Variable: J200
b. Predictors: (Constant), EUR/ZAR

Coefficients[a]

Model		Unstandardized Coefficients: B	Std. Error	Standardized Coefficients: Beta	t	Sig.	95.0% Confidence Interval for B: Lower Bound	Upper Bound	Collinearity Statistics: Tolerance	VIF
1	(Constant)	-5367.637	831.155		-6.458	.000	-6997.192	-3738.083		
	USD/ZAR	3500.944	97.798	.502	35.798	.000	3309.203	3692.686	1.000	1.000

a. Dependent Variable: J200

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	USD/ZAR
1	1	1.978	1.000	.01	.01
	2	.022	9.556	.99	.99

a. Dependent Variable: J200

Coefficients[a]

Model		Unstandardized Coefficients: B	Std. Error	Standardized Coefficients: Beta	t	Sig.	95.0% Confidence Interval for B: Lower Bound	Upper Bound	Collinearity Statistics: Tolerance	VIF
1	(Constant)	-24301.772	571.608		-42.515	.000	-25422.461	-23181.083		
	EUR/ZAR	4666.844	54.369	.812	85.837	.000	4560.249	4773.439	1.000	1.000

a. Dependent Variable: J200

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	EUR/ZAR
1	1	1.979	1.000	.01	.01
	2	.021	9.748	.99	.99

a. Dependent Variable: J200

J201

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.469[a]	.220	.220	17516.92	.220	1069.351	1	3797	.000	.001

a. Predictors: (Constant), USD/ZAR
b. Dependent Variable: J201

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.777[a]	.603	.603	12491.02	.603	5773.240	1	3797	.000	.005

a. Predictors: (Constant), EUR/ZAR
b. Dependent Variable: J201

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	328122560943	1	328122560943	1069.351	.000[b]
	Residual	1165081479526	3797	306842633		
	Total	1493204040469	3798			

a. Dependent Variable: J201
b. Predictors: (Constant), USD/ZAR

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	900774219753	1	900774219753	5773.240	.000[b]
	Residual	592429820716	3797	156025762.633		
	Total	1493204040469	3798			

a. Dependent Variable: J201
b. Predictors: (Constant), EUR/ZAR

Coefficients[a]

Model		Unstandardized Coefficients: B	Std. Error	Standardized Coefficients: Beta	t	Sig.	95.0% Confidence Interval for B: Lower Bound	Upper Bound	Collinearity Statistics: Tolerance	VIF
1	(Constant)	-10622.837	1372.739		-7.738	.000	-13314.213	-7931.460		
	USD/ZAR	5281.967	161.523	.469	32.701	.000	4965.286	5598.648	1.000	1.000

a. Dependent Variable: J201

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	USD/ZAR
1	1	1.978	1.000	.01	.01
	2	.022	9.556	.99	.99

a. Dependent Variable: J201

Coefficients[a]

Model		Unstandardized Coefficients: B	Std. Error	Standardized Coefficients: Beta	t	Sig.	95.0% Confidence Interval for B: Lower Bound	Upper Bound	Collinearity Statistics: Tolerance	VIF
1	(Constant)	-40968.889	998.172		-41.044	.000	-42925.894	-39011.885		
	EUR/ZAR	7213.862	94.942	.777	75.982	.000	7027.720	7400.004	1.000	1.000

a. Dependent Variable: J201

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	EUR/ZAR
1	1	1.979	1.000	.01	.01
	2	.021	9.748	.99	.99

a. Dependent Variable: J201

J202

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.462[a]	.214	.214	14615.97	.214	1032.887	1	3797	.000	.001

a. Predictors: (Constant), USD/ZAR
b. Dependent Variable: J202

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.789[a]	.622	.622	10138.34	.622	6241.252	1	3797	.000	.005

a. Predictors: (Constant), EUR/ZAR
b. Dependent Variable: J202

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	220652110560	1	220652110560	1032.887	.000[b]
	Residual	811140421165	3797	213626658		
	Total	1031792531726	3798			

a. Dependent Variable: J202
b. Predictors: (Constant), USD/ZAR

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	641513785875	1	641513785875	6241.252	.000[b]
	Residual	390278745850	3797	102786080		
	Total	1031792531726	3798			

a. Dependent Variable: J202
b. Predictors: (Constant), EUR/ZAR

Coefficients[a]

Model		Unstandardized Coefficients: B	Std. Error	Standardized Coefficients: Beta	t	Sig.	95.0% Confidence Interval for B: Lower Bound	Upper Bound	Collinearity Statistics: Tolerance	VIF
1	(Constant)	-8548.730	1145.402		-7.464	.000	-10794.392	-6303.068		
	USD/ZAR	4331.434	134.774	.462	32.139	.000	4067.198	4595.670	1.000	1.000

a. Dependent Variable: J202

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	USD/ZAR
1	1	1.978	1.000	.01	.01
	2	.022	9.556	.99	.99

a. Dependent Variable: J202

Coefficients[a]

Model		Unstandardized Coefficients: B	Std. Error	Standardized Coefficients: Beta	t	Sig.	95.0% Confidence Interval for B: Lower Bound	Upper Bound	Collinearity Statistics: Tolerance	VIF
1	(Constant)	-35206.133	810.167		-43.455	.000	-36794.537	-33617.729		
	EUR/ZAR	6087.835	77.060	.789	79.002	.000	5936.752	6238.917	1.000	1.000

a. Dependent Variable: J202

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	EUR/ZAR
1	1	1.979	1.000	.01	.01
	2	.021	9.748	.99	.99

a. Dependent Variable: J202

J203

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.497[a]	.247	.247	12068.32	.247	1247.315	1	3797	.000	.002

a. Predictors: (Constant), USD/ZAR
b. Dependent Variable: J203

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.808[a]	.653	.653	8189.22	.653	7157.950	1	3797	.000	.007

a. Predictors: (Constant), EUR/ZAR
b. Dependent Variable: J203

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	181664476539	1	181664476539	1247.315	.000[b]
	Residual	553011789821	3797	145644400		
	Total	734676266360	3798			

a. Dependent Variable: J203
b. Predictors: (Constant), USD/ZAR

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	480036504191	1	480036504191	7157.950	.000[b]
	Residual	254639762168	3797	67063408		
	Total	734676266360	3798			

a. Dependent Variable: J203
b. Predictors: (Constant), EUR/ZAR

Coefficients[a]

Model		Unstandardized Coefficients: B	Std. Error	Standardized Coefficients: Beta	t	Sig.	95.0% Confidence Interval for B: Lower Bound	Upper Bound	Collinearity Statistics: Tolerance	VIF
1	(Constant)	-6342.647	945.751		-6.706	.000	-8196.876	-4488.417		
	USD/ZAR	3930.182	111.282	.497	35.317	.000	3712.004	4148.360	1.000	1.000

a. Dependent Variable: J203

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	USD/ZAR
1	1	1.978	1.000	.01	.01
	2	.022	9.556	.99	.99

a. Dependent Variable: J203

Coefficients[a]

Model		Unstandardized Coefficients: B	Std. Error	Standardized Coefficients: Beta	t	Sig.	95.0% Confidence Interval for B: Lower Bound	Upper Bound	Collinearity Statistics: Tolerance	VIF
1	(Constant)	-27877.897	654.410		-42.600	.000	-29160.926	-26594.868		
	EUR/ZAR	5266.195	62.245	.808	84.605	.000	5144.159	5388.232	1.000	1.000

a. Dependent Variable: J203

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	EUR/ZAR
1	1	1.979	1.000	.01	.01
	2	.021	9.748	.99	.99

a. Dependent Variable: J203

J204

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.328[a]	.108	.107	1758.14	.108	427.500	1	3547	.000	.001

a. Predictors: (Constant), USD/ZAR
b. Dependent Variable: J204

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.640[a]	.409	.409	1430.59	.409	2455.868	1	3547	.000	.003

a. Predictors: (Constant), EUR/ZAR
b. Dependent Variable: J204

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1321427791	1	1321427791	427.500	.000[b]
	Residual	10963979537	3547	3091057		
	Total	12285407329	3548			

a. Dependent Variable: J204
b. Predictors: (Constant), USD/ZAR

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5026153955	1	5026153955	2455.868	.000[b]
	Residual	7259253374	3547	2046589		
	Total	12285407329	3548			

a. Dependent Variable: J204
b. Predictors: (Constant), EUR/ZAR

Coefficients[a]

Model		Unstandardized Coefficients: B	Std. Error	Standardized Coefficients: Beta	t	Sig.	95.0% Confidence Interval for B: Lower Bound	Upper Bound	Collinearity Statistics: Tolerance	VIF
1	(Constant)	1342.960	139.364		9.636	.000	1069.719	1616.202		
	USD/ZAR	339.444	16.417	.328	20.676	.000	307.256	371.633	1.000	1.000

a. Dependent Variable: J204

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	USD/ZAR
1	1	1.977	1.000	.01	.01
	2	.023	9.337	.99	.99

a. Dependent Variable: J204

Coefficients[a]

Model		Unstandardized Coefficients: B	Std. Error	Standardized Coefficients: Beta	t	Sig.	95.0% Confidence Interval for B: Lower Bound	Upper Bound	Collinearity Statistics: Tolerance	VIF
1	(Constant)	-1869.205	123.992		-15.075	.000	-2112.309	-1626.101		
	EUR/ZAR	574.981	11.602	.640	49.557	.000	552.232	597.729	1.000	1.000

a. Dependent Variable: J204

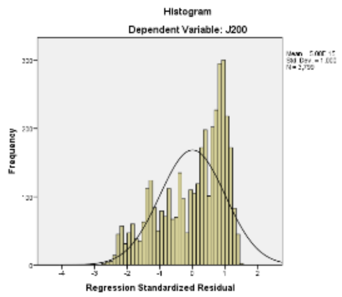
Collinearity Diagnostics[a]

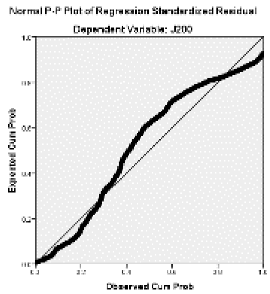
Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	EUR/ZAR
1	1	1.981	1.000	.01	.01
	2	.019	10.229	.99	.99

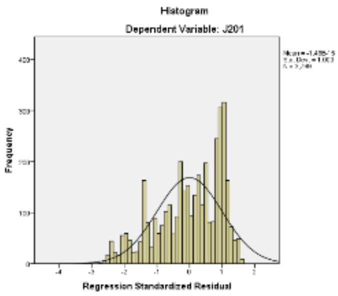
a. Dependent Variable: J204

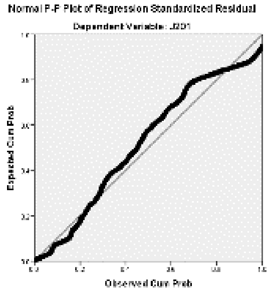
f) Histogram, P-P plot & Q-Q plot (individual)

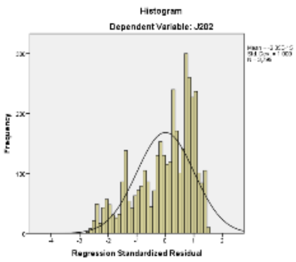
USD

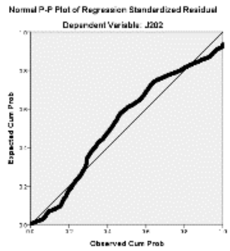


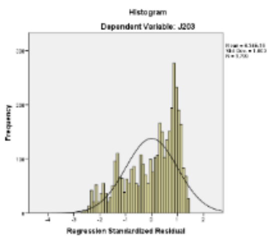


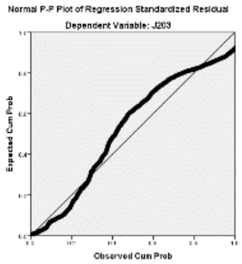


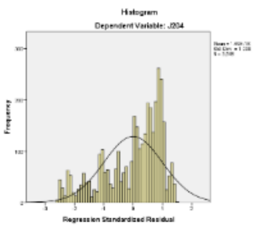


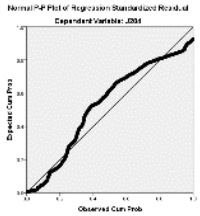




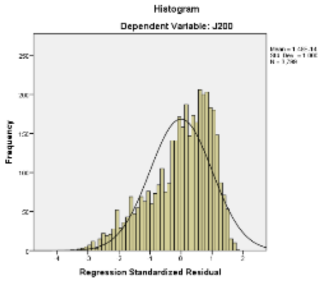


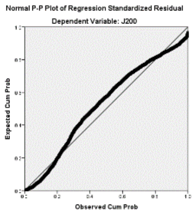


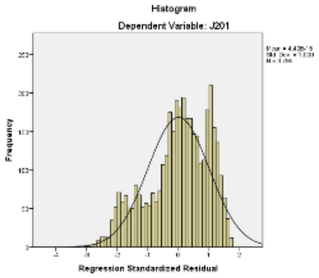


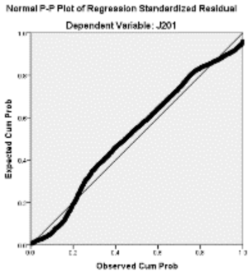


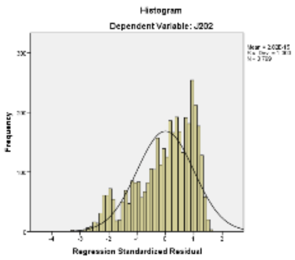
EUR

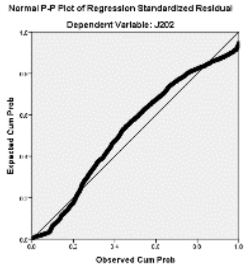

Histogram
Dependent Variable: J200
Frequency
Regression Standardized Residual

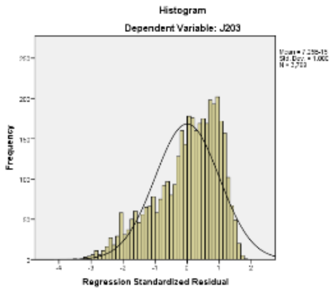

Normal P-P Plot of Regression Standardized Residual
Dependent Variable: J200
Expected Cum Prob
Observed Cum Prob

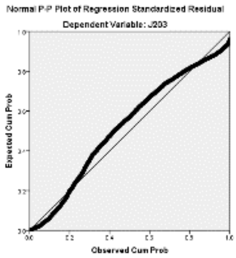

Histogram
Dependent Variable: J201
Frequency
Regression Standardized Residual

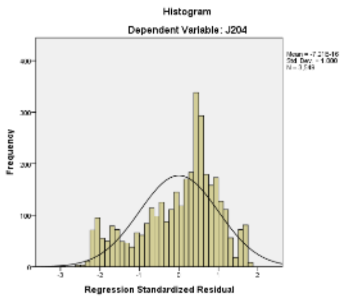

Normal P-P Plot of Regression Standardized Residual
Dependent Variable: J201
Expected Cum Prob
Observed Cum Prob

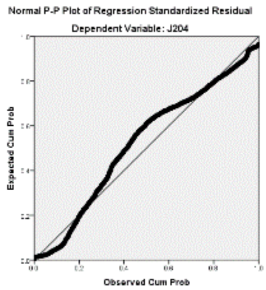

Histogram
Dependent Variable: J202
Frequency
Regression Standardized Residual


Normal P-P Plot of Regression Standardized Residual
Dependent Variable: J202
Expected Cum Prob
Observed Cum Prob


Histogram
Dependent Variable: J203
Frequency
Regression Standardized Residual


Normal P-P Plot of Regression Standardized Residual
Dependent Variable: J203
Expected Cum Prob
Observed Cum Prob

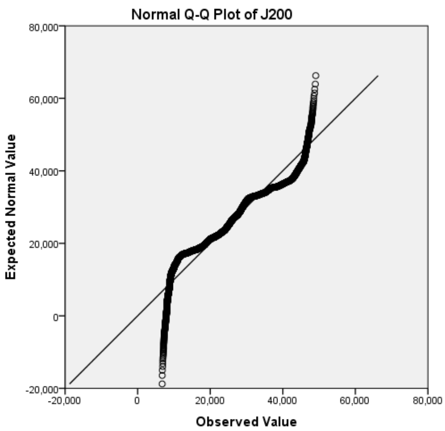

Histogram
Dependent Variable: J204
Frequency
Regression Standardized Residual

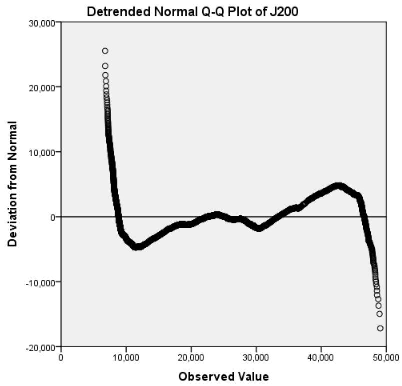

Normal P-P Plot of Regression Standardized Residual
Dependent Variable: J204
Expected Cum Prob
Observed Cum Prob

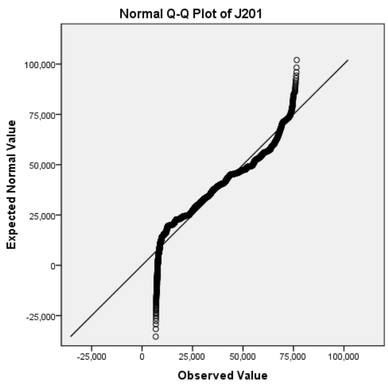
Estimated Distribution Parameters

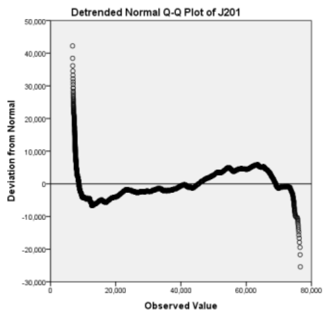
		J200	J201	J202	J203	J204	USD/ZAR	EUR/ZAR
Normal Distribution	Location	23741.2	33294.4	27465.3	26335.1	4159.1	8.315	10.295
	Scale	12264.3	19828.1	16482.3	13908.2	1860.8	1.760	2.135

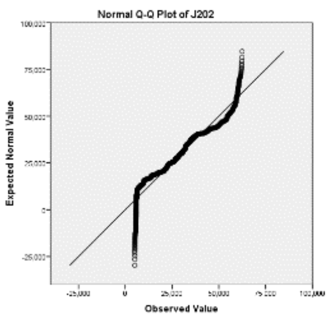
The cases are unweighted.

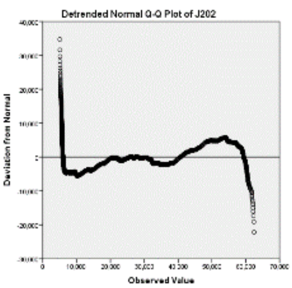


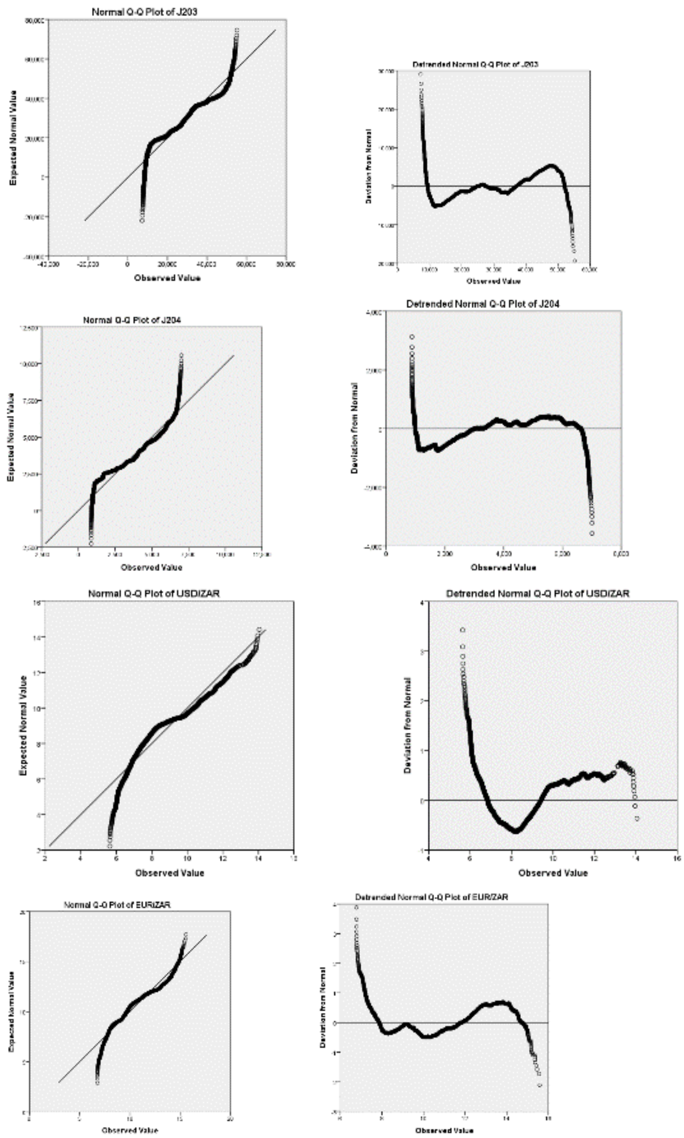











Normal Q-Q Plot of J203
Expected Normal Value
Observed Value
Detrended Normal Q-Q Plot of J203
Deviation from Normal
Observed Value
Normal Q-Q Plot of J204
Expected Normal Value
Observed Value
Detrended Normal Q-Q Plot of J204
Deviation from Normal
Observed Value
Normal Q-Q Plot of USDIZAR
Expected Normal Value
Observed Value
Detrended Normal Q-Q Plot of USDIZAR
Deviation from Normal
Observed Value
Normal Q-Q Plot of EURZAR
Expected Normal Value
Observed Value
Detrended Normal Q-Q Plot of EURZAR
Deviation from Normal
Observed Value

g) Combined Analysis (USD/ZAR + EUR/ZAR)

J200

Correlations

		J200	USD_ZAR	EUR_ZAR
Pearson Correlation	J200	1.000	.502	.812
	USD_ZAR	.502	1.000	.752
	EUR_ZAR	.812	.752	1.000
Sig. (1-tailed)	J200	.	.000	.000
	USD_ZAR	.000	.	.000
	EUR_ZAR	.000	.000	.
N	J200	3799	3799	3799
	USD_ZAR	3799	3799	3799
	EUR_ZAR	3799	3799	3799

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.829[a]	.687	.687	6860.49	.687	4170.713	2	3796	.000	.012

a. Predictors: (Constant), EUR/ZAR, USD/ZAR
b. Dependent Variable: J200

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	392601132812.931	2	196300566406.466	4170.713	.000[b]
	Residual	178664156660.160	3796	47066426.939		
	Total	571265289473.091	3798			

a. Dependent Variable: J200
b. Predictors: (Constant), EUR/ZAR, USD/ZAR

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	-20926.111	578.710		-36.160	.000	-22060.725	-19791.498		
	USD/ZAR	-1749.242	96.040	-.251	-18.214	.000	-1937.537	-1560.947	.434	2.305
	EUR/ZAR	5751.743	79.165	1.001	72.655	.000	5596.533	5906.954	.434	2.305

a. Dependent Variable: J200

Coefficient Correlations[a]

Model			EUR/ZAR	USD/ZAR
1	Correlations	EUR/ZAR	1.000	-.752
		USD/ZAR	-.752	1.000
	Covariances	EUR/ZAR	6267.141	-5720.641
		USD/ZAR	-5720.641	9223.699

a. Dependent Variable: J200

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	USD/ZAR	EUR/ZAR
1	1	2.965	1.000	.00	.00	.00
	2	.025	10.920	.99	.14	.11
	3	.010	16.885	.00	.86	.89

a. Dependent Variable: J200

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	3743.2495	48718.3984	23741.2041	10167.12807	3799
Residual	-26664.15820	16205.16895	.00000	6858.69099	3799
Std. Predicted Value	-1.967	2.457	.000	1.000	3799
Std. Residual	-3.887	2.362	.000	1.000	3799

a. Dependent Variable: J200

J201

Correlations

		J201	USD_ZAR	EUR_ZAR
Pearson Correlation	J201	1.000	.469	.777
	USD_ZAR	.469	1.000	.752
	EUR_ZAR	.777	.752	1.000
Sig. (1-tailed)	J201	.	.000	.000
	USD_ZAR	.000	.	.000
	EUR_ZAR	.000	.000	.
N	J201	3799	3799	3799
	USD_ZAR	3799	3799	3799
	EUR_ZAR	3799	3799	3799

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.796[a]	.634	.634	11997.74	.634	3288.686	2	3796	.000	.009

a. Predictors: (Constant), EUR/ZAR, USD/ZAR
b. Dependent Variable: J201

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	946785552171.105	2	473392776085.552	3288.686	.000[b]
	Residual	546418488298.710	3796	143945860.985		
	Total	1493204040469.815	3798			

a. Dependent Variable: J201
b. Predictors: (Constant), EUR/ZAR, USD/ZAR

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	-35174.091	1012.058		-34.755	.000	-37158.321	-33189.862		
	USD/ZAR	-3002.820	167.956	-.266	-17.879	.000	-3332.114	-2673.527	.434	2.305
	EUR/ZAR	9076.244	138.445	.977	65.558	.000	8804.810	9347.679	.434	2.305

a. Dependent Variable: J201

Coefficient Correlations[a]

Model			EUR/ZAR	USD/ZAR
1	Correlations	EUR/ZAR	1.000	-.752
		USD/ZAR	-.752	1.000
	Covariances	EUR/ZAR	19167.144	-17495.752
		USD/ZAR	-17495.752	28209.349

a. Dependent Variable: J201

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	USD/ZAR	EUR/ZAR
1	1	2.965	1.000	.00	.00	.00
	2	.025	10.920	.99	.14	.11
	3	.010	16.885	.00	.86	.89

a. Dependent Variable: J201

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	1761.8411	72089.4375	33294.4442	15788.77118	3799
Residual	-43210.40234	23082.43359	.00000	11994.58462	3799
Std. Predicted Value	-1.997	2.457	.000	1.000	3799
Std. Residual	-3.602	1.924	.000	1.000	3799

a. Dependent Variable: J201

J202

Correlations

		J202	USD_ZAR	EUR_ZAR
Pearson Correlation	J202	1.000	.462	.789
	USD_ZAR	.462	1.000	.752
	EUR_ZAR	.789	.752	1.000
Sig. (1-tailed)	J202	.	.000	.000
	USD_ZAR	.000	.	.000
	EUR_ZAR	.000	.000	.
N	J202	3799	3799	3799
	USD_ZAR	3799	3799	3799
	EUR_ZAR	3799	3799	3799

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.813[a]	.661	.661	9596.24	.661	3704.217	2	3796	.000	.010

a. Predictors: (Constant), EUR/ZAR, USD/ZAR
b. Dependent Variable: J202

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	682226981313.468	2	341113490656.734	3704.217	.000[b]
	Residual	349565550413.030	3796	92087868.918		
	Total	1031792531726.498	3798			

a. Dependent Variable: J202
b. Predictors: (Constant), EUR/ZAR, USD/ZAR

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.	95.0% Confidence Interval for B Lower Bound	95.0% Confidence Interval for B Upper Bound	Collinearity Statistics Tolerance	Collinearity Statistics VIF
1	(Constant)	-29755.166	809.482		-36.758	.000	-31342.227	-28168.106		
	USD/ZAR	-2824.649	134.338	-.302	-21.026	.000	-3088.030	-2561.268	.434	2.305
	EUR/ZAR	7839.713	110.734	1.015	70.798	.000	7622.610	8056.817	.434	2.305

a. Dependent Variable: J202

Coefficient Correlations[a]

Model			EUR/ZAR	USD/ZAR
1	Correlations	EUR/ZAR	1.000	-.752
		USD/ZAR	-.752	1.000
	Covariances	EUR/ZAR	12261.981	-11192.725
		USD/ZAR	-11192.725	18046.638

a. Dependent Variable: J202

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions (Constant)	USD/ZAR	EUR/ZAR
1	1	2.965	1.000	.00	.00	.00
	2	.025	10.920	.99	.14	.11
	3	.010	16.885	.00	.86	.89

a. Dependent Variable: J202

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	251.6109	60385.5078	27465.2768	13402.53548	3799
Residual	-35334.53906	21808.35742	.00000	9593.71545	3799
Std. Predicted Value	-2.030	2.456	.000	1.000	3799
Std. Residual	-3.682	2.273	.000	1.000	3799

a. Dependent Variable: J202

J203

Correlations

		J203	USD_ZAR	EUR_ZAR
Pearson Correlation	J203	1.000	.497	.808
	USD_ZAR	.497	1.000	.752
	EUR_ZAR	.808	.752	1.000
Sig. (1-tailed)	J203	.	.000	.000
	USD_ZAR	.000	.	.000
	EUR_ZAR	.000	.000	.
N	J203	3799	3799	3799
	USD_ZAR	3799	3799	3799
	EUR_ZAR	3799	3799	3799

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.826[a]	.682	.682	7848.01256	.682	4066.124	2	3796	.000	.011

a. Predictors: (Constant), EUR/ZAR, USD/ZAR
b. Dependent Variable: J203

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	500875687355.926	2	250437843677.963	4066.124	.000[b]
	Residual	233800579004.397	3796	61591301.108		
	Total	734676266360.323	3798			

a. Dependent Variable: J203
b. Predictors: (Constant), EUR/ZAR, USD/ZAR

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	-23978.062	662.011		-36.220	.000	-25275.994	-22680.130		
	USD/ZAR	-2020.865	109.864	-.256	-18.394	.000	-2236.264	-1805.466	.434	2.305
	EUR/ZAR	6519.558	90.560	1.001	71.991	.000	6342.006	6697.110	.434	2.305

a. Dependent Variable: J203

Coefficient Correlations[a]

Model			EUR/ZAR	USD/ZAR
1	Correlations	EUR/ZAR	1.000	-.752
		USD/ZAR	-.752	1.000
	Covariances	EUR/ZAR	8201.204	-7486.051
		USD/ZAR	-7486.051	12070.166

a. Dependent Variable: J203

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	USD/ZAR	EUR/ZAR
1	1	2.965	1.000	.00	.00	.00
	2	.025	10.920	.99	.14	.11
	3	.010	16.885	.00	.86	.89

a. Dependent Variable: J203

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	3671.3838	54549.3125	26335.1228	11483.84959	3799
Residual	-30300.21680	18074.05469	.00000	7845.94593	3799
Std. Predicted Value	-1.974	2.457	.000	1.000	3799
Std. Residual	-3.861	2.303	.000	1.000	3799

a. Dependent Variable: J203

J204

Correlations

		J204	USD_ZAR	EUR_ZAR
Pearson Correlation	J204	1.000	.328	.640
	USD_ZAR	.328	1.000	.812
	EUR_ZAR	.640	.812	1.000
Sig. (1-tailed)	J204	.	.000	.000
	USD_ZAR	.000	.	.000
	EUR_ZAR	.000	.000	.
N	J204	3549	3549	3549
	USD_ZAR	3549	3549	3549
	EUR_ZAR	3549	3549	3549

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.719[a]	.517	.516	1293.98957	.517	1895.580	2	3546	.000	.010

a. Predictors: (Constant), EUR/ZAR, USD/ZAR
b. Dependent Variable: J204

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6347952967.568	2	3173976483.784	1895.580	.000[b]
	Residual	5937454362.343	3546	1674409.014		
	Total	12285407329.911	3548			

a. Dependent Variable: J204
b. Predictors: (Constant), EUR/ZAR, USD/ZAR

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	-1344.556	113.697		-11.826	.000	-1567.474	-1121.638		
	USD/ZAR	-581.711	20.704	-.562	-28.096	.000	-622.304	-541.118	.341	2.936
	EUR/ZAR	985.251	17.982	1.096	54.790	.000	949.994	1020.508	.341	2.936

a. Dependent Variable: J204

Coefficient Correlations[a]

Model			EUR/ZAR	USD/ZAR
1	Correlations	EUR/ZAR	1.000	-.812
		USD/ZAR	-.812	1.000
	Covariances	EUR/ZAR	323.361	-302.324
		USD/ZAR	-302.324	428.657

a. Dependent Variable: J204

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	USD/ZAR	EUR/ZAR
1	1	2.967	1.000	.00	.00	.00
	2	.025	10.814	.95	.15	.05
	3	.008	19.745	.05	.85	.95

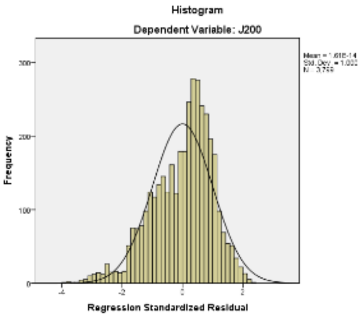
a. Dependent Variable: J204

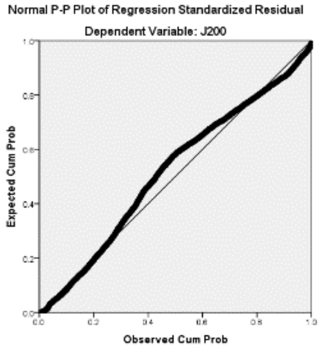
Residuals Statistics[a]

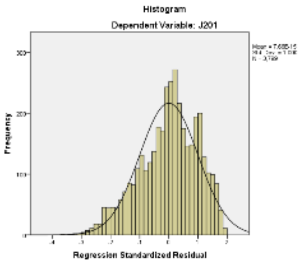
	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	1226.9987	7520.0195	4159.1101	1337.59626	3549
Residual	-4069.99048	2432.59277	.00000	1293.62481	3549
Std. Predicted Value	-2.192	2.513	.000	1.000	3549
Std. Residual	-3.145	1.880	.000	1.000	3549

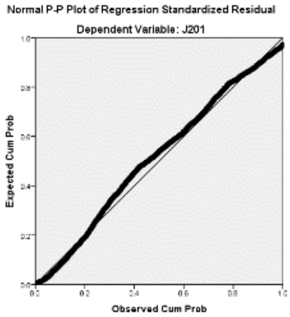
a. Dependent Variable: J204

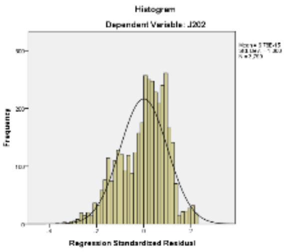
h) Histogram & PP plot (USD/ZAR + EUR/ZAR)

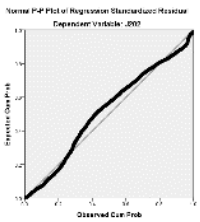


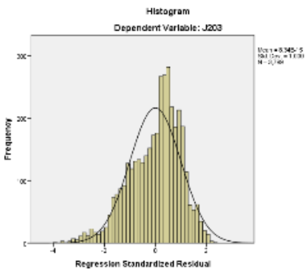


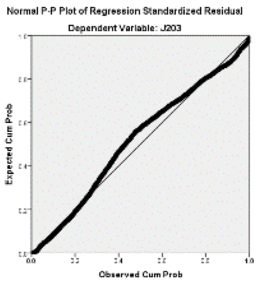


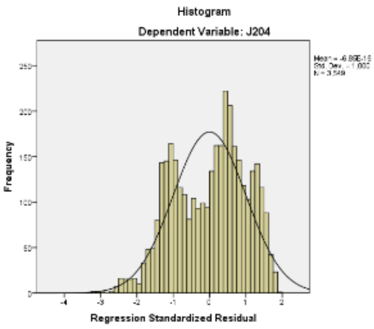


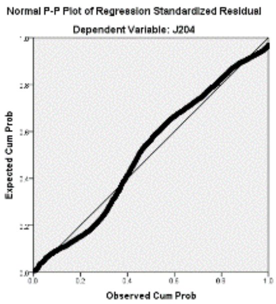












9.6. Hypothesis 1B: Exchange Rate P1 (2001-2005)

a) Descriptive statistics

Statistics

		J200	J201	J202	J203	J204	USD/ZAR	EUR/ZAR
N	Valid	1252	1252	1252	1252	1002	1252	1252
	Missing	0	0	0	0	250	0	0
Mean		9988.5842	11423.0894	8971.1464	10743.1498	1690.1754	7.89997	8.42169
Median		9296.1600	9822.7300	6788.3750	10104.7550	1573.0200	7.49215	8.12120
Mode		7571.97[a]	6965.04[a]	5625.86	9089.89[a]	907.52[a]	8.020	7.118[a]
Std. Deviation		2047.14052	3855.40000	3889.71967	2360.35908	730.24906	1.685891	.977254
Skewness		1.141	.881	1.001	1.181	.725	.826	.692
Std. Error of Skewness		.069	.069	.069	.069	.077	.069	.069
Kurtosis		.807	-.375	-.287	.756	-.760	-.376	-.324
Std. Error of Kurtosis		.138	.138	.138	.138	.154	.138	.138
Minimum		6753.06	6772.62	5051.68	7189.99	872.18	5.635	6.776
Maximum		16685.92	21520.45	18953.16	18312.14	3406.66	13.717	12.177
Sum		12505707.41	14301707.98	11231875.33	13450423.53	1693555.79	9890.767	10543.956

a. Multiple modes exist. The smallest value is shown

b) Correlation

Correlations

		J200	J201	J202	J203	J204	USD_ZAR	EUR_ZAR
J200	Pearson Correlation	1	.861**	.871**	.994**	.850**	-.310**	-.090**
	Sig. (2-tailed)		.000	.000	.000	.000	.000	.001
	N	1252	1252	1252	1252	1002	1252	1252
J201	Pearson Correlation	.861**	1	.993**	.911**	.995**	-.690**	-.302**
	Sig. (2-tailed)	.000		.000	.000	.000	.000	.000
	N	1252	1252	1252	1252	1002	1252	1252
J202	Pearson Correlation	.871**	.993**	1	.918**	.998**	-.689**	-.350**
	Sig. (2-tailed)	.000	.000		.000	.000	.000	.000
	N	1252	1252	1252	1252	1002	1252	1252
J203	Pearson Correlation	.994**	.911**	.918**	1	.901**	-.396**	-.133**
	Sig. (2-tailed)	.000	.000	.000		.000	.000	.000
	N	1252	1252	1252	1252	1002	1252	1252
J204	Pearson Correlation	.850**	.995**	.998**	.901**	1	-.718**	-.708**
	Sig. (2-tailed)	.000	.000	.000	.000		.000	.000
	N	1002	1002	1002	1002	1002	1002	1002
USD_ZAR	Pearson Correlation	-.310**	-.690**	-.689**	-.396**	-.718**	1	.744**
	Sig. (2-tailed)	.000	.000	.000	.000	.000		.000
	N	1252	1252	1252	1252	1002	1252	1252
EUR_ZAR	Pearson Correlation	-.090**	-.302**	-.350**	-.133**	-.708**	.744**	1
	Sig. (2-tailed)	.001	.000	.000	.000	.000	.000	
	N	1252	1252	1252	1252	1002	1252	1252

**. Correlation is significant at the 0.01 level (2-tailed).

c) Linear Regression

J200

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.310[a]	.096	.095	1947.06	.096	132.905	1	1250	.000	.004

a. Predictors: (Constant), USD_ZAR
b. Dependent Variable: J200

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.090[a]	.008	.007	2039.59	.008	10.273	1	1250	.001	.003

a. Predictors: (Constant), EUR_ZAR
b. Dependent Variable: J200

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	503850623.020	1	503850623.020	132.905	.000[b]
	Residual	4738820529.448	1250	3791056.424		
	Total	5242671152.468	1251			

a. Dependent Variable: J200
b. Predictors: (Constant), USD_ZAR

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	42734057.431	1	42734057.431	10.273	.001[b]
	Residual	5199937095.037	1250	4159949.676		
	Total	5242671152.468	1251			

a. Dependent Variable: J200
b. Predictors: (Constant), EUR_ZAR

Coefficients[a]

Model		Unstandardized Coefficients: B	Std. Error	Standardized Coefficients: Beta	t	Sig.	95.0% Confidence Interval for B: Lower Bound	Upper Bound	Collinearity Statistics: Tolerance	VIF
1	(Constant)	12962.430	263.761		49.145	.000	12444.966	13479.893		
	USD_ZAR	-376.437	32.653	-.310	-11.528	.000	-440.498	-312.377	1.000	1.000

a. Dependent Variable: J200

Coefficients[a]

Model		Unstandardized Coefficients: B	Std. Error	Standardized Coefficients: Beta	t	Sig.	95.0% Confidence Interval for B: Lower Bound	Upper Bound	Collinearity Statistics: Tolerance	VIF
1	(Constant)	11581.344	500.276		23.150	.000	10599.871	12562.817		
	EUR_ZAR	-189.126	59.008	-.090	-3.205	.001	-304.891	-73.361	1.000	1.000

a. Dependent Variable: J200

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	USD_ZAR
1	1	1.978	1.000	.01	.01
	2	.022	9.481	.99	.99

a. Dependent Variable: J200

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	EUR_ZAR
1	1	1.993	1.000	.00	.00
	2	.007	17.300	1.00	1.00

a. Dependent Variable: J200

© University of Pretoria

J201

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.690[a]	.477	.476	2790.45	.477	1138.066	1	1250	.000	.004

a. Predictors: (Constant), USD_ZAR
b. Dependent Variable: J201

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.302[a]	.091	.091	3676.36	.091	125.810	1	1250	.000	.002

a. Predictors: (Constant), EUR_ZAR
b. Dependent Variable: J201

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	8861705981.064	1	8861705981.064	1138.066	.000[b]
	Residual	9733294544.846	1250	7786635.636		
	Total	18595000525.910	1251			

a. Dependent Variable: J201
b. Predictors: (Constant), USD_ZAR

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1700407076.912	1	1700407076.912	125.810	.000[b]
	Residual	16894593448.998	1250	13515674.759		
	Total	18595000525.910	1251			

a. Dependent Variable: J201
b. Predictors: (Constant), EUR_ZAR

Coefficients[a]

Model		Unstandardized Coefficients: B	Std. Error	Standardized Coefficients: Beta	t	Sig.	95.0% Confidence Interval for B: Lower Bound	Upper Bound	Collinearity Statistics: Tolerance	VIF
1	(Constant)	23894.804	378.012		63.212	.000	23153.196	24636.412		
	USD_ZAR	-1578.703	46.797	-.690	-33.735	.000	-1670.512	-1486.894	1.000	1.000

a. Dependent Variable: J201

Coefficients[a]

Model		Unstandardized Coefficients: B	Std. Error	Standardized Coefficients: Beta	t	Sig.	95.0% Confidence Interval for B: Lower Bound	Upper Bound	Collinearity Statistics: Tolerance	VIF
1	(Constant)	21470.167	901.746		23.810	.000	19701.064	23239.271		
	EUR_ZAR	-1193.000	106.361	-.302	-11.217	.000	-1401.666	-984.334	1.000	1.000

a. Dependent Variable: J201

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	USD_ZAR
1	1	1.978	1.000	.01	.01
	2	.022	9.481	.99	.99

a. Dependent Variable: J201

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	EUR_ZAR
1	1	1.993	1.000	.00	.00
	2	.007	17.300	1.00	1.00

a. Dependent Variable: J201

J202

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.689[a]	.475	.474	2819.93	.475	1130.209	1	1250	.000	.004

a. Predictors: (Constant), USD_ZAR
b. Dependent Variable: J202

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.350[a]	.123	.122	3644.455	.123	175.045	1	1250	.000	.002

a. Predictors: (Constant), EUR_ZAR
b. Dependent Variable: J202

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	8987474070.262	1	8987474070.262	1130.209	.000[b]
	Residual	9940054747.494	1250	7952043.798		
	Total	18927528817.756	1251			

a. Dependent Variable: J202
b. Predictors: (Constant), USD_ZAR

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2324955069.455	1	2324955069.455	175.045	.000[b]
	Residual	16602573748.301	1250	13282058.999		
	Total	18927528817.756	1251			

a. Dependent Variable: J202
b. Predictors: (Constant), EUR_ZAR

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	21531.051	382.006		56.363	.000	20781.607	22280.494		
	USD_ZAR	-1589.867	47.291	-.689	-33.619	.000	-1682.646	-1497.087	1.000	1.000

a. Dependent Variable: J202

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	20719.327	893.919		23.178	.000	18965.580	22473.074		
	EUR_ZAR	-1394.991	105.438	-.350	-13.230	.000	-1601.846	-1188.136	1.000	1.000

a. Dependent Variable: J202

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	USD_ZAR
1	1	1.978	1.000	.01	.01
	2	.022	9.481	.99	.99

a. Dependent Variable: J202

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	EUR_ZAR
1	1	1.993	1.000	.00	.00
	2	.007	17.300	1.00	1.00

a. Dependent Variable: J202

J203

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.396[a]	.157	.156	2167.95	.157	232.898	1	1250	.000	.003

a. Predictors: (Constant), USD_ZAR
b. Dependent Variable: J203

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.133[a]	.018	.017	2340.21	.018	22.630	1	1250	.000	.003

a. Predictors: (Constant), EUR_ZAR
b. Dependent Variable: J203

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1094630514.101	1	1094630514.101	232.898	.000[b]
	Residual	5875059485.583	1250	4700047.588		
	Total	6969689999.684	1251			

a. Dependent Variable: J203
b. Predictors: (Constant), USD_ZAR

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	123933111.932	1	123933111.932	22.630	.000[b]
	Residual	6845756887.752	1250	5476605.510		
	Total	6969689999.684	1251			

a. Dependent Variable: J203
b. Predictors: (Constant), EUR_ZAR

Coefficients[a]

Model		Unstandardized Coefficients: B	Std. Error	Standardized Coefficients: Beta	t	Sig.	95.0% Confidence Interval for B: Lower Bound	Upper Bound	Collinearity Statistics: Tolerance	VIF
1	(Constant)	15126.451	293.685		51.506	.000	14550.281	15702.620		
	USD_ZAR	-554.850	36.357	-.396	-15.261	.000	-626.178	-483.522	1.000	1.000

a. Dependent Variable: J203

Coefficients[a]

Model		Unstandardized Coefficients: B	Std. Error	Standardized Coefficients: Beta	t	Sig.	95.0% Confidence Interval for B: Lower Bound	Upper Bound	Collinearity Statistics: Tolerance	VIF
1	(Constant)	13455.570	574.012		23.441	.000	12329.436	14581.704		
	EUR_ZAR	-322.076	67.705	-.133	-4.757	.000	-454.903	-189.248	1.000	1.000

a. Dependent Variable: J203

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	USD_ZAR
1	1	1.978	1.000	.01	.01
	2	.022	9.481	.99	.99

a. Dependent Variable: J203

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	EUR_ZAR
1	1	1.993	1.000	.00	.00
	2	.007	17.300	1.00	1.00

a. Dependent Variable: J203

J204

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.718[a]	.515	.515	508.60	.515	1063.532	1	1000	.000	.003

a. Predictors: (Constant), USD_ZAR
b. Dependent Variable: J204

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.708[a]	.501	.500	516.20	.501	1003.221	1	1000	.000	.016

a. Predictors: (Constant), EUR_ZAR
b. Dependent Variable: J204

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	275115706.417	1	275115706.417	1063.532	.000[b]
	Residual	258681249.358	1000	258681.249		
	Total	533796955.775	1001			

a. Dependent Variable: J204
b. Predictors: (Constant), USD_ZAR

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	267327641.451	1	267327641.451	1003.221	.000[b]
	Residual	266469314.324	1000	266469.314		
	Total	533796955.775	1001			

a. Dependent Variable: J204
b. Predictors: (Constant), EUR_ZAR

Coefficients[a]

Model	Unstandardized Coefficients: B	Std. Error	Standardized Coefficients: Beta	t	Sig.	95.0% Confidence Interval for B: Lower Bound	Upper Bound	Collinearity Statistics: Tolerance	VIF
1 (Constant)	3979.060	72.001		55.264	.000	3837.769	4120.352		
USD_ZAR	-296.027	9.077	-.718	-32.612	.000	-313.840	-278.214	1.000	1.000

a. Dependent Variable: J204

Coefficients[a]

Model	Unstandardized Coefficients: B	Std. Error	Standardized Coefficients: Beta	t	Sig.	95.0% Confidence Interval for B: Lower Bound	Upper Bound	Collinearity Statistics: Tolerance	VIF
1 (Constant)	6612.931	156.274		42.316	.000	6306.268	6919.594		
EUR_ZAR	-570.633	18.016	-.708	-31.674	.000	-605.986	-535.279	1.000	1.000

a. Dependent Variable: J204

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	USD_ZAR
1	1	1.975	1.000	.01	.01
	2	.025	8.849	.99	.99

a. Dependent Variable: J204

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	EUR_ZAR
1	1	1.995	1.000	.00	.00
	2	.005	19.114	1.00	1.00

a. Dependent Variable: J204

d) Combined Analysis (USD/ZAR + EUR/ZAR)

J200

Correlations

		J200	EUR_ZAR	USD_ZAR
Pearson Correlation	J200	1.000	-.090	-.310
	EUR_ZAR	-.090	1.000	.744
	USD_ZAR	-.310	.744	1.000
Sig. (1-tailed)	J200	.	.001	.000
	EUR_ZAR	.001	.	.000
	USD_ZAR	.000	.000	.
N	J200	1252	1252	1252
	EUR_ZAR	1252	1252	1252
	USD_ZAR	1252	1252	1252

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.374[a]	.140	.139	1899.86	.140	101.731	2	1249	.000	.006

a. Predictors: (Constant), USD_ZAR, EUR_ZAR

b. Dependent Variable: J200

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	734399540.426	2	367199770.213	101.731	.000[b]
	Residual	4508271612.042	1249	3609504.894		
	Total	5242671152.468	1251			

a. Dependent Variable: J200

b. Predictors: (Constant), USD_ZAR, EUR_ZAR

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	9666.732	486.096		19.886	.000	8713.077	10620.387		
	EUR_ZAR	656.944	82.200	.314	7.992	.000	495.679	818.209	.447	2.236
	USD_ZAR	-659.588	47.648	-.543	-13.843	.000	-753.068	-566.108	.447	2.236

a. Dependent Variable: J200

Coefficient Correlations[a]

Model			USD_ZAR	EUR_ZAR
1	Correlations	USD_ZAR	1.000	-.744
		EUR_ZAR	-.744	1.000
	Covariances	USD_ZAR	2270.373	-2912.264
		EUR_ZAR	-2912.264	6756.808

a. Dependent Variable: J200

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	EUR_ZAR	USD_ZAR
1	1	2.974	1.000	.00	.00	.00
	2	.022	11.549	.23	.00	.50
	3	.004	27.625	.77	1.00	.50

a. Dependent Variable: J200

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	7197.340	11164.222	9988.584	766.191	1252
Residual	-3658.469	6147.396	.0000000000022	1898.350	1252
Std. Predicted Value	-3.643	1.534	.000	1.000	1252
Std. Residual	-1.926	3.236	.000	.999	1252

a. Dependent Variable: J200

J201

Correlations

		J201	EUR_ZAR	USD_ZAR
Pearson Correlation	J201	1.000	-.302	-.690
	EUR_ZAR	-.302	1.000	.744
	USD_ZAR	-.690	.744	1.000
Sig. (1-tailed)	J201	.	.000	.000
	EUR_ZAR	.000	.	.000
	USD_ZAR	.000	.000	.
N	J201	1252	1252	1252
	EUR_ZAR	1252	1252	1252
	USD_ZAR	1252	1252	1252

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.759[a]	.576	.575	2512.33	.576	848.527	2	1249	.000	.017

a. Predictors: (Constant), USD_ZAR, EUR_ZAR
b. Dependent Variable: J201

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	10711521215.960	2	5355760607.980	848.527	.000[b]
	Residual	7883479309.950	1249	6311832.914		
	Total	18595000525.910	1251			

a. Dependent Variable: J201
b. Predictors: (Constant), USD_ZAR, EUR_ZAR

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	14559.467	642.800		22.650	.000	13298.380	15820.554		
	EUR_ZAR	1860.849	108.699	.472	17.119	.000	1647.597	2074.101	.447	2.236
	USD_ZAR	-2380.751	63.009	-1.041	-37.784	.000	-2504.366	-2257.136	.447	2.236

a. Dependent Variable: J201

Coefficient Correlations[a]

Model			USD_ZAR	EUR_ZAR
1	Correlations	USD_ZAR	1.000	-.744
		EUR_ZAR	-.744	1.000
	Covariances	USD_ZAR	3970.133	-5092.589
		EUR_ZAR	-5092.589	11815.428

a. Dependent Variable: J201

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	EUR_ZAR	USD_ZAR
1	1	2.974	1.000	.00	.00	.00
	2	.022	11.549	.23	.00	.50
	3	.004	27.625	.77	1.00	.50

a. Dependent Variable: J201

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	535.682	15706.656	11423.089	2926.152	1252
Residual	-4922.041	7707.670	.00000000000767	2510.327	1252
Std. Predicted Value	-3.721	1.464	.000	1.000	1252
Std. Residual	-1.959	3.068	.000	.999	1252

a. Dependent Variable: J201

J202

Correlations

		J202	EUR_ZAR	USD_ZAR
Pearson Correlation	J202	1.000	-.350	-.689
	EUR_ZAR	-.350	1.000	.744
	USD_ZAR	-.689	.744	1.000
Sig. (1-tailed)	J202	.	.000	.000
	EUR_ZAR	.000	.	.000
	USD_ZAR	.000	.000	.
N	J202	1252	1252	1252
	EUR_ZAR	1252	1252	1252
	USD_ZAR	1252	1252	1252

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.730[a]	.533	.533	2658.972	.533	714.055	2	1249	.000	.011

a. Predictors: (Constant), USD_ZAR, EUR_ZAR
b. Dependent Variable: J202

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	10096928750.520	2	5048464375.260	714.055	.000[b]
	Residual	8830600067.236	1249	7070136.163		
	Total	18927528817.756	1251			

a. Dependent Variable: J202
b. Predictors: (Constant), USD_ZAR, EUR_ZAR

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	14301.345	680.318		21.022	.000	12966.652	15636.037		
	EUR_ZAR	1441.125	115.043	.362	12.527	.000	1215.426	1666.825	.447	2.236
	USD_ZAR	-2211.009	66.687	-.958	-33.155	.000	-2341.839	-2080.178	.447	2.236

a. Dependent Variable: J202

Coefficient Correlations[a]

Model			USD_ZAR	EUR_ZAR
1	Correlations	USD_ZAR	1.000	-.744
		EUR_ZAR	-.744	1.000
	Covariances	USD_ZAR	4447.104	-5704.412
		EUR_ZAR	-5704.412	13234.933

a. Dependent Variable: J202

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	EUR_ZAR	USD_ZAR
1	1	2.974	1.000	.00	.00	.00
	2	.022	11.549	.23	.00	.50
	3	.004	27.625	.77	1.00	.50

a. Dependent Variable: J202

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	-1597.024	13074.397	8971.146	2840.965	1252
Residual	-4803.718	7628.998	-.00000000000840	2656.846	1252
Std. Predicted Value	-3.720	1.444	.000	1.000	1252
Std. Residual	-1.807	2.869	.000	.999	1252

a. Dependent Variable: J202

© University of Pretoria

J203

Correlations

		J203	EUR_ZAR	USD_ZAR
Pearson Correlation	J203	1.000	-.133	-.396
	EUR_ZAR	-.133	1.000	.744
	USD_ZAR	-.396	.744	1.000
Sig. (1-tailed)	J203	.	.000	.000
	EUR_ZAR	.000	.	.000
	USD_ZAR	.000	.000	.
N	J203	1252	1252	1252
	EUR_ZAR	1252	1252	1252
	USD_ZAR	1252	1252	1252

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.464[a]	.215	.214	2092.60	.215	171.306	2	1249	.000	.007

a. Predictors: (Constant), USD_ZAR, EUR_ZAR
b. Dependent Variable: J203

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1500302377.937	2	750151188.968	171.306	.000[b]
	Residual	5469387621.747	1249	4379013.308		
	Total	6969689999.684	1251			

a. Dependent Variable: J203
b. Predictors: (Constant), USD_ZAR, EUR_ZAR

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	10754.721	535.410		20.087	.000	9704.319	11805.123		
	EUR_ZAR	871.434	90.539	.361	9.625	.000	693.809	1049.059	.447	2.236
	USD_ZAR	-930.448	52.482	-.665	-17.729	.000	-1033.412	-827.485	.447	2.236

a. Dependent Variable: J203

Coefficient Correlations[a]

Model			USD_ZAR	EUR_ZAR
1	Correlations	USD_ZAR	1.000	-.744
		EUR_ZAR	-.744	1.000
	Covariances	USD_ZAR	2754.392	-3533.128
		EUR_ZAR	-3533.128	8197.289

a. Dependent Variable: J203

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	EUR_ZAR	USD_ZAR
1	1	2.974	1.000	.00	.00	.00
	2	.022	11.549	.23	.00	.50
	3	.004	27.625	.77	1.00	.50

a. Dependent Variable: J203

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	6717.660	12376.730	10743.149	1095.117	1252
Residual	-4029.107	6749.377	.00000000000595	2090.935	1252
Std. Predicted Value	-3.676	1.492	.000	1.000	1252
Std. Residual	-1.925	3.225	.000	.999	1252

a. Dependent Variable: J203

J204

Correlations

		J204	EUR_ZAR	USD_ZAR
Pearson Correlation	J204	1.000	-.708	-.718
	EUR_ZAR	-.708	1.000	.938
	USD_ZAR	-.718	.938	1.000
Sig. (1-tailed)	J204	.	.000	.000
	EUR_ZAR	.000	.	.000
	USD_ZAR	.000	.000	.
N	J204	1002	1002	1002
	EUR_ZAR	1002	1002	1002
	USD_ZAR	1002	1002	1002

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.725[a]	.525	.524	503.70	.525	552.462	2	999	.000	.004

a. Predictors: (Constant), USD_ZAR, EUR_ZAR
b. Dependent Variable: J204

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	280335756.796	2	140167878.398	552.462	.000[b]
	Residual	253461198.980	999	253714.914		
	Total	533796955.775	1001			

a. Dependent Variable: J204
b. Predictors: (Constant), USD_ZAR, EUR_ZAR

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	5110.349	259.401		19.701	.000	4601.317	5619.382		
EUR_ZAR	-230.028	50.713	-.285	-4.536	.000	-329.544	-130.512	.120	8.322
USD_ZAR	-185.690	25.933	-.450	-7.160	.000	-236.580	-134.801	.120	8.322

a. Dependent Variable: J204

Coefficient Correlations[a]

Model			USD_ZAR	EUR_ZAR
1	Correlations	USD_ZAR	1.000	-.938
		EUR_ZAR	-.938	1.000
	Covariances	USD_ZAR	672.528	-1233.593
		EUR_ZAR	-1233.593	2571.773

a. Dependent Variable: J204

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	EUR_ZAR	USD_ZAR
1	1	2.974	1.000	.00	.00	.00
	2	.025	10.829	.07	.00	.13
	3	.001	58.665	.93	1.00	.87

a. Dependent Variable: J204

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	23.379	2308.263	1690.175	529.202	1002
Residual	-857.837	1236.138	.00000000000353	503.197	1002
Std. Predicted Value	-3.150	1.168	.000	1.000	1002
Std. Residual	-1.703	2.454	.000	.999	1002

a. Dependent Variable: J204

9.7. Hypothesis 1C: Exchange Rate P2 (2006-2010)

a) Descriptive statistics

Statistics

		J200	J201	J202	J203	J204	USD_ZAR	EUR_ZAR
N	Valid	1250	1250	1250	1250	1250	1250	1250
	Missing	0	0	0	0	0	0	0
Mean		23201.2114	31113.9621	27198.1540	25604.7722	4371.9837	7.57664	10.32853
Median		23922.1500	30679.2450	26897.2500	26519.9100	4105.5900	7.38500	9.91430
Mode		21855.80	21546.01[a]	18962.49[a]	17814.42[a]	3907.53[a]	7.410	7.351[a]
Std. Deviation		3576.97352	5323.88987	4576.92132	3875.98417	890.89432	.981274	1.558014
Skewness		-.131	.289	.226	-.227	.550	1.329	.126
Std. Error of Skewness		.069	.069	.069	.069	.069	.069	.069
Kurtosis		-.992	-.802	-1.007	-1.126	-.634	1.859	-.462
Std. Error of Kurtosis		.138	.138	.138	.138	.138	.138	.138
Minimum		15905.06	21546.01	18962.49	17814.42	2810.26	5.956	7.162
Maximum		31315.34	43473.49	37271.62	33232.89	6172.41	11.578	14.864
Sum		29001514.29	38892452.64	33997692.55	32005965.22	5464979.61	9470.796	12910.658

a. Multiple modes exist. The smallest value is shown

b) Correlation

Correlations

		J200	J201	J202	J203	J204	USD_ZAR	EUR_ZAR
J200	Pearson Correlation	1	.731**	.863**	.995**	.669**	-.245**	.086**
	Sig. (2-tailed)		.000	.000	.000	.000	.000	.002
	N	1250	1250	1250	1250	1250	1250	1250
J201	Pearson Correlation	.731**	1	.796**	.794**	.444**	-.225**	-.096**
	Sig. (2-tailed)	.000		.000	.000	.000	.000	.001
	N	1250	1250	1250	1250	1250	1250	1250
J202	Pearson Correlation	.863**	.796**	1	.887**	.853**	-.338**	-.112**
	Sig. (2-tailed)	.000	.000		.000	.000	.000	.000
	N	1250	1250	1250	1250	1250	1250	1250
J203	Pearson Correlation	.995**	.794**	.887**	1	.666**	-.252**	.061*
	Sig. (2-tailed)	.000	.000	.000		.000	.000	.032
	N	1250	1250	1250	1250	1250	1250	1250
J204	Pearson Correlation	.669**	.444**	.853**	.666**	1	-.537**	-.369**
	Sig. (2-tailed)	.000	.000	.000	.000		.000	.000
	N	1250	1250	1250	1250	1250	1250	1250
USD_ZAR	Pearson Correlation	-.245**	-.225**	-.338**	-.252**	-.537**	1	.839**
	Sig. (2-tailed)	.000	.000	.000	.000	.000		.000
	N	1250	1250	1250	1250	1250	1250	1250
EUR_ZAR	Pearson Correlation	.086**	-.096**	-.112**	.061*	-.369**	.839**	1
	Sig. (2-tailed)	.002	.001	.000	.032	.000	.000	
	N	1250	1250	1250	1250	1250	1250	1250

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

c) Linear Regression

J200

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.245[a]	.060	.059	3469.45	.060	79.610	1	1248	.000	.012

a. Predictors: (Constant), USD_ZAR
b. Dependent Variable: J200

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.086[a]	.007	.007	3565.03	.007	9.382	1	1248	.002	.011

a. Predictors: (Constant), EUR_ZAR
b. Dependent Variable: J200

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	958275174.222	1	958275174.222	79.610	.000[b]
	Residual	15022354554.554	1248	12037143.073		
	Total	15980629728.777	1249			

a. Dependent Variable: J200
b. Predictors: (Constant), USD_ZAR

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	119242883.945	1	119242883.945	9.382	.002[b]
	Residual	15861386844.832	1248	12709444.587		
	Total	15980629728.777	1249			

a. Dependent Variable: J200
b. Predictors: (Constant), EUR_ZAR

Coefficients[a]

Model	Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.	95.0% Confidence Interval for B Lower Bound	95.0% Confidence Interval for B Upper Bound	Collinearity Statistics Tolerance	Collinearity Statistics VIF
1 (Constant)	29964.379	764.321		39.204	.000	28464.882	31463.876		
USD_ZAR	-892.635	100.044	-.245	-8.922	.000	-1088.907	-696.362	1.000	1.000

a. Dependent Variable: J200

Coefficients[a]

Model	Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.	95.0% Confidence Interval for B Lower Bound	95.0% Confidence Interval for B Upper Bound	Collinearity Statistics Tolerance	Collinearity Statistics VIF
1 (Constant)	21152.872	676.287		31.278	.000	19826.088	22479.656		
EUR_ZAR	198.319	64.746	.086	3.063	.002	71.296	325.341	1.000	1.000

a. Dependent Variable: J200

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions (Constant)	Variance Proportions USD_ZAR
1	1	1.992	1.000	.00	.00
	2	.008	15.513	1.00	1.00

a. Dependent Variable: J200

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions (Constant)	Variance Proportions EUR_ZAR
1	1	1.989	1.000	.01	.01
	2	.011	13.339	.99	.99

a. Dependent Variable: J200

J201

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.225[a]	.051	.050	5189.58	.051	66.486	1	1248	.000	.004

a. Predictors: (Constant), USD_ZAR
b. Dependent Variable: J201

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.096[a]	.009	.008	5301.30	.009	11.667	1	1248	.001	.003

a. Predictors: (Constant), EUR_ZAR
b. Dependent Variable: J201

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1790592713.495	1	1790592713.495	66.486	.000[b]
	Residual	33610817644.887	1248	26931744.908		
	Total	35401410358.382	1249			

a. Dependent Variable: J201
b. Predictors: (Constant), USD_ZAR

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	327874458.295	1	327874458.295	11.667	.001[b]
	Residual	35073535900.087	1248	28103794.792		
	Total	35401410358.382	1249			

a. Dependent Variable: J201
b. Predictors: (Constant), EUR_ZAR

Coefficients[a]

Model	Unstandardized Coefficients: B	Std. Error	Standardized Coefficients: Beta	t	Sig.	95.0% Confidence Interval for B: Lower Bound	Upper Bound	Collinearity Statistics: Tolerance	VIF
1 (Constant)	40358.888	1143.264		35.301	.000	38115.956	42601.820		
USD_ZAR	-1220.189	149.645	-.225	-8.154	.000	-1513.771	-926.606	1.000	1.000

a. Dependent Variable: J201

Coefficients[a]

Model	Unstandardized Coefficients: B	Std. Error	Standardized Coefficients: Beta	t	Sig.	95.0% Confidence Interval for B: Lower Bound	Upper Bound	Collinearity Statistics: Tolerance	VIF
1 (Constant)	34510.524	1005.657		34.316	.000	32537.558	36483.489		
EUR_ZAR	-328.852	96.279	-.096	-3.416	.001	-517.738	-139.967	1.000	1.000

a. Dependent Variable: J201

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	USD_ZAR
1	1	1.992	1.000	.00	.00
	2	.008	15.513	1.00	1.00

a. Dependent Variable: J201

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	EUR_ZAR
1	1	1.989	1.000	.01	.01
	2	.011	13.339	.99	.99

a. Dependent Variable: J201

J202

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.338[a]	.114	.113	4309.742	.114	160.661	1	1248	.000	.003

a. Predictors: (Constant), USD_ZAR
b. Dependent Variable: J202

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.112[a]	.013	.012	4549.82	.013	15.922	1	1248	.000	.002

a. Predictors: (Constant), EUR_ZAR
b. Dependent Variable: J202

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2984105802.018	1	2984105802.018	160.661	.000[b]
	Residual	23180206955.469	1248	18573883.778		
	Total	26164312757.487	1249			

a. Dependent Variable: J202
b. Predictors: (Constant), USD_ZAR

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	329599670.417	1	329599670.417	15.922	.000[b]
	Residual	25834713087.069	1248	20700891.897		
	Total	26164312757.487	1249			

a. Dependent Variable: J202
b. Predictors: (Constant), EUR_ZAR

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	39132.871	949.436		41.217	.000	37270.205	40995.538		
USD_ZAR	-1575.200	124.274	-.338	-12.675	.000	-1819.009	-1331.391	1.000	1.000

a. Dependent Variable: J202

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	30603.640	863.102		35.458	.000	28910.349	32296.931		
EUR_ZAR	-329.717	82.631	-.112	-3.990	.000	-491.827	-167.606	1.000	1.000

a. Dependent Variable: J202

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	USD_ZAR
1	1	1.992	1.000	.00	.00
	2	.008	15.513	1.00	1.00

a. Dependent Variable: J202

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	EUR_ZAR
1	1	1.989	1.000	.01	.01
	2	.011	13.339	.99	.99

a. Dependent Variable: J202

© University of Pretoria

J203

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.252[a]	.064	.063	3751.98	.064	84.923	1	1248	.000	.011

a. Predictors: (Constant), USD_ZAR
b. Dependent Variable: J203

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.061[a]	.004	.003	3870.39	.004	4.608	1	1248	.032	.009

a. Predictors: (Constant), EUR_ZAR
b. Dependent Variable: J203

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1195492787.448	1	1195492787.448	84.923	.000[b]
	Residual	17568550570.103	1248	14077364.239		
	Total	18764043357.551	1249			

a. Dependent Variable: J203
b. Predictors: (Constant), USD_ZAR

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	69032305.822	1	69032305.822	4.608	.032[b]
	Residual	18695011051.730	1248	14979976.804		
	Total	18764043357.551	1249			

a. Dependent Variable: J203
b. Predictors: (Constant), EUR_ZAR

Coefficients[a]

Model	Unstandardized Coefficients: B	Unstandardized Coefficients: Std. Error	Standardized Coefficients: Beta	t	Sig.	95.0% Confidence Interval for B: Lower Bound	95.0% Confidence Interval for B: Upper Bound	Collinearity Statistics: Tolerance	Collinearity Statistics: VIF
1 (Constant)	33158.799	826.561		40.117	.000	31537.196	34780.401		
USD_ZAR	-997.016	108.191	-.252	-9.215	.000	-1209.271	-784.760	1.000	1.000

a. Dependent Variable: J203

Coefficients[a]

Model	Unstandardized Coefficients: B	Unstandardized Coefficients: Std. Error	Standardized Coefficients: Beta	t	Sig.	95.0% Confidence Interval for B: Lower Bound	95.0% Confidence Interval for B: Upper Bound	Collinearity Statistics: Tolerance	Collinearity Statistics: VIF
1 (Constant)	24046.254	734.215		32.751	.000	22605.822	25486.685		
EUR_ZAR	150.895	70.292	.061	2.147	.032	12.992	288.797	1.000	1.000

a. Dependent Variable: J203

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	Variance Proportions: USD_ZAR
1	1	1.992	1.000	.00	.00
	2	.008	15.513	1.00	1.00

a. Dependent Variable: J203

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	Variance Proportions: EUR_ZAR
1	1	1.989	1.000	.01	.01
	2	.011	13.339	.99	.99

a. Dependent Variable: J203

J204

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.537[a]	.288	.288	751.84	.288	505.721	1	1248	.000	.006

a. Predictors: (Constant), USD_ZAR
b. Dependent Variable: J204

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.369[a]	.136	.135	828.46	.136	196.323	1	1248	.000	.002

a. Predictors: (Constant), EUR_ZAR
b. Dependent Variable: J204

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	285867759.002	1	285867759.002	505.721	.000[b]
	Residual	705454411.399	1248	565267.958		
	Total	991322170.402	1249			

a. Dependent Variable: J204
b. Predictors: (Constant), USD_ZAR

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	134747633.260	1	134747633.260	196.323	.000[b]
	Residual	856574537.142	1248	686357.802		
	Total	991322170.402	1249			

a. Dependent Variable: J204
b. Predictors: (Constant), EUR_ZAR

Coefficients[a]

Model	Unstandardized Coefficients: B	Unstandardized Coefficients: Std. Error	Standardized Coefficients: Beta	t	Sig.	95.0% Confidence Interval for B: Lower Bound	95.0% Confidence Interval for B: Upper Bound	Collinearity Statistics: Tolerance	Collinearity Statistics: VIF
1 (Constant)	8065.905	165.631		48.698	.000	7740.959	8390.851		
USD_ZAR	-487.541	21.680	-.537	-22.488	.000	-530.074	-445.008	1.000	1.000

a. Dependent Variable: J204

Coefficients[a]

Model	Unstandardized Coefficients: B	Unstandardized Coefficients: Std. Error	Standardized Coefficients: Beta	t	Sig.	95.0% Confidence Interval for B: Lower Bound	95.0% Confidence Interval for B: Upper Bound	Collinearity Statistics: Tolerance	Collinearity Statistics: VIF
1 (Constant)	6549.424	157.160		41.674	.000	6241.097	6857.752		
EUR_ZAR	-210.818	15.046	-.369	-14.012	.000	-240.336	-181.300	1.000	1.000

a. Dependent Variable: J204

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	Variance Proportions: USD_ZAR
1	1	1.992	1.000	.00	.00
	2	.008	15.513	1.00	1.00

a. Dependent Variable: J204

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	Variance Proportions: EUR_ZAR
1	1	1.989	1.000	.01	.01
	2	.011	13.339	.99	.99

a. Dependent Variable: J204

d) Combined Analysis (USD/ZAR + EUR/ZAR)

J200

Correlations

		J200	EUR_ZAR	USD_ZAR
Pearson Correlation	J200	1.000	.086	-.245
	EUR_ZAR	.086	1.000	.839
	USD_ZAR	-.245	.839	1.000
Sig. (1-tailed)	J200	.	.001	.000
	EUR_ZAR	.001	.	.000
	USD_ZAR	.000	.000	.
N	J200	1250	1250	1250
	EUR_ZAR	1250	1250	1250
	USD_ZAR	1250	1250	1250

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.589[a]	.347	.346	2892.52	.347	331.516	2	1247	.000	.050

a. Predictors: (Constant), USD_ZAR, EUR_ZAR
b. Dependent Variable: J200

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5547374986.465	2	2773687493.232	331.516	.000[b]
	Residual	10433254742.312	1247	8366683.835		
	Total	15980629728.777	1249			

a. Dependent Variable: J200
b. Predictors: (Constant), USD_ZAR, EUR_ZAR

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	29425.950	637.637		46.148	.000	28174.991	30676.910		
EUR_ZAR	2259.574	96.480	.984	23.420	.000	2070.292	2448.856	.296	3.373
USD_ZAR	-3901.838	153.187	-1.070	-25.471	.000	-4202.370	-3601.306	.296	3.373

a. Dependent Variable: J200

Coefficient Correlations[a]

Model			USD_ZAR	EUR_ZAR
1	Correlations	USD_ZAR	1.000	-.839
		EUR_ZAR	-.839	1.000
	Covariances	USD_ZAR	23466.128	-12396.640
		EUR_ZAR	-12396.640	9308.485

a. Dependent Variable: J200

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	EUR_ZAR	USD_ZAR
1	1	2.985	1.000	.00	.00	.00
	2	.012	15.654	.87	.15	.03
	3	.003	31.606	.13	.85	.97

a. Dependent Variable: J200

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	10754.42	28784.15	23201.21	2107.47	1250
Residual	-7140.92	7636.25	-.0000000000216	2890.20	1250
Std. Predicted Value	-5.906	2.649	.000	1.000	1250
Std. Residual	-2.469	2.640	.000	.999	1250

a. Dependent Variable: J200

J201

Correlations

		J201	EUR_ZAR	USD_ZAR
Pearson Correlation	J201	1.000	-.096	-.225
	EUR_ZAR	-.096	1.000	.839
	USD_ZAR	-.225	.839	1.000
Sig. (1-tailed)	J201	.	.000	.000
	EUR_ZAR	.000	.	.000
	USD_ZAR	.000	.000	.
N	J201	1250	1250	1250
	EUR_ZAR	1250	1250	1250
	USD_ZAR	1250	1250	1250

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.282[a]	.079	.078	5112.31	.079	53.761	2	1247	.000	.007

a. Predictors: (Constant), USD_ZAR, EUR_ZAR
b. Dependent Variable: J201

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2810153023.244	2	1405076511.622	53.761	.000[b]
	Residual	32591257335.138	1247	26135731.624		
	Total	35401410358.382	1249			

a. Dependent Variable: J201
b. Predictors: (Constant), USD_ZAR, EUR_ZAR

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	40105.100	1126.975		35.587	.000	37894.125	42316.075		
EUR_ZAR	1065.048	170.522	.312	6.246	.000	730.507	1399.590	.296	3.373
USD_ZAR	-2638.574	270.746	-.486	-9.746	.000	-3169.741	-2107.407	.296	3.373

a. Dependent Variable: J201

Coefficient Correlations[a]

Model			USD_ZAR	EUR_ZAR
1	Correlations	USD_ZAR	1.000	-.839
		EUR_ZAR	-.839	1.000
	Covariances	USD_ZAR	73303.167	-38724.452
		EUR_ZAR	-38724.452	29077.716

a. Dependent Variable: J201

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	EUR_ZAR	USD_ZAR
1	1	2.985	1.000	.00	.00	.00
	2	.012	15.654	.87	.15	.03
	3	.003	31.606	.13	.85	.97

a. Dependent Variable: J201

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	22048.228	34035.625	31113.962	1499.974	1250
Residual	-10119.771	12527.506	.0000000000315	5108.217	1250
Std. Predicted Value	-6.044	1.948	.000	1.000	1250
Std. Residual	-1.979	2.450	.000	.999	1250

a. Dependent Variable: J201

J202

Correlations

		J202	EUR_ZAR	USD_ZAR
Pearson Correlation	J202	1.000	-.112	-.338
	EUR_ZAR	-.112	1.000	.839
	USD_ZAR	-.338	.839	1.000
Sig. (1-tailed)	J202	.	.000	.000
	EUR_ZAR	.000	.	.000
	USD_ZAR	.000	.000	.
N	J202	1250	1250	1250
	EUR_ZAR	1250	1250	1250
	USD_ZAR	1250	1250	1250

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.461[a]	.213	.211	4064.30	.213	168.467	2	1247	.000	.016

a. Predictors: (Constant), USD_ZAR, EUR_ZAR
b. Dependent Variable: J202

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5565665143.770	2	2782832571.885	168.467	.000[b]
	Residual	20598647613.717	1247	16518562.641		
	Total	26164312757.487	1249			

a. Dependent Variable: J202
b. Predictors: (Constant), USD_ZAR, EUR_ZAR

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	38729.035	895.948		43.227	.000	36971.302	40486.767		
EUR_ZAR	1694.743	135.565	.577	12.501	.000	1428.782	1960.705	.296	3.373
USD_ZAR	-3832.186	215.244	-.822	-17.804	.000	-4254.465	-3409.906	.296	3.373

a. Dependent Variable: J202

Coefficient Correlations[a]

Model			USD_ZAR	EUR_ZAR
1	Correlations	USD_ZAR	1.000	-.839
		EUR_ZAR	-.839	1.000
	Covariances	USD_ZAR	46329.790	-24475.010
		EUR_ZAR	-24475.010	18377.985

a. Dependent Variable: J202

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	EUR_ZAR	USD_ZAR
1	1	2.985	1.000	.00	.00	.00
	2	.012	15.654	.87	.15	.03
	3	.003	31.606	.13	.85	.97

a. Dependent Variable: J202

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	14238.600	31714.224	27198.154	2110.946	1250
Residual	-8644.758	8019.970	.0000000000061	4061.048	1250
Std. Predicted Value	-6.139	2.139	.000	1.000	1250
Std. Residual	-2.127	1.973	.000	.999	1250

a. Dependent Variable: J202

J203

Correlations

		J203	EUR_ZAR	USD_ZAR
Pearson Correlation	J203	1.000	.061	-.252
	EUR_ZAR	.061	1.000	.839
	USD_ZAR	-.252	.839	1.000
Sig. (1-tailed)	J203	.	.016	.000
	EUR_ZAR	.016	.	.000
	USD_ZAR	.000	.000	.
N	J203	1250	1250	1250
	EUR_ZAR	1250	1250	1250
	USD_ZAR	1250	1250	1250

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.560[a]	.314	.313	3212.98	.314	285.324	2	1247	.000	.043

a. Predictors: (Constant), USD_ZAR, EUR_ZAR
b. Dependent Variable: J203

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5890951472.023	2	2945475736.011	285.324	.000[b]
	Residual	12873091885.529	1247	10323249.307		
	Total	18764043357.551	1249			

a. Dependent Variable: J203
b. Predictors: (Constant), USD_ZAR, EUR_ZAR

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	32614.166	708.280		46.047	.000	31224.614	34003.718		
EUR_ZAR	2285.608	107.169	.919	21.327	.000	2075.356	2495.861	.296	3.373
USD_ZAR	-4040.891	170.158	-1.023	-23.748	.000	-4374.718	-3707.063	.296	3.373

a. Dependent Variable: J203

Coefficient Correlations[a]

Model			USD_ZAR	EUR_ZAR
1	Correlations	USD_ZAR	1.000	-.839
		EUR_ZAR	-.839	1.000
	Covariances	USD_ZAR	28953.728	-15295.618
		EUR_ZAR	-15295.618	11485.292

a. Dependent Variable: J203

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	EUR_ZAR	USD_ZAR
1	1	2.985	1.000	.00	.00	.00
	2	.012	15.654	.87	.15	.03
	3	.003	31.606	.13	.85	.97

a. Dependent Variable: J203

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	12638.056	31286.189	25604.772	2171.758	1250
Residual	-7781.180	7625.052	.0000000000125	3210.407	1250
Std. Predicted Value	-5.971	2.616	.000	1.000	1250
Std. Residual	-2.422	2.373	.000	.999	1250

a. Dependent Variable: J203

J204

Correlations

		J204	EUR_ZAR	USD_ZAR
Pearson Correlation	J204	1.000	-.369	-.537
	EUR_ZAR	-.369	1.000	.839
	USD_ZAR	-.537	.839	1.000
Sig. (1-tailed)	J204	.	.000	.000
	EUR_ZAR	.000	.	.000
	USD_ZAR	.000	.000	.
N	J204	1250	1250	1250
	EUR_ZAR	1250	1250	1250
	USD_ZAR	1250	1250	1250

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.558[a]	.311	.310	740.13	.311	281.312	2	1247	.000	.013

a. Predictors: (Constant), USD_ZAR, EUR_ZAR
b. Dependent Variable: J204

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	308208461.770	2	154104230.885	281.312	.000[b]
	Residual	683113708.632	1247	547805.701		
	Total	991322170.402	1249			

a. Dependent Variable: J204
b. Predictors: (Constant), USD_ZAR, EUR_ZAR

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	8028.337	163.159		49.206	.000	7708.241	8348.433		
EUR_ZAR	157.656	24.687	.276	6.386	.000	109.223	206.090	.296	3.373
USD_ZAR	-697.501	39.197	-.768	-17.795	.000	-774.401	-620.601	.296	3.373

a. Dependent Variable: J204

Coefficient Correlations[a]

Model			USD_ZAR	EUR_ZAR
1	Correlations	USD_ZAR	1.000	-.839
		EUR_ZAR	-.839	1.000
	Covariances	USD_ZAR	1536.437	-811.666
		EUR_ZAR	-811.666	609.470

a. Dependent Variable: J204

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	EUR_ZAR	USD_ZAR
1	1	2.985	1.000	.00	.00	.00
	2	.012	15.654	.87	.15	.03
	3	.003	31.606	.13	.85	.97

a. Dependent Variable: J204

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	1801.879	5052.491	4371.983	496.753	1250
Residual	-1427.595	1588.919	.00000000000247	739.546	1250
Std. Predicted Value	-5.174	1.370	.000	1.000	1250
Std. Residual	-1.929	2.147	.000	.999	1250

a. Dependent Variable: J204

© University of Pretoria

9.8. Hypothesis 1D: Exchange Rate P3 (2011-2015)

a) Descriptive statistics

Statistics

		J200	J201	J202	J203	J204	USD_ZAR	EUR_ZAR
N	Valid	1249	1249	1249	1249	1249	1249	1249
	Missing	0	0	0	0	0	0	0
Mean		37301.4211	56200.0311	45317.3373	41830.1840	5843.4744	9.27474	11.97550
Median		36391.6100	55756.2600	44823.9500	40897.6800	5894.2100	9.02620	11.81270
Mode		25180.59[a]	39226.61[a]	30410.67[a]	28391.18[a]	4467.72[a]	6.828[a]	9.778[a]
Std. Deviation		7166.22893	10273.72777	10228.25206	7986.64701	813.34574	1.727736	1.852537
Skewness		.028	.058	.036	.021	-.343	.117	.066
Std. Error of Skewness		.069	.069	.069	.069	.069	.069	.069
Kurtosis		-1.553	-1.104	-1.483	-1.524	-1.201	-1.205	-1.487
Std. Error of Kurtosis		.138	.138	.138	.138	.138	.138	.138
Minimum		25180.59	39226.61	30410.67	28391.18	4403.61	6.556	8.719
Maximum		49081.01	76601.28	62435.68	55188.34	7009.86	12.774	15.413
Sum		46589474.97	70193838.80	56601354.27	52245899.76	7298499.55	11584.156	14957.401

a. Multiple modes exist. The smallest value is shown

b) Correlation

Correlations

		J200	J201	J202	J203	J204	USD_ZAR	EUR_ZAR
J200	Pearson Correlation	1	.962**	.985**	.999**	.953**	.962**	.946**
	Sig. (2-tailed)		.000	.000	.000	.000	.000	.000
	N	1249	1249	1249	1249	1249	1249	1249
J201	Pearson Correlation	.962**	1	.984**	.972**	.964**	.938**	.909**
	Sig. (2-tailed)	.000		.000	.000	.000	.000	.000
	N	1249	1249	1249	1249	1249	1249	1249
J202	Pearson Correlation	.985**	.984**	1	.990**	.959**	.962**	.936**
	Sig. (2-tailed)	.000	.000		.000	.000	.000	.000
	N	1249	1249	1249	1249	1249	1249	1249
J203	Pearson Correlation	.999**	.972**	.990**	1	.959**	.963**	.945**
	Sig. (2-tailed)	.000	.000	.000		.000	.000	.000
	N	1249	1249	1249	1249	1249	1249	1249
J204	Pearson Correlation	.953**	.964**	.959**	.959**	1	.923**	.923**
	Sig. (2-tailed)	.000	.000	.000	.000		.000	.000
	N	1249	1249	1249	1249	1249	1249	1249
USD_ZAR	Pearson Correlation	.962**	.938**	.962**	.963**	.923**	1	.904**
	Sig. (2-tailed)	.000	.000	.000	.000	.000		.000
	N	1249	1249	1249	1249	1249	1249	1249
EUR_ZAR	Pearson Correlation	.946**	.909**	.936**	.945**	.923**	.904**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	
	N	1249	1249	1249	1249	1249	1249	1249

**. Correlation is significant at the 0.01 level (2-tailed).

c) Linear Regression

J200

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.962[a]	.925	.925	1958.43	.925	15463.074	1	1247	.000	.068

a. Predictors: (Constant), USD_ZAR
b. Dependent Variable: J200

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.946[a]	.894	.894	2332.29	.894	10535.286	1	1247	.000	.052

a. Predictors: (Constant), EUR_ZAR
b. Dependent Variable: J200

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	59308016846.552	1	59308016846.552	15463.074	.000[b]
	Residual	4782819754.388	1247	3835460.910		
	Total	64090836600.940	1248			

a. Dependent Variable: J200
b. Predictors: (Constant), USD_ZAR

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	57307664423.163	1	57307664423.163	10535.286	.000[b]
	Residual	6783172177.777	1247	5439592.765		
	Total	64090836600.940	1248			

a. Dependent Variable: J200
b. Predictors: (Constant), EUR_ZAR

Coefficients[a]

Model	Unstandardized Coefficients: B	Std. Error	Standardized Coefficients: Beta	t	Sig.	95.0% Confidence Interval for B: Lower Bound	Upper Bound	Collinearity Statistics: Tolerance	VIF
1 (Constant)	295.273	302.711		.975	.330	-298.606	889.151		
USD_ZAR	3989.991	32.087	.962	124.351	.000	3927.041	4052.941	1.000	1.000

a. Dependent Variable: J200

Coefficients[a]

Model	Unstandardized Coefficients: B	Std. Error	Standardized Coefficients: Beta	t	Sig.	95.0% Confidence Interval for B: Lower Bound	Upper Bound	Collinearity Statistics: Tolerance	VIF
1 (Constant)	-6503.804	431.851		-15.060	.000	-7351.038	-5656.569		
EUR_ZAR	3657.903	35.638	.946	102.642	.000	3587.987	3727.820	1.000	1.000

a. Dependent Variable: J200

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	USD_ZAR
1	1	1.983	1.000	.01	.01
	2	.017	10.833	.99	.99

a. Dependent Variable: J200

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	EUR_ZAR
1	1	1.988	1.000	.01	.01
	2	.012	13.011	.99	.99

a. Dependent Variable: J200

J201

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.938[a]	.879	.879	3572.69	.879	9073.005	1	1247	.000	.029

a. Predictors: (Constant), USD_ZAR
b. Dependent Variable: J201

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.909[a]	.826	.826	4284.72	.826	5928.045	1	1247	.000	.022

a. Predictors: (Constant), EUR_ZAR
b. Dependent Variable: J201

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	115808899212.814	1	115808899212.814	9073.005	.000[b]
	Residual	15916854704.816	1247	12764117.646		
	Total	131725753917.631	1248			

a. Dependent Variable: J201
b. Predictors: (Constant), USD_ZAR

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	108832237746.284	1	108832237746.284	5928.045	.000[b]
	Residual	22893516171.346	1247	18358874.235		
	Total	131725753917.631	1248			

a. Dependent Variable: J201
b. Predictors: (Constant), EUR_ZAR

Coefficients[a]

Model	Unstandardized Coefficients: B	Std. Error	Standardized Coefficients: Beta	t	Sig.	95.0% Confidence Interval for B: Lower Bound	Upper Bound	Collinearity Statistics: Tolerance	VIF
1 (Constant)	4488.410	552.223		8.128	.000	3405.022	5571.798		
USD_ZAR	5575.531	58.534	.938	95.252	.000	5460.694	5690.367	1.000	1.000

a. Dependent Variable: J201

Coefficients[a]

Model	Unstandardized Coefficients: B	Std. Error	Standardized Coefficients: Beta	t	Sig.	95.0% Confidence Interval for B: Lower Bound	Upper Bound	Collinearity Statistics: Tolerance	VIF
1 (Constant)	-4166.794	793.366		-5.252	.000	-5723.274	-2610.315		
EUR_ZAR	5040.860	65.471	.909	76.994	.000	4912.414	5169.305	1.000	1.000

a. Dependent Variable: J201

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	USD_ZAR
1	1	1.983	1.000	.01	.01
	2	.017	10.833	.99	.99

a. Dependent Variable: J201

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	EUR_ZAR
1	1	1.988	1.000	.01	.01
	2	.012	13.011	.99	.99

a. Dependent Variable: J201

J202

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.962[a]	.925	.925	2795.83	.925	15455.973	1	1247	.000	.035

a. Predictors: (Constant), USD_ZAR
b. Dependent Variable: J202

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.936[a]	.876	.876	3598.98	.876	8832.946	1	1247	.000	.026

a. Predictors: (Constant), EUR_ZAR
b. Dependent Variable: J202

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	120814761211.607	1	120814761211.607	15455.973	.000[b]
	Residual	9747429678.268	1247	7816703.832		
	Total	130562190889.875	1248			

a. Dependent Variable: J202
b. Predictors: (Constant), USD_ZAR

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	114410214242.396	1	114410214242.396	8832.946	.000[b]
	Residual	16151976647.479	1247	12952667.721		
	Total	130562190889.875	1248			

a. Dependent Variable: J202
b. Predictors: (Constant), EUR_ZAR

Coefficients[a]

Model	Unstandardized Coefficients: B	Std. Error	Standardized Coefficients: Beta	t	Sig.	95.0% Confidence Interval for B: Lower Bound	Upper Bound	Collinearity Statistics: Tolerance	VIF
1 (Constant)	-7500.083	432.146		-17.355	.000	-8347.897	-6652.269		
USD_ZAR	5694.758	45.806	.962	124.322	.000	5604.891	5784.624	1.000	1.000

a. Dependent Variable: J202

Coefficients[a]

Model	Unstandardized Coefficients: B	Std. Error	Standardized Coefficients: Beta	t	Sig.	95.0% Confidence Interval for B: Lower Bound	Upper Bound	Collinearity Statistics: Tolerance	VIF
1 (Constant)	-16577.148	666.393		-24.876	.000	-17884.523	-15269.774		
EUR_ZAR	5168.425	54.993	.936	93.984	.000	5060.537	5276.314	1.000	1.000

a. Dependent Variable: J202

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	USD_ZAR
1	1	1.983	1.000	.01	.01
	2	.017	10.833	.99	.99

a. Dependent Variable: J202

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	EUR_ZAR
1	1	1.988	1.000	.01	.01
	2	.012	13.011	.99	.99

a. Dependent Variable: J202

J203

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.963[a]	.928	.928	2140.41	.928	16128.842	1	1247	.000	.064

a. Predictors: (Constant), USD_ZAR
b. Dependent Variable: J203

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.945[a]	.892	.892	2621.14	.892	10339.703	1	1247	.000	.047

a. Predictors: (Constant), EUR_ZAR
b. Dependent Variable: J203

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	73892590729.313	1	73892590729.313	16128.842	.000[b]
	Residual	5712999267.619	1247	4581394.762		
	Total	79605589996.932	1248			

a. Dependent Variable: J203
b. Predictors: (Constant), USD_ZAR

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	71038168648.647	1	71038168648.647	10339.703	.000[b]
	Residual	8567421348.285	1247	6870426.101		
	Total	79605589996.932	1248			

a. Dependent Variable: J203
b. Predictors: (Constant), EUR_ZAR

Coefficients[a]

Model	Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.	95.0% Confidence Interval for B Lower Bound	95.0% Confidence Interval for B Upper Bound	Collinearity Statistics Tolerance	Collinearity Statistics VIF
1 (Constant)	523.757	330.840		1.583	.114	-125.307	1172.821		
USD_ZAR	4453.646	35.068	.963	126.999	.000	4384.847	4522.445	1.000	1.000

a. Dependent Variable: J203

Coefficients[a]

Model	Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.	95.0% Confidence Interval for B Lower Bound	95.0% Confidence Interval for B Upper Bound	Collinearity Statistics Tolerance	Collinearity Statistics VIF
1 (Constant)	-6941.240	485.336		-14.302	.000	-7893.405	-5989.075		
EUR_ZAR	4072.600	40.051	.945	101.684	.000	3994.024	4151.175	1.000	1.000

a. Dependent Variable: J203

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions (Constant)	Variance Proportions USD_ZAR
1	1	1.983	1.000	.01	.01
	2	.017	10.833	.99	.99

a. Dependent Variable: J203

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions (Constant)	Variance Proportions EUR_ZAR
1	1	1.988	1.000	.01	.01
	2	.012	13.011	.99	.99

a. Dependent Variable: J203

J204

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.923[a]	.851	.851	313.69	.851	7143.018	1	1247	.000	.021

a. Predictors: (Constant), USD_ZAR
b. Dependent Variable: J204

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.923[a]	.852	.852	313.06	.852	7176.507	1	1247	.000	.024

a. Predictors: (Constant), EUR_ZAR
b. Dependent Variable: J204

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	702884289.814	1	702884289.814	7143.018	.000[b]
	Residual	122706770.617	1247	98401.580		
	Total	825591060.432	1248			

a. Dependent Variable: J204
b. Predictors: (Constant), USD_ZAR

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	703372130.507	1	703372130.507	7176.507	.000[b]
	Residual	122218929.925	1247	98010.369		
	Total	825591060.432	1248			

a. Dependent Variable: J204
b. Predictors: (Constant), EUR_ZAR

Coefficients[a]

Model	Unstandardized Coefficients: B	Std. Error	Standardized Coefficients: Beta	t	Sig.	95.0% Confidence Interval for B: Lower Bound	Upper Bound	Collinearity Statistics: Tolerance	VIF
1 (Constant)	1814.828	48.486		37.430	.000	1719.705	1909.952		
USD_ZAR	434.367	5.139	.923	84.516	.000	424.284	444.450	1.000	1.000

a. Dependent Variable: J204

Coefficients[a]

Model	Unstandardized Coefficients: B	Std. Error	Standardized Coefficients: Beta	t	Sig.	95.0% Confidence Interval for B: Lower Bound	Upper Bound	Collinearity Statistics: Tolerance	VIF
1 (Constant)	990.454	57.968		17.086	.000	876.729	1104.179		
EUR_ZAR	405.246	4.784	.923	84.714	.000	395.861	414.631	1.000	1.000

a. Dependent Variable: J204

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	USD_ZAR
1	1	1.983	1.000	.01	.01
	2	.017	10.833	.99	.99

a. Dependent Variable: J204

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	EUR_ZAR
1	1	1.988	1.000	.01	.01
	2	.012	13.011	.99	.99

a. Dependent Variable: J204

d) Combined Analysis (USD/ZAR + EUR/ZAR)

J200

Correlations

		J200	EUR_ZAR	USD_ZAR
Pearson Correlation	J200	1.000	.946	.962
	EUR_ZAR	.946	1.000	.904
	USD_ZAR	.962	.904	1.000
Sig. (1-tailed)	J200	.	.000	.000
	EUR_ZAR	.000	.	.000
	USD_ZAR	.000	.000	.
N	J200	1249	1249	1249
	EUR_ZAR	1249	1249	1249
	USD_ZAR	1249	1249	1249

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.978[a]	.957	.957	1488.51	.957	13840.125	2	1246	.000	.098

a. Predictors: (Constant), USD_ZAR, EUR_ZAR
b. Dependent Variable: J200

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	61330119817.040	2	30665059908.520	13840.125	.000[b]
	Residual	2760716783.900	1246	2215663.550		
	Total	64090836600.940	1248			

a. Dependent Variable: J200
b. Predictors: (Constant), USD_ZAR, EUR_ZAR

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	-4503.509	279.584		-16.108	.000	-5052.017	-3955.000		
EUR_ZAR	1607.786	53.220	.416	30.210	.000	1503.374	1712.198	.183	5.475
USD_ZAR	2431.429	57.065	.586	42.608	.000	2319.476	2543.383	.183	5.475

a. Dependent Variable: J200

Coefficient Correlations[a]

Model			USD_ZAR	EUR_ZAR
1	Correlations	USD_ZAR	1.000	-.904
		EUR_ZAR	-.904	1.000
	Covariances	USD_ZAR	3256.386	-2745.699
		EUR_ZAR	-2745.699	2832.416

a. Dependent Variable: J200

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	EUR_ZAR	USD_ZAR
1	1	2.979	1.000	.00	.00	.00
	2	.019	12.652	.79	.02	.09
	3	.003	33.989	.21	.98	.91

a. Dependent Variable: J200

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	26057.826	48708.433	37301.421	7010.187	1249
Residual	-4743.349	3466.629	.0000000001377	1487.317	1249
Std. Predicted Value	-1.604	1.627	.000	1.000	1249
Std. Residual	-3.187	2.329	.000	.999	1249

a. Dependent Variable: J200

J201

Correlations

		J201	EUR_ZAR	USD_ZAR
Pearson Correlation	J201	1.000	.909	.938
	EUR_ZAR	.909	1.000	.904
	USD_ZAR	.938	.904	1.000
Sig. (1-tailed)	J201	.	.000	.000
	EUR_ZAR	.000	.	.000
	USD_ZAR	.000	.000	.
N	J201	1249	1249	1249
	EUR_ZAR	1249	1249	1249
	USD_ZAR	1249	1249	1249

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.949[a]	.900	.900	3256.11	.900	5589.133	2	1246	.000	.027

a. Predictors: (Constant), USD_ZAR, EUR_ZAR
b. Dependent Variable: J201

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	118515291922.422	2	59257645961.211	5589.133	.000[b]
	Residual	13210461995.209	1246	10602296.946		
	Total	131725753917.631	1248			

a. Dependent Variable: J201
b. Predictors: (Constant), USD_ZAR, EUR_ZAR

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	-1063.274	611.591		-1.739	.082	-2263.136	136.588		
EUR_ZAR	1860.039	116.420	.335	15.977	.000	1631.639	2088.439	.183	5.475
USD_ZAR	3772.439	124.829	.634	30.221	.000	3527.540	4017.337	.183	5.475

a. Dependent Variable: J201

Coefficient Correlations[a]

Model			USD_ZAR	EUR_ZAR
1	Correlations	USD_ZAR	1.000	-.904
		EUR_ZAR	-.904	1.000
	Covariances	USD_ZAR	15582.316	-13138.598
		EUR_ZAR	-13138.598	13553.555

a. Dependent Variable: J201

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	EUR_ZAR	USD_ZAR
1	1	2.979	1.000	.00	.00	.00
	2	.019	12.652	.79	.02	.09
	3	.003	33.989	.21	.98	.91

a. Dependent Variable: J201

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	40603.132	72679.453	56200.031	9744.956	1249
Residual	-12918.140	9773.405	.0000000001114	3253.506	1249
Std. Predicted Value	-1.601	1.691	.000	1.000	1249
Std. Residual	-3.967	3.002	.000	.999	1249

a. Dependent Variable: J201

J202

Correlations

		J202	EUR_ZAR	USD_ZAR
Pearson Correlation	J202	1.000	.936	.962
	EUR_ZAR	.936	1.000	.904
	USD_ZAR	.962	.904	1.000
Sig. (1-tailed)	J202	.	.000	.000
	EUR_ZAR	.000	.	.000
	USD_ZAR	.000	.000	.
N	J202	1249	1249	1249
	EUR_ZAR	1249	1249	1249
	USD_ZAR	1249	1249	1249

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.974[a]	.950	.949	2300.31	.950	11714.138	2	1246	.000	.037

a. Predictors: (Constant), USD_ZAR, EUR_ZAR
b. Dependent Variable: J202

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	123969069880.817	2	61984534940.408	11714.138	.000[b]
	Residual	6593121009.058	1246	5291429.381		
	Total	130562190889.875	1248			

a. Dependent Variable: J202
b. Predictors: (Constant), USD_ZAR, EUR_ZAR

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	-13493.596	432.064		-31.231	.000	-14341.248	-12645.943		
EUR_ZAR	2008.069	82.246	.364	24.415	.000	1846.714	2169.425	.183	5.475
USD_ZAR	3748.167	88.187	.633	42.503	.000	3575.157	3921.178	.183	5.475

a. Dependent Variable: J202

Coefficient Correlations[a]

Model			USD_ZAR	EUR_ZAR
1	Correlations	USD_ZAR	1.000	-.904
		EUR_ZAR	-.904	1.000
	Covariances	USD_ZAR	7776.874	-6557.255
		EUR_ZAR	-6557.255	6764.353

a. Dependent Variable: J202

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	EUR_ZAR	USD_ZAR
1	1	2.979	1.000	.00	.00	.00
	2	.019	12.652	.79	.02	.09
	3	.003	33.989	.21	.98	.91

a. Dependent Variable: J202

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	29354.812	61998.101	45317.337	9966.653	1249
Residual	-11297.076	4949.392	.0000000001024	2298.466	1249
Std. Predicted Value	-1.602	1.674	.000	1.000	1249
Std. Residual	-4.911	2.152	.000	.999	1249

a. Dependent Variable: J202

J203

Correlations

		J203	EUR_ZAR	USD_ZAR
Pearson Correlation	J203	1.000	.945	.963
	EUR_ZAR	.945	1.000	.904
	USD_ZAR	.963	.904	1.000
Sig. (1-tailed)	J203	.	.000	.000
	EUR_ZAR	.000	.	.000
	USD_ZAR	.000	.000	.
N	J203	1249	1249	1249
	EUR_ZAR	1249	1249	1249
	USD_ZAR	1249	1249	1249

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.979[a]	.958	.958	1639.81	.958	14179.054	2	1246	.000	.089

a. Predictors: (Constant), USD_ZAR, EUR_ZAR
b. Dependent Variable: J203

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	76255090053.304	2	38127545026.652	14179.054	.000[b]
	Residual	3350499943.629	1246	2689004.770		
	Total	79605589996.932	1248			

a. Dependent Variable: J203
b. Predictors: (Constant), USD_ZAR, EUR_ZAR

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	-4663.230	308.004		-15.140	.000	-5267.495	-4058.966		
EUR_ZAR	1737.851	58.630	.403	29.641	.000	1622.826	1852.876	.183	5.475
USD_ZAR	2769.001	62.865	.599	44.046	.000	2645.668	2892.335	.183	5.475

a. Dependent Variable: J203

Coefficient Correlations[a]

Model			USD_ZAR	EUR_ZAR
1	Correlations	USD_ZAR	1.000	-.904
		EUR_ZAR	-.904	1.000
	Covariances	USD_ZAR	3952.061	-3332.273
		EUR_ZAR	-3332.273	3437.517

a. Dependent Variable: J203

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	EUR_ZAR	USD_ZAR
1	1	2.979	1.000	.00	.00	.00
	2	.019	12.652	.79	.02	.09
	3	.003	33.989	.21	.98	.91

a. Dependent Variable: J203

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	29296.869	54641.949	41830.183	7816.766	1249
Residual	-5954.767	4077.251	.0000000001447	1638.504	1249
Std. Predicted Value	-1.603	1.639	.000	1.000	1249
Std. Residual	-3.631	2.486	.000	.999	1249

a. Dependent Variable: J203

J204

Correlations

		J204	EUR_ZAR	USD_ZAR
Pearson Correlation	J204	1.000	.923	.923
	EUR_ZAR	.923	1.000	.904
	USD_ZAR	.923	.904	1.000
Sig. (1-tailed)	J204	.	.000	.000
	EUR_ZAR	.000	.	.000
	USD_ZAR	.000	.000	.
N	J204	1249	1249	1249
	EUR_ZAR	1249	1249	1249
	USD_ZAR	1249	1249	1249

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.946[a]	.895	.894	264.30	.895	5286.189	2	1246	.000	.022

a. Predictors: (Constant), USD_ZAR, EUR_ZAR
b. Dependent Variable: J204

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	738549807.003	2	369274903.502	5286.189	.000[b]
	Residual	87041253.428	1246	69856.544		
	Total	825591060.432	1248			

a. Dependent Variable: J204
b. Predictors: (Constant), USD_ZAR, EUR_ZAR

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	1177.514	49.644		23.719	.000	1080.120	1274.909		
EUR_ZAR	213.526	9.450	.486	22.595	.000	194.986	232.066	.183	5.475
USD_ZAR	227.379	10.133	.483	22.440	.000	207.500	247.257	.183	5.475

a. Dependent Variable: J204

Coefficient Correlations[a]

Model			USD_ZAR	EUR_ZAR
1	Correlations	USD_ZAR	1.000	-.904
		EUR_ZAR	-.904	1.000
	Covariances	USD_ZAR	102.669	-86.568
		EUR_ZAR	-86.568	89.302

a. Dependent Variable: J204

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	EUR_ZAR	USD_ZAR
1	1	2.979	1.000	.00	.00	.00
	2	.019	12.652	.79	.02	.09
	3	.003	33.989	.21	.98	.91

a. Dependent Variable: J204

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	4600.587	7031.576	5843.474	769.276	1249
Residual	-969.729	589.481	.00000000000980	264.092	1249
Std. Predicted Value	-1.616	1.544	.000	1.000	1249
Std. Residual	-3.669	2.230	.000	.999	1249

a. Dependent Variable: J204

9.9. Hypothesis 2A: Debt Rate (2001-2015)

a) Descriptive statistics

Statistics

		J200	J201	J202	J203	J204	SA Goverment Bond 30Year	SA Goverment Bond 10Year
N	Valid	3751	3751	3751	3751	3502	3751	3751
	Missing	0	0	0	0	249	0	0
Mean		23486.1895	32894.6946	27147.6732	26046.9977	4128.2224	8.7901	8.7829
Median		23914.8200	30639.0400	26867.4000	26515.0700	4270.0150	8.7000	8.3800
Mode		7571.97[a]	6965.04[a]	5625.86	9089.89[a]	907.52[a]	8.03	8.16[a]
Std. Deviation		12131.46466	19631.78047	16343.32791	13759.35072	1856.97215	1.20184	1.33942
Skewness		.398	.403	.380	.396	-.297	1.043	1.075
Std. Error of Skewness		.040	.040	.040	.040	.041	.040	.040
Kurtosis		-.888	-.940	-.795	-.895	-1.075	1.198	.712
Std. Error of Kurtosis		.080	.080	.080	.080	.083	.080	.080
Minimum		6753.06	6772.62	5051.68	7189.99	.00	6.51	6.13
Maximum		49081.01	76601.28	62435.68	55188.34	7009.86	13.43	13.63
Sum		88096696.68	123387999.42	101830922.16	97702288.51	14457034.96	32971.62	32944.65

a. Multiple modes exist. The smallest value is shown

b) Univariate Analysis of Variance

J200-SAGB30

Tests of Between-Subjects Effects

Dependent Variable: J200

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	34449807253.972[a]	1	34449807253.972	249.595	.000	.062	249.595	1.000
Intercept	143435456700.760	1	143435456700.760	1039.217	.000	.217	1039.217	1.000
SAGB30	34449807253.965	1	34449807253.965	249.595	.000	.062	249.595	1.000
Error	517446822872.201	3749	138022625.466					
Total	2620952339376.856	3751						
Corrected Total	551896630126.173	3750						

a. R Squared = .062 (Adjusted R Squared = .062)

b. Computed using alpha = .05

Parameter Estimates

Dependent Variable: J200

Parameter	B	Std. Error	t	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound	Partial Eta Squared	Noncent. Parameter	Observed Power[a]
Intercept	45654.030	1416.205	32.237	.000	42877.423	48430.636	.217	32.237	1.000
SAGB30	-2521.913	159.629	-15.799	.000	-2834.882	-2208.945	.062	15.799	1.000

a. Computed using alpha = .05

J200-SAGB10

Tests of Between-Subjects Effects

Dependent Variable: J200

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	206455845906.449[a]	1	206455845906.449	2240.624	.000	.374	2240.624	1.000
Intercept	443570885023.406	1	443570885023.406	4813.986	.000	.562	4813.986	1.000
SAGB10	206455845906.290	1	206455845906.290	2240.624	.000	.374	2240.624	1.000
Error	345440784219.724	3749	92142113.689					
Total	2620952339376.856	3751						
Corrected Total	551896630126.173	3750						

a. R Squared = .374 (Adjusted R Squared = .374)

b. Computed using alpha = .05

Parameter Estimates

Dependent Variable: J200

Parameter	B	Std. Error	t	Sig.	95% Confidence Interval		Partial Eta Squared	Noncent. Parameter	Observed Power[a]
					Lower Bound	Upper Bound			
Intercept	72140.078	1039.739	69.383	.000	70101.570	74178.587	.562	69.383	1.000
SAGB10	-5539.616	117.029	-47.335	.000	-5769.064	-5310.169	.374	47.335	1.000

a. Computed using alpha = .05

J201-SAGB30

Tests of Between-Subjects Effects

Dependent Variable: J201

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	130991443975.535[a]	1	130991443975.535	373.654	.000	.091	373.654	1.000
Intercept	398759498133.077	1	398759498133.077	1137.463	.000	.233	1137.463	1.000
SAGB30	130991443975.525	1	130991443975.525	373.654	.000	.091	373.654	1.000
Error	1314284072100.066	3749	350569237.690					
Total	5504086073623.836	3751						
Corrected Total	1445275516075.601	3750						

a. R Squared = .091 (Adjusted R Squared = .090)

b. Computed using alpha = .05

Parameter Estimates

Dependent Variable: J201

Parameter	B	Std. Error	t	Sig.	95% Confidence Interval		Partial Eta Squared	Noncent. Parameter	Observed Power[a]
					Lower Bound	Upper Bound			
Intercept	76121.332	2257.032	33.726	.000	71696.201	80546.462	.233	33.726	1.000
SAGB30	-4917.657	254.404	-19.330	.000	-5416.441	-4418.874	.091	19.330	1.000

a. Computed using alpha = .05

J201-SAGB10

Tests of Between-Subjects Effects

Dependent Variable: J201

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	655441391595.131[a]	1	655441391595.131	3111.096	.000	.454	3111.096	1.000
Intercept	1218887880339.952	1	1218887880339.952	5785.532	.000	.607	5785.532	1.000
SAGB10	655441391594.843	1	655441391594.843	3111.096	.000	.454	3111.096	1.000
Error	789834124480.470	3749	210678614.159					
Total	5504086073623.836	3751						
Corrected Total	1445275516075.601	3750						

a. R Squared = .454 (Adjusted R Squared = .453)

b. Computed using alpha = .05

Parameter Estimates

Dependent Variable: J201

Parameter	B	Std. Error	t	Sig.	95% Confidence Interval		Partial Eta Squared	Noncent. Parameter	Observed Power[a]
					Lower Bound	Upper Bound			
Intercept	119585.073	1572.191	76.063	.000	116502.640	122667.506	.607	76.063	1.000
SAGB10	-9870.361	176.960	-55.777	.000	-10217.309	-9523.413	.454	55.777	1.000

a. Computed using alpha = .05

J202-SAGB30

Tests of Between-Subjects Effects

Dependent Variable: J202

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	108172504555.744[a]	1	108172504555.744	453.892	.000	.108	453.892	1.000
Intercept	303680154158.630	1	303680154158.630	1274.243	.000	.254	1274.243	1.000
SAGB30	108172504555.739	1	108172504555.739	453.892	.000	.108	453.892	1.000
Error	893468871962.443	3749	238321918.368					
Total	3766113972396.969	3751						
Corrected Total	1001641376518.187	3750						

a. R Squared = .108 (Adjusted R Squared = .108)

b. Computed using alpha = .05

Parameter Estimates

Dependent Variable: J202

Parameter	B	Std. Error	t	Sig.	95% Confidence Interval		Partial Eta Squared	Noncent. Parameter	Observed Power[a]
					Lower Bound	Upper Bound			
Intercept	66429.206	1860.942	35.697	.000	62780.649	70077.764	.254	35.697	1.000
SAGB30	-4468.844	209.758	-21.305	.000	-4880.095	-4057.593	.108	21.305	1.000

a. Computed using alpha = .05

J202-SAGB10

Tests of Between-Subjects Effects

Dependent Variable: J202

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	448071760844.765[a]	1	448071760844.765	3034.525	.000	.447	3034.525	1.000
Intercept	832410575754.111	1	832410575754.111	5637.425	.000	.601	5637.425	1.000
SAGB10	448071760844.560	1	448071760844.560	3034.525	.000	.447	3034.525	1.000
Error	553569615673.422	3749	147657939.630					
Total	3766113972396.969	3751						
Corrected Total	1001641376518.187	3750						

a. R Squared = .447 (Adjusted R Squared = .447)

b. Computed using alpha = .05

Parameter Estimates

Dependent Variable: J202

Parameter	B	Std. Error	t	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound	Partial Eta Squared	Noncent. Parameter	Observed Power[a]
Intercept	98824.332	1316.205	75.083	.000	96243.785	101404.879	.601	75.083	1.000
SAGB10	-8160.935	148.148	-55.087	.000	-8451.392	-7870.477	.447	55.087	1.000

a. Computed using alpha = .05

J203-SAGB30

Tests of Between-Subjects Effects

Dependent Variable: J203

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	48112352691.404[a]	1	48112352691.404	272.534	.000	.068	272.534	1.000
Intercept	187835567612.993	1	187835567612.993	1064.002	.000	.221	1064.002	1.000
SAGB30	48112352691.399	1	48112352691.399	272.534	.000	.068	272.534	1.000
Error	661836642974.680	3749	176536847.953					
Total	3254800283451.222	3751						
Corrected Total	709948995666.085	3750						

a. R Squared = .068 (Adjusted R Squared = .068)

b. Computed using alpha = .05

Parameter Estimates

Dependent Variable: J203

Parameter	B	Std. Error	t	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound	Partial Eta Squared	Noncent. Parameter	Observed Power[a]
Intercept	52244.403	1601.653	32.619	.000	49104.206	55384.600	.221	32.619	1.000
SAGB30	-2980.335	180.532	-16.509	.000	-3334.286	-2626.384	.068	16.509	1.000

a. Computed using alpha = .05

J203-SAGB10

Tests of Between-Subjects Effects

Dependent Variable: J203

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	276049955007.899[a]	1	276049955007.899	2385.143	.000	.389	2385.143	1.000
Intercept	577405222972.242	1	577405222972.242	4988.931	.000	.571	4988.931	1.000
SAGB10	276049955007.738	1	276049955007.738	2385.143	.000	.389	2385.143	1.000
Error	433899040658.186	3749	115737274.115					
Total	3254800283451.222	3751						
Corrected Total	709948995666.085	3750						

a. R Squared = .389 (Adjusted R Squared = .389)

b. Computed using alpha = .05

Parameter Estimates

Dependent Variable: J203

Parameter	B	Std. Error	t	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound	Partial Eta Squared	Noncent. Parameter	Observed Power[a]
Intercept	82306.749	1165.284	70.632	.000	80022.097	84591.401	.571	70.632	1.000
SAGB10	-6405.602	131.160	-48.838	.000	-6662.755	-6148.449	.389	48.838	1.000

a. Computed using alpha = .05

J204-SAGB30

Tests of Between-Subjects Effects

Dependent Variable: J204

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	1254286046.962[a]	1	1254286046.962	405.791	.000	.104	405.791	1.000
Intercept	4082633863.023	1	4082633863.023	1320.829	.000	.274	1320.829	1.000
SAGB30	1254286046.962	1	1254286046.962	405.791	.000	.104	405.791	1.000
Error	10818371727.215	3500	3090963.351					
Total	71754513784.434	3502						
Corrected Total	12072657774.177	3501						

a. R Squared = .104 (Adjusted R Squared = .104)

b. Computed using alpha = .05

Parameter Estimates

Dependent Variable: J204

Parameter	B	Std. Error	t	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound	Partial Eta Squared	Noncent. Parameter	Observed Power[a]
Intercept	9182.675	252.665	36.343	.000	8687.289	9678.062	.274	36.343	1.000
SAGB30	-586.740	29.127	-20.144	.000	-643.847	-529.632	.104	20.144	1.000

a. Computed using alpha = .05

J204-SAGB10

Tests of Between-Subjects Effects

Dependent Variable: J204

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	5944543514.737[a]	1	5944543514.737	3395.156	.000	.492	3395.156	1.000
Intercept	11973261244.261	1	11973261244.261	6838.387	.000	.661	6838.387	1.000
SAGB10	5944543514.734	1	5944543514.734	3395.156	.000	.492	3395.156	1.000
Error	6128114259.440	3500	1750889.788					
Total	71754513784.434	3502						
Corrected Total	12072657774.177	3501						

a. R Squared = .492 (Adjusted R Squared = .492)

b. Computed using alpha = .05

Parameter Estimates

Dependent Variable: J204

Parameter	B	Std. Error	t	Sig.	95% Confidence Interval		Partial Eta Squared	Noncent. Parameter	Observed Power[a]
					Lower Bound	Upper Bound			
Intercept	13676.276	165.383	82.695	.000	13352.019	14000.533	.661	82.695	1.000
SAGB10	-1110.169	19.053	-58.268	.000	-1147.524	-1072.813	.492	58.268	1.000

a. Computed using alpha = .05

c) Bivariate Correlation

Correlations

		J200	J201	J202	J203	J204	SAGB30	SAGB10
J200	Pearson Correlation	1	.985**	.991**	1.000**	.941**	-.250**	-.612**
	Sig. (2-tailed)		.000	.000	.000	.000	.000	.000
	N	3751	3751	3751	3751	3502	3751	3751
J201	Pearson Correlation	.985**	1	.988**	.989**	.927**	-.301**	-.673**
	Sig. (2-tailed)	.000		.000	.000	.000	.000	.000
	N	3751	3751	3751	3751	3502	3751	3751
J202	Pearson Correlation	.991**	.988**	1	.993**	.957**	-.329**	-.669**
	Sig. (2-tailed)	.000	.000		.000	.000	.000	.000
	N	3751	3751	3751	3751	3502	3751	3751
J203	Pearson Correlation	1.000**	.989**	.993**	1	.942**	-.260**	-.624**
	Sig. (2-tailed)	.000	.000	.000		.000	.000	.000
	N	3751	3751	3751	3751	3502	3751	3751
J204	Pearson Correlation	.941**	.927**	.957**	.942**	1	-.322**	-.702**
	Sig. (2-tailed)	.000	.000	.000	.000		.000	.000
	N	3502	3502	3502	3502	3502	3502	3502
SAGB30	Pearson Correlation	-.250**	-.301**	-.329**	-.260**	-.322**	1	.865**
	Sig. (2-tailed)	.000	.000	.000	.000	.000		.000
	N	3751	3751	3751	3751	3502	3751	3751
SAGB10	Pearson Correlation	-.612**	-.673**	-.669**	-.624**	-.702**	.865**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	
	N	3751	3751	3751	3751	3502	3751	3751

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

			J200	J201	J202	J203	J204	SAGB30	SAGB10
Kendall's tau_b	J200	Correlation Coefficient	1.000	.879**	.878**	.979**	.819**	-.060**	-.438**
		Sig. (2-tailed)	.	.000	.000	.000	.000	.000	.000
		N	3751	3751	3751	3751	3502	3751	3751
	J201	Correlation Coefficient	.879**	1.000	.925**	.900**	.830**	-.134**	-.522**
		Sig. (2-tailed)	.000	.	.000	.000	.000	.000	.000
		N	3751	3751	3751	3751	3502	3751	3751
	J202	Correlation Coefficient	.878**	.925**	1.000	.894**	.884**	-.153**	-.517**
		Sig. (2-tailed)	.000	.000	.	.000	.000	.000	.000
		N	3751	3751	3751	3751	3502	3751	3751
	J203	Correlation Coefficient	.979**	.900**	.894**	1.000	.823**	-.073**	-.454**
		Sig. (2-tailed)	.000	.000	.000	.	.000	.000	.000
		N	3751	3751	3751	3751	3502	3751	3751
	J204	Correlation Coefficient	.819**	.830**	.884**	.823**	1.000	-.089**	-.461**
		Sig. (2-tailed)	.000	.000	.000	.000	.	.000	.000
		N	3502	3502	3502	3502	3502	3502	3502
	SAGB30	Correlation Coefficient	-.060**	-.134**	-.153**	-.073**	-.089**	1.000	.552**
		Sig. (2-tailed)	.000	.000	.000	.000	.000	.	.000
		N	3751	3751	3751	3751	3502	3751	3751
	SAGB10	Correlation Coefficient	-.438**	-.522**	-.517**	-.454**	-.461**	.552**	1.000
		Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.
		N	3751	3751	3751	3751	3502	3751	3751
Spearman's rho	J200	Correlation Coefficient	1.000	.974**	.975**	.999**	.948**	-.180**	-.639**
		Sig. (2-tailed)	.	.000	.000	.000	.000	.000	.000
		N	3751	3751	3751	3751	3502	3751	3751
	J201	Correlation Coefficient	.974**	1.000	.987**	.981**	.939**	-.237**	-.697**
		Sig. (2-tailed)	.000	.	.000	.000	.000	.000	.000
		N	3751	3751	3751	3751	3502	3751	3751
	J202	Correlation Coefficient	.975**	.987**	1.000	.980**	.978**	-.256**	-.693**
		Sig. (2-tailed)	.000	.000	.	.000	.000	.000	.000
		N	3751	3751	3751	3751	3502	3751	3751
	J203	Correlation Coefficient	.999**	.981**	.980**	1.000	.949**	-.192**	-.652**
		Sig. (2-tailed)	.000	.000	.000	.	.000	.000	.000
		N	3751	3751	3751	3751	3502	3751	3751
	J204	Correlation Coefficient	.948**	.939**	.978**	.949**	1.000	-.143**	-.630**
		Sig. (2-tailed)	.000	.000	.000	.000	.	.000	.000
		N	3502	3502	3502	3502	3502	3502	3502
	SAGB30	Correlation Coefficient	-.180**	-.237**	-.256**	-.192**	-.143**	1.000	.713**
		Sig. (2-tailed)	.000	.000	.000	.000	.000	.	.000
		N	3751	3751	3751	3751	3502	3751	3751
	SAGB10	Correlation Coefficient	-.639**	-.697**	-.693**	-.652**	-.630**	.713**	1.000
		Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.
		N	3751	3751	3751	3751	3502	3751	3751

**. Correlation is significant at the 0.01 level (2-tailed).

d) Multivariate analysis

Tests of Between-Subjects Effects

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	J200	3.324E+011[a]	2	1.662E+011	3656.180	.000
	J201	9.712E+011[b]	2	4.856E+011	5595.771	.000
	J202	5.948E+011[c]	2	2.974E+011	3661.584	.000
	J203	4.354E+011[d]	2	2.177E+011	3906.630	.000
	J204	8.007E+009[e]	2	4.004E+009	3445.657	.000
Intercept	J200	8.406E+010	1	8.406E+010	1849.185	.000
	J201	2.515E+011	1	2.515E+011	2898.548	.000
	J202	1.931E+011	1	1.931E+011	2378.110	.000
	J203	1.113E+011	1	1.113E+011	1997.579	.000
	J204	5.170E+009	1	5.170E+009	4449.225	.000
SAGB30	J200	1.812E+011	1	1.812E+011	3985.436	.000
	J201	4.718E+011	1	4.718E+011	5436.802	.000
	J202	2.595E+011	1	2.595E+011	3194.563	.000
	J203	2.322E+011	1	2.322E+011	4166.414	.000
	J204	2.063E+009	1	2.063E+009	1775.152	.000
SAGB10	J200	3.285E+011	1	3.285E+011	7226.206	.000
	J201	9.441E+011	1	9.441E+011	10878.433	.000
	J202	5.670E+011	1	5.670E+011	6981.254	.000
	J203	4.291E+011	1	4.291E+011	7700.219	.000
	J204	6.753E+009	1	6.753E+009	5811.815	.000
Error	J200	1.591E+011	3499	4.546E+007		
	J201	3.037E+011	3499	8.678E+007		
	J202	2.842E+011	3499	8.122E+007		
	J203	1.950E+011	3499	5.573E+007		
	J204	4.066E+009	3499	1.162E+006		
Total	J200	2.603E+012	3502			
	J201	5.490E+012	3502			
	J202	3.758E+012	3502			
	J203	3.236E+012	3502			
	J204	7.175E+010	3502			
Corrected Total	J200	4.915E+011	3501			
	J201	1.275E+012	3501			
	J202	8.789E+011	3501			
	J203	6.304E+011	3501			
	J204	1.207E+010	3501			

a. R Squared = .676 (Adjusted R Squared = .676)
b. R Squared = .762 (Adjusted R Squared = .762)
c. R Squared = .677 (Adjusted R Squared = .676)
d. R Squared = .691 (Adjusted R Squared = .691)
e. R Squared = .663 (Adjusted R Squared = .663)

e) Linear Regression

J200

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.250[a]	.062	.062	11748.30	.062	249.595	1	3749	.000	.001

a. Predictors: (Constant), SAGB30
b. Dependent Variable: J200

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.612[a]	.374	.374	9599.07	.374	2240.624	1	3749	.000	.004

a. Predictors: (Constant), SAGB10
b. Dependent Variable: J200

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	34449807254.0	1	34449807254.0	249.595	.000[b]
	Residual	517446822872.2	3749	138022625.5		
	Total	551896630126.2	3750			

a. Dependent Variable: J200
b. Predictors: (Constant), SAGB30

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	206455845906.445	1	206455845906.445	2240.624	.000[b]
	Residual	345440784219.728	3749	92142113.689		
	Total	551896630126.173	3750			

a. Dependent Variable: J200
b. Predictors: (Constant), SAGB10

Coefficients[a]

Model	Unstandardized Coefficients: B	Std. Error	Standardized Coefficients: Beta	t	Sig.	95.0% Confidence Interval for B: Lower Bound	Upper Bound	Collinearity Statistics: Tolerance	VIF
1 (Constant)	45654.030	1416.205		32.237	.000	42877.423	48430.636		
SAGB30	-2521.913	159.629	-.250	-15.799	.000	-2834.882	-2208.945	1.000	1.000

a. Dependent Variable: J200

Coefficients[a]

Model	Unstandardized Coefficients: B	Std. Error	Standardized Coefficients: Beta	t	Sig.	95.0% Confidence Interval for B: Lower Bound	Upper Bound	Collinearity Statistics: Tolerance	VIF
1 (Constant)	72140.078	1039.739		69.383	.000	70101.570	74178.587		
SAGB10	-5539.616	117.029	-.612	-47.335	.000	-5769.064	-5310.169	1.000	1.000

a. Dependent Variable: J200

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	SAGB30
1	1	1.991	1.000	.00	.00
	2	.009	14.698	1.00	1.00

a. Dependent Variable: J200

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	SAGB10
1	1	1.989	1.000	.01	.01
	2	.011	13.192	.99	.99

a. Dependent Variable: J200

© University of Pretoria

J201

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.301[a]	.091	.090	18723.49	.091	373.654	1	3749	.000	.001

a. Predictors: (Constant), SAGB30
b. Dependent Variable: J201

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.673[a]	.454	.453	14514.77	.454	3111.096	1	3749	.000	.004

a. Predictors: (Constant), SAGB10
b. Dependent Variable: J201

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	130991443975.531	1	130991443975.531	373.654	.000[b]
	Residual	1314284072100.065	3749	350569237.690		
	Total	1445275516075.596	3750			

a. Dependent Variable: J201
b. Predictors: (Constant), SAGB30

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	655441391595.121	1	655441391595.121	3111.096	.000[b]
	Residual	789834124480.475	3749	210678614.159		
	Total	1445275516075.596	3750			

a. Dependent Variable: J201
b. Predictors: (Constant), SAGB10

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	76121.332	2257.032		33.726	.000	71696.201	80546.462		
SAGB30	-4917.657	254.404	-.301	-19.330	.000	-5416.441	-4418.874	1.000	1.000

a. Dependent Variable: J201

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	119585.073	1572.191		76.063	.000	116502.640	122667.506		
SAGB10	-9870.361	176.960	-.673	-55.777	.000	-10217.309	-9523.413	1.000	1.000

a. Dependent Variable: J201

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	SAGB30
1	1	1.991	1.000	.00	.00
	2	.009	14.698	1.00	1.00

a. Dependent Variable: J201

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	SAGB10
1	1	1.989	1.000	.01	.01
	2	.011	13.192	.99	.99

a. Dependent Variable: J201

© University of Pretoria

J202

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.329[a]	.108	.108	15437.67	.108	453.892	1	3749	.000	.001

a. Predictors: (Constant), SAGB30
b. Dependent Variable: J202

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.669[a]	.447	.447	12151.45	.447	3034.525	1	3749	.000	.004

a. Predictors: (Constant), SAGB10
b. Dependent Variable: J202

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	108172504555.743	1	108172504555.743	453.892	.000[b]
	Residual	893468871962.444	3749	238321918.368		
	Total	1001641376518.187	3750			

a. Dependent Variable: J202
b. Predictors: (Constant), SAGB30

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	448071760844.761	1	448071760844.761	3034.525	.000[b]
	Residual	553569615673.427	3749	147657939.630		
	Total	1001641376518.187	3750			

a. Dependent Variable: J202
b. Predictors: (Constant), SAGB10

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	66429.206	1860.942		35.697	.000	62780.649	70077.764		
SAGB30	-4468.844	209.758	-.329	-21.305	.000	-4880.095	-4057.593	1.000	1.000

a. Dependent Variable: J202

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	98824.332	1316.205		75.083	.000	96243.785	101404.879		
SAGB10	-8160.935	148.148	-.669	-55.087	.000	-8451.392	-7870.477	1.000	1.000

a. Dependent Variable: J202

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	SAGB30
1	1	1.991	1.000	.00	.00
	2	.009	14.698	1.00	1.00

a. Dependent Variable: J202

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	SAGB10
1	1	1.989	1.000	.01	.01
	2	.011	13.192	.99	.99

a. Dependent Variable: J202

J203

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.260[a]	.068	.068	13286.716	.068	272.534	1	3749	.000	.001

a. Predictors: (Constant), SAGB30
b. Dependent Variable: J203

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.624[a]	.389	.389	10758.12	.389	2385.143	1	3749	.000	.004

a. Predictors: (Constant), SAGB10
b. Dependent Variable: J203

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	48112352691.405	1	48112352691.405	272.534	.000[b]
	Residual	661836642974.678	3749	176536847.953		
	Total	709948995666.084	3750			

a. Dependent Variable: J203
b. Predictors: (Constant), SAGB30

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	276049955007.897	1	276049955007.897	2385.143	.000[b]
	Residual	433899040658.186	3749	115737274.115		
	Total	709948995666.084	3750			

a. Dependent Variable: J203
b. Predictors: (Constant), SAGB10

Coefficients[a]

Model	Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.	95.0% Confidence Interval for B Lower Bound	95.0% Confidence Interval for B Upper Bound	Collinearity Statistics Tolerance	Collinearity Statistics VIF
1 (Constant)	52244.403	1601.653		32.619	.000	49104.206	55384.600		
SAGB30	-2980.335	180.532	-.260	-16.509	.000	-3334.286	-2626.384	1.000	1.000

a. Dependent Variable: J203

Coefficients[a]

Model	Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.	95.0% Confidence Interval for B Lower Bound	95.0% Confidence Interval for B Upper Bound	Collinearity Statistics Tolerance	Collinearity Statistics VIF
1 (Constant)	82306.749	1165.284		70.632	.000	80022.097	84591.401		
SAGB10	-6405.602	131.160	-.624	-48.838	.000	-6662.755	-6148.449	1.000	1.000

a. Dependent Variable: J203

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions (Constant)	Variance Proportions SAGB30
1	1	1.991	1.000	.00	.00
	2	.009	14.698	1.00	1.00

a. Dependent Variable: J203

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions (Constant)	Variance Proportions SAGB10
1	1	1.989	1.000	.01	.01
	2	.011	13.192	.99	.99

a. Dependent Variable: J203

J204

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.322[a]	.104	.104	1758.11	.104	405.791	1	3500	.000	.001

a. Predictors: (Constant), SAGB30
b. Dependent Variable: J204

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.702[a]	.492	.492	1323.21	.492	3395.156	1	3500	.000	.005

a. Predictors: (Constant), SAGB10
b. Dependent Variable: J204

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1254286046.962	1	1254286046.962	405.791	.000[b]
	Residual	10818371727.215	3500	3090963.351		
	Total	12072657774.177	3501			

a. Dependent Variable: J204
b. Predictors: (Constant), SAGB30

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5944543514.737	1	5944543514.737	3395.156	.000[b]
	Residual	6128114259.440	3500	1750889.788		
	Total	12072657774.177	3501			

a. Dependent Variable: J204
b. Predictors: (Constant), SAGB10

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	9182.675	252.665		36.343	.000	8687.289	9678.062		
SAGB30	-586.740	29.127	-.322	-20.144	.000	-643.847	-529.632	1.000	1.000

a. Dependent Variable: J204

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	13676.276	165.383		82.695	.000	13352.019	14000.533		
SAGB10	-1110.169	19.053	-.702	-58.268	.000	-1147.524	-1072.813	1.000	1.000

a. Dependent Variable: J204

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	SAGB30
1	1	1.993	1.000	.00	.00
	2	.007	16.950	1.00	1.00

a. Dependent Variable: J204

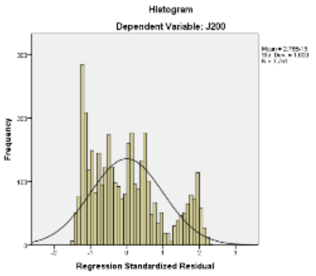
Collinearity Diagnostics[a]

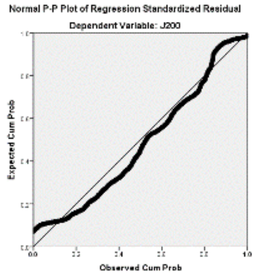
Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	SAGB10
1	1	1.991	1.000	.00	.00
	2	.009	14.725	1.00	1.00

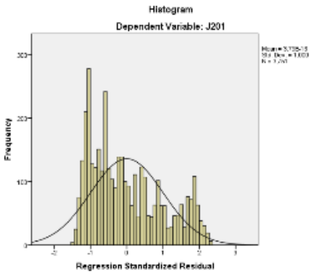
a. Dependent Variable: J204

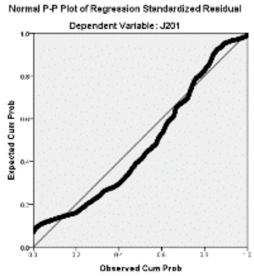
f) Histogram, P-P plot & Q-Q plot (individual)

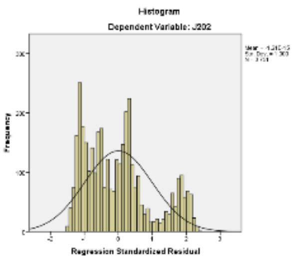
SAGB30

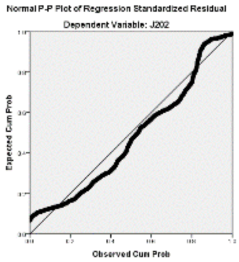


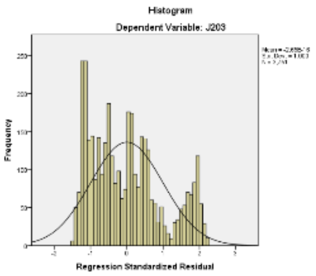


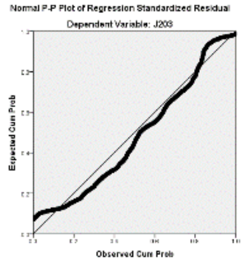


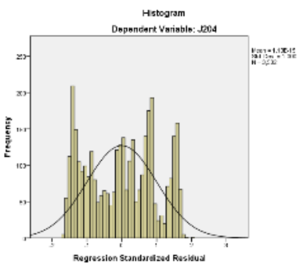


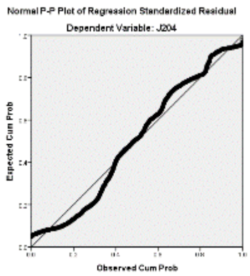




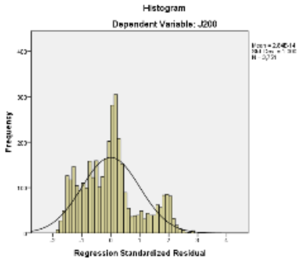


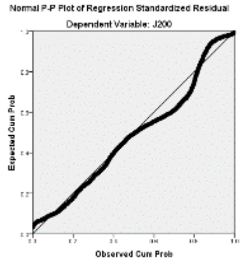


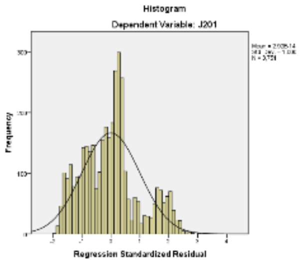


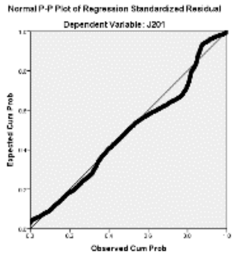


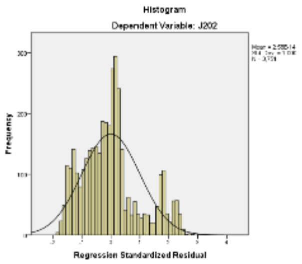
SAGB10

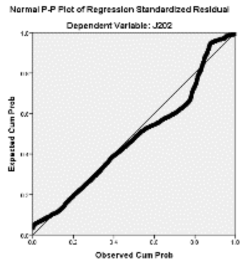

Histogram
Dependent Variable: J200
Frequency
Regression Standardized Residual

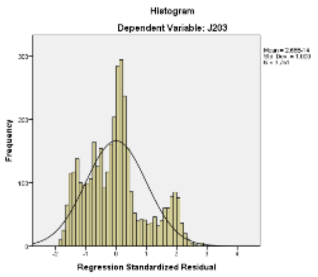

Normal P-P Plot of Regression Standardized Residual
Dependent Variable: J200
Expected Cum Prob
Observed Cum Prob

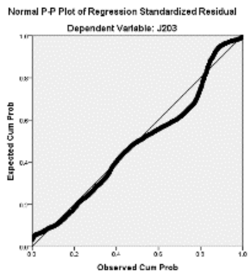

Histogram
Dependent Variable: J201
Frequency
Regression Standardized Residual

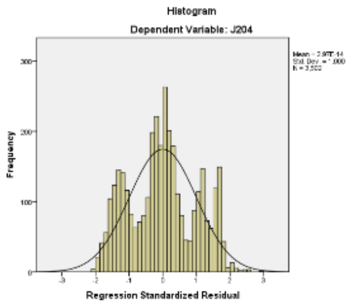

Normal P-P Plot of Regression Standardized Residual
Dependent Variable: J201
Expected Cum Prob
Observed Cum Prob

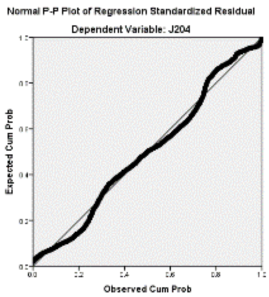

Histogram
Dependent Variable: J202
Frequency
Regression Standardized Residual


Normal P-P Plot of Regression Standardized Residual
Dependent Variable: J202
Expected Cum Prob
Observed Cum Prob


Histogram
Dependent Variable: J203
Frequency
Regression Standardized Residual


Normal P-P Plot of Regression Standardized Residual
Dependent Variable: J203
Expected Cum Prob
Observed Cum Prob

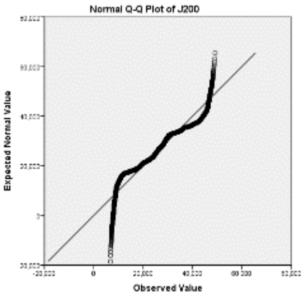

Histogram
Dependent Variable: J204
Frequency
Regression Standardized Residual

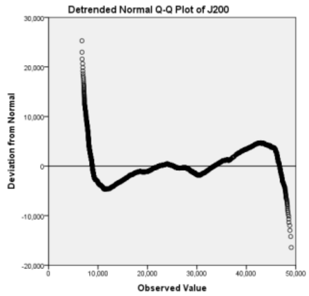

Normal P-P Plot of Regression Standardized Residual
Dependent Variable: J204
Expected Cum Prob
Observed Cum Prob

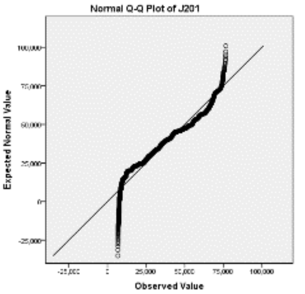
Estimated Distribution Parameters

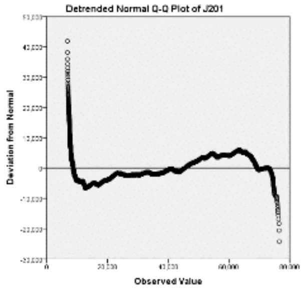
		J200	J201	J202	J203	J204	SA Goverment Bond 30Year	SA Goverment Bond 10Year
Normal Distribution	Location	23486.1895	32894.6946	27147.6732	26046.9977	4128.2224	8.7901	8.7829
	Scale	12131.46466	19631.78047	16343.32791	13759.35072	1856.97215	1.20184	1.33942

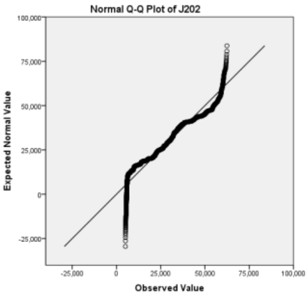
The cases are unweighted.

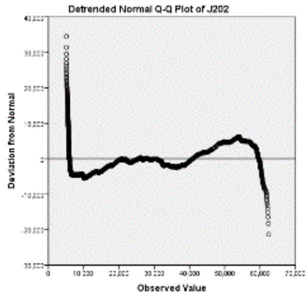


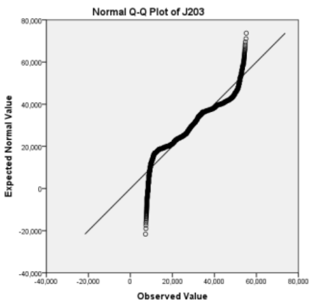


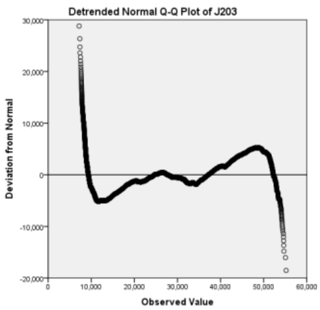


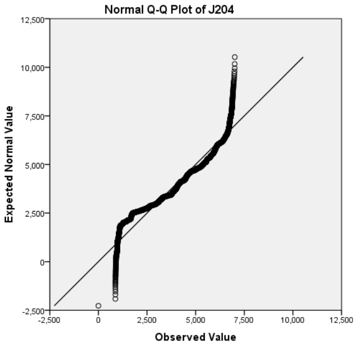


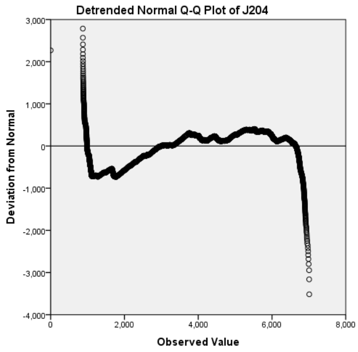


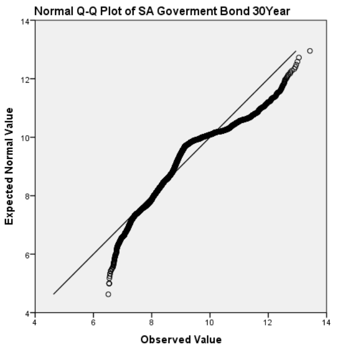


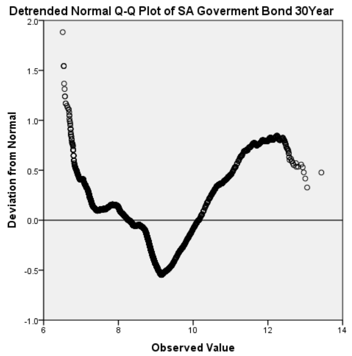


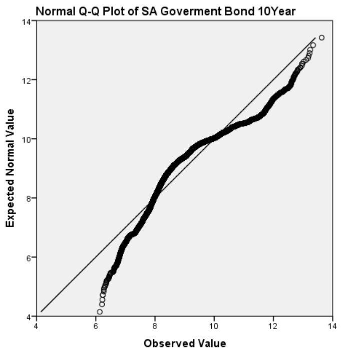


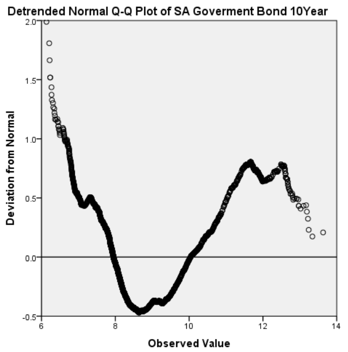

Normal Q-Q Plot of J204
Expected Normal Value
Observed Value


Detrended Normal Q-Q Plot of J204
Deviation from Normal
Observed Value


Normal Q-Q Plot of SA Goverment Bond 30Year
Expected Normal Value
Observed Value


Detrended Normal Q-Q Plot of SA Goverment Bond 30Year
Deviation from Normal
Observed Value


Normal Q-Q Plot of SA Goverment Bond 10Year
Expected Normal Value
Observed Value


Detrended Normal Q-Q Plot of SA Goverment Bond 10Year
Deviation from Normal
Observed Value

g) Combined Analysis (SAGB30 + SAGB10)

J200

Correlations

		J200	SAGB10	SAGB30
Pearson Correlation	J200	1.000	-.612	-.250
	SAGB10	-.612	1.000	.865
	SAGB30	-.250	.865	1.000
Sig. (1-tailed)	J200	.	.000	.000
	SAGB10	.000	.	.000
	SAGB30	.000	.000	.
N	J200	3751	3751	3751
	SAGB10	3751	3751	3751
	SAGB30	3751	3751	3751

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.827[a]	.683	.683	6830.47	.683	4040.612	2	3748	.000	.006

a. Predictors: (Constant), SAGB30, SAGB10
b. Dependent Variable: J200

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	377032372435.537	2	188516186217.769	4040.612	.000[b]
	Residual	174864257690.635	3748	46655351.572		
	Total	551896630126.173	3750			

a. Dependent Variable: J200
b. Predictors: (Constant), SAGB30, SAGB10

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	50069.651	824.993		60.691	.000	48452.171	51687.130		
SAGB10	-14213.421	165.870	-1.569	-85.690	.000	-14538.624	-13888.217	.252	3.967
SAGB30	11177.541	184.858	1.107	60.466	.000	10815.110	11539.973	.252	3.967

a. Dependent Variable: J200

Coefficient Correlations[a]

Model			SAGB30	SAGB10
1	Correlations	SAGB30	1.000	-.865
		SAGB10	-.865	1.000
	Covariances	SAGB30	34172.345	-26517.838
		SAGB10	-26517.838	27512.714

a. Dependent Variable: J200

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	SAGB10	SAGB30
1	1	2.984	1.000	.00	.00	.00
	2	.013	15.175	.93	.11	.04
	3	.003	33.143	.07	.89	.96

a. Dependent Variable: J200

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	5290.449	47848.054	23486.189	10027.061	3751
Residual	-15384.241	18362.035	.00000000061415	6828.650	3751
Std. Predicted Value	-1.815	2.430	.000	1.000	3751
Std. Residual	-2.252	2.688	.000	1.000	3751

a. Dependent Variable: J200

J201

Correlations

		J201	SAGB10	SAGB30
Pearson Correlation	J201	1.000	-.673	-.301
	SAGB10	-.673	1.000	.865
	SAGB30	-.301	.865	1.000
Sig. (1-tailed)	J201	.	.000	.000
	SAGB10	.000	.	.000
	SAGB30	.000	.000	.
N	J201	3751	3751	3751
	SAGB10	3751	3751	3751
	SAGB30	3751	3751	3751

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.876[a]	.768	.767	9467.53	.768	6188.071	2	3748	.000	.006

a. Predictors: (Constant), SAGB30, SAGB10
b. Dependent Variable: J201

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1109326302924.798	2	554663151462.399	6188.071	.000[b]
	Residual	335949213150.798	3748	89634261.780		
	Total	1445275516075.596	3750			

a. Dependent Variable: J201
b. Predictors: (Constant), SAGB30, SAGB10

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	83583.292	1143.501		73.094	.000	81341.346	85825.237		
SAGB10	-24019.267	229.907	-1.639	-104.474	.000	-24470.023	-23568.511	.252	3.967
SAGB30	18233.059	256.226	1.116	71.160	.000	17730.702	18735.415	.252	3.967

a. Dependent Variable: J201

Coefficient Correlations[a]

Model			SAGB30	SAGB10
1	Correlations	SAGB30	1.000	-.865
		SAGB10	-.865	1.000
	Covariances	SAGB30	65651.909	-50946.070
		SAGB10	-50946.070	52857.427

a. Dependent Variable: J201

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	SAGB10	SAGB30
1	1	2.984	1.000	.00	.00	.00
	2	.013	15.175	.93	.11	.04
	3	.003	33.143	.07	.89	.96

a. Dependent Variable: J201

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	759.960	74574.148	32894.694	17199.428	3751
Residual	-22446.677	26685.671	.00000000095294	9465.0122	3751
Std. Predicted Value	-1.868	2.423	.000	1.000	3751
Std. Residual	-2.371	2.819	.000	1.000	3751

a. Dependent Variable: J201

J202

Correlations

		J202	SAGB10	SAGB30
Pearson Correlation	J202	1.000	-.669	-.329
	SAGB10	-.669	1.000	.865
	SAGB30	-.329	.865	1.000
Sig. (1-tailed)	J202	.	.000	.000
	SAGB10	.000	.	.000
	SAGB30	.000	.000	.
N	J202	3751	3751	3751
	SAGB10	3751	3751	3751
	SAGB30	3751	3751	3751

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.834[a]	.695	.695	9029.64	.695	4268.439	2	3748	.000	.004

a. Predictors: (Constant), SAGB30, SAGB10
b. Dependent Variable: J202

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	696050073034.452	2	348025036517.226	4268.439	.000[b]
	Residual	305591303483.735	3748	81534499.329		
	Total	1001641376518.188	3750			

a. Dependent Variable: J202
b. Predictors: (Constant), SAGB30, SAGB10

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	72213.530	1090.612		66.214	.000	70075.279	74351.781		
SAGB10	-18619.132	219.274	-1.526	-84.913	.000	-19049.039	-18189.224	.252	3.967
SAGB30	13477.009	244.375	.991	55.149	.000	12997.887	13956.130	.252	3.967

a. Dependent Variable: J202

Coefficient Correlations[a]

Model			SAGB30	SAGB10
1	Correlations	SAGB30	1.000	-.865
		SAGB10	-.865	1.000
	Covariances	SAGB30	59719.302	-46342.350
		SAGB10	-46342.350	48080.988

a. Dependent Variable: J202

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	SAGB10	SAGB30
1	1	2.984	1.000	.00	.00	.00
	2	.013	15.175	.93	.11	.04
	3	.003	33.143	.07	.89	.96

a. Dependent Variable: J202

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	-569.0126	60124.210	27147.673	13623.999	3751
Residual	-19670.042	22970.050	.00000000074408	9027.237	3751
Std. Predicted Value	-2.034	2.420	.000	1.000	3751
Std. Residual	-2.178	2.544	.000	1.000	3751

a. Dependent Variable: J202

J203

Correlations

		J203	SAGB10	SAGB30
Pearson Correlation	J203	1.000	-.624	-.260
	SAGB10	-.624	1.000	.865
	SAGB30	-.260	.865	1.000
Sig. (1-tailed)	J203	.	.000	.000
	SAGB10	.000	.	.000
	SAGB30	.000	.000	.
N	J203	3751	3751	3751
	SAGB10	3751	3751	3751
	SAGB30	3751	3751	3751

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.835[a]	.698	.697	7568.98	.698	4322.156	2	3748	.000	.006

a. Predictors: (Constant), SAGB30, SAGB10
b. Dependent Variable: J203

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	495228068544.846	2	247614034272.423	4322.156	.000[b]
	Residual	214720927121.237	3748	57289468.282		
	Total	709948995666.084	3750			

a. Dependent Variable: J203
b. Predictors: (Constant), SAGB30, SAGB10

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	57288.915	914.191		62.666	.000	55496.554	59081.276		
SAGB10	-16237.754	183.803	-1.581	-88.343	.000	-16598.118	-15877.390	.252	3.967
SAGB30	12670.252	204.844	1.107	61.853	.000	12268.635	13071.869	.252	3.967

a. Dependent Variable: J203

Coefficient Correlations[a]

Model			SAGB30	SAGB10
1	Correlations	SAGB30	1.000	-.865
		SAGB10	-.865	1.000
	Covariances	SAGB30	41961.220	-32562.027
		SAGB10	-32562.027	33783.665

a. Dependent Variable: J203

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	SAGB10	SAGB30
1	1	2.984	1.000	.00	.00	.00
	2	.013	15.175	.93	.11	.04
	3	.003	33.143	.07	.89	.96

a. Dependent Variable: J203

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	5052.510	53955.796	26046.997	11491.771	3751
Residual	-17131.312	20276.875	.00000000066685	7566.961	3751
Std. Predicted Value	-1.827	2.429	.000	1.000	3751
Std. Residual	-2.263	2.679	.000	1.000	3751

a. Dependent Variable: J203

© University of Pretoria

J204

Correlations

		J204	SAGB10	SAGB30
Pearson Correlation	J204	1.000	-.702	-.322
	SAGB10	-.702	1.000	.807
	SAGB30	-.322	.807	1.000
Sig. (1-tailed)	J204	.	.000	.000
	SAGB10	.000	.	.000
	SAGB30	.000	.000	.
N	J204	3502	3502	3502
	SAGB10	3502	3502	3502
	SAGB30	3502	3502	3502

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.814[a]	.663	.663	1077.92	.663	3445.657	2	3499	.000	.005

a. Predictors: (Constant), SAGB30, SAGB10
b. Dependent Variable: J204

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	8007118518.599	2	4003559259.300	3445.657	.000[b]
	Residual	4065539255.578	3499	1161914.620		
	Total	12072657774.177	3501			

a. Dependent Variable: J204
b. Predictors: (Constant), SAGB30, SAGB10

Coefficients[a]

Model	Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.	95.0% Confidence Interval for B Lower Bound	95.0% Confidence Interval for B Upper Bound	Collinearity Statistics Tolerance	Collinearity Statistics VIF
1 (Constant)	10386.598	155.715		66.703	.000	10081.296	10691.900		
SAGB10	-2004.143	26.289	-1.267	-76.235	.000	-2055.686	-1952.600	.349	2.869
SAGB30	1274.406	30.248	.700	42.133	.000	1215.102	1333.711	.349	2.869

a. Dependent Variable: J204

Coefficient Correlations[a]

Model			SAGB30	SAGB10
1	Correlations	SAGB30	1.000	-.807
		SAGB10	-.807	1.000
	Covariances	SAGB30	914.914	-641.796
		SAGB10	-641.796	691.107

a. Dependent Variable: J204

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions (Constant)	SAGB10	SAGB30
1	1	2.987	1.000	.00	.00	.00
	2	.010	17.352	.89	.18	.03
	3	.003	31.699	.11	.82	.97

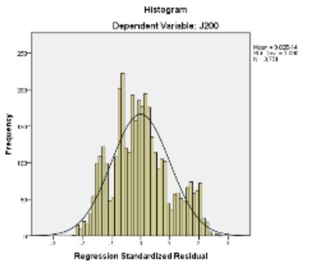
a. Dependent Variable: J204

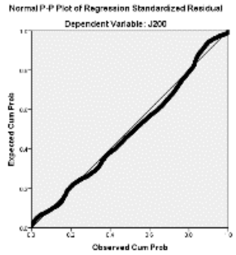
Residuals Statistics[a]

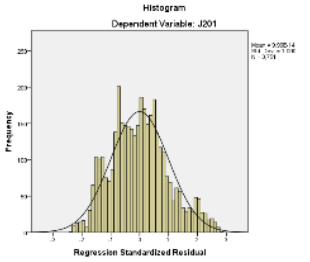
	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	282.336	7750.092	4128.222	1512.314	3502
Residual	-2752.930	2633.068	.000000000072065	1077.613	3502
Std. Predicted Value	-2.543	2.395	.000	1.000	3502
Std. Residual	-2.554	2.443	.000	1.000	3502

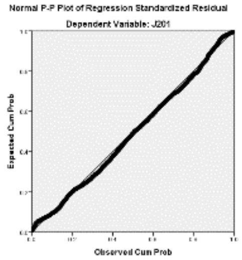
a. Dependent Variable: J204

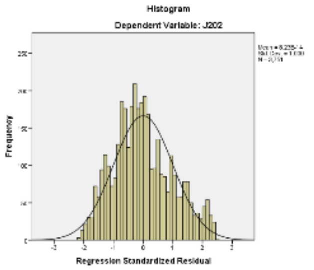
h) Histogram & PP plot (SAGB30 + SAGB10)

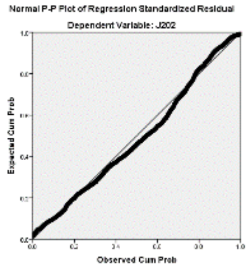


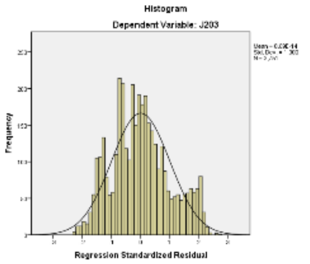


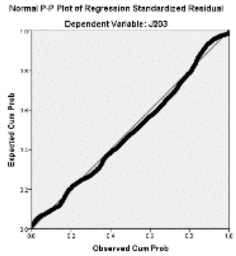


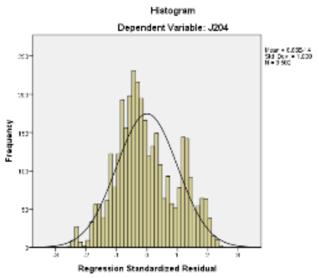


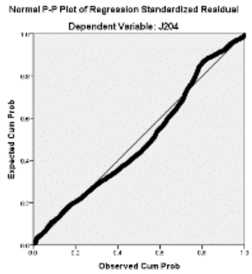












© University of Pretoria

9.10. Hypothesis 2B: Debt Rate P1 (2001-2005)

a) Descriptive statistics

Statistics

		J200	J201	J202	J203	J204	SA Government Bond 30Year	SA Government Bond 10Year
N	Valid	1252	1252	1252	1252	1003	1252	1252
	Missing	0	0	0	0	249	0	0
Mean		9988.5842	11423.0894	8971.1464	10743.1498	1688.4903	9.5221	10.0372
Median		9296.1600	9822.7300	6788.3750	10104.7550	1570.2700	9.4350	10.0200
Mode		7571.97[a]	6965.04[a]	5625.86	9089.89[a]	907.52[a]	7.63	9.23
Std. Deviation		2047.14052	3855.40000	3889.71967	2360.35908	731.83307	1.64629	1.42927
Skewness		1.141	.881	1.001	1.181	.715	.070	.099
Std. Error of Skewness		.069	.069	.069	.069	.077	.069	.069
Kurtosis		.807	-.375	-.287	.756	-.747	-1.084	-.972
Std. Error of Kurtosis		.138	.138	.138	.138	.154	.138	.138
Minimum		6753.06	6772.62	5051.68	7189.99	.00	6.51	7.39
Maximum		16685.92	21520.45	18953.16	18312.14	3406.66	13.43	13.63

a. Multiple modes exist. The smallest value is shown

b) Correlation

Correlations

		J200	J201	J202	J203	J204	SAGB30	SAGB10
J200	Pearson Correlation	1	.861**	.871**	.994**	.849**	-.587**	-.568**
	Sig. (2-tailed)		.000	.000	.000	.000	.000	.000
	N	1252	1252	1252	1252	1003	1252	1252
J201	Pearson Correlation	.861**	1	.993**	.911**	.994**	-.896**	-.876**
	Sig. (2-tailed)	.000		.000	.000	.000	.000	.000
	N	1252	1252	1252	1252	1003	1252	1252
J202	Pearson Correlation	.871**	.993**	1	.918**	.997**	-.873**	-.854**
	Sig. (2-tailed)	.000	.000		.000	.000	.000	.000
	N	1252	1252	1252	1252	1003	1252	1252
J203	Pearson Correlation	.994**	.911**	.918**	1	.900**	-.667**	-.647**
	Sig. (2-tailed)	.000	.000	.000		.000	.000	.000
	N	1252	1252	1252	1252	1003	1252	1252
J204	Pearson Correlation	.849**	.994**	.997**	.900**	1	-.870**	-.851**
	Sig. (2-tailed)	.000	.000	.000	.000		.000	.000
	N	1003	1003	1003	1003	1003	1003	1003
SAGB30	Pearson Correlation	-.587**	-.896**	-.873**	-.667**	-.870**	1	.979**
	Sig. (2-tailed)	.000	.000	.000	.000	.000		.000
	N	1252	1252	1252	1252	1003	1252	1252
SAGB10	Pearson Correlation	-.568**	-.876**	-.854**	-.647**	-.851**	.979**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	
	N	1252	1252	1252	1252	1003	1252	1252

**. Correlation is significant at the 0.01 level (2-tailed).

c) Linear Regression

J200

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.587[a]	.345	.344	1658.07	.345	656.963	1	1250	.000	.007

a. Predictors: (Constant), SAGB30
b. Dependent Variable: J200

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.568[a]	.322	.322	1685.95	.322	594.431	1	1250	.000	.007

a. Predictors: (Constant), SAGB10
b. Dependent Variable: J200

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1806139096.017	1	1806139096.017	656.963	.000[b]
	Residual	3436532056.451	1250	2749225.645		
	Total	5242671152.468	1251			

a. Dependent Variable: J200
b. Predictors: (Constant), SAGB30

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1689630981.048	1	1689630981.048	594.431	.000[b]
	Residual	3553040171.420	1250	2842432.137		
	Total	5242671152.468	1251			

a. Dependent Variable: J200
b. Predictors: (Constant), SAGB10

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	16938.409	275.166		61.557	.000	16398.572	17478.247		
SAGB30	-729.861	28.475	-.587	-25.631	.000	-785.726	-673.997	1.000	1.000

a. Dependent Variable: J200

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	18150.012	338.120		53.679	.000	17486.666	18813.357		
SAGB10	-813.119	33.351	-.568	-24.381	.000	-878.548	-747.690	1.000	1.000

a. Dependent Variable: J200

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	SAGB30
1	1	1.985	1.000	.01	.01
	2	.015	11.658	.99	.99

a. Dependent Variable: J200

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	SAGB10
1	1	1.990	1.000	.00	.00
	2	.010	14.122	1.00	1.00

a. Dependent Variable: J200

J201

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.896[a]	.803	.803	1712.47	.803	5090.828	1	1250	.000	.021

a. Predictors: (Constant), SAGB30
b. Dependent Variable: J201

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.876[a]	.767	.767	1861.14	.767	4118.279	1	1250	.000	.020

a. Predictors: (Constant), SAGB10
b. Dependent Variable: J201

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	14929272593.071	1	14929272593.071	5090.828	.000[b]
	Residual	3665727932.839	1250	2932582.346		
	Total	18595000525.910	1251			

a. Dependent Variable: J201
b. Predictors: (Constant), SAGB30

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	14265167542.717	1	14265167542.717	4118.279	.000[b]
	Residual	4329832983.193	1250	3463866.387		
	Total	18595000525.910	1251			

a. Dependent Variable: J201
b. Predictors: (Constant), SAGB10

Coefficients[a]

Model	Unstandardized Coefficients: B	Unstandardized Coefficients: Std. Error	Standardized Coefficients: Beta	t	Sig.	95.0% Confidence Interval for B: Lower Bound	95.0% Confidence Interval for B: Upper Bound	Collinearity Statistics: Tolerance	Collinearity Statistics: VIF
1 (Constant)	31404.107	284.193		110.503	.000	30846.559	31961.656		
SAGB30	-2098.380	29.410	-.896	-71.350	.000	-2156.078	-2040.682	1.000	1.000

a. Dependent Variable: J201

Coefficients[a]

Model	Unstandardized Coefficients: B	Unstandardized Coefficients: Std. Error	Standardized Coefficients: Beta	t	Sig.	95.0% Confidence Interval for B: Lower Bound	95.0% Confidence Interval for B: Upper Bound	Collinearity Statistics: Tolerance	Collinearity Statistics: VIF
1 (Constant)	35137.297	373.256		94.137	.000	34405.021	35869.574		
SAGB10	-2362.635	36.816	-.876	-64.174	.000	-2434.863	-2290.406	1.000	1.000

a. Dependent Variable: J201

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	Variance Proportions: SAGB30
1	1	1.985	1.000	.01	.01
	2	.015	11.658	.99	.99

a. Dependent Variable: J201

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	Variance Proportions: SAGB10
1	1	1.990	1.000	.00	.00
	2	.010	14.122	1.00	1.00

a. Dependent Variable: J201

J202

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.873[a]	.762	.761	1900.01	.762	3992.978	1	1250	.000	.016

a. Predictors: (Constant), SAGB30
b. Dependent Variable: J202

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.854[a]	.729	.729	2026.33	.729	3359.694	1	1250	.000	.016

a. Predictors: (Constant), SAGB10
b. Dependent Variable: J202

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	14414938937.874	1	14414938937.874	3992.978	.000[b]
	Residual	4512589879.882	1250	3610071.904		
	Total	18927528817.756	1251			

a. Dependent Variable: J202
b. Predictors: (Constant), SAGB30

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	13794994630.711	1	13794994630.711	3359.694	.000[b]
	Residual	5132534187.045	1250	4106027.350		
	Total	18927528817.756	1251			

a. Dependent Variable: J202
b. Predictors: (Constant), SAGB10

Coefficients[a]

Model	Unstandardized Coefficients: B	Std. Error	Standardized Coefficients: Beta	t	Sig.	95.0% Confidence Interval for B: Lower Bound	Upper Bound	Collinearity Statistics: Tolerance	VIF
1 (Constant)	28604.961	315.317		90.718	.000	27986.353	29223.569		
SAGB30	-2061.917	32.630	-.873	-63.190	.000	-2125.934	-1997.901	1.000	1.000

a. Dependent Variable: J202

Coefficients[a]

Model	Unstandardized Coefficients: B	Std. Error	Standardized Coefficients: Beta	t	Sig.	95.0% Confidence Interval for B: Lower Bound	Upper Bound	Collinearity Statistics: Tolerance	VIF
1 (Constant)	32291.276	406.384		79.460	.000	31494.006	33088.546		
SAGB10	-2323.373	40.084	-.854	-57.963	.000	-2402.012	-2244.734	1.000	1.000

a. Dependent Variable: J202

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	SAGB30
1	1	1.985	1.000	.01	.01
	2	.015	11.658	.99	.99

a. Dependent Variable: J202

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	SAGB10
1	1	1.990	1.000	.00	.00
	2	.010	14.122	1.00	1.00

a. Dependent Variable: J202

J203

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.667[a]	.445	.444	1759.67	.445	1000.849	1	1250	.000	.008

a. Predictors: (Constant), SAGB30
b. Dependent Variable: J203

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.647[a]	.418	.418	1801.46	.418	897.646	1	1250	.000	.008

a. Predictors: (Constant), SAGB10
b. Dependent Variable: J203

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3099100324.114	1	3099100324.114	1000.849	.000[b]
	Residual	3870589675.570	1250	3096471.740		
	Total	6969689999.684	1251			

a. Dependent Variable: J203
b. Predictors: (Constant), SAGB30

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2913102276.497	1	2913102276.497	897.646	.000[b]
	Residual	4056587723.187	1250	3245270.179		
	Total	6969689999.684	1251			

a. Dependent Variable: J203
b. Predictors: (Constant), SAGB10

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	19846.811	292.027		67.962	.000	19273.895	20419.728		
SAGB30	-956.054	30.220	-.667	-31.636	.000	-1015.342	-896.766	1.000	1.000

a. Dependent Variable: J203

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	21459.528	361.286		59.398	.000	20750.735	22168.322		
SAGB10	-1067.667	35.636	-.647	-29.961	.000	-1137.579	-997.755	1.000	1.000

a. Dependent Variable: J203

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	SAGB30
1	1	1.985	1.000	.01	.01
	2	.015	11.658	.99	.99

a. Dependent Variable: J203

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	SAGB10
1	1	1.990	1.000	.00	.00
	2	.010	14.122	1.00	1.00

a. Dependent Variable: J203

J204

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.870[a]	.756	.756	361.63	.756	3102.516	1	1001	.000	.021

a. Predictors: (Constant), SAGB30
b. Dependent Variable: J204

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.851[a]	.723	.723	385.01	.723	2619.198	1	1001	.000	.018

a. Predictors: (Constant), SAGB10
b. Dependent Variable: J204

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	405741742.185	1	405741742.185	3102.516	.000[b]
	Residual	130909058.464	1001	130778.280		
	Total	536650800.648	1002			

a. Dependent Variable: J204
b. Predictors: (Constant), SAGB30

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	388264580.228	1	388264580.228	2619.198	.000[b]
	Residual	148386220.421	1001	148237.982		
	Total	536650800.648	1002			

a. Dependent Variable: J204
b. Predictors: (Constant), SAGB10

Coefficients[a]

Model	Unstandardized Coefficients: B	Unstandardized Coefficients: Std. Error	Standardized Coefficients: Beta	t	Sig.	95.0% Confidence Interval for B: Lower Bound	95.0% Confidence Interval for B: Upper Bound	Collinearity Statistics: Tolerance	Collinearity Statistics: VIF
1 (Constant)	5502.023	69.411		79.267	.000	5365.816	5638.231		
SAGB30	-419.499	7.531	-.870	-55.700	.000	-434.278	-404.720	1.000	1.000

a. Dependent Variable: J204

Coefficients[a]

Model	Unstandardized Coefficients: B	Unstandardized Coefficients: Std. Error	Standardized Coefficients: Beta	t	Sig.	95.0% Confidence Interval for B: Lower Bound	95.0% Confidence Interval for B: Upper Bound	Collinearity Statistics: Tolerance	Collinearity Statistics: VIF
1 (Constant)	6111.866	87.282		70.024	.000	5940.590	6283.143		
SAGB10	-455.461	8.900	-.851	-51.178	.000	-472.924	-437.997	1.000	1.000

a. Dependent Variable: J204

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	Variance Proportions: SAGB30
1	1	1.986	1.000	.01	.01
	2	.014	12.075	.99	.99

a. Dependent Variable: J204

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	Variance Proportions: SAGB10
1	1	1.990	1.000	.00	.00
	2	.010	14.289	1.00	1.00

a. Dependent Variable: J204

© University of Pretoria

d) Combined Analysis (SAGB30 + SAGB10)

J200

Correlations

		J200	SAGB10	SAGB30
Pearson Correlation	J200	1.000	-.568	-.587
	SAGB10	-.568	1.000	.979
	SAGB30	-.587	.979	1.000
Sig. (1-tailed)	J200	.	.000	.000
	SAGB10	.000	.	.000
	SAGB30	.000	.000	.
N	J200	1252	1252	1252
	SAGB10	1252	1252	1252
	SAGB30	1252	1252	1252

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.588[a]	.346	.345	1657.32	.346	329.854	2	1249	.000	.007

a. Predictors: (Constant), SAGB30, SAGB10

b. Dependent Variable: J200

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1812028372.261	2	906014186.130	329.854	.000[b]
	Residual	3430642780.207	1249	2746711.593		
	Total	5242671152.468	1251			

a. Dependent Variable: J200

b. Predictors: (Constant), SAGB30, SAGB10

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	16481.684	415.855		39.633	.000	15665.833	17297.535		
SAGB10	234.831	160.373	.164	1.464	.143	-79.799	549.460	.042	23.929
SAGB30	-929.430	139.231	-.747	-6.675	.000	-1202.583	-656.277	.042	23.929

a. Dependent Variable: J200

Coefficient Correlations[a]

Model			SAGB30	SAGB10
1	Correlations	SAGB30	1.000	-.979
		SAGB10	-.979	1.000
	Covariances	SAGB30	19385.372	-21857.369
		SAGB10	-21857.369	25719.396

a. Dependent Variable: J200

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	SAGB10	SAGB30
1	1	2.983	1.000	.00	.00	.00
	2	.017	13.436	.50	.00	.02
	3	.000	78.163	.50	1.00	.98

a. Dependent Variable: J200

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	7200.183	12227.549	9988.584	1203.521	1252
Residual	-3019.662	4770.272	.00000000000391	1655.995	1252
Std. Predicted Value	-2.317	1.860	.000	1.000	1252
Std. Residual	-1.822	2.878	.000	.999	1252

a. Dependent Variable: J200

J201

Correlations

		J201	SAGB10	SAGB30
Pearson Correlation	J201	1.000	-.876	-.896
	SAGB10	-.876	1.000	.979
	SAGB30	-.896	.979	1.000
Sig. (1-tailed)	J201	.	.000	.000
	SAGB10	.000	.	.000
	SAGB30	.000	.000	.
N	J201	1252	1252	1252
	SAGB10	1252	1252	1252
	SAGB30	1252	1252	1252

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.896[a]	.803	.803	1713.00	.803	2543.963	2	1249	.000	.021

a. Predictors: (Constant), SAGB30, SAGB10
b. Dependent Variable: J201

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	14929949903.126	2	7464974951.563	2543.963	.000[b]
	Residual	3665050622.784	1249	2934388.009		
	Total	18595000525.910	1251			

a. Dependent Variable: J201
b. Predictors: (Constant), SAGB30, SAGB10

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	31249.219	429.827		72.702	.000	30405.956	32092.483		
SAGB10	79.637	165.761	.030	.480	.631	-245.563	404.838	.042	23.929
SAGB30	-2166.059	143.909	-.925	-15.052	.000	-2448.390	-1883.728	.042	23.929

a. Dependent Variable: J201

Coefficient Correlations[a]

Model			SAGB30	SAGB10
1	Correlations	SAGB30	1.000	-.979
		SAGB10	-.979	1.000
	Covariances	SAGB30	20709.929	-23350.832
		SAGB10	-23350.832	27476.743

a. Dependent Variable: J201

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	SAGB10	SAGB30
1	1	2.983	1.000	.00	.00	.00
	2	.017	13.436	.50	.00	.02
	3	.000	78.163	.50	1.00	.98

a. Dependent Variable: J201

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	3244.505	17757.402	11423.089	3454.621	1252
Residual	-3102.388	4781.789	.00000000003000	1711.635	1252
Std. Predicted Value	-2.367	1.834	.000	1.000	1252
Std. Residual	-1.811	2.791	.000	.999	1252

a. Dependent Variable: J201

J202

Correlations

		J202	SAGB10	SAGB30
Pearson Correlation	J202	1.000	-.854	-.873
	SAGB10	-.854	1.000	.979
	SAGB30	-.873	.979	1.000
Sig. (1-tailed)	J202	.	.000	.000
	SAGB10	.000	.	.000
	SAGB30	.000	.000	.
N	J202	1252	1252	1252
	SAGB10	1252	1252	1252
	SAGB30	1252	1252	1252

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.873[a]	.762	.761	1900.75	.762	1994.969	2	1249	.000	.016

a. Predictors: (Constant), SAGB30, SAGB10
b. Dependent Variable: J202

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	14415072412.071	2	7207536206.036	1994.969	.000[b]
	Residual	4512456405.685	1249	3612855.409		
	Total	18927528817.756	1251			

a. Dependent Variable: J202
b. Predictors: (Constant), SAGB30, SAGB10

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	28536.203	476.937		59.832	.000	27600.518	29471.889		
SAGB10	35.353	183.929	.013	.192	.848	-325.490	396.196	.042	23.929
SAGB30	-2091.961	159.682	-.885	-13.101	.000	-2405.236	-1778.687	.042	23.929

a. Dependent Variable: J202

Coefficient Correlations[a]

Model			SAGB30	SAGB10
1	Correlations	SAGB30	1.000	-.979
		SAGB10	-.979	1.000
	Covariances	SAGB30	25498.325	-28749.839
		SAGB10	-28749.839	33829.711

a. Dependent Variable: J202

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	SAGB10	SAGB30
1	1	2.983	1.000	.00	.00	.00
	2	.017	13.436	.50	.00	.02
	3	.000	78.163	.50	1.00	.98

a. Dependent Variable: J202

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	923.021	15187.984	8971.146	3394.530	1252
Residual	-3706.815	5131.889	.00000000000848	1899.231	1252
Std. Predicted Value	-2.371	1.831	.000	1.000	1252
Std. Residual	-1.950	2.700	.000	.999	1252

a. Dependent Variable: J202

J203

Correlations

		J203	SAGB10	SAGB30
Pearson Correlation	J203	1.000	-.647	-.667
	SAGB10	-.647	1.000	.979
	SAGB30	-.667	.979	1.000
Sig. (1-tailed)	J203	.	.000	.000
	SAGB10	.000	.	.000
	SAGB30	.000	.000	.
N	J203	1252	1252	1252
	SAGB10	1252	1252	1252
	SAGB30	1252	1252	1252

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.668[a]	.446	.445	1758.90	.446	501.913	2	1249	.000	.008

a. Predictors: (Constant), SAGB30, SAGB10
b. Dependent Variable: J203

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3105590324.028	2	1552795162.014	501.913	.000[b]
	Residual	3864099675.656	1249	3093754.744		
	Total	6969689999.684	1251			

a. Dependent Variable: J203
b. Predictors: (Constant), SAGB30, SAGB10

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	19367.358	441.345		43.883	.000	18501.498	20233.217		
SAGB10	246.517	170.203	.149	1.448	.148	-87.398	580.432	.042	23.929
SAGB30	-1165.554	147.766	-.813	-7.888	.000	-1455.450	-875.658	.042	23.929

a. Dependent Variable: J203

Coefficient Correlations[a]

Model			SAGB30	SAGB10
1	Correlations	SAGB30	1.000	-.979
		SAGB10	-.979	1.000
	Covariances	SAGB30	21834.687	-24619.017
		SAGB10	-24619.017	28969.006

a. Dependent Variable: J203

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	SAGB10	SAGB30
1	1	2.983	1.000	.00	.00	.00
	2	.017	13.436	.50	.00	.02
	3	.000	78.163	.50	1.00	.98

a. Dependent Variable: J203

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	7073.988	13665.453	10743.149	1575.590	1252
Residual	-3140.174	5027.275	.00000000001021	1757.500	1252
Std. Predicted Value	-2.329	1.855	.000	1.000	1252
Std. Residual	-1.785	2.858	.000	.999	1252

a. Dependent Variable: J203

© University of Pretoria

J204

Correlations

		J204	SAGB10	SAGB30
Pearson Correlation	J204	1.000	-.851	-.870
	SAGB10	-.851	1.000	.975
	SAGB30	-.870	.975	1.000
Sig. (1-tailed)	J204	.	.000	.000
	SAGB10	.000	.	.000
	SAGB30	.000	.000	.
N	J204	1003	1003	1003
	SAGB10	1003	1003	1003
	SAGB30	1003	1003	1003

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.870[a]	.756	.756	361.70	.756	1550.922	2	1000	.000	.021

a. Predictors: (Constant), SAGB30, SAGB10
b. Dependent Variable: J204

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	405819209.186	2	202909604.593	1550.922	.000[b]
	Residual	130831591.463	1000	130831.591		
	Total	536650800.648	1002			

a. Dependent Variable: J204
b. Predictors: (Constant), SAGB30, SAGB10

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	5552.122	95.177		58.335	.000	5365.352	5738.891		
SAGB10	-29.048	37.750	-.054	-.769	.442	-103.125	45.030	.049	20.386
SAGB30	-393.977	34.012	-.817	-11.583	.000	-460.720	-327.234	.049	20.386

a. Dependent Variable: J204

Coefficient Correlations[a]

Model			SAGB30	SAGB10
1	Correlations	SAGB30	1.000	-.975
		SAGB10	-.975	1.000
	Covariances	SAGB30	1156.812	-1252.051
		SAGB10	-1252.051	1425.032

a. Dependent Variable: J204

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	SAGB10	SAGB30
1	1	2.984	1.000	.00	.00	.00
	2	.016	13.823	.60	.01	.02
	3	.001	73.473	.40	.99	.98

a. Dependent Variable: J204

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	23.223	2765.114	1688.490	636.403	1003
Residual	-737.390	857.505	.000000000004980	361.345	1003
Std. Predicted Value	-2.617	1.692	.000	1.000	1003
Std. Residual	-2.039	2.371	.000	.999	1003

a. Dependent Variable: J204

9.11. Hypothesis 2C: Debt Rate P2 (2006-2010)

a) Descriptive statistics

Statistics

		J200	J201	J202	J203	J204	SA Government Bond 30Year	SA Government Bond 10Year
N	Valid	1250	1250	1250	1250	1250	1250	1250
	Missing	0	0	0	0	0	0	0
Mean		23201.2114	31113.9621	27198.1540	25604.7722	4371.9837	8.1466	8.4498
Median		23922.1500	30679.2450	26897.2500	26519.9100	4105.5900	8.1655	8.4730
Mode		21855.80	21546.01[a]	18962.49[a]	17814.42[a]	3907.53[a]	8.01	7.36[a]
Std. Deviation		3576.97352	5323.88987	4576.92132	3875.98417	890.89432	.70372	.66890
Skewness		-.131	.289	.226	-.227	.550	.066	.443
Std. Error of Skewness		.069	.069	.069	.069	.069	.069	.069
Kurtosis		-.992	-.802	-1.007	-1.126	-.634	.091	.444
Std. Error of Kurtosis		.138	.138	.138	.138	.138	.138	.138
Minimum		15905.06	21546.01	18962.49	17814.42	2810.26	6.54	7.11
Maximum		31315.34	43473.49	37271.62	33232.89	6172.41	10.44	10.85
Sum		29001514.29	38892452.64	33997692.55	32005965.22	5464979.61	10183.29	10562.20

a. Multiple modes exist. The smallest value is shown

b) Correlation

Correlations

		J200	J201	J202	J203	J204	SAGB30	SAGB10
J200	Pearson Correlation	1	.731**	.863**	.995**	.669**	.481**	.360**
	Sig. (2-tailed)		.000	.000	.000	.000	.000	.000
	N	1250	1250	1250	1250	1250	1250	1250
J201	Pearson Correlation	.731**	1	.796**	.794**	.444**	.190**	-.039
	Sig. (2-tailed)	.000		.000	.000	.000	.000	.173
	N	1250	1250	1250	1250	1250	1250	1250
J202	Pearson Correlation	.863**	.796**	1	.887**	.853**	.130**	.007
	Sig. (2-tailed)	.000	.000		.000	.000	.000	.809
	N	1250	1250	1250	1250	1250	1250	1250
J203	Pearson Correlation	.995**	.794**	.887**	1	.666**	.450**	.312**
	Sig. (2-tailed)	.000	.000	.000		.000	.000	.000
	N	1250	1250	1250	1250	1250	1250	1250
J204	Pearson Correlation	.669**	.444**	.853**	.666**	1	-.120**	-.150**
	Sig. (2-tailed)	.000	.000	.000	.000		.000	.000
	N	1250	1250	1250	1250	1250	1250	1250
SAGB30	Pearson Correlation	.481**	.190**	.130**	.450**	-.120**	1	.949**
	Sig. (2-tailed)	.000	.000	.000	.000	.000		.000
	N	1250	1250	1250	1250	1250	1250	1250
SAGB10	Pearson Correlation	.360**	-.039	.007	.312**	-.150**	.949**	1
	Sig. (2-tailed)	.000	.173	.809	.000	.000	.000	
	N	1250	1250	1250	1250	1250	1250	1250

**. Correlation is significant at the 0.01 level (2-tailed).

c) Linear Regression

J200

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.481[a]	.231	.230	3138.08	.231	374.795	1	1248	.000	.017

a. Predictors: (Constant), SAGB30
b. Dependent Variable: J200

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.360[a]	.130	.129	3337.99	.130	186.247	1	1248	.000	.014

a. Predictors: (Constant), SAGB10
b. Dependent Variable: J200

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3690826175.078	1	3690826175.078	374.795	.000[b]
	Residual	12289803553.699	1248	9847599.001		
	Total	15980629728.777	1249			

a. Dependent Variable: J200
b. Predictors: (Constant), SAGB30

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2075192487.991	1	2075192487.991	186.247	.000[b]
	Residual	13905437240.785	1248	11142177.276		
	Total	15980629728.777	1249			

a. Dependent Variable: J200
b. Predictors: (Constant), SAGB10

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	3300.853	1031.757		3.199	.001	1276.684	5325.022		
SAGB30	2442.772	126.179	.481	19.360	.000	2195.226	2690.318	1.000	1.000

a. Dependent Variable: J200

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	6918.247	1196.864		5.780	.000	4570.160	9266.335		
SAGB10	1927.033	141.203	.360	13.647	.000	1650.011	2204.055	1.000	1.000

a. Dependent Variable: J200

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	SAGB30
1	1	1.996	1.000	.00	.00
	2	.004	23.206	1.00	1.00

a. Dependent Variable: J200

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	SAGB10
1	1	1.997	1.000	.00	.00
	2	.003	25.314	1.00	1.00

a. Dependent Variable: J200

J201

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.190[a]	.036	.035	5228.93	.036	46.776	1	1248	.000	.004

a. Predictors: (Constant), SAGB30
b. Dependent Variable: J201

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.039[a]	.001	.001	5322.06	.001	1.855	1	1248	.173	.003

a. Predictors: (Constant), SAGB10
b. Dependent Variable: J201

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1278923423.969	1	1278923423.969	46.776	.000[b]
	Residual	34122486934.413	1248	27341736.326		
	Total	35401410358.382	1249			

a. Dependent Variable: J201
b. Predictors: (Constant), SAGB30

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	52536765.048	1	52536765.048	1.855	.173[b]
	Residual	35348873593.334	1248	28324417.943		
	Total	35401410358.382	1249			

a. Dependent Variable: J201
b. Predictors: (Constant), SAGB10

Coefficients[a]

Model	Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.	95.0% Confidence Interval for B Lower Bound	95.0% Confidence Interval for B Upper Bound	Collinearity Statistics Tolerance	Collinearity Statistics VIF
1 (Constant)	19399.526	1719.195		11.284	.000	16026.695	22772.358		
SAGB30	1437.949	210.249	.190	6.839	.000	1025.468	1850.430	1.000	1.000

a. Dependent Variable: J201

Coefficients[a]

Model	Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.	95.0% Confidence Interval for B Lower Bound	95.0% Confidence Interval for B Upper Bound	Collinearity Statistics Tolerance	Collinearity Statistics VIF
1 (Constant)	33704.774	1908.272		17.662	.000	29961.000	37448.549		
SAGB10	-306.614	225.134	-.039	-1.362	.173	-748.296	135.069	1.000	1.000

a. Dependent Variable: J201

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions (Constant)	Variance Proportions SAGB30
1	1	1.996	1.000	.00	.00
	2	.004	23.206	1.00	1.00

a. Dependent Variable: J201

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions (Constant)	Variance Proportions SAGB10
1	1	1.997	1.000	.00	.00
	2	.003	25.314	1.00	1.00

a. Dependent Variable: J201

J202

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.130[a]	.017	.016	4539.79	.017	21.512	1	1248	.000	.002

a. Predictors: (Constant), SAGB30
b. Dependent Variable: J202

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.007[a]	.000	-.001	4578.64	.000	.058	1	1248	.809	.002

a. Predictors: (Constant), SAGB10
b. Dependent Variable: J202

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	443355426.197	1	443355426.197	21.512	.000[b]
	Residual	25720957331.290	1248	20609741.451		
	Total	26164312757.487	1249			

a. Dependent Variable: J202
b. Predictors: (Constant), SAGB30

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1219542.430	1	1219542.430	.058	.809[b]
	Residual	26163093215.057	1248	20964016.999		
	Total	26164312757.487	1249			

a. Dependent Variable: J202
b. Predictors: (Constant), SAGB10

Coefficients[a]

Model	Unstandardized Coefficients: B	Std. Error	Standardized Coefficients: Beta	t	Sig.	95.0% Confidence Interval for B: Lower Bound	Upper Bound	Collinearity Statistics: Tolerance	VIF
1 (Constant)	20300.918	1492.617		13.601	.000	17372.602	23229.233		
SAGB30	846.637	182.540	.130	4.638	.000	488.518	1204.756	1.000	1.000

a. Dependent Variable: J202

Coefficients[a]

Model	Unstandardized Coefficients: B	Std. Error	Standardized Coefficients: Beta	t	Sig.	95.0% Confidence Interval for B: Lower Bound	Upper Bound	Collinearity Statistics: Tolerance	VIF
1 (Constant)	26803.422	1641.712		16.327	.000	23582.602	30024.242		
SAGB10	46.715	193.686	.007	.241	.809	-333.270	426.700	1.000	1.000

a. Dependent Variable: J202

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	SAGB30
1	1	1.996	1.000	.00	.00
	2	.004	23.206	1.00	1.00

a. Dependent Variable: J202

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	SAGB10
1	1	1.997	1.000	.00	.00
	2	.003	25.314	1.00	1.00

a. Dependent Variable: J202

J203

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.450[a]	.203	.202	3461.87	.203	317.679	1	1248	.000	.015

a. Predictors: (Constant), SAGB30
b. Dependent Variable: J203

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.312[a]	.097	.096	3684.59	.097	134.126	1	1248	.000	.011

a. Predictors: (Constant), SAGB10
b. Dependent Variable: J203

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3807252428.822	1	3807252428.822	317.679	.000[b]
	Residual	14956790928.729	1248	11984608.116		
	Total	18764043357.551	1249			

a. Dependent Variable: J203
b. Predictors: (Constant), SAGB30

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1820928611.259	1	1820928611.259	134.126	.000[b]
	Residual	16943114746.292	1248	13576213.739		
	Total	18764043357.551	1249			

a. Dependent Variable: J203
b. Predictors: (Constant), SAGB10

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	5392.975	1138.214		4.738	.000	3159.950	7625.999		
SAGB30	2481.001	139.198	.450	17.824	.000	2207.913	2754.089	1.000	1.000

a. Dependent Variable: J203

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	10351.932	1321.141		7.836	.000	7760.030	12943.833		
SAGB10	1805.122	155.865	.312	11.581	.000	1499.335	2110.909	1.000	1.000

a. Dependent Variable: J203

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	SAGB30
1	1	1.996	1.000	.00	.00
	2	.004	23.206	1.00	1.00

a. Dependent Variable: J203

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	SAGB10
1	1	1.997	1.000	.00	.00
	2	.003	25.314	1.00	1.00

a. Dependent Variable: J203

J204

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.120[a]	.014	.014	884.83	.014	18.167	1	1248	.000	.001

a. Predictors: (Constant), SAGB30
b. Dependent Variable: J204

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.150[a]	.022	.022	881.17	.022	28.710	1	1248	.000	.001

a. Predictors: (Constant), SAGB10
b. Dependent Variable: J204

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	14223190.386	1	14223190.386	18.167	.000[b]
	Residual	977098980.015	1248	782931.875		
	Total	991322170.402	1249			

a. Dependent Variable: J204
b. Predictors: (Constant), SAGB30

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	22292652.113	1	22292652.113	28.710	.000[b]
	Residual	969029518.289	1248	776465.960		
	Total	991322170.402	1249			

a. Dependent Variable: J204
b. Predictors: (Constant), SAGB10

Coefficients[a]

Model	Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.	95.0% Confidence Interval for B Lower Bound	95.0% Confidence Interval for B Upper Bound	Collinearity Statistics Tolerance	Collinearity Statistics VIF
1 (Constant)	5607.355	290.920		19.275	.000	5036.608	6178.102		
SAGB30	-151.642	35.578	-.120	-4.262	.000	-221.442	-81.843	1.000	1.000

a. Dependent Variable: J204

Coefficients[a]

Model	Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.	95.0% Confidence Interval for B Lower Bound	95.0% Confidence Interval for B Upper Bound	Collinearity Statistics Tolerance	Collinearity Statistics VIF
1 (Constant)	6059.644	315.952		19.179	.000	5439.789	6679.500		
SAGB10	-199.729	37.275	-.150	-5.358	.000	-272.858	-126.600	1.000	1.000

a. Dependent Variable: J204

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions (Constant)	Variance Proportions SAGB30
1	1	1.996	1.000	.00	.00
	2	.004	23.206	1.00	1.00

a. Dependent Variable: J204

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions (Constant)	Variance Proportions SAGB10
1	1	1.997	1.000	.00	.00
	2	.003	25.314	1.00	1.00

a. Dependent Variable: J204

d) Combined Analysis (SAGB30 + SAGB10)

J200

Correlations

		J200	SAGB10	SAGB30
Pearson Correlation	J200	1.000	.360	.481
	SAGB10	.360	1.000	.949
	SAGB30	.481	.949	1.000
Sig. (1-tailed)	J200	.	.000	.000
	SAGB10	.000	.	.000
	SAGB30	.000	.000	.
N	J200	1250	1250	1250
	SAGB10	1250	1250	1250
	SAGB30	1250	1250	1250

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.569[a]	.324	.323	2943.91	.324	298.466	2	1247	.000	.021

a. Predictors: (Constant), SAGB30, SAGB10

b. Dependent Variable: J200

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5173371767.132	2	2586685883.566	298.466	.000[b]
	Residual	10807257961.644	1247	8666606.224		
	Total	15980629728.777	1249			

a. Dependent Variable: J200

b. Predictors: (Constant), SAGB30, SAGB10

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	8992.861	1061.251		8.474	.000	6910.826	11074.895		
SAGB10	-5177.366	395.849	-.968	-13.079	.000	-5953.969	-4400.763	.099	10.104
SAGB30	7114.088	376.262	1.400	18.907	.000	6375.912	7852.265	.099	10.104

a. Dependent Variable: J200

Coefficient Correlations[a]

Model			SAGB30	SAGB10
1	Correlations	SAGB30	1.000	-.949
		SAGB10	-.949	1.000
	Covariances	SAGB30	141573.197	-141380.377
		SAGB10	-141380.377	156696.296

a. Dependent Variable: J200

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	SAGB10	SAGB30
1	1	2.995	1.000	.00	.00	.00
	2	.004	25.934	.92	.02	.04
	3	.000	93.626	.08	.98	.96

a. Dependent Variable: J200

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	18552.605	27459.412	23201.211	2035.193	1250
Residual	-6834.591	6409.627	.0000000002549	2941.552	1250
Std. Predicted Value	-2.284	2.092	.000	1.000	1250
Std. Residual	-2.322	2.177	.000	.999	1250

a. Dependent Variable: J200

J201

Correlations

		J201	SAGB10	SAGB30
Pearson Correlation	J201	1.000	-.039	.190
	SAGB10	-.039	1.000	.949
	SAGB30	.190	.949	1.000
Sig. (1-tailed)	J201	.	.087	.000
	SAGB10	.087	.	.000
	SAGB30	.000	.000	.
N	J201	1250	1250	1250
	SAGB10	1250	1250	1250
	SAGB30	1250	1250	1250

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.721[a]	.520	.520	3689.67	.520	676.710	2	1247	.000	.018

a. Predictors: (Constant), SAGB30, SAGB10
b. Dependent Variable: J201

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	18425092540.899	2	9212546270.449	676.710	.000[b]
	Residual	16976317817.483	1247	13613727.199		
	Total	35401410358.382	1249			

a. Dependent Variable: J201
b. Predictors: (Constant), SAGB30, SAGB10

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	38756.837	1330.093		29.138	.000	36147.369	41366.304		
SAGB10	-17607.122	496.128	-2.212	-35.489	.000	-18580.459	-16633.786	.099	10.104
SAGB30	17324.104	471.579	2.290	36.736	.000	16398.928	18249.280	.099	10.104

a. Dependent Variable: J201

Coefficient Correlations[a]

Model			SAGB30	SAGB10
1	Correlations	SAGB30	1.000	-.949
		SAGB10	-.949	1.000
	Covariances	SAGB30	222386.807	-222083.921
		SAGB10	-222083.921	246142.558

a. Dependent Variable: J201

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	SAGB10	SAGB30
1	1	2.995	1.000	.00	.00	.00
	2	.004	25.934	.92	.02	.04
	3	.000	93.626	.08	.98	.96

a. Dependent Variable: J201

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	23591.974	41366.078	31113.962	3840.817	1250
Residual	-10015.965	7820.482	.0000000006214	3686.723	1250
Std. Predicted Value	-1.958	2.669	.000	1.000	1250
Std. Residual	-2.715	2.120	.000	.999	1250

a. Dependent Variable: J201

J202

Correlations

		J202	SAGB10	SAGB30
Pearson Correlation	J202	1.000	.007	.130
	SAGB10	.007	1.000	.949
	SAGB30	.130	.949	1.000
Sig. (1-tailed)	J202	.	.405	.000
	SAGB10	.405	.	.000
	SAGB30	.000	.000	.
N	J202	1250	1250	1250
	SAGB10	1250	1250	1250
	SAGB30	1250	1250	1250

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.393[a]	.155	.153	4211.56	.155	114.051	2	1247	.000	.004

a. Predictors: (Constant), SAGB30, SAGB10
b. Dependent Variable: J202

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4045917827.785	2	2022958913.892	114.051	.000[b]
	Residual	22118394929.702	1247	17737285.429		
	Total	26164312757.487	1249			

a. Dependent Variable: J202
b. Predictors: (Constant), SAGB30, SAGB10

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	29173.851	1518.228		19.216	.000	26195.287	32152.415		
SAGB10	-8070.689	566.302	-1.179	-14.252	.000	-9181.699	-6959.678	.099	10.104
SAGB30	8128.475	538.282	1.250	15.101	.000	7072.437	9184.512	.099	10.104

a. Dependent Variable: J202

Coefficient Correlations[a]

Model			SAGB30	SAGB10
1	Correlations	SAGB30	1.000	-.949
		SAGB10	-.949	1.000
	Covariances	SAGB30	289747.121	-289352.492
		SAGB10	-289352.492	320698.420

a. Dependent Variable: J202

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	SAGB10	SAGB30
1	1	2.995	1.000	.00	.00	.00
	2	.004	25.934	.92	.02	.04
	3	.000	93.626	.08	.98	.96

a. Dependent Variable: J202

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	23751.470	31907.488	27198.154	1799.812	1250
Residual	-8264.471	9883.430	.0000000003238	4208.192	1250
Std. Predicted Value	-1.915	2.617	.000	1.000	1250
Std. Residual	-1.962	2.347	.000	.999	1250

a. Dependent Variable: J202

J203

Correlations

		J203	SAGB10	SAGB30
Pearson Correlation	J203	1.000	.312	.450
	SAGB10	.312	1.000	.949
	SAGB30	.450	.949	1.000
Sig. (1-tailed)	J203	.	.000	.000
	SAGB10	.000	.	.000
	SAGB30	.000	.000	.
N	J203	1250	1250	1250
	SAGB10	1250	1250	1250
	SAGB30	1250	1250	1250

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.582[a]	.339	.338	3153.79	.339	319.757	2	1247	.000	.020

a. Predictors: (Constant), SAGB30, SAGB10
b. Dependent Variable: J203

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6360865104.715	2	3180432552.357	319.757	.000[b]
	Residual	12403178252.837	1247	9946413.996		
	Total	18764043357.551	1249			

a. Dependent Variable: J203
b. Predictors: (Constant), SAGB30, SAGB10

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	12863.291	1136.912		11.314	.000	10632.819	15093.762		
SAGB10	-6794.889	424.071	-1.173	-16.023	.000	-7626.859	-5962.918	.099	10.104
SAGB30	8611.739	403.087	1.564	21.364	.000	7820.935	9402.544	.099	10.104

a. Dependent Variable: J203

Coefficient Correlations[a]

Model			SAGB30	SAGB10
1	Correlations	SAGB30	1.000	-.949
		SAGB10	-.949	1.000
	Covariances	SAGB30	162479.475	-162258.181
		SAGB10	-162258.181	179835.819

a. Dependent Variable: J203

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	SAGB10	SAGB30
1	1	2.995	1.000	.00	.00	.00
	2	.004	25.934	.92	.02	.04
	3	.000	93.626	.08	.98	.96

a. Dependent Variable: J203

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	20668.560	30661.671	25604.772	2256.715	1250
Residual	-7563.632	7001.544	.0000000003340	3151.267	1250
Std. Predicted Value	-2.187	2.241	.000	1.000	1250
Std. Residual	-2.398	2.220	.000	.999	1250

a. Dependent Variable: J203

J204

Correlations

		J204	SAGB10	SAGB30
Pearson Correlation	J204	1.000	-.150	-.120
	SAGB10	-.150	1.000	.949
	SAGB30	-.120	.949	1.000
Sig. (1-tailed)	J204	.	.000	.000
	SAGB10	.000	.	.000
	SAGB30	.000	.000	.
N	J204	1250	1250	1250
	SAGB10	1250	1250	1250
	SAGB30	1250	1250	1250

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.166[a]	.028	.026	879.20	.028	17.718	2	1247	.000	.001

a. Predictors: (Constant), SAGB30, SAGB10
b. Dependent Variable: J204

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	27391936.565	2	13695968.282	17.718	.000[b]
	Residual	963930233.837	1247	772999.386		
	Total	991322170.402	1249			

a. Dependent Variable: J204
b. Predictors: (Constant), SAGB30, SAGB10

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	6143.811	316.944		19.385	.000	5522.008	6765.614		
SAGB10	-487.952	118.221	-.366	-4.127	.000	-719.886	-256.018	.099	10.104
SAGB30	288.616	112.371	.228	2.568	.010	68.158	509.074	.099	10.104

a. Dependent Variable: J204

Coefficient Correlations[a]

Model			SAGB30	SAGB10
1	Correlations	SAGB30	1.000	-.949
		SAGB10	-.949	1.000
	Covariances	SAGB30	12627.318	-12610.120
		SAGB10	-12610.120	13976.191

a. Dependent Variable: J204

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	SAGB10	SAGB30
1	1	2.995	1.000	.00	.00	.00
	2	.004	25.934	.92	.02	.04
	3	.000	93.626	.08	.98	.96

a. Dependent Variable: J204

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	3862.684	4661.444	4371.983	148.091	1250
Residual	-1628.685	1776.880	.00000000002184	878.499	1250
Std. Predicted Value	-3.439	1.955	.000	1.000	1250
Std. Residual	-1.852	2.021	.000	.999	1250

a. Dependent Variable: J204

9.12. Hypothesis 2D: Debt Rate P3 (2011-2015)

a) Descriptive statistics

Statistics

		J200	J201	J202	J203	J204	SA Government Bond 30Year	SA Government Bond 10Year
N	Valid	1249	1249	1249	1249	1249	1249	1249
	Missing	0	0	0	0	0	0	0
Mean		37301.4211	56200.0311	45317.3373	41830.1840	5843.4744	8.7003	7.8590
Median		36391.6100	55756.2600	44823.9500	40897.6800	5894.2100	8.7690	7.9790
Mode		25180.59[a]	39226.61[a]	30410.67[a]	28391.18[a]	4467.72[a]	8.76	7.82[a]
Std. Deviation		7166.22893	10273.72777	10228.25206	7986.64701	813.34574	.40922	.59295
Skewness		.028	.058	.036	.021	-.343	.175	-.477
Std. Error of Skewness		.069	.069	.069	.069	.069	.069	.069
Kurtosis		-1.553	-1.104	-1.483	-1.524	-1.201	2.290	.397
Std. Error of Kurtosis		.138	.138	.138	.138	.138	.138	.138
Minimum		25180.59	39226.61	30410.67	28391.18	4403.61	7.55	6.13
Maximum		49081.01	76601.28	62435.68	55188.34	7009.86	11.12	10.30
Sum		46589474.97	70193838.80	56601354.27	52245899.76	7298499.55	10866.64	9815.90

a. Multiple modes exist. The smallest value is shown

b) Correlation

Correlations

		J200	J201	J202	J203	J204	SAGB30	SAGB10
J200	Pearson Correlation	1	.962**	.985**	.999**	.953**	.272**	.142**
	Sig. (2-tailed)		.000	.000	.000	.000	.000	.000
	N	1249	1249	1249	1249	1249	1249	1249
J201	Pearson Correlation	.962**	1	.984**	.972**	.964**	.086**	-.043
	Sig. (2-tailed)	.000		.000	.000	.000	.002	.130
	N	1249	1249	1249	1249	1249	1249	1249
J202	Pearson Correlation	.985**	.984**	1	.990**	.959**	.191**	.071*
	Sig. (2-tailed)	.000	.000		.000	.000	.000	.012
	N	1249	1249	1249	1249	1249	1249	1249
J203	Pearson Correlation	.999**	.972**	.990**	1	.959**	.246**	.116**
	Sig. (2-tailed)	.000	.000	.000		.000	.000	.000
	N	1249	1249	1249	1249	1249	1249	1249
J204	Pearson Correlation	.953**	.964**	.959**	.959**	1	.114**	-.061*
	Sig. (2-tailed)	.000	.000	.000	.000		.000	.032
	N	1249	1249	1249	1249	1249	1249	1249
SAGB30	Pearson Correlation	.272**	.086**	.191**	.246**	.114**	1	.859**
	Sig. (2-tailed)	.000	.002	.000	.000	.000		.000
	N	1249	1249	1249	1249	1249	1249	1249
SAGB10	Pearson Correlation	.142**	-.043	.071*	.116**	-.061*	.859**	1
	Sig. (2-tailed)	.000	.130	.012	.000	.032	.000	
	N	1249	1249	1249	1249	1249	1249	1249

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

© University of Pretoria

c) Linear Regression

J200

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.272[a]	.074	.073	6899.27	.074	99.444	1	1247	.000	.006

a. Predictors: (Constant), SAGB30
b. Dependent Variable: J200

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.142[a]	.020	.019	7096.71	.020	25.569	1	1247	.000	.003

a. Predictors: (Constant), SAGB10
b. Dependent Variable: J200

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4733560021.562	1	4733560021.562	99.444	.000[b]
	Residual	59357276579.379	1247	47600061.411		
	Total	64090836600.940	1248			

a. Dependent Variable: J200
b. Predictors: (Constant), SAGB30

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1287751144.248	1	1287751144.248	25.569	.000[b]
	Residual	62803085456.692	1247	50363340.382		
	Total	64090836600.940	1248			

a. Dependent Variable: J200
b. Predictors: (Constant), SAGB10

Coefficients[a]

Model	Unstandardized Coefficients: B	Unstandardized Coefficients: Std. Error	Standardized Coefficients: Beta	t	Sig.	95.0% Confidence Interval for B: Lower Bound	95.0% Confidence Interval for B: Upper Bound	Collinearity Statistics: Tolerance	Collinearity Statistics: VIF
1 (Constant)	-4104.701	4156.750		-.987	.324	-12259.696	4050.293		
SAGB30	4759.174	477.245	.272	9.972	.000	3822.882	5695.466	1.000	1.000

a. Dependent Variable: J200

Coefficients[a]

Model	Unstandardized Coefficients: B	Unstandardized Coefficients: Std. Error	Standardized Coefficients: Beta	t	Sig.	95.0% Confidence Interval for B: Lower Bound	95.0% Confidence Interval for B: Upper Bound	Collinearity Statistics: Tolerance	Collinearity Statistics: VIF
1 (Constant)	23837.972	2670.111		8.928	.000	18599.567	29076.377		
SAGB10	1713.124	338.790	.142	5.057	.000	1048.464	2377.785	1.000	1.000

a. Dependent Variable: J200

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	Variance Proportions: SAGB30
1	1	1.999	1.000	.00	.00
	2	.001	42.562	1.00	1.00

a. Dependent Variable: J200

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	Variance Proportions: SAGB10
1	1	1.997	1.000	.00	.00
	2	.003	26.556	1.00	1.00

a. Dependent Variable: J200

J201

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.086[a]	.007	.007	10240.13	.007	9.202	1	1247	.002	.002

a. Predictors: (Constant), SAGB30
b. Dependent Variable: J201

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.043[a]	.002	.001	10268.39	.002	2.296	1	1247	.130	.002

a. Predictors: (Constant), SAGB10
b. Dependent Variable: J201

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	964876019.244	1	964876019.244	9.202	.002[b]
	Residual	130760877898.387	1247	104860367.200		
	Total	131725753917.631	1248			

a. Dependent Variable: J201
b. Predictors: (Constant), SAGB30

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	242075314.108	1	242075314.108	2.296	.130[b]
	Residual	131483678603.523	1247	105439998.880		
	Total	131725753917.631	1248			

a. Dependent Variable: J201
b. Predictors: (Constant), SAGB10

Coefficients[a]

Model	Unstandardized Coefficients: B	Unstandardized Coefficients: Std. Error	Standardized Coefficients: Beta	t	Sig.	95.0% Confidence Interval for B: Lower Bound	95.0% Confidence Interval for B: Upper Bound	Collinearity Statistics: Tolerance	Collinearity Statistics: VIF
1 (Constant)	37505.853	6169.583		6.079	.000	25401.945	49609.761		
SAGB30	2148.688	708.343	.086	3.033	.002	759.014	3538.363	1.000	1.000

a. Dependent Variable: J201

Coefficients[a]

Model	Unstandardized Coefficients: B	Unstandardized Coefficients: Std. Error	Standardized Coefficients: Beta	t	Sig.	95.0% Confidence Interval for B: Lower Bound	95.0% Confidence Interval for B: Upper Bound	Collinearity Statistics: Tolerance	Collinearity Statistics: VIF
1 (Constant)	62037.380	3863.445		16.058	.000	54457.810	69616.949		
SAGB10	-742.759	490.203	-.043	-1.515	.130	-1704.472	218.953	1.000	1.000

a. Dependent Variable: J201

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	Variance Proportions: SAGB30
1	1	1.999	1.000	.00	.00
	2	.001	42.562	1.00	1.00

a. Dependent Variable: J201

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	Variance Proportions: SAGB10
1	1	1.997	1.000	.00	.00
	2	.003	26.556	1.00	1.00

a. Dependent Variable: J201

J202

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.191[a]	.037	.036	10043.46	.037	47.346	1	1247	.000	.002

a. Predictors: (Constant), SAGB30
b. Dependent Variable: J202

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.071[a]	.005	.004	10206.41	.005	6.347	1	1247	.012	.001

a. Predictors: (Constant), SAGB10
b. Dependent Variable: J202

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4775839838.632	1	4775839838.632	47.346	.000[b]
	Residual	125786351051.243	1247	100871171.653		
	Total	130562190889.875	1248			

a. Dependent Variable: J202
b. Predictors: (Constant), SAGB30

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	661177180.027	1	661177180.027	6.347	.012[b]
	Residual	129901013709.849	1247	104170820.938		
	Total	130562190889.875	1248			

a. Dependent Variable: J202
b. Predictors: (Constant), SAGB10

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	3726.708	6051.090		.616	.538	-8144.734	15598.149		
SAGB30	4780.381	694.738	.191	6.881	.000	3417.396	6143.366	1.000	1.000

a. Dependent Variable: J202

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	35670.181	3840.122		9.289	.000	28136.368	43203.995		
SAGB10	1227.529	487.243	.071	2.519	.012	271.622	2183.436	1.000	1.000

a. Dependent Variable: J202

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	SAGB30
1	1	1.999	1.000	.00	.00
	2	.001	42.562	1.00	1.00

a. Dependent Variable: J202

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	SAGB10
1	1	1.997	1.000	.00	.00
	2	.003	26.556	1.00	1.00

a. Dependent Variable: J202

J203

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.246[a]	.061	.060	7743.76	.061	80.515	1	1247	.000	.005

a. Predictors: (Constant), SAGB30
b. Dependent Variable: J203

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.116[a]	.013	.013	7935.82	.013	17.036	1	1247	.000	.003

a. Predictors: (Constant), SAGB10
b. Dependent Variable: J203

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4828179819.576	1	4828179819.576	80.515	.000[b]
	Residual	74777410177.357	1247	59965846.173		
	Total	79605589996.932	1248			

a. Dependent Variable: J203
b. Predictors: (Constant), SAGB30

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1072901286.493	1	1072901286.493	17.036	.000[b]
	Residual	78532688710.440	1247	62977296.480		
	Total	79605589996.932	1248			

a. Dependent Variable: J203
b. Predictors: (Constant), SAGB10

Coefficients[a]

Model	Unstandardized Coefficients: B	Std. Error	Standardized Coefficients: Beta	t	Sig.	95.0% Confidence Interval for B: Lower Bound	Upper Bound	Collinearity Statistics: Tolerance	VIF
1 (Constant)	12.273	4665.542		.003	.998	-9140.905	9165.451		
SAGB30	4806.505	535.661	.246	8.973	.000	3755.609	5857.400	1.000	1.000

a. Dependent Variable: J203

Coefficients[a]

Model	Unstandardized Coefficients: B	Std. Error	Standardized Coefficients: Beta	t	Sig.	95.0% Confidence Interval for B: Lower Bound	Upper Bound	Collinearity Statistics: Tolerance	VIF
1 (Constant)	29541.079	2985.823		9.894	.000	23683.289	35398.869		
SAGB10	1563.698	378.848	.116	4.128	.000	820.448	2306.947	1.000	1.000

a. Dependent Variable: J203

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	SAGB30
1	1	1.999	1.000	.00	.00
	2	.001	42.562	1.00	1.00

a. Dependent Variable: J203

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	SAGB10
1	1	1.997	1.000	.00	.00
	2	.003	26.556	1.00	1.00

a. Dependent Variable: J203

J204

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.114[a]	.013	.012	808.37	.013	16.408	1	1247	.000	.002

a. Predictors: (Constant), SAGB30
b. Dependent Variable: J204

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.061[a]	.004	.003	812.17	.004	4.599	1	1247	.032	.001

a. Predictors: (Constant), SAGB10
b. Dependent Variable: J204

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	10721866.217	1	10721866.217	16.408	.000[b]
	Residual	814869194.214	1247	653463.668		
	Total	825591060.432	1248			

a. Dependent Variable: J204
b. Predictors: (Constant), SAGB30

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3033467.133	1	3033467.133	4.599	.032[b]
	Residual	822557593.299	1247	659629.185		
	Total	825591060.432	1248			

a. Dependent Variable: J204
b. Predictors: (Constant), SAGB10

Coefficients[a]

Model	Unstandardized Coefficients: B	Std. Error	Standardized Coefficients: Beta	t	Sig.	95.0% Confidence Interval for B: Lower Bound	Upper Bound	Collinearity Statistics: Tolerance	VIF
1 (Constant)	3872.841	487.036		7.952	.000	2917.341	4828.341		
SAGB30	226.502	55.918	.114	4.051	.000	116.799	336.205	1.000	1.000

a. Dependent Variable: J204

Coefficients[a]

Model	Unstandardized Coefficients: B	Std. Error	Standardized Coefficients: Beta	t	Sig.	95.0% Confidence Interval for B: Lower Bound	Upper Bound	Collinearity Statistics: Tolerance	VIF
1 (Constant)	6496.921	305.578		21.261	.000	5897.417	7096.424		
SAGB10	-83.146	38.772	-.061	-2.144	.032	-159.213	-7.080	1.000	1.000

a. Dependent Variable: J204

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	SAGB30
1	1	1.999	1.000	.00	.00
	2	.001	42.562	1.00	1.00

a. Dependent Variable: J204

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	SAGB10
1	1	1.997	1.000	.00	.00
	2	.003	26.556	1.00	1.00

a. Dependent Variable: J204

d) Combined Analysis (SAGB30 + SAGB10)

J200

Correlations

		J200	SAGB10	SAGB30
Pearson Correlation	J200	1.000	.142	.272
	SAGB10	.142	1.000	.859
	SAGB30	.272	.859	1.000
Sig. (1-tailed)	J200	.	.000	.000
	SAGB10	.000	.	.000
	SAGB30	.000	.000	.
N	J200	1249	1249	1249
	SAGB10	1249	1249	1249
	SAGB30	1249	1249	1249

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.325[a]	.106	.104	6781.66	.106	73.776	2	1246	.000	.009

a. Predictors: (Constant), SAGB30, SAGB10
b. Dependent Variable: J200

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6786039792.367	2	3393019896.184	73.776	.000[b]
	Residual	57304796808.573	1246	45991008.675		
	Total	64090836600.940	1248			

a. Dependent Variable: J200
b. Predictors: (Constant), SAGB30, SAGB10

Coefficients[a]

Model	Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.	95.0% Confidence Interval for B Lower Bound	95.0% Confidence Interval for B Upper Bound	Collinearity Statistics Tolerance	Collinearity Statistics VIF
1 (Constant)	-16638.335	4496.057		-3.701	.000	-25459.015	-7817.656		
SAGB10	-4222.470	632.068	-.349	-6.680	.000	-5462.504	-2982.436	.262	3.812
SAGB30	10013.955	915.858	.572	10.934	.000	8217.160	11810.750	.262	3.812

a. Dependent Variable: J200

Coefficient Correlations[a]

Model			SAGB30	SAGB10
1	Correlations	SAGB30	1.000	-.859
		SAGB10	-.859	1.000
	Covariances	SAGB30	838796.681	-497181.843
		SAGB10	-497181.843	399509.577

a. Dependent Variable: J200

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions (Constant)	SAGB10	SAGB30
1	1	2.997	1.000	.00	.00	.00
	2	.003	32.498	.34	.25	.00
	3	.000	88.241	.66	.75	1.00

a. Dependent Variable: J200

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	30626.783	51231.199	37301.421	2331.851	1249
Residual	-11214.248	13437.321	.0000000000720	6776.230	1249
Std. Predicted Value	-2.862	5.974	.000	1.000	1249
Std. Residual	-1.654	1.981	.000	.999	1249

a. Dependent Variable: J200

J201

Correlations

		J201	SAGB10	SAGB30
Pearson Correlation	J201	1.000	-.043	.086
	SAGB10	-.043	1.000	.859
	SAGB30	.086	.859	1.000
Sig. (1-tailed)	J201	.	.065	.001
	SAGB10	.065	.	.000
	SAGB30	.001	.000	.
N	J201	1249	1249	1249
	SAGB10	1249	1249	1249
	SAGB30	1249	1249	1249

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.243[a]	.059	.057	9974.32	.059	39.024	2	1246	.000	.003

a. Predictors: (Constant), SAGB30, SAGB10
b. Dependent Variable: J201

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	7764692221.215	2	3882346110.607	39.024	.000[b]
	Residual	123961061696.416	1246	99487208.424		
	Total	131725753917.631	1248			

a. Dependent Variable: J201
b. Predictors: (Constant), SAGB30, SAGB10

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	14692.655	6612.703		2.222	.026	1719.394	27665.917		
SAGB10	-7685.564	929.631	-.444	-8.267	.000	-9509.379	-5861.748	.262	3.812
SAGB30	11713.222	1347.025	.467	8.696	.000	9070.535	14355.908	.262	3.812

a. Dependent Variable: J201

Coefficient Correlations[a]

Model			SAGB30	SAGB10
1	Correlations	SAGB30	1.000	-.859
		SAGB10	-.859	1.000
	Covariances	SAGB30	1814475.103	-1075497.908
		SAGB10	-1075497.908	864214.413

a. Dependent Variable: J201

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	SAGB10	SAGB30
1	1	2.997	1.000	.00	.00	.00
	2	.003	32.498	.34	.25	.00
	3	.000	88.241	.66	.75	1.00

a. Dependent Variable: J201

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	47928.613	65786.398	56200.031	2494.335	1249
Residual	-14967.656	22265.886	.0000000000380	9966.332	1249
Std. Predicted Value	-3.316	3.843	.000	1.000	1249
Std. Residual	-1.501	2.232	.000	.999	1249

a. Dependent Variable: J201

J202

Correlations

		J202	SAGB10	SAGB30
Pearson Correlation	J202	1.000	.071	.191
	SAGB10	.071	1.000	.859
	SAGB30	.191	.859	1.000
Sig. (1-tailed)	J202	.	.006	.000
	SAGB10	.006	.	.000
	SAGB30	.000	.000	.
N	J202	1249	1249	1249
	SAGB10	1249	1249	1249
	SAGB30	1249	1249	1249

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.264[a]	.070	.068	9873.71	.070	46.617	2	1246	.000	.004

a. Predictors: (Constant), SAGB30, SAGB10
b. Dependent Variable: J202

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	9089346162.968	2	4544673081.484	46.617	.000[b]
	Residual	121472844726.907	1246	97490244.564		
	Total	130562190889.875	1248			

a. Dependent Variable: J202
b. Predictors: (Constant), SAGB30, SAGB10

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	-14443.203	6546.000		-2.206	.028	-27285.601	-1600.805		
SAGB10	-6121.281	920.254	-.355	-6.652	.000	-7926.700	-4315.863	.262	3.812
SAGB30	12398.196	1333.437	.496	9.298	.000	9782.167	15014.226	.262	3.812

a. Dependent Variable: J202

Coefficient Correlations[a]

Model			SAGB30	SAGB10
1	Correlations	SAGB30	1.000	-.859
		SAGB10	-.859	1.000
	Covariances	SAGB30	1778053.926	-1053909.902
		SAGB10	-1053909.902	846867.409

a. Dependent Variable: J202

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	SAGB10	SAGB30
1	1	2.997	1.000	.00	.00	.00
	2	.003	32.498	.34	.25	.00
	3	.000	88.241	.66	.75	1.00

a. Dependent Variable: J202

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	36902.527	60381.816	45317.337	2698.727	1249
Residual	-14843.458	21599.234	.0000000000208	9865.800	1249
Std. Predicted Value	-3.118	5.582	.000	1.000	1249
Std. Residual	-1.503	2.188	.000	.999	1249

a. Dependent Variable: J202

J203

Correlations

		J203	SAGB10	SAGB30
Pearson Correlation	J203	1.000	.116	.246
	SAGB10	.116	1.000	.859
	SAGB30	.246	.859	1.000
Sig. (1-tailed)	J203	.	.000	.000
	SAGB10	.000	.	.000
	SAGB30	.000	.000	.
N	J203	1249	1249	1249
	SAGB10	1249	1249	1249
	SAGB30	1249	1249	1249

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.309[a]	.095	.094	7602.40	.095	65.670	2	1246	.000	.007

a. Predictors: (Constant), SAGB30, SAGB10
b. Dependent Variable: J203

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	7591003836.313	2	3795501918.157	65.670	.000[b]
	Residual	72014586160.619	1246	57796618.106		
	Total	79605589996.932	1248			

a. Dependent Variable: J203
b. Predictors: (Constant), SAGB30, SAGB10

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	-14529.394	5040.186		-2.883	.004	-24417.583	-4641.205		
SAGB10	-4898.958	708.563	-.364	-6.914	.000	-6289.066	-3508.850	.262	3.812
SAGB30	10903.162	1026.699	.559	10.620	.000	8888.913	12917.412	.262	3.812

a. Dependent Variable: J203

Coefficient Correlations[a]

Model			SAGB30	SAGB10
1	Correlations	SAGB30	1.000	-.859
		SAGB10	-.859	1.000
	Covariances	SAGB30	1054110.636	-624805.368
		SAGB10	-624805.368	502061.231

a. Dependent Variable: J203

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	SAGB10	SAGB30
1	1	2.997	1.000	.00	.00	.00
	2	.003	32.498	.34	.25	.00
	3	.000	88.241	.66	.75	1.00

a. Dependent Variable: J203

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	34511.898	56260.503	41830.183	2466.279	1249
Residual	-12366.465	15355.432	.0000000000765	7596.314	1249
Std. Predicted Value	-2.967	5.851	.000	1.000	1249
Std. Residual	-1.627	2.020	.000	.999	1249

a. Dependent Variable: J203

J204

Correlations

		J204	SAGB10	SAGB30
Pearson Correlation	J204	1.000	-.061	.114
	SAGB10	-.061	1.000	.859
	SAGB30	.114	.859	1.000
Sig. (1-tailed)	J204	.	.016	.000
	SAGB10	.016	.	.000
	SAGB30	.000	.000	.
N	J204	1249	1249	1249
	SAGB10	1249	1249	1249
	SAGB30	1249	1249	1249

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.330[a]	.109	.107	768.47	.109	76.005	2	1246	.000	.005

a. Predictors: (Constant), SAGB30, SAGB10
b. Dependent Variable: J204

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	89769303.164	2	44884651.582	76.005	.000[b]
	Residual	735821757.267	1246	590547.157		
	Total	825591060.432	1248			

a. Dependent Variable: J204
b. Predictors: (Constant), SAGB30, SAGB10

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	1413.145	509.475		2.774	.006	413.622	2412.668		
SAGB10	-828.650	71.623	-.604	-11.570	.000	-969.165	-688.134	.262	3.812
SAGB30	1257.741	103.781	.633	12.119	.000	1054.135	1461.346	.262	3.812

a. Dependent Variable: J204

Coefficient Correlations[a]

Model			SAGB30	SAGB10
1	Correlations	SAGB30	1.000	-.859
		SAGB10	-.859	1.000
	Covariances	SAGB30	10770.562	-6384.059
		SAGB10	-6384.059	5129.899

a. Dependent Variable: J204

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	SAGB10	SAGB30
1	1	2.997	1.000	.00	.00	.00
	2	.003	32.498	.34	.25	.00
	3	.000	88.241	.66	.75	1.00

a. Dependent Variable: J204

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	4954.733	6864.559	5843.474	268.198	1249
Residual	-1362.363	1559.204	.00000000000239	767.854	1249
Std. Predicted Value	-3.314	3.807	.000	1.000	1249
Std. Residual	-1.773	2.029	.000	.999	1249

a. Dependent Variable: J204

9.13. Hypothesis 3A: GDP Growth Rate (2001-2015)

a) Descriptive statistics

Statistics

		J200	J201	J202	J203	J204	GDP%
N	Valid	60	60	60	60	56	60
	Missing	0	0	0	0	4	0
Mean		23720.0967	33162.4919	27362.8102	26301.4507	4193.4919	2.9900
Median		24222.8300	31622.6500	26976.4200	27048.8500	4423.9750	3.0500
Mode		7264.63[a]	6965.04[a]	5188.33[a]	7793.16[a]	896.49[a]	1.00[a]
Std. Deviation		12206.96414	19674.57146	16344.45273	13831.55226	1866.56799	2.52141
Skewness		.365	.367	.335	.361	-.345	-.800
Std. Error of Skewness		.309	.309	.309	.309	.319	.309
Kurtosis		-.894	-.995	-.839	-.911	-1.034	1.533
Std. Error of Kurtosis		.608	.608	.608	.608	.628	.608
Minimum		7264.63	6965.04	5188.33	7793.16	896.49	-6.00
Maximum		47259.66	73818.48	59293.13	52856.39	6825.23	7.20
Sum		1423205.80	1989749.52	1641768.61	1578087.04	234835.55	179.40

a. Multiple modes exist. The smallest value is shown

b) Univariate Analysis of Variance

J200

Tests of Between-Subjects Effects

Dependent Variable: J200

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	826365885.386[a]	1	826365885.386	6.017	.017	.094	6.017	.674
Intercept	19576781545.722	1	19576781545.722	142.551	.000	.711	142.551	1.000
GDP	826365885.386	1	826365885.386	6.017	.017	.094	6.017	.674
Error	7965222554.237	58	137331423.349					
Total	42550167781.945	60						
Corrected Total	8791588439.623	59						

a. R Squared = .094 (Adjusted R Squared = .078)
b. Computed using alpha = .05

Parameter Estimates

Dependent Variable: J200

Parameter	B	Std. Error	t	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound	Partial Eta Squared	Noncent. Parameter	Observed Power[a]
Intercept	28158.097	2358.401	11.939	.000	23437.245	32878.949	.711	11.939	1.000
GDP	-1484.281	605.083	-2.453	.017	-2695.486	-273.076	.094	2.453	.674

a. Computed using alpha = .05

J201

Tests of Between-Subjects Effects

Dependent Variable: J201

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	2204030074.970[a]	1	2204030074.970	6.195	.016	.097	6.195	.687
Intercept	40319950761.241	1	40319950761.241	113.334	.000	.661	113.334	1.000
GDP	2204030074.970	1	2204030074.970	6.195	.016	.097	6.195	.687
Error	20634206887.146	58	355762187.709					
Total	88823289235.821	60						
Corrected Total	22838236962.117	59						

a. R Squared = .097 (Adjusted R Squared = .081)
b. Computed using alpha = .05

Parameter Estimates

Dependent Variable: J201

Parameter	B	Std. Error	t	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound	Partial Eta Squared	Noncent. Parameter	Observed Power[a]
Intercept	40410.353	3795.881	10.646	.000	32812.073	48008.634	.661	10.646	1.000
GDP	-2424.034	973.890	-2.489	.016	-4373.486	-474.582	.097	2.489	.687

a. Computed using alpha = .05

J202

Tests of Between-Subjects Effects

Dependent Variable: J202

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	1302104679.567[a]	1	1302104679.567	5.223	.026	.083	5.223	.613
Intercept	26780308698.547	1	26780308698.547	107.423	.000	.649	107.423	1.000
GDP	1302104679.567	1	1302104679.567	5.223	.026	.083	5.223	.613
Error	14459222279.922	58	249296935.861					
Total	60684729772.511	60						
Corrected Total	15761326959.489	59						

a. R Squared = .083 (Adjusted R Squared = .067)
b. Computed using alpha = .05

Parameter Estimates

Dependent Variable: J202

Parameter	B	Std. Error	t	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound	Partial Eta Squared	Noncent. Parameter	Observed Power[a]
Intercept	32933.694	3177.541	10.365	.000	26573.155	39294.232	.649	10.365	1.000
GDP	-1863.172	815.246	-2.285	.026	-3495.063	-231.281	.083	2.285	.613

a. Computed using alpha = .05

J203

Tests of Between-Subjects Effects

Dependent Variable: J203

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	1065418537.657[a]	1	1065418537.657	6.045	.017	.094	6.045	.676
Intercept	24252169911.085	1	24252169911.085	137.608	.000	.703	137.608	1.000
GDP	1065418537.657	1	1065418537.657	6.045	.017	.094	6.045	.676
Error	10221979896.110	58	176241032.692					
Total	52793376864.033	60						
Corrected Total	11287398433.767	59						

a. R Squared = .094 (Adjusted R Squared = .079)
b. Computed using alpha = .05

Parameter Estimates

Dependent Variable: J203

Parameter	B	Std. Error	t	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound	Partial Eta Squared	Noncent. Parameter	Observed Power[a]
Intercept	31340.647	2671.691	11.731	.000	25992.677	36688.617	.703	11.731	1.000
GDP	-1685.350	685.462	-2.459	.017	-3057.451	-313.248	.094	2.459	.676

a. Computed using alpha = .05

J204

Tests of Between-Subjects Effects

Dependent Variable: J204

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	9799379.319[a]	1	9799379.319	2.910	.094	.051	2.910	.388
Intercept	513369358.155	1	513369358.155	152.465	.000	.738	152.465	1.000
GDP	9799379.319	1	9799379.319	2.910	.094	.051	2.910	.388
Error	181824803.646	54	3367125.993					
Total	1176405158.045	56						
Corrected Total	191624182.965	55						

a. R Squared = .051 (Adjusted R Squared = .034)
b. Computed using alpha = .05

Parameter Estimates

Dependent Variable: J204

Parameter	B	Std. Error	t	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound	Partial Eta Squared	Noncent. Parameter	Observed Power[a]
Intercept	4687.981	379.665	12.348	.000	3926.798	5449.163	.738	12.348	1.000
GDP	-162.699	95.371	-1.706	.094	-353.906	28.508	.051	1.706	.388

a. Computed using alpha = .05

c) Bivariate Correlation

Correlations

		J200	J201	J202	J203	J204	GDP%
J200	Pearson Correlation	1	.984**	.992**	1.000**	.944**	-.307*
	Sig. (2-tailed)		.000	.000	.000	.000	.017
	N	60	60	60	60	56	60
J201	Pearson Correlation	.984**	1	.988**	.988**	.926**	-.311*
	Sig. (2-tailed)	.000		.000	.000	.000	.016
	N	60	60	60	60	56	60
J202	Pearson Correlation	.992**	.988**	1	.994**	.958**	-.287*
	Sig. (2-tailed)	.000	.000		.000	.000	.026
	N	60	60	60	60	56	60
J203	Pearson Correlation	1.000**	.988**	.994**	1	.944**	-.307*
	Sig. (2-tailed)	.000	.000	.000		.000	.017
	N	60	60	60	60	56	60
J204	Pearson Correlation	.944**	.926**	.958**	.944**	1	-.226
	Sig. (2-tailed)	.000	.000	.000	.000		.094
	N	56	56	56	56	56	56
GDP%	Pearson Correlation	-.307*	-.311*	-.287*	-.307*	-.226	1
	Sig. (2-tailed)	.017	.016	.026	.017	.094	
	N	60	60	60	60	56	60

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Correlations

			J200	J201	J202	J203	J204	GDP%
Kendall's tau_b	J200	Correlation Coefficient	1.000	.886**	.886**	.986**	.822**	-.200*
		Sig. (2-tailed)	.	.000	.000	.000	.000	.025
		N	60	60	60	60	56	60
	J201	Correlation Coefficient	.886**	1.000	.932**	.899**	.827**	-.225*
		Sig. (2-tailed)	.000	.	.000	.000	.000	.012
		N	60	60	60	60	56	60
	J202	Correlation Coefficient	.886**	.932**	1.000	.895**	.879**	-.193*
		Sig. (2-tailed)	.000	.000	.	.000	.000	.030
		N	60	60	60	60	56	60
	J203	Correlation Coefficient	.986**	.899**	.895**	1.000	.818**	-.198*
		Sig. (2-tailed)	.000	.000	.000	.	.000	.027
		N	60	60	60	60	56	60
	J204	Correlation Coefficient	.822**	.827**	.879**	.818**	1.000	-.194*
		Sig. (2-tailed)	.000	.000	.000	.000	.	.036
		N	56	56	56	56	56	56
	GDP%	Correlation Coefficient	-.200*	-.225*	-.193*	-.198*	-.194*	1.000
		Sig. (2-tailed)	.025	.012	.030	.027	.036	.
		N	60	60	60	60	56	60

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Correlations

			J200	J201	J202	J203	J204	GDP%
Spearman's rho	J200	Correlation Coefficient	1.000	.974**	.976**	.999**	.945**	-.308*
		Sig. (2-tailed)	.	.000	.000	.000	.000	.017
		N	60	60	60	60	56	60
	J201	Correlation Coefficient	.974**	1.000	.986**	.980**	.930**	-.335**
		Sig. (2-tailed)	.000	.	.000	.000	.000	.009
		N	60	60	60	60	56	60
	J202	Correlation Coefficient	.976**	.986**	1.000	.979**	.974**	-.294*
		Sig. (2-tailed)	.000	.000	.	.000	.000	.023
		N	60	60	60	60	56	60
	J203	Correlation Coefficient	.999**	.980**	.979**	1.000	.944**	-.308*
		Sig. (2-tailed)	.000	.000	.000	.	.000	.017
		N	60	60	60	60	56	60
	J204	Correlation Coefficient	.945**	.930**	.974**	.944**	1.000	-.293*
		Sig. (2-tailed)	.000	.000	.000	.000	.	.029
		N	56	56	56	56	56	56
	GDP%	Correlation Coefficient	-.308*	-.335**	-.294*	-.308*	-.293*	1.000
		Sig. (2-tailed)	.017	.009	.023	.017	.029	.
		N	60	60	60	60	56	60

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

d) Multivariate analysis

Tests of Between-Subjects Effects

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	J200	9.853E+008[a]	1	9.853E+008	7.817	.007
	J201	2.621E+009[b]	1	2.621E+009	8.127	.006
	J202	1.573E+009[c]	1	1.573E+009	6.981	.011
	J203	1.271E+009[d]	1	1.271E+009	7.883	.007
	J204	9.799E+006[e]	1	9.799E+006	2.910	.094
Intercept	J200	2.070E+010	1	2.070E+010	164.212	.000
	J201	4.334E+010	1	4.334E+010	134.417	.000
	J202	2.891E+010	1	2.891E+010	128.319	.000
	J203	2.572E+010	1	2.572E+010	159.547	.000
	J204	5.134E+008	1	5.134E+008	152.465	.000
GDP	J200	9.853E+008	1	9.853E+008	7.817	.007
	J201	2.621E+009	1	2.621E+009	8.127	.006
	J202	1.573E+009	1	1.573E+009	6.981	.011
	J203	1.271E+009	1	1.271E+009	7.883	.007
	J204	9.799E+006	1	9.799E+006	2.910	.094
Error	J200	6.806E+009	54	1.260E+008		
	J201	1.741E+010	54	3.225E+008		
	J202	1.217E+010	54	2.253E+008		
	J203	8.704E+009	54	1.612E+008		
	J204	1.818E+008	54	3.367E+006		
Total	J200	4.226E+010	56			
	J201	8.859E+010	56			
	J202	6.056E+010	56			
	J203	5.248E+010	56			
	J204	1.176E+009	56			
Corrected Total	J200	7.792E+009	55			
	J201	2.003E+010	55			
	J202	1.374E+010	55			
	J203	9.975E+009	55			
	J204	1.916E+008	55			

a. R Squared = .126 (Adjusted R Squared = .110)
b. R Squared = .131 (Adjusted R Squared = .115)
c. R Squared = .114 (Adjusted R Squared = .098)
d. R Squared = .127 (Adjusted R Squared = .111)
e. R Squared = .051 (Adjusted R Squared = .034)

© University of Pretoria

e) Linear Regression

J200

Correlations

		J200	GDP%
Pearson Correlation	J200	1.000	-.307
	GDP%	-.307	1.000
Sig. (1-tailed)	J200	.	.009
	GDP%	.009	.
N	J200	60	60
	GDP%	60	60

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.307[a]	.094	.078	11718.84	.094	6.017	1	58	.017	.127

a. Predictors: (Constant), GDP%
b. Dependent Variable: J200

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	826365885.386	1	826365885.386	6.017	.017[b]
	Residual	7965222554.237	58	137331423.349		
	Total	8791588439.623	59			

a. Dependent Variable: J200
b. Predictors: (Constant), GDP%

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	28158.097	2358.401		11.939	.000	23437.245	32878.949		
GDP%	-1484.281	605.083	-.307	-2.453	.017	-2695.486	-273.076	1.000	1.000

a. Dependent Variable: J200

Coefficient Correlations[a]

Model			GDP%
1	Correlations	GDP%	1.000
	Covariances	GDP%	366125.354

a. Dependent Variable: J200

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	GDP%
1	1	1.767	1.000	.12	.12
	2	.233	2.755	.88	.88

a. Dependent Variable: J200

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	17471.273	37063.781	23720.096	3742.485	60
Residual	-19303.576	21525.884	.00000000000073	11619.112	60
Std. Predicted Value	-1.670	3.565	.000	1.000	60
Std. Residual	-1.647	1.837	.000	.991	60

a. Dependent Variable: J200

J201

Correlations

		J201	GDP%
Pearson Correlation	J201	1.000	-.311
	GDP%	-.311	1.000
Sig. (1-tailed)	J201	.	.008
	GDP%	.008	.
N	J201	60	60
	GDP%	60	60

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.311[a]	.097	.081	18861.65	.097	6.195	1	58	.016	.127

a. Predictors: (Constant), GDP%
b. Dependent Variable: J201

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2204030074.970	1	2204030074.970	6.195	.016[b]
	Residual	20634206887.146	58	355762187.709		
	Total	22838236962.117	59			

a. Dependent Variable: J201
b. Predictors: (Constant), GDP%

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	40410.353	3795.881		10.646	.000	32812.073	48008.634		
GDP%	-2424.034	973.890	-.311	-2.489	.016	-4373.486	-474.582	1.000	1.000

a. Dependent Variable: J201

Coefficient Correlations[a]

Model			GDP%
1	Correlations	GDP%	1.000
	Covariances	GDP%	948461.420

a. Dependent Variable: J201

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	GDP%
1	1	1.767	1.000	.12	.12
	2	.233	2.755	.88	.88

a. Dependent Variable: J201

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	22957.308	54954.558	33162.491	6111.991	60
Residual	-30598.388	38277.726	-.00000000000218	18701.131	60
Std. Predicted Value	-1.670	3.565	.000	1.000	60
Std. Residual	-1.622	2.029	.000	.991	60

a. Dependent Variable: J201

J202

Correlations

		J202	GDP%
Pearson Correlation	J202	1.000	-.287
	GDP%	-.287	1.000
Sig. (1-tailed)	J202	.	.013
	GDP%	.013	.
N	J202	60	60
	GDP%	60	60

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.287[a]	.083	.067	15789.13	.083	5.223	1	58	.026	.108

a. Predictors: (Constant), GDP%
b. Dependent Variable: J202

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1302104679.567	1	1302104679.567	5.223	.026[b]
	Residual	14459222279.922	58	249296935.861		
	Total	15761326959.489	59			

a. Dependent Variable: J202
b. Predictors: (Constant), GDP%

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	32933.694	3177.541		10.365	.000	26573.155	39294.232		
GDP%	-1863.172	815.246	-.287	-2.285	.026	-3495.063	-231.281	1.000	1.000

a. Dependent Variable: J202

Coefficient Correlations[a]

Model			GDP%
1	Correlations	GDP%	1.000
	Covariances	GDP%	664625.230

a. Dependent Variable: J202

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	GDP%
1	1	1.767	1.000	.12	.12
	2	.233	2.755	.88	.88

a. Dependent Variable: J202

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	19518.857	44112.722	27362.810	4697.826	60
Residual	-25401.232	32001.128	-.00000000000340	15654.761	60
Std. Predicted Value	-1.670	3.565	.000	1.000	60
Std. Residual	-1.609	2.027	.000	.991	60

a. Dependent Variable: J202

J203

Correlations

		J203	GDP%
Pearson Correlation	J203	1.000	-.307
	GDP%	-.307	1.000
Sig. (1-tailed)	J203	.	.008
	GDP%	.008	.
N	J203	60	60
	GDP%	60	60

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.307[a]	.094	.079	13275.58	.094	6.045	1	58	.017	.124

a. Predictors: (Constant), GDP%
b. Dependent Variable: J203

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1065418537.657	1	1065418537.657	6.045	.017[b]
	Residual	10221979896.110	58	176241032.692		
	Total	11287398433.767	59			

a. Dependent Variable: J203
b. Predictors: (Constant), GDP%

Coefficients[a]

Model	Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.	95.0% Confidence Interval for B: Lower Bound	Upper Bound	Collinearity Statistics: Tolerance	VIF
1 (Constant)	31340.647	2671.691		11.731	.000	25992.677	36688.617		
GDP%	-1685.350	685.462	-.307	-2.459	.017	-3057.451	-313.248	1.000	1.000

a. Dependent Variable: J203

Coefficient Correlations[a]

Model			GDP%
1	Correlations	GDP%	1.000
	Covariances	GDP%	469858.309

a. Dependent Variable: J203

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	GDP%
1	1	1.767	1.000	.12	.12
	2	.233	2.755	.88	.88

a. Dependent Variable: J203

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	19206.126	41452.746	26301.450	4249.463	60
Residual	-21862.134	24879.322	-.00000000000437	13162.594	60
Std. Predicted Value	-1.670	3.565	.000	1.000	60
Std. Residual	-1.647	1.874	.000	.991	60

a. Dependent Variable: J203

J204

Correlations

		J204	GDP%
Pearson Correlation	J204	1.000	-.226
	GDP%	-.226	1.000
Sig. (1-tailed)	J204	.	.047
	GDP%	.047	.
N	J204	56	56
	GDP%	56	56

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.226[a]	.051	.034	1834.97	.051	2.910	1	54	.094	.104

a. Predictors: (Constant), GDP%
b. Dependent Variable: J204

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	9799379.319	1	9799379.319	2.910	.094[b]
	Residual	181824803.646	54	3367125.993		
	Total	191624182.965	55			

a. Dependent Variable: J204
b. Predictors: (Constant), GDP%

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	4687.981	379.665		12.348	.000	3926.798	5449.163		
GDP%	-162.699	95.371	-.226	-1.706	.094	-353.906	28.508	1.000	1.000

a. Dependent Variable: J204

Coefficient Correlations[a]

Model			GDP%
1	Correlations	GDP%	1.000
	Covariances	GDP%	9095.582

a. Dependent Variable: J204

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	GDP%
1	1	1.763	1.000	.12	.12
	2	.237	2.730	.88	.88

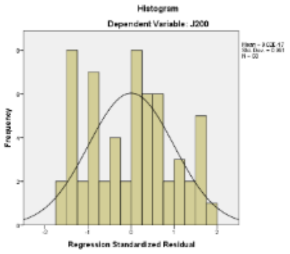
a. Dependent Variable: J204

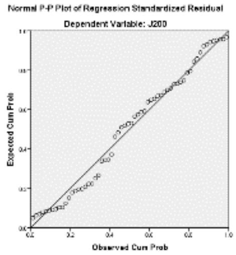
Residuals Statistics[a]

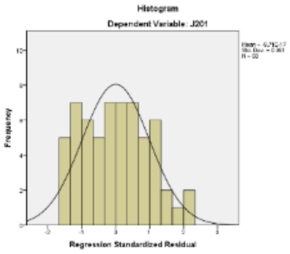
	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	3516.547	5664.174	4193.491	422.102	56
Residual	-3262.452	2654.698	-.000000000000666	1818.214	56
Std. Predicted Value	-1.604	3.484	.000	1.000	56
Std. Residual	-1.778	1.447	.000	.991	56

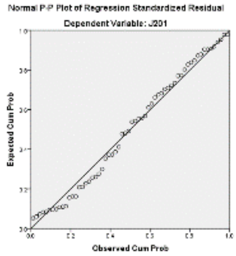
a. Dependent Variable: J204

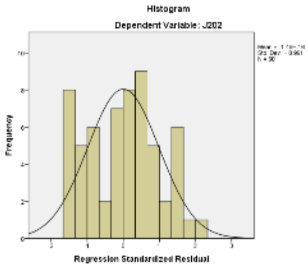
f) Histogram, P-P plot & Q-Q plot

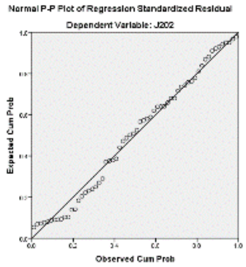


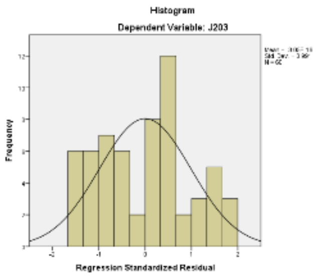


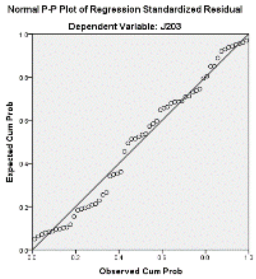


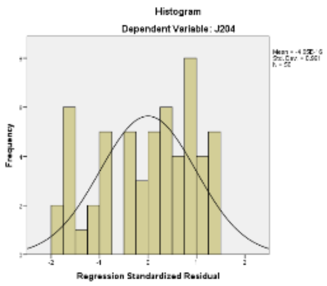


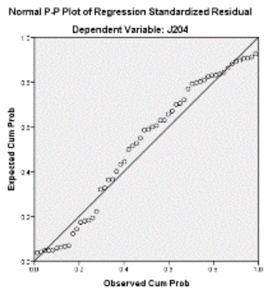






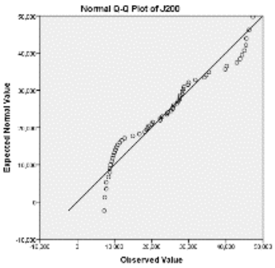


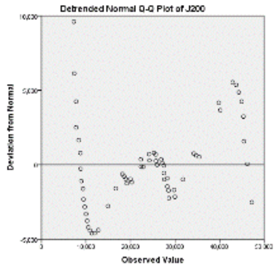


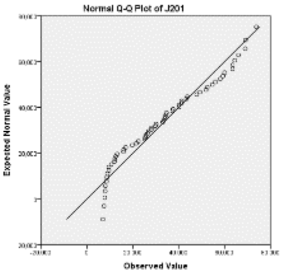


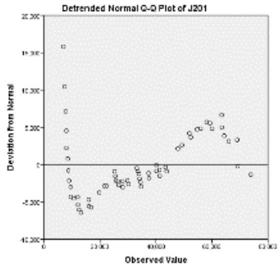
© University of Pretoria

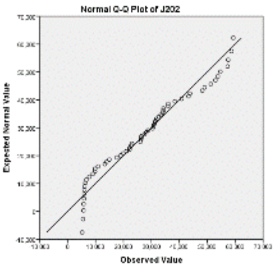
QQ

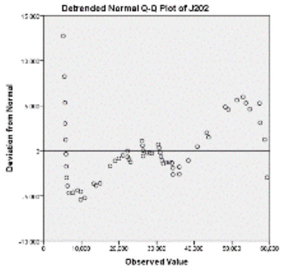

Normal Q-Q Plot of J200
Expected Normal Value
Observed Value

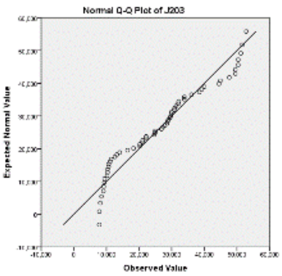

Detrended Normal Q-Q Plot of J200
Deviation from Normal
Observed Value

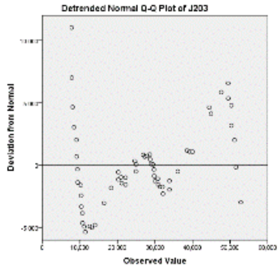

Normal Q-Q Plot of J201
Expected Normal Value
Observed Value

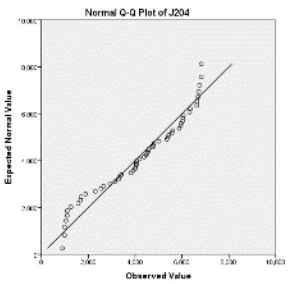

Detrended Normal Q-Q Plot of J201
Deviation from Normal
Observed Value

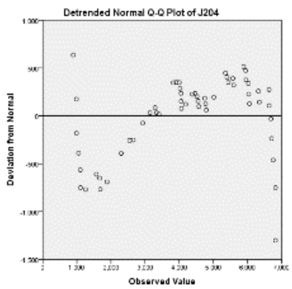

Normal Q-Q Plot of J202
Expected Normal Value
Observed Value

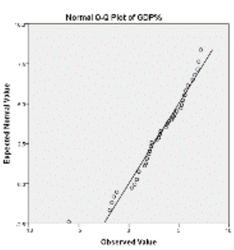

Detrended Normal Q-Q Plot of J202
Deviation from Normal
Observed Value

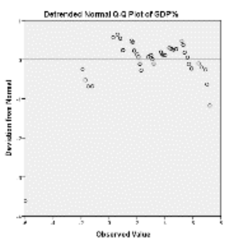

Normal Q-Q Plot of J203
Expected Normal Value
Observed Value


Detrended Normal Q-Q Plot of J203
Deviation from Normal
Observed Value


Normal Q-Q Plot of J204
Expected Normal Value
Observed Value


Detrended Normal Q-Q Plot of J204
Deviation from Normal
Observed Value


Normal Q-Q Plot of GDP%
Expected Normal Value
Observed Value


Detrended Normal Q-Q Plot of GDP%
Deviation from Normal
Observed Value

9.14. Hypothesis 3B: GDP Growth Rate P1 (2001-2005)

a) Descriptive statistics

Statistics

		J200	J201	J202	J203	J204	GDP%
N	Valid	20	20	20	20	16	20
	Missing	0	0	0	0	4	0
Mean		10144.9900	11702.9526	9246.3707	10928.4368	1765.5958	3.9500
Median		9591.1400	10108.7450	7230.4800	10330.3030	1620.2350	3.4000
Mode		7264.63[a]	6965.04[a]	5188.33[a]	7793.16[a]	896.49[a]	2.10[a]
Std. Deviation		2458.91130	4281.99272	4323.56565	2802.49888	814.44129	1.78340
Skewness		1.303	.978	1.058	1.327	.801	.276
Std. Error of Skewness		.512	.512	.512	.512	.564	.512
Kurtosis		1.654	.027	-.025	1.562	-.554	-1.061
Std. Error of Kurtosis		.992	.992	.992	.992	1.091	.992
Minimum		7264.63	6965.04	5188.33	7793.16	896.49	1.00
Maximum		16685.92	21520.45	18953.16	18312.14	3406.66	7.20
Sum		202899.80	234059.05	184927.41	218568.74	28249.53	79.00

a. Multiple modes exist. The smallest value is shown

b) Correlation

Correlations

		J200	J201	J202	J203	J204	GDP%
J200	Pearson Correlation	1	.884**	.889**	.996**	.890**	.426
	Sig. (2-tailed)		.000	.000	.000	.000	.061
	N	20	20	20	20	16	20
J201	Pearson Correlation	.884**	1	.994**	.924**	.996**	.391
	Sig. (2-tailed)	.000		.000	.000	.000	.088
	N	20	20	20	20	16	20
J202	Pearson Correlation	.889**	.994**	1	.926**	.999**	.404
	Sig. (2-tailed)	.000	.000		.000	.000	.077
	N	20	20	20	20	16	20
J203	Pearson Correlation	.996**	.924**	.926**	1	.926**	.429
	Sig. (2-tailed)	.000	.000	.000		.000	.059
	N	20	20	20	20	16	20
J204	Pearson Correlation	.890**	.996**	.999**	.926**	1	.259
	Sig. (2-tailed)	.000	.000	.000	.000		.332
	N	16	16	16	16	16	16
GDP%	Pearson Correlation	.426	.391	.404	.429	.259	1
	Sig. (2-tailed)	.061	.088	.077	.059	.332	
	N	20	20	20	20	16	20

**. Correlation is significant at the 0.01 level (2-tailed).

c) Linear Regression

J200

Correlations

		J200	GDP%
Pearson Correlation	J200	1.000	.426
	GDP%	.426	1.000
Sig. (1-tailed)	J200	.	.030
	GDP%	.030	.
N	J200	20	20
	GDP%	20	20

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.426[a]	.182	.136	2285.31	.182	3.996	1	18	.061	.478

a. Predictors: (Constant), GDP%
b. Dependent Variable: J200

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	20870889.559	1	20870889.559	3.996	.061[b]
	Residual	94007761.472	18	5222653.415		
	Total	114878651.031	19			

a. Dependent Variable: J200
b. Predictors: (Constant), GDP%

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	7823.637	1268.691		6.167	.000	5158.216	10489.057		
GDP%	587.684	293.981	.426	1.999	.061	-29.947	1205.316	1.000	1.000

a. Dependent Variable: J200

Coefficient Correlations[a]

Model			GDP%
1	Correlations	GDP%	1.000
	Covariances	GDP%	86424.846

a. Dependent Variable: J200

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	GDP%
1	1	1.915	1.000	.04	.04
	2	.085	4.755	.96	.96

a. Dependent Variable: J200

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	8411.321	12054.964	10144.990	1048.078	20
Residual	-2733.438	7216.767	.00000000000127	2224.359	20
Std. Predicted Value	-1.654	1.822	.000	1.000	20
Std. Residual	-1.196	3.158	.000	.973	20

a. Dependent Variable: J200

J201

Correlations

		J201	GDP%
Pearson Correlation	J201	1.000	.391
	GDP%	.391	1.000
Sig. (1-tailed)	J201	.	.044
	GDP%	.044	.
N	J201	20	20
	GDP%	20	20

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.391[a]	.153	.106	4049.30	.153	3.246	1	18	.088	.374

a. Predictors: (Constant), GDP%
b. Dependent Variable: J201

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	53229593.901	1	53229593.901	3.246	.088[b]
	Residual	295144177.118	18	16396898.729		
	Total	348373771.018	19			

a. Dependent Variable: J201
b. Predictors: (Constant), GDP%

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	7995.741	2247.973		3.557	.002	3272.926	12718.557		
GDP%	938.535	520.900	.391	1.802	.088	-155.836	2032.905	1.000	1.000

a. Dependent Variable: J201

Coefficient Correlations[a]

Model			GDP%
1	Correlations	GDP%	1.000
	Covariances	GDP%	271337.063

a. Dependent Variable: J201

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	GDP%
1	1	1.915	1.000	.04	.04
	2	.085	4.755	.96	.96

a. Dependent Variable: J201

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	8934.275	14753.190	11702.952	1673.785	20
Residual	-5495.251	10896.812	-.00000000000118	3941.307	20
Std. Predicted Value	-1.654	1.822	.000	1.000	20
Std. Residual	-1.357	2.691	.000	.973	20

a. Dependent Variable: J201

J202

Correlations

		J202	GDP%
Pearson Correlation	J202	1.000	.404
	GDP%	.404	1.000
Sig. (1-tailed)	J202	.	.038
	GDP%	.038	.
N	J202	20	20
	GDP%	20	20

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.404[a]	.164	.117	4062.50	.164	3.520	1	18	.077	.340

a. Predictors: (Constant), GDP%
b. Dependent Variable: J202

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	58100138.418	1	58100138.418	3.520	.077[b]
	Residual	297071040.629	18	16503946.702		
	Total	355171179.047	19			

a. Dependent Variable: J202
b. Predictors: (Constant), GDP%

Coefficients[a]

Model	Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.	95.0% Confidence Interval for B Lower Bound	95.0% Confidence Interval for B Upper Bound	Collinearity Statistics Tolerance	Collinearity Statistics VIF
1 (Constant)	5373.265	2255.299		2.383	.028	635.058	10111.472		
GDP%	980.533	522.598	.404	1.876	.077	-117.404	2078.470	1.000	1.000

a. Dependent Variable: J202

Coefficient Correlations[a]

Model			GDP%
1	Correlations	GDP%	1.000
	Covariances	GDP%	273108.501

a. Dependent Variable: J202

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions (Constant)	Variance Proportions GDP%
1	1	1.915	1.000	.04	.04
	2	.085	4.755	.96	.96

a. Dependent Variable: J202

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	6353.797	12433.103	9246.370	1748.685	20
Residual	-5375.624	10834.402	.00000000000073	3954.151	20
Std. Predicted Value	-1.654	1.822	.000	1.000	20
Std. Residual	-1.323	2.667	.000	.973	20

a. Dependent Variable: J202

J203

Correlations

		J203	GDP%
Pearson Correlation	J203	1.000	.429
	GDP%	.429	1.000
Sig. (1-tailed)	J203	.	.030
	GDP%	.030	.
N	J203	20	20
	GDP%	20	20

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.429[a]	.184	.139	2600.88	.184	4.060	1	18	.059	.453

a. Predictors: (Constant), GDP%
b. Dependent Variable: J203

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	27463070.490	1	27463070.490	4.060	.059[b]
	Residual	121762928.962	18	6764607.165		
	Total	149225999.452	19			

a. Dependent Variable: J203
b. Predictors: (Constant), GDP%

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	8265.595	1443.881		5.725	.000	5232.113	11299.077		
GDP%	674.137	334.576	.429	2.015	.059	-28.781	1377.056	1.000	1.000

a. Dependent Variable: J203

Coefficient Correlations[a]

Model			GDP%
1	Correlations	GDP%	1.000
	Covariances	GDP%	111941.207

a. Dependent Variable: J203

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	GDP%
1	1	1.915	1.000	.04	.04
	2	.085	4.755	.96	.96

a. Dependent Variable: J203

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	8939.732	13119.382	10928.436	1202.258	20
Residual	-2921.602	8158.960	.00000000000164	2531.516	20
Std. Predicted Value	-1.654	1.822	.000	1.000	20
Std. Residual	-1.123	3.137	.000	.973	20

a. Dependent Variable: J203

J204

Correlations

		J204	GDP%
Pearson Correlation	J204	1.000	.259
	GDP%	.259	1.000
Sig. (1-tailed)	J204	.	.166
	GDP%	.166	.
N	J204	16	16
	GDP%	16	16

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.259[a]	.067	.001	814.18	.067	1.009	1	14	.332	.207

a. Predictors: (Constant), GDP%

b. Dependent Variable: J204

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	669057.396	1	669057.396	1.009	.332[b]
	Residual	9280661.935	14	662904.424		
	Total	9949719.331	15			

a. Dependent Variable: J204

b. Predictors: (Constant), GDP%

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	1227.387	573.093		2.142	.050	-1.776	2456.550		
GDP%	123.372	122.803	.259	1.005	.332	-140.015	386.758	1.000	1.000

a. Dependent Variable: J204

Coefficient Correlations[a]

Model			GDP%
1	Correlations	GDP%	1.000
	Covariances	GDP%	15080.576

a. Dependent Variable: J204

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	GDP%
1	1	1.935	1.000	.03	.03
	2	.065	5.447	.97	.97

a. Dependent Variable: J204

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	1474.130	2115.662	1765.595	211.196	16
Residual	-1021.775	1833.832	.000000000000142	786.581	16
Std. Predicted Value	-1.380	1.658	.000	1.000	16
Std. Residual	-1.255	2.252	.000	.966	16

a. Dependent Variable: J204

9.15. Hypothesis 3C: GDP Growth Rate P2 (2006-2010)

a) Descriptive statistics

Statistics

		J200	J201	J202	J203	J204	GDP%
N	Valid	20	20	20	20	20	20
	Missing	0	0	0	0	0	0
Mean		23602.2930	31509.2725	27441.2720	26030.0335	4433.8440	3.1400
Median		24222.8300	31622.6500	26976.4200	27048.8500	4127.4250	4.5000
Mode		18198.97[a]	22399.64[a]	19954.35[a]	20200.15[a]	2933.99[a]	2.30[a]
Std. Deviation		3454.23958	5587.67676	4616.79615	3771.83890	898.22374	3.33031
Skewness		-.233	.361	.048	-.296	.509	-1.260
Std. Error of Skewness		.512	.512	.512	.512	.512	.512
Kurtosis		-1.354	-.533	-1.142	-1.328	-.356	1.560
Std. Error of Kurtosis		.992	.992	.992	.992	.992	.992
Minimum		18198.97	22399.64	19954.35	20200.15	2933.99	-6.00
Maximum		28558.30	43388.79	34308.76	32012.31	6061.53	7.00
Sum		472045.86	630185.45	548825.44	520600.67	88676.88	62.80

a. Multiple modes exist. The smallest value is shown

b) Correlation

Correlations

		J200	J201	J202	J203	J204	GDP%
J200	Pearson Correlation	1	.711**	.873**	.994**	.681**	.329
	Sig. (2-tailed)		.000	.000	.000	.001	.157
	N	20	20	20	20	20	20
J201	Pearson Correlation	.711**	1	.783**	.782**	.401	.202
	Sig. (2-tailed)	.000		.000	.000	.080	.392
	N	20	20	20	20	20	20
J202	Pearson Correlation	.873**	.783**	1	.897**	.850**	.365
	Sig. (2-tailed)	.000	.000		.000	.000	.114
	N	20	20	20	20	20	20
J203	Pearson Correlation	.994**	.782**	.897**	1	.671**	.324
	Sig. (2-tailed)	.000	.000	.000		.001	.163
	N	20	20	20	20	20	20
J204	Pearson Correlation	.681**	.401	.850**	.671**	1	.602**
	Sig. (2-tailed)	.001	.080	.000	.001		.005
	N	20	20	20	20	20	20
GDP%	Pearson Correlation	.329	.202	.365	.324	.602**	1
	Sig. (2-tailed)	.157	.392	.114	.163	.005	
	N	20	20	20	20	20	20

**. Correlation is significant at the 0.01 level (2-tailed).

c) Linear Regression

J200

Correlations

		J200	GDP%
Pearson Correlation	J200	1.000	.329
	GDP%	.329	1.000
Sig. (1-tailed)	J200	.	.078
	GDP%	.078	.
N	J200	20	20
	GDP%	20	20

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.329[a]	.108	.059	3351.44	.108	2.183	1	18	.157	.346

a. Predictors: (Constant), GDP%
b. Dependent Variable: J200

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	24523979.193	1	24523979.193	2.183	.157[b]
	Residual	202179670.693	18	11232203.927		
	Total	226703649.886	19			

a. Dependent Variable: J200
b. Predictors: (Constant), GDP%

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	22531.109	1042.663		21.609	.000	20340.556	24721.662		
GDP%	341.141	230.872	.329	1.478	.157	-143.903	826.186	1.000	1.000

a. Dependent Variable: J200

Coefficient Correlations[a]

Model			GDP%
1	Correlations	GDP%	1.000
	Covariances	GDP%	53301.905

a. Dependent Variable: J200

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	GDP%
1	1	1.695	1.000	.15	.15
	2	.305	2.359	.85	.85

a. Dependent Variable: J200

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	20484.261	24919.097	23602.292	1136.105	20
Residual	-6686.0146	4457.940	.0000000000042	3262.059	20
Std. Predicted Value	-2.744	1.159	.000	1.000	20
Std. Residual	-1.995	1.330	.000	.973	20

a. Dependent Variable: J200

J201

Correlations

		J201	GDP%
Pearson Correlation	J201	1.000	.202
	GDP%	.202	1.000
Sig. (1-tailed)	J201	.	.196
	GDP%	.196	.
N	J201	20	20
	GDP%	20	20

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.202[a]	.041	-.012	5621.86	.041	.770	1	18	.392	.227

a. Predictors: (Constant), GDP%
b. Dependent Variable: J201

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	24324089.360	1	24324089.360	.770	.392[b]
	Residual	568896410.423	18	31605356.135		
	Total	593220499.783	19			

a. Dependent Variable: J201
b. Predictors: (Constant), GDP%

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	30442.463	1749.008		17.406	.000	26767.934	34116.992		
GDP%	339.748	387.275	.202	.877	.392	-473.886	1153.382	1.000	1.000

a. Dependent Variable: J201

Coefficient Correlations[a]

Model			GDP%
1	Correlations	GDP%	1.000
	Covariances	GDP%	149981.759

a. Dependent Variable: J201

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	GDP%
1	1	1.695	1.000	.15	.15
	2	.305	2.359	.85	.85

a. Dependent Variable: J201

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	28403.974	32820.699	31509.272	1131.465	20
Residual	-9979.387	11383.485	-.0000000000016	5471.920	20
Std. Predicted Value	-2.744	1.159	.000	1.000	20
Std. Residual	-1.775	2.025	.000	.973	20

a. Dependent Variable: J201

J202

Correlations

		J202	GDP%
Pearson Correlation	J202	1.000	.365
	GDP%	.365	1.000
Sig. (1-tailed)	J202	.	.057
	GDP%	.057	.
N	J202	20	20
	GDP%	20	20

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.365[a]	.133	.085	4416.87	.133	2.759	1	18	.114	.384

a. Predictors: (Constant), GDP%
b. Dependent Variable: J202

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	53823811.052	1	53823811.052	2.759	.114[b]
	Residual	351157516.775	18	19508750.932		
	Total	404981327.826	19			

a. Dependent Variable: J202
b. Predictors: (Constant), GDP%

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	25854.349	1374.125		18.815	.000	22967.421	28741.278		
GDP%	505.389	304.266	.365	1.661	.114	-133.850	1144.629	1.000	1.000

a. Dependent Variable: J202

Coefficient Correlations[a]

Model			GDP%
1	Correlations	GDP%	1.000
	Covariances	GDP%	92577.877

a. Dependent Variable: J202

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	GDP%
1	1	1.695	1.000	.15	.15
	2	.305	2.359	.85	.85

a. Dependent Variable: J202

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	22822.013	29392.074	27441.271	1683.101	20
Residual	-8780.718	6837.164	-.0000000000022	4299.066	20
Std. Predicted Value	-2.744	1.159	.000	1.000	20
Std. Residual	-1.988	1.548	.000	.973	20

a. Dependent Variable: J202

J203

Correlations

		J203	GDP%
Pearson Correlation	J203	1.000	.324
	GDP%	.324	1.000
Sig. (1-tailed)	J203	.	.082
	GDP%	.082	.
N	J203	20	20
	GDP%	20	20

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.324[a]	.105	.055	3665.86	.105	2.114	1	18	.163	.299

a. Predictors: (Constant), GDP%

b. Dependent Variable: J203

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	28414912.325	1	28414912.325	2.114	.163[b]
	Residual	241893692.264	18	13438538.459		
	Total	270308604.589	19			

a. Dependent Variable: J203

b. Predictors: (Constant), GDP%

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	24877.001	1140.479		21.813	.000	22480.943	27273.059		
GDP%	367.208	252.531	.324	1.454	.163	-163.340	897.756	1.000	1.000

a. Dependent Variable: J203

Coefficient Correlations[a]

Model			GDP%
1	Correlations	GDP%	1.000
	Covariances	GDP%	63771.964

a. Dependent Variable: J203

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	GDP%
1	1	1.695	1.000	.15	.15
	2	.305	2.359	.85	.85

a. Dependent Variable: J203

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	22673.753	27447.457	26030.033	1222.915	20
Residual	-7210.585	5446.152	-.0000000000044	3568.087	20
Std. Predicted Value	-2.744	1.159	.000	1.000	20
Std. Residual	-1.967	1.486	.000	.973	20

a. Dependent Variable: J203

J204

Correlations

		J204	GDP%
Pearson Correlation	J204	1.000	.602
	GDP%	.602	1.000
Sig. (1-tailed)	J204	.	.002
	GDP%	.002	.
N	J204	20	20
	GDP%	20	20

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.602[a]	.362	.327	736.95	.362	10.226	1	18	.005	.429

a. Predictors: (Constant), GDP%
b. Dependent Variable: J204

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5553553.035	1	5553553.035	10.226	.005[b]
	Residual	9775758.906	18	543097.717		
	Total	15329311.941	19			

a. Dependent Variable: J204
b. Predictors: (Constant), GDP%

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	3924.098	229.272		17.115	.000	3442.416	4405.780		
GDP%	162.340	50.767	.602	3.198	.005	55.683	268.996	1.000	1.000

a. Dependent Variable: J204

Coefficient Correlations[a]

Model			GDP%
1	Correlations	GDP%	1.000
	Covariances	GDP%	2577.245

a. Dependent Variable: J204

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	GDP%
1	1	1.695	1.000	.15	.15
	2	.305	2.359	.85	.85

a. Dependent Variable: J204

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2950.060	5060.474	4433.843	540.640	20
Residual	-1024.283	1516.525	.00000000000070	717.296	20
Std. Predicted Value	-2.744	1.159	.000	1.000	20
Std. Residual	-1.390	2.058	.000	.973	20

a. Dependent Variable: J204

9.16. Hypothesis 3D: GDP Growth Rate P3 (2011-2015)

a) Descriptive statistics

Statistics

		J200	J201	J202	J203	J204	GDP%
N	Valid	20	20	20	20	20	20
	Missing	0	0	0	0	0	0
Mean		37413.0071	56275.2506	45400.7878	41945.8816	5895.4567	1.8800
Median		37620.0400	57040.2400	46008.1350	42231.2900	5992.8000	1.8000
Mode		27493.63[a]	40178.84[a]	31144.08[a]	30752.40[a]	4468.69[a]	1.80
Std. Deviation		7305.88170	10124.88120	10077.51799	8094.29621	825.29776	1.78314
Skewness		-.083	-.116	-.102	-.105	-.559	-.206
Std. Error of Skewness		.512	.512	.512	.512	.512	.512
Kurtosis		-1.730	-1.009	-1.533	-1.686	-1.011	.087
Std. Error of Kurtosis		.992	.992	.992	.992	.992	.992
Minimum		27493.63	40178.84	31144.08	30752.40	4468.69	-1.70
Maximum		47259.66	73818.48	59293.13	52856.39	6825.23	5.30
Sum		748260.14	1125505.01	908015.76	838917.63	117909.13	37.60

a. Multiple modes exist. The smallest value is shown

b) Correlation

Correlations

		J200	J201	J202	J203	J204	GDP%
J200	Pearson Correlation	1	.956**	.984**	.999**	.947**	-.401
	Sig. (2-tailed)		.000	.000	.000	.000	.080
	N	20	20	20	20	20	20
J201	Pearson Correlation	.956**	1	.983**	.967**	.965**	-.313
	Sig. (2-tailed)	.000		.000	.000	.000	.179
	N	20	20	20	20	20	20
J202	Pearson Correlation	.984**	.983**	1	.989**	.958**	-.341
	Sig. (2-tailed)	.000	.000		.000	.000	.141
	N	20	20	20	20	20	20
J203	Pearson Correlation	.999**	.967**	.989**	1	.955**	-.390
	Sig. (2-tailed)	.000	.000	.000		.000	.089
	N	20	20	20	20	20	20
J204	Pearson Correlation	.947**	.965**	.958**	.955**	1	-.339
	Sig. (2-tailed)	.000	.000	.000	.000		.143
	N	20	20	20	20	20	20
GDP%	Pearson Correlation	-.401	-.313	-.341	-.390	-.339	1
	Sig. (2-tailed)	.080	.179	.141	.089	.143	
	N	20	20	20	20	20	20

**. Correlation is significant at the 0.01 level (2-tailed).

c) Linear Regression

J200

Correlations

		J200	GDP%
Pearson Correlation	J200	1.000	-.401
	GDP%	-.401	1.000
Sig. (1-tailed)	J200	.	.040
	GDP%	.040	.
N	J200	20	20
	GDP%	20	20

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.401[a]	.161	.114	6877.31	.161	3.442	1	18	.080	.305

a. Predictors: (Constant), GDP%
b. Dependent Variable: J200

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	162789141.895	1	162789141.895	3.442	.080[b]
	Residual	851353099.564	18	47297394.420		
	Total	1014142241.460	19			

a. Dependent Variable: J200
b. Predictors: (Constant), GDP%

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	40499.100	2265.392		17.877	.000	35739.688	45258.512		
GDP%	-1641.539	884.824	-.401	-1.855	.080	-3500.485	217.408	1.000	1.000

a. Dependent Variable: J200

Coefficient Correlations[a]

Model			GDP%
1	Correlations	GDP%	1.000
	Covariances	GDP%	782913.898

a. Dependent Variable: J200

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	GDP%
1	1	1.734	1.000	.13	.13
	2	.266	2.555	.87	.87

a. Dependent Variable: J200

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	31798.945	43289.714	37413.007	2927.088	20
Residual	-11363.931	9813.913	.0000000000036	6693.882	20
Std. Predicted Value	-1.918	2.008	.000	1.000	20
Std. Residual	-1.652	1.427	.000	.973	20

a. Dependent Variable: J200

J201

Correlations

		J201	GDP%
Pearson Correlation	J201	1.000	-.313
	GDP%	-.313	1.000
Sig. (1-tailed)	J201	.	.089
	GDP%	.089	.
N	J201	20	20
	GDP%	20	20

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.313[a]	.098	.048	9878.67	.098	1.959	1	18	.179	.307

a. Predictors: (Constant), GDP%
b. Dependent Variable: J201

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	191164823.740	1	191164823.740	1.959	.179[b]
	Residual	1756586342.726	18	97588130.151		
	Total	1947751166.465	19			

a. Dependent Variable: J201
b. Predictors: (Constant), GDP%

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	59619.512	3254.043		18.322	.000	52783.022	66456.002		
GDP%	-1778.863	1270.975	-.313	-1.400	.179	-4449.081	891.356	1.000	1.000

a. Dependent Variable: J201

Coefficient Correlations[a]

Model			GDP%
1	Correlations	GDP%	1.000
	Covariances	GDP%	1615376.583

a. Dependent Variable: J201

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	GDP%
1	1	1.734	1.000	.13	.13
	2	.266	2.555	.87	.87

a. Dependent Variable: J201

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	50191.539	62643.578	56275.250	3171.956	20
Residual	-16611.529	17400.919	.0000000000102	9615.191	20
Std. Predicted Value	-1.918	2.008	.000	1.000	20
Std. Residual	-1.682	1.761	.000	.973	20

a. Dependent Variable: J201

J202

Correlations

		J202	GDP%
Pearson Correlation	J202	1.000	-.341
	GDP%	-.341	1.000
Sig. (1-tailed)	J202	.	.070
	GDP%	.070	.
N	J202	20	20
	GDP%	20	20

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.341[a]	.117	.068	9731.45	.117	2.375	1	18	.141	.263

a. Predictors: (Constant), GDP%
b. Dependent Variable: J202

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	224948914.329	1	224948914.329	2.375	.141[b]
	Residual	1704622092.100	18	94701227.339		
	Total	1929571006.429	19			

a. Dependent Variable: J202
b. Predictors: (Constant), GDP%

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	49028.545	3205.550		15.295	.000	42293.934	55763.155		
GDP%	-1929.658	1252.034	-.341	-1.541	.141	-4560.084	700.768	1.000	1.000

a. Dependent Variable: J202

Coefficient Correlations[a]

Model			GDP%
1	Correlations	GDP%	1.000
	Covariances	GDP%	1567589.673

a. Dependent Variable: J202

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	GDP%
1	1	1.734	1.000	.13	.13
	2	.266	2.555	.87	.87

a. Dependent Variable: J202

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	38801.359	52308.964	45400.787	3440.845	20
Residual	-15954.806	16172.221	-.0000000000076	9471.903	20
Std. Predicted Value	-1.918	2.008	.000	1.000	20
Std. Residual	-1.640	1.662	.000	.973	20

a. Dependent Variable: J202

© University of Pretoria

J203

Correlations

		J203	GDP%
Pearson Correlation	J203	1.000	-.390
	GDP%	-.390	1.000
Sig. (1-tailed)	J203	.	.044
	GDP%	.044	.
N	J203	20	20
	GDP%	20	20

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.390[a]	.152	.105	7656.93	.152	3.233	1	18	.089	.299

a. Predictors: (Constant), GDP%
b. Dependent Variable: J203

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	189519677.535	1	189519677.535	3.233	.089[b]
	Residual	1055315314.629	18	58628628.591		
	Total	1244834992.164	19			

a. Dependent Variable: J203
b. Predictors: (Constant), GDP%

Coefficients[a]

Model	Unstandardized Coefficients: B	Unstandardized Coefficients: Std. Error	Standardized Coefficients: Beta	t	Sig.	95.0% Confidence Interval for B: Lower Bound	95.0% Confidence Interval for B: Upper Bound	Collinearity Statistics: Tolerance	Collinearity Statistics: VIF
1 (Constant)	45275.722	2522.201		17.951	.000	39976.775	50574.669		
GDP%	-1771.192	985.129	-.390	-1.798	.089	-3840.872	298.488	1.000	1.000

a. Dependent Variable: J203

Coefficient Correlations[a]

Model			GDP%
1	Correlations	GDP%	1.000
	Covariances	GDP%	970479.848

a. Dependent Variable: J203

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	Variance Proportions: GDP%
1	1	1.734	1.000	.13	.13
	2	.266	2.555	.87	.87

a. Dependent Variable: J203

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	35888.406	48286.746	41945.881	3158.277	20
Residual	-12752.129	11287.614	.0000000000135	7452.711	20
Std. Predicted Value	-1.918	2.008	.000	1.000	20
Std. Residual	-1.665	1.474	.000	.973	20

a. Dependent Variable: J203

J204

Correlations

		J204	GDP%
Pearson Correlation	J204	1.000	-.339
	GDP%	-.339	1.000
Sig. (1-tailed)	J204	.	.072
	GDP%	.072	.
N	J204	20	20
	GDP%	20	20

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.339[a]	.115	.066	797.65	.115	2.340	1	18	.143	.294

a. Predictors: (Constant), GDP%
b. Dependent Variable: J204

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1488740.369	1	1488740.369	2.340	.143[b]
	Residual	11452471.084	18	636248.394		
	Total	12941211.453	19			

a. Dependent Variable: J204
b. Predictors: (Constant), GDP%

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	6190.582	262.747		23.561	.000	5638.570	6742.593		
GDP%	-156.981	102.625	-.339	-1.530	.143	-372.588	58.625	1.000	1.000

a. Dependent Variable: J204

Coefficient Correlations[a]

Model			GDP%
1	Correlations	GDP%	1.000
	Covariances	GDP%	10531.821

a. Dependent Variable: J204

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	GDP%
1	1	1.734	1.000	.13	.13
	2	.266	2.555	.87	.87

a. Dependent Variable: J204

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	5358.580	6457.449	5895.456	279.919	20
Residual	-1513.610	1129.226	.00000000000036	776.377	20
Std. Predicted Value	-1.918	2.008	.000	1.000	20
Std. Residual	-1.898	1.416	.000	.973	20

a. Dependent Variable: J204

© University of Pretoria

9.17. Hypothesis 4A: Inflation (2001-2015)

a) Descriptive statistics

Statistics

		J200	J201	J202	J203	J204	CPI	PPI
N	Valid	180	180	180	180	168	180	180
	Missing	0	0	0	0	12	0	0
Mean		23567.5002	33009.6387	27241.9834	26137.6205	4157.5768	128.8111	133.0489
Median		24094.8150	30942.3500	27146.0100	26816.0100	4384.5150	128.3000	136.9500
Mode		6897.73[a]	6965.04[a]	5188.33[a]	7492.46[a]	888.08[a]	109.20[a]	109.40[a]
Std. Deviation		12209.62563	19726.74173	16401.96399	13843.58430	1865.75431	19.81036	21.89873
Skewness		.398	.406	.378	.396	-.308	.286	.221
Std. Error of Skewness		.181	.181	.181	.181	.187	.181	.181
Kurtosis		-.879	-.930	-.797	-.886	-1.069	-1.237	-1.258
Std. Error of Kurtosis		.360	.360	.360	.360	.373	.360	.360
Minimum		6897.73	6965.04	5188.33	7492.46	888.08	100.00	100.00
Maximum		48965.36	76264.92	61125.49	55188.34	6947.06	165.60	173.00
Sum		4242150.04	5941734.96	4903557.00	4704771.70	698472.89	23186.00	23948.80

a. Multiple modes exist. The smallest value is shown

b) Univariate Analysis of Variance

J200-CPI

Tests of Between-Subjects Effects

Dependent Variable: J200

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	24130834381.618[a]	1	24130834381.618	1682.063	.000	.904	1682.063	1.000
Intercept	11154140095.547	1	11154140095.547	777.510	.000	.814	777.510	1.000
CPI	24130834381.616	1	24130834381.616	1682.063	.000	.904	1682.063	1.000
Error	2553583109.243	178	14345972.524					
Total	126661289548.396	180						
Corrected Total	26684417490.861	179						

a. R Squared = .904 (Adjusted R Squared = .904)
b. Computed using alpha = .05

Parameter Estimates

Dependent Variable: J200

Parameter	B	Std. Error	t	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound	Partial Eta Squared	Noncent. Parameter	Observed Power[a]
Intercept	-51927.909	1862.292	-27.884	.000	-55602.920	-48252.897	.814	27.884	1.000
CPI	586.094	14.290	41.013	.000	557.893	614.294	.904	41.013	1.000

a. Computed using alpha = .05

J200-PPI

Tests of Between-Subjects Effects

Dependent Variable: J200

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	24419263008.952[a]	1	24419263008.952	1918.911	.000	.915	1918.911	1.000
Intercept	10607128399.917	1	10607128399.917	833.528	.000	.824	833.528	1.000
PPI	24419263008.952	1	24419263008.952	1918.911	.000	.915	1918.911	1.000
Error	2265154481.910	178	12725586.977					
Total	126661289548.396	180						
Corrected Total	26684417490.861	179						

a. R Squared = .915 (Adjusted R Squared = .915)
b. Computed using alpha = .05

Parameter Estimates

Dependent Variable: J200

Parameter	B	Std. Error	t	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound	Partial Eta Squared	Noncent. Parameter	Observed Power[a]
Intercept	-47395.504	1641.637	-28.871	.000	-50635.079	-44155.929	.824	28.871	1.000
PPI	533.360	12.176	43.805	.000	509.333	557.388	.915	43.805	1.000

a. Computed using alpha = .05

J201-CPI

Tests of Between-Subjects Effects

Dependent Variable: J201

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	65284273707.991[a]	1	65284273707.991	2657.618	.000	.937	2657.618	1.000
Intercept	34380040379.035	1	34380040379.035	1399.556	.000	.887	1399.556	1.000
CPI	65284273707.985	1	65284273707.985	2657.618	.000	.937	2657.618	1.000
Error	4372563037.054	178	24564960.882					
Total	265791360827.746	180						
Corrected Total	69656836745.045	179						

a. R Squared = .937 (Adjusted R Squared = .937)
b. Computed using alpha = .05

Parameter Estimates

Dependent Variable: J201

Parameter	B	Std. Error	t	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound	Partial Eta Squared	Noncent. Parameter	Observed Power[a]
Intercept	-91166.646	2436.917	-37.411	.000	-95975.612	-86357.680	.887	37.411	1.000
CPI	964.018	18.700	51.552	.000	927.116	1000.920	.937	51.552	1.000

a. Computed using alpha = .05

J201-PPI

Tests of Between-Subjects Effects

Dependent Variable: J201

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	64980410326.192[a]	1	64980410326.192	2473.366	.000	.933	2473.366	1.000
Intercept	32333961842.074	1	32333961842.074	1230.736	.000	.874	1230.736	1.000
PPI	64980410326.191	1	64980410326.191	2473.366	.000	.933	2473.366	1.000
Error	4676426418.853	178	26272058.533					
Total	265791360827.746	180						
Corrected Total	69656836745.045	179						

a. R Squared = .933 (Adjusted R Squared = .932)
b. Computed using alpha = .05

Parameter Estimates

Dependent Variable: J201

Parameter	B	Std. Error	t	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound	Partial Eta Squared	Noncent. Parameter	Observed Power[a]
Intercept	-82749.941	2358.768	-35.082	.000	-87404.689	-78095.192	.874	35.082	1.000
PPI	870.053	17.494	49.733	.000	835.530	904.576	.933	49.733	1.000

a. Computed using alpha = .05

J202-CPI

Tests of Between-Subjects Effects

Dependent Variable: J202

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	42817721705.457[a]	1	42817721705.457	1427.886	.000	.889	1427.886	1.000
Intercept	22238891514.538	1	22238891514.538	741.623	.000	.806	741.623	1.000
CPI	42817721705.453	1	42817721705.453	1427.886	.000	.889	1427.886	1.000
Error	5337649942.561	178	29986797.430					
Total	181737989988.488	180						
Corrected Total	48155371648.019	179						

a. R Squared = .889 (Adjusted R Squared = .889)
b. Computed using alpha = .05

Parameter Estimates

Dependent Variable: J202

Parameter	B	Std. Error	t	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound	Partial Eta Squared	Noncent. Parameter	Observed Power[a]
Intercept	-73322.853	2692.451	-27.233	.000	-78636.084	-68009.621	.806	27.233	1.000
CPI	780.716	20.661	37.787	.000	739.944	821.487	.889	37.787	1.000

a. Computed using alpha = .05

J202-PPI

Tests of Between-Subjects Effects

Dependent Variable: J202

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	43178945092.523[a]	1	43178945092.523	1544.452	.000	.897	1544.452	1.000
Intercept	21273579062.027	1	21273579062.027	760.927	.000	.810	760.927	1.000
PPI	43178945092.523	1	43178945092.523	1544.452	.000	.897	1544.452	1.000
Error	4976426555.496	178	27957452.559					
Total	181737989988.488	180						
Corrected Total	48155371648.019	179						

a. R Squared = .897 (Adjusted R Squared = .896)
b. Computed using alpha = .05

Parameter Estimates

Dependent Variable: J202

Parameter	B	Std. Error	t	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound	Partial Eta Squared	Noncent. Parameter	Observed Power[a]
Intercept	-67121.014	2433.252	-27.585	.000	-71922.747	-62319.282	.810	27.585	1.000
PPI	709.236	18.047	39.300	.000	673.622	744.849	.897	39.300	1.000

a. Computed using alpha = .05

J203-CPI

Tests of Between-Subjects Effects

Dependent Variable: J203

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	31295636966.354[a]	1	31295636966.354	1851.452	.000	.912	1851.452	1.000
Intercept	14811235970.700	1	14811235970.700	876.234	.000	.831	876.234	1.000
CPI	31295636966.351	1	31295636966.351	1851.452	.000	.912	1851.452	1.000
Error	3008786946.647	178	16903297.453					
Total	157275961355.842	180						
Corrected Total	34304423913.001	179						

a. R Squared = .912 (Adjusted R Squared = .912)
b. Computed using alpha = .05

Parameter Estimates

Dependent Variable: J203

Parameter	B	Std. Error	t	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound	Partial Eta Squared	Noncent. Parameter	Observed Power[a]
Intercept	-59838.188	2021.476	-29.601	.000	-63827.330	-55849.047	.831	29.601	1.000
CPI	667.456	15.512	43.028	.000	636.845	698.067	.912	43.028	1.000

a. Computed using alpha = .05

J203-PPI

Tests of Between-Subjects Effects

Dependent Variable: J203

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	31592372912.207[a]	1	31592372912.207	2073.502	.000	.921	2073.502	1.000
Intercept	14065544569.773	1	14065544569.773	923.164	.000	.838	923.164	1.000
PPI	31592372912.206	1	31592372912.206	2073.502	.000	.921	2073.502	1.000
Error	2712051000.794	178	15236241.577					
Total	157275961355.842	180						
Corrected Total	34304423913.001	179						

a. R Squared = .921 (Adjusted R Squared = .920)

b. Computed using alpha = .05

Parameter Estimates

Dependent Variable: J203

Parameter	B	Std. Error	t	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound	Partial Eta Squared	Noncent. Parameter	Observed Power[a]
Intercept	-54577.860	1796.293	-30.384	.000	-58122.630	-51033.090	.838	30.384	1.000
PPI	606.660	13.323	45.536	.000	580.369	632.951	.921	45.536	1.000

a. Computed using alpha = .05

J204-CPI

Tests of Between-Subjects Effects

Dependent Variable: J204

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	410777553.208[a]	1	410777553.208	399.805	.000	.707	399.805	1.000
Intercept	152218384.441	1	152218384.441	148.152	.000	.472	148.152	1.000
CPI	410777553.208	1	410777553.208	399.805	.000	.707	399.805	1.000
Error	170555984.927	166	1027445.692					
Total	3485288211.050	168						
Corrected Total	581333538.135	167						

a. R Squared = .707 (Adjusted R Squared = .705)

b. Computed using alpha = .05

Parameter Estimates

Dependent Variable: J204

Parameter	B	Std. Error	t	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound	Partial Eta Squared	Noncent. Parameter	Observed Power[a]
Intercept	-6643.669	545.826	-12.172	.000	-7721.324	-5566.014	.472	12.172	1.000
CPI	82.576	4.130	19.995	.000	74.422	90.730	.707	19.995	1.000

a. Computed using alpha = .05

J204-PPI

Tests of Between-Subjects Effects

Dependent Variable: J204

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	424868551.226[a]	1	424868551.226	450.760	.000	.731	450.760	1.000
Intercept	147696594.109	1	147696594.109	156.697	.000	.486	156.697	1.000
PPI	424868551.226	1	424868551.226	450.760	.000	.731	450.760	1.000
Error	156464986.909	166	942560.162					
Total	3485288211.050	168						
Corrected Total	581333538.135	167						

a. R Squared = .731 (Adjusted R Squared = .729)

b. Computed using alpha = .05

Parameter Estimates

Dependent Variable: J204

Parameter	B	Std. Error	t	Sig.	95% Confidence Interval		Partial Eta Squared	Noncent. Parameter	Observed Power[a]
					Lower Bound	Upper Bound			
Intercept	-6148.222	491.155	-12.518	.000	-7117.939	-5178.506	.486	12.518	1.000
PPI	76.178	3.588	21.231	.000	69.094	83.262	.731	21.231	1.000

a. Computed using alpha = .05

c) Bivariate Correlation

Correlations

		J200	J201	J202	J203	J204	CPI	PPI
J200	Pearson Correlation	1	.985**	.991**	1.000**	.942**	.951**	.957**
	Sig. (2-tailed)		.000	.000	.000	.000	.000	.000
	N	180	180	180	180	168	180	180
J201	Pearson Correlation	.985**	1	.989**	.989**	.927**	.968**	.966**
	Sig. (2-tailed)	.000		.000	.000	.000	.000	.000
	N	180	180	180	180	168	180	180
J202	Pearson Correlation	.991**	.989**	1	.993**	.958**	.943**	.947**
	Sig. (2-tailed)	.000	.000		.000	.000	.000	.000
	N	180	180	180	180	168	180	180
J203	Pearson Correlation	1.000**	.989**	.993**	1	.942**	.955**	.960**
	Sig. (2-tailed)	.000	.000	.000		.000	.000	.000
	N	180	180	180	180	168	180	180
J204	Pearson Correlation	.942**	.927**	.958**	.942**	1	.841**	.855**
	Sig. (2-tailed)	.000	.000	.000	.000		.000	.000
	N	168	168	168	168	168	168	168
CPI	Pearson Correlation	.951**	.968**	.943**	.955**	.841**	1	.997**
	Sig. (2-tailed)	.000	.000	.000	.000	.000		.000
	N	180	180	180	180	168	180	180
PPI	Pearson Correlation	.957**	.966**	.947**	.960**	.855**	.997**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	
	N	180	180	180	180	168	180	180

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

			J200	J201	J202	J203	J204	CPI	PPI
Kendall's tau_b	J200	Correlation Coefficient	1.000	.881**	.881**	.980**	.823**	.837**	.832**
		Sig. (2-tailed)	.	.000	.000	.000	.000	.000	.000
		N	180	180	180	180	168	180	180
	J201	Correlation Coefficient	.881**	1.000	.926**	.900**	.833**	.895**	.886**
		Sig. (2-tailed)	.000	.	.000	.000	.000	.000	.000
		N	180	180	180	180	168	180	180
	J202	Correlation Coefficient	.881**	.926**	1.000	.896**	.888**	.854**	.844**
		Sig. (2-tailed)	.000	.000	.	.000	.000	.000	.000
		N	180	180	180	180	168	180	180
	J203	Correlation Coefficient	.980**	.900**	.896**	1.000	.825**	.850**	.844**
		Sig. (2-tailed)	.000	.000	.000	.	.000	.000	.000
		N	180	180	180	180	168	180	180
	J204	Correlation Coefficient	.823**	.833**	.888**	.825**	1.000	.751**	.740**
		Sig. (2-tailed)	.000	.000	.000	.000	.	.000	.000
		N	168	168	168	168	168	168	168
	CPI	Correlation Coefficient	.837**	.895**	.854**	.850**	.751**	1.000	.977**
		Sig. (2-tailed)	.000	.000	.000	.000	.000	.	.000
		N	180	180	180	180	168	180	180
	PPI	Correlation Coefficient	.832**	.886**	.844**	.844**	.740**	.977**	1.000
		Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.
		N	180	180	180	180	168	180	180
Spearman's rho	J200	Correlation Coefficient	1.000	.974**	.975**	.999**	.948**	.955**	.954**
		Sig. (2-tailed)	.	.000	.000	.000	.000	.000	.000
		N	180	180	180	180	168	180	180
	J201	Correlation Coefficient	.974**	1.000	.986**	.981**	.938**	.980**	.979**
		Sig. (2-tailed)	.000	.	.000	.000	.000	.000	.000
		N	180	180	180	180	168	180	180
	J202	Correlation Coefficient	.975**	.986**	1.000	.980**	.978**	.954**	.952**
		Sig. (2-tailed)	.000	.000	.	.000	.000	.000	.000
		N	180	180	180	180	168	180	180
	J203	Correlation Coefficient	.999**	.981**	.980**	1.000	.948**	.961**	.960**
		Sig. (2-tailed)	.000	.000	.000	.	.000	.000	.000
		N	180	180	180	180	168	180	180
	J204	Correlation Coefficient	.948**	.938**	.978**	.948**	1.000	.878**	.876**
		Sig. (2-tailed)	.000	.000	.000	.000	.	.000	.000
		N	168	168	168	168	168	168	168
	CPI	Correlation Coefficient	.955**	.980**	.954**	.961**	.878**	1.000	.998**
		Sig. (2-tailed)	.000	.000	.000	.000	.000	.	.000
		N	180	180	180	180	168	180	180
	PPI	Correlation Coefficient	.954**	.979**	.952**	.960**	.876**	.998**	1.000
		Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.
		N	180	180	180	180	168	180	180

**. Correlation is significant at the 0.01 level (2-tailed).

d) Multivariate analysis

Tests of Between-Subjects Effects

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	J200	2.160E+010[a]	2	1.080E+010	824.790	.000
	J201	5.706E+010[b]	2	2.853E+010	1086.906	.000
	J202	3.727E+010[c]	2	1.863E+010	622.311	.000
	J203	2.783E+010[d]	2	1.391E+010	873.015	.000
	J204	4.376E+008[e]	2	2.188E+008	251.214	.000
Intercept	J200	4.607E+009	1	4.607E+009	351.764	.000
	J201	1.875E+010	1	1.875E+010	714.281	.000
	J202	9.616E+009	1	9.616E+009	321.130	.000
	J203	6.397E+009	1	6.397E+009	401.376	.000
	J204	4.683E+007	1	4.683E+007	53.770	.000
CPI	J200	5.672E+007	1	5.672E+007	4.331	.039
	J201	2.819E+008	1	2.819E+008	10.739	.001
	J202	2.203E+007	1	2.203E+007	.736	.392
	J203	3.084E+007	1	3.084E+007	1.935	.166
	J204	1.275E+007	1	1.275E+007	14.637	.000
PPI	J200	3.630E+008	1	3.630E+008	27.719	.000
	J201	4.016E+006	1	4.016E+006	.153	.696
	J202	3.943E+008	1	3.943E+008	13.169	.000
	J203	3.478E+008	1	3.478E+008	21.823	.000
	J204	2.684E+007	1	2.684E+007	30.815	.000
Error	J200	2.161E+009	165	1.310E+007		
	J201	4.331E+009	165	2.625E+007		
	J202	4.941E+009	165	2.994E+007		
	J203	2.630E+009	165	1.594E+007		
	J204	1.437E+008	165	8.710E+005		
Total	J200	1.258E+011	168			
	J201	2.651E+011	168			
	J202	1.813E+011	168			
	J203	1.563E+011	168			
	J204	3.485E+009	168			
Corrected Total	J200	2.376E+010	167			
	J201	6.139E+010	167			
	J202	4.221E+010	167			
	J203	3.046E+010	167			
	J204	5.813E+008	167			

a. R Squared = .909 (Adjusted R Squared = .908)
b. R Squared = .929 (Adjusted R Squared = .929)
c. R Squared = .883 (Adjusted R Squared = .882)
d. R Squared = .914 (Adjusted R Squared = .913)
e. R Squared = .753 (Adjusted R Squared = .750)

e) Linear Regression

J200

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.951[a]	.904	.904	3787.60	.904	1682.063	1	178	.000	.121

a. Predictors: (Constant), CPI
b. Dependent Variable: J200

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.957[a]	.915	.915	3567.29	.915	1918.911	1	178	.000	.146

a. Predictors: (Constant), PPI
b. Dependent Variable: J200

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	24130834381.618	1	24130834381.618	1682.063	.000[b]
	Residual	2553583109.243	178	14345972.524		
	Total	26684417490.861	179			

a. Dependent Variable: J200
b. Predictors: (Constant), CPI

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	24419263008.952	1	24419263008.952	1918.911	.000[b]
	Residual	2265154481.910	178	12725586.977		
	Total	26684417490.861	179			

a. Dependent Variable: J200
b. Predictors: (Constant), PPI

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	-51927.909	1862.292		-27.884	.000	-55602.920	-48252.897		
CPI	586.094	14.290	.951	41.013	.000	557.893	614.294	1.000	1.000

a. Dependent Variable: J200

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	CPI
1	1	1.988	1.000	.01	.01
	2	.012	13.117	.99	.99

a. Dependent Variable: J200

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	-47395.504	1641.637		-28.871	.000	-50635.079	-44155.929		
PPI	533.360	12.176	.957	43.805	.000	509.333	557.388	1.000	1.000

a. Dependent Variable: J200

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	PPI
1	1	1.987	1.000	.01	.01
	2	.013	12.267	.99	.99

a. Dependent Variable: J200

J201

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.968[a]	.937	.937	4956.30	.937	2657.618	1	178	.000	.098

a. Predictors: (Constant), CPI
b. Dependent Variable: J201

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.966[a]	.933	.932	5125.62	.933	2473.366	1	178	.000	.109

a. Predictors: (Constant), PPI
b. Dependent Variable: J201

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	65284273707.991	1	65284273707.991	2657.618	.000[b]
	Residual	4372563037.054	178	24564960.882		
	Total	69656836745.045	179			

a. Dependent Variable: J201
b. Predictors: (Constant), CPI

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	64980410326.192	1	64980410326.192	2473.366	.000[b]
	Residual	4676426418.853	178	26272058.533		
	Total	69656836745.045	179			

a. Dependent Variable: J201
b. Predictors: (Constant), PPI

Coefficients[a]

Model	Unstandardized Coefficients: B	Std. Error	Standardized Coefficients: Beta	t	Sig.	95.0% Confidence Interval for B: Lower Bound	Upper Bound	Collinearity Statistics: Tolerance	VIF
1 (Constant)	-91166.646	2436.917		-37.411	.000	-95975.612	-86357.680		
CPI	964.018	18.700	.968	51.552	.000	927.116	1000.920	1.000	1.000

a. Dependent Variable: J201

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	CPI
1	1	1.988	1.000	.01	.01
	2	.012	13.117	.99	.99

a. Dependent Variable: J201

Coefficients[a]

Model	Unstandardized Coefficients: B	Std. Error	Standardized Coefficients: Beta	t	Sig.	95.0% Confidence Interval for B: Lower Bound	Upper Bound	Collinearity Statistics: Tolerance	VIF
1 (Constant)	-82749.941	2358.768		-35.082	.000	-87404.689	-78095.192		
PPI	870.053	17.494	.966	49.733	.000	835.530	904.576	1.000	1.000

a. Dependent Variable: J201

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	PPI
1	1	1.987	1.000	.01	.01
	2	.013	12.267	.99	.99

a. Dependent Variable: J201

J202

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.943[a]	.889	.889	5476.02	.889	1427.886	1	178	.000	.047

a. Predictors: (Constant), CPI
b. Dependent Variable: J202

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.947[a]	.897	.896	5287.48	.897	1544.452	1	178	.000	.061

a. Predictors: (Constant), PPI
b. Dependent Variable: J202

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	42817721705.457	1	42817721705.457	1427.886	.000[b]
	Residual	5337649942.561	178	29986797.430		
	Total	48155371648.019	179			

a. Dependent Variable: J202
b. Predictors: (Constant), CPI

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	43178945092.523	1	43178945092.523	1544.452	.000[b]
	Residual	4976426555.496	178	27957452.559		
	Total	48155371648.019	179			

a. Dependent Variable: J202
b. Predictors: (Constant), PPI

Coefficients[a]

Model	Unstandardized Coefficients: B	Std. Error	Standardized Coefficients: Beta	t	Sig.	95.0% Confidence Interval for B: Lower Bound	Upper Bound	Collinearity Statistics: Tolerance	VIF
1 (Constant)	-73322.853	2692.451		-27.233	.000	-78636.084	-68009.621		
CPI	780.716	20.661	.943	37.787	.000	739.944	821.487	1.000	1.000

a. Dependent Variable: J202

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	CPI
1	1	1.988	1.000	.01	.01
	2	.012	13.117	.99	.99

a. Dependent Variable: J202

Coefficients[a]

Model	Unstandardized Coefficients: B	Std. Error	Standardized Coefficients: Beta	t	Sig.	95.0% Confidence Interval for B: Lower Bound	Upper Bound	Collinearity Statistics: Tolerance	VIF
1 (Constant)	-67121.014	2433.252		-27.585	.000	-71922.747	-62319.282		
PPI	709.236	18.047	.947	39.300	.000	673.622	744.849	1.000	1.000

a. Dependent Variable: J202

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	PPI
1	1	1.987	1.000	.01	.01
	2	.013	12.267	.99	.99

a. Dependent Variable: J202

J203

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.955[a]	.912	.912	4111.36	.912	1851.452	1	178	.000	.112

a. Predictors: (Constant), CPI
b. Dependent Variable: J203

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.960[a]	.921	.920	3903.36	.921	2073.502	1	178	.000	.136

a. Predictors: (Constant), PPI
b. Dependent Variable: J203

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	31295636966.354	1	31295636966.354	1851.452	.000[b]
	Residual	3008786946.647	178	16903297.453		
	Total	34304423913.001	179			

a. Dependent Variable: J203
b. Predictors: (Constant), CPI

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	31592372912.207	1	31592372912.207	2073.502	.000[b]
	Residual	2712051000.794	178	15236241.577		
	Total	34304423913.001	179			

a. Dependent Variable: J203
b. Predictors: (Constant), PPI

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	-59838.188	2021.476		-29.601	.000	-63827.330	-55849.047		
CPI	667.456	15.512	.955	43.028	.000	636.845	698.067	1.000	1.000

a. Dependent Variable: J203

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	CPI
1	1	1.988	1.000	.01	.01
	2	.012	13.117	.99	.99

a. Dependent Variable: J203

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	-54577.860	1796.293		-30.384	.000	-58122.630	-51033.090		
PPI	606.660	13.323	.960	45.536	.000	580.369	632.951	1.000	1.000

a. Dependent Variable: J203

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	PPI
1	1	1.987	1.000	.01	.01
	2	.013	12.267	.99	.99

a. Dependent Variable: J203

© University of Pretoria

J204

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.841[a]	.707	.705	1013.62	.707	399.805	1	166	.000	.024

a. Predictors: (Constant), CPI
b. Dependent Variable: J204

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.855[a]	.731	.729	970.85	.731	450.760	1	166	.000	.030

a. Predictors: (Constant), PPI
b. Dependent Variable: J204

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	410777553.208	1	410777553.208	399.805	.000[b]
	Residual	170555984.927	166	1027445.692		
	Total	581333538.135	167			

a. Dependent Variable: J204
b. Predictors: (Constant), CPI

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	424868551.226	1	424868551.226	450.760	.000[b]
	Residual	156464986.909	166	942560.162		
	Total	581333538.135	167			

a. Dependent Variable: J204
b. Predictors: (Constant), PPI

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	-6643.669	545.826		-12.172	.000	-7721.324	-5566.014		
CPI	82.576	4.130	.841	19.995	.000	74.422	90.730	1.000	1.000

a. Dependent Variable: J204

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	CPI
1	1	1.990	1.000	.01	.01
	2	.010	13.887	.99	.99

a. Dependent Variable: J204

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	-6148.222	491.155		-12.518	.000	-7117.939	-5178.506		
PPI	76.178	3.588	.855	21.231	.000	69.094	83.262	1.000	1.000

a. Dependent Variable: J204

Collinearity Diagnostics[a]

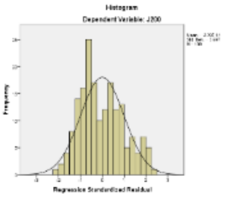
Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	PPI
1	1	1.988	1.000	.01	.01
	2	.012	13.038	.99	.99

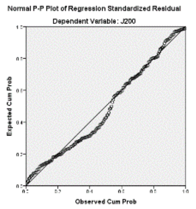
a. Dependent Variable: J204

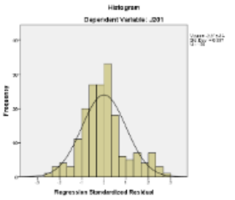
© University of Pretoria

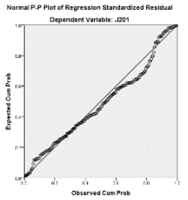
f) Histogram, P-P plot & Q-Q plot (individual)

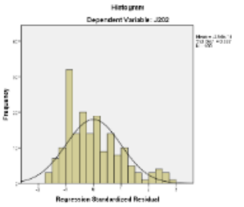
CPI

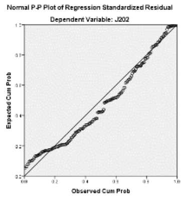


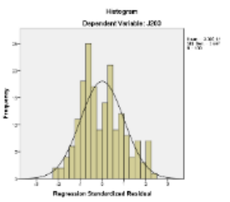


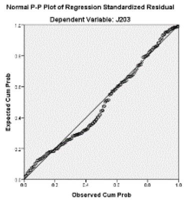


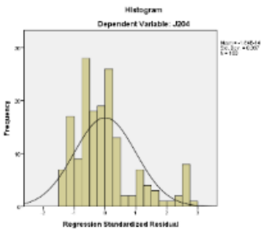


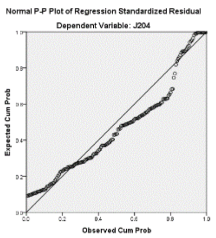




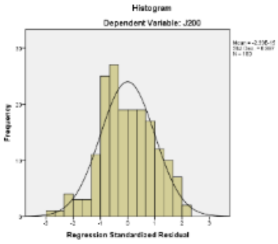


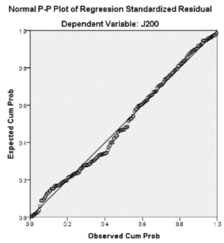


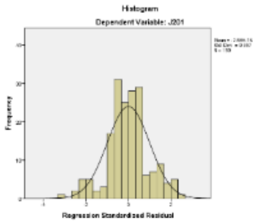


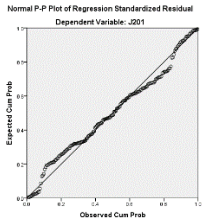


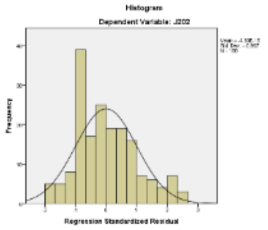
PPI

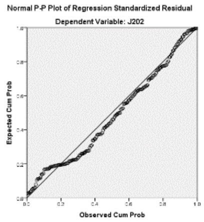

Histogram
Dependent Variable: J200
Frequency
Regression Standardized Residual

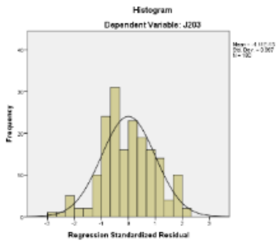

Normal P-P Plot of Regression Standardized Residual
Dependent Variable: J200
Expected Cum Prob
Observed Cum Prob

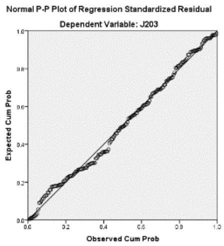

Histogram
Dependent Variable: J201
Frequency
Regression Standardized Residual

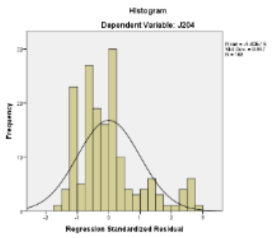

Normal P-P Plot of Regression Standardized Residual
Dependent Variable: J201
Expected Cum Prob
Observed Cum Prob

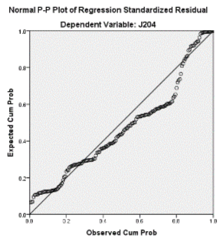

Histogram
Dependent Variable: J202
Frequency
Regression Standardized Residual


Normal P-P Plot of Regression Standardized Residual
Dependent Variable: J202
Expected Cum Prob
Observed Cum Prob


Histogram
Dependent Variable: J203
Frequency
Regression Standardized Residual


Normal P-P Plot of Regression Standardized Residual
Dependent Variable: J203
Expected Cum Prob
Observed Cum Prob


Histogram
Dependent Variable: J204
Frequency
Regression Standardized Residual

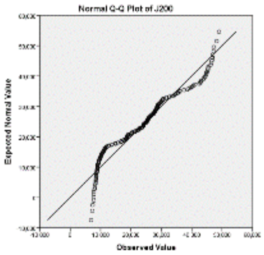

Normal P-P Plot of Regression Standardized Residual
Dependent Variable: J204
Expected Cum Prob
Observed Cum Prob

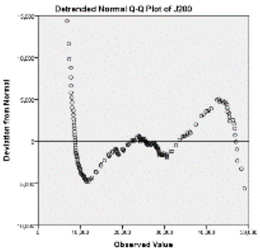
QQ

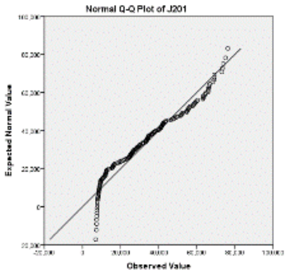
Estimated Distribution Parameters

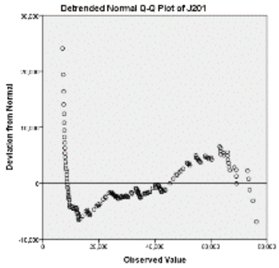
		J200	J201	J202	J203	J204	CPI	PPI
Normal Distribution	Location	23567.5002	33009.6387	27241.9834	26137.6205	4157.5768	128.8111	133.0489
	Scale	12209.62563	19726.74173	16401.96399	13843.58430	1865.75431	19.81036	21.89873

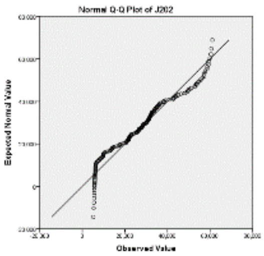
The cases are unweighted.

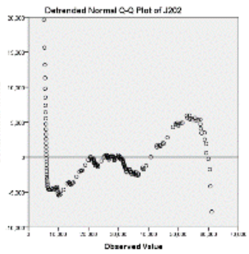


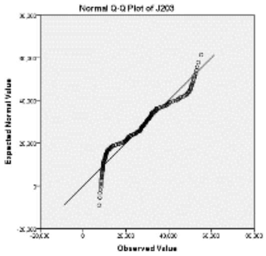


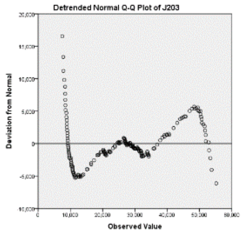


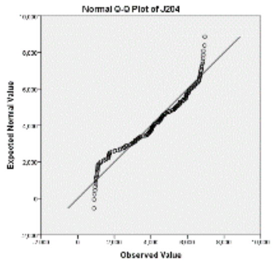


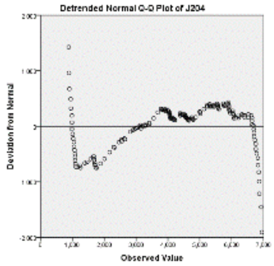


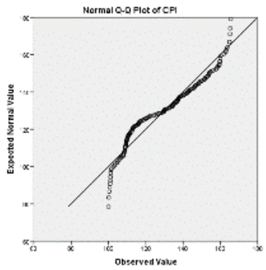


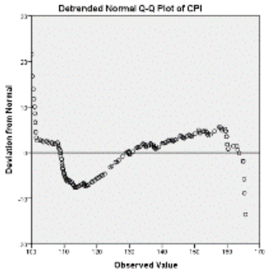


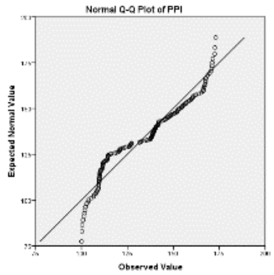


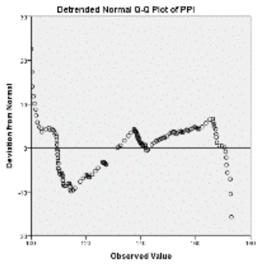












© University of Pretoria

g) Combined Analysis (CPI + PPI)

J200

Correlations

		J200	PPI	CPI
Pearson Correlation	J200	1.000	.957	.951
	PPI	.957	1.000	.997
	CPI	.951	.997	1.000
Sig. (1-tailed)	J200	.	.000	.000
	PPI	.000	.	.000
	CPI	.000	.000	.
N	J200	180	180	180
	PPI	180	180	180
	CPI	180	180	180

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.958[a]	.917	.916	3540.39	.917	975.946	2	177	.000	.161

a. Predictors: (Constant), CPI, PPI
b. Dependent Variable: J200

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	24465826209.150	2	12232913104.575	975.946	.000[b]
	Residual	2218591281.712	177	12534414.021		
	Total	26684417490.861	179			

a. Dependent Variable: J200
b. Predictors: (Constant), CPI, PPI

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	-44324.417	2278.900		-19.450	.000	-48821.729	-39827.106		
PPI	849.048	164.236	1.523	5.170	.000	524.936	1173.160	.005	184.723
CPI	-349.916	181.549	-.568	-1.927	.056	-708.195	8.364	.005	184.723

a. Dependent Variable: J200

Coefficient Correlations[a]

Model			CPI	PPI
1	Correlations	CPI	1.000	-.997
		PPI	-.997	1.000
	Covariances	CPI	32960.044	-29735.995
		PPI	-29735.995	26973.333

a. Dependent Variable: J200

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	PPI	CPI
1	1	2.983	1.000	.00	.00	.00
	2	.017	13.442	.54	.00	.00
	3	6.625E-5	212.203	.46	1.00	1.00

a. Dependent Variable: J200

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	5588.854	44614.917	23567.500	11691.047	180
Residual	-11185.517	7119.446	.00000000004697	3520.563	180
Std. Predicted Value	-1.538	1.800	.000	1.000	180
Std. Residual	-3.159	2.011	.000	.994	180

a. Dependent Variable: J200

J201

Correlations

		J201	PPI	CPI
Pearson Correlation	J201	1.000	.966	.968
	PPI	.966	1.000	.997
	CPI	.968	.997	1.000
Sig. (1-tailed)	J201	.	.000	.000
	PPI	.000	.	.000
	CPI	.000	.000	.
N	J201	180	180	180
	PPI	180	180	180
	CPI	180	180	180

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.968[a]	.937	.937	4969.29	.937	1321.907	2	177	.000	.099

a. Predictors: (Constant), CPI, PPI
b. Dependent Variable: J201

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	65286019483.182	2	32643009741.591	1321.907	.000[b]
	Residual	4370817261.863	177	24693882.835		
	Total	69656836745.045	179			

a. Dependent Variable: J201
b. Predictors: (Constant), CPI, PPI

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	-90617.750	3198.659		-28.330	.000	-96930.166	-84305.334		
PPI	61.293	230.521	.068	.266	.791	-393.630	516.216	.005	184.723
CPI	896.448	254.822	.900	3.518	.001	393.568	1399.328	.005	184.723

a. Dependent Variable: J201

Coefficient Correlations[a]

Model			CPI	PPI
1	Correlations	CPI	1.000	-.997
		PPI	-.997	1.000
	Covariances	CPI	64934.145	-58582.489
		PPI	-58582.489	53139.805

a. Dependent Variable: J201

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	PPI	CPI
1	1	2.983	1.000	.00	.00	.00
	2	.017	13.442	.54	.00	.00
	3	6.625E-5	212.203	.46	1.00	1.00

a. Dependent Variable: J201

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	5156.319	68437.679	33009.638	19097.810	180
Residual	-12031.743	13390.280	-.00000000019455	4941.454	180
Std. Predicted Value	-1.458	1.855	.000	1.000	180
Std. Residual	-2.421	2.695	.000	.994	180

a. Dependent Variable: J201

© University of Pretoria

J202

Correlations

		J202	PPI	CPI
Pearson Correlation	J202	1.000	.947	.943
	PPI	.947	1.000	.997
	CPI	.943	.997	1.000
Sig. (1-tailed)	J202	.	.000	.000
	PPI	.000	.	.000
	CPI	.000	.000	.
N	J202	180	180	180
	PPI	180	180	180
	CPI	180	180	180

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.947[a]	.897	.896	5293.06	.897	770.910	2	177	.000	.065

a. Predictors: (Constant), CPI, PPI
b. Dependent Variable: J202

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	43196445008.226	2	21598222504.113	770.910	.000[b]
	Residual	4958926639.792	177	28016534.688		
	Total	48155371648.019	179			

a. Dependent Variable: J202
b. Predictors: (Constant), CPI, PPI

Coefficients[a]

Model	Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.	95.0% Confidence Interval for B Lower Bound	95.0% Confidence Interval for B Upper Bound	Collinearity Statistics Tolerance	Collinearity Statistics VIF
1 (Constant)	-65238.282	3407.065		-19.148	.000	-71961.979	-58514.585		
PPI	902.768	245.540	1.205	3.677	.000	418.205	1387.331	.005	184.723
CPI	-214.516	271.425	-.259	-.790	.430	-750.161	321.129	.005	184.723

a. Dependent Variable: J202

Coefficient Correlations[a]

Model			CPI	PPI
1	Correlations	CPI	1.000	-.997
		PPI	-.997	1.000
	Covariances	CPI	73671.271	-66464.977
		PPI	-66464.977	60289.960

a. Dependent Variable: J202

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions (Constant)	PPI	CPI
1	1	2.983	1.000	.00	.00	.00
	2	.017	13.442	.54	.00	.00
	3	6.625E-5	212.203	.46	1.00	1.00

a. Dependent Variable: J202

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	3586.940	55416.773	27241.983	15534.507	180
Residual	-11042.823	13420.224	.00000000001253	5263.411	180
Std. Predicted Value	-1.523	1.814	.000	1.000	180
Std. Residual	-2.086	2.535	.000	.994	180

a. Dependent Variable: J202

© University of Pretoria

J203

Correlations

		J203	PPI	CPI
Pearson Correlation	J203	1.000	.960	.955
	PPI	.960	1.000	.997
	CPI	.955	.997	1.000
Sig. (1-tailed)	J203	.	.000	.000
	PPI	.000	.	.000
	CPI	.000	.000	.
N	J203	180	180	180
	PPI	180	180	180
	CPI	180	180	180

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.960[a]	.922	.921	3897.54	.922	1040.616	2	177	.000	.145

a. Predictors: (Constant), CPI, PPI
b. Dependent Variable: J203

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	31615645806.536	2	15807822903.268	1040.616	.000[b]
	Residual	2688778106.465	177	15190836.760		
	Total	34304423913.001	179			

a. Dependent Variable: J203
b. Predictors: (Constant), CPI, PPI

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	-52406.680	2508.789		-20.889	.000	-57357.667	-47455.693		
PPI	829.844	180.803	1.313	4.590	.000	473.036	1186.651	.005	184.723
CPI	-247.381	199.863	-.354	-1.238	.217	-641.803	147.040	.005	184.723

a. Dependent Variable: J203

Coefficient Correlations[a]

Model			CPI	PPI
1	Correlations	CPI	1.000	-.997
		PPI	-.997	1.000
	Covariances	CPI	39945.277	-36037.955
		PPI	-36037.955	32689.801

a. Dependent Variable: J203

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	PPI	CPI
1	1	2.983	1.000	.00	.00	.00
	2	.017	13.442	.54	.00	.00
	3	6.625E-5	212.203	.46	1.00	1.00

a. Dependent Variable: J203

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	5839.543	50189.910	26137.620	13289.985	180
Residual	-12008.548	8044.207	.00000000002648	3875.707	180
Std. Predicted Value	-1.527	1.810	.000	1.000	180
Std. Residual	-3.081	2.064	.000	.994	180

a. Dependent Variable: J203

J204

Correlations

		J204	PPI	CPI
Pearson Correlation	J204	1.000	.855	.841
	PPI	.855	1.000	.997
	CPI	.841	.997	1.000
Sig. (1-tailed)	J204	.	.000	.000
	PPI	.000	.	.000
	CPI	.000	.000	.
N	J204	168	168	168
	PPI	168	168	168
	CPI	168	168	168

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.868[a]	.753	.750	933.27	.753	251.214	2	165	.000	.054

a. Predictors: (Constant), CPI, PPI
b. Dependent Variable: J204

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	437617796.061	2	218808898.031	251.214	.000[b]
	Residual	143715742.073	165	871004.497		
	Total	581333538.135	167			

a. Dependent Variable: J204
b. Predictors: (Constant), CPI, PPI

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	-4582.138	624.883		-7.333	.000	-5815.935	-3348.341		
PPI	243.435	43.853	2.732	5.551	.000	156.850	330.021	.006	161.650
CPI	-184.961	48.345	-1.883	-3.826	.000	-280.415	-89.507	.006	161.650

a. Dependent Variable: J204

Coefficient Correlations[a]

Model			CPI	PPI
1	Correlations	CPI	1.000	-.997
		PPI	-.997	1.000
	Covariances	CPI	2337.213	-2113.500
		PPI	-2113.500	1923.098

a. Dependent Variable: J204

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	PPI	CPI
1	1	2.985	1.000	.00	.00	.00
	2	.015	14.263	.60	.00	.00
	3	6.742E-5	210.422	.40	1.00	1.00

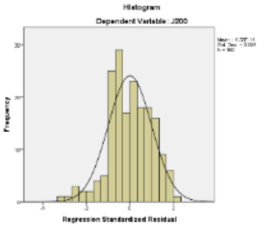
a. Dependent Variable: J204

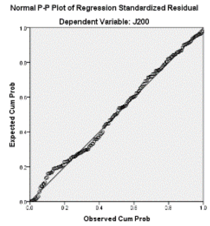
Residuals Statistics[a]

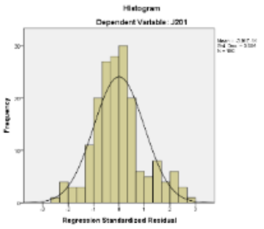
	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	1766.225	6902.571	4157.576	1618.785	168
Residual	-1849.578	2324.207	.000000000018758	927.670	168
Std. Predicted Value	-1.477	1.696	.000	1.000	168
Std. Residual	-1.982	2.490	.000	.994	168

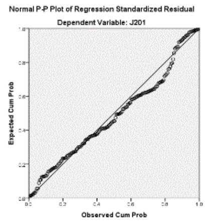
a. Dependent Variable: J204

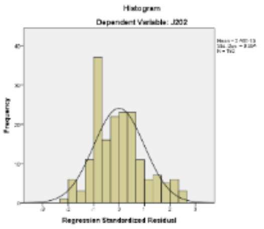
h) Histogram & PP plot (CPI + PPI)

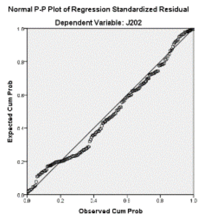


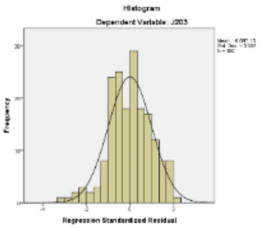


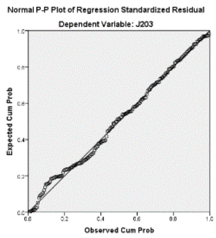


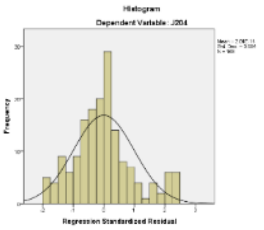


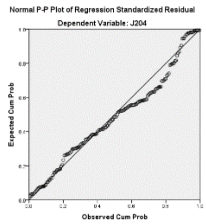












© University of Pretoria

9.18. Hypothesis 4B: Inflation P1 (2001-2005)

a) Descriptive statistics

Statistics

		J200	J201	J202	J203	J204	CPI	PPI
N	Valid	60	60	60	60	48	60	60
	Missing	0	0	0	0	12	0	0
Mean		10010.4883	11498.3658	9056.8333	10774.0537	1711.3954	107.4933	108.7567
Median		9344.8050	9833.6250	6861.8800	10210.3550	1620.2350	109.0500	109.7000
Mode		6897.73[a]	6965.04[a]	5188.33[a]	7492.46[a]	888.08[a]	109.20[a]	109.40[a]
Std. Deviation		2153.54890	3970.19024	3999.67738	2475.35103	750.03205	4.00271	4.02351
Skewness		1.259	.929	1.026	1.284	.743	-.657	-.864
Std. Error of Skewness		.309	.309	.309	.309	.343	.309	.309
Kurtosis		1.366	-.212	-.191	1.241	-.693	-.940	-.229
Std. Error of Kurtosis		.608	.608	.608	.608	.674	.608	.608
Minimum		6897.73	6965.04	5188.33	7492.46	888.08	100.00	100.00
Maximum		16685.92	21520.45	18953.16	18312.14	3406.66	112.70	114.30
Sum		600629.30	689901.95	543410.00	646443.22	82146.98	6449.60	6525.40

a. Multiple modes exist. The smallest value is shown

b) Correlation

Correlations

		J200	J201	J202	J203	J204	CPI	PPI
J200	Pearson Correlation	1	.869**	.878**	.995**	.863**	.540**	.597**
	Sig. (2-tailed)		.000	.000	.000	.000	.000	.000
	N	60	60	60	60	48	60	60
J201	Pearson Correlation	.869**	1	.994**	.915**	.995**	.812**	.789**
	Sig. (2-tailed)	.000		.000	.000	.000	.000	.000
	N	60	60	60	60	48	60	60
J202	Pearson Correlation	.878**	.994**	1	.921**	.998**	.765**	.740**
	Sig. (2-tailed)	.000	.000		.000	.000	.000	.000
	N	60	60	60	60	48	60	60
J203	Pearson Correlation	.995**	.915**	.921**	1	.908**	.610**	.652**
	Sig. (2-tailed)	.000	.000	.000		.000	.000	.000
	N	60	60	60	60	48	60	60
J204	Pearson Correlation	.863**	.995**	.998**	.908**	1	.831**	.897**
	Sig. (2-tailed)	.000	.000	.000	.000		.000	.000
	N	48	48	48	48	48	48	48
CPI	Pearson Correlation	.540**	.812**	.765**	.610**	.831**	1	.973**
	Sig. (2-tailed)	.000	.000	.000	.000	.000		.000
	N	60	60	60	60	48	60	60
PPI	Pearson Correlation	.597**	.789**	.740**	.652**	.897**	.973**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	
	N	60	60	60	60	48	60	60

**. Correlation is significant at the 0.01 level (2-tailed).

c) Linear Regression

J200

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.540[a]	.292	.279	1828.14	.292	23.873	1	58	.000	.100

a. Predictors: (Constant), CPI
b. Dependent Variable: J200

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.597[a]	.356	.345	1743.27	.356	32.039	1	58	.000	.102

a. Predictors: (Constant), PPI
b. Dependent Variable: J200

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	79786660.356	1	79786660.356	23.873	.000[b]
	Residual	193841938.283	58	3342102.384		
	Total	273628598.639	59			

a. Dependent Variable: J200
b. Predictors: (Constant), CPI

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	97366636.309	1	97366636.309	32.039	.000[b]
	Residual	176261962.329	58	3038999.351		
	Total	273628598.639	59			

a. Dependent Variable: J200
b. Predictors: (Constant), PPI

Coefficients[a]

Model	Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.	95.0% Confidence Interval for B Lower Bound	95.0% Confidence Interval for B Upper Bound	Collinearity Statistics Tolerance	Collinearity Statistics VIF
1 (Constant)	-21219.157	6395.988		-3.318	.002	-34022.118	-8416.196		
CPI	290.526	59.461	.540	4.886	.000	171.503	409.550	1.000	1.000

a. Dependent Variable: J200

Coefficients[a]

Model	Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.	95.0% Confidence Interval for B Lower Bound	95.0% Confidence Interval for B Upper Bound	Collinearity Statistics Tolerance	Collinearity Statistics VIF
1 (Constant)	-24713.559	6138.788		-4.026	.000	-37001.677	-12425.440		
PPI	319.282	56.407	.597	5.660	.000	206.371	432.193	1.000	1.000

a. Dependent Variable: J200

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions (Constant)	Variance Proportions CPI
1	1	1.999	1.000	.00	.00
	2	.001	54.182	1.00	1.00

a. Dependent Variable: J200

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions (Constant)	Variance Proportions PPI
1	1	1.999	1.000	.00	.00
	2	.001	54.535	1.00	1.00

a. Dependent Variable: J200

J201

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.812[a]	.659	.653	2337.62	.659	112.187	1	58	.000	.059

a. Predictors: (Constant), CPI
b. Dependent Variable: J201

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.789[a]	.622	.616	2461.59	.622	95.477	1	58	.000	.056

a. Predictors: (Constant), PPI
b. Dependent Variable: J201

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	613042824.713	1	613042824.713	112.187	.000[b]
	Residual	316939398.548	58	5464472.389		
	Total	929982223.260	59			

a. Dependent Variable: J201
b. Predictors: (Constant), CPI

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	578534706.408	1	578534706.408	95.477	.000[b]
	Residual	351447516.853	58	6059439.946		
	Total	929982223.260	59			

a. Dependent Variable: J201
b. Predictors: (Constant), PPI

Coefficients[a]

Model	Unstandardized Coefficients: B	Unstandardized Coefficients: Std. Error	Standardized Coefficients: Beta	t	Sig.	95.0% Confidence Interval for B: Lower Bound	95.0% Confidence Interval for B: Upper Bound	Collinearity Statistics: Tolerance	Collinearity Statistics: VIF
1 (Constant)	-75067.627	8178.467		-9.179	.000	-91438.607	-58696.647		
CPI	805.315	76.032	.812	10.592	.000	653.121	957.509	1.000	1.000

a. Dependent Variable: J201

Coefficients[a]

Model	Unstandardized Coefficients: B	Unstandardized Coefficients: Std. Error	Standardized Coefficients: Beta	t	Sig.	95.0% Confidence Interval for B: Lower Bound	95.0% Confidence Interval for B: Upper Bound	Collinearity Statistics: Tolerance	Collinearity Statistics: VIF
1 (Constant)	-73144.422	8668.292		-8.438	.000	-90495.894	-55792.950		
PPI	778.277	79.650	.789	9.771	.000	618.840	937.714	1.000	1.000

a. Dependent Variable: J201

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	Variance Proportions: CPI
1	1	1.999	1.000	.00	.00
	2	.001	54.182	1.00	1.00

a. Dependent Variable: J201

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	Variance Proportions: PPI
1	1	1.999	1.000	.00	.00
	2	.001	54.535	1.00	1.00

a. Dependent Variable: J201

J202

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.765[a]	.585	.577	2599.95	.585	81.627	1	58	.000	.034

a. Predictors: (Constant), CPI
b. Dependent Variable: J202

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.740[a]	.547	.539	2715.01	.547	70.043	1	58	.000	.034

a. Predictors: (Constant), PPI
b. Dependent Variable: J202

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	551779919.197	1	551779919.197	81.627	.000[b]
	Residual	392067811.506	58	6759789.854		
	Total	943847730.702	59			

a. Dependent Variable: J202
b. Predictors: (Constant), CPI

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	516310633.132	1	516310633.132	70.043	.000[b]
	Residual	427537097.570	58	7371329.268		
	Total	943847730.702	59			

a. Dependent Variable: J202
b. Predictors: (Constant), PPI

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	-73069.958	9096.292		-8.033	.000	-91278.164	-54861.752		
CPI	764.018	84.564	.765	9.035	.000	594.744	933.291	1.000	1.000

a. Dependent Variable: J202

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	-70904.640	9560.711		-7.416	.000	-90042.483	-51766.797		
PPI	735.233	87.850	.740	8.369	.000	559.382	911.084	1.000	1.000

a. Dependent Variable: J202

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	CPI
1	1	1.999	1.000	.00	.00
	2	.001	54.182	1.00	1.00

a. Dependent Variable: J202

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	PPI
1	1	1.999	1.000	.00	.00
	2	.001	54.535	1.00	1.00

a. Dependent Variable: J202

J203

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.610[a]	.373	.362	1977.40	.373	34.456	1	58	.000	.089

a. Predictors: (Constant), CPI
b. Dependent Variable: J203

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.652[a]	.426	.416	1892.17	.426	42.972	1	58	.000	.090

a. Predictors: (Constant), PPI
b. Dependent Variable: J203

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	134726883.796	1	134726883.796	34.456	.000[b]
	Residual	226787516.295	58	3910129.591		
	Total	361514400.091	59			

a. Dependent Variable: J203
b. Predictors: (Constant), CPI

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	153854678.734	1	153854678.734	42.972	.000[b]
	Residual	207659721.357	58	3580340.023		
	Total	361514400.091	59			

a. Dependent Variable: J203
b. Predictors: (Constant), PPI

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	-29807.535	6918.204		-4.309	.000	-43655.824	-15959.245		
CPI	377.527	64.316	.610	5.870	.000	248.785	506.268	1.000	1.000

a. Dependent Variable: J203

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	-32875.580	6663.148		-4.934	.000	-46213.319	-19537.841		
PPI	401.351	61.225	.652	6.555	.000	278.795	523.907	1.000	1.000

a. Dependent Variable: J203

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	CPI
1	1	1.999	1.000	.00	.00
	2	.001	54.182	1.00	1.00

a. Dependent Variable: J203

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	PPI
1	1	1.999	1.000	.00	.00
	2	.001	54.535	1.00	1.00

a. Dependent Variable: J203

J204

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.831[a]	.691	.684	421.48	.691	102.828	1	46	.000	.072

a. Predictors: (Constant), CPI
b. Dependent Variable: J204

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.897[a]	.805	.801	334.84	.805	189.813	1	46	.000	.217

a. Predictors: (Constant), PPI
b. Dependent Variable: J204

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	18267735.416	1	18267735.416	102.828	.000[b]
	Residual	8172023.955	46	177652.695		
	Total	26439759.371	47			

a. Dependent Variable: J204
b. Predictors: (Constant), CPI

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	21282165.423	1	21282165.423	189.813	.000[b]
	Residual	5157593.948	46	112121.608		
	Total	26439759.371	47			

a. Dependent Variable: J204
b. Predictors: (Constant), PPI

Coefficients[a]

Model	Unstandardized Coefficients: B	Std. Error	Standardized Coefficients: Beta	t	Sig.	95.0% Confidence Interval for B: Lower Bound	Upper Bound	Collinearity Statistics: Tolerance	VIF
1 (Constant)	-25500.979	2684.241		-9.500	.000	-30904.077	-20097.882		
CPI	249.340	24.589	.831	10.140	.000	199.846	298.835	1.000	1.000

a. Dependent Variable: J204

Coefficients[a]

Model	Unstandardized Coefficients: B	Std. Error	Standardized Coefficients: Beta	t	Sig.	95.0% Confidence Interval for B: Lower Bound	Upper Bound	Collinearity Statistics: Tolerance	VIF
1 (Constant)	-34551.974	2632.559		-13.125	.000	-39851.040	-29252.908		
PPI	328.138	23.817	.897	13.777	.000	280.196	376.080	1.000	1.000

a. Dependent Variable: J204

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	CPI
1	1	2.000	1.000	.00	.00
	2	.000	88.233	1.00	1.00

a. Dependent Variable: J204

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	PPI
1	1	2.000	1.000	.00	.00
	2	.000	108.930	1.00	1.00

a. Dependent Variable: J204

d) Combined Analysis (CPI + PPI)

J200

Correlations

		J200	PPI	CPI
Pearson Correlation	J200	1.000	.597	.540
	PPI	.597	1.000	.973
	CPI	.540	.973	1.000
Sig. (1-tailed)	J200	.	.000	.000
	PPI	.000	.	.000
	CPI	.000	.000	.
N	J200	60	60	60
	PPI	60	60	60
	CPI	60	60	60

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.622[a]	.387	.366	1715.15	.387	18.008	2	57	.000	.113

a. Predictors: (Constant), CPI, PPI
b. Dependent Variable: J200

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	105948724.083	2	52974362.042	18.008	.000[b]
	Residual	167679874.555	57	2941752.185		
	Total	273628598.639	59			

a. Dependent Variable: J200
b. Predictors: (Constant), CPI, PPI

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	-23806.401	6063.076		-3.926	.000	-35947.502	-11665.300		
PPI	721.495	241.936	1.348	2.982	.004	237.027	1205.963	.053	19.004
CPI	-415.379	243.193	-.772	-1.708	.093	-902.365	71.607	.053	19.004

a. Dependent Variable: J200

Coefficient Correlations[a]

Model			CPI	PPI
1	Correlations	CPI	1.000	-.973
		PPI	-.973	1.000
	Covariances	CPI	59142.921	-57268.268
		PPI	-57268.268	58532.994

a. Dependent Variable: J200

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	PPI	CPI
1	1	2.999	1.000	.00	.00	.00
	2	.001	58.044	1.00	.01	.01
	3	3.607E-5	288.347	.00	.99	.99

a. Dependent Variable: J200

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	6805.172	11971.847	10010.488	1340.052	60
Residual	-2887.691	4838.685	.00000000001146	1685.832	60
Std. Predicted Value	-2.392	1.464	.000	1.000	60
Std. Residual	-1.684	2.821	.000	.983	60

a. Dependent Variable: J200

J201

Correlations

		J201	PPI	CPI
Pearson Correlation	J201	1.000	.789	.812
	PPI	.789	1.000	.973
	CPI	.812	.973	1.000
Sig. (1-tailed)	J201	.	.000	.000
	PPI	.000	.	.000
	CPI	.000	.000	.
N	J201	60	60	60
	PPI	60	60	60
	CPI	60	60	60

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.812[a]	.659	.647	2357.88	.659	55.137	2	57	.000	.060

a. Predictors: (Constant), CPI, PPI
b. Dependent Variable: J201

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	613084330.349	2	306542165.175	55.137	.000[b]
	Residual	316897892.911	57	5559612.156		
	Total	929982223.260	59			

a. Dependent Variable: J201
b. Predictors: (Constant), CPI, PPI

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	-74964.576	8335.128		-8.994	.000	-91655.381	-58273.770		
PPI	-28.738	332.598	-.029	-.086	.931	-694.754	637.278	.053	19.004
CPI	833.432	334.326	.840	2.493	.016	163.955	1502.909	.053	19.004

a. Dependent Variable: J201

Coefficient Correlations[a]

Model			CPI	PPI
1	Correlations	CPI	1.000	-.973
		PPI	-.973	1.000
	Covariances	CPI	111774.100	-108231.197
		PPI	-108231.197	110621.401

a. Dependent Variable: J201

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	PPI	CPI
1	1	2.999	1.000	.00	.00	.00
	2	.001	58.044	1.00	.01	.01
	3	3.607E-5	288.347	.00	.99	.99

a. Dependent Variable: J201

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	5504.830	15689.959	11498.365	3223.547	60
Residual	-4629.040	5841.985	-.00000000001064	2317.5746350	60
Std. Predicted Value	-1.859	1.300	.000	1.000	60
Std. Residual	-1.963	2.478	.000	.983	60

a. Dependent Variable: J201

J202

Correlations

		J202	PPI	CPI
Pearson Correlation	J202	1.000	.740	.765
	PPI	.740	1.000	.973
	CPI	.765	.973	1.000
Sig. (1-tailed)	J202	.	.000	.000
	PPI	.000	.	.000
	CPI	.000	.000	.
N	J202	60	60	60
	PPI	60	60	60
	CPI	60	60	60

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.765[a]	.585	.570	2621.40	.585	40.176	2	57	.000	.035

a. Predictors: (Constant), CPI, PPI
b. Dependent Variable: J202

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	552158622.290	2	276079311.145	40.176	.000[b]
	Residual	391689108.412	57	6871738.744		
	Total	943847730.702	59			

a. Dependent Variable: J202
b. Predictors: (Constant), CPI, PPI

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	-72758.678	9266.662		-7.852	.000	-91314.849	-54202.507		
PPI	-86.805	369.769	-.087	-.235	.815	-827.255	653.645	.053	19.004
CPI	848.947	371.691	.850	2.284	.026	104.650	1593.245	.053	19.004

a. Dependent Variable: J202

Coefficient Correlations[a]

Model			CPI	PPI
1	Correlations	CPI	1.000	-.973
		PPI	-.973	1.000
	Covariances	CPI	138153.956	-133774.891
		PPI	-133774.891	136729.208

a. Dependent Variable: J202

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	PPI	CPI
1	1	2.999	1.000	.00	.00	.00
	2	.001	58.044	1.00	.01	.01
	3	3.607E-5	288.347	.00	.99	.99

a. Dependent Variable: J202

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	3455.513	13030.549	9056.833	3059.186	60
Residual	-4641.561	5957.332	-.00000000001634	2576.586	60
Std. Predicted Value	-1.831	1.299	.000	1.000	60
Std. Residual	-1.771	2.273	.000	.983	60

a. Dependent Variable: J202

J203

Correlations

		J203	PPI	CPI
Pearson Correlation	J203	1.000	.652	.610
	PPI	.652	1.000	.973
	CPI	.610	.973	1.000
Sig. (1-tailed)	J203	.	.000	.000
	PPI	.000	.	.000
	CPI	.000	.000	.
N	J203	60	60	60
	PPI	60	60	60
	CPI	60	60	60

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.661[a]	.437	.417	1889.65	.437	22.121	2	57	.000	.096

a. Predictors: (Constant), CPI, PPI
b. Dependent Variable: J203

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	157979436.694	2	78989718.347	22.121	.000[b]
	Residual	203534963.397	57	3570788.832		
	Total	361514400.091	59			

a. Dependent Variable: J203
b. Predictors: (Constant), CPI, PPI

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	-32246.674	6679.933		-4.827	.000	-45623.009	-18870.340		
PPI	680.194	266.550	1.106	2.552	.013	146.436	1213.952	.053	19.004
CPI	-287.970	267.936	-.466	-1.075	.287	-824.502	248.562	.053	19.004

a. Dependent Variable: J203

Coefficient Correlations[a]

Model			CPI	PPI
1	Correlations	CPI	1.000	-.973
		PPI	-.973	1.000
	Covariances	CPI	71789.488	-69513.977
		PPI	-69513.977	71049.140

a. Dependent Variable: J203

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	PPI	CPI
1	1	2.999	1.000	.00	.00	.00
	2	.001	58.044	1.00	.01	.01
	3	3.607E-5	288.347	.00	.99	.99

a. Dependent Variable: J203

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	6975.680	13131.621	10774.053	1636.342	60
Residual	-3277.363	5266.910	.00000000001680	1857.348	60
Std. Predicted Value	-2.321	1.441	.000	1.000	60
Std. Residual	-1.734	2.787	.000	.983	60

a. Dependent Variable: J203

© University of Pretoria

J204

Correlations

		J204	PPI	CPI
Pearson Correlation	J204	1.000	.897	.831
	PPI	.897	1.000	.937
	CPI	.831	.937	1.000
Sig. (1-tailed)	J204	.	.000	.000
	PPI	.000	.	.000
	CPI	.000	.000	.
N	J204	48	48	48
	PPI	48	48	48
	CPI	48	48	48

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.898[a]	.806	.797	337.94	.806	93.251	2	45	.000	.238

a. Predictors: (Constant), CPI, PPI
b. Dependent Variable: J204

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	21300327.277	2	10650163.638	93.251	.000[b]
	Residual	5139432.094	45	114209.602		
	Total	26439759.371	47			

a. Dependent Variable: J204
b. Predictors: (Constant), CPI, PPI

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	-34935.461	2825.636		-12.364	.000	-40626.583	-29244.338		
PPI	353.784	68.657	.967	5.153	.000	215.502	492.065	.123	8.158
CPI	-22.455	56.310	-.075	-.399	.692	-135.869	90.959	.123	8.158

a. Dependent Variable: J204

Coefficient Correlations[a]

Model			CPI	PPI
1	Correlations	CPI	1.000	-.937
		PPI	-.937	1.000
	Covariances	CPI	3170.787	-3621.333
		PPI	-3621.333	4713.729

a. Dependent Variable: J204

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	PPI	CPI
1	1	3.000	1.000	.00	.00	.00
	2	.000	103.086	.67	.01	.07
	3	2.506E-5	345.945	.32	.99	.93

a. Dependent Variable: J204

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	14.096	2978.092	1711.395	673.200	48
Residual	-505.561	894.639	-.000000000003505	330.680	48
Std. Predicted Value	-2.521	1.882	.000	1.000	48
Std. Residual	-1.496	2.647	.000	.978	48

a. Dependent Variable: J204

9.19. Hypothesis 4C: Inflation P2 (2006-2010)

a) Descriptive statistics

Statistics

		J200	J201	J202	J203	J204	CPI	PPI
N	Valid	60	60	60	60	60	60	60
	Missing	0	0	0	0	0	0	0
Mean		23274.9528	31218.8475	27238.7388	25685.8615	4395.4675	126.4950	131.7200
Median		24094.8150	30942.3500	27146.0100	26816.0100	4131.8300	128.3000	136.9500
Mode		16799.03[a]	22300.40[a]	19954.35[a]	18549.24[a]	2889.58[a]	134.80	120.40[a]
Std. Deviation		3571.08958	5437.91293	4609.92202	3880.42373	894.96698	8.47932	9.20779
Skewness		-.163	.315	.173	-.255	.509	-.164	-.556
Std. Error of Skewness		.309	.309	.309	.309	.309	.309	.309
Kurtosis		-1.029	-.725	-1.094	-1.158	-.580	-1.502	-1.231
Std. Error of Kurtosis		.608	.608	.608	.608	.608	.608	.608
Minimum		16799.03	22300.40	19954.35	18549.24	2889.58	113.10	114.20
Maximum		30536.33	43388.79	36589.26	32464.77	6121.27	138.00	142.00
Sum		1396497.17	1873130.85	1634324.33	1541151.69	263728.05	7589.70	7903.20

a. Multiple modes exist. The smallest value is shown

b) Correlation

Correlations

		J200	J201	J202	J203	J204	CPI	PPI
J200	Pearson Correlation	1	.733**	.865**	.995**	.664**	.273*	.305*
	Sig. (2-tailed)		.000	.000	.000	.000	.035	.018
	N	60	60	60	60	60	60	60
J201	Pearson Correlation	.733**	1	.797**	.796**	.435**	.495**	.420**
	Sig. (2-tailed)	.000		.000	.000	.001	.000	.001
	N	60	60	60	60	60	60	60
J202	Pearson Correlation	.865**	.797**	1	.889**	.852**	.098	.114
	Sig. (2-tailed)	.000	.000		.000	.000	.457	.386
	N	60	60	60	60	60	60	60
J203	Pearson Correlation	.995**	.796**	.889**	1	.661**	.309*	.327*
	Sig. (2-tailed)	.000	.000	.000		.000	.016	.011
	N	60	60	60	60	60	60	60
J204	Pearson Correlation	.664**	.435**	.852**	.661**	1	-.412**	-.366**
	Sig. (2-tailed)	.000	.001	.000	.000		.001	.004
	N	60	60	60	60	60	60	60
CPI	Pearson Correlation	.273*	.495**	.098	.309*	-.412**	1	.977**
	Sig. (2-tailed)	.035	.000	.457	.016	.001		.000
	N	60	60	60	60	60	60	60
PPI	Pearson Correlation	.305*	.420**	.114	.327*	-.366**	.977**	1
	Sig. (2-tailed)	.018	.001	.386	.011	.004	.000	
	N	60	60	60	60	60	60	60

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

c) Linear Regression

J200

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.273[a]	.075	.059	3464.54	.075	4.685	1	58	.035	.215

a. Predictors: (Constant), CPI
b. Dependent Variable: J200

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.305[a]	.093	.077	3430.09	.093	5.950	1	58	.018	.226

a. Predictors: (Constant), PPI
b. Dependent Variable: J200

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	56228738.651	1	56228738.651	4.685	.035[b]
	Residual	696179428.089	58	12003093.588		
	Total	752408166.740	59			

a. Dependent Variable: J200
b. Predictors: (Constant), CPI

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	70006383.006	1	70006383.006	5.950	.018[b]
	Residual	682401783.734	58	11765547.995		
	Total	752408166.740	59			

a. Dependent Variable: J200
b. Predictors: (Constant), PPI

Coefficients[a]

Model	Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.	95.0% Confidence Interval for B Lower Bound	95.0% Confidence Interval for B Upper Bound	Collinearity Statistics Tolerance	Collinearity Statistics VIF
1 (Constant)	8711.454	6743.580		1.292	.202	-4787.289	22210.196		
CPI	115.131	53.194	.273	2.164	.035	8.652	221.610	1.000	1.000

a. Dependent Variable: J200

Coefficients[a]

Model	Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.	95.0% Confidence Interval for B Lower Bound	95.0% Confidence Interval for B Upper Bound	Collinearity Statistics Tolerance	Collinearity Statistics VIF
1 (Constant)	7692.374	6403.501		1.201	.235	-5125.626	20510.375		
PPI	118.301	48.498	.305	2.439	.018	21.221	215.380	1.000	1.000

a. Dependent Variable: J200

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions (Constant)	Variance Proportions CPI
1	1	1.998	1.000	.00	.00
	2	.002	30.121	1.00	1.00

a. Dependent Variable: J200

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions (Constant)	Variance Proportions PPI
1	1	1.998	1.000	.00	.00
	2	.002	28.887	1.00	1.00

a. Dependent Variable: J200

J201

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.495[a]	.245	.232	4765.04	.245	18.839	1	58	.000	.135

a. Predictors: (Constant), CPI
b. Dependent Variable: J201

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.420[a]	.177	.163	4976.46	.177	12.449	1	58	.001	.134

a. Predictors: (Constant), PPI
b. Dependent Variable: J201

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	427755107.114	1	427755107.114	18.839	.000[b]
	Residual	1316927817.579	58	22705652.027		
	Total	1744682924.694	59			

a. Dependent Variable: J201
b. Predictors: (Constant), CPI

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	308302518.094	1	308302518.094	12.449	.001[b]
	Residual	1436380406.600	58	24765179.424		
	Total	1744682924.694	59			

a. Dependent Variable: J201
b. Predictors: (Constant), PPI

Coefficients[a]

	Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B		Collinearity Statistics	
Model	B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	-8949.519	9274.936		-.965	.339	-27515.320	9616.282		
CPI	317.549	73.161	.495	4.340	.000	171.101	463.997	1.000	1.000

a. Dependent Variable: J201

Coefficients[a]

	Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B		Collinearity Statistics	
Model	B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	-1482.002	9290.352		-.160	.874	-20078.662	17114.658		
PPI	248.260	70.362	.420	3.528	.001	107.415	389.106	1.000	1.000

a. Dependent Variable: J201

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	CPI
1	1	1.998	1.000	.00	.00
	2	.002	30.121	1.00	1.00

a. Dependent Variable: J201

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	PPI
1	1	1.998	1.000	.00	.00
	2	.002	28.887	1.00	1.00

a. Dependent Variable: J201

J202

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.098[a]	.010	-.008	4627.18	.010	.561	1	58	.457	.101

a. Predictors: (Constant), CPI
b. Dependent Variable: J202

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.114[a]	.013	-.004	4619.18	.013	.764	1	58	.386	.103

a. Predictors: (Constant), PPI
b. Dependent Variable: J202

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	12002295.824	1	12002295.824	.561	.457[b]
	Residual	1241829186.435	58	21410848.042		
	Total	1253831482.259	59			

a. Dependent Variable: J202
b. Predictors: (Constant), CPI

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	16294260.860	1	16294260.860	.764	.386[b]
	Residual	1237537221.399	58	21336848.645		
	Total	1253831482.259	59			

a. Dependent Variable: J202
b. Predictors: (Constant), PPI

Coefficients[a]

Model	Unstandardized Coefficients: B	Unstandardized Coefficients: Std. Error	Standardized Coefficients: Beta	t	Sig.	95.0% Confidence Interval for B: Lower Bound	95.0% Confidence Interval for B: Upper Bound	Collinearity Statistics: Tolerance	Collinearity Statistics: VIF
1 (Constant)	20510.231	9006.600		2.277	.026	2481.564	38538.899		
CPI	53.192	71.044	.098	.749	.457	-89.019	195.403	1.000	1.000

a. Dependent Variable: J202

Coefficients[a]

Model	Unstandardized Coefficients: B	Unstandardized Coefficients: Std. Error	Standardized Coefficients: Beta	t	Sig.	95.0% Confidence Interval for B: Lower Bound	95.0% Confidence Interval for B: Upper Bound	Collinearity Statistics: Tolerance	Collinearity Statistics: VIF
1 (Constant)	19720.990	8623.361		2.287	.026	2459.457	36982.522		
PPI	57.074	65.311	.114	.874	.386	-73.660	187.807	1.000	1.000

a. Dependent Variable: J202

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	Variance Proportions: CPI
1	1	1.998	1.000	.00	.00
	2	.002	30.121	1.00	1.00

a. Dependent Variable: J202

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	Variance Proportions: PPI
1	1	1.998	1.000	.00	.00
	2	.002	28.887	1.00	1.00

a. Dependent Variable: J202

J203

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.309[a]	.096	.080	3721.99	.096	6.130	1	58	.016	.204

a. Predictors: (Constant), CPI
b. Dependent Variable: J203

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.327[a]	.107	.092	3698.37	.107	6.952	1	58	.011	.214

a. Predictors: (Constant), PPI
b. Dependent Variable: J203

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	84914306.077	1	84914306.077	6.130	.016[b]
	Residual	803489306.728	58	13853263.909		
	Total	888403612.806	59			

a. Dependent Variable: J203
b. Predictors: (Constant), CPI

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	95082632.065	1	95082632.065	6.952	.011[b]
	Residual	793320980.740	58	13677947.944		
	Total	888403612.806	59			

a. Dependent Variable: J203
b. Predictors: (Constant), PPI

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	7788.995	7244.693		1.075	.287	-6712.833	22290.823		
CPI	141.483	57.146	.309	2.476	.016	27.092	255.874	1.000	1.000

a. Dependent Variable: J203

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	7525.642	6904.336		1.090	.280	-6294.888	21346.171		
PPI	137.870	52.291	.327	2.637	.011	33.198	242.542	1.000	1.000

a. Dependent Variable: J203

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	CPI
1	1	1.998	1.000	.00	.00
	2	.002	30.121	1.00	1.00

a. Dependent Variable: J203

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	PPI
1	1	1.998	1.000	.00	.00
	2	.002	28.887	1.00	1.00

a. Dependent Variable: J203

© University of Pretoria

J204

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.412[a]	.170	.156	822.30	.170	11.888	1	58	.001	.060

a. Predictors: (Constant), CPI
b. Dependent Variable: J204

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.366[a]	.134	.119	839.89	.134	8.991	1	58	.004	.055

a. Predictors: (Constant), PPI
b. Dependent Variable: J204

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	8038612.976	1	8038612.976	11.888	.001[b]
	Residual	39218375.126	58	676178.881		
	Total	47256988.102	59			

a. Dependent Variable: J204
b. Predictors: (Constant), CPI

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6342238.899	1	6342238.899	8.991	.004[b]
	Residual	40914749.203	58	705426.710		
	Total	47256988.102	59			

a. Dependent Variable: J204
b. Predictors: (Constant), PPI

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	9901.986	1600.570		6.187	.000	6698.097	13105.876		
CPI	-43.532	12.625	-.412	-3.448	.001	-68.804	-18.259	1.000	1.000

a. Dependent Variable: J204

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	9085.672	1567.969		5.795	.000	5947.042	12224.303		
PPI	-35.607	11.875	-.366	-2.998	.004	-59.378	-11.836	1.000	1.000

a. Dependent Variable: J204

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	CPI
1	1	1.998	1.000	.00	.00
	2	.002	30.121	1.00	1.00

a. Dependent Variable: J204

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	PPI
1	1	1.998	1.000	.00	.00
	2	.002	28.887	1.00	1.00

a. Dependent Variable: J204

d) Combined Analysis (CPI + PPI)

J200

Correlations

		J200	PPI	CPI
Pearson Correlation	J200	1.000	.305	.273
	PPI	.305	1.000	.977
	CPI	.273	.977	1.000
Sig. (1-tailed)	J200	.	.009	.017
	PPI	.009	.	.000
	CPI	.017	.000	.
N	J200	60	60	60
	PPI	60	60	60
	CPI	60	60	60

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.326[a]	.106	.075	3434.46	.106	3.394	2	57	.041	.243

a. Predictors: (Constant), CPI, PPI
b. Dependent Variable: J200

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	80061973.192	2	40030986.596	3.394	.041[b]
	Residual	672346193.548	57	11795547.255		
	Total	752408166.740	59			

a. Dependent Variable: J200
b. Predictors: (Constant), CPI, PPI

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	9515.847	6708.933		1.418	.162	-3918.559	22950.254		
PPI	323.772	227.775	.835	1.421	.161	-132.340	779.883	.045	22.002
CPI	-228.373	247.344	-.542	-.923	.360	-723.670	266.924	.045	22.002

a. Dependent Variable: J200

Coefficient Correlations[a]

Model			CPI	PPI
1	Correlations	CPI	1.000	-.977
		PPI	-.977	1.000
	Covariances	CPI	61178.875	-55043.518
		PPI	-55043.518	51881.512

a. Dependent Variable: J200

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	PPI	CPI
1	1	2.997	1.000	.00	.00	.00
	2	.003	31.443	.96	.01	.01
	3	.000	168.740	.04	.99	.99

a. Dependent Variable: J200

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	20661.535	24829.537	23274.952	1164.895	60
Residual	-7958.237	6116.714	-.0000000000079	3375.751	60
Std. Predicted Value	-2.243	1.335	.000	1.000	60
Std. Residual	-2.317	1.781	.000	.983	60

a. Dependent Variable: J200

J201

Correlations

		J201	PPI	CPI
Pearson Correlation	J201	1.000	.420	.495
	PPI	.420	1.000	.977
	CPI	.495	.977	1.000
Sig. (1-tailed)	J201	.	.000	.000
	PPI	.000	.	.000
	CPI	.000	.000	.
N	J201	60	60	60
	PPI	60	60	60
	CPI	60	60	60

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.578[a]	.334	.310	4516.30	.334	14.268	2	57	.000	.129

a. Predictors: (Constant), CPI, PPI
b. Dependent Variable: J201

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	582054405.079	2	291027202.540	14.268	.000[b]
	Residual	1162628519.615	57	20396991.572		
	Total	1744682924.694	59			

a. Dependent Variable: J201
b. Predictors: (Constant), CPI, PPI

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	-10996.243	8822.212		-1.246	.218	-28662.417	6669.931		
PPI	-823.814	299.523	-1.395	-2.750	.008	-1423.599	-224.029	.045	22.002
CPI	1191.572	325.256	1.858	3.663	.001	540.259	1842.885	.045	22.002

a. Dependent Variable: J201

Coefficient Correlations[a]

Model			CPI	PPI
1	Correlations	CPI	1.000	-.977
		PPI	-.977	1.000
	Covariances	CPI	105791.192	-95181.863
		PPI	-95181.863	89714.089

a. Dependent Variable: J201

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	PPI	CPI
1	1	2.997	1.000	.00	.00	.00
	2	.003	31.443	.96	.01	.01
	3	.000	168.740	.04	.99	.99

a. Dependent Variable: J201

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	27357.705	37509.457	31218.847	3140.912	60
Residual	-7229.454	8844.856	.0000000000452	4439.095	60
Std. Predicted Value	-1.229	2.003	.000	1.000	60
Std. Residual	-1.601	1.958	.000	.983	60

a. Dependent Variable: J201

J202

Correlations

		J202	PPI	CPI
Pearson Correlation	J202	1.000	.114	.098
	PPI	.114	1.000	.977
	CPI	.098	.977	1.000
Sig. (1-tailed)	J202	.	.193	.229
	PPI	.193	.	.000
	CPI	.229	.000	.
N	J202	60	60	60
	PPI	60	60	60
	CPI	60	60	60

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.130[a]	.017	-.017	4649.99	.017	.494	2	57	.613	.109

a. Predictors: (Constant), CPI, PPI
b. Dependent Variable: J202

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	21350401.848	2	10675200.924	.494	.613[b]
	Residual	1232481080.411	57	21622475.095		
	Total	1253831482.259	59			

a. Dependent Variable: J202
b. Predictors: (Constant), CPI, PPI

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	21014.009	9083.372		2.313	.024	2824.870	39203.149		
PPI	202.773	308.390	.405	.658	.513	-414.767	820.312	.045	22.002
CPI	-161.939	334.884	-.298	-.484	.631	-832.533	508.655	.045	22.002

a. Dependent Variable: J202

Coefficient Correlations[a]

Model			CPI	PPI
1	Correlations	CPI	1.000	-.977
		PPI	-.977	1.000
	Covariances	CPI	112147.294	-100900.540
		PPI	-100900.540	95104.253

a. Dependent Variable: J202

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	PPI	CPI
1	1	2.997	1.000	.00	.00	.00
	2	.003	31.443	.96	.01	.01
	3	.000	168.740	.04	.99	.99

a. Dependent Variable: J202

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	25855.335	28159.296	27238.738	601.557	60
Residual	-7112.273	9539.277	-.0000000000085	4570.504	60
Std. Predicted Value	-2.300	1.530	.000	1.000	60
Std. Residual	-1.530	2.051	.000	.983	60

a. Dependent Variable: J202

© University of Pretoria

J203

Correlations

		J203	PPI	CPI
Pearson Correlation	J203	1.000	.327	.309
	PPI	.327	1.000	.977
	CPI	.309	.977	1.000
Sig. (1-tailed)	J203	.	.005	.008
	PPI	.005	.	.000
	CPI	.008	.000	.
N	J203	60	60	60
	PPI	60	60	60
	CPI	60	60	60

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.331[a]	.109	.078	3725.63	.109	3.502	2	57	.037	.221

a. Predictors: (Constant), CPI, PPI
b. Dependent Variable: J203

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	97223857.911	2	48611928.955	3.502	.037[b]
	Residual	791179754.895	57	13880346.577		
	Total	888403612.806	59			

a. Dependent Variable: J203
b. Predictors: (Constant), CPI, PPI

Coefficients[a]

Model	Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sig.	95.0% Confidence Interval for B: Lower Bound	Upper Bound	Collinearity Statistics: Tolerance	VIF
1 (Constant)	8367.089	7277.707		1.150	.255	-6206.268	22940.446		
PPI	232.685	247.086	.552	.942	.350	-262.095	727.465	.045	22.002
CPI	-105.384	268.313	-.230	-.393	.696	-642.671	431.904	.045	22.002

a. Dependent Variable: J203

Coefficient Correlations[a]

Model			CPI	PPI
1	Correlations	CPI	1.000	-.977
		PPI	-.977	1.000
	Covariances	CPI	71991.911	-64772.162
		PPI	-64772.162	61051.290

a. Dependent Variable: J203

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	PPI	CPI
1	1	2.997	1.000	.00	.00	.00
	2	.003	31.443	.96	.01	.01
	3	.000	168.740	.04	.99	.99

a. Dependent Variable: J203

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	23020.833	26967.865	25685.861	1283.690	60
Residual	-8401.931	5944.231	-.0000000000025	3661.942	60
Std. Predicted Value	-2.076	.999	.000	1.000	60
Std. Residual	-2.255	1.595	.000	.983	60

a. Dependent Variable: J203

J204

Correlations

		J204	PPI	CPI
Pearson Correlation	J204	1.000	-.366	-.412
	PPI	-.366	1.000	.977
	CPI	-.412	.977	1.000
Sig. (1-tailed)	J204	.	.002	.001
	PPI	.002	.	.000
	CPI	.001	.000	.
N	J204	60	60	60
	PPI	60	60	60
	CPI	60	60	60

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.447[a]	.200	.172	814.61	.200	7.107	2	57	.002	.075

a. Predictors: (Constant), CPI, PPI

b. Dependent Variable: J204

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	9432298.582	2	4716149.291	7.107	.002[b]
	Residual	37824689.520	57	663591.044		
	Total	47256988.102	59			

a. Dependent Variable: J204

b. Predictors: (Constant), CPI, PPI

Coefficients[a]

Model	Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.	95.0% Confidence Interval for B Lower Bound	95.0% Confidence Interval for B Upper Bound	Collinearity Statistics Tolerance	Collinearity Statistics VIF
1 (Constant)	10096.504	1591.273		6.345	.000	6910.035	13282.973		
PPI	78.294	54.025	.806	1.449	.153	-29.890	186.478	.045	22.002
CPI	-126.598	58.667	-1.199	-2.158	.035	-244.076	-9.119	.045	22.002

a. Dependent Variable: J204

Coefficient Correlations[a]

Model			CPI	PPI
1	Correlations	CPI	1.000	-.977
		PPI	-.977	1.000
	Covariances	CPI	3441.786	-3096.625
		PPI	-3096.625	2918.738

a. Dependent Variable: J204

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	PPI	CPI
1	1	2.997	1.000	.00	.00	.00
	2	.003	31.443	.96	.01	.01
	3	.000	168.740	.04	.99	.99

a. Dependent Variable: J204

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	3662.693	4864.305	4395.467	399.836	60
Residual	-1406.764	1478.655	-.00000000000211	800.684	60
Std. Predicted Value	-1.833	1.173	.000	1.000	60
Std. Residual	-1.727	1.815	.000	.983	60

a. Dependent Variable: J204

© University of Pretoria

9.20. Hypothesis 4D: Inflation P3 (2011-2015)

a) Descriptive statistics

Statistics

		J200	J201	J202	J203	J204	CPI	PPI
N	Valid	60	60	60	60	60	60	60
	Missing	0	0	0	0	0	0	0
Mean		37417.0595	56311.7027	45430.3780	41952.9464	5876.6311	152.4450	158.6700
Median		36801.7600	55876.4000	44986.7350	41294.7450	5922.0750	152.2500	158.4500
Mode		26200.73[a]	40178.84[a]	30712.37[a]	29425.05[a]	4433.58[a]	159.80[a]	152.20[a]
Std. Deviation		7268.54588	10452.87471	10306.03643	8101.51441	820.39498	8.19153	9.19079
Skewness		.011	.045	-.002	.003	-.400	.023	-.082
Std. Error of Skewness		.309	.309	.309	.309	.309	.309	.309
Kurtosis		-1.581	-1.070	-1.508	-1.548	-1.183	-1.252	-1.267
Std. Error of Kurtosis		.608	.608	.608	.608	.608	.608	.608
Minimum		26200.73	40178.84	30712.37	29425.05	4433.58	138.40	141.90
Maximum		48965.36	76264.92	61125.49	55188.34	6947.06	165.60	173.00
Sum		2245023.57	3378702.16	2725822.68	2517176.79	352597.87	9146.70	9520.20

a. Multiple modes exist. The smallest value is shown

b) Correlation

Correlations

		J200	J201	J202	J203	J204	CPI	PPI
J200	Pearson Correlation	1	.962**	.984**	.999**	.952**	.965**	.968**
	Sig. (2-tailed)		.000	.000	.000	.000	.000	.000
	N	60	60	60	60	60	60	60
J201	Pearson Correlation	.962**	1	.984**	.972**	.964**	.951**	.950**
	Sig. (2-tailed)	.000		.000	.000	.000	.000	.000
	N	60	60	60	60	60	60	60
J202	Pearson Correlation	.984**	.984**	1	.989**	.961**	.973**	.971**
	Sig. (2-tailed)	.000	.000		.000	.000	.000	.000
	N	60	60	60	60	60	60	60
J203	Pearson Correlation	.999**	.972**	.989**	1	.958**	.968**	.970**
	Sig. (2-tailed)	.000	.000	.000		.000	.000	.000
	N	60	60	60	60	60	60	60
J204	Pearson Correlation	.952**	.964**	.961**	.958**	1	.936**	.946**
	Sig. (2-tailed)	.000	.000	.000	.000		.000	.000
	N	60	60	60	60	60	60	60
CPI	Pearson Correlation	.965**	.951**	.973**	.968**	.936**	1	.997**
	Sig. (2-tailed)	.000	.000	.000	.000	.000		.000
	N	60	60	60	60	60	60	60
PPI	Pearson Correlation	.968**	.950**	.971**	.970**	.946**	.997**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	
	N	60	60	60	60	60	60	60

**. Correlation is significant at the 0.01 level (2-tailed).

© University of Pretoria

c) Linear Regression

J200

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.965[a]	.931	.930	1928.43	.931	780.177	1	58	.000	.623

a. Predictors: (Constant), CPI
b. Dependent Variable: J200

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.968[a]	.936	.935	1852.58	.936	850.215	1	58	.000	.663

a. Predictors: (Constant), PPI
b. Dependent Variable: J200

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2901379093.753	1	2901379093.753	780.177	.000[b]
	Residual	215694698.083	58	3718874.105		
	Total	3117073791.836	59			

a. Dependent Variable: J200
b. Predictors: (Constant), CPI

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2918012646.844	1	2918012646.844	850.215	.000[b]
	Residual	199061144.992	58	3432088.707		
	Total	3117073791.836	59			

a. Dependent Variable: J200
b. Predictors: (Constant), PPI

Coefficients[a]

Model	Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.	95.0% Confidence Interval for B Lower Bound	95.0% Confidence Interval for B Upper Bound	Collinearity Statistics Tolerance	Collinearity Statistics VIF
1 (Constant)	-93087.114	4678.898		-19.895	.000	-102452.945	-83721.282		
CPI	856.074	30.649	.965	27.932	.000	794.723	917.424	1.000	1.000

a. Dependent Variable: J200

Coefficients[a]

Model	Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.	95.0% Confidence Interval for B Lower Bound	95.0% Confidence Interval for B Upper Bound	Collinearity Statistics Tolerance	Collinearity Statistics VIF
1 (Constant)	-83994.374	4170.715		-20.139	.000	-92342.966	-75645.781		
PPI	765.182	26.242	.968	29.158	.000	712.653	817.712	1.000	1.000

a. Dependent Variable: J200

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions (Constant)	Variance Proportions CPI
1	1	1.999	1.000	.00	.00
	2	.001	37.561	1.00	1.00

a. Dependent Variable: J200

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions (Constant)	Variance Proportions PPI
1	1	1.998	1.000	.00	.00
	2	.002	34.848	1.00	1.00

a. Dependent Variable: J200

J201

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.951[a]	.905	.904	3246.60	.905	553.597	1	58	.000	.347

a. Predictors: (Constant), CPI
b. Dependent Variable: J201

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.950[a]	.902	.900	3303.37	.902	532.756	1	58	.000	.364

a. Predictors: (Constant), PPI
b. Dependent Variable: J201

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5835147761.800	1	5835147761.800	553.597	.000[b]
	Residual	611345031.295	58	10540431.574		
	Total	6446492793.096	59			

a. Dependent Variable: J201
b. Predictors: (Constant), CPI

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5813580724.270	1	5813580724.270	532.756	.000[b]
	Residual	632912068.826	58	10912277.049		
	Total	6446492793.096	59			

a. Dependent Variable: J201
b. Predictors: (Constant), PPI

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	-128763.439	7877.112		-16.347	.000	-144531.192	-112995.686		
CPI	1214.045	51.599	.951	23.529	.000	1110.759	1317.331	1.000	1.000

a. Dependent Variable: J201

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	-115059.504	7436.849		-15.472	.000	-129945.973	-100173.034		
PPI	1080.048	46.793	.950	23.082	.000	986.382	1173.714	1.000	1.000

a. Dependent Variable: J201

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	CPI
1	1	1.999	1.000	.00	.00
	2	.001	37.561	1.00	1.00

a. Dependent Variable: J201

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	PPI
1	1	1.998	1.000	.00	.00
	2	.002	34.848	1.00	1.00

a. Dependent Variable: J201

J202

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.973[a]	.946	.945	2419.18	.946	1012.775	1	58	.000	.310

a. Predictors: (Constant), CPI
b. Dependent Variable: J202

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.971[a]	.943	.942	2480.20	.943	960.735	1	58	.000	.314

a. Predictors: (Constant), PPI
b. Dependent Variable: J202

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5927207140.917	1	5927207140.917	1012.775	.000[b]
	Residual	339441689.054	58	5852442.915		
	Total	6266648829.970	59			

a. Dependent Variable: J202
b. Predictors: (Constant), CPI

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5909867426.567	1	5909867426.567	960.735	.000[b]
	Residual	356781403.403	58	6151403.507		
	Total	6266648829.970	59			

a. Dependent Variable: J202
b. Predictors: (Constant), PPI

Coefficients[a]

Model	Unstandardized Coefficients: B	Std. Error	Standardized Coefficients: Beta	t	Sig.	95.0% Confidence Interval for B: Lower Bound	Upper Bound	Collinearity Statistics: Tolerance	VIF
1 (Constant)	-141098.988	5869.572		-24.039	.000	-152848.212	-129349.764		
CPI	1223.585	38.448	.973	31.824	.000	1146.622	1300.547	1.000	1.000

a. Dependent Variable: J202

Coefficients[a]

Model	Unstandardized Coefficients: B	Std. Error	Standardized Coefficients: Beta	t	Sig.	95.0% Confidence Interval for B: Lower Bound	Upper Bound	Collinearity Statistics: Tolerance	VIF
1 (Constant)	-127354.157	5583.652		-22.808	.000	-138531.052	-116177.263		
PPI	1088.955	35.132	.971	30.996	.000	1018.630	1159.281	1.000	1.000

a. Dependent Variable: J202

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	CPI
1	1	1.999	1.000	.00	.00
	2	.001	37.561	1.00	1.00

a. Dependent Variable: J202

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	PPI
1	1	1.998	1.000	.00	.00
	2	.002	34.848	1.00	1.00

a. Dependent Variable: J202

© University of Pretoria

J203

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.968[a]	.937	.936	2048.66	.937	864.666	1	58	.000	.602

a. Predictors: (Constant), CPI
b. Dependent Variable: J203

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.970[a]	.941	.940	1984.36	.941	925.429	1	58	.000	.638

a. Predictors: (Constant), PPI
b. Dependent Variable: J203

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3629011148.054	1	3629011148.054	864.666	.000[b]
	Residual	243426459.396	58	4197007.921		
	Total	3872437607.449	59			

a. Dependent Variable: J203
b. Predictors: (Constant), CPI

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3644051634.365	1	3644051634.365	925.429	.000[b]
	Residual	228385973.084	58	3937689.191		
	Total	3872437607.449	59			

a. Dependent Variable: J203
b. Predictors: (Constant), PPI

Coefficients[a]

Model	Unstandardized Coefficients: B	Std. Error	Standardized Coefficients: Beta	t	Sig.	95.0% Confidence Interval for B: Lower Bound	Upper Bound	Collinearity Statistics: Tolerance	VIF
1 (Constant)	-104001.158	4970.587		-20.923	.000	-113950.870	-94051.446		
CPI	957.421	32.560	.968	29.405	.000	892.246	1022.596	1.000	1.000

a. Dependent Variable: J203

Coefficients[a]

Model	Unstandardized Coefficients: B	Std. Error	Standardized Coefficients: Beta	t	Sig.	95.0% Confidence Interval for B: Lower Bound	Upper Bound	Collinearity Statistics: Tolerance	VIF
1 (Constant)	-93724.687	4467.370		-20.980	.000	-102667.101	-84782.274		
PPI	855.093	28.109	.970	30.421	.000	798.827	911.359	1.000	1.000

a. Dependent Variable: J203

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	CPI
1	1	1.999	1.000	.00	.00
	2	.001	37.561	1.00	1.00

a. Dependent Variable: J203

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	PPI
1	1	1.998	1.000	.00	.00
	2	.002	34.848	1.00	1.00

a. Dependent Variable: J203

J204

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.936[a]	.877	.875	290.24	.877	413.389	1	58	.000	.195

a. Predictors: (Constant), CPI
b. Dependent Variable: J204

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.946[a]	.894	.893	268.76	.894	491.753	1	58	.000	.243

a. Predictors: (Constant), PPI
b. Dependent Variable: J204

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	34823904.589	1	34823904.589	413.389	.000[b]
	Residual	4885922.942	58	84240.051		
	Total	39709827.531	59			

a. Dependent Variable: J204
b. Predictors: (Constant), CPI

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	35520366.320	1	35520366.320	491.753	.000[b]
	Residual	4189461.211	58	72232.090		
	Total	39709827.531	59			

a. Dependent Variable: J204
b. Predictors: (Constant), PPI

Coefficients[a]

Model	Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.	95.0% Confidence Interval for B Lower Bound	95.0% Confidence Interval for B Upper Bound	Collinearity Statistics Tolerance	Collinearity Statistics VIF
1 (Constant)	-8420.895	704.202		-11.958	.000	-9830.508	-7011.282		
CPI	93.788	4.613	.936	20.332	.000	84.554	103.022	1.000	1.000

a. Dependent Variable: J204

Coefficients[a]

Model	Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.	95.0% Confidence Interval for B Lower Bound	95.0% Confidence Interval for B Upper Bound	Collinearity Statistics Tolerance	Collinearity Statistics VIF
1 (Constant)	-7518.739	605.057		-12.426	.000	-8729.892	-6307.586		
PPI	84.423	3.807	.946	22.176	.000	76.802	92.043	1.000	1.000

a. Dependent Variable: J204

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions (Constant)	Variance Proportions CPI
1	1	1.999	1.000	.00	.00
	2	.001	37.561	1.00	1.00

a. Dependent Variable: J204

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions (Constant)	Variance Proportions PPI
1	1	1.998	1.000	.00	.00
	2	.002	34.848	1.00	1.00

a. Dependent Variable: J204

d) Combined Analysis (CPI + PPI)

J200

Correlations

		J200	PPI	CPI
Pearson Correlation	J200	1.000	.968	.965
	PPI	.968	1.000	.997
	CPI	.965	.997	1.000
Sig. (1-tailed)	J200	.	.000	.000
	PPI	.000	.	.000
	CPI	.000	.000	.
N	J200	60	60	60
	PPI	60	60	60
	CPI	60	60	60

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.968[a]	.936	.934	1868.51	.936	417.898	2	57	.000	.664

a. Predictors: (Constant), CPI, PPI
b. Dependent Variable: J200

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2918066249.198	2	1459033124.599	417.898	.000[b]
	Residual	199007542.638	57	3491360.397		
	Total	3117073791.836	59			

a. Dependent Variable: J200
b. Predictors: (Constant), CPI, PPI

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	-83407.126	6336.999		-13.162	.000	-96096.746	-70717.505		
PPI	811.031	370.974	1.026	2.186	.033	68.168	1553.894	.005	196.449
CPI	-51.573	416.228	-.058	-.124	.902	-885.056	781.909	.005	196.449

a. Dependent Variable: J200

Coefficient Correlations[a]

Model			CPI	PPI
1	Correlations	CPI	1.000	-.997
		PPI	-.997	1.000
	Covariances	CPI	173245.887	-154016.394
		PPI	-154016.394	137621.833

a. Dependent Variable: J200

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	PPI	CPI
1	1	2.998	1.000	.00	.00	.00
	2	.002	38.293	.47	.00	.00
	3	7.732E-6	622.669	.53	1.00	1.00

a. Dependent Variable: J200

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	24540.417	48360.687	37417.059	7032.691	60
Residual	-4082.868	4106.982	.0000000000165	1836.575	60
Std. Predicted Value	-1.831	1.556	.000	1.000	60
Std. Residual	-2.185	2.198	.000	.983	60

a. Dependent Variable: J200

J201

Correlations

		J201	PPI	CPI
Pearson Correlation	J201	1.000	.950	.951
	PPI	.950	1.000	.997
	CPI	.951	.997	1.000
Sig. (1-tailed)	J201	.	.000	.000
	PPI	.000	.	.000
	CPI	.000	.000	.
N	J201	60	60	60
	PPI	60	60	60
	CPI	60	60	60

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.951[a]	.905	.902	3273.45	.905	272.301	2	57	.000	.350

a. Predictors: (Constant), CPI, PPI
b. Dependent Variable: J201

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5835707361.685	2	2917853680.842	272.301	.000[b]
	Residual	610785431.411	57	10715533.884		
	Total	6446492793.096	59			

a. Dependent Variable: J201
b. Predictors: (Constant), CPI, PPI

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	-126990.791	11101.794		-11.439	.000	-149221.751	-104759.831		
PPI	148.520	649.910	.131	.229	.820	-1152.902	1449.942	.005	196.449
CPI	1047.832	729.191	.821	1.437	.156	-412.346	2508.011	.005	196.449

a. Dependent Variable: J201

Coefficient Correlations[a]

Model			CPI	PPI
1	Correlations	CPI	1.000	-.997
		PPI	-.997	1.000
	Covariances	CPI	531718.861	-472700.524
		PPI	-472700.524	422383.038

a. Dependent Variable: J201

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	PPI	CPI
1	1	2.998	1.000	.00	.00	.00
	2	.002	38.293	.47	.00	.00
	3	7.732E-6	622.669	.53	1.00	1.00

a. Dependent Variable: J201

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	39104.214	72224.234	56311.702	9945.365	60
Residual	-8692.625	9282.413	-.0000000000494	3217.498	60
Std. Predicted Value	-1.730	1.600	.000	1.000	60
Std. Residual	-2.655	2.836	.000	.983	60

a. Dependent Variable: J201

J202

Correlations

		J202	PPI	CPI
Pearson Correlation	J202	1.000	.971	.973
	PPI	.971	1.000	.997
	CPI	.973	.997	1.000
Sig. (1-tailed)	J202	.	.000	.000
	PPI	.000	.	.000
	CPI	.000	.000	.
N	J202	60	60	60
	PPI	60	60	60
	CPI	60	60	60

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.973[a]	.946	.944	2435.38	.946	499.789	2	57	.000	.310

a. Predictors: (Constant), CPI, PPI
b. Dependent Variable: J202

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5928576988.644	2	2964288494.322	499.789	.000[b]
	Residual	338071841.326	57	5931084.936		
	Total	6266648829.970	59			

a. Dependent Variable: J202
b. Predictors: (Constant), CPI, PPI

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	-138325.541	8259.492		-16.747	.000	-154864.889	-121786.194		
PPI	232.371	483.519	.207	.481	.633	-735.858	1200.601	.005	196.449
CPI	963.532	542.502	.766	1.776	.081	-122.810	2049.873	.005	196.449

a. Dependent Variable: J202

Coefficient Correlations[a]

Model			CPI	PPI
1	Correlations	CPI	1.000	-.997
		PPI	-.997	1.000
	Covariances	CPI	294308.222	-261641.369
		PPI	-261641.369	233790.467

a. Dependent Variable: J202

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	PPI	CPI
1	1	2.998	1.000	.00	.00	.00
	2	.002	38.293	.47	.00	.00
	3	7.732E-6	622.669	.53	1.00	1.00

a. Dependent Variable: J202

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	28000.710	61435.515	45430.377	10024.188	60
Residual	-8493.518	5920.527	-.0000000000240	2393.748	60
Std. Predicted Value	-1.739	1.597	.000	1.000	60
Std. Residual	-3.488	2.431	.000	.983	60

a. Dependent Variable: J202

J203

Correlations

		J203	PPI	CPI
Pearson Correlation	J203	1.000	.970	.968
	PPI	.970	1.000	.997
	CPI	.968	.997	1.000
Sig. (1-tailed)	J203	.	.000	.000
	PPI	.000	.	.000
	CPI	.000	.000	.
N	J203	60	60	60
	PPI	60	60	60
	CPI	60	60	60

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.970[a]	.941	.939	2000.96	.941	455.090	2	57	.000	.636

a. Predictors: (Constant), CPI, PPI
b. Dependent Variable: J203

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3644218360.427	2	1822109180.214	455.090	.000[b]
	Residual	228219247.022	57	4003846.439		
	Total	3872437607.449	59			

a. Dependent Variable: J203
b. Predictors: (Constant), CPI, PPI

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	-94760.381	6786.174		-13.964	.000	-108349.460	-81171.303		
PPI	774.232	397.269	.878	1.949	.056	-21.286	1569.750	.005	196.449
CPI	90.957	445.731	.092	.204	.839	-801.604	983.518	.005	196.449

a. Dependent Variable: J203

Coefficient Correlations[a]

Model			CPI	PPI
1	Correlations	CPI	1.000	-.997
		PPI	-.997	1.000
	Covariances	CPI	198676.117	-176623.986
		PPI	-176623.986	157822.918

a. Dependent Variable: J203

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	PPI	CPI
1	1	2.998	1.000	.00	.00	.00
	2	.002	38.293	.47	.00	.00
	3	7.732E-6	622.669	.53	1.00	1.00

a. Dependent Variable: J203

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	27691.585	54244.230	41952.946	7859.161	60
Residual	-4427.706	4567.808	.0000000000155	1966.754	60
Std. Predicted Value	-1.815	1.564	.000	1.000	60
Std. Residual	-2.213	2.283	.000	.983	60

a. Dependent Variable: J203

J204

Correlations

		J204	PPI	CPI
Pearson Correlation	J204	1.000	.946	.936
	PPI	.946	1.000	.997
	CPI	.936	.997	1.000
Sig. (1-tailed)	J204	.	.000	.000
	PPI	.000	.	.000
	CPI	.000	.000	.
N	J204	60	60	60
	PPI	60	60	60
	CPI	60	60	60

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.951[a]	.904	.900	258.78	.904	267.980	2	57	.000	.351

a. Predictors: (Constant), CPI, PPI
b. Dependent Variable: J204

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	35892607.867	2	17946303.934	267.980	.000[b]
	Residual	3817219.664	57	66968.766		
	Total	39709827.531	59			

a. Dependent Variable: J204
b. Predictors: (Constant), CPI, PPI

Coefficients[a]

Model	Unstandardized Coefficients: B	Std. Error	Standardized Coefficients: Beta	t	Sig.	95.0% Confidence Interval for B: Lower Bound	Upper Bound	Collinearity Statistics: Tolerance	VIF
1 (Constant)	-5971.199	877.652		-6.804	.000	-7728.667	-4213.730		
PPI	205.246	51.379	2.299	3.995	.000	102.362	308.130	.005	196.449
CPI	-135.908	57.646	-1.357	-2.358	.022	-251.343	-20.474	.005	196.449

a. Dependent Variable: J204

Coefficient Correlations[a]

Model			CPI	PPI
1	Correlations	CPI	1.000	-.997
		PPI	-.997	1.000
	Covariances	CPI	3323.078	-2954.232
		PPI	-2954.232	2639.763

a. Dependent Variable: J204

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	PPI	CPI
1	1	2.998	1.000	.00	.00	.00
	2	.002	38.293	.47	.00	.00
	3	7.732E-6	622.669	.53	1.00	1.00

a. Dependent Variable: J204

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	4343.488	7029.931	5876.631	779.967	60
Residual	-678.710	489.898	.00000000000993	254.359	60
Std. Predicted Value	-1.966	1.479	.000	1.000	60
Std. Residual	-2.623	1.893	.000	.983	60

a. Dependent Variable: J204

9.21. Hypothesis 5A: Unemployment Rate (2001-2015)

a) Descriptive statistics

Statistics

		J200	J201	J202	J203	J204	Unemployment rate	Employed / population ratio (Absorption)	Labour force participation rate
N	Valid	60	60	60	60	57	60	32	32
	Missing	0	0	0	0	3	0	28	28
Mean		23720.10	33162.49	27362.81	26301.45	4135.85	24.720	43.116	57.084
Median		24222.83	31622.65	26976.42	27048.85	4379.26	24.600	42.650	56.800
Mode		7264.63[a]	6965.04[a]	5188.33[a]	7793.16[a]	896.49[a]	24.5[a]	42.0	55.9
Std. Deviation		1.22E+004	1.97E+004	1.63E+004	1.38E+004	1.90E+003	1.8340	1.3926	1.3303
Skewness		.365	.367	.335	.361	-.322	.436	1.075	.497
Std. Error of Skewness		.309	.309	.309	.309	.316	.309	.414	.414
Kurtosis		-.894	-.995	-.839	-.911	-1.088	.396	.074	-.961
Std. Error of Kurtosis		.608	.608	.608	.608	.623	.608	.809	.809
Minimum		7264.63	6965.04	5188.33	7793.16	896.49	21.0	41.3	55.0
Maximum		47259.66	73818.48	59293.13	52856.39	6825.23	29.3	46.2	59.6
Sum		1.42E+006	1.99E+006	1.64E+006	1.58E+006	2.36E+005	1483.2	1379.7	1826.7

a. Multiple modes exist. The smallest value is shown

b) Univariate Analysis of Variance

J200-UNEMPLOYMENT RATE (UR)

Tests of Between-Subjects Effects

Dependent Variable: J200

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	463707412.612[a]	1	463707412.612	3.230	.078	.053	3.230	.424
Intercept	1221992129.185	1	1221992129.185	8.511	.005	.128	8.511	.818
UR	463707412.612	1	463707412.612	3.230	.078	.053	3.230	.424
Error	8327881027.011	58	143584155.638					
Total	42550167781.945	60						
Corrected Total	8791588439.623	59						

a. R Squared = .053 (Adjusted R Squared = .036)
b. Computed using alpha = .05

Parameter Estimates

Dependent Variable: J200

Parameter	B	Std. Error	t	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound	Partial Eta Squared	Noncent. Parameter	Observed Power[a]
Intercept	61506.745	21083.456	2.917	.005	19303.623	103709.867	.128	2.917	.818
UR	-1528.586	850.592	-1.797	.078	-3231.230	174.058	.053	1.797	.424

a. Computed using alpha = .05

J200-ABSORPTION RATE (AR)

Tests of Between-Subjects Effects

Dependent Variable: J200

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	71264887.195[a]	1	71264887.195	.886	.354	.029	.886	.149
Intercept	203378432.314	1	203378432.314	2.529	.122	.078	2.529	.337
AR	71264887.195	1	71264887.195	.886	.354	.029	.886	.149
Error	2412352086.158	30	80411736.205					
Total	36072072606.896	32						
Corrected Total	2483616973.353	31						

a. R Squared = .029 (Adjusted R Squared = -.004)
b. Computed using alpha = .05

© University of Pretoria

Parameter Estimates

Dependent Variable: J200

Parameter	B	Std. Error	t	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound	Partial Eta Squared	Noncent. Parameter	Observed Power[a]
Intercept	79339.435	49888.032	1.590	.122	-22545.519	181224.389	.078	1.590	.337
AR	-1088.731	1156.491	-.941	.354	-3450.601	1273.140	.029	.941	.149

a. Computed using alpha = .05

J200-LABOUR FORCE PARTICIPATION RATE (LFPR)

Tests of Between-Subjects Effects

Dependent Variable: J200

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	32162465.456[a]	1	32162465.456	.394	.535	.013	.394	.093
Intercept	2152195.970	1	2152195.970	.026	.872	.001	.026	.053
LFPR	32162465.456	1	32162465.456	.394	.535	.013	.394	.093
Error	2451454507.897	30	81715150.263					
Total	36072072606.896	32						
Corrected Total	2483616973.353	31						

a. R Squared = .013 (Adjusted R Squared = -.020)
b. Computed using alpha = .05

Parameter Estimates

Dependent Variable: J200

Parameter	B	Std. Error	t	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound	Partial Eta Squared	Noncent. Parameter	Observed Power[a]
Intercept	-11309.302	69686.106	-.162	.872	-153627.318	131008.713	.001	.162	.053
LFPR	765.664	1220.435	.627	.535	-1726.797	3258.125	.013	.627	.093

a. Computed using alpha = .05

J200-COMBINED (UR + AR + LFPR)

Tests of Between-Subjects Effects

Dependent Variable: J200

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	1385358446.365[a]	3	461786148.788	11.773	.000	.558	35.320	.999
Intercept	94502552.257	1	94502552.257	2.409	.132	.079	2.409	.323
UR	143790991.067	1	143790991.067	3.666	.066	.116	3.666	.456
AR	207572820.452	1	207572820.452	5.292	.029	.159	5.292	.603
LFPR	233051603.251	1	233051603.251	5.942	.021	.175	5.942	.653
Error	1098258526.988	28	39223518.821					
Total	36072072606.896	32						
Corrected Total	2483616973.353	31						

a. R Squared = .558 (Adjusted R Squared = .510)
b. Computed using alpha = .05

Parameter Estimates

Dependent Variable: J200

Parameter	B	Std. Error	t	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound	Partial Eta Squared	Noncent. Parameter	Observed Power[a]
Intercept	656049.451	422657.017	1.552	.132	-209724.202	1521823.104	.079	1.552	.323
UR	-32627.447	17040.822	-1.915	.066	-67533.988	2279.094	.116	1.915	.456
AR	-67274.678	29244.194	-2.300	.029	-127178.694	-7370.662	.159	2.300	.603
LFPR	53887.023	22107.082	2.438	.021	8602.718	99171.327	.175	2.438	.653

a. Computed using alpha = .05

J201-UNEMPLOYMENT RATE (UR)

Tests of Between-Subjects Effects

Dependent Variable: J201

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	730693352.918[a]	1	730693352.918	1.917	.171	.032	1.917	.275
Intercept	2098207082.221	1	2098207082.221	5.505	.022	.087	5.505	.636
UR	730693352.918	1	730693352.918	1.917	.171	.032	1.917	.275
Error	22107543609.199	58	381164544.986					
Total	88823289235.821	60						
Corrected Total	22838236962.117	59						

a. R Squared = .032 (Adjusted R Squared = .015)

b. Computed using alpha = .05

Parameter Estimates

Dependent Variable: J201

Parameter	B	Std. Error	t	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound	Partial Eta Squared	Noncent. Parameter	Observed Power[a]
Intercept	80595.856	34351.427	2.346	.022	11834.003	149357.709	.087	2.346	.636
UR	-1918.825	1385.875	-1.385	.171	-4692.956	855.305	.032	1.385	.275

a. Computed using alpha = .05

J201-ABSORPTION RATE (AR)

Tests of Between-Subjects Effects

Dependent Variable: J201

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	847055091.877[a]	1	847055091.877	4.459	.043	.129	4.459	.533
Intercept	1414377364.572	1	1414377364.572	7.445	.011	.199	7.445	.752
AR	847055091.877	1	847055091.877	4.459	.043	.129	4.459	.533
Error	5699532606.725	30	189984420.224					
Total	78420180531.359	32						
Corrected Total	6546587698.602	31						

a. R Squared = .129 (Adjusted R Squared = .100)

b. Computed using alpha = .05

Parameter Estimates

Dependent Variable: J201

Parameter	B	Std. Error	t	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound	Partial Eta Squared	Noncent. Parameter	Observed Power[a]
Intercept	209227.759	76682.392	2.728	.011	52621.423	365834.096	.199	2.728	.752
AR	-3753.517	1777.631	-2.112	.043	-7383.924	-123.111	.129	2.112	.533

a. Computed using alpha = .05

J201-LABOUR FORCE PARTICIPATION RATE (LFPR)

Tests of Between-Subjects Effects

Dependent Variable: J201

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	42345305.932[a]	1	42345305.932	.195	.662	.006	.195	.071
Intercept	160107161.947	1	160107161.947	.738	.397	.024	.738	.132
LFPR	42345305.932	1	42345305.932	.195	.662	.006	.195	.071
Error	6504242392.670	30	216808079.756					
Total	78420180531.359	32						
Corrected Total	6546587698.602	31						

a. R Squared = .006 (Adjusted R Squared = -.027)

b. Computed using alpha = .05

Parameter Estimates

Dependent Variable: J201

Parameter	B	Std. Error	t	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound	Partial Eta Squared	Noncent. Parameter	Observed Power[a]
Intercept	97543.938	113509.612	.859	.397	-134273.615	329361.492	.024	.859	.132
LFPR	-878.549	1987.930	-.442	.662	-4938.445	3181.346	.006	.442	.071

a. Computed using alpha = .05

J201-COMBINED (UR + AR + LFPR)

Tests of Between-Subjects Effects

Dependent Variable: J201

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	3788416097.301[a]	3	1262805365.767	12.820	.000	.579	38.459	.999
Intercept	214853880.206	1	214853880.206	2.181	.151	.072	2.181	.297
UR	280307700.038	1	280307700.038	2.846	.103	.092	2.846	.371
AR	434357590.663	1	434357590.663	4.409	.045	.136	4.409	.527
LFPR	470317237.289	1	470317237.289	4.774	.037	.146	4.774	.560
Error	2758171601.301	28	98506128.618					
Total	78420180531.359	32						
Corrected Total	6546587698.602	31						

a. R Squared = .579 (Adjusted R Squared = .534)

b. Computed using alpha = .05

Parameter Estimates

Dependent Variable: J201

Parameter	B	Std. Error	t	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound	Partial Eta Squared	Noncent. Parameter	Observed Power[a]
Intercept	989205.240	669801.990	1.477	.151	-382821.939	2361232.420	.072	1.477	.297
UR	-45554.866	27005.292	-1.687	.103	-100872.699	9762.968	.092	1.687	.371
AR	-97317.309	46344.480	-2.100	.045	-192249.672	-2384.946	.136	2.100	.527
LFPR	76551.479	35034.003	2.185	.037	4787.577	148315.382	.146	2.185	.560

a. Computed using alpha = .05

J202-UNEMPLOYMENT RATE (UR)

Tests of Between-Subjects Effects

Dependent Variable: J202

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	1005402655.747[a]	1	1005402655.747	3.952	.052	.064	3.952	.498
Intercept	2225397005.850	1	2225397005.850	8.747	.004	.131	8.747	.829
UR	1005402655.747	1	1005402655.747	3.952	.052	.064	3.952	.498
Error	14755924303.741	58	254412487.996					
Total	60684729772.511	60						
Corrected Total	15761326959.489	59						

a. R Squared = .064 (Adjusted R Squared = .048)

b. Computed using alpha = .05

Parameter Estimates

Dependent Variable: J202

Parameter	B	Std. Error	t	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound	Partial Eta Squared	Noncent. Parameter	Observed Power[a]
Intercept	83002.713	28064.529	2.958	.004	26825.456	139179.971	.131	2.958	.829
UR	-2250.805	1132.236	-1.988	.052	-4517.222	15.612	.064	1.988	.498

a. Computed using alpha = .05

J202-ABSORPTION RATE (AR)

Tests of Between-Subjects Effects

Dependent Variable: J202

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	184209637.653[a]	1	184209637.653	1.247	.273	.040	1.247	.191
Intercept	419670155.375	1	419670155.375	2.841	.102	.087	2.841	.371
AR	184209637.653	1	184209637.653	1.247	.273	.040	1.247	.191
Error	4431502530.803	30	147716751.027					
Total	52048184641.632	32						
Corrected Total	4615712168.456	31						

a. R Squared = .040 (Adjusted R Squared = .008)
b. Computed using alpha = .05

Parameter Estimates

Dependent Variable: J202

Parameter	B	Std. Error	t	Sig.	95% Confidence Interval		Partial Eta Squared	Noncent. Parameter	Observed Power[a]
					Lower Bound	Upper Bound			
Intercept	113970.039	67616.320	1.686	.102	-24120.908	252060.987	.087	1.686	.371
AR	-1750.406	1567.464	-1.117	.273	-4951.594	1450.782	.040	1.117	.191

a. Computed using alpha = .05

J202-LABOUR FORCE PARTICIPATION RATE (LFPR)

Tests of Between-Subjects Effects

Dependent Variable: J202

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	35191615.027[a]	1	35191615.027	.230	.635	.008	.230	.075
Intercept	876973.312	1	876973.312	.006	.940	.000	.006	.051
LFPR	35191615.027	1	35191615.027	.230	.635	.008	.230	.075
Error	4580520553.429	30	152684018.448					
Total	52048184641.632	32						
Corrected Total	4615712168.456	31						

a. R Squared = .008 (Adjusted R Squared = -.025)
b. Computed using alpha = .05

Parameter Estimates

Dependent Variable: J202

Parameter	B	Std. Error	t	Sig.	95% Confidence Interval		Partial Eta Squared	Noncent. Parameter	Observed Power[a]
					Lower Bound	Upper Bound			
Intercept	-7219.184	95255.859	-.076	.940	-201757.601	187319.233	.000	.076	.051
LFPR	800.909	1668.247	.480	.635	-2606.105	4207.923	.008	.480	.075

a. Computed using alpha = .05

J202-COMBINED (UR + AR + LFPR)

Tests of Between-Subjects Effects

Dependent Variable: J202

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	2628172595.874[a]	3	876057531.958	12.342	.000	.569	37.025	.999
Intercept	159701262.706	1	159701262.706	2.250	.145	.074	2.250	.305
UR	245390456.555	1	245390456.555	3.457	.074	.110	3.457	.435
AR	362282677.846	1	362282677.846	5.104	.032	.154	5.104	.588
LFPR	406307673.147	1	406307673.147	5.724	.024	.170	5.724	.637
Error	1987539572.582	28	70983556.164					
Total	52048184641.632	32						
Corrected Total	4615712168.456	31						

a. R Squared = .569 (Adjusted R Squared = .523)
b. Computed using alpha = .05

Parameter Estimates

Dependent Variable: J202

Parameter	B	Std. Error	t	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound	Partial Eta Squared	Noncent. Parameter	Observed Power[a]
Intercept	852842.791	568582.756	1.500	.145	-311846.187	2017531.769	.074	1.500	.305
UR	-42623.204	22924.303	-1.859	.074	-89581.509	4335.101	.110	1.859	.435
AR	-88877.160	39340.988	-2.259	.032	-169463.520	-8290.800	.154	2.259	.588
LFPR	71151.761	29739.730	2.392	.024	10232.686	132070.835	.170	2.392	.637

a. Computed using alpha = .05

J203-UNEMPLOYMENT RATE (UR)

Tests of Between-Subjects Effects

Dependent Variable: J203

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	564401615.316[a]	1	564401615.316	3.053	.086	.050	3.053	.405
Intercept	1493156289.433	1	1493156289.433	8.076	.006	.122	8.076	.798
UR	564401615.316	1	564401615.316	3.053	.086	.050	3.053	.405
Error	10722996818.451	58	184879255.491					
Total	52793376864.033	60						
Corrected Total	11287398433.767	59						

a. R Squared = .050 (Adjusted R Squared = .034)
b. Computed using alpha = .05

Parameter Estimates

Dependent Variable: J203

Parameter	B	Std. Error	t	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound	Partial Eta Squared	Noncent. Parameter	Observed Power[a]
Intercept	67989.394	23923.936	2.842	.006	20100.434	115878.355	.122	2.842	.798
UR	-1686.405	965.188	-1.747	.086	-3618.439	245.628	.050	1.747	.405

a. Computed using alpha = .05

J203-ABSORPTION RATE (AR)

Tests of Between-Subjects Effects

Dependent Variable: J203

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	124107980.382[a]	1	124107980.382	1.221	.278	.039	1.221	.188
Intercept	311033886.388	1	311033886.388	3.061	.090	.093	3.061	.395
AR	124107980.382	1	124107980.382	1.221	.278	.039	1.221	.188
Error	3048684867.562	30	101622828.919					
Total	45036467577.729	32						
Corrected Total	3172792847.944	31						

a. R Squared = .039 (Adjusted R Squared = .007)
b. Computed using alpha = .05

Parameter Estimates

Dependent Variable: J203

Parameter	B	Std. Error	t	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound	Partial Eta Squared	Noncent. Parameter	Observed Power[a]
Intercept	98116.152	56083.137	1.749	.090	-16420.893	212653.198	.093	1.749	.395
AR	-1436.754	1300.104	-1.105	.278	-4091.922	1218.413	.039	1.105	.188

a. Computed using alpha = .05

J203-LABOUR FORCE PARTICIPATION RATE (LFPR)

Tests of Between-Subjects Effects

Dependent Variable: J203

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	23826302.411[a]	1	23826302.411	.227	.637	.008	.227	.075
Intercept	35357.338	1	35357.338	.000	.985	.000	.000	.050
LFPR	23826302.411	1	23826302.411	.227	.637	.008	.227	.075
Error	3148966545.532	30	104965551.518					
Total	45036467577.729	32						
Corrected Total	3172792847.944	31						

a. R Squared = .008 (Adjusted R Squared = -.026)

b. Computed using alpha = .05

Parameter Estimates

Dependent Variable: J203

Parameter	B	Std. Error	t	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound	Partial Eta Squared	Noncent. Parameter	Observed Power[a]
Intercept	-1449.555	78980.213	-.018	.985	-162748.669	159849.559	.000	.018	.050
LFPR	659.010	1383.206	.476	.637	-2165.874	3483.893	.008	.476	.075

a. Computed using alpha = .05

J203-COMBINED (UR + AR + LFPR)

Tests of Between-Subjects Effects

Dependent Variable: J203

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	1786197855.173[a]	3	595399285.058	12.023	.000	.563	36.069	.999
Intercept	119589661.613	1	119589661.613	2.415	.131	.079	2.415	.323
UR	178496296.973	1	178496296.973	3.604	.068	.114	3.604	.450
AR	260051484.953	1	260051484.953	5.251	.030	.158	5.251	.600
LFPR	290635091.397	1	290635091.397	5.869	.022	.173	5.869	.648
Error	1386594992.770	28	49521249.742					
Total	45036467577.729	32						
Corrected Total	3172792847.944	31						

a. R Squared = .563 (Adjusted R Squared = .516)

b. Computed using alpha = .05

Parameter Estimates

Dependent Variable: J203

Parameter	B	Std. Error	t	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound	Partial Eta Squared	Noncent. Parameter	Observed Power[a]
Intercept	738008.946	474909.225	1.554	.131	-234798.503	1710816.394	.079	1.554	.323
UR	-36352.297	19147.543	-1.899	.068	-75574.261	2869.667	.114	1.899	.450
AR	-75300.187	32859.593	-2.292	.030	-142610.012	-7990.361	.158	2.292	.600
LFPR	60177.226	24840.134	2.423	.022	9294.518	111059.934	.173	2.423	.648

a. Computed using alpha = .05

J204-UNEMPLOYMENT RATE (UR)

Tests of Between-Subjects Effects

Dependent Variable: J204

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	37213352.412[a]	1	37213352.412	12.403	.001	.184	12.403	.933
Intercept	70932991.881	1	70932991.881	23.642	.000	.301	23.642	.998
UR	37213352.412	1	37213352.412	12.403	.001	.184	12.403	.933
Error	165016376.139	55	3000297.748					
Total	1177229491.298	57						
Corrected Total	202229728.551	56						

a. R Squared = .184 (Adjusted R Squared = .169)

b. Computed using alpha = .05

Parameter Estimates

Dependent Variable: J204

Parameter	B	Std. Error	t	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound	Partial Eta Squared	Noncent. Parameter	Observed Power[a]
Intercept	14891.958	3062.738	4.862	.000	8754.094	21029.822	.301	4.862	.998
UR	-435.501	123.658	-3.522	.001	-683.317	-187.685	.184	3.522	.933

a. Computed using alpha = .05

J204-ABSORPTION RATE (AR)

Tests of Between-Subjects Effects

Dependent Variable: J204

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	2417651.861[a]	1	2417651.861	1.777	.193	.056	1.777	.252
Intercept	6189990.110	1	6189990.110	4.549	.041	.132	4.549	.542
AR	2417651.861	1	2417651.861	1.777	.193	.056	1.777	.252
Error	40820268.946	30	1360675.632					
Total	907011772.796	32						
Corrected Total	43237920.807	31						

a. R Squared = .056 (Adjusted R Squared = .024)

b. Computed using alpha = .05

Parameter Estimates

Dependent Variable: J204

Parameter	B	Std. Error	t	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound	Partial Eta Squared	Noncent. Parameter	Observed Power[a]
Intercept	13841.451	6489.541	2.133	.041	588.041	27094.862	.132	2.133	.542
AR	-200.530	150.439	-1.333	.193	-507.767	106.707	.056	1.333	.252

a. Computed using alpha = .05

J204-LABOUR FORCE PARTICIPATION RATE (LFPR)

Tests of Between-Subjects Effects

Dependent Variable: J204

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	51020.548[a]	1	51020.548	.035	.852	.001	.035	.054
Intercept	200825.800	1	200825.800	.140	.711	.005	.140	.065
LFPR	51020.548	1	51020.548	.035	.852	.001	.035	.054
Error	43186900.259	30	1439563.342					
Total	907011772.796	32						
Corrected Total	43237920.807	31						

a. R Squared = .001 (Adjusted R Squared = -.032)

b. Computed using alpha = .05

Parameter Estimates

Dependent Variable: J204

Parameter	B	Std. Error	t	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound	Partial Eta Squared	Noncent. Parameter	Observed Power[a]
Intercept	3454.655	9249.330	.374	.711	-15434.998	22344.308	.005	.374	.065
LFPR	30.496	161.987	.188	.852	-300.325	361.316	.001	.188	.054

a. Computed using alpha = .05

© University of Pretoria

J204-COMBINED (UR + AR + LFPR)

Tests of Between-Subjects Effects

Dependent Variable: J204

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	23018096.343[a]	3	7672698.781	10.625	.000	.532	31.875	.997
Intercept	2128507.514	1	2128507.514	2.948	.097	.095	2.948	.381
UR	2823009.998	1	2823009.998	3.909	.058	.123	3.909	.480
AR	3966757.989	1	3966757.989	5.493	.026	.164	5.493	.619
LFPR	4338182.111	1	4338182.111	6.007	.021	.177	6.007	.658
Error	20219824.464	28	722136.588					
Total	907011772.796	32						
Corrected Total	43237920.807	31						

a. R Squared = .532 (Adjusted R Squared = .482)

b. Computed using alpha = .05

Parameter Estimates

Dependent Variable: J204

Parameter	B	Std. Error	t	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound	Partial Eta Squared	Noncent. Parameter	Observed Power[a]
Intercept	98458.316	57348.819	1.717	.097	-19015.416	215932.047	.095	1.717	.381
UR	-4571.655	2312.208	-1.977	.058	-9307.999	164.689	.123	1.977	.480
AR	-9300.028	3968.040	-2.344	.026	-17428.189	-1171.866	.164	2.344	.619
LFPR	7352.111	2999.631	2.451	.021	1207.645	13496.576	.177	2.451	.658

a. Computed using alpha = .05

c) Bivariate Correlation

Correlations

		J200	J201	J202	J203	J204	UR	AR	LFPR
J200	Pearson Correlation	1	.984**	.992**	1.000**	.944**	-.230	-.169	.114
	Sig. (2-tailed)		.000	.000	.000	.000	.078	.354	.535
	N	60	60	60	60	57	60	32	32
J201	Pearson Correlation	.984**	1	.988**	.988**	.928**	-.179	-.360*	-.080
	Sig. (2-tailed)	.000		.000	.000	.000	.171	.043	.662
	N	60	60	60	60	57	60	32	32
J202	Pearson Correlation	.992**	.988**	1	.994**	.960**	-.253	-.200	.087
	Sig. (2-tailed)	.000	.000		.000	.000	.052	.273	.635
	N	60	60	60	60	57	60	32	32
J203	Pearson Correlation	1.000**	.988**	.994**	1	.944**	-.224	-.198	.087
	Sig. (2-tailed)	.000	.000	.000		.000	.086	.278	.637
	N	60	60	60	60	57	60	32	32
J204	Pearson Correlation	.944**	.928**	.960**	.944**	1	-.429**	-.236	.034
	Sig. (2-tailed)	.000	.000	.000	.000		.001	.193	.852
	N	57	57	57	57	57	57	32	32
UR	Pearson Correlation	-.230	-.179	-.253	-.224	-.429**	1	-.765**	-.451**
	Sig. (2-tailed)	.078	.171	.052	.086	.001		.000	.009
	N	60	60	60	60	57	60	32	32
AR	Pearson Correlation	-.169	-.360*	-.200	-.198	-.236	-.765**	1	.920**
	Sig. (2-tailed)	.354	.043	.273	.278	.193	.000		.000
	N	32	32	32	32	32	32	32	32
LFPR	Pearson Correlation	.114	-.080	.087	.087	.034	-.451**	.920**	1
	Sig. (2-tailed)	.535	.662	.635	.637	.852	.009	.000	
	N	32	32	32	32	32	32	32	32

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Correlations

			J200	J201	J202	J203	J204	UR	AR	LFPR
Kendall's tau_b	J200	Correlation Coefficient	1.000	.886**	.886**	.986**	.817**	-.076	.097	.149
		Sig. (2-tailed)	.	.000	.000	.000	.000	.396	.436	.235
		N	60	60	60	60	57	60	32	32
	J201	Correlation Coefficient	.886**	1.000	.932**	.899**	.833**	-.023	.000	.067
		Sig. (2-tailed)	.000	.	.000	.000	.000	.794	1.000	.592
		N	60	60	60	60	57	60	32	32
	J202	Correlation Coefficient	.886**	.932**	1.000	.895**	.881**	-.065	.041	.100
		Sig. (2-tailed)	.000	.000	.	.000	.000	.471	.745	.426
		N	60	60	60	60	57	60	32	32
	J203	Correlation Coefficient	.986**	.899**	.895**	1.000	.815**	-.067	.077	.137
		Sig. (2-tailed)	.000	.000	.000	.	.000	.455	.537	.276
		N	60	60	60	60	57	60	32	32
	J204	Correlation Coefficient	.817**	.833**	.881**	.815**	1.000	-.120	.069	.153
		Sig. (2-tailed)	.000	.000	.000	.000	.	.193	.581	.223
		N	57	57	57	57	57	57	32	32
	UR	Correlation Coefficient	-.076	-.023	-.065	-.067	-.120	1.000	-.364**	-.154
		Sig. (2-tailed)	.396	.794	.471	.455	.193	.	.004	.228
		N	60	60	60	60	57	60	32	32
	AR	Correlation Coefficient	.097	.000	.041	.077	.069	-.364**	1.000	.802**
		Sig. (2-tailed)	.436	1.000	.745	.537	.581	.004	.	.000
		N	32	32	32	32	32	32	32	32
	LFPR	Correlation Coefficient	.149	.067	.100	.137	.153	-.154	.802**	1.000
		Sig. (2-tailed)	.235	.592	.426	.276	.223	.228	.000	.
		N	32	32	32	32	32	32	32	32
Spearman's rho	J200	Correlation Coefficient	1.000	.974**	.976**	.999**	.944**	-.166	.026	.112
		Sig. (2-tailed)	.	.000	.000	.000	.000	.205	.886	.543
		N	60	60	60	60	57	60	32	32
	J201	Correlation Coefficient	.974**	1.000	.986**	.980**	.933**	-.114	-.095	-.017
		Sig. (2-tailed)	.000	.	.000	.000	.000	.387	.606	.925
		N	60	60	60	60	57	60	32	32
	J202	Correlation Coefficient	.976**	.986**	1.000	.979**	.975**	-.164	-.054	.036
		Sig. (2-tailed)	.000	.000	.	.000	.000	.211	.769	.843
		N	60	60	60	60	57	60	32	32
	J203	Correlation Coefficient	.999**	.980**	.979**	1.000	.944**	-.157	-.009	.078
		Sig. (2-tailed)	.000	.000	.000	.	.000	.232	.963	.670
		N	60	60	60	60	57	60	32	32
	J204	Correlation Coefficient	.944**	.933**	.975**	.944**	1.000	-.227	.054	.163
		Sig. (2-tailed)	.000	.000	.000	.000	.	.090	.770	.374
		N	57	57	57	57	57	57	32	32
	UR	Correlation Coefficient	-.166	-.114	-.164	-.157	-.227	1.000	-.510**	-.262
		Sig. (2-tailed)	.205	.387	.211	.232	.090	.	.003	.147
		N	60	60	60	60	57	60	32	32
	AR	Correlation Coefficient	.026	-.095	-.054	-.009	.054	-.510**	1.000	.937**
		Sig. (2-tailed)	.886	.606	.769	.963	.770	.003	.	.000
		N	32	32	32	32	32	32	32	32
	LFPR	Correlation Coefficient	.112	-.017	.036	.078	.163	-.262	.937**	1.000
		Sig. (2-tailed)	.543	.925	.843	.670	.374	.147	.000	.
		N	32	32	32	32	32	32	32	32

**. Correlation is significant at the 0.01 level (2-tailed).

d) Multivariate analysis

Tests of Between-Subjects Effects

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[f]
Corrected Model	J200	1.385E+009[a]	3	4.618E+008	11.773	.000	.558	35.320	.999
	J201	3.788E+009[b]	3	1.263E+009	12.820	.000	.579	38.459	.999
	J202	2.628E+009[c]	3	8.761E+008	12.342	.000	.569	37.025	.999
	J203	1.786E+009[d]	3	5.954E+008	12.023	.000	.563	36.069	.999
	J204	2.302E+007[e]	3	7.673E+006	10.625	.000	.532	31.875	.997
Intercept	J200	9.450E+007	1	9.450E+007	2.409	.132	.079	2.409	.323
	J201	2.149E+008	1	2.149E+008	2.181	.151	.072	2.181	.297
	J202	1.597E+008	1	1.597E+008	2.250	.145	.074	2.250	.305
	J203	1.196E+008	1	1.196E+008	2.415	.131	.079	2.415	.323
	J204	2.129E+006	1	2.129E+006	2.948	.097	.095	2.948	.381
UR	J200	1.438E+008	1	1.438E+008	3.666	.066	.116	3.666	.456
	J201	2.803E+008	1	2.803E+008	2.846	.103	.092	2.846	.371
	J202	2.454E+008	1	2.454E+008	3.457	.074	.110	3.457	.435
	J203	1.785E+008	1	1.785E+008	3.604	.068	.114	3.604	.450
	J204	2.823E+006	1	2.823E+006	3.909	.058	.123	3.909	.480
AR	J200	2.076E+008	1	2.076E+008	5.292	.029	.159	5.292	.603
	J201	4.344E+008	1	4.344E+008	4.409	.045	.136	4.409	.527
	J202	3.623E+008	1	3.623E+008	5.104	.032	.154	5.104	.588
	J203	2.601E+008	1	2.601E+008	5.251	.030	.158	5.251	.600
	J204	3.967E+006	1	3.967E+006	5.493	.026	.164	5.493	.619
LFPR	J200	2.331E+008	1	2.331E+008	5.942	.021	.175	5.942	.653
	J201	4.703E+008	1	4.703E+008	4.774	.037	.146	4.774	.560
	J202	4.063E+008	1	4.063E+008	5.724	.024	.170	5.724	.637
	J203	2.906E+008	1	2.906E+008	5.869	.022	.173	5.869	.648
	J204	4.338E+006	1	4.338E+006	6.007	.021	.177	6.007	.658
Error	J200	1.098E+009	28	3.922E+007					
	J201	2.758E+009	28	9.851E+007					
	J202	1.988E+009	28	7.098E+007					
	J203	1.387E+009	28	4.952E+007					
	J204	2.022E+007	28	7.221E+005					
Total	J200	3.607E+010	32						
	J201	7.842E+010	32						
	J202	5.205E+010	32						
	J203	4.504E+010	32						
	J204	9.070E+008	32						
Corrected Total	J200	2.484E+009	31						
	J201	6.547E+009	31						
	J202	4.616E+009	31						
	J203	3.173E+009	31						
	J204	4.324E+007	31						

a. R Squared = .558 (Adjusted R Squared = .510)

b. R Squared = .579 (Adjusted R Squared = .534)

c. R Squared = .569 (Adjusted R Squared = .523)

d. R Squared = .563 (Adjusted R Squared = .516)

e. R Squared = .532 (Adjusted R Squared = .482)

f. Computed using alpha = .05

e) Linear Regression

J200

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.230[a]	.053	.036	11982.66	.053	3.230	1	58	.078	.040

a. Predictors: (Constant), UR
b. Dependent Variable: J200

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.169[a]	.029	-.004	8967.25	.029	.886	1	30	.354	.067

a. Predictors: (Constant), AR
b. Dependent Variable: J200

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.114[a]	.013	-.020	9039.64	.013	.394	1	30	.535	.065

a. Predictors: (Constant), LFPR
b. Dependent Variable: J200

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	463707412.612	1	463707412.612	3.230	.078[b]
	Residual	8327881027.011	58	143584155.638		
	Total	8791588439.623	59			

a. Dependent Variable: J200
b. Predictors: (Constant), UR

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	71264887.195	1	71264887.195	.886	.354[b]
	Residual	2412352086.158	30	80411736.205		
	Total	2483616973.353	31			

a. Dependent Variable: J200
b. Predictors: (Constant), AR

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	32162465.456	1	32162465.456	.394	.535[b]
	Residual	2451454507.897	30	81715150.263		
	Total	2483616973.353	31			

a. Dependent Variable: J200
b. Predictors: (Constant), LFPR

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	61506.745	21083.456		2.917	.005	19303.623	103709.867		
UR	-1528.586	850.592	-.230	-1.797	.078	-3231.230	174.058	1.000	1.000

a. Dependent Variable: J200

Coefficients[a]

Model	Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.	95.0% Confidence Interval for B Lower Bound	95.0% Confidence Interval for B Upper Bound	Collinearity Statistics Tolerance	Collinearity Statistics VIF
1 (Constant)	79339.435	49888.032		1.590	.122	-22545.519	181224.389		
AR	-1088.731	1156.491	-.169	-.941	.354	-3450.601	1273.140	1.000	1.000

a. Dependent Variable: J200

Coefficients[a]

Model	Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.	95.0% Confidence Interval for B Lower Bound	95.0% Confidence Interval for B Upper Bound	Collinearity Statistics Tolerance	Collinearity Statistics VIF
1 (Constant)	-11309.302	69686.106		-.162	.872	-153627.318	131008.713		
LFPR	765.664	1220.435	.114	.627	.535	-1726.797	3258.125	1.000	1.000

a. Dependent Variable: J200

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions (Constant)	Variance Proportions UR
1	1	1.997	1.000	.00	.00
	2	.003	27.221	1.00	1.00

a. Dependent Variable: J200

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions (Constant)	Variance Proportions AR
1	1	1.999	1.000	.00	.00
	2	.001	62.926	1.00	1.00

a. Dependent Variable: J200

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions (Constant)	Variance Proportions LFPR
1	1	2.000	1.000	.00	.00
	2	.000	87.205	1.00	1.00

a. Dependent Variable: J200

J201

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.179[a]	.032	.015	19523.43	.032	1.917	1	58	.171	.029

a. Predictors: (Constant), UR
b. Dependent Variable: J201

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.360[a]	.129	.100	13783.48	.129	4.459	1	30	.043	.055

a. Predictors: (Constant), AR
b. Dependent Variable: J201

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.080[a]	.006	-.027	14724.40	.006	.195	1	30	.662	.042

a. Predictors: (Constant), LFPR
b. Dependent Variable: J201

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	730693352.918	1	730693352.918	1.917	.171[b]
	Residual	22107543609.199	58	381164544.986		
	Total	22838236962.117	59			

a. Dependent Variable: J201
b. Predictors: (Constant), UR

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	847055091.877	1	847055091.877	4.459	.043[b]
	Residual	5699532606.725	30	189984420.224		
	Total	6546587698.602	31			

a. Dependent Variable: J201
b. Predictors: (Constant), AR

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	42345305.932	1	42345305.932	.195	.662[b]
	Residual	6504242392.670	30	216808079.756		
	Total	6546587698.602	31			

a. Dependent Variable: J201
b. Predictors: (Constant), LFPR

Coefficients[a]

	Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B		Collinearity Statistics	
Model	B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	80595.856	34351.427		2.346	.022	11834.003	149357.709		
UR	-1918.825	1385.875	-.179	-1.385	.171	-4692.956	855.305	1.000	1.000

a. Dependent Variable: J201

Coefficients[a]

	Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B		Collinearity Statistics	
Model	B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	209227.759	76682.392		2.728	.011	52621.423	365834.096		
AR	-3753.517	1777.631	-.360	-2.112	.043	-7383.924	-123.111	1.000	1.000

a. Dependent Variable: J201

Coefficients[a]

	Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B		Collinearity Statistics	
Model	B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	97543.938	113509.612		.859	.397	-134273.615	329361.492		
LFPR	-878.549	1987.930	-.080	-.442	.662	-4938.445	3181.346	1.000	1.000

a. Dependent Variable: J201

Collinearity Diagnostics[a]

				Variance Proportions	
Model	Dimension	Eigenvalue	Condition Index	(Constant)	UR
1	1	1.997	1.000	.00	.00
	2	.003	27.221	1.00	1.00

a. Dependent Variable: J201

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	AR
1	1	1.999	1.000	.00	.00
	2	.001	62.926	1.00	1.00

a. Dependent Variable: J201

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	LFPR
1	1	2.000	1.000	.00	.00
	2	.000	87.205	1.00	1.00

a. Dependent Variable: J201

J202

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.253[a]	.064	.048	15950.31	.064	3.952	1	58	.052	.043

a. Predictors: (Constant), UR
b. Dependent Variable: J202

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.200[a]	.040	.008	12153.87	.040	1.247	1	30	.273	.039

a. Predictors: (Constant), AR
b. Dependent Variable: J202

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.087[a]	.008	-.025	12356.53	.008	.230	1	30	.635	.041

a. Predictors: (Constant), LFPR
b. Dependent Variable: J202

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1005402655.747	1	1005402655.747	3.952	.052[b]
	Residual	14755924303.741	58	254412487.996		
	Total	15761326959.489	59			

a. Dependent Variable: J202
b. Predictors: (Constant), UR

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	184209637.653	1	184209637.653	1.247	.273[b]
	Residual	4431502530.803	30	147716751.027		
	Total	4615712168.456	31			

a. Dependent Variable: J202
b. Predictors: (Constant), AR

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	35191615.027	1	35191615.027	.230	.635[b]
	Residual	4580520553.429	30	152684018.448		
	Total	4615712168.456	31			

a. Dependent Variable: J202
b. Predictors: (Constant), LFPR

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	83002.713	28064.529		2.958	.004	26825.456	139179.971		
UR	-2250.805	1132.236	-.253	-1.988	.052	-4517.222	15.612	1.000	1.000

a. Dependent Variable: J202

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	113970.039	67616.320		1.686	.102	-24120.908	252060.987		
AR	-1750.406	1567.464	-.200	-1.117	.273	-4951.594	1450.782	1.000	1.000

a. Dependent Variable: J202

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	-7219.184	95255.859		-.076	.940	-201757.601	187319.233		
LFPR	800.909	1668.247	.087	.480	.635	-2606.105	4207.923	1.000	1.000

a. Dependent Variable: J202

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	UR
1	1	1.997	1.000	.00	.00
	2	.003	27.221	1.00	1.00

a. Dependent Variable: J202

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	AR
1	1	1.999	1.000	.00	.00
	2	.001	62.926	1.00	1.00

a. Dependent Variable: J202

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	LFPR
1	1	2.000	1.000	.00	.00
	2	.000	87.205	1.00	1.00

a. Dependent Variable: J202

J203

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.224[a]	.050	.034	13597.03	.050	3.053	1	58	.086	.036

a. Predictors: (Constant), UR
b. Dependent Variable: J203

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.198[a]	.039	.007	10080.81	.039	1.221	1	30	.278	.057

a. Predictors: (Constant), AR
b. Dependent Variable: J203

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.087[a]	.008	-.026	10245.26	.008	.227	1	30	.637	.053

a. Predictors: (Constant), LFPR
b. Dependent Variable: J203

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	564401615.316	1	564401615.316	3.053	.086[b]
	Residual	10722996818.451	58	184879255.491		
	Total	11287398433.767	59			

a. Dependent Variable: J203
b. Predictors: (Constant), UR

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	124107980.382	1	124107980.382	1.221	.278[b]
	Residual	3048684867.562	30	101622828.919		
	Total	3172792847.944	31			

a. Dependent Variable: J203
b. Predictors: (Constant), AR

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	23826302.411	1	23826302.411	.227	.637[b]
	Residual	3148966545.532	30	104965551.518		
	Total	3172792847.944	31			

a. Dependent Variable: J203
b. Predictors: (Constant), LFPR

Coefficients[a]

Model	Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.	95.0% Confidence Interval for B Lower Bound	95.0% Confidence Interval for B Upper Bound	Collinearity Statistics Tolerance	Collinearity Statistics VIF
1 (Constant)	67989.394	23923.936		2.842	.006	20100.434	115878.355		
UR	-1686.405	965.188	-.224	-1.747	.086	-3618.439	245.628	1.000	1.000

a. Dependent Variable: J203

Coefficients[a]

Model	Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.	95.0% Confidence Interval for B Lower Bound	95.0% Confidence Interval for B Upper Bound	Collinearity Statistics Tolerance	Collinearity Statistics VIF
1 (Constant)	98116.152	56083.137		1.749	.090	-16420.893	212653.198		
AR	-1436.754	1300.104	-.198	-1.105	.278	-4091.922	1218.413	1.000	1.000

a. Dependent Variable: J203

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	-1449.555	78980.213		-.018	.985	-162748.669	159849.559		
LFPR	659.010	1383.206	.087	.476	.637	-2165.874	3483.893	1.000	1.000

a. Dependent Variable: J203

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	UR
1	1	1.997	1.000	.00	.00
	2	.003	27.221	1.00	1.00

a. Dependent Variable: J203

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	AR
1	1	1.999	1.000	.00	.00
	2	.001	62.926	1.00	1.00

a. Dependent Variable: J203

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	LFPR
1	1	2.000	1.000	.00	.00
	2	.000	87.205	1.00	1.00

a. Dependent Variable: J203

J204

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.429[a]	.184	.169	1732.13	.184	12.403	1	55	.001	.112

a. Predictors: (Constant), UR
b. Dependent Variable: J204

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.236[a]	.056	.024	1166.48	.056	1.777	1	30	.193	.073

a. Predictors: (Constant), AR
b. Dependent Variable: J204

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.034[a]	.001	-.032	1199.81	.001	.035	1	30	.852	.078

a. Predictors: (Constant), LFPR
b. Dependent Variable: J204

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	37213352.412	1	37213352.412	12.403	.001[b]
	Residual	165016376.139	55	3000297.748		
	Total	202229728.551	56			

a. Dependent Variable: J204
b. Predictors: (Constant), UR

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2417651.861	1	2417651.861	1.777	.193[b]
	Residual	40820268.946	30	1360675.632		
	Total	43237920.807	31			

a. Dependent Variable: J204
b. Predictors: (Constant), AR

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	51020.548	1	51020.548	.035	.852[b]
	Residual	43186900.259	30	1439563.342		
	Total	43237920.807	31			

a. Dependent Variable: J204
b. Predictors: (Constant), LFPR

Coefficients[a]

	Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B		Collinearity Statistics	
Model	B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	14891.958	3062.738		4.862	.000	8754.094	21029.822		
UR	-435.501	123.658	-.429	-3.522	.001	-683.317	-187.685	1.000	1.000

a. Dependent Variable: J204

Coefficients[a]

	Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B		Collinearity Statistics	
Model	B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	13841.451	6489.541		2.133	.041	588.041	27094.862		
AR	-200.530	150.439	-.236	-1.333	.193	-507.767	106.707	1.000	1.000

a. Dependent Variable: J204

Coefficients[a]

	Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B		Collinearity Statistics	
Model	B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	3454.655	9249.330		.374	.711	-15434.998	22344.308		
LFPR	30.496	161.987	.034	.188	.852	-300.325	361.316	1.000	1.000

a. Dependent Variable: J204

Collinearity Diagnostics[a]

				Variance Proportions	
Model	Dimension	Eigenvalue	Condition Index	(Constant)	UR
1	1	1.997	1.000	.00	.00
	2	.003	26.661	1.00	1.00

a. Dependent Variable: J204

© University of Pretoria

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions (Constant)	Variance Proportions AR
1	1	1.999	1.000	.00	.00
	2	.001	62.926	1.00	1.00

a. Dependent Variable: J204

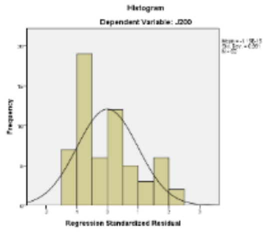
Collinearity Diagnostics[a]

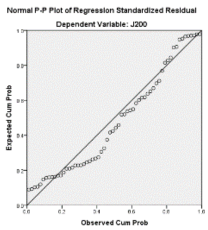
Model	Dimension	Eigenvalue	Condition Index	Variance Proportions (Constant)	Variance Proportions LFPR
1	1	2.000	1.000	.00	.00
	2	.000	87.205	1.00	1.00

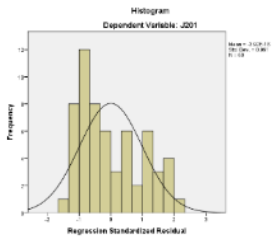
a. Dependent Variable: J204

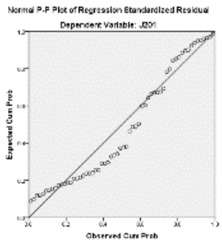
f) Histogram, P-P plot & Q-Q plot (individual)

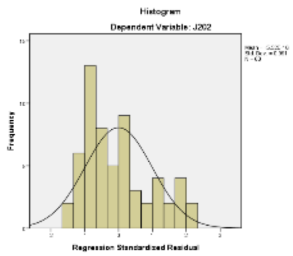
UNEMPLOYMENT RATE (UR)

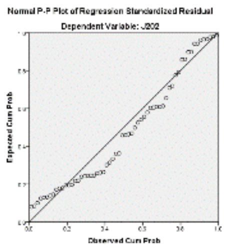


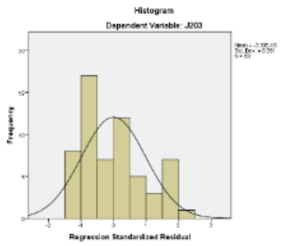


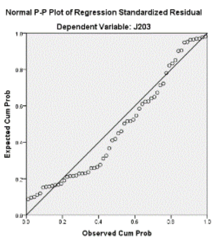


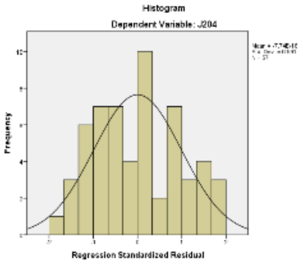


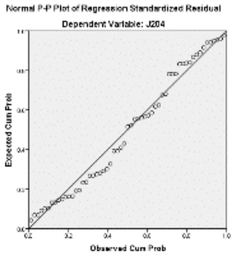




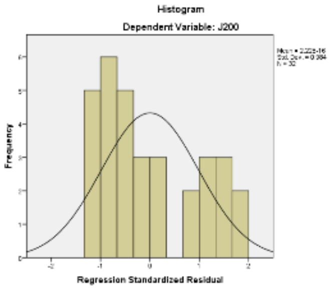


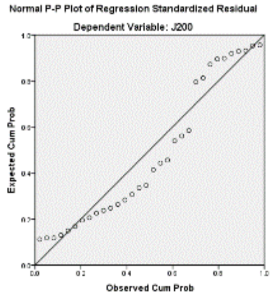


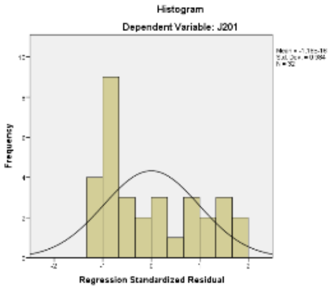


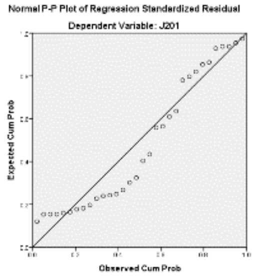


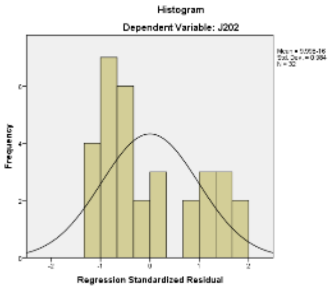
ABSORPTION RATE (AR)

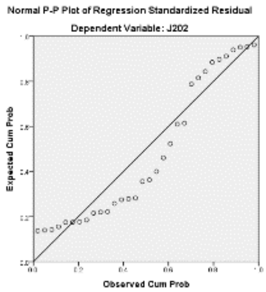


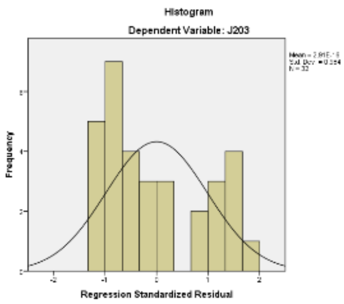


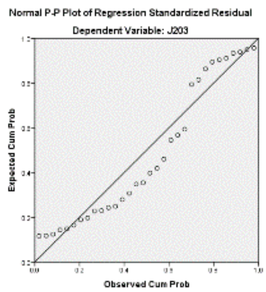




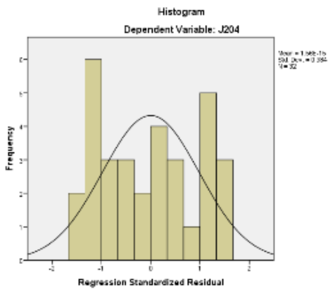


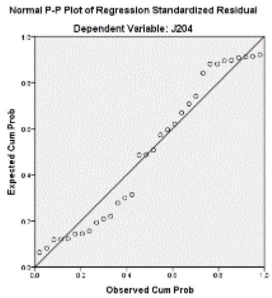




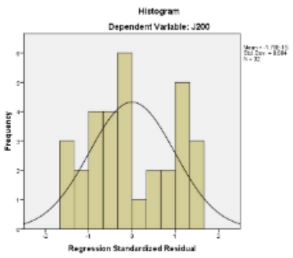


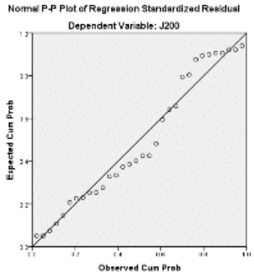
© University of Pretoria

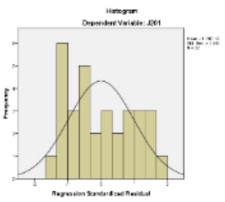


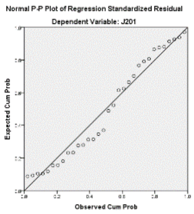


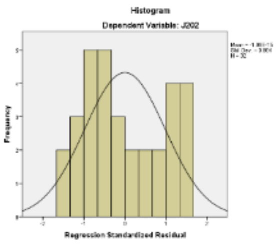
LABOUR FORCE PARTICIPATION RATE (LFPR)

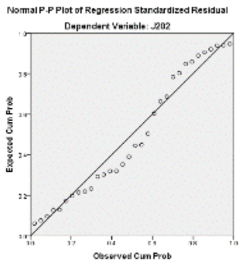


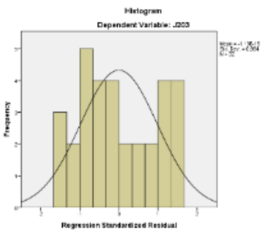


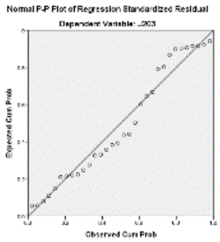


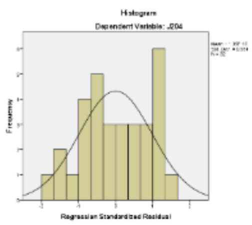


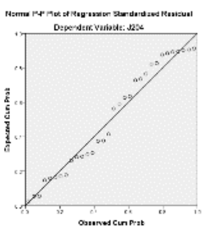












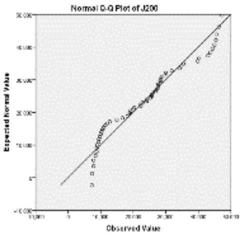
© University of Pretoria

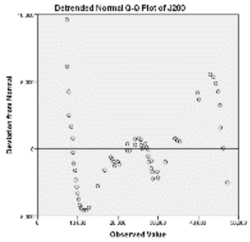
QQ

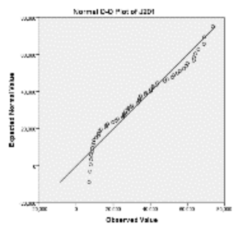
Estimated Distribution Parameters

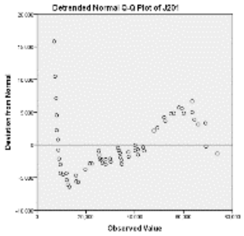
		J200	J201	J202	J203	J204	UR	AR	LFPR
Normal Distribution	Location	23720.096	33162.491	27362.810	26301.450	4135.850	24.720	43.115	57.084
	Scale	12206.9641	19674.5714	16344.4527	13831.5522	1900.3276	1.8340	1.3926	1.3303

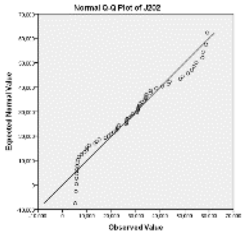
The cases are unweighted.

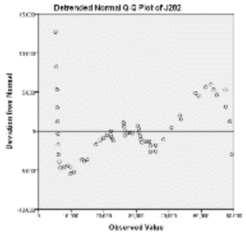


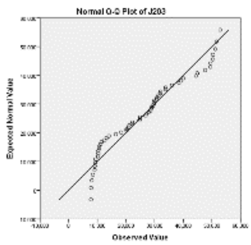


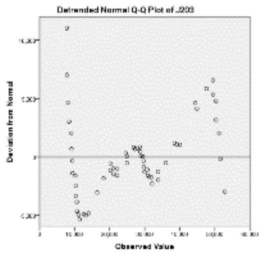


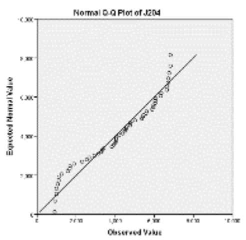


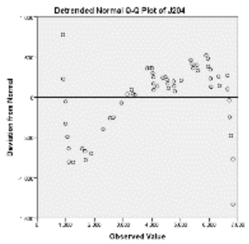


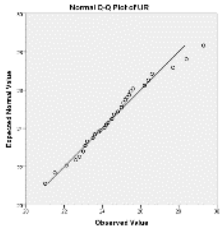


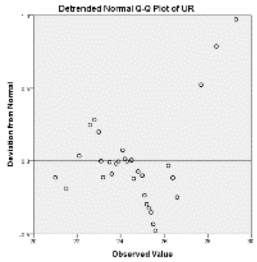


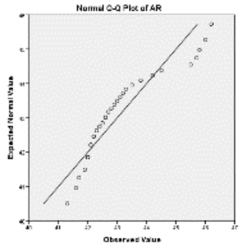


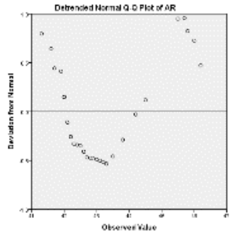


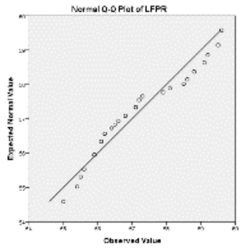


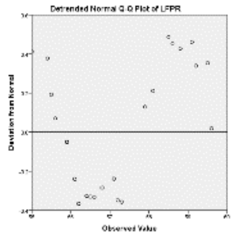

Normal Q-Q Plot of UR
Expected Normal Value
Observed Value


Detrended Normal Q-Q Plot of UR
Deviation from Normal
Observed Value


Normal Q-Q Plot of AR
Expected Normal Value
Observed Value


Detrended Normal Q-Q Plot of AR
Deviation from Normal
Observed Value


Normal Q-Q Plot of LFPR
Expected Normal Value
Observed Value


Detrended Normal Q-Q Plot of LFPR
Deviation from Normal
Observed Value

g) Combined Analysis (UR + AR + LFPR)

J200

Correlations

		J200	UR	AR	LFPR
Pearson Correlation	J200	1.000	.555	-.169	.114
	UR	.555	1.000	-.765	-.451
	AR	-.169	-.765	1.000	.920
	LFPR	.114	-.451	.920	1.000
Sig. (1-tailed)	J200	.	.000	.177	.268
	UR	.000	.	.000	.005
	AR	.177	.000	.	.000
	LFPR	.268	.005	.000	.
N	J200	32	32	32	32
	UR	32	32	32	32
	AR	32	32	32	32
	LFPR	32	32	32	32

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.747[a]	.558	.510	6262.86	.558	11.773	3	28	.000	1.345

a. Predictors: (Constant), LFPR, UR, AR
b. Dependent Variable: J200

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1385358446.365	3	461786148.788	11.773	.000[b]
	Residual	1098258526.988	28	39223518.821		
	Total	2483616973.353	31			

a. Dependent Variable: J200
b. Predictors: (Constant), LFPR, UR, AR

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	656049.451	422657.017		1.552	.132	-209724.202	1521823.103		
UR	-32627.447	17040.822	-3.834	-1.915	.066	-67533.988	2279.094	.004	253.929
AR	-67274.678	29244.194	-10.467	-2.300	.029	-127178.694	-7370.661	.001	1310.894
LFPR	53887.022	22107.082	8.009	2.438	.021	8602.718	99171.327	.001	683.580

a. Dependent Variable: J200

Coefficient Correlations[a]

Model			LFPR	UR	AR
1	Correlations	LFPR	1.000	-.995	-.999
		UR	-.995	1.000	.998
		AR	-.999	.998	1.000
	Covariances	LFPR	488723061.383	-374931940.355	-645909592.806
		UR	-374931940.355	290389604.974	497111127.887
		AR	-645909592.806	497111127.887	855222895.588

a. Dependent Variable: J200

© University of Pretoria

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions (Constant)	UR	AR	LFPR
1	1	3.997	1.000	.00	.00	.00	.00
	2	.003	38.237	.00	.00	.00	.00
	3	.000	162.412	.03	.00	.00	.00
	4	3.473E-7	3392.574	.97	1.00	1.00	1.00

a. Dependent Variable: J200

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	15026.14	46198.28	32398.13	6684.98	32
Residual	-10362.201	12572.641	.00000	5952.116	32
Std. Predicted Value	-2.599	2.064	.000	1.000	32
Std. Residual	-1.655	2.007	.000	.950	32

a. Dependent Variable: J200

J201

Correlations

		J201	UR	AR	LFPR
Pearson Correlation	J201	1.000	.671	-.360	-.080
	UR	.671	1.000	-.765	-.451
	AR	-.360	-.765	1.000	.920
	LFPR	-.080	-.451	.920	1.000
Sig. (1-tailed)	J201	.	.000	.022	.331
	UR	.000	.	.000	.005
	AR	.022	.000	.	.000
	LFPR	.331	.005	.000	.
N	J201	32	32	32	32
	UR	32	32	32	32
	AR	32	32	32	32
	LFPR	32	32	32	32

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.761[a]	.579	.534	9925.02	.579	12.820	3	28	.000	1.291

a. Predictors: (Constant), LFPR, UR, AR

b. Dependent Variable: J201

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3788416097.301	3	1262805365.767	12.820	.000[b]
	Residual	2758171601.301	28	98506128.618		
	Total	6546587698.602	31			

a. Dependent Variable: J201

b. Predictors: (Constant), LFPR, UR, AR

Coefficients[a]

Model	Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sig.	95.0% Confidence Interval for B Lower Bound	Upper Bound	Collinearity Statistics Tolerance	VIF
1 (Constant)	989205.240	669801.990		1.477	.151	-382821.939	2361232.419		
UR	-45554.866	27005.292	-3.297	-1.687	.103	-100872.699	9762.968	.004	253.929
AR	-97317.309	46344.479	-9.326	-2.100	.045	-192249.672	-2384.946	.001	1310.894
LFPR	76551.479	35034.003	7.008	2.185	.037	4787.577	148315.382	.001	683.580

a. Dependent Variable: J201

Coefficient Correlations[a]

Model			LFPR	UR	AR
1	Correlations	LFPR	1.000	-.995	-.999
		UR	-.995	1.000	.998
		AR	-.999	.998	1.000
	Covariances	LFPR	1227381382.145	-941605828.587	-1622140372.333
		UR	-941605828.587	729285812.101	1248447211.594
		AR	-1622140372.333	1248447211.594	2147810779.911

a. Dependent Variable: J201

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions			
				(Constant)	UR	AR	LFPR
1	1	3.997	1.000	.00	.00	.00	.00
	2	.003	38.237	.00	.00	.00	.00
	3	.000	162.412	.03	.00	.00	.00
	4	3.473E-7	3392.574	.97	1.00	1.00	1.00

a. Dependent Variable: J201

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	14942.94	68365.73	47392.50	11054.72	32
Residual	-15484.220	23290.195	.00000	9432.564	32
Std. Predicted Value	-2.935	1.897	.000	1.000	32
Std. Residual	-1.560	2.347	.000	.950	32

a. Dependent Variable: J201

J202

Correlations

		J202	UR	AR	LFPR
Pearson Correlation	J202	1.000	.581	-.200	.087
	UR	.581	1.000	-.765	-.451
	AR	-.200	-.765	1.000	.920
	LFPR	.087	-.451	.920	1.000
Sig. (1-tailed)	J202	.	.000	.136	.317
	UR	.000	.	.000	.005
	AR	.136	.000	.	.000
	LFPR	.317	.005	.000	.
N	J202	32	32	32	32
	UR	32	32	32	32
	AR	32	32	32	32
	LFPR	32	32	32	32

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.755[a]	.569	.523	8425.17	.569	12.342	3	28	.000	1.343

a. Predictors: (Constant), LFPR, UR, AR
b. Dependent Variable: J202

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2628172595.874	3	876057531.958	12.342	.000[b]
	Residual	1987539572.582	28	70983556.164		
	Total	4615712168.456	31			

a. Dependent Variable: J202
b. Predictors: (Constant), LFPR, UR, AR

Coefficients[a]

Model	Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.	95.0% Confidence Interval for B Lower Bound	95.0% Confidence Interval for B Upper Bound	Collinearity Statistics Tolerance	Collinearity Statistics VIF
1 (Constant)	852842.790	568582.756		1.500	.145	-311846.188	2017531.768		
UR	-42623.204	22924.303	-3.674	-1.859	.074	-89581.509	4335.101	.004	253.929
AR	-88877.160	39340.988	-10.144	-2.259	.032	-169463.520	-8290.800	.001	1310.894
LFPR	71151.761	29739.730	7.757	2.392	.024	10232.686	132070.835	.001	683.580

a. Dependent Variable: J202

Coefficient Correlations[a]

Model			LFPR	UR	AR
1	Correlations	LFPR	1.000	-.995	-.999
		UR	-.995	1.000	.998
		AR	-.999	.998	1.000
	Covariances	LFPR	884451520.896	-678521541.302	-1168915009.050
		UR	-678521541.302	525523651.462	899631566.126
		AR	-1168915009.050	899631566.126	1547713317.575

a. Dependent Variable: J202

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions (Constant)	UR	AR	LFPR
1	1	3.997	1.000	.00	.00	.00	.00
	2	.003	38.237	.00	.00	.00	.00
	3	.000	162.412	.03	.00	.00	.00
	4	3.473E-7	3392.574	.97	1.00	1.00	1.00

a. Dependent Variable: J202

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	14042.65	57590.08	38500.19	9207.59	32
Residual	-13627.201	20681.058	.00000	8007.133	32
Std. Predicted Value	-2.656	2.073	.000	1.000	32
Std. Residual	-1.617	2.455	.000	.950	32

a. Dependent Variable: J202

J203

Correlations

		J203	UR	AR	LFPR
Pearson Correlation	J203	1.000	.575	-.198	.087
	UR	.575	1.000	-.765	-.451
	AR	-.198	-.765	1.000	.920
	LFPR	.087	-.451	.920	1.000
Sig. (1-tailed)	J203	.	.000	.139	.319
	UR	.000	.	.000	.005
	AR	.139	.000	.	.000
	LFPR	.319	.005	.000	.
N	J203	32	32	32	32
	UR	32	32	32	32
	AR	32	32	32	32
	LFPR	32	32	32	32

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.750[a]	.563	.516	7037.13	.563	12.023	3	28	.000	1.344

a. Predictors: (Constant), LFPR, UR, AR
b. Dependent Variable: J203

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1786197855.173	3	595399285.058	12.023	.000[b]
	Residual	1386594992.770	28	49521249.742		
	Total	3172792847.944	31			

a. Dependent Variable: J203
b. Predictors: (Constant), LFPR, UR, AR

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	738008.945	474909.225		1.554	.131	-234798.503	1710816.393		
UR	-36352.297	19147.543	-3.780	-1.899	.068	-75574.261	2869.667	.004	253.929
AR	-75300.187	32859.593	-10.366	-2.292	.030	-142610.012	-7990.361	.001	1310.894
LFPR	60177.226	24840.134	7.913	2.423	.022	9294.518	111059.934	.001	683.580

a. Dependent Variable: J203

Coefficient Correlations[a]

Model			LFPR	UR	AR
1	Correlations	LFPR	1.000	-.995	-.999
		UR	-.995	1.000	.998
		AR	-.999	.998	1.000
	Covariances	LFPR	617032268.006	-473366460.037	-815486504.461
		UR	-473366460.037	366628405.166	627622534.986
		AR	-815486504.461	627622534.986	1079752859.263

a. Dependent Variable: J203

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions			
				(Constant)	UR	AR	LFPR
1	1	3.997	1.000	.00	.00	.00	.00
	2	.003	38.237	.00	.00	.00	.00
	3	.000	162.412	.03	.00	.00	.00
	4	3.473E-7	3392.574	.97	1.00	1.00	1.00

a. Dependent Variable: J203

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	15986.82	51725.68	36169.59	7590.73	32
Residual	-11642.761	14672.028	.00000	6687.964	32
Std. Predicted Value	-2.659	2.049	.000	1.000	32
Std. Residual	-1.654	2.085	.000	.950	32

a. Dependent Variable: J203

J204

Correlations

		J204	UR	AR	LFPR
Pearson Correlation	J204	1.000	.576	-.236	.034
	UR	.576	1.000	-.765	-.451
	AR	-.236	-.765	1.000	.920
	LFPR	.034	-.451	.920	1.000
Sig. (1-tailed)	J204	.	.000	.096	.426
	UR	.000	.	.000	.005
	AR	.096	.000	.	.000
	LFPR	.426	.005	.000	.
N	J204	32	32	32	32
	UR	32	32	32	32
	AR	32	32	32	32
	LFPR	32	32	32	32

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.730[a]	.532	.482	849.78	.532	10.625	3	28	.000	1.159

a. Predictors: (Constant), LFPR, UR, AR
b. Dependent Variable: J204

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	23018096.343	3	7672698.781	10.625	.000[b]
	Residual	20219824.464	28	722136.588		
	Total	43237920.807	31			

a. Dependent Variable: J204
b. Predictors: (Constant), LFPR, UR, AR

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	98458.315	57348.819		1.717	.097	-19015.416	215932.047		
UR	-4571.655	2312.208	-4.072	-1.977	.058	-9307.999	164.689	.004	253.929
AR	-9300.028	3968.040	-10.967	-2.344	.026	-17428.189	-1171.866	.001	1310.894
LFPR	7352.111	2999.631	8.282	2.451	.021	1207.645	13496.576	.001	683.580

a. Dependent Variable: J204

Coefficient Correlations[a]

Model			LFPR	UR	AR
1	Correlations	LFPR	1.000	-.995	-.999
		UR	-.995	1.000	.998
		AR	-.999	.998	1.000
	Covariances	LFPR	8997785.375	-6902799.144	-11891716.080
		UR	-6902799.144	5346306.625	9152216.439
		AR	-11891716.080	9152216.439	15745342.650

a. Dependent Variable: J204

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions			
				(Constant)	UR	AR	LFPR
1	1	3.997	1.000	.00	.00	.00	.00
	2	.003	38.237	.00	.00	.00	.00
	3	.000	162.412	.03	.00	.00	.00
	4	3.473E-7	3392.574	.97	1.00	1.00	1.00

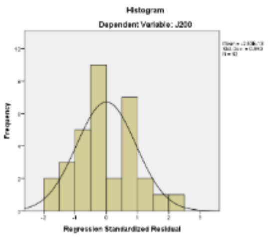
a. Dependent Variable: J204

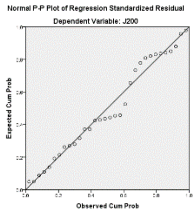
Residuals Statistics[a]

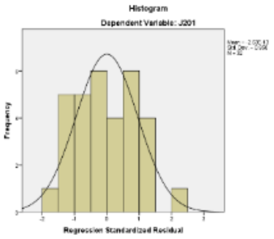
	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2810.55	6844.00	5195.47	861.69	32
Residual	-1734.736	1626.093	.00000	807.621	32
Std. Predicted Value	-2.768	1.913	.000	1.000	32
Std. Residual	-2.041	1.914	.000	.950	32

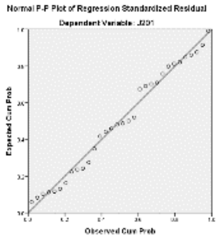
a. Dependent Variable: J204

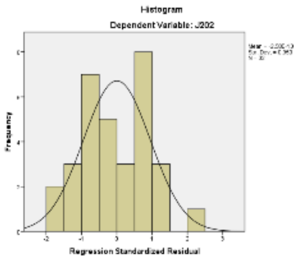
h) Histogram & PP plot (UR + AR + LFPR)

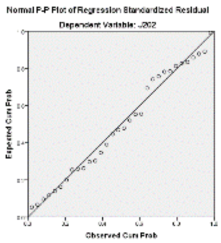


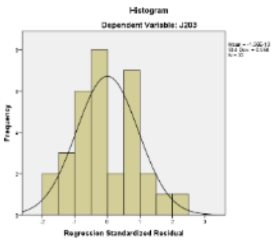


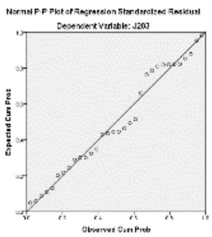


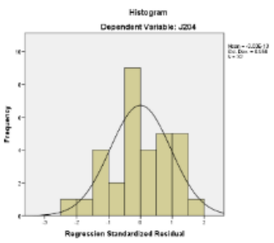


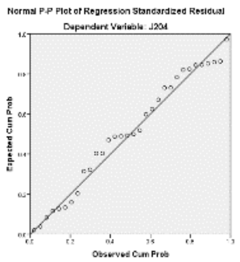












9.22. Research Model development analysis

a) Descriptive Analysis

Statistics

		J200	J201	J202	J203	J204
N	Valid	3751	3751	3751	3751	3501
	Missing	0	0	0	0	250
Mean		23486.1895	32894.6946	27147.6732	26046.9977	4129.4016
Std. Error of Mean		198.07958	320.54290	266.84985	224.65930	31.36639
Median		23914.8200	30639.0400	26867.4000	26515.0700	4275.0900
Mode		7571.97[a]	6965.04[a]	5625.86	9089.89[a]	907.52[a]
Std. Deviation		12131.46466	19631.78047	16343.32791	13759.35072	1855.92570
Variance		147172434.700	385406804.287	267104367.072	189319732.178	3444460.196
Skewness		.398	.403	.380	.396	-.297
Std. Error of Skewness		.040	.040	.040	.040	.041
Kurtosis		-.888	-.940	-.795	-.895	-1.077
Std. Error of Kurtosis		.080	.080	.080	.080	.083
Range		42327.95	69828.66	57384.00	47998.34	6137.68
Minimum		6753.06	6772.62	5051.68	7189.99	872.18
Maximum		49081.01	76601.28	62435.68	55188.34	7009.86
Sum		88096696.68	123387999.42	101830922.16	97702288.51	14457034.96

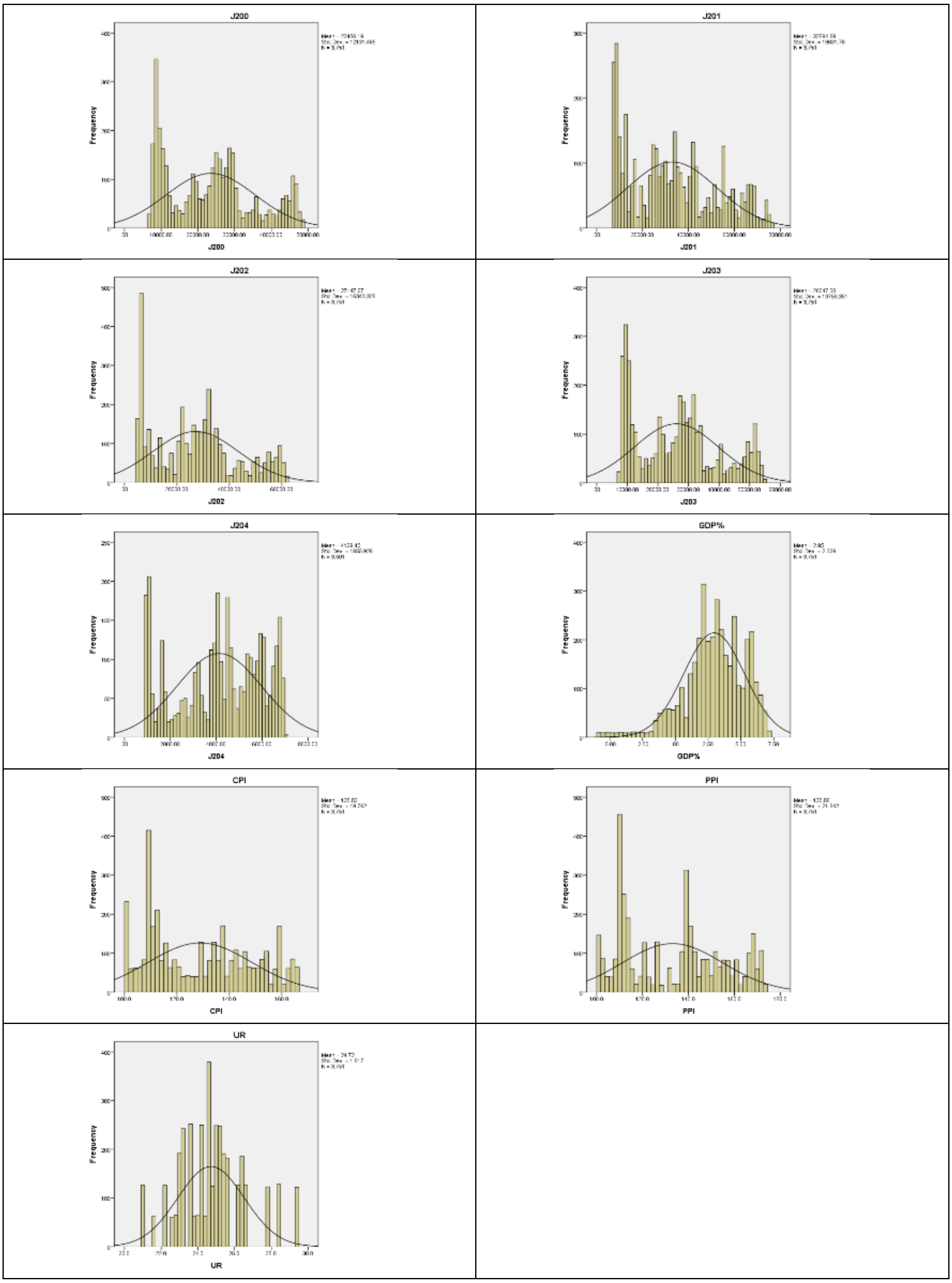
a. Multiple modes exist. The smallest value is shown

Statistics

		GDP%	CPI	PPI	UR
N	Valid	3751	3751	3751	3751
	Missing	0	0	0	0
Mean		2.9541	128.818	133.061	24.715
Std. Error of Mean		.03803	.3227	.3566	.0297
Median		3.0656	128.800	137.500	24.600
Mode		1.00[a]	112.7	111.6	24.5
Std. Deviation		2.32894	19.7618	21.8416	1.8173
Variance		5.424	390.527	477.056	3.302
Skewness		-.810	.284	.219	.423
Std. Error of Skewness		.040	.040	.040	.040
Kurtosis		1.102	-1.235	-1.255	.265
Std. Error of Kurtosis		.080	.080	.080	.080
Range		13.20	65.6	73.0	8.3
Minimum		-6.00	100.0	100.0	21.0
Maximum		7.20	165.6	173.0	29.3
Sum		11080.80	483197.2	499113.3	92707.6

a. Multiple modes exist. The smallest value is shown

b) Histogram

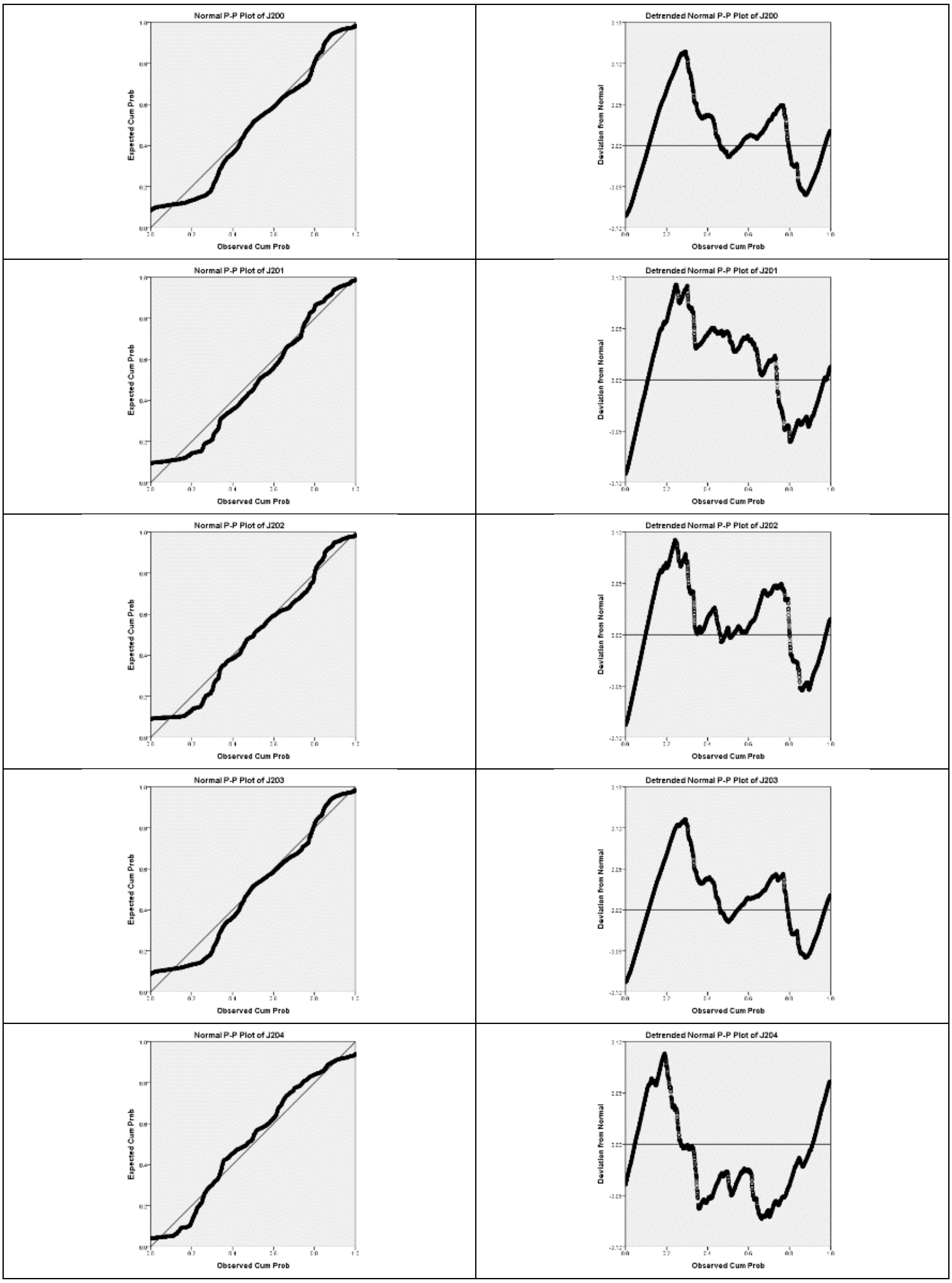


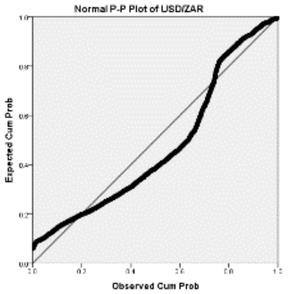
Van der Waerden's PP

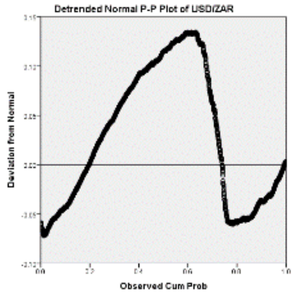
c) PP Plot

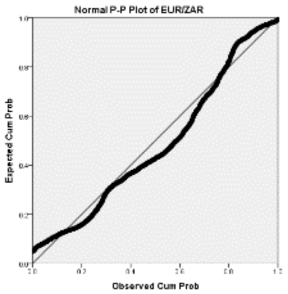
		J200	J201	J202	J203	J204
Normal Distribution	Location	23486.1895	32894.6946	27147.6732	26046.9977	4129.4016
	Scale	12131.46466	19631.78047	16343.32791	13759.35072	1855.92570

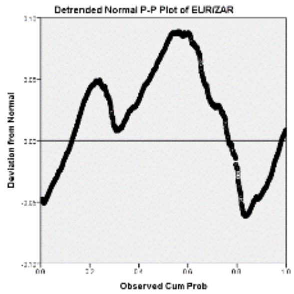
		USD/ZAR	EUR/ZAR	SAGB30	SAGB10	GDP%	CPI	PPI	UR
Normal Distribution	Location	8.2500	10.2405	8.7901	8.7829	2.9541	128.8182	133.0614	24.7154
	Scale	1.67455	2.09257	1.20184	1.33942	2.32894	19.76175	21.84160	1.81727

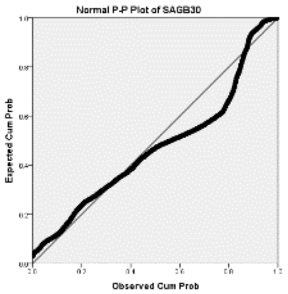


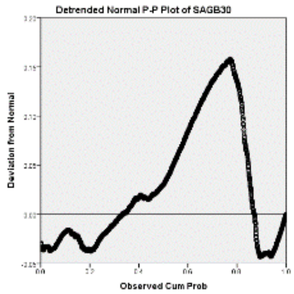


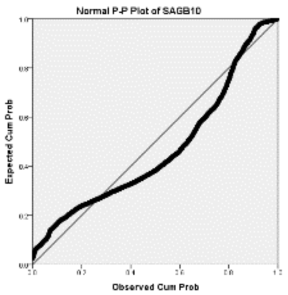


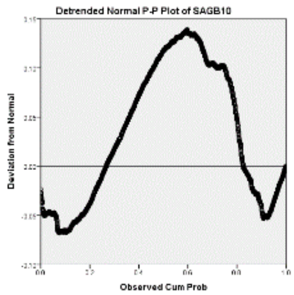


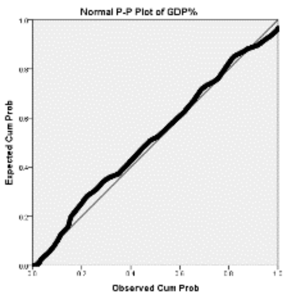


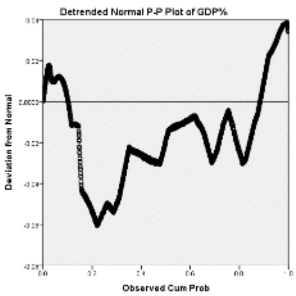


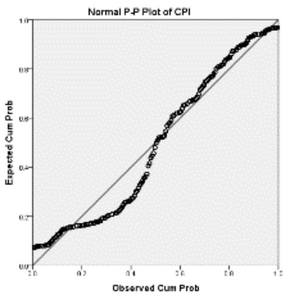


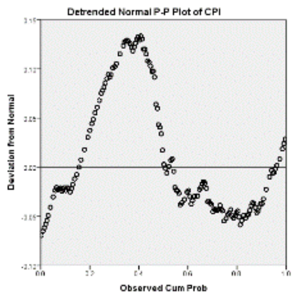




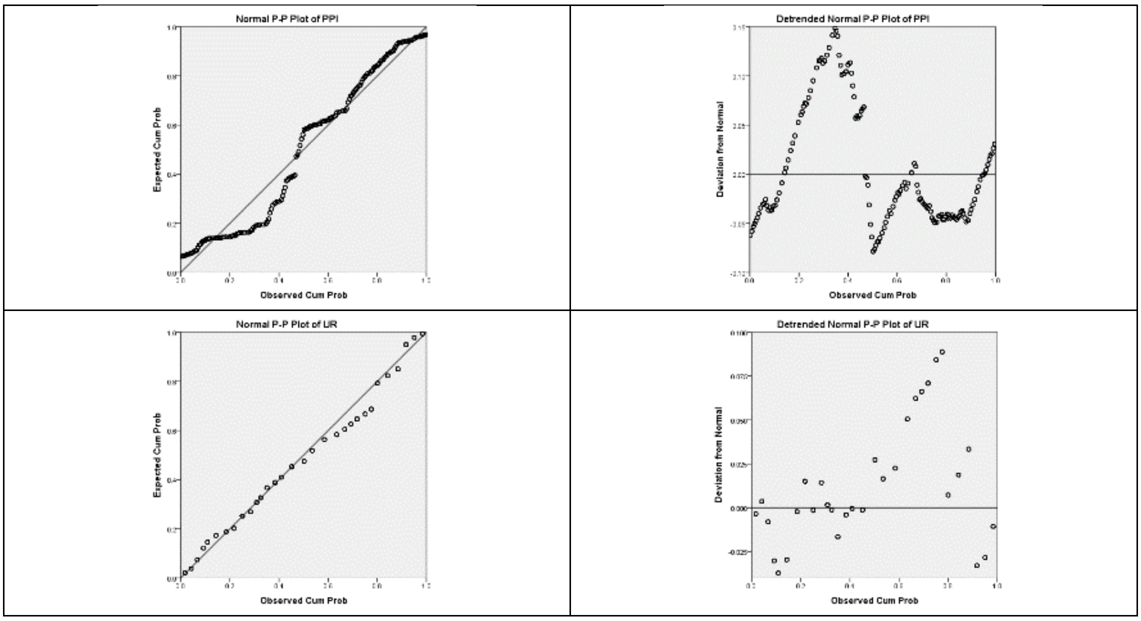




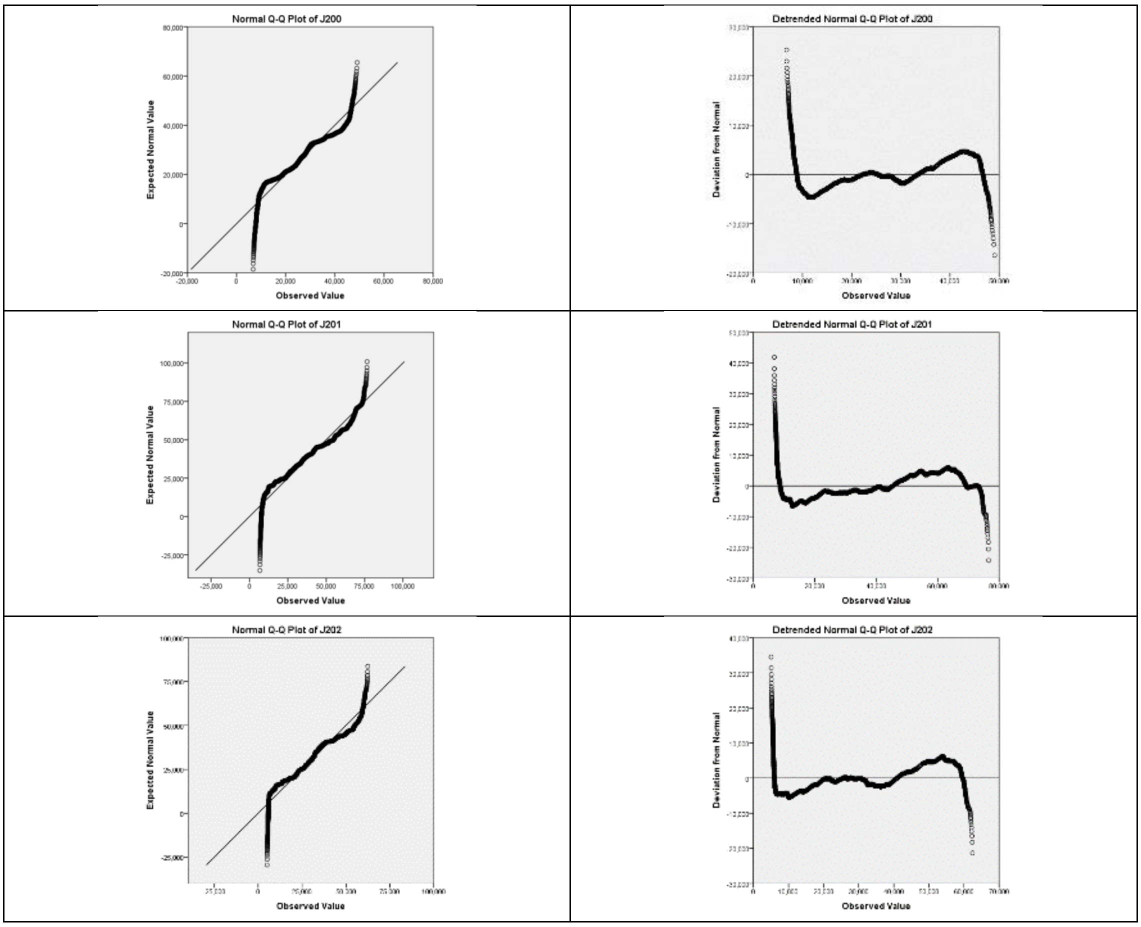


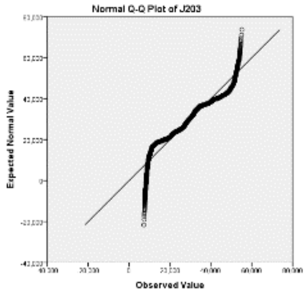


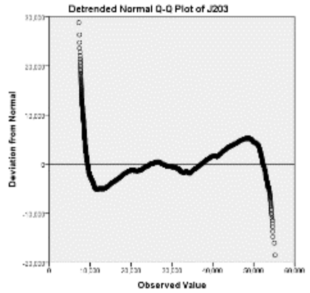
© University of Pretoria

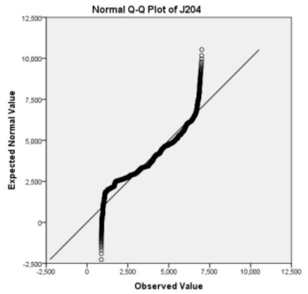

Normal P-P Plot of PPI
Expected Cum Prob
Observed Cum Prob
Detrended Normal P-P Plot of PPI
Deviation from Normal
Observed Cum Prob
Normal P-P Plot of UR
Expected Cum Prob
Observed Cum Prob
Detrended Normal P-P Plot of UR
Deviation from Normal
Observed Cum Prob

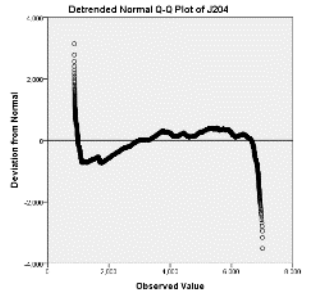
d) QQ Plot

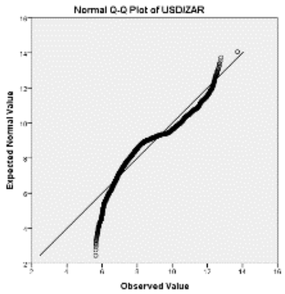

Normal Q-Q Plot of J200
Expected Normal Value
Observed Value
Detrended Normal Q-Q Plot of J200
Deviation from Normal
Observed Value
Normal Q-Q Plot of J201
Expected Normal Value
Observed Value
Detrended Normal Q-Q Plot of J201
Deviation from Normal
Observed Value
Normal Q-Q Plot of J202
Expected Normal Value
Observed Value
Detrended Normal Q-Q Plot of J202
Deviation from Normal
Observed Value

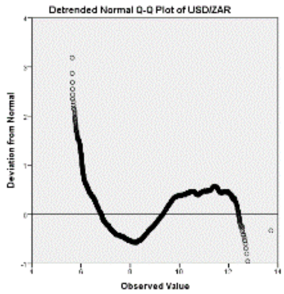

Normal Q-Q Plot of J203
Expected Normal Value
Observed Value

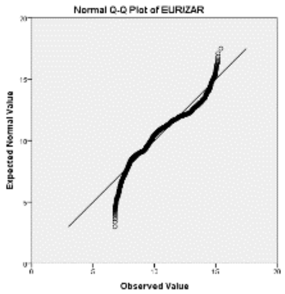

Detrended Normal Q-Q Plot of J203
Deviation from Normal
Observed Value

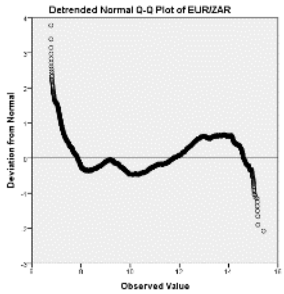

Normal Q-Q Plot of J204
Expected Normal Value
Observed Value

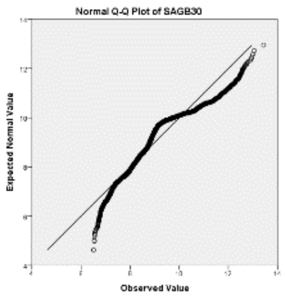

Detrended Normal Q-Q Plot of J204
Deviation from Normal
Observed Value

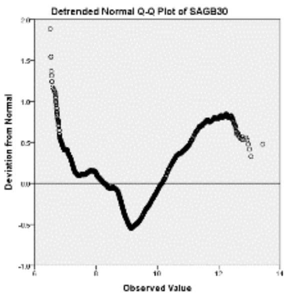

Normal Q-Q Plot of USDZAR
Expected Normal Value
Observed Value

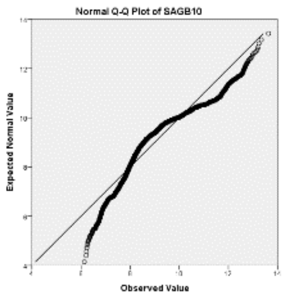

Detrended Normal Q-Q Plot of USDZAR
Deviation from Normal
Observed Value

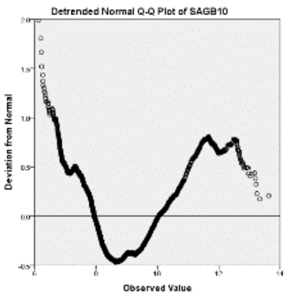

Normal Q-Q Plot of EURZAR
Expected Normal Value
Observed Value

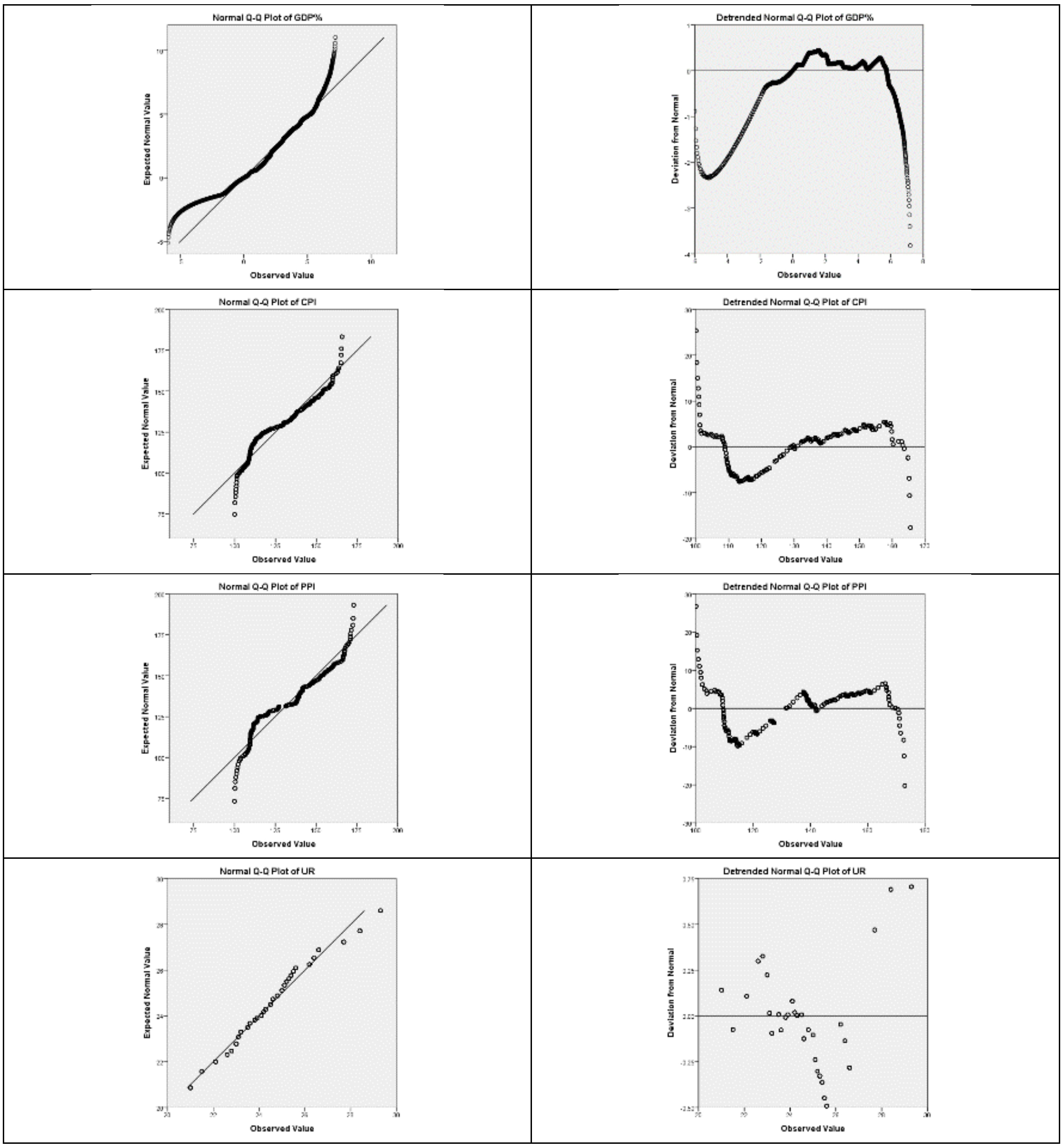

Detrended Normal Q-Q Plot of EURZAR
Deviation from Normal
Observed Value


Normal Q-Q Plot of SAGB30
Expected Normal Value
Observed Value


Detrended Normal Q-Q Plot of SAGB30
Deviation from Normal
Observed Value


Normal Q-Q Plot of SAGB10
Expected Normal Value
Observed Value


Detrended Normal Q-Q Plot of SAGB10
Deviation from Normal
Observed Value


Normal Q-Q Plot of GDP%
Expected Normal Value
Observed Value
Detrended Normal Q-Q Plot of GDP%
Deviation from Normal
Observed Value
Normal Q-Q Plot of CPI
Expected Normal Value
Observed Value
Detrended Normal Q-Q Plot of CPI
Deviation from Normal
Observed Value
Normal Q-Q Plot of PPI
Expected Normal Value
Observed Value
Detrended Normal Q-Q Plot of PPI
Deviation from Normal
Observed Value
Normal Q-Q Plot of UR
Expected Normal Value
Observed Value
Detrended Normal Q-Q Plot of UR
Deviation from Normal
Observed Value

e) Multivariate Analysis

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[c]
Intercept	Pillai's Trace	.752	2111.165[b]	5.000	3488.000	.000	.752	10555.827	1.000
	Wilks' Lambda	.248	2111.165[b]	5.000	3488.000	.000	.752	10555.827	1.000
	Hotelling's Trace	3.026	2111.165[b]	5.000	3488.000	.000	.752	10555.827	1.000
	Roy's Largest Root	3.026	2111.165[b]	5.000	3488.000	.000	.752	10555.827	1.000
USD_ZAR	Pillai's Trace	.333	347.572[b]	5.000	3488.000	.000	.333	1737.859	1.000
	Wilks' Lambda	.667	347.572[b]	5.000	3488.000	.000	.333	1737.859	1.000
	Hotelling's Trace	.498	347.572[b]	5.000	3488.000	.000	.333	1737.859	1.000
	Roy's Largest Root	.498	347.572[b]	5.000	3488.000	.000	.333	1737.859	1.000
EUR_ZAR	Pillai's Trace	.111	87.134[b]	5.000	3488.000	.000	.111	435.672	1.000
	Wilks' Lambda	.889	87.134[b]	5.000	3488.000	.000	.111	435.672	1.000
	Hotelling's Trace	.125	87.134[b]	5.000	3488.000	.000	.111	435.672	1.000
	Roy's Largest Root	.125	87.134[b]	5.000	3488.000	.000	.111	435.672	1.000
SAGB30	Pillai's Trace	.224	201.487[b]	5.000	3488.000	.000	.224	1007.436	1.000
	Wilks' Lambda	.776	201.487[b]	5.000	3488.000	.000	.224	1007.436	1.000
	Hotelling's Trace	.289	201.487[b]	5.000	3488.000	.000	.224	1007.436	1.000
	Roy's Largest Root	.289	201.487[b]	5.000	3488.000	.000	.224	1007.436	1.000
SAGB10	Pillai's Trace	.317	323.930[b]	5.000	3488.000	.000	.317	1619.648	1.000
	Wilks' Lambda	.683	323.930[b]	5.000	3488.000	.000	.317	1619.648	1.000
	Hotelling's Trace	.464	323.930[b]	5.000	3488.000	.000	.317	1619.648	1.000
	Roy's Largest Root	.464	323.930[b]	5.000	3488.000	.000	.317	1619.648	1.000
GDP	Pillai's Trace	.389	444.341[b]	5.000	3488.000	.000	.389	2221.703	1.000
	Wilks' Lambda	.611	444.341[b]	5.000	3488.000	.000	.389	2221.703	1.000
	Hotelling's Trace	.637	444.341[b]	5.000	3488.000	.000	.389	2221.703	1.000
	Roy's Largest Root	.637	444.341[b]	5.000	3488.000	.000	.389	2221.703	1.000
CPI	Pillai's Trace	.535	802.024[b]	5.000	3488.000	.000	.535	4010.122	1.000
	Wilks' Lambda	.465	802.024[b]	5.000	3488.000	.000	.535	4010.122	1.000
	Hotelling's Trace	1.150	802.024[b]	5.000	3488.000	.000	.535	4010.122	1.000
	Roy's Largest Root	1.150	802.024[b]	5.000	3488.000	.000	.535	4010.122	1.000
PPI	Pillai's Trace	.457	587.062[b]	5.000	3488.000	.000	.457	2935.310	1.000
	Wilks' Lambda	.543	587.062[b]	5.000	3488.000	.000	.457	2935.310	1.000
	Hotelling's Trace	.842	587.062[b]	5.000	3488.000	.000	.457	2935.310	1.000
	Roy's Largest Root	.842	587.062[b]	5.000	3488.000	.000	.457	2935.310	1.000
UR	Pillai's Trace	.064	47.408[b]	5.000	3488.000	.000	.064	237.038	1.000
	Wilks' Lambda	.936	47.408[b]	5.000	3488.000	.000	.064	237.038	1.000
	Hotelling's Trace	.068	47.408[b]	5.000	3488.000	.000	.064	237.038	1.000
	Roy's Largest Root	.068	47.408[b]	5.000	3488.000	.000	.064	237.038	1.000

a. Design: Intercept + USD_ZAR + EUR_ZAR + SAGB30 + SAGB10 + GDP + CPI + PPI + UR

b. Exact statistic

c. Computed using alpha = .05

Tests of Between-Subjects Effects

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[f]
Corrected Model	J200	4.671E+011[a]	8	5.838E+010	8420.585	.000	.951	67364.678	1.000
	J201	1.234E+012[b]	8	1.542E+011	13338.485	.000	.968	106707.883	1.000
	J202	8.273E+011[c]	8	1.034E+011	7065.878	.000	.942	56527.022	1.000
	J203	6.015E+011[d]	8	7.519E+010	9167.361	.000	.955	73338.886	1.000
	J204	1.103E+010[e]	8	1.379E+009	4686.612	.000	.915	37492.896	1.000
Intercept	J200	7.043E+009	1	7.043E+009	1015.784	.000	.225	1015.784	1.000
	J201	1.823E+010	1	1.823E+010	1576.237	.000	.311	1576.237	1.000
	J202	9.075E+009	1	9.075E+009	620.072	.000	.151	620.072	1.000
	J203	9.007E+009	1	9.007E+009	1098.185	.000	.239	1098.185	1.000
	J204	8.124E+006	1	8.124E+006	27.618	.000	.008	27.618	1.000
USD_ZAR	J200	2.200E+009	1	2.200E+009	317.300	.000	.083	317.300	1.000
	J201	6.863E+009	1	6.863E+009	593.603	.000	.145	593.603	1.000
	J202	7.599E+009	1	7.599E+009	519.235	.000	.129	519.235	1.000
	J203	2.967E+009	1	2.967E+009	361.765	.000	.094	361.765	1.000
	J204	2.692E+007	1	2.692E+007	91.527	.000	.026	91.527	1.000
EUR_ZAR	J200	5.628E+005	1	5.628E+005	.081	.776	.000	.081	.059
	J201	4.178E+008	1	4.178E+008	36.136	.000	.010	36.136	1.000
	J202	7.255E+007	1	7.255E+007	4.957	.026	.001	4.957	.605
	J203	8.944E+006	1	8.944E+006	1.090	.296	.000	1.090	.181
	J204	1.469E+007	1	1.469E+007	49.939	.000	.014	49.939	1.000
SAGB30	J200	5.971E+007	1	5.971E+007	8.612	.003	.002	8.612	.835
	J201	7.947E+007	1	7.947E+007	6.873	.009	.002	6.873	.746
	J202	1.896E+009	1	1.896E+009	129.551	.000	.036	129.551	1.000
	J203	8.525E+007	1	8.525E+007	10.394	.001	.003	10.394	.897
	J204	2.796E+006	1	2.796E+006	9.505	.002	.003	9.505	.869
SAGB10	J200	1.556E+008	1	1.556E+008	22.449	.000	.006	22.449	.997
	J201	2.391E+009	1	2.391E+009	206.827	.000	.056	206.827	1.000
	J202	1.350E+008	1	1.350E+008	9.226	.002	.003	9.226	.859
	J203	2.838E+008	1	2.838E+008	34.605	.000	.010	34.605	1.000
	J204	5.444E+007	1	5.444E+007	185.073	.000	.050	185.073	1.000
GDP	J200	1.388E+010	1	1.388E+010	2001.609	.000	.364	2001.609	1.000
	J201	2.128E+010	1	2.128E+010	1840.228	.000	.345	1840.228	1.000
	J202	2.322E+010	1	2.322E+010	1586.475	.000	.312	1586.475	1.000
	J203	1.666E+010	1	1.666E+010	2031.439	.000	.368	2031.439	1.000
	J204	4.806E+008	1	4.806E+008	1633.891	.000	.319	1633.891	1.000
CPI	J200	1.730E+009	1	1.730E+009	249.521	.000	.067	249.521	1.000
	J201	1.352E+008	1	1.352E+008	11.689	.001	.003	11.689	.928
	J202	2.260E+009	1	2.260E+009	154.444	.000	.042	154.444	1.000
	J203	1.726E+009	1	1.726E+009	210.407	.000	.057	210.407	1.000
	J204	2.997E+008	1	2.997E+008	1018.755	.000	.226	1018.755	1.000
PPI	J200	4.236E+009	1	4.236E+009	611.000	.000	.149	611.000	1.000
	J201	2.842E+009	1	2.842E+009	245.828	.000	.066	245.828	1.000
	J202	6.234E+009	1	6.234E+009	425.905	.000	.109	425.905	1.000
	J203	4.706E+009	1	4.706E+009	573.778	.000	.141	573.778	1.000
	J204	3.887E+008	1	3.887E+008	1321.391	.000	.275	1321.391	1.000
UR	J200	1.929E+007	1	1.929E+007	2.782	.095	.001	2.782	.385
	J201	1.149E+008	1	1.149E+008	9.935	.002	.003	9.935	.883
	J202	2.832E+006	1	2.832E+006	.194	.660	.000	.194	.072
	J203	9.593E+006	1	9.593E+006	1.170	.280	.000	1.170	.191
	J204	5.879E+006	1	5.879E+006	19.988	.000	.006	19.988	.994
Error	J200	2.421E+010	3492	6.933E+006					
	J201	4.038E+010	3492	1.156E+007					
	J202	5.111E+010	3492	1.464E+007					
	J203	2.864E+010	3492	8.202E+006					
	J204	1.027E+009	3492	2.941E+005					
Total	J200	2.603E+012	3501						
	J201	5.490E+012	3501						
	J202	3.758E+012	3501						
	J203	3.235E+012	3501						
	J204	7.175E+010	3501						
Corrected Total	J200	4.913E+011	3500						
	J201	1.274E+012	3500						
	J202	8.784E+011	3500						
	J203	6.301E+011	3500						
	J204	1.206E+010	3500						

a. R Squared = .951 (Adjusted R Squared = .951)
b. R Squared = .968 (Adjusted R Squared = .968)
c. R Squared = .942 (Adjusted R Squared = .942)
d. R Squared = .955 (Adjusted R Squared = .954)
e. R Squared = .915 (Adjusted R Squared = .915)
f. Computed using alpha = .05

Parameter Estimates

Dependent Variable	Parameter	B	Std. Error	t	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound	Partial Eta Squared	Noncent. Parameter	Observed Power[a]
J200	Intercept	-41919.087	1315.258	-31.871	.000	-44497.839	-39340.334	.225	31.871	1.000
	USD_ZAR	1073.897	60.288	17.813	.000	955.694	1192.099	.083	17.813	1.000
	EUR_ZAR	-22.639	79.464	-.285	.776	-178.439	133.160	.000	.285	.059
	SAGB30	-496.160	169.073	-2.935	.003	-827.651	-164.669	.002	2.935	.835
	SAGB10	-722.765	152.545	-4.738	.000	-1021.852	-423.679	.006	4.738	.997
	GDP	1166.698	26.078	44.739	.000	1115.569	1217.827	.364	44.739	1.000
	CPI	-829.343	52.503	-15.796	.000	-932.281	-726.404	.067	15.796	1.000
	PPI	1295.667	52.417	24.718	.000	1192.896	1398.438	.149	24.718	1.000
	UR	-77.799	46.646	-1.668	.095	-169.256	13.657	.001	1.668	.385
J201	Intercept	-67433.079	1698.487	-39.702	.000	-70763.206	-64102.951	.311	39.702	1.000
	USD_ZAR	1896.822	77.854	24.364	.000	1744.179	2049.465	.145	24.364	1.000
	EUR_ZAR	-616.866	102.617	-6.011	.000	-818.061	-415.671	.010	6.011	1.000
	SAGB30	-572.400	218.336	-2.622	.009	-1000.478	-144.321	.002	2.622	.746
	SAGB10	-2833.041	196.992	-14.381	.000	-3219.273	-2446.809	.056	14.381	1.000
	GDP	1444.627	33.676	42.898	.000	1378.601	1510.654	.345	42.898	1.000
	CPI	-231.807	67.800	-3.419	.001	-364.739	-98.875	.003	3.419	.928
	PPI	1061.304	67.690	15.679	.000	928.588	1194.020	.066	15.679	1.000
	UR	189.866	60.237	3.152	.002	71.762	307.971	.003	3.152	.883
J202	Intercept	-47584.878	1910.944	-24.901	.000	-51331.558	-43838.198	.151	24.901	1.000
	USD_ZAR	1995.936	87.592	22.787	.000	1824.199	2167.672	.129	22.787	1.000
	EUR_ZAR	-257.050	115.453	-2.226	.026	-483.412	-30.688	.001	2.226	.605
	SAGB30	-2795.955	245.647	-11.382	.000	-3277.581	-2314.330	.036	11.382	1.000
	SAGB10	-673.214	221.633	-3.038	.002	-1107.759	-238.670	.003	3.038	.859
	GDP	1509.115	37.888	39.831	.000	1434.829	1583.400	.312	39.831	1.000
	CPI	-947.989	76.281	-12.428	.000	-1097.549	-798.429	.042	12.428	1.000
	PPI	1571.686	76.157	20.637	.000	1422.369	1721.002	.109	20.637	1.000
	UR	-29.813	67.772	-.440	.660	-162.690	103.064	.000	.440	.072
J203	Intercept	-47405.187	1430.501	-33.139	.000	-50209.890	-44600.485	.239	33.139	1.000
	USD_ZAR	1247.148	65.570	19.020	.000	1118.589	1375.707	.094	19.020	1.000
	EUR_ZAR	-90.250	86.426	-1.044	.296	-259.701	79.200	.000	1.044	.181
	SAGB30	-592.843	183.887	-3.224	.001	-953.380	-232.307	.003	3.224	.897
	SAGB10	-975.987	165.911	-5.883	.000	-1301.280	-650.695	.010	5.883	1.000
	GDP	1278.344	28.363	45.071	.000	1222.735	1333.953	.368	45.071	1.000
	CPI	-828.299	57.103	-14.505	.000	-940.257	-716.341	.057	14.505	1.000
	PPI	1365.595	57.010	23.954	.000	1253.819	1477.370	.141	23.954	1.000
	UR	-54.868	50.733	-1.081	.280	-154.338	44.602	.000	1.081	.191
J204	Intercept	1423.696	270.907	5.255	.000	892.544	1954.848	.008	5.255	1.000
	USD_ZAR	118.798	12.418	9.567	.000	94.452	143.145	.026	9.567	1.000
	EUR_ZAR	-115.663	16.367	-7.067	.000	-147.754	-83.573	.014	7.067	1.000
	SAGB30	-107.363	34.824	-3.083	.002	-175.641	-39.085	.003	3.083	.869
	SAGB10	-427.445	31.420	-13.604	.000	-489.048	-365.841	.050	13.604	1.000
	GDP	217.115	5.371	40.421	.000	206.584	227.646	.319	40.421	1.000
	CPI	-345.163	10.814	-31.918	.000	-366.366	-323.961	.226	31.918	1.000
	PPI	392.462	10.796	36.351	.000	371.294	413.630	.275	36.351	1.000
	UR	-42.955	9.608	-4.471	.000	-61.792	-24.117	.006	4.471	.994

a. Computed using alpha = .05

Between-Subjects SSCP Matrix

			J200	J201	J202	J203	J204
Hypothesis	Intercept	J200	7.043E+009	1.133E+010	7.995E+009	7.965E+009	-2.392E+008
		J201	1.133E+010	1.823E+010	1.286E+010	1.281E+010	-3.848E+008
		J202	7.995E+009	1.286E+010	9.075E+009	9.041E+009	-2.715E+008
		J203	7.965E+009	1.281E+010	9.041E+009	9.007E+009	-2.705E+008
		J204	-2.392E+008	-3.848E+008	-2.715E+008	-2.705E+008	8.124E+006
	USD_ZAR	J200	2.200E+009	3.886E+009	4.089E+009	2.555E+009	2.434E+008
		J201	3.886E+009	6.863E+009	7.222E+009	4.513E+009	4.299E+008
		J202	4.089E+009	7.222E+009	7.599E+009	4.748E+009	4.523E+008
		J203	2.555E+009	4.513E+009	4.748E+009	2.967E+009	2.826E+008
		J204	2.434E+008	4.299E+008	4.523E+008	2.826E+008	2.692E+007
	EUR_ZAR	J200	5.628E+005	1.533E+007	6.390E+006	2.243E+006	2.875E+006
		J201	1.533E+007	4.178E+008	1.741E+008	6.113E+007	7.834E+007
		J202	6.390E+006	1.741E+008	7.255E+007	2.547E+007	3.265E+007
		J203	2.243E+006	6.113E+007	2.547E+007	8.944E+006	1.146E+007
		J204	2.875E+006	7.834E+007	3.265E+007	1.146E+007	1.469E+007
	SAGB30	J200	5.971E+007	6.888E+007	3.365E+008	7.134E+007	1.292E+007
		J201	6.888E+007	7.947E+007	3.882E+008	8.231E+007	1.491E+007
		J202	3.365E+008	3.882E+008	1.896E+009	4.020E+008	7.281E+007
		J203	7.134E+007	8.231E+007	4.020E+008	8.525E+007	1.544E+007
		J204	1.292E+007	1.491E+007	7.281E+007	1.544E+007	2.796E+006
	SAGB10	J200	1.556E+008	6.101E+008	1.450E+008	2.102E+008	9.205E+007
		J201	6.101E+008	2.391E+009	5.683E+008	8.238E+008	3.608E+008
		J202	1.450E+008	5.683E+008	1.350E+008	1.958E+008	8.574E+007
		J203	2.102E+008	8.238E+008	1.958E+008	2.838E+008	1.243E+008
		J204	9.205E+007	3.608E+008	8.574E+007	1.243E+008	5.444E+007
	GDP	J200	1.388E+010	1.718E+010	1.795E+010	1.521E+010	2.583E+009
		J201	1.718E+010	2.128E+010	2.223E+010	1.883E+010	3.198E+009
		J202	1.795E+010	2.223E+010	2.322E+010	1.967E+010	3.341E+009
		J203	1.521E+010	1.883E+010	1.967E+010	1.666E+010	2.830E+009
		J204	2.583E+009	3.198E+009	3.341E+009	2.830E+009	4.806E+008
	CPI	J200	1.730E+009	4.836E+008	1.978E+009	1.728E+009	7.200E+008
		J201	4.836E+008	1.352E+008	5.527E+008	4.829E+008	2.013E+008
		J202	1.978E+009	5.527E+008	2.260E+009	1.975E+009	8.230E+008
		J203	1.728E+009	4.829E+008	1.975E+009	1.726E+009	7.191E+008
		J204	7.200E+008	2.013E+008	8.230E+008	7.191E+008	2.997E+008
	PPI	J200	4.236E+009	3.470E+009	5.139E+009	4.465E+009	1.283E+009
		J201	3.470E+009	2.842E+009	4.209E+009	3.657E+009	1.051E+009
		J202	5.139E+009	4.209E+009	6.234E+009	5.416E+009	1.557E+009
		J203	4.465E+009	3.657E+009	5.416E+009	4.706E+009	1.352E+009
		J204	1.283E+009	1.051E+009	1.557E+009	1.352E+009	3.887E+008
	UR	J200	1.929E+007	-4.707E+007	7.391E+006	1.360E+007	1.065E+007
		J201	-4.707E+007	1.149E+008	-1.804E+007	-3.320E+007	-2.599E+007
		J202	7.391E+006	-1.804E+007	2.832E+006	5.212E+006	4.081E+006
		J203	1.360E+007	-3.320E+007	5.212E+006	9.593E+006	7.510E+006
		J204	1.065E+007	-2.599E+007	4.081E+006	7.510E+006	5.879E+006
Error		J200	2.421E+010	2.695E+010	3.221E+010	2.627E+010	4.415E+009
		J201	2.695E+010	4.038E+010	4.159E+010	3.040E+010	5.601E+009
		J202	3.221E+010	4.159E+010	5.111E+010	3.571E+010	6.745E+009
		J203	2.627E+010	3.040E+010	3.571E+010	2.864E+010	4.878E+009
		J204	4.415E+009	5.601E+009	6.745E+009	4.878E+009	1.027E+009

Based on Type III Sum of Squares

Residual SSCP Matrix

		J200	J201	J202	J203	J204
Sum-of-Squares and Cross-Products	J200	2.421E+010	2.695E+010	3.221E+010	2.627E+010	4.415E+009
	J201	2.695E+010	4.038E+010	4.159E+010	3.040E+010	5.601E+009
	J202	3.221E+010	4.159E+010	5.111E+010	3.571E+010	6.745E+009
	J203	2.627E+010	3.040E+010	3.571E+010	2.864E+010	4.878E+009
	J204	4.415E+009	5.601E+009	6.745E+009	4.878E+009	1.027E+009
Covariance	J200	6.933E+006	7.719E+006	9.224E+006	7.524E+006	1.264E+006
	J201	7.719E+006	1.156E+007	1.191E+007	8.704E+006	1.604E+006
	J202	9.224E+006	1.191E+007	1.464E+007	1.023E+007	1.931E+006
	J203	7.524E+006	8.704E+006	1.023E+007	8.202E+006	1.397E+006
	J204	1.264E+006	1.604E+006	1.931E+006	1.397E+006	2.941E+005
Correlation	J200	1.000	.862	.916	.998	.885
	J201	.862	1.000	.916	.894	.870
	J202	.916	.916	1.000	.933	.931
	J203	.998	.894	.933	1.000	.899
	J204	.885	.870	.931	.899	1.000

Based on Type III Sum of Squares

SSCP Matrix

		J200	J201	J202	J203	J204
Lack of Fit	J200	24211468741.582	26953543357.844	32210286127.082	26272774071.729	4415133675.308
	J201	26953543357.844	40376009776.435	41591898360.199	30395458325.762	5600881871.495
	J202	32210286127.082	41591898360.199	51108719247.639	35713206733.705	6744523652.071
	J203	26272774071.729	30395458325.762	35713206733.705	28640149675.605	4877618741.866
	J204	4415133675.308	5600881871.495	6744523652.071	4877618741.866	1027163572.079
Pure Error	J200	.000	.000	.000	.000	.000
	J201	.000	.000	.000	.000	.000
	J202	.000	.000	.000	.000	.000
	J203	.000	.000	.000	.000	.000
	J204	.000	.000	.000	.000	.000

f) Correlation Test

Correlations

		J200	J201	J202	J203	J204	USD ZAR	EUR ZAR	SAG B30	SAG B10	GDP%	CPI	PPI	UR
J200	Pearson Correlation	1	.985**	.991**	1.000**	.941**	.476**	.806**	-.250**	-.612**	-.373**	.952**	.958**	-.214**
	Sig. (2-tailed)		.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	3751	3751	3751	3751	3501	3751	3751	3751	3751	3751	3751	3751	3751
J201	Pearson Correlation	.985**	1	.988**	.989**	.927**	.441**	.768**	-.301**	-.673**	-.370**	.969**	.967**	-.172**
	Sig. (2-tailed)	.000		.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	3751	3751	3751	3751	3501	3751	3751	3751	3751	3751	3751	3751	3751
J202	Pearson Correlation	.991**	.988**	1	.993**	.957**	.437**	.782**	-.329**	-.669**	-.359**	.944**	.948**	-.247**
	Sig. (2-tailed)	.000	.000		.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	3751	3751	3751	3751	3501	3751	3751	3751	3751	3751	3751	3751	3751
J203	Pearson Correlation	1.000**	.989**	.993**	1	.942**	.471**	.801**	-.260**	-.624**	-.373**	.956**	.961**	-.209**
	Sig. (2-tailed)	.000	.000	.000		.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	3751	3751	3751	3751	3501	3751	3751	3751	3751	3751	3751	3751	3751
J204	Pearson Correlation	.941**	.927**	.957**	.942**	1	.303**	.631**	-.321**	-.701**	-.296**	.841**	.857**	-.408**
	Sig. (2-tailed)	.000	.000	.000	.000		.000	.000	.000	.000	.000	.000	.000	.000
	N	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501
USD/ ZAR	Pearson Correlation	.476**	.441**	.437**	.471**	.303**	1	.737**	.442**	.156**	-.508**	.472**	.482**	.296**
	Sig. (2-tailed)	.000	.000	.000	.000	.000		.000	.000	.000	.000	.000	.000	.000
	N	3751	3751	3751	3751	3501	3751	3751	3751	3751	3751	3751	3751	3751
EUR/ ZAR	Pearson Correlation	.806**	.768**	.782**	.801**	.631**	.737**	1	-.031	-.314**	-.591**	.815**	.838**	-.057**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000		.057	.000	.000	.000	.000	.001
	N	3751	3751	3751	3751	3501	3751	3751	3751	3751	3751	3751	3751	3751
SAG B30	Pearson Correlation	-.250**	-.301**	-.329**	-.260**	-.321**	.442**	-.031	1	.865**	-.112**	-.247**	-.246**	.527**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.057		.000	.000	.000	.000	.000
	N	3751	3751	3751	3751	3501	3751	3751	3751	3751	3751	3751	3751	3751
SAG B10	Pearson Correlation	-.612**	-.673**	-.669**	-.624**	-.701**	.156**	-.314**	.865**	1	.089**	-.623**	-.617**	.406**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000		.000	.000	.000	.000
	N	3751	3751	3751	3751	3501	3751	3751	3751	3751	3751	3751	3751	3751
GDP %	Pearson Correlation	-.373**	-.370**	-.359**	-.373**	-.296**	-.508**	-.591**	-.112**	.089**	1	-.479**	-.496**	-.008
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000		.000	.000	.615
	N	3751	3751	3751	3751	3501	3751	3751	3751	3751	3751	3751	3751	3751
CPI	Pearson Correlation	.952**	.969**	.944**	.956**	.841**	.472**	.815**	-.247**	-.623**	-.479**	1	.997**	-.112**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000		.000	.000
	N	3751	3751	3751	3751	3501	3751	3751	3751	3751	3751	3751	3751	3751
PPI	Pearson Correlation	.958**	.967**	.948**	.961**	.857**	.482**	.838**	-.246**	-.617**	-.496**	.997**	1	-.147**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000		.000
	N	3751	3751	3751	3751	3501	3751	3751	3751	3751	3751	3751	3751	3751
UR	Pearson Correlation	-.214**	-.172**	-.247**	-.209**	-.408**	.296**	-.057**	.527**	.406**	-.008	-.112**	-.147**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.001	.000	.000	.615	.000	.000	
	N	3751	3751	3751	3751	3501	3751	3751	3751	3751	3751	3751	3751	3751

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

Kendall's tau_b		J200	J201	J202	J203	J204	USD ZAR	EUR ZAR	SAG B30	SAG B10	GDP%	CPI	PPI	UR
J200	Correlation Coefficient	1.000	.879**	.878**	.979**	.819**	.283**	.550**	-.060**	-.438**	-.250**	.835**	.833**	-.075**
	Sig. (2-tailed)	.	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	3751	3751	3751	3751	3501	3751	3751	3751	3751	3751	3751	3751	3751
J201	Correlation Coefficient	.879**	1.000	.925**	.900**	.830**	.241**	.511**	-.134**	-.522**	-.254**	.897**	.887**	-.019
	Sig. (2-tailed)	.000	.	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.091
	N	3751	3751	3751	3751	3501	3751	3751	3751	3751	3751	3751	3751	3751
J202	Correlation Coefficient	.878**	.925**	1.000	.894**	.884**	.223**	.503**	-.153**	-.517**	-.239**	.856**	.846**	-.069**
	Sig. (2-tailed)	.000	.000	.	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	3751	3751	3751	3751	3501	3751	3751	3751	3751	3751	3751	3751	3751
J203	Correlation Coefficient	.979**	.900**	.894**	1.000	.823**	.275**	.542**	-.073**	-.454**	-.249**	.849**	.845**	-.065**
	Sig. (2-tailed)	.000	.000	.000	.	.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	3751	3751	3751	3751	3501	3751	3751	3751	3751	3751	3751	3751	3751
J204	Correlation Coefficient	.819**	.830**	.884**	.823**	1.000	.253**	.417**	-.089**	-.461**	-.246**	.750**	.739**	-.092**
	Sig. (2-tailed)	.000	.000	.000	.000	.	.000	.000	.000	.000	.000	.000	.000	.000
	N	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501
USD/ ZAR	Correlation Coefficient	.283**	.241**	.223**	.275**	.253**	1.000	.542**	.349**	.059**	-.401**	.302**	.311**	.265**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.	.000	.000	.000	.000	.000	.000	.000
	N	3751	3751	3751	3751	3501	3751	3751	3751	3751	3751	3751	3751	3751
EUR /ZAR	Correlation Coefficient	.550**	.511**	.503**	.542**	.417**	.542**	1.000	.092**	-.188**	-.404**	.565**	.576**	.013
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.	.000	.000	.000	.000	.000	.249
	N	3751	3751	3751	3751	3501	3751	3751	3751	3751	3751	3751	3751	3751
SAG B30	Correlation Coefficient	-.060**	-.134**	-.153**	-.073**	-.089**	.349**	.092**	1.000	.552**	-.174**	-.086**	-.077**	.423**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.	.000	.000	.000	.000	.000
	N	3751	3751	3751	3751	3501	3751	3751	3751	3751	3751	3751	3751	3751
SAG B10	Correlation Coefficient	-.438**	-.522**	-.517**	-.454**	-.461**	.059**	-.188**	.552**	1.000	.025*	-.476**	-.467**	.198**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.	.020	.000	.000	.000
	N	3751	3751	3751	3751	3501	3751	3751	3751	3751	3751	3751	3751	3751
GDP %	Correlation Coefficient	-.250**	-.254**	-.239**	-.249**	-.246**	-.401**	-.404**	-.174**	.025*	1.000	-.310**	-.303**	-.098**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.020	.	.000	.000	.000
	N	3751	3751	3751	3751	3501	3751	3751	3751	3751	3751	3751	3751	3751
CPI	Correlation Coefficient	.835**	.897**	.856**	.849**	.750**	.302**	.565**	-.086**	-.476**	-.310**	1.000	.977**	-.009
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.	.000	.406
	N	3751	3751	3751	3751	3501	3751	3751	3751	3751	3751	3751	3751	3751
PPI	Correlation Coefficient	.833**	.887**	.846**	.845**	.739**	.311**	.576**	-.077**	-.467**	-.303**	.977**	1.000	-.016
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.	.160
	N	3751	3751	3751	3751	3501	3751	3751	3751	3751	3751	3751	3751	3751
UR	Correlation Coefficient	-.075**	-.019	-.069**	-.065**	-.092**	.265**	.013	.423**	.198**	-.098**	-.009	-.016	1.000
	Sig. (2-tailed)	.000	.091	.000	.000	.000	.000	.249	.000	.000	.000	.406	.160	.
	N	3751	3751	3751	3751	3501	3751	3751	3751	3751	3751	3751	3751	3751

**. Correlation is significant at the 0.01 level (2-tailed). *. Correlation is significant at the 0.05 level (2-tailed).

Correlations

Spearman's rho		J200	J201	J202	J203	J204	USD ZAR	EUR ZAR	SAG B30	SAG B10	GDP %	CPI	PPI	UR
J200	Correlation Coefficient	1.000	.974**	.975**	.999**	.948**	.360**	.754**	-.180**	-.639**	-.371**	.955**	.955**	-.161**
	Sig. (2-tailed)	.	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	3751	3751	3751	3751	3501	3751	3751	3751	3751	3751	3751	3751	3751
J201	Correlation Coefficient	.974**	1.000	.987**	.981**	.939**	.312**	.722**	-.237**	-.697**	-.376**	.981**	.979**	-.111**
	Sig. (2-tailed)	.000	.	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	3751	3751	3751	3751	3501	3751	3751	3751	3751	3751	3751	3751	3751
J202	Correlation Coefficient	.975**	.987**	1.000	.980**	.978**	.297**	.713**	-.256**	-.693**	-.359**	.955**	.954**	-.169**
	Sig. (2-tailed)	.000	.000	.	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	3751	3751	3751	3751	3501	3751	3751	3751	3751	3751	3751	3751	3751
J203	Correlation Coefficient	.999**	.981**	.980**	1.000	.949**	.349**	.748**	-.192**	-.652**	-.368**	.961**	.961**	-.152**
	Sig. (2-tailed)	.000	.000	.000	.	.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	3751	3751	3751	3751	3501	3751	3751	3751	3751	3751	3751	3751	3751
J204	Correlation Coefficient	.948**	.939**	.978**	.949**	1.000	.347**	.618**	-.142**	-.630**	-.366**	.878**	.877**	-.183**
	Sig. (2-tailed)	.000	.000	.000	.000	.	.000	.000	.000	.000	.000	.000	.000	.000
	N	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501	3501
USD ZAR	Correlation Coefficient	.360**	.312**	.297**	.349**	.347**	1.000	.718**	.501**	.060**	-.570**	.366**	.374**	.386**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.	.000	.000	.000	.000	.000	.000	.000
	N	3751	3751	3751	3751	3501	3751	3751	3751	3751	3751	3751	3751	3751
EUR ZAR	Correlation Coefficient	.754**	.722**	.713**	.748**	.618**	.718**	1.000	.109**	-.277**	-.572**	.774**	.780**	.022
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.	.000	.000	.000	.000	.000	.184
	N	3751	3751	3751	3751	3501	3751	3751	3751	3751	3751	3751	3751	3751
SAG B30	Correlation Coefficient	-.180**	-.237**	-.256**	-.192**	-.142**	.501**	.109**	1.000	.713**	-.270**	-.194**	-.185**	.602**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.	.000	.000	.000	.000	.000
	N	3751	3751	3751	3751	3501	3751	3751	3751	3751	3751	3751	3751	3751
SAG B10	Correlation Coefficient	-.639**	-.697**	-.693**	-.652**	-.630**	.060**	-.277**	.713**	1.000	.041*	-.650**	-.643**	.311**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.	.012	.000	.000	.000
	N	3751	3751	3751	3751	3501	3751	3751	3751	3751	3751	3751	3751	3751
GDP %	Correlation Coefficient	-.371**	-.376**	-.359**	-.368**	-.366**	-.570**	-.572**	-.270**	.041*	1.000	-.463**	-.460**	-.144**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.012	.	.000	.000	.000
	N	3751	3751	3751	3751	3501	3751	3751	3751	3751	3751	3751	3751	3751
CPI	Correlation Coefficient	.955**	.981**	.955**	.961**	.878**	.366**	.774**	-.194**	-.650**	-.463**	1.000	.998**	-.108**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.	.000	.000
	N	3751	3751	3751	3751	3501	3751	3751	3751	3751	3751	3751	3751	3751
PPI	Correlation Coefficient	.955**	.979**	.954**	.961**	.877**	.374**	.780**	-.185**	-.643**	-.460**	.998**	1.000	-.109**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.	.000
	N	3751	3751	3751	3751	3501	3751	3751	3751	3751	3751	3751	3751	3751
UR	Correlation Coefficient	-.161**	-.111**	-.169**	-.152**	-.183**	.386**	.022	.602**	.311**	-.144**	-.108**	-.109**	1.000
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.184	.000	.000	.000	.000	.000	.
	N	3751	3751	3751	3751	3501	3751	3751	3751	3751	3751	3751	3751	3751

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

g) Regression Model (enter method)

J200

Correlations

		J200	USD ZAR	EUR ZAR	SAG B30	SAG B10	GDP %	CPI	PPI	UR
Pearson Correlation	J200	1.000	.476	.806	-.250	-.612	-.373	.952	.958	-.214
	USD/ZAR	.476	1.000	.737	.442	.156	-.508	.472	.482	.296
	EUR/ZAR	.806	.737	1.000	-.031	-.314	-.591	.815	.838	-.057
	SAGB30	-.250	.442	-.031	1.000	.865	-.112	-.247	-.246	.527
	SAGB10	-.612	.156	-.314	.865	1.000	.089	-.623	-.617	.406
	GDP%	-.373	-.508	-.591	-.112	.089	1.000	-.479	-.496	-.008
	CPI	.952	.472	.815	-.247	-.623	-.479	1.000	.997	-.112
	PPI	.958	.482	.838	-.246	-.617	-.496	.997	1.000	-.147
	UR	-.214	.296	-.057	.527	.406	-.008	-.112	-.147	1.000
Sig. (1-tailed)	J200	.	.000	.000	.000	.000	.000	.000	.000	.000
	USD/ZAR	.000	.	.000	.000	.000	.000	.000	.000	.000
	EUR/ZAR	.000	.000	.	.029	.000	.000	.000	.000	.000
	SAGB30	.000	.000	.029	.	.000	.000	.000	.000	.000
	SAGB10	.000	.000	.000	.000	.	.000	.000	.000	.000
	GDP%	.000	.000	.000	.000	.000	.	.000	.000	.308
	CPI	.000	.000	.000	.000	.000	.000	.	.000	.000
	PPI	.000	.000	.000	.000	.000	.000	.000	.	.000
	UR	.000	.000	.000	.000	.000	.308	.000	.000	.
N	J200	3751	3751	3751	3751	3751	3751	3751	3751	3751
	USD/ZAR	3751	3751	3751	3751	3751	3751	3751	3751	3751
	EUR/ZAR	3751	3751	3751	3751	3751	3751	3751	3751	3751
	SAGB30	3751	3751	3751	3751	3751	3751	3751	3751	3751
	SAGB10	3751	3751	3751	3751	3751	3751	3751	3751	3751
	GDP%	3751	3751	3751	3751	3751	3751	3751	3751	3751
	CPI	3751	3751	3751	3751	3751	3751	3751	3751	3751
	PPI	3751	3751	3751	3751	3751	3751	3751	3751	3751
	UR	3751	3751	3751	3751	3751	3751	3751	3751	3751

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	UR, GDP%, SAGB10, USD/ZAR, CPI, EUR/ZAR, SAGB30, PPI[b]	.	Enter

a. Dependent Variable: J200
b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.974[a]	.948	.948	2757.588	.948	8604.372	8	3742	.000	.018

a. Predictors: (Constant), UR, GDP%, SAGB10, USD/ZAR, CPI, EUR/ZAR, SAGB30, PPI
b. Dependent Variable: J200

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	523441364547.564	8	65430170568.445	8604.372	.000[b]
	Residual	28455265578.608	3742	7604293.313		
	Total	551896630126.173	3750			

a. Dependent Variable: J200
b. Predictors: (Constant), UR, GDP%, SAGB10, USD/ZAR, CPI, EUR/ZAR, SAGB30, PPI

© University of Pretoria

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	-29579.226	1237.322		-23.906	.000	-32005.117	-27153.335		
	USD/ZAR	877.724	60.331	.121	14.548	.000	759.439	996.009	.199	5.033
	EUR/ZAR	49.240	81.500	.008	.604	.546	-110.549	209.030	.070	14.343
	SAGB30	1683.918	144.183	.167	11.679	.000	1401.234	1966.602	.068	14.808
	SAGB10	-1883.713	147.990	-.208	-12.729	.000	-2173.861	-1593.565	.052	19.376
	GDP%	890.235	24.578	.171	36.221	.000	842.048	938.423	.619	1.616
	CPI	-302.010	48.839	-.492	-6.184	.000	-397.764	-206.256	.002	459.366
	PPI	758.115	48.568	1.365	15.609	.000	662.892	853.338	.002	554.941
	UR	-709.623	38.771	-.106	-18.303	.000	-785.637	-633.609	.408	2.448

a. Dependent Variable: J200

Coefficient Correlations[a]

Model			UR	GDP%	SAGB10	USD/ZAR	CPI	EUR/ZAR	SAGB30	PPI
1	Correlations	UR	1.000	.032	.243	.010	-.612	-.299	-.373	.619
		GDP%	.032	1.000	.044	.083	-.113	.064	-.004	.122
		SAGB10	.243	.044	1.000	.254	-.152	-.488	-.916	.274
		USD/ZAR	.010	.083	.254	1.000	-.243	-.679	-.441	.280
		CPI	-.612	-.113	-.152	-.243	1.000	.559	.241	-.988
		EUR/ZAR	-.299	.064	-.488	-.679	.559	1.000	.548	-.646
		SAGB30	-.373	-.004	-.916	-.441	.241	.548	1.000	-.341
		PPI	.619	.122	.274	.280	-.988	-.646	-.341	1.000
	Covariances	UR	1503.170	30.260	1394.553	23.556	-1159.436	-945.778	-2085.795	1165.699
		GDP%	30.260	604.075	160.088	122.861	-135.639	127.229	-13.605	145.819
		SAGB10	1394.553	160.088	21900.908	2272.104	-1101.401	-5880.157	-19543.206	1971.646
		USD/ZAR	23.556	122.861	2272.104	3639.839	-714.610	-3340.432	-3833.941	819.188
		CPI	-1159.436	-135.639	-1101.401	-714.610	2385.258	2224.673	1695.498	-2344.456
		EUR/ZAR	-945.778	127.229	-5880.157	-3340.432	2224.673	6642.292	6439.268	-2557.210
		SAGB30	-2085.795	-13.605	-19543.206	-3833.941	1695.498	6439.268	20788.623	-2389.360
		PPI	1165.699	145.819	1971.646	819.188	-2344.456	-2557.210	-2389.360	2358.877

a. Dependent Variable: J200

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions								
				(Constant)	USD/ZAR	EUR/ZAR	SAGB30	SAGB10	GDP%	CPI	PPI	UR
1	1	8.477	1.000	.00	.00	.00	.00	.00	.00	.00	.00	.00
	2	.426	4.461	.00	.00	.00	.00	.00	.48	.00	.00	.00
	3	.066	11.358	.00	.00	.00	.00	.01	.13	.00	.00	.00
	4	.019	21.085	.01	.23	.01	.00	.00	.28	.00	.00	.01
	5	.005	39.699	.00	.27	.17	.00	.04	.02	.00	.00	.12
	6	.004	44.023	.05	.00	.09	.09	.00	.04	.00	.00	.09
	7	.002	65.925	.25	.37	.18	.05	.02	.04	.00	.00	.33
	8	.000	134.014	.62	.06	.15	.76	.89	.00	.01	.00	.06
	9	2.416E-5	592.295	.07	.07	.38	.10	.05	.01	.99	1.00	.39

a. Dependent Variable: J200

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	4507.7012	45418.7109	23486.1895	11814.58268	3751
Residual	-8138.41162	7921.58838	.00000	2754.64532	3751
Std. Predicted Value	-1.606	1.856	.000	1.000	3751
Std. Residual	-2.951	2.873	.000	.999	3751

a. Dependent Variable: J200

© University of Pretoria

J201

Correlations

		J201	USD ZAR	EUR ZAR	SAG B30	SAG B10	GDP %	CPI	PPI	UR
Pearson Correlation	J201	1.000	.441	.768	-.301	-.673	-.370	.969	.967	-.172
	USD/ZAR	.441	1.000	.737	.442	.156	-.508	.472	.482	.296
	EUR/ZAR	.768	.737	1.000	-.031	-.314	-.591	.815	.838	-.057
	SAGB30	-.301	.442	-.031	1.000	.865	-.112	-.247	-.246	.527
	SAGB10	-.673	.156	-.314	.865	1.000	.089	-.623	-.617	.406
	GDP%	-.370	-.508	-.591	-.112	.089	1.000	-.479	-.496	-.008
	CPI	.969	.472	.815	-.247	-.623	-.479	1.000	.997	-.112
	PPI	.967	.482	.838	-.246	-.617	-.496	.997	1.000	-.147
	UR	-.172	.296	-.057	.527	.406	-.008	-.112	-.147	1.000
Sig. (1-tailed)	J201	.	.000	.000	.000	.000	.000	.000	.000	.000
	USD/ZAR	.000	.	.000	.000	.000	.000	.000	.000	.000
	EUR/ZAR	.000	.000	.	.029	.000	.000	.000	.000	.000
	SAGB30	.000	.000	.029	.	.000	.000	.000	.000	.000
	SAGB10	.000	.000	.000	.000	.	.000	.000	.000	.000
	GDP%	.000	.000	.000	.000	.000	.	.000	.000	.308
	CPI	.000	.000	.000	.000	.000	.000	.	.000	.000
	PPI	.000	.000	.000	.000	.000	.000	.000	.	.000
	UR	.000	.000	.000	.000	.000	.308	.000	.000	.
N	J201	3751	3751	3751	3751	3751	3751	3751	3751	3751
	USD/ZAR	3751	3751	3751	3751	3751	3751	3751	3751	3751
	EUR/ZAR	3751	3751	3751	3751	3751	3751	3751	3751	3751
	SAGB30	3751	3751	3751	3751	3751	3751	3751	3751	3751
	SAGB10	3751	3751	3751	3751	3751	3751	3751	3751	3751
	GDP%	3751	3751	3751	3751	3751	3751	3751	3751	3751
	CPI	3751	3751	3751	3751	3751	3751	3751	3751	3751
	PPI	3751	3751	3751	3751	3751	3751	3751	3751	3751
	UR	3751	3751	3751	3751	3751	3751	3751	3751	3751

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	UR, GDP%, SAGB10, USD/ZAR, CPI, EUR/ZAR, SAGB30, PPI[b]	.	Enter

a. Dependent Variable: J201
b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.983[a]	.966	.966	3632.69	.966	13222.231	8	3742	.000	.013

a. Predictors: (Constant), UR, GDP%, SAGB10, USD/ZAR, CPI, EUR/ZAR, SAGB30, PPI
b. Dependent Variable: J201

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1395894321058.658	8	174486790132.332	13222.231	.000[b]
	Residual	49381195016.939	3742	13196471.143		
	Total	1445275516075.596	3750			

a. Dependent Variable: J201
b. Predictors: (Constant), UR, GDP%, SAGB10, USD/ZAR, CPI, EUR/ZAR, SAGB30, PPI

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	-49191.806	1629.979		-30.179	.000	-52387.541	-45996.072		
USD/ZAR	1596.475	79.477	.136	20.087	.000	1440.653	1752.297	.199	5.033
EUR/ZAR	-468.420	107.364	-.050	-4.363	.000	-678.917	-257.922	.070	14.343
SAGB30	2725.389	189.938	.167	14.349	.000	2352.997	3097.782	.068	14.808
SAGB10	-4571.292	194.953	-.312	-23.448	.000	-4953.517	-4189.067	.052	19.376
GDP%	1050.991	32.378	.125	32.460	.000	987.512	1114.471	.619	1.616
CPI	571.612	64.338	.575	8.885	.000	445.471	697.752	.002	459.366
PPI	242.153	63.981	.269	3.785	.000	116.712	367.595	.002	554.941
UR	-770.966	51.074	-.071	-15.095	.000	-871.103	-670.830	.408	2.448

a. Dependent Variable: J201

Coefficient Correlations[a]

Model			UR	GDP%	SAGB10	USD/ZAR	CPI	EUR/ZAR	SAGB30	PPI
1	Correlations	UR	1.000	.032	.243	.010	-.612	-.299	-.373	.619
		GDP%	.032	1.000	.044	.083	-.113	.064	-.004	.122
		SAGB10	.243	.044	1.000	.254	-.152	-.488	-.916	.274
		USD/ZAR	.010	.083	.254	1.000	-.243	-.679	-.441	.280
		CPI	-.612	-.113	-.152	-.243	1.000	.559	.241	-.988
		EUR/ZAR	-.299	.064	-.488	-.679	.559	1.000	.548	-.646
		SAGB30	-.373	-.004	-.916	-.441	.241	.548	1.000	-.341
		PPI	.619	.122	.274	.280	-.988	-.646	-.341	1.000
	Covariances	UR	2608.597	52.514	2420.104	40.878	-2012.083	-1641.301	-3619.683	2022.951
		GDP%	52.514	1048.310	277.816	213.213	-235.387	220.793	-23.611	253.053
		SAGB10	2420.104	277.816	38006.779	3943.004	-1911.368	-10204.410	-33915.230	3421.589
		USD/ZAR	40.878	213.213	3943.004	6316.567	-1240.132	-5796.978	-6653.411	1421.617
		CPI	-2012.083	-235.387	-1911.368	-1240.132	4139.371	3860.692	2942.362	-4068.562
		EUR/ZAR	-1641.301	220.793	-10204.410	-5796.978	3860.692	11527.017	11174.689	-4437.776
		SAGB30	-3619.683	-23.611	-33915.230	-6653.411	2942.362	11174.689	36076.523	-4146.489
		PPI	2022.951	253.053	3421.589	1421.617	-4068.562	-4437.776	-4146.489	4093.590

a. Dependent Variable: J201

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions								
				(Constant)	USD/ZAR	EUR/ZAR	SAGB30	SAGB10	GDP%	CPI	PPI	UR
1	1	8.477	1.000	.00	.00	.00	.00	.00	.00	.00	.00	.00
	2	.426	4.461	.00	.00	.00	.00	.00	.48	.00	.00	.00
	3	.066	11.358	.00	.00	.00	.00	.01	.13	.00	.00	.00
	4	.019	21.085	.01	.23	.01	.00	.00	.28	.00	.00	.01
	5	.005	39.699	.00	.27	.17	.00	.04	.02	.00	.00	.12
	6	.004	44.023	.05	.00	.09	.09	.00	.04	.00	.00	.09
	7	.002	65.925	.25	.37	.18	.05	.02	.04	.00	.00	.33
	8	.000	134.014	.62	.06	.15	.76	.89	.00	.01	.00	.06
	9	2.416E-5	592.295	.07	.07	.38	.10	.05	.01	.99	1.00	.39

a. Dependent Variable: J201

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	1149.7777	68895.5859	32894.6946	19293.48298	3751
Residual	-10870.88379	14200.80957	.00000	3628.81781	3751
Std. Predicted Value	-1.645	1.866	.000	1.000	3751
Std. Residual	-2.993	3.909	.000	.999	3751

a. Dependent Variable: J201

J202

Correlations

		J202	USD ZAR	EUR ZAR	SAG B30	SAG B10	GDP %	CPI	PPI	UR
Pearson Correlation	J202	1.000	.437	.782	-.329	-.669	-.359	.944	.948	-.247
	USD/ZAR	.437	1.000	.737	.442	.156	-.508	.472	.482	.296
	EUR/ZAR	.782	.737	1.000	-.031	-.314	-.591	.815	.838	-.057
	SAGB30	-.329	.442	-.031	1.000	.865	-.112	-.247	-.246	.527
	SAGB10	-.669	.156	-.314	.865	1.000	.089	-.623	-.617	.406
	GDP%	-.359	-.508	-.591	-.112	.089	1.000	-.479	-.496	-.008
	CPI	.944	.472	.815	-.247	-.623	-.479	1.000	.997	-.112
	PPI	.948	.482	.838	-.246	-.617	-.496	.997	1.000	-.147
	UR	-.247	.296	-.057	.527	.406	-.008	-.112	-.147	1.000
Sig. (1-tailed)	J202	.	.000	.000	.000	.000	.000	.000	.000	.000
	USD/ZAR	.000	.	.000	.000	.000	.000	.000	.000	.000
	EUR/ZAR	.000	.000	.	.029	.000	.000	.000	.000	.000
	SAGB30	.000	.000	.029	.	.000	.000	.000	.000	.000
	SAGB10	.000	.000	.000	.000	.	.000	.000	.000	.000
	GDP%	.000	.000	.000	.000	.000	.	.000	.000	.308
	CPI	.000	.000	.000	.000	.000	.000	.	.000	.000
	PPI	.000	.000	.000	.000	.000	.000	.000	.	.000
	UR	.000	.000	.000	.000	.000	.308	.000	.000	.
N	J202	3751	3751	3751	3751	3751	3751	3751	3751	3751
	USD/ZAR	3751	3751	3751	3751	3751	3751	3751	3751	3751
	EUR/ZAR	3751	3751	3751	3751	3751	3751	3751	3751	3751
	SAGB30	3751	3751	3751	3751	3751	3751	3751	3751	3751
	SAGB10	3751	3751	3751	3751	3751	3751	3751	3751	3751
	GDP%	3751	3751	3751	3751	3751	3751	3751	3751	3751
	CPI	3751	3751	3751	3751	3751	3751	3751	3751	3751
	PPI	3751	3751	3751	3751	3751	3751	3751	3751	3751
	UR	3751	3751	3751	3751	3751	3751	3751	3751	3751

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	UR, GDP%, SAGB10, USD/ZAR, CPI, EUR/ZAR, SAGB30, PPI[b]	.	Enter

a. Dependent Variable: J202
b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.968[a]	.938	.938	4082.57340	.938	7044.227	8	3742	.000	.007

a. Predictors: (Constant), UR, GDP%, SAGB10, USD/ZAR, CPI, EUR/ZAR, SAGB30, PPI
b. Dependent Variable: J202

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	939271944815.015	8	117408993101.877	7044.227	.000[b]
	Residual	62369431703.172	3742	16667405.586		
	Total	1001641376518.187	3750			

a. Dependent Variable: J202
b. Predictors: (Constant), UR, GDP%, SAGB10, USD/ZAR, CPI, EUR/ZAR, SAGB30, PPI

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	-27332.344	1831.839		-14.921	.000	-30923.843	-23740.844		
USD/ZAR	1653.154	89.319	.169	18.508	.000	1478.034	1828.273	.199	5.033
EUR/ZAR	-97.589	120.660	-.012	-.809	.419	-334.155	138.977	.070	14.343
SAGB30	856.626	213.460	.063	4.013	.000	438.116	1275.136	.068	14.808
SAGB10	-2601.724	219.097	-.213	-11.875	.000	-3031.284	-2172.163	.052	19.376
GDP%	1065.660	36.387	.152	29.287	.000	994.319	1137.001	.619	1.616
CPI	-59.117	72.306	-.071	-.818	.414	-200.880	82.645	.002	459.366
PPI	665.666	71.905	.890	9.258	.000	524.690	806.642	.002	554.941
UR	-1090.226	57.400	-.121	-18.994	.000	-1202.763	-977.688	.408	2.448

a. Dependent Variable: J202

Coefficient Correlations[a]

Model			UR	GDP%	SAGB10	USD/ZAR	CPI	EUR/ZAR	SAGB30	PPI
1	Correlations	UR	1.000	.032	.243	.010	-.612	-.299	-.373	.619
		GDP%	.032	1.000	.044	.083	-.113	.064	-.004	.122
		SAGB10	.243	.044	1.000	.254	-.152	-.488	-.916	.274
		USD/ZAR	.010	.083	.254	1.000	-.243	-.679	-.441	.280
		CPI	-.612	-.113	-.152	-.243	1.000	.559	.241	-.988
		EUR/ZAR	-.299	.064	-.488	-.679	.559	1.000	.548	-.646
		SAGB30	-.373	-.004	-.916	-.441	.241	.548	1.000	-.341
		PPI	.619	.122	.274	.280	-.988	-.646	-.341	1.000
	Covariances	UR	3294.710	66.326	3056.640	51.630	-2541.300	-2072.995	-4571.731	2555.027
		GDP%	66.326	1324.036	350.887	269.292	-297.299	278.866	-29.821	319.611
		SAGB10	3056.640	350.887	48003.318	4980.092	-2414.096	-12888.373	-42835.610	4321.535
		USD/ZAR	51.630	269.292	4980.092	7977.950	-1566.311	-7321.698	-8403.390	1795.530
		CPI	-2541.300	-297.299	-2414.096	-1566.311	5228.107	4876.131	3716.262	-5138.675
		EUR/ZAR	-2072.995	278.866	-12888.373	-7321.698	4876.131	14558.852	14113.855	-5604.999
		SAGB30	-4571.731	-29.821	-42835.610	-8403.390	3716.262	14113.855	45565.367	-5237.098
		PPI	2555.027	319.611	4321.535	1795.530	-5138.675	-5604.999	-5237.098	5170.285

a. Dependent Variable: J202

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions								
				(Constant)	USD/ZAR	EUR/ZAR	SAGB30	SAGB10	GDP%	CPI	PPI	UR
1	1	8.477	1.000	.00	.00	.00	.00	.00	.00	.00	.00	.00
	2	.426	4.461	.00	.00	.00	.00	.00	.48	.00	.00	.00
	3	.066	11.358	.00	.00	.00	.00	.01	.13	.00	.00	.00
	4	.019	21.085	.01	.23	.01	.00	.00	.28	.00	.00	.01
	5	.005	39.699	.00	.27	.17	.00	.04	.02	.00	.00	.12
	6	.004	44.023	.05	.00	.09	.09	.00	.04	.00	.00	.09
	7	.002	65.925	.25	.37	.18	.05	.02	.04	.00	.00	.33
	8	.000	134.014	.62	.06	.15	.76	.89	.00	.01	.00	.06
	9	2.416E-5	592.295	.07	.07	.38	.10	.05	.01	.99	1.00	.39

a. Dependent Variable: J202

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	-848.2006	56861.8672	27147.6732	15826.32360	3751
Residual	-11001.33008	11597.83008	.00000	4078.21633	3751
Std. Predicted Value	-1.769	1.878	.000	1.000	3751
Std. Residual	-2.695	2.841	.000	.999	3751

a. Dependent Variable: J202

© University of Pretoria

J203

Correlations

		J203	USD/ZAR	EUR/ZAR	SAGB30	SAGB10	GDP%	CPI	PPI	UR
Pearson Correlation	J203	1.000	.471	.801	-.260	-.624	-.373	.956	.961	-.209
	USD/ZAR	.471	1.000	.737	.442	.156	-.508	.472	.482	.296
	EUR/ZAR	.801	.737	1.000	-.031	-.314	-.591	.815	.838	-.057
	SAGB30	-.260	.442	-.031	1.000	.865	-.112	-.247	-.246	.527
	SAGB10	-.624	.156	-.314	.865	1.000	.089	-.623	-.617	.406
	GDP%	-.373	-.508	-.591	-.112	.089	1.000	-.479	-.496	-.008
	CPI	.956	.472	.815	-.247	-.623	-.479	1.000	.997	-.112
	PPI	.961	.482	.838	-.246	-.617	-.496	.997	1.000	-.147
	UR	-.209	.296	-.057	.527	.406	-.008	-.112	-.147	1.000
Sig. (1-tailed)	J203	.	.000	.000	.000	.000	.000	.000	.000	.000
	USD/ZAR	.000	.	.000	.000	.000	.000	.000	.000	.000
	EUR/ZAR	.000	.000	.	.029	.000	.000	.000	.000	.000
	SAGB30	.000	.000	.029	.	.000	.000	.000	.000	.000
	SAGB10	.000	.000	.000	.000	.	.000	.000	.000	.000
	GDP%	.000	.000	.000	.000	.000	.	.000	.000	.308
	CPI	.000	.000	.000	.000	.000	.000	.	.000	.000
	PPI	.000	.000	.000	.000	.000	.000	.000	.	.000
	UR	.000	.000	.000	.000	.000	.308	.000	.000	.
N	J203	3751	3751	3751	3751	3751	3751	3751	3751	3751
	USD/ZAR	3751	3751	3751	3751	3751	3751	3751	3751	3751
	EUR/ZAR	3751	3751	3751	3751	3751	3751	3751	3751	3751
	SAGB30	3751	3751	3751	3751	3751	3751	3751	3751	3751
	SAGB10	3751	3751	3751	3751	3751	3751	3751	3751	3751
	GDP%	3751	3751	3751	3751	3751	3751	3751	3751	3751
	CPI	3751	3751	3751	3751	3751	3751	3751	3751	3751
	PPI	3751	3751	3751	3751	3751	3751	3751	3751	3751
	UR	3751	3751	3751	3751	3751	3751	3751	3751	3751

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	UR, GDP%, SAGB10, USD/ZAR, CPI, EUR/ZAR, SAGB30, PPI[b]	.	Enter

a. Dependent Variable: J203
b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.976[a]	.952	.952	3011.25085	.952	9319.108	8	3742	.000	.016

a. Predictors: (Constant), UR, GDP%, SAGB10, USD/ZAR, CPI, EUR/ZAR, SAGB30, PPI
b. Dependent Variable: J203

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	676017917857.381	8	84502239732.173	9319.108	.000[b]
	Residual	33931077808.703	3742	9067631.697		
	Total	709948995666.084	3750			

a. Dependent Variable: J203
b. Predictors: (Constant), UR, GDP%, SAGB10, USD/ZAR, CPI, EUR/ZAR, SAGB30, PPI

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	-33585.766	1351.139		-24.857	.000	-36234.807	-30936.725		
USD/ZAR	1024.501	65.881	.125	15.551	.000	895.335	1153.667	.199	5.033
EUR/ZAR	-3.584	88.997	-.001	-.040	.968	-178.072	170.904	.070	14.343
SAGB30	1859.144	157.446	.162	11.808	.000	1550.457	2167.832	.068	14.808
SAGB10	-2278.724	161.603	-.222	-14.101	.000	-2595.562	-1961.886	.052	19.376
GDP%	970.183	26.839	.164	36.149	.000	917.563	1022.803	.619	1.616
CPI	-233.828	53.332	-.336	-4.384	.000	-338.390	-129.266	.002	459.366
PPI	759.685	53.036	1.206	14.324	.000	655.703	863.667	.002	554.941
UR	-766.337	42.337	-.101	-18.101	.000	-849.343	-683.330	.408	2.448

a. Dependent Variable: J203

Coefficient Correlations[a]

Model			UR	GDP%	SAGB10	USD/ZAR	CPI	EUR/ZAR	SAGB30	PPI
1	Correlations	UR	1.000	.032	.243	.010	-.612	-.299	-.373	.619
		GDP%	.032	1.000	.044	.083	-.113	.064	-.004	.122
		SAGB10	.243	.044	1.000	.254	-.152	-.488	-.916	.274
		USD/ZAR	.010	.083	.254	1.000	-.243	-.679	-.441	.280
		CPI	-.612	-.113	-.152	-.243	1.000	.559	.241	-.988
		EUR/ZAR	-.299	.064	-.488	-.679	.559	1.000	.548	-.646
		SAGB30	-.373	-.004	-.916	-.441	.241	.548	1.000	-.341
		PPI	.619	.122	.274	.280	-.988	-.646	-.341	1.000
	Covariances	UR	1792.433	36.083	1662.915	28.088	-1382.553	-1127.779	-2487.176	1390.021
		GDP%	36.083	720.320	190.894	146.504	-161.740	151.712	-16.224	173.879
		SAGB10	1662.915	190.894	26115.427	2709.338	-1313.350	-7011.710	-23304.019	2351.061
		USD/ZAR	28.088	146.504	2709.338	4340.274	-852.126	-3983.251	-4571.728	976.829
		CPI	-1382.553	-161.740	-1313.350	-852.126	2844.267	2652.780	2021.772	-2795.613
		EUR/ZAR	-1127.779	151.712	-7011.710	-3983.251	2652.780	7920.507	7678.414	-3049.309
		SAGB30	-2487.176	-16.224	-23304.019	-4571.728	2021.772	7678.414	24789.099	-2849.158
		PPI	1390.021	173.879	2351.061	976.829	-2795.613	-3049.309	-2849.158	2812.810

a. Dependent Variable: J203

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions								
				(Constant)	USD/ZAR	EUR/ZAR	SAGB30	SAGB10	GDP%	CPI	PPI	UR
1	1	8.477	1.000	.00	.00	.00	.00	.00	.00	.00	.00	.00
	2	.426	4.461	.00	.00	.00	.00	.00	.48	.00	.00	.00
	3	.066	11.358	.00	.00	.00	.00	.01	.13	.00	.00	.00
	4	.019	21.085	.01	.23	.01	.00	.00	.28	.00	.00	.01
	5	.005	39.699	.00	.27	.17	.00	.04	.02	.00	.00	.12
	6	.004	44.023	.05	.00	.09	.09	.00	.04	.00	.00	.09
	7	.002	65.925	.25	.37	.18	.05	.02	.04	.00	.00	.33
	8	.000	134.014	.62	.06	.15	.76	.89	.00	.01	.00	.06
	9	2.416E-5	592.295	.07	.07	.38	.10	.05	.01	.99	1.00	.39

a. Dependent Variable: J203

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	4537.4282	51020.5000	26046.9977	13426.52020	3751
Residual	-8953.66113	9145.16016	.00000	3008.03714	3751
Std. Predicted Value	-1.602	1.860	.000	1.000	3751
Std. Residual	-2.973	3.037	.000	.999	3751

a. Dependent Variable: J203

J204

Correlations

		J204	USD ZAR	EUR ZAR	SAG B30	SAG B10	GDP %	CPI	PPI	UR
Pearson Correlation	J204	1.000	.303	.631	-.321	-.701	-.296	.841	.857	-.408
	USD/ZAR	.303	1.000	.802	.521	.163	-.537	.538	.550	.287
	EUR/ZAR	.631	.802	1.000	.207	-.174	-.664	.793	.818	-.031
	SAGB30	-.321	.521	.207	1.000	.807	-.107	-.051	-.045	.600
	SAGB10	-.701	.163	-.174	.807	1.000	.132	-.548	-.537	.439
	GDP%	-.296	-.537	-.664	-.107	.132	1.000	-.538	-.559	-.012
	CPI	.841	.538	.793	-.051	-.548	-.538	1.000	.997	-.081
	PPI	.857	.550	.818	-.045	-.537	-.559	.997	1.000	-.119
	UR	-.408	.287	-.031	.600	.439	-.012	-.081	-.119	1.000
Sig. (1-tailed)	J204	.	.000	.000	.000	.000	.000	.000	.000	.000
	USD/ZAR	.000	.	.000	.000	.000	.000	.000	.000	.000
	EUR/ZAR	.000	.000	.	.000	.000	.000	.000	.000	.032
	SAGB30	.000	.000	.000	.	.000	.000	.001	.004	.000
	SAGB10	.000	.000	.000	.000	.	.000	.000	.000	.000
	GDP%	.000	.000	.000	.000	.000	.	.000	.000	.245
	CPI	.000	.000	.000	.001	.000	.000	.	.000	.000
	PPI	.000	.000	.000	.004	.000	.000	.000	.	.000
	UR	.000	.000	.032	.000	.000	.245	.000	.000	.
N	J204	3501	3501	3501	3501	3501	3501	3501	3501	3501
	USD/ZAR	3501	3501	3501	3501	3501	3501	3501	3501	3501
	EUR/ZAR	3501	3501	3501	3501	3501	3501	3501	3501	3501
	SAGB30	3501	3501	3501	3501	3501	3501	3501	3501	3501
	SAGB10	3501	3501	3501	3501	3501	3501	3501	3501	3501
	GDP%	3501	3501	3501	3501	3501	3501	3501	3501	3501
	CPI	3501	3501	3501	3501	3501	3501	3501	3501	3501
	PPI	3501	3501	3501	3501	3501	3501	3501	3501	3501
	UR	3501	3501	3501	3501	3501	3501	3501	3501	3501

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	UR, GDP%, SAGB10, USD/ZAR, CPI, EUR/ZAR, SAGB30, PPI[b]	.	Enter

a. Dependent Variable: J204
b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.956[a]	.915	.915	542.353	.915	4686.612	8	3492	.000	.016

a. Predictors: (Constant), UR, GDP%, SAGB10, USD/ZAR, CPI, EUR/ZAR, SAGB30, PPI
b. Dependent Variable: J204

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	11028447113.829	8	1378555889.229	4686.612	.000[b]
	Residual	1027163572.085	3492	294147.644		
	Total	12055610685.914	3500			

a. Dependent Variable: J204
b. Predictors: (Constant), UR, GDP%, SAGB10, USD/ZAR, CPI, EUR/ZAR, SAGB30, PPI

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	1423.696	270.907		5.255	.000	892.544	1954.848		
USD/ZAR	118.798	12.418	.109	9.567	.000	94.452	143.145	.187	5.354
EUR/ZAR	-115.663	16.367	-.126	-7.067	.000	-147.754	-83.573	.076	13.105
SAGB30	-107.363	34.824	-.059	-3.083	.002	-175.641	-39.085	.067	14.990
SAGB10	-427.445	31.420	-.270	-13.604	.000	-489.048	-365.841	.062	16.159
GDP%	217.115	5.371	.279	40.421	.000	206.584	227.646	.511	1.959
CPI	-345.163	10.814	-3.523	-31.918	.000	-366.366	-323.961	.002	499.276
PPI	392.462	10.796	4.415	36.351	.000	371.294	413.630	.002	604.594
UR	-42.955	9.608	-.043	-4.471	.000	-61.792	-24.117	.263	3.796

a. Dependent Variable: J204

Coefficient Correlations[a]

Model			UR	GDP%	SAGB10	USD/ZAR	CPI	EUR/ZAR	SAGB30	PPI
1	Correlations	UR	1.000	.253	.381	.076	-.703	-.277	-.584	.713
		GDP%	.253	1.000	.176	.115	-.256	.051	-.230	.268
		SAGB10	.381	.176	1.000	.229	-.259	-.446	-.902	.367
		USD/ZAR	.076	.115	.229	1.000	-.285	-.684	-.385	.311
		CPI	-.703	-.256	-.259	-.285	1.000	.536	.415	-.990
		EUR/ZAR	-.277	.051	-.446	-.684	.536	1.000	.463	-.608
		SAGB30	-.584	-.230	-.902	-.385	.415	.463	1.000	-.496
		PPI	.713	.268	.367	.311	-.990	-.608	-.496	1.000
	Covariances	UR	92.310	13.077	115.061	9.067	-73.010	-43.490	-195.484	73.943
		GDP%	13.077	28.851	29.729	7.689	-14.869	4.447	-42.935	15.535
		SAGB10	115.061	29.729	987.223	89.494	-87.856	-229.589	-987.024	124.434
		USD/ZAR	9.067	7.689	89.494	154.196	-38.255	-138.933	-166.377	41.631
		CPI	-73.010	-14.869	-87.856	-38.255	116.944	94.932	156.155	-115.629
		EUR/ZAR	-43.490	4.447	-229.589	-138.933	94.932	267.889	263.788	-107.432
		SAGB30	-195.484	-42.935	-987.024	-166.377	156.155	263.788	1212.735	-186.663
		PPI	73.943	15.535	124.434	41.631	-115.629	-107.432	-186.663	116.564

a. Dependent Variable: J204

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions								
				(Constant)	USD/ZAR	EUR/ZAR	SAGB30	SAGB10	GDP%	CPI	PPI	UR
1	1	8.485	1.000	.00	.00	.00	.00	.00	.00	.00	.00	.00
	2	.439	4.395	.00	.00	.00	.00	.00	.39	.00	.00	.00
	3	.045	13.680	.00	.00	.00	.00	.01	.15	.00	.00	.00
	4	.019	21.312	.01	.23	.01	.00	.00	.28	.00	.00	.01
	5	.005	39.476	.00	.26	.17	.00	.03	.02	.00	.00	.08
	6	.004	48.651	.09	.02	.08	.10	.00	.00	.00	.00	.03
	7	.002	66.950	.14	.38	.34	.02	.03	.05	.00	.00	.26
	8	.000	138.329	.62	.02	.06	.65	.82	.03	.01	.00	.09
	9	1.961E-5	657.872	.15	.09	.34	.23	.11	.07	.99	1.00	.52

a. Dependent Variable: J204

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	275.9139	7137.8550	4129.4016	1775.10137	3501
Residual	-1392.42297	2196.19409	.00000	541.73361	3501
Std. Predicted Value	-2.171	1.695	.000	1.000	3501
Std. Residual	-2.567	4.049	.000	.999	3501

a. Dependent Variable: J204

h) Regression Model (stepwise method)

J200

Correlations

		J200	USD/ZAR	EUR/ZAR	SAGB30	SAGB10	GDP%	CPI	PPI	UR
Pearson Correlation	J200	1.000	.476	.806	-.250	-.612	-.373	.952	.958	-.214
	USD/ZAR	.476	1.000	.737	.442	.156	-.508	.472	.482	.296
	EUR/ZAR	.806	.737	1.000	-.031	-.314	-.591	.815	.838	-.057
	SAGB30	-.250	.442	-.031	1.000	.865	-.112	-.247	-.246	.527
	SAGB10	-.612	.156	-.314	.865	1.000	.089	-.623	-.617	.406
	GDP%	-.373	-.508	-.591	-.112	.089	1.000	-.479	-.496	-.008
	CPI	.952	.472	.815	-.247	-.623	-.479	1.000	.997	-.112
	PPI	.958	.482	.838	-.246	-.617	-.496	.997	1.000	-.147
	UR	-.214	.296	-.057	.527	.406	-.008	-.112	-.147	1.000
Sig. (1-tailed)	J200	.	.000	.000	.000	.000	.000	.000	.000	.000
	USD/ZAR	.000	.	.000	.000	.000	.000	.000	.000	.000
	EUR/ZAR	.000	.000	.	.029	.000	.000	.000	.000	.000
	SAGB30	.000	.000	.029	.	.000	.000	.000	.000	.000
	SAGB10	.000	.000	.000	.000	.	.000	.000	.000	.000
	GDP%	.000	.000	.000	.000	.000	.	.000	.000	.308
	CPI	.000	.000	.000	.000	.000	.000	.	.000	.000
	PPI	.000	.000	.000	.000	.000	.000	.000	.	.000
	UR	.000	.000	.000	.000	.000	.308	.000	.000	.
N	J200	3751	3751	3751	3751	3751	3751	3751	3751	3751
	USD/ZAR	3751	3751	3751	3751	3751	3751	3751	3751	3751
	EUR/ZAR	3751	3751	3751	3751	3751	3751	3751	3751	3751
	SAGB30	3751	3751	3751	3751	3751	3751	3751	3751	3751
	SAGB10	3751	3751	3751	3751	3751	3751	3751	3751	3751
	GDP%	3751	3751	3751	3751	3751	3751	3751	3751	3751
	CPI	3751	3751	3751	3751	3751	3751	3751	3751	3751
	PPI	3751	3751	3751	3751	3751	3751	3751	3751	3751
	UR	3751	3751	3751	3751	3751	3751	3751	3751	3751

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	PPI	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
2	GDP%	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
3	CPI	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
4	USD/ZAR	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
5	UR	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
6	EUR/ZAR	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
7	SAGB10	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
8	SAGB30	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
9	.	EUR/ZAR	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).

a. Dependent Variable: J200

© University of Pretoria

Model Summary[j]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.958[a]	.918	.918	3479.01568	.918	41848.913	1	3749	.000	
2	.965[b]	.932	.932	3173.86839	.014	756.539	1	3748	.000	
3	.968[c]	.938	.938	3024.18302	.006	381.205	1	3747	.000	
4	.970[d]	.941	.941	2943.64431	.003	208.842	1	3746	.000	
5	.972[e]	.946	.946	2831.75456	.004	302.876	1	3745	.000	
6	.973[f]	.946	.946	2815.90272	.001	43.283	1	3744	.000	
7	.973[g]	.947	.946	2807.02221	.000	24.727	1	3743	.000	
8	.974[h]	.948	.948	2757.58831	.002	136.401	1	3742	.000	
9	.974[i]	.948	.948	2757.35440	.000	.365	1	3742	.546	.018

a. Predictors: (Constant), PPI
b. Predictors: (Constant), PPI, GDP%
c. Predictors: (Constant), PPI, GDP%, CPI
d. Predictors: (Constant), PPI, GDP%, CPI, USD/ZAR
e. Predictors: (Constant), PPI, GDP%, CPI, USD/ZAR, UR
f. Predictors: (Constant), PPI, GDP%, CPI, USD/ZAR, UR, EUR/ZAR
g. Predictors: (Constant), PPI, GDP%, CPI, USD/ZAR, UR, EUR/ZAR, SAGB10
h. Predictors: (Constant), PPI, GDP%, CPI, USD/ZAR, UR, EUR/ZAR, SAGB10, SAGB30
i. Predictors: (Constant), PPI, GDP%, CPI, USD/ZAR, UR, SAGB10, SAGB30
j. Dependent Variable: J200

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	506520420817.055	1	506520420817.055	41848.913	.000[b]
	Residual	45376209309.117	3749	12103550.096		
	Total	551896630126.173	3750			
2	Regression	514141375015.066	2	257070687507.533	25519.651	.000[c]
	Residual	37755255111.107	3748	10073440.531		
	Total	551896630126.173	3750			
3	Regression	517627756227.156	3	172542585409.052	18866.014	.000[d]
	Residual	34268873899.017	3747	9145682.919		
	Total	551896630126.173	3750			
4	Regression	519437383513.535	4	129859345878.384	14986.580	.000[e]
	Residual	32459246612.638	3746	8665041.808		
	Total	551896630126.173	3750			
5	Regression	521866097152.311	5	104373219430.462	13016.010	.000[f]
	Residual	30030532973.861	3745	8018833.905		
	Total	551896630126.173	3750			
6	Regression	522209300454.416	6	87034883409.069	10976.353	.000[g]
	Residual	29687329671.756	3744	7929308.139		
	Total	551896630126.173	3750			
7	Regression	522404134362.505	7	74629162051.786	9471.459	.000[h]
	Residual	29492495763.668	3743	7879373.701		
	Total	551896630126.173	3750			
8	Regression	523441364547.564	8	65430170568.446	8604.372	.000[i]
	Residual	28455265578.608	3742	7604293.313		
	Total	551896630126.173	3750			
9	Regression	523438588790.110	7	74776941255.730	9835.185	.000[j]
	Residual	28458041336.062	3743	7603003.296		
	Total	551896630126.173	3750			

a. Dependent Variable: J200
b. Predictors: (Constant), PPI
c. Predictors: (Constant), PPI, GDP%
d. Predictors: (Constant), PPI, GDP%, CPI
e. Predictors: (Constant), PPI, GDP%, CPI, USD/ZAR
f. Predictors: (Constant), PPI, GDP%, CPI, USD/ZAR, UR
g. Predictors: (Constant), PPI, GDP%, CPI, USD/ZAR, UR, EUR/ZAR
h. Predictors: (Constant), PPI, GDP%, CPI, USD/ZAR, UR, EUR/ZAR, SAGB10
i. Predictors: (Constant), PPI, GDP%, CPI, USD/ZAR, UR, EUR/ZAR, SAGB10, SAGB30
j. Predictors: (Constant), PPI, GDP%, CPI, USD/ZAR, UR, SAGB10, SAGB30

© University of Pretoria

Coefficients[a]

Model	Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.	95.0% Confidence Interval for B Lower Bound	95.0% Confidence Interval for B Upper Bound	Collinearity Statistics Tolerance	Collinearity Statistics VIF
1 (Constant)	-47316.609	350.736		-134.907	.000	-48004.261	-46628.958		
PPI	532.106	2.601	.958	204.570	.000	527.007	537.206	1.000	1.000
2 (Constant)	-54358.315	409.787		-132.650	.000	-55161.741	-53554.888		
PPI	569.378	2.733	1.025	208.365	.000	564.020	574.735	.754	1.326
GDP%	704.884	25.627	.135	27.505	.000	654.639	755.129	.754	1.326
3 (Constant)	-49557.318	461.437		-107.398	.000	-50462.010	-48652.625		
PPI	1190.873	31.938	2.144	37.287	.000	1128.255	1253.490	.005	199.525
GDP%	821.902	25.143	.158	32.689	.000	772.606	871.198	.711	1.406
CPI	-681.919	34.926	-1.111	-19.524	.000	-750.396	-613.443	.005	195.332
4 (Constant)	-52746.818	500.445		-105.400	.000	-53727.989	-51765.646		
PPI	1152.980	31.198	2.076	36.957	.000	1091.814	1214.146	.005	200.944
GDP%	947.166	25.963	.182	36.481	.000	896.262	998.069	.632	1.582
CPI	-653.375	34.054	-1.064	-19.187	.000	-720.140	-586.610	.005	195.991
USD/ZAR	507.209	35.098	.070	14.451	.000	438.397	576.021	.669	1.495
5 (Constant)	-41110.762	823.898		-49.898	.000	-42726.094	-39495.429		
PPI	750.363	37.893	1.351	19.802	.000	676.070	824.657	.003	320.345
GDP%	916.140	25.040	.176	36.587	.000	867.046	965.233	.629	1.590
CPI	-232.139	40.731	-.378	-5.699	.000	-311.996	-152.282	.003	302.985
USD/ZAR	868.873	39.646	.120	21.916	.000	791.143	946.604	.485	2.061
UR	-615.742	35.381	-.092	-17.403	.000	-685.109	-546.374	.517	1.933
6 (Constant)	-41135.358	819.295		-50.208	.000	-42741.665	-39529.050		
PPI	928.260	46.380	1.671	20.014	.000	837.329	1019.192	.002	485.308
GDP%	903.889	24.969	.174	36.200	.000	854.934	952.844	.625	1.599
CPI	-397.379	47.658	-.647	-8.338	.000	-490.818	-303.940	.002	419.495
USD/ZAR	1074.763	50.336	.148	21.352	.000	976.075	1173.451	.298	3.360
UR	-588.925	35.418	-.088	-16.628	.000	-658.365	-519.484	.510	1.959
EUR/ZAR	-457.582	69.552	-.079	-6.579	.000	-593.945	-321.218	.100	10.018
7 (Constant)	-38142.187	1014.561		-37.595	.000	-40131.334	-36153.040		
PPI	951.657	46.472	1.713	20.478	.000	860.544	1042.770	.002	490.334
GDP%	891.337	25.018	.171	35.627	.000	842.286	940.388	.619	1.616
CPI	-439.348	48.252	-.716	-9.105	.000	-533.951	-344.746	.002	432.735
USD/ZAR	1188.280	55.126	.164	21.556	.000	1080.201	1296.360	.247	4.055
UR	-540.670	36.616	-.081	-14.766	.000	-612.458	-468.881	.475	2.107
EUR/ZAR	-472.353	69.396	-.081	-6.807	.000	-608.411	-336.294	.100	10.036
SAGB10	-300.676	60.466	-.033	-4.973	.000	-419.225	-182.126	.320	3.122
8 (Constant)	-29579.226	1237.322		-23.906	.000	-32005.117	-27153.335		
PPI	758.115	48.568	1.365	15.609	.000	662.892	853.338	.002	554.941
GDP%	890.235	24.578	.171	36.221	.000	842.048	938.423	.619	1.616
CPI	-302.010	48.839	-.492	-6.184	.000	-397.764	-206.256	.002	459.366
USD/ZAR	877.724	60.331	.121	14.548	.000	759.439	996.009	.199	5.033
UR	-709.623	38.771	-.106	-18.303	.000	-785.637	-633.609	.408	2.448
EUR/ZAR	49.240	81.500	.008	.604	.546	-110.549	209.030	.070	14.343
SAGB10	-1883.713	147.990	-.208	-12.729	.000	-2173.861	-1593.565	.052	19.376
SAGB30	1683.918	144.183	.167	11.679	.000	1401.234	1966.602	.068	14.808
9 (Constant)	-29811.023	1176.238		-25.344	.000	-32117.152	-27504.893		
PPI	777.072	37.069	1.399	20.963	.000	704.393	849.750	.003	323.331
GDP%	889.292	24.526	.171	36.259	.000	841.206	937.378	.621	1.609
CPI	-318.502	40.495	-.519	-7.865	.000	-397.897	-239.106	.003	315.870
USD/ZAR	902.487	44.267	.125	20.387	.000	815.696	989.277	.369	2.710
UR	-702.612	36.990	-.105	-18.995	.000	-775.135	-630.089	.449	2.229
SAGB10	-1840.122	129.200	-.203	-14.242	.000	-2093.431	-1586.813	.068	14.771
SAGB30	1636.183	120.597	.162	13.567	.000	1399.740	1872.626	.097	10.361

a. Dependent Variable: J200

Coefficient Correlations[a]

Model			PPI	GDP%	CPI	USD/ZAR	UR	EUR/ZAR	SAGB10	SAGB30
1	Correlations	PPI	1.000							
	Covariances	PPI	6.766							
2	Correlations	PPI	1.000	.496						
		GDP%	.496	1.000						
	Covariances	PPI	7.467	34.727						
		GDP%	34.727	656.755						
3	Correlations	PPI	1.000	.277	-.997					
		GDP%	.277	1.000	-.238					
		CPI	-.997	-.238	1.000					
	Covariances	PPI	1020.028	222.308	-1111.762					
		GDP%	222.308	632.189	-209.328					
		CPI	-1111.762	-209.328	1219.852					
4	Correlations	PPI	1.000	.232	-.996	-.084				
		GDP%	.232	1.000	-.205	.334				
		CPI	-.996	-.205	1.000	.058				
		USD/ZAR	-.084	.334	.058	1.000				
	Covariances	PPI	973.297	187.897	-1058.513	-92.029				
		GDP%	187.897	674.099	-181.206	304.225				
		CPI	-1058.513	-181.206	1159.646	69.325				
		USD/ZAR	-92.029	304.225	69.325	1231.844				
5	Correlations	PPI	1.000	.227	-.997	-.377	.611			
		GDP%	.227	1.000	-.207	.246	.071			
		CPI	-.997	-.207	1.000	.351	-.594			
		USD/ZAR	-.377	.246	.351	1.000	-.524			
		UR	.611	.071	-.594	-.524	1.000			
	Covariances	PPI	1435.915	215.127	-1539.527	-565.929	818.512			
		GDP%	215.127	627.005	-210.842	244.489	63.075			
		CPI	-1539.527	-210.842	1659.013	567.153	-856.366			
		USD/ZAR	-565.929	244.489	567.153	1571.840	-735.256			
		UR	818.512	63.075	-856.366	-735.256	1251.791			
6	Correlations	PPI	1.000	.140	-.996	.123	.560	-.583		
		GDP%	.140	1.000	-.136	.146	.062	.075		
		CPI	-.996	-.136	1.000	-.094	-.562	.527		
		USD/ZAR	.123	.146	-.094	1.000	-.336	-.622		
		UR	.560	.062	-.562	-.336	1.000	-.115		
		EUR/ZAR	-.583	.075	.527	-.622	-.115	1.000		
	Covariances	PPI	2151.058	162.372	-2201.493	286.617	919.594	-1880.706		
		GDP%	162.372	623.472	-161.718	183.483	54.780	129.516		
		CPI	-2201.493	-161.718	2271.326	-225.202	-949.183	1746.901		
		USD/ZAR	286.617	183.483	-225.202	2533.678	-599.484	-2176.646		
		UR	919.594	54.780	-949.183	-599.484	1254.431	-283.505		
		EUR/ZAR	-1880.706	129.516	1746.901	-2176.646	-283.505	4837.500		
7	Correlations	PPI	1.000	.129	-.993	.153	.564	-.584	-.101	
		GDP%	.129	1.000	-.115	.090	.033	.078	.101	
		CPI	-.993	-.115	1.000	-.157	-.580	.526	.175	
		USD/ZAR	.153	.090	-.157	1.000	-.185	-.583	-.414	
		UR	.564	.033	-.580	-.185	1.000	-.122	-.265	
		EUR/ZAR	-.584	.078	.526	-.583	-.122	1.000	.043	
		SAGB10	-.101	.101	.175	-.414	-.265	.043	1.000	
	Covariances	PPI	2159.650	149.473	-2227.342	392.224	959.462	-1882.839	-284.503	
		GDP%	149.473	625.918	-139.396	124.706	29.940	136.198	152.626	
		CPI	-2227.342	-139.396	2328.258	-416.457	-1025.109	1760.971	510.339	
		USD/ZAR	392.224	124.706	-416.457	3038.855	-374.180	-2230.749	-1380.340	
		UR	959.462	29.940	-1025.109	-374.180	1340.701	-310.545	-586.769	
		EUR/ZAR	-1882.839	136.198	1760.971	-2230.749	-310.545	4815.860	179.614	
		SAGB10	-284.503	152.626	510.339	-1380.340	-586.769	179.614	3656.149	
8	Correlations	PPI	1.000	.122	-.988	.280	.619	-.646	.274	-.341
		GDP%	.122	1.000	-.113	.083	.032	.064	.044	-.004
		CPI	-.988	-.113	1.000	-.243	-.612	.559	-.152	.241
		USD/ZAR	.280	.083	-.243	1.000	.010	-.679	.254	-.441
		UR	.619	.032	-.612	.010	1.000	-.299	.243	-.373
		EUR/ZAR	-.646	.064	.559	-.679	-.299	1.000	-.488	.548
		SAGB10	.274	.044	-.152	.254	.243	-.488	1.000	-.916
		SAGB30	-.341	-.004	.241	-.441	-.373	.548	-.916	1.000
	Covariances	PPI	2358.877	145.819	-2344.456	819.188	1165.699	-2557.210	1971.646	-2389.360
		GDP%	145.819	604.075	-135.639	122.861	30.260	127.229	160.088	-13.605
		CPI	-2344.456	-135.639	2385.258	-714.610	-1159.436	2224.673	-1101.401	1695.498
		USD/ZAR	819.188	122.861	-714.610	3639.839	23.556	-3340.432	2272.104	-3833.941
		UR	1165.699	30.260	-1159.436	23.556	1503.170	-945.778	1394.553	-2085.795
		EUR/ZAR	-2557.210	127.229	2224.673	-3340.432	-945.778	6642.292	-5880.157	6439.268
		SAGB10	1971.646	160.088	-1101.401	2272.104	1394.553	-5880.157	21900.908	-19543.206
		SAGB30	-2389.360	-13.605	1695.498	-3833.941	-2085.795	6439.268	-19543.206	20788.623

a. Dependent Variable: J200

Coefficient Correlations[a]

Model			PPI	GDP%	CPI	USD/ZAR	UR	EUR/ZAR	SAGB10	SAGB30
9	Correlations	PPI	1.000	.214	-.991	-.284	.584		-.061	.020
		GDP%	.214	1.000	-.179	.172	.053		.086	-.046
		CPI	-.991	-.179	1.000	.225	-.562		.166	-.094
		USD/ZAR	-.284	.172	.225	1.000	-.276		-.120	-.112
		UR	.584	.053	-.562	-.276	1.000		.117	-.262
		SAGB10	-.061	.086	.166	-.120	.117		1.000	-.888
		SAGB30	.020	-.046	-.094	-.112	-.262		-.888	1.000
	Covariances	PPI	1374.146	194.767	-1487.728	-466.763	801.449		-292.101	89.673
		GDP%	194.767	601.536	-178.221	186.813	48.368		272.672	-136.922
		CPI	-1487.728	-178.221	1639.880	404.118	-842.528		867.867	-461.099
		USD/ZAR	-466.763	186.813	404.118	1959.591	-452.003		-684.932	-595.509
		UR	801.449	48.368	-842.528	-452.003	1368.271		557.199	-1168.727
		SAGB10	-292.101	272.672	867.867	-684.932	557.199		16692.606	-13840.430
		SAGB30	89.673	-136.922	-461.099	-595.509	-1168.727		-13840.430	14543.706

a. Dependent Variable: J200

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions								
				(Constant)	PPI	GDP%	CPI	USD/ZAR	UR	EUR/ZAR	SAGB10	SAGB30
1	1	1.987	1.000	.01	.01							
	2	.013	12.267	.99	.99							
2	1	2.670	1.000	.00	.00	.03						
	2	.321	2.884	.00	.01	.63						
	3	.009	17.375	.99	.98	.34						
3	1	3.622	1.000	.00	.00	.01	.00					
	2	.367	3.143	.00	.00	.59	.00					
	3	.011	18.305	.75	.00	.33	.00					
	4	6.211E-5	241.492	.25	1.00	.07	1.00					
4	1	4.570	1.000	.00	.00	.01	.00	.00				
	2	.399	3.386	.00	.00	.51	.00	.00				
	3	.022	14.256	.00	.00	.01	.00	.76				
	4	.009	22.132	.77	.00	.43	.00	.23				
	5	6.179E-5	271.935	.23	1.00	.05	1.00	.01				
5	1	5.558	1.000	.00	.00	.01	.00	.00	.00			
	2	.400	3.726	.00	.00	.51	.00	.00	.00			
	3	.024	15.062	.00	.00	.01	.00	.28	.01			
	4	.015	19.140	.05	.00	.40	.00	.51	.05			
	5	.002	52.377	.87	.00	.02	.00	.07	.56			
	6	3.918E-5	376.643	.08	1.00	.05	1.00	.13	.37			
6	1	6.525	1.000	.00	.00	.00	.00	.00	.00	.00		
	2	.425	3.917	.00	.00	.49	.00	.00	.00	.00		
	3	.026	15.992	.01	.00	.07	.00	.12	.02	.01		
	4	.019	18.763	.04	.00	.39	.00	.24	.03	.03		
	5	.004	40.619	.08	.00	.00	.00	.41	.00	.55		
	6	.002	59.127	.83	.00	.03	.00	.22	.63	.10		
	7	2.711E-5	490.595	.05	1.00	.02	1.00	.01	.32	.31		

a. Dependent Variable: J200

© University of Pretoria

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions								
				(Constant)	PPI	GDP%	CPI	USD/ZAR	UR	EUR/ZAR	SAGB10	SAGB30
7	1	7.493	1.000	.00	.00	.00	.00	.00	.00	.00	.00	
	2	.426	4.196	.00	.00	.48	.00	.00	.00	.00	.00	
	3	.052	11.979	.00	.00	.15	.00	.00	.00	.01	.07	
	4	.019	19.824	.01	.00	.28	.00	.29	.01	.02	.00	
	5	.005	37.369	.00	.00	.02	.00	.32	.12	.27	.25	
	6	.003	51.390	.01	.00	.00	.00	.12	.31	.37	.31	
	7	.001	70.987	.97	.00	.06	.00	.24	.22	.02	.35	
	8	2.659E-5	530.875	.01	1.00	.01	1.00	.02	.33	.31	.02	
8	1	8.477	1.000	.00	.00	.00	.00	.00	.00	.00	.00	.00
	2	.426	4.461	.00	.00	.48	.00	.00	.00	.00	.00	.00
	3	.066	11.358	.00	.00	.13	.00	.00	.00	.00	.01	.00
	4	.019	21.085	.01	.00	.28	.00	.23	.01	.01	.00	.00
	5	.005	39.699	.00	.00	.02	.00	.27	.12	.17	.04	.00
	6	.004	44.023	.05	.00	.04	.00	.00	.09	.09	.00	.09
	7	.002	65.925	.25	.00	.04	.00	.37	.33	.18	.02	.05
	8	.000	134.014	.62	.00	.00	.01	.06	.06	.15	.89	.76
	9	2.416E-5	592.295	.07	1.00	.01	.99	.07	.39	.38	.05	.10
9	1	7.514	1.000	.00	.00	.00	.00	.00	.00		.00	.00
	2	.403	4.319	.00	.00	.52	.00	.00	.00		.00	.00
	3	.058	11.343	.00	.00	.08	.00	.00	.00		.01	.01
	4	.017	20.977	.01	.00	.27	.00	.64	.01		.00	.00
	5	.005	40.007	.02	.00	.06	.00	.13	.26		.02	.08
	6	.003	53.710	.20	.00	.01	.00	.12	.24		.08	.16
	7	.001	111.936	.76	.00	.03	.00	.03	.16		.88	.75
	8	3.830E-5	442.925	.01	1.00	.04	1.00	.07	.34		.01	.00

a. Dependent Variable: J200

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	4542.1304	45481.4727	23486.1895	11814.55135	3751
Residual	-8119.38574	7946.94434	.00000	2754.77967	3751
Std. Predicted Value	-1.603	1.862	.000	1.000	3751
Std. Residual	-2.945	2.882	.000	.999	3751

a. Dependent Variable: J200

J201

Correlations

		J201	USD/ZAR	EUR/ZAR	SAGB30	SAGB10	GDP%	CPI	PPI	UR
Pearson Correlation	J201	1.000	.441	.768	-.301	-.673	-.370	.969	.967	-.172
	USD/ZAR	.441	1.000	.737	.442	.156	-.508	.472	.482	.296
	EUR/ZAR	.768	.737	1.000	-.031	-.314	-.591	.815	.838	-.057
	SAGB30	-.301	.442	-.031	1.000	.865	-.112	-.247	-.246	.527
	SAGB10	-.673	.156	-.314	.865	1.000	.089	-.623	-.617	.406
	GDP%	-.370	-.508	-.591	-.112	.089	1.000	-.479	-.496	-.008
	CPI	.969	.472	.815	-.247	-.623	-.479	1.000	.997	-.112
	PPI	.967	.482	.838	-.246	-.617	-.496	.997	1.000	-.147
	UR	-.172	.296	-.057	.527	.406	-.008	-.112	-.147	1.000
Sig. (1-tailed)	J201	.	.000	.000	.000	.000	.000	.000	.000	.000
	USD/ZAR	.000	.	.000	.000	.000	.000	.000	.000	.000
	EUR/ZAR	.000	.000	.	.029	.000	.000	.000	.000	.000
	SAGB30	.000	.000	.029	.	.000	.000	.000	.000	.000
	SAGB10	.000	.000	.000	.000	.	.000	.000	.000	.000
	GDP%	.000	.000	.000	.000	.000	.	.000	.000	.308
	CPI	.000	.000	.000	.000	.000	.000	.	.000	.000
	PPI	.000	.000	.000	.000	.000	.000	.000	.	.000
	UR	.000	.000	.000	.000	.000	.308	.000	.000	.
N	J201	3751	3751	3751	3751	3751	3751	3751	3751	3751
	USD/ZAR	3751	3751	3751	3751	3751	3751	3751	3751	3751
	EUR/ZAR	3751	3751	3751	3751	3751	3751	3751	3751	3751
	SAGB30	3751	3751	3751	3751	3751	3751	3751	3751	3751
	SAGB10	3751	3751	3751	3751	3751	3751	3751	3751	3751
	GDP%	3751	3751	3751	3751	3751	3751	3751	3751	3751
	CPI	3751	3751	3751	3751	3751	3751	3751	3751	3751
	PPI	3751	3751	3751	3751	3751	3751	3751	3751	3751
	UR	3751	3751	3751	3751	3751	3751	3751	3751	3751

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	CPI	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
2	GDP%	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
3	SAGB10	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
4	USD/ZAR	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
5	UR	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
6	SAGB30	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
7	EUR/ZAR	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
8	PPI	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).

a. Dependent Variable: J201

© University of Pretoria

Model Summary[i]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.969[a]	.939	.939	4845.13625	.939	57816.677	1	3749	.000	
2	.975[b]	.951	.951	4362.67215	.012	876.047	1	3748	.000	
3	.977[c]	.954	.954	4206.79148	.003	283.907	1	3747	.000	
4	.980[d]	.960	.960	3949.64039	.005	504.799	1	3746	.000	
5	.981[e]	.962	.962	3829.72059	.002	239.269	1	3745	.000	
6	.983[f]	.966	.966	3641.72509	.004	397.634	1	3744	.000	
7	.983[g]	.966	.966	3639.15488	.000	6.290	1	3743	.012	
8	.983[h]	.966	.966	3632.69475	.000	14.324	1	3742	.000	.013

a. Predictors: (Constant), CPI
b. Predictors: (Constant), CPI, GDP%
c. Predictors: (Constant), CPI, GDP%, SAGB10
d. Predictors: (Constant), CPI, GDP%, SAGB10, USD/ZAR
e. Predictors: (Constant), CPI, GDP%, SAGB10, USD/ZAR, UR
f. Predictors: (Constant), CPI, GDP%, SAGB10, USD/ZAR, UR, SAGB30
g. Predictors: (Constant), CPI, GDP%, SAGB10, USD/ZAR, UR, SAGB30, EUR/ZAR
h. Predictors: (Constant), CPI, GDP%, SAGB10, USD/ZAR, UR, SAGB30, EUR/ZAR, PPI
i. Dependent Variable: J201

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1357266446733.468	1	1357266446733.468	57816.677	.000[b]
	Residual	88009069342.129	3749	23475345.250		
	Total	1445275516075.596	3750			
2	Regression	1373940175857.363	2	686970087928.682	36093.805	.000[c]
	Residual	71335340218.233	3748	19032908.276		
	Total	1445275516075.596	3750			
3	Regression	1378964502905.879	3	459654834301.960	25973.463	.000[d]
	Residual	66311013169.717	3747	17697094.521		
	Total	1445275516075.596	3750			
4	Regression	1386839192760.281	4	346709798190.070	22225.473	.000[e]
	Residual	58436323315.315	3746	15599659.187		
	Total	1445275516075.596	3750			
5	Regression	1390348500763.695	5	278069700152.739	18959.177	.000[f]
	Residual	54927015311.901	3745	14666759.763		
	Total	1445275516075.596	3750			
6	Regression	1395621982986.169	6	232603663831.028	17538.895	.000[g]
	Residual	49653533089.427	3744	13262161.616		
	Total	1445275516075.596	3750			
7	Regression	1395705289377.152	7	199386469911.022	15055.480	.000[h]
	Residual	49570226698.444	3743	13243448.223		
	Total	1445275516075.596	3750			
8	Regression	1395894321058.658	8	174486790132.332	13222.231	.000[i]
	Residual	49381195016.939	3742	13196471.143		
	Total	1445275516075.596	3750			

a. Dependent Variable: J201
b. Predictors: (Constant), CPI
c. Predictors: (Constant), CPI, GDP%
d. Predictors: (Constant), CPI, GDP%, SAGB10
e. Predictors: (Constant), CPI, GDP%, SAGB10, USD/ZAR
f. Predictors: (Constant), CPI, GDP%, SAGB10, USD/ZAR, UR
g. Predictors: (Constant), CPI, GDP%, SAGB10, USD/ZAR, UR, SAGB30
h. Predictors: (Constant), CPI, GDP%, SAGB10, USD/ZAR, UR, SAGB30, EUR/ZAR
i. Predictors: (Constant), CPI, GDP%, SAGB10, USD/ZAR, UR, SAGB30, EUR/ZAR, PPI

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	-91118.766	521.786		-174.629	.000	-92141.777	-90095.755		
CPI	962.701	4.004	.969	240.451	.000	954.851	970.551	1.000	1.000
2 (Constant)	-101672.616	589.815		-172.381	.000	-102829.006	-100516.227		
CPI	1020.972	4.108	1.028	248.557	.000	1012.919	1029.025	.770	1.298
GDP%	1031.615	34.854	.122	29.598	.000	963.280	1099.950	.770	1.298
3 (Constant)	-83307.640	1229.404		-67.763	.000	-85718.006	-80897.274		
CPI	961.695	5.298	.968	181.533	.000	951.308	972.081	.431	2.322
GDP%	849.838	35.298	.101	24.076	.000	780.633	919.043	.698	1.432
SAGB10	-1160.435	68.870	-.079	-16.850	.000	-1295.463	-1025.408	.555	1.803
4 (Constant)	-73249.361	1238.029		-59.166	.000	-75676.637	-70822.085		
CPI	870.822	6.411	.877	135.839	.000	858.253	883.391	.259	3.858
GDP%	1024.731	34.042	.122	30.102	.000	957.988	1091.474	.662	1.511
SAGB10	-2283.336	81.724	-.156	-27.940	.000	-2443.564	-2123.108	.347	2.880
USD/ZAR	1332.540	59.309	.114	22.468	.000	1216.259	1448.822	.422	2.371
5 (Constant)	-63270.425	1362.804		-46.427	.000	-65942.335	-60598.514		
CPI	874.934	6.222	.881	140.625	.000	862.736	887.133	.259	3.865
GDP%	1083.886	33.229	.129	32.618	.000	1018.736	1149.035	.653	1.531
SAGB10	-1953.867	82.055	-.133	-23.812	.000	-2114.744	-1792.989	.324	3.089
USD/ZAR	1505.324	58.583	.128	25.696	.000	1390.466	1620.182	.406	2.461
UR	-607.012	39.242	-.056	-15.468	.000	-683.950	-530.074	.769	1.300
6 (Constant)	-46718.859	1538.939		-30.358	.000	-49736.100	-43701.619		
CPI	795.424	7.135	.801	111.489	.000	781.436	809.412	.178	5.621
GDP%	1051.202	31.641	.125	33.223	.000	989.167	1113.236	.651	1.535
SAGB10	-4972.824	170.321	-.339	-29.197	.000	-5306.755	-4638.894	.068	14.716
USD/ZAR	1381.902	56.050	.118	24.655	.000	1272.011	1491.794	.401	2.491
UR	-873.717	39.640	-.081	-22.041	.000	-951.436	-795.998	.682	1.467
SAGB30	3175.458	159.245	.194	19.941	.000	2863.243	3487.672	.097	10.357
7 (Constant)	-47344.639	1557.962		-30.389	.000	-50399.176	-44290.101		
CPI	812.284	9.799	.818	82.893	.000	793.072	831.497	.094	10.618
GDP%	1036.022	32.192	.123	32.182	.000	972.906	1099.138	.628	1.592
SAGB10	-4773.693	187.808	-.326	-25.418	.000	-5141.910	-4405.476	.056	17.918
USD/ZAR	1512.380	76.443	.129	19.784	.000	1362.505	1662.255	.216	4.640
UR	-890.632	40.182	-.082	-22.165	.000	-969.414	-811.851	.662	1.510
SAGB30	2970.672	178.857	.182	16.609	.000	2620.005	3321.339	.076	13.084
EUR/ZAR	-205.906	82.098	-.022	-2.508	.012	-366.867	-44.946	.120	8.357
8 (Constant)	-49191.806	1629.979		-30.179	.000	-52387.541	-45996.072		
CPI	571.612	64.338	.575	8.885	.000	445.471	697.752	.002	459.366
GDP%	1050.991	32.378	.125	32.460	.000	987.512	1114.471	.619	1.616
SAGB10	-4571.292	194.953	-.312	-23.448	.000	-4953.517	-4189.067	.052	19.376
USD/ZAR	1596.475	79.477	.136	20.087	.000	1440.653	1752.297	.199	5.033
UR	-770.966	51.074	-.071	-15.095	.000	-871.103	-670.830	.408	2.448
SAGB30	2725.389	189.938	.167	14.349	.000	2352.997	3097.782	.068	14.808
EUR/ZAR	-468.420	107.364	-.050	-4.363	.000	-678.917	-257.922	.070	14.343
PPI	242.153	63.981	.269	3.785	.000	116.712	367.595	.002	554.941

a. Dependent Variable: J201

Coefficient Correlations[a]

Model		CPI	GDP%	SAGB10	USD/ZAR	UR	SAGB30	EUR/ZAR	PPI
1 Correlations	CPI	1.000							
Covariances	CPI	16.030							
2 Correlations	CPI	1.000	.479						
	GDP%	.479	1.000						
Covariances	CPI	16.872	68.619						
	GDP%	68.619	1214.808						
3 Correlations	CPI	1.000	.544	.664					
	GDP%	.544	1.000	.306					
	SAGB10	.664	.306	1.000					
Covariances	CPI	28.065	101.756	242.289					
	GDP%	101.756	1245.934	742.991					
	SAGB10	242.289	742.991	4743.141					
4 Correlations	CPI	1.000	.267	.793	-.631				
	GDP%	.267	1.000	.096	.229				
	SAGB10	.793	.096	1.000	-.612				
	USD/ZAR	-.631	.229	-.612	1.000				
Covariances	CPI	41.097	58.212	415.715	-239.881				
	GDP%	58.212	1158.861	265.892	461.672				
	SAGB10	415.715	265.892	6678.828	-2964.172				
	USD/ZAR	-239.881	461.672	-2964.172	3517.568				
5 Correlations	CPI	1.000	.270	.777	-.611	-.043			
	GDP%	.270	1.000	.122	.245	-.115			
	SAGB10	.777	.122	1.000	-.530	-.260			
	USD/ZAR	-.611	.245	-.530	1.000	-.191			
	UR	-.043	-.115	-.260	-.191	1.000			
Covariances	CPI	38.710	55.748	396.517	-222.566	-10.432			
	GDP%	55.748	1104.183	331.446	476.781	-150.072			
	SAGB10	396.517	331.446	6733.090	-2548.987	-835.843			
	USD/ZAR	-222.566	476.781	-2548.987	3431.981	-438.342			
	UR	-10.432	-150.072	-835.843	-438.342	1539.952			
6 Correlations	CPI	1.000	.252	.792	-.442	.155	-.559		
	GDP%	.252	1.000	.102	.249	-.091	-.052		
	SAGB10	.792	.102	1.000	-.143	.188	-.889		
	USD/ZAR	-.442	.249	-.143	1.000	-.141	-.110		
	UR	.155	-.091	.188	-.141	1.000	-.337		
	SAGB30	-.559	-.052	-.889	-.110	-.337	1.000		
Covariances	CPI	50.902	56.944	962.212	-176.572	43.897	-634.962		
	GDP%	56.944	1001.124	547.849	441.265	-113.778	-261.009		
	SAGB10	962.212	547.849	29009.138	-1367.820	1269.110	-24109.054		
	USD/ZAR	-176.572	441.265	-1367.820	3141.618	-313.580	-985.634		
	UR	43.897	-113.778	1269.110	-313.580	1571.362	-2129.876		
	SAGB30	-634.962	-261.009	-24109.054	-985.634	-2129.876	25358.844		
7 Correlations	CPI	1.000	.051	.812	.231	-.004	-.675	-.686	
	GDP%	.051	1.000	.011	.051	-.056	.041	.188	
	SAGB10	.812	.011	1.000	.193	.097	-.910	-.423	
	USD/ZAR	.231	.051	.193	1.000	-.216	-.383	-.681	
	UR	-.004	-.056	.097	-.216	1.000	-.219	.168	
	SAGB30	-.675	.041	-.910	-.383	-.219	1.000	.457	
	EUR/ZAR	-.686	.188	-.423	-.681	.168	.457	1.000	

a. Dependent Variable: J201

Coefficient Correlations[a]

Model		CPI	GDP%	SAGB10	USD/ZAR	UR	SAGB30	EUR/ZAR	PPI
Covariances	CPI	96.023	16.176	1494.604	173.409	-1.505	-1182.972	-551.910	
	GDP%	16.176	1036.343	66.540	125.779	-72.797	233.541	496.885	
	SAGB10	1494.604	66.540	35271.992	2764.565	731.835	-30557.819	-6518.257	
	USD/ZAR	173.409	125.779	2764.565	5843.598	-664.005	-5231.982	-4270.982	
	UR	-1.505	-72.797	731.835	-664.005	1614.632	-1576.182	553.702	
	SAGB30	-1182.972	233.541	-30557.819	-5231.982	-1576.182	31989.926	6703.344	
	EUR/ZAR	-551.910	496.885	-6518.257	-4270.982	553.702	6703.344	6740.024	
8 Correlations	CPI	1.000	-.113	-.152	-.243	-.612	.241	.559	-.988
	GDP%	-.113	1.000	.044	.083	.032	-.004	.064	.122
	SAGB10	-.152	.044	1.000	.254	.243	-.916	-.488	.274
	USD/ZAR	-.243	.083	.254	1.000	.010	-.441	-.679	.280
	UR	-.612	.032	.243	.010	1.000	-.373	-.299	.619
	SAGB30	.241	-.004	-.916	-.441	-.373	1.000	.548	-.341
	EUR/ZAR	.559	.064	-.488	-.679	-.299	.548	1.000	-.646
	PPI	-.988	.122	.274	.280	.619	-.341	-.646	1.000
Covariances	CPI	4139.371	-235.387	-1911.368	-1240.132	-2012.083	2942.362	3860.692	-4068.562
	GDP%	-235.387	1048.310	277.816	213.213	52.514	-23.611	220.793	253.053
	SAGB10	-1911.368	277.816	38006.779	3943.004	2420.104	-33915.230	-10204.410	3421.589
	USD/ZAR	-1240.132	213.213	3943.004	6316.567	40.878	-6653.411	-5796.978	1421.617
	UR	-2012.083	52.514	2420.104	40.878	2608.597	-3619.683	-1641.301	2022.951
	SAGB30	2942.362	-23.611	-33915.230	-6653.411	-3619.683	36076.523	11174.689	-4146.489
	EUR/ZAR	3860.692	220.793	-10204.410	-5796.978	-1641.301	11174.689	11527.017	-4437.776
	PPI	-4068.562	253.053	3421.589	1421.617	2022.951	-4146.489	-4437.776	4093.590

a. Dependent Variable: J201

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions								
				(Constant)	CPI	GDP%	SAGB10	USD/ZAR	UR	SAGB30	EUR/ZAR	PPI
1	1	1.988	1.000	.01	.01							
	2	.012	13.115	.99	.99							
2	1	2.675	1.000	.00	.00	.03						
	2	.317	2.906	.00	.01	.65						
	3	.008	18.279	.99	.99	.32						
3	1	3.631	1.000	.00	.00	.01	.00					
	2	.333	3.300	.00	.00	.63	.00					
	3	.033	10.447	.00	.13	.08	.21					
	4	.002	41.362	1.00	.87	.27	.78					
4	1	4.572	1.000	.00	.00	.01	.00	.00				
	2	.378	3.479	.00	.00	.55	.00	.00				
	3	.033	11.722	.00	.08	.08	.13	.00				
	4	.016	17.091	.04	.02	.27	.02	.71				
	5	.002	53.678	.96	.90	.09	.84	.28				
5	1	5.562	1.000	.00	.00	.01	.00	.00	.00			
	2	.382	3.815	.00	.00	.56	.00	.00	.00			
	3	.034	12.855	.00	.08	.09	.12	.00	.00			
	4	.017	18.198	.02	.02	.27	.00	.68	.02			
	5	.003	40.050	.01	.21	.02	.41	.03	.80			
	6	.001	62.699	.98	.70	.06	.47	.28	.18			

a. Dependent Variable: J201

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions								
				(Constant)	CPI	GDP%	SAGB10	USD/ZAR	UR	SAGB30	EUR/ZAR	PPI
6	1	6.548	1.000	.00	.00	.00	.00	.00	.00	.00		
	2	.387	4.111	.00	.00	.56	.00	.00	.00	.00		
	3	.041	12.677	.00	.05	.07	.01	.01	.00	.01		
	4	.017	19.738	.01	.01	.27	.00	.67	.02	.00		
	5	.004	40.270	.01	.21	.05	.01	.15	.45	.09		
	6	.003	50.148	.20	.02	.01	.08	.14	.34	.16		
	7	.001	106.983	.77	.72	.03	.90	.03	.19	.74		
7	1	7.503	1.000	.00	.00	.00	.00	.00	.00	.00	.00	
	2	.414	4.255	.00	.00	.50	.00	.00	.00	.00	.00	
	3	.053	11.878	.00	.01	.15	.01	.00	.00	.00	.02	
	4	.018	20.559	.01	.02	.26	.00	.26	.02	.00	.01	
	5	.005	37.350	.00	.00	.02	.04	.29	.20	.00	.30	
	6	.004	45.490	.05	.18	.03	.01	.01	.13	.14	.10	
	7	.002	62.370	.28	.02	.03	.01	.38	.59	.04	.32	
	8	.000	128.602	.66	.77	.00	.93	.06	.06	.82	.25	
8	1	8.477	1.000	.00	.00	.00	.00	.00	.00	.00	.00	.00
	2	.426	4.461	.00	.00	.48	.00	.00	.00	.00	.00	.00
	3	.066	11.358	.00	.00	.13	.01	.00	.00	.00	.00	.00
	4	.019	21.085	.01	.00	.28	.00	.23	.01	.00	.01	.00
	5	.005	39.699	.00	.00	.02	.04	.27	.12	.00	.17	.00
	6	.004	44.023	.05	.00	.04	.00	.00	.09	.09	.09	.00
	7	.002	65.925	.25	.00	.04	.02	.37	.33	.05	.18	.00
	8	.000	134.014	.62	.01	.00	.89	.06	.06	.76	.15	.00
	9	2.416E-5	592.295	.07	.99	.01	.05	.07	.39	.10	.38	1.00

a. Dependent Variable: J201

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	1149.7777	68895.5859	32894.6946	19293.48298	3751
Residual	-10870.88379	14200.80957	.00000	3628.81781	3751
Std. Predicted Value	-1.645	1.866	.000	1.000	3751
Std. Residual	-2.993	3.909	.000	.999	3751

a. Dependent Variable: J201

J202

Correlations

		J202	USD/ZAR	EUR/ZAR	SAGB30	SAGB10	GDP%	CPI	PPI	UR
Pearson Correlation	J202	1.000	.437	.782	-.329	-.669	-.359	.944	.948	-.247
	USD/ZAR	.437	1.000	.737	.442	.156	-.508	.472	.482	.296
	EUR/ZAR	.782	.737	1.000	-.031	-.314	-.591	.815	.838	-.057
	SAGB30	-.329	.442	-.031	1.000	.865	-.112	-.247	-.246	.527
	SAGB10	-.669	.156	-.314	.865	1.000	.089	-.623	-.617	.406
	GDP%	-.359	-.508	-.591	-.112	.089	1.000	-.479	-.496	-.008
	CPI	.944	.472	.815	-.247	-.623	-.479	1.000	.997	-.112
	PPI	.948	.482	.838	-.246	-.617	-.496	.997	1.000	-.147
	UR	-.247	.296	-.057	.527	.406	-.008	-.112	-.147	1.000
Sig. (1-tailed)	J202	.	.000	.000	.000	.000	.000	.000	.000	.000
	USD/ZAR	.000	.	.000	.000	.000	.000	.000	.000	.000
	EUR/ZAR	.000	.000	.	.029	.000	.000	.000	.000	.000
	SAGB30	.000	.000	.029	.	.000	.000	.000	.000	.000
	SAGB10	.000	.000	.000	.000	.	.000	.000	.000	.000
	GDP%	.000	.000	.000	.000	.000	.	.000	.000	.308
	CPI	.000	.000	.000	.000	.000	.000	.	.000	.000
	PPI	.000	.000	.000	.000	.000	.000	.000	.	.000
	UR	.000	.000	.000	.000	.000	.308	.000	.000	.
N	J202	3751	3751	3751	3751	3751	3751	3751	3751	3751
	USD/ZAR	3751	3751	3751	3751	3751	3751	3751	3751	3751
	EUR/ZAR	3751	3751	3751	3751	3751	3751	3751	3751	3751
	SAGB30	3751	3751	3751	3751	3751	3751	3751	3751	3751
	SAGB10	3751	3751	3751	3751	3751	3751	3751	3751	3751
	GDP%	3751	3751	3751	3751	3751	3751	3751	3751	3751
	CPI	3751	3751	3751	3751	3751	3751	3751	3751	3751
	PPI	3751	3751	3751	3751	3751	3751	3751	3751	3751
	UR	3751	3751	3751	3751	3751	3751	3751	3751	3751

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	PPI	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
2	GDP%	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
3	UR	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
4	USD/ZAR	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
5	SAGB10	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
6	SAGB30	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).

a. Dependent Variable: J202

Model Summary[g]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.948[a]	.899	.899	5193.95585	.899	33380.213	1	3749	.000	
2	.957[b]	.915	.915	4752.18694	.016	730.421	1	3748	.000	
3	.962[c]	.925	.925	4474.71790	.010	480.224	1	3747	.000	
4	.964[d]	.930	.930	4321.32558	.005	271.733	1	3746	.000	
5	.968[e]	.937	.937	4096.74147	.007	422.970	1	3745	.000	
6	.968[f]	.938	.938	4081.94553	.000	28.198	1	3744	.000	.007

a. Predictors: (Constant), PPI

b. Predictors: (Constant), PPI, GDP%

c. Predictors: (Constant), PPI, GDP%, UR

d. Predictors: (Constant), PPI, GDP%, UR, USD/ZAR

e. Predictors: (Constant), PPI, GDP%, UR, USD/ZAR, SAGB10

f. Predictors: (Constant), PPI, GDP%, UR, USD/ZAR, SAGB10, SAGB30

g. Dependent Variable: J202

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	900503938550.213	1	900503938550.213	33380.213	.000[b]
	Residual	101137437967.974	3749	26977177.372		
	Total	1001641376518.187	3750			
2	Regression	916999240280.112	2	458499620140.056	20302.613	.000[c]
	Residual	84642136238.075	3748	22583280.747		
	Total	1001641376518.187	3750			
3	Regression	926614819796.832	3	308871606598.944	15425.763	.000[d]
	Residual	75026556721.355	3747	20023100.273		
	Total	1001641376518.187	3750			
4	Regression	931689116519.748	4	232922279129.937	12473.176	.000[e]
	Residual	69952259998.439	3746	18673854.778		
	Total	1001641376518.187	3750			
5	Regression	938787952990.676	5	187757590598.135	11187.174	.000[f]
	Residual	62853423527.512	3745	16783290.662		
	Total	1001641376518.187	3750			
6	Regression	939257802720.770	6	156542967120.128	9395.051	.000[g]
	Residual	62383573797.417	3744	16662279.326		
	Total	1001641376518.187	3750			

a. Dependent Variable: J202

b. Predictors: (Constant), PPI

c. Predictors: (Constant), PPI, GDP%

d. Predictors: (Constant), PPI, GDP%, UR

e. Predictors: (Constant), PPI, GDP%, UR, USD/ZAR

f. Predictors: (Constant), PPI, GDP%, UR, USD/ZAR, SAGB10

g. Predictors: (Constant), PPI, GDP%, UR, USD/ZAR, SAGB10, SAGB30

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	-67257.274	523.627		-128.445	.000	-68283.896	-66230.653		
PPI	709.484	3.883	.948	182.703	.000	701.871	717.098	1.000	1.000
2 (Constant)	-77617.120	613.568		-126.501	.000	-78820.079	-76414.161		
PPI	764.319	4.091	1.021	186.807	.000	756.297	772.340	.754	1.326
GDP%	1037.034	38.371	.148	27.026	.000	961.803	1112.265	.754	1.326
3 (Constant)	-53302.200	1250.964		-42.609	.000	-55754.836	-50849.563		
PPI	749.443	3.912	1.002	191.579	.000	741.774	757.113	.731	1.367
GDP%	962.121	36.292	.137	26.510	.000	890.966	1033.275	.747	1.338
UR	-894.757	40.830	-.099	-21.914	.000	-974.809	-814.705	.970	1.031
4 (Constant)	-50655.392	1218.705		-41.565	.000	-53044.781	-48266.003		
PPI	722.591	4.114	.966	175.639	.000	714.525	730.657	.617	1.621
GDP%	1176.648	37.386	.168	31.473	.000	1103.348	1249.947	.657	1.522
UR	-1194.623	43.425	-.133	-27.510	.000	-1279.761	-1109.485	.800	1.251
USD/ZAR	933.790	56.647	.096	16.484	.000	822.728	1044.853	.553	1.807
5 (Constant)	-31811.821	1474.573		-21.574	.000	-34702.865	-28920.777		
PPI	625.634	6.119	.836	102.251	.000	613.638	637.631	.251	3.990
GDP%	1076.903	35.774	.153	30.103	.000	1006.766	1147.041	.645	1.551
UR	-1025.664	41.979	-.114	-24.433	.000	-1107.969	-943.359	.769	1.300
USD/ZAR	1642.142	63.799	.168	25.739	.000	1517.058	1767.226	.392	2.550
SAGB10	-1783.864	86.737	-.146	-20.566	.000	-1953.922	-1613.807	.332	3.016
6 (Constant)	-26854.260	1740.769		-15.427	.000	-30267.207	-23441.313		
PPI	604.116	7.320	.807	82.524	.000	589.763	618.468	.174	5.754
GDP%	1064.657	35.719	.152	29.807	.000	994.626	1134.687	.642	1.557
UR	-1117.701	45.277	-.124	-24.686	.000	-1206.471	-1028.932	.656	1.524
USD/ZAR	1610.590	63.846	.165	25.226	.000	1485.414	1735.765	.389	2.572
SAGB10	-2674.126	188.616	-.219	-14.178	.000	-3043.926	-2304.327	.070	14.364
SAGB30	943.800	177.733	.069	5.310	.000	595.337	1292.263	.097	10.269

a. Dependent Variable: J202

Coefficient Correlations[a]

Model			PPI	GDP%	UR	USD/ZAR	SAGB10	SAGB30
1	Correlations	PPI	1.000					
	Covariances	PPI	15.080					
2	Correlations	PPI	1.000	.496				
		GDP%	.496	1.000				
	Covariances	PPI	16.740	77.853				
		GDP%	77.853	1472.356				
3	Correlations	PPI	1.000	.503	.174			
		GDP%	.503	1.000	.094			
		UR	.174	.094	1.000			
	Covariances	PPI	15.303	71.347	27.715			
		GDP%	71.347	1317.127	139.579			
		UR	27.715	139.579	1667.118			
4	Correlations	PPI	1.000	.295	.311	-.396		
		GDP%	.295	1.000	-.066	.348		
		UR	.311	-.066	1.000	-.419		
		USD/ZAR	-.396	.348	-.419	1.000		
	Covariances	PPI	16.926	45.340	55.480	-92.276		
		GDP%	45.340	1397.737	-106.563	737.207		
		UR	55.480	-106.563	1885.691	-1030.467		
		USD/ZAR	-92.276	737.207	-1030.467	3208.906		
5	Correlations	PPI	1.000	.291	.043	-.628	.770	
		GDP%	.291	1.000	-.090	.217	.136	
		UR	.043	-.090	1.000	-.240	-.196	
		USD/ZAR	-.628	.217	-.240	1.000	-.540	
		SAGB10	.770	.136	-.196	-.540	1.000	

a. Dependent Variable: J202

Coefficient Correlations[a]

Model			PPI	GDP%	UR	USD/ZAR	SAGB10	SAGB30
	Covariances	PPI	37.437	63.614	11.133	-245.308	408.912	
		GDP%	63.614	1279.750	-135.618	495.529	420.668	
		UR	11.133	-135.618	1762.273	-643.185	-712.578	
		USD/ZAR	-245.308	495.529	-643.185	4070.314	-2987.450	
		SAGB10	408.912	420.668	-712.578	-2987.450	7523.391	
6	Correlations	PPI	1.000	.277	.245	-.470	.786	-.554
		GDP%	.277	1.000	-.059	.222	.119	-.065
		UR	.245	-.059	1.000	-.185	.257	-.383
		USD/ZAR	-.470	.222	-.185	1.000	-.164	-.093
		SAGB10	.786	.119	.257	-.164	1.000	-.889
		SAGB30	-.554	-.065	-.383	-.093	-.889	1.000
	Covariances	PPI	53.589	72.501	81.289	-219.461	1085.345	-720.238
		GDP%	72.501	1275.841	-94.669	505.659	804.276	-409.893
		UR	81.289	-94.669	2049.969	-535.563	2198.304	-3080.488
		USD/ZAR	-219.461	505.659	-535.563	4076.271	-1969.758	-1056.058
		SAGB10	1085.345	804.276	2198.304	-1969.758	35575.931	-29797.051
		SAGB30	-720.238	-409.893	-3080.488	-1056.058	-29797.051	31588.965

a. Dependent Variable: J202

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions						
				(Constant)	PPI	GDP%	UR	USD/ZAR	SAGB10	SAGB30
1	1	1.987	1.000	.01	.01					
	2	.013	12.267	.99	.99					
2	1	2.670	1.000	.00	.00	.03				
	2	.321	2.884	.00	.01	.63				
	3	.009	17.375	.99	.98	.34				
3	1	3.642	1.000	.00	.00	.02	.00			
	2	.341	3.267	.00	.01	.66	.00			
	3	.015	15.600	.02	.75	.24	.11			
	4	.002	41.395	.98	.24	.09	.88			
4	1	4.584	1.000	.00	.00	.01	.00	.00		
	2	.382	3.463	.00	.00	.54	.00	.00		
	3	.018	16.088	.01	.35	.04	.00	.70		
	4	.014	17.897	.04	.34	.39	.11	.20		
	5	.002	48.504	.95	.30	.02	.89	.09		
5	1	5.558	1.000	.00	.00	.01	.00	.00	.00	
	2	.384	3.803	.00	.00	.54	.00	.00	.00	
	3	.035	12.537	.00	.09	.10	.00	.00	.11	
	4	.017	18.269	.02	.02	.26	.02	.66	.00	
	5	.004	38.519	.00	.22	.03	.70	.03	.45	
	6	.001	63.402	.98	.68	.06	.28	.30	.43	
6	1	6.544	1.000	.00	.00	.00	.00	.00	.00	.00
	2	.389	4.100	.00	.00	.55	.00	.00	.00	.00
	3	.043	12.392	.00	.05	.08	.00	.00	.01	.01
	4	.017	19.815	.01	.01	.27	.02	.65	.00	.00
	5	.004	38.687	.01	.20	.06	.41	.14	.01	.08
	6	.003	50.532	.19	.02	.01	.31	.15	.08	.19
	7	.001	106.731	.78	.71	.03	.27	.04	.89	.73

a. Dependent Variable: J202

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	-739.4287	56780.9531	27147.6732	15826.20445	3751
Residual	-11026.91016	11559.67676	.00000	4078.67867	3751
Std. Predicted Value	-1.762	1.872	.000	1.000	3751
Std. Residual	-2.701	2.832	.000	.999	3751

a. Dependent Variable: J202

J203

Correlations

		J203	USD/ZAR	EUR/ZAR	SAGB30	SAGB10	GDP%	CPI	PPI	UR
Pearson Correlation	J203	1.000	.471	.801	-.260	-.624	-.373	.956	.961	-.209
	USD/ZAR	.471	1.000	.737	.442	.156	-.508	.472	.482	.296
	EUR/ZAR	.801	.737	1.000	-.031	-.314	-.591	.815	.838	-.057
	SAGB30	-.260	.442	-.031	1.000	.865	-.112	-.247	-.246	.527
	SAGB10	-.624	.156	-.314	.865	1.000	.089	-.623	-.617	.406
	GDP%	-.373	-.508	-.591	-.112	.089	1.000	-.479	-.496	-.008
	CPI	.956	.472	.815	-.247	-.623	-.479	1.000	.997	-.112
	PPI	.961	.482	.838	-.246	-.617	-.496	.997	1.000	-.147
	UR	-.209	.296	-.057	.527	.406	-.008	-.112	-.147	1.000
Sig. (1-tailed)	J203	.	.000	.000	.000	.000	.000	.000	.000	.000
	USD/ZAR	.000	.	.000	.000	.000	.000	.000	.000	.000
	EUR/ZAR	.000	.000	.	.029	.000	.000	.000	.000	.000
	SAGB30	.000	.000	.029	.	.000	.000	.000	.000	.000
	SAGB10	.000	.000	.000	.000	.	.000	.000	.000	.000
	GDP%	.000	.000	.000	.000	.000	.	.000	.000	.308
	CPI	.000	.000	.000	.000	.000	.000	.	.000	.000
	PPI	.000	.000	.000	.000	.000	.000	.000	.	.000
	UR	.000	.000	.000	.000	.000	.308	.000	.000	.
N	J203	3751	3751	3751	3751	3751	3751	3751	3751	3751
	USD/ZAR	3751	3751	3751	3751	3751	3751	3751	3751	3751
	EUR/ZAR	3751	3751	3751	3751	3751	3751	3751	3751	3751
	SAGB30	3751	3751	3751	3751	3751	3751	3751	3751	3751
	SAGB10	3751	3751	3751	3751	3751	3751	3751	3751	3751
	GDP%	3751	3751	3751	3751	3751	3751	3751	3751	3751
	CPI	3751	3751	3751	3751	3751	3751	3751	3751	3751
	PPI	3751	3751	3751	3751	3751	3751	3751	3751	3751
	UR	3751	3751	3751	3751	3751	3751	3751	3751	3751

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	PPI	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
2	GDP%	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
3	CPI	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
4	USD/ZAR	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
5	UR	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
6	SAGB10	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
7	SAGB30	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).

a. Dependent Variable: J203

Model Summary[h]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.961[a]	.924	.924	3802.59902	.924	45349.258	1	3749	.000	
2	.968[b]	.938	.938	3429.99051	.014	859.769	1	3748	.000	
3	.971[c]	.942	.942	3317.47490	.004	259.546	1	3747	.000	
4	.972[d]	.944	.944	3243.98952	.003	172.683	1	3746	.000	
5	.974[e]	.949	.949	3113.55600	.004	321.430	1	3745	.000	
6	.975[f]	.950	.950	3089.85627	.001	58.670	1	3744	.000	
7	.976[g]	.952	.952	3010.84923	.003	200.069	1	3743	.000	.016

a. Predictors: (Constant), PPI

b. Predictors: (Constant), PPI, GDP%

c. Predictors: (Constant), PPI, GDP%, CPI

d. Predictors: (Constant), PPI, GDP%, CPI, USD/ZAR

e. Predictors: (Constant), PPI, GDP%, CPI, USD/ZAR, UR

f. Predictors: (Constant), PPI, GDP%, CPI, USD/ZAR, UR, SAGB10

g. Predictors: (Constant), PPI, GDP%, CPI, USD/ZAR, UR, SAGB10, SAGB30

h. Dependent Variable: J203

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	655739358103.905	1	655739358103.905	45349.258	.000[b]
	Residual	54209637562.179	3749	14459759.286		
	Total	709948995666.084	3750			
2	Regression	665854394399.187	2	332927197199.593	28298.501	.000[c]
	Residual	44094601266.897	3748	11764834.916		
	Total	709948995666.084	3750			
3	Regression	668710863731.339	3	222903621243.780	20253.582	.000[d]
	Residual	41238131934.745	3747	11005639.694		
	Total	709948995666.084	3750			
4	Regression	670528084537.337	4	167632021134.334	15929.352	.000[e]
	Residual	39420911128.747	3746	10523468.000		
	Total	709948995666.084	3750			
5	Regression	673644100666.707	5	134728820133.341	13897.835	.000[f]
	Residual	36304894999.377	3745	9694230.974		
	Total	709948995666.084	3750			
6	Regression	674204234722.756	6	112367372453.793	11769.653	.000[g]
	Residual	35744760943.327	3744	9547211.790		
	Total	709948995666.084	3750			
7	Regression	676017903153.990	7	96573986164.856	10653.251	.000[h]
	Residual	33931092512.094	3743	9065213.068		
	Total	709948995666.084	3750			

a. Dependent Variable: J203

b. Predictors: (Constant), PPI

c. Predictors: (Constant), PPI, GDP%

d. Predictors: (Constant), PPI, GDP%, CPI

e. Predictors: (Constant), PPI, GDP%, CPI, USD/ZAR

f. Predictors: (Constant), PPI, GDP%, CPI, USD/ZAR, UR

g. Predictors: (Constant), PPI, GDP%, CPI, USD/ZAR, UR, SAGB10

h. Predictors: (Constant), PPI, GDP%, CPI, USD/ZAR, UR, SAGB10, SAGB30

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.	95.0% Confidence Interval for B Lower Bound	95.0% Confidence Interval for B Upper Bound	Collinearity Statistics Tolerance	Collinearity Statistics VIF
1	(Constant)	-54512.653	383.358		-142.198	.000	-55264.263	-53761.042		
	PPI	605.432	2.843	.961	212.954	.000	599.858	611.006	1.000	1.000
2	(Constant)	-62625.193	442.855		-141.412	.000	-63493.454	-61756.933		
	PPI	648.372	2.953	1.029	219.555	.000	642.582	654.162	.754	1.326
	GDP%	812.076	27.695	.137	29.322	.000	757.777	866.375	.754	1.326
3	(Constant)	-58279.503	506.188		-115.134	.000	-59271.934	-57287.071		
	PPI	1210.926	35.035	1.922	34.563	.000	1142.236	1279.617	.005	199.525
	GDP%	917.996	27.582	.155	33.283	.000	863.919	972.073	.711	1.406
	CPI	-617.249	38.314	-.887	-16.110	.000	-692.366	-542.131	.005	195.332
4	(Constant)	-61475.688	551.506		-111.469	.000	-62556.970	-60394.406		
	PPI	1172.954	34.381	1.862	34.116	.000	1105.547	1240.362	.005	200.944
	GDP%	1043.523	28.613	.177	36.471	.000	987.425	1099.620	.632	1.582
	CPI	-588.645	37.528	-.845	-15.685	.000	-662.222	-515.067	.005	195.991
	USD/ZAR	508.272	38.679	.062	13.141	.000	432.439	584.106	.669	1.495
5	(Constant)	-48295.624	905.888		-53.313	.000	-50071.707	-46519.542		
	PPI	716.914	41.664	1.138	17.207	.000	635.227	798.601	.003	320.345
	GDP%	1008.380	27.532	.171	36.626	.000	954.401	1062.359	.629	1.590
	CPI	-111.514	44.784	-.160	-2.490	.013	-199.318	-23.710	.003	302.985
	USD/ZAR	917.926	43.592	.112	21.057	.000	832.460	1003.392	.485	2.061
	UR	-697.445	38.902	-.092	-17.928	.000	-773.716	-621.175	.517	1.933
6	(Constant)	-43223.824	1116.524		-38.713	.000	-45412.879	-41034.768		
	PPI	746.821	41.531	1.186	17.982	.000	665.395	828.247	.003	323.201
	GDP%	987.787	27.454	.167	35.979	.000	933.961	1041.614	.623	1.606
	CPI	-173.574	45.176	-.249	-3.842	.000	-262.146	-85.003	.003	313.055
	USD/ZAR	1098.966	49.296	.134	22.293	.000	1002.317	1195.615	.374	2.677
	UR	-617.168	40.003	-.082	-15.428	.000	-695.597	-538.738	.482	2.076
	SAGB10	-509.347	66.498	-.050	-7.660	.000	-639.722	-378.972	.321	3.116
7	(Constant)	-33568.896	1284.374		-26.136	.000	-36087.037	-31050.754		
	PPI	758.305	40.477	1.204	18.734	.000	678.945	837.665	.003	323.331
	GDP%	970.252	26.781	.164	36.229	.000	917.745	1022.759	.621	1.609
	CPI	-232.628	44.218	-.334	-5.261	.000	-319.322	-145.933	.003	315.870
	USD/ZAR	1022.699	48.337	.124	21.158	.000	927.929	1117.468	.369	2.710
	UR	-766.847	40.391	-.101	-18.986	.000	-846.037	-687.657	.449	2.229
	SAGB10	-2281.897	141.078	-.222	-16.175	.000	-2558.493	-2005.300	.068	14.771
	SAGB30	1862.618	131.684	.163	14.145	.000	1604.439	2120.798	.097	10.361

a. Dependent Variable: J203

Coefficient Correlations[a]

Model			PPI	GDP%	CPI	USD/ZAR	UR	SAGB10	SAGB30
1	Correlations	PPI	1.000						
	Covariances	PPI	8.083						
2	Correlations	PPI	1.000	.496					
		GDP%	.496	1.000					
	Covariances	PPI	8.721	40.558					
		GDP%	40.558	767.029					
3	Correlations	PPI	1.000	.277	-.997				
		GDP%	.277	1.000	-.238				
		CPI	-.997	-.238	1.000				
	Covariances	PPI	1227.471	267.518	-1337.860				
		GDP%	267.518	760.758	-251.899				
		CPI	-1337.860	-251.899	1467.933				
4	Correlations	PPI	1.000	.232	-.996	-.084			
		GDP%	.232	1.000	-.205	.334			
		CPI	-.996	-.205	1.000	.058			
		USD/ZAR	-.084	.334	.058	1.000			
	Covariances	PPI	1182.044	228.196	-1285.537	-111.766			
		GDP%	228.196	818.675	-220.070	369.473			
		CPI	-1285.537	-220.070	1408.359	84.193			
		USD/ZAR	-111.766	369.473	84.193	1496.042			
5	Correlations	PPI	1.000	.227	-.997	-.377	.611		
		GDP%	.227	1.000	-.207	.246	.071		
		CPI	-.997	-.207	1.000	.351	-.594		
		USD/ZAR	-.377	.246	.351	1.000	-.524		
		UR	.611	.071	-.594	-.524	1.000		
	Covariances	PPI	1735.924	260.074	-1861.185	-684.171	989.526		
		GDP%	260.074	758.007	-254.894	295.571	76.253		
		CPI	-1861.185	-254.894	2005.636	685.649	-1035.288		
		USD/ZAR	-684.171	295.571	685.649	1900.249	-888.876		
		UR	989.526	76.253	-1035.288	-888.876	1513.331		
6	Correlations	PPI	1.000	.215	-.994	-.284	.611	-.094	
		GDP%	.215	1.000	-.185	.168	.043	.098	
		CPI	-.994	-.185	1.000	.217	-.611	.179	
		USD/ZAR	-.284	.168	.217	1.000	-.318	-.479	
		UR	.611	.043	-.611	-.318	1.000	-.262	
		SAGB10	-.094	.098	.179	-.479	-.262	1.000	
	Covariances	PPI	1724.843	245.633	-1864.594	-581.511	1015.440	-259.637	
		GDP%	245.633	753.739	-229.246	227.544	46.920	178.777	
		CPI	-1864.594	-229.246	2040.866	483.749	-1104.505	538.783	
		USD/ZAR	-581.511	227.544	483.749	2430.070	-627.679	-1571.709	
		UR	1015.440	46.920	-1104.505	-627.679	1600.225	-696.938	
		SAGB10	-259.637	178.777	538.783	-1571.709	-696.938	4421.935	
7	Correlations	PPI	1.000	.214	-.991	-.284	.584	-.061	.020
		GDP%	.214	1.000	-.179	.172	.053	.086	-.046
		CPI	-.991	-.179	1.000	.225	-.562	.166	-.094
		USD/ZAR	-.284	.172	.225	1.000	-.276	-.120	-.112
		UR	.584	.053	-.562	-.276	1.000	.117	-.262
		SAGB10	-.061	.086	.166	-.120	.117	1.000	-.888
		SAGB30	.020	-.046	-.094	-.112	-.262	-.888	1.000
	Covariances	PPI	1638.422	232.225	-1773.848	-556.531	955.583	-348.278	106.919
		GDP%	232.225	717.223	-212.496	222.741	57.670	325.113	-163.255
		CPI	-1773.848	-212.496	1955.262	481.838	-1004.563	1034.775	-549.778
		USD/ZAR	-556.531	222.741	481.838	2336.460	-538.932	-816.658	-710.037
		UR	955.583	57.670	-1004.563	-538.932	1631.417	664.360	-1393.496
		SAGB10	-348.278	325.113	1034.775	-816.658	664.360	19902.928	-16502.221
		SAGB30	106.919	-163.255	-549.778	-710.037	-1393.496	-16502.221	17340.752

a. Dependent Variable: J203

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions							
				(Constant)	PPI	GDP%	CPI	USD/ZAR	UR	SAGB10	SAGB30
1	1	1.987	1.000	.01	.01						
	2	.013	12.267	.99	.99						
2	1	2.670	1.000	.00	.00	.03					
	2	.321	2.884	.00	.01	.63					
	3	.009	17.375	.99	.98	.34					
3	1	3.622	1.000	.00	.00	.01	.00				
	2	.367	3.143	.00	.00	.59	.00				
	3	.011	18.305	.75	.00	.33	.00				
	4	6.211E-5	241.492	.25	1.00	.07	1.00				
4	1	4.570	1.000	.00	.00	.01	.00	.00			
	2	.399	3.386	.00	.00	.51	.00	.00			
	3	.022	14.256	.00	.00	.01	.00	.76			
	4	.009	22.132	.77	.00	.43	.00	.23			
	5	6.179E-5	271.935	.23	1.00	.05	1.00	.01			
5	1	5.558	1.000	.00	.00	.01	.00	.00	.00		
	2	.400	3.726	.00	.00	.51	.00	.00	.00		
	3	.024	15.062	.00	.00	.01	.00	.28	.01		
	4	.015	19.140	.05	.00	.40	.00	.51	.05		
	5	.002	52.377	.87	.00	.02	.00	.07	.56		
	6	3.918E-5	376.643	.08	1.00	.05	1.00	.13	.37		
6	1	6.529	1.000	.00	.00	.00	.00	.00	.00	.00	
	2	.401	4.037	.00	.00	.51	.00	.00	.00	.00	
	3	.048	11.706	.00	.00	.09	.00	.00	.00	.07	
	4	.017	19.556	.02	.00	.27	.00	.65	.01	.01	
	5	.004	41.003	.00	.00	.03	.00	.03	.43	.50	
	6	.002	65.811	.97	.00	.05	.00	.25	.18	.39	
	7	3.843E-5	412.196	.02	1.00	.04	1.00	.06	.38	.02	
7	1	7.514	1.000	.00	.00	.00	.00	.00	.00	.00	.00
	2	.403	4.319	.00	.00	.52	.00	.00	.00	.00	.00
	3	.058	11.343	.00	.00	.08	.00	.00	.00	.01	.01
	4	.017	20.977	.01	.00	.27	.00	.64	.01	.00	.00
	5	.005	40.007	.02	.00	.06	.00	.13	.26	.02	.08
	6	.003	53.710	.20	.00	.01	.00	.12	.24	.08	.16
	7	.001	111.936	.76	.00	.03	.00	.03	.16	.88	.75
	8	3.830E-5	442.925	.01	1.00	.04	1.00	.07	.34	.01	.00

a. Dependent Variable: J203

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	4534.9224	51015.9336	26046.9977	13426.52006	3751
Residual	-8954.59277	9143.31445	.00000	3008.03779	3751
Std. Predicted Value	-1.602	1.860	.000	1.000	3751
Std. Residual	-2.974	3.037	.000	.999	3751

a. Dependent Variable: J203

J204

Correlations

		J204	USD/ZAR	EUR/ZAR	SAGB30	SAGB10	GDP%	CPI	PPI	UR
Pearson Correlation	J204	1.000	.303	.631	-.321	-.701	-.296	.841	.857	-.408
	USD/ZAR	.303	1.000	.802	.521	.163	-.537	.538	.550	.287
	EUR/ZAR	.631	.802	1.000	.207	-.174	-.664	.793	.818	-.031
	SAGB30	-.321	.521	.207	1.000	.807	-.107	-.051	-.045	.600
	SAGB10	-.701	.163	-.174	.807	1.000	.132	-.548	-.537	.439
	GDP%	-.296	-.537	-.664	-.107	.132	1.000	-.538	-.559	-.012
	CPI	.841	.538	.793	-.051	-.548	-.538	1.000	.997	-.081
	PPI	.857	.550	.818	-.045	-.537	-.559	.997	1.000	-.119
	UR	-.408	.287	-.031	.600	.439	-.012	-.081	-.119	1.000
Sig. (1-tailed)	J204	.	.000	.000	.000	.000	.000	.000	.000	.000
	USD/ZAR	.000	.	.000	.000	.000	.000	.000	.000	.000
	EUR/ZAR	.000	.000	.	.000	.000	.000	.000	.000	.032
	SAGB30	.000	.000	.000	.	.000	.000	.001	.004	.000
	SAGB10	.000	.000	.000	.000	.	.000	.000	.000	.000
	GDP%	.000	.000	.000	.000	.000	.	.000	.000	.245
	CPI	.000	.000	.000	.001	.000	.000	.	.000	.000
	PPI	.000	.000	.000	.004	.000	.000	.000	.	.000
	UR	.000	.000	.032	.000	.000	.245	.000	.000	.
N	J204	3501	3501	3501	3501	3501	3501	3501	3501	3501
	USD/ZAR	3501	3501	3501	3501	3501	3501	3501	3501	3501
	EUR/ZAR	3501	3501	3501	3501	3501	3501	3501	3501	3501
	SAGB30	3501	3501	3501	3501	3501	3501	3501	3501	3501
	SAGB10	3501	3501	3501	3501	3501	3501	3501	3501	3501
	GDP%	3501	3501	3501	3501	3501	3501	3501	3501	3501
	CPI	3501	3501	3501	3501	3501	3501	3501	3501	3501
	PPI	3501	3501	3501	3501	3501	3501	3501	3501	3501
	UR	3501	3501	3501	3501	3501	3501	3501	3501	3501

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	PPI	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
2	UR	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
3	GDP%	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
4	SAGB10	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
5	CPI	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
6	USD/ZAR	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
7	EUR/ZAR	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
8	SAGB30	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).

a. Dependent Variable: J204

© University of Pretoria

Model Summary[i]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.857[a]	.734	.734	957.73538	.734	9644.110	1	3499	.000	
2	.910[b]	.829	.829	768.21427	.095	1940.389	1	3498	.000	
3	.930[c]	.865	.865	680.98803	.037	954.492	1	3497	.000	
4	.939[d]	.881	.881	639.67358	.016	467.308	1	3496	.000	
5	.955[e]	.913	.912	549.28195	.031	1246.302	1	3495	.000	
6	.956[f]	.914	.913	546.06519	.001	42.298	1	3494	.000	
7	.956[g]	.915	.914	543.01367	.001	40.380	1	3493	.000	
8	.956[h]	.915	.915	542.35380	.000	9.505	1	3492	.002	.016

a. Predictors: (Constant), PPI

b. Predictors: (Constant), PPI, UR

c. Predictors: (Constant), PPI, UR, GDP%

d. Predictors: (Constant), PPI, UR, GDP%, SAGB10

e. Predictors: (Constant), PPI, UR, GDP%, SAGB10, CPI

f. Predictors: (Constant), PPI, UR, GDP%, SAGB10, CPI, USD/ZAR

g. Predictors: (Constant), PPI, UR, GDP%, SAGB10, CPI, USD/ZAR, EUR/ZAR

h. Predictors: (Constant), PPI, UR, GDP%, SAGB10, CPI, USD/ZAR, EUR/ZAR, SAGB30

i. Dependent Variable: J204

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	8846128256.419	1	8846128256.419	9644.110	.000[b]
	Residual	3209482429.495	3499	917257.053		
	Total	12055610685.914	3500			
2	Regression	9991254922.646	2	4995627461.323	8464.968	.000[c]
	Residual	2064355763.268	3498	590153.163		
	Total	12055610685.914	3500			
3	Regression	10433895456.822	3	3477965152.274	7499.741	.000[d]
	Residual	1621715229.092	3497	463744.704		
	Total	12055610685.914	3500			
4	Regression	10625109413.244	4	2656277353.311	6491.672	.000[e]
	Residual	1430501272.670	3496	409182.286		
	Total	12055610685.914	3500			
5	Regression	11001131923.941	5	2200226384.788	7292.505	.000[f]
	Residual	1054478761.972	3495	301710.662		
	Total	12055610685.914	3500			
6	Regression	11013744655.669	6	1835624109.278	6155.946	.000[g]
	Residual	1041866030.245	3494	298187.187		
	Total	12055610685.914	3500			
7	Regression	11025651280.789	7	1575093040.113	5341.764	.000[h]
	Residual	1029959405.125	3493	294863.843		
	Total	12055610685.914	3500			
8	Regression	11028447113.829	8	1378555889.229	4686.612	.000[i]
	Residual	1027163572.085	3492	294147.644		
	Total	12055610685.914	3500			

a. Dependent Variable: J204
b. Predictors: (Constant), PPI
c. Predictors: (Constant), PPI, UR
d. Predictors: (Constant), PPI, UR, GDP%
e. Predictors: (Constant), PPI, UR, GDP%, SAGB10
f. Predictors: (Constant), PPI, UR, GDP%, SAGB10, CPI
g. Predictors: (Constant), PPI, UR, GDP%, SAGB10, CPI, USD/ZAR
h. Predictors: (Constant), PPI, UR, GDP%, SAGB10, CPI, USD/ZAR, EUR/ZAR
i. Predictors: (Constant), PPI, UR, GDP%, SAGB10, CPI, USD/ZAR, EUR/ZAR, SAGB30

Coefficients[a]

Model	Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.	95.0% Confidence Interval for B Lower Bound	95.0% Confidence Interval for B Upper Bound	Collinearity Statistics Tolerance	Collinearity Statistics VIF
1 (Constant)	-6172.973	106.149		-58.154	.000	-6381.093	-5964.853		
PPI	76.145	.775	.857	98.204	.000	74.625	77.666	1.000	1.000
2 (Constant)	1916.854	202.429		9.469	.000	1519.963	2313.744		
PPI	72.850	.626	.820	116.295	.000	71.622	74.078	.986	1.014
UR	-309.897	7.035	-.310	-44.050	.000	-323.691	-296.104	.986	1.014
3 (Constant)	-661.513	197.902		-3.343	.001	-1049.528	-273.499		
PPI	84.577	.673	.951	125.740	.000	83.258	85.896	.672	1.488
UR	-291.460	6.265	-.292	-46.523	.000	-303.743	-279.177	.977	1.024
GDP%	180.349	5.838	.232	30.895	.000	168.904	191.794	.681	1.467
4 (Constant)	1465.338	210.326		6.967	.000	1052.964	1877.712		
PPI	75.334	.763	.847	98.748	.000	73.839	76.830	.461	2.170
UR	-229.262	6.550	-.230	-34.999	.000	-242.105	-216.418	.788	1.268
GDP%	153.360	5.624	.197	27.270	.000	142.334	164.386	.648	1.544
SAGB10	-270.961	12.534	-.171	-21.617	.000	-295.536	-246.385	.541	1.849
5 (Constant)	1359.986	180.630		7.529	.000	1005.836	1714.137		
PPI	358.689	8.053	4.035	44.541	.000	342.900	374.479	.003	327.942
UR	-47.444	7.627	-.048	-6.221	.000	-62.397	-32.491	.429	2.332
GDP%	213.163	5.118	.274	41.654	.000	203.130	223.197	.577	1.733
SAGB10	-482.713	12.322	-.305	-39.176	.000	-506.872	-458.555	.413	2.423
CPI	-313.995	8.894	-3.205	-35.303	.000	-331.433	-296.556	.003	329.274
6 (Constant)	1918.107	199.024		9.638	.000	1527.893	2308.322		
PPI	346.632	8.218	3.899	42.181	.000	330.520	362.744	.003	345.528
UR	-60.686	7.850	-.061	-7.730	.000	-76.078	-45.294	.400	2.500
GDP%	219.359	5.176	.282	42.380	.000	209.211	229.507	.557	1.794
SAGB10	-521.358	13.615	-.329	-38.294	.000	-548.051	-494.664	.334	2.993
CPI	-304.605	8.959	-3.109	-33.999	.000	-322.171	-287.039	.003	338.052
USD/ZAR	59.015	9.074	.054	6.504	.000	41.224	76.807	.355	2.820
7 (Constant)	1993.641	198.268		10.055	.000	1604.907	2382.374		
PPI	375.937	9.383	4.229	40.064	.000	357.539	394.334	.002	455.572
UR	-60.261	7.807	-.060	-7.719	.000	-75.568	-44.954	.400	2.500
GDP%	213.314	5.234	.275	40.754	.000	203.051	223.576	.539	1.856
SAGB10	-514.826	13.578	-.325	-37.917	.000	-541.446	-488.205	.332	3.010
CPI	-331.339	9.853	-3.382	-33.630	.000	-350.656	-312.021	.002	413.433
USD/ZAR	104.069	11.476	.096	9.069	.000	81.569	126.569	.219	4.561
EUR/ZAR	-92.310	14.527	-.101	-6.355	.000	-120.792	-63.828	.097	10.298
8 (Constant)	1423.696	270.907		5.255	.000	892.544	1954.848		
PPI	392.462	10.796	4.415	36.351	.000	371.294	413.630	.002	604.594
UR	-42.955	9.608	-.043	-4.471	.000	-61.792	-24.117	.263	3.796
GDP%	217.115	5.371	.279	40.421	.000	206.584	227.646	.511	1.959
SAGB10	-427.445	31.420	-.270	-13.604	.000	-489.048	-365.841	.062	16.159
CPI	-345.163	10.814	-3.523	-31.918	.000	-366.366	-323.961	.002	499.276
USD/ZAR	118.798	12.418	.109	9.567	.000	94.452	143.145	.187	5.354
EUR/ZAR	-115.663	16.367	-.126	-7.067	.000	-147.754	-83.573	.076	13.105
SAGB30	-107.363	34.824	-.059	-3.083	.002	-175.641	-39.085	.067	14.990

a. Dependent Variable: J204

Coefficient Correlations[a]

Model			PPI	UR	GDP%	SAGB10	CPI	USD/ZAR	EUR/ZAR	SAGB30
1	Correlations	PPI	1.000							
	Covariances	PPI	.601							
2	Correlations	PPI	1.000	.119						
		UR	.119	1.000						
	Covariances	PPI	.392	.526						
		UR	.526	49.493						
3	Correlations	PPI	1.000	.152	.564					
		UR	.152	1.000	.095					
		GDP%	.564	.095	1.000					
	Covariances	PPI	.452	.640	2.216					
		UR	.640	39.248	3.484					
		GDP%	2.216	3.484	34.077					
4	Correlations	PPI	1.000	-.133	.580	.560				
		UR	-.133	1.000	-.014	-.439				
		GDP%	.580	-.014	1.000	.222				
		SAGB10	.560	-.439	.222	1.000				
	Covariances	PPI	.582	-.665	2.489	5.359				
		UR	-.665	42.909	-.519	-36.065				
		GDP%	2.489	-.519	31.626	15.649				
		SAGB10	5.359	-36.065	15.649	157.112				
5	Correlations	PPI	1.000	.665	.374	-.445	-.997			
		UR	.665	1.000	.214	-.612	-.675			
		GDP%	.374	.214	1.000	.022	-.331			
		SAGB10	-.445	-.612	.022	1.000	.487			
		CPI	-.997	-.675	-.331	.487	1.000			
	Covariances	PPI	64.852	40.847	15.432	-44.192	-71.389			
		UR	40.847	58.164	8.342	-57.484	-45.807			
		GDP%	15.432	8.342	26.189	1.378	-15.067			
		SAGB10	-44.192	-57.484	1.378	151.824	53.349			
		CPI	-71.389	-45.807	-15.067	53.349	79.108			
6	Correlations	PPI	1.000	.684	.317	-.292	-.995	-.226		
		UR	.684	1.000	.155	-.418	-.685	-.259		
		GDP%	.317	.155	1.000	-.061	-.291	.184		
		SAGB10	-.292	-.418	-.061	1.000	.362	-.436		
		CPI	-.995	-.685	-.291	.362	1.000	.161		
		USD/ZAR	-.226	-.259	.184	-.436	.161	1.000		
	Covariances	PPI	67.532	44.145	13.486	-32.659	-73.232	-16.823		
		UR	44.145	61.630	6.305	-44.715	-48.212	-18.475		
		GDP%	13.486	6.305	26.791	-4.298	-13.516	8.644		
		SAGB10	-32.659	-44.715	-4.298	185.358	44.147	-53.918		
		CPI	-73.232	-48.212	-13.516	44.147	80.269	13.101		
		USD/ZAR	-16.823	-18.475	8.644	-53.918	13.101	82.340		
7	Correlations	PPI	1.000	.600	.182	-.216	-.993	.149	-.491	
		UR	.600	1.000	.151	-.416	-.623	-.199	-.009	
		GDP%	.182	.151	1.000	-.074	-.182	.030	.182	
		SAGB10	-.216	-.416	-.074	1.000	.294	-.295	-.076	
		CPI	-.993	-.623	-.182	.294	1.000	-.149	.427	
		USD/ZAR	.149	-.199	.030	-.295	-.149	1.000	-.618	
		EUR/ZAR	-.491	-.009	.182	-.076	.427	-.618	1.000	
	Covariances	PPI	88.047	43.961	8.948	-27.555	-91.817	16.061	-66.992	
		UR	43.961	60.947	6.171	-44.148	-47.956	-17.795	-.971	
		GDP%	8.948	6.171	27.397	-5.228	-9.363	1.803	13.819	
		SAGB10	-27.555	-44.148	-5.228	184.349	39.331	-46.029	-14.933	
		CPI	-91.817	-47.956	-9.363	39.331	97.073	-16.873	61.114	
		USD/ZAR	16.061	-17.795	1.803	-46.029	-16.873	131.691	-102.994	
		EUR/ZAR	-66.992	-.971	13.819	-14.933	61.114	-102.994	211.023	

a. Dependent Variable: J204

© University of Pretoria

Coefficient Correlations[a]

Model			PPI	UR	GDP%	SAGB10	CPI	USD/ZAR	EUR/ZAR	SAGB30
8	Correlations	PPI	1.000	.713	.268	.367	-.990	.311	-.608	-.496
		UR	.713	1.000	.253	.381	-.703	.076	-.277	-.584
		GDP%	.268	.253	1.000	.176	-.256	.115	.051	-.230
		SAGB10	.367	.381	.176	1.000	-.259	.229	-.446	-.902
		CPI	-.990	-.703	-.256	-.259	1.000	-.285	.536	.415
		USD/ZAR	.311	.076	.115	.229	-.285	1.000	-.684	-.385
		EUR/ZAR	-.608	-.277	.051	-.446	.536	-.684	1.000	.463
		SAGB30	-.496	-.584	-.230	-.902	.415	-.385	.463	1.000
	Covariances	PPI	116.564	73.943	15.535	124.434	-115.629	41.631	-107.432	-186.663
		UR	73.943	92.310	13.077	115.061	-73.010	9.067	-43.490	-195.484
		GDP%	15.535	13.077	28.851	29.729	-14.869	7.689	4.447	-42.935
		SAGB10	124.434	115.061	29.729	987.223	-87.856	89.494	-229.589	-987.024
		CPI	-115.629	-73.010	-14.869	-87.856	116.944	-38.255	94.932	156.155
		USD/ZAR	41.631	9.067	7.689	89.494	-38.255	154.196	-138.933	-166.377
		EUR/ZAR	-107.432	-43.490	4.447	-229.589	94.932	-138.933	267.889	263.788
		SAGB30	-186.663	-195.484	-42.935	-987.024	156.155	-166.377	263.788	1212.735

a. Dependent Variable: J204

Collinearity Diagnostics[a]

			Condition	Variance Proportions								
Model	Dimension	Eigenvalue	Index	(Constant)	PPI	UR	GDP%	SAGB10	CPI	USD/ZAR	EUR/ZAR	SAGB30
1	1	1.988	1.000	.01	.01							
	2	.012	13.039	.99	.99							
2	1	2.980	1.000	.00	.00	.00						
	2	.018	12.937	.02	.84	.08						
	3	.002	34.947	.98	.16	.92						
3	1	3.635	1.000	.00	.00	.00	.01					
	2	.351	3.220	.00	.01	.00	.60					
	3	.013	17.044	.02	.71	.16	.27					
	4	.002	40.965	.98	.28	.84	.12					
4	1	4.609	1.000	.00	.00	.00	.01	.00				
	2	.358	3.587	.00	.00	.00	.59	.00				
	3	.027	13.108	.00	.19	.00	.14	.18				
	4	.004	34.488	.01	.34	.69	.07	.67				
	5	.002	48.164	.99	.46	.30	.19	.15				
5	1	5.573	1.000	.00	.00	.00	.00	.00	.00			
	2	.385	3.804	.00	.00	.00	.50	.00	.00			
	3	.036	12.428	.00	.00	.00	.16	.10	.00			
	4	.004	37.393	.02	.00	.36	.07	.57	.00			
	5	.002	51.655	.98	.00	.18	.15	.11	.00			
	6	3.299E-5	410.978	.00	1.00	.46	.12	.22	1.00			
6	1	6.528	1.000	.00	.00	.00	.00	.00	.00	.00		
	2	.413	3.976	.00	.00	.00	.45	.00	.00	.00		
	3	.037	13.368	.00	.00	.00	.11	.08	.00	.01		
	4	.017	19.675	.02	.00	.01	.29	.01	.00	.64		
	5	.004	41.778	.00	.00	.38	.01	.46	.00	.04		
	6	.002	64.302	.97	.00	.12	.04	.35	.00	.27		
	7	3.177E-5	453.327	.02	1.00	.48	.09	.11	1.00	.04		
7	1	7.495	1.000	.00	.00	.00	.00	.00	.00	.00	.00	
	2	.439	4.133	.00	.00	.00	.41	.00	.00	.00	.00	
	3	.038	13.974	.00	.00	.00	.17	.07	.00	.00	.00	
	4	.019	20.030	.02	.00	.01	.30	.00	.00	.27	.02	
	5	.005	37.122	.00	.00	.12	.02	.19	.00	.29	.23	
	6	.002	58.221	.02	.00	.27	.01	.45	.00	.12	.50	
	7	.002	69.593	.95	.00	.22	.06	.22	.00	.29	.04	
	8	2.510E-5	546.414	.01	1.00	.38	.03	.07	1.00	.02	.21	

a. Dependent Variable: J204

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions (Constant)	PPI	UR	GDP%	SAGB10	CPI	USD/ZAR	EUR/ZAR	SAGB30
8	1	8.485	1.000	.00	.00	.00	.00	.00	.00	.00	.00	.00
	2	.439	4.395	.00	.00	.00	.39	.00	.00	.00	.00	.00
	3	.045	13.680	.00	.00	.00	.15	.01	.00	.00	.00	.00
	4	.019	21.312	.01	.00	.01	.28	.00	.00	.23	.01	.00
	5	.005	39.476	.00	.00	.08	.02	.03	.00	.26	.17	.00
	6	.004	48.651	.09	.00	.03	.00	.00	.00	.02	.08	.10
	7	.002	66.950	.14	.00	.26	.05	.03	.00	.38	.34	.02
	8	.000	138.329	.62	.00	.09	.03	.82	.01	.02	.06	.65
	9	1.961E-5	657.872	.15	1.00	.52	.07	.11	.99	.09	.34	.23

a. Dependent Variable: J204

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	275.9139	7137.8550	4129.4016	1775.10137	3501
Residual	-1392.42297	2196.19409	.00000	541.73361	3501
Std. Predicted Value	-2.171	1.695	.000	1.000	3501
Std. Residual	-2.567	4.049	.000	.999	3501

a. Dependent Variable: J204

i) Automatic Linear Modelling

J200

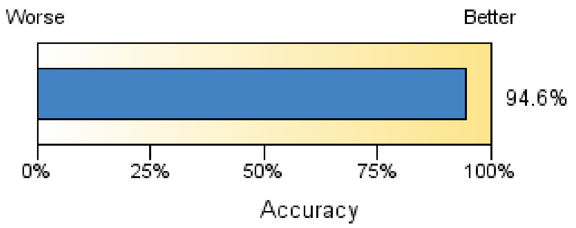
Case Processing Summary

	N	Percent
Included	3730	99.4%
Excluded	21	0.6%
Total	3751	100.0%

Model Summary

Target	J200
Automatic Data Preparation	On
Model Selection Method	Forward Stepwise
Information Criterion	59,199.606

The information criterion is used to compare to models. Models with smaller information criterion values fit better.



Automatic Data Preparation

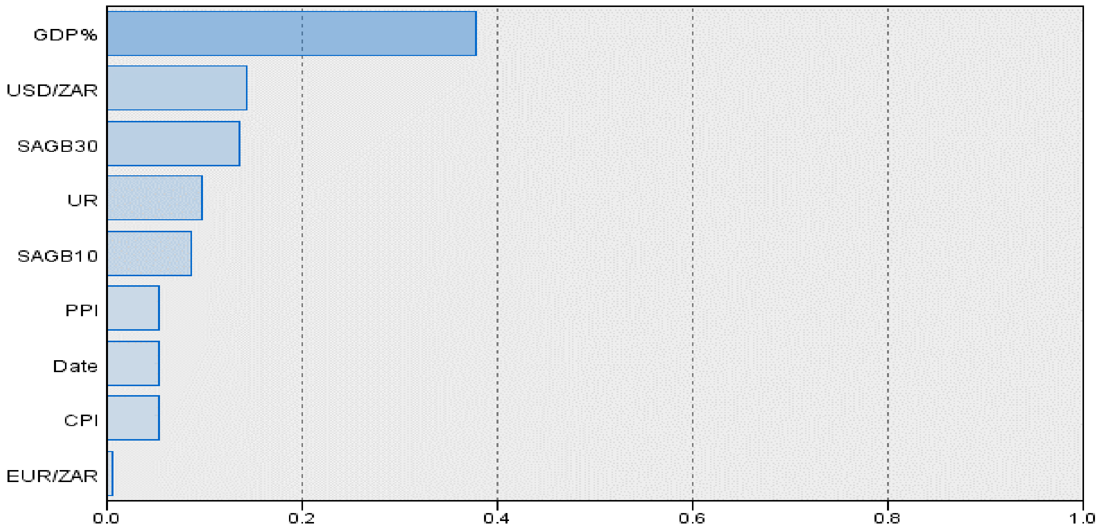
Target: J200

Field	Role	Actions Taken
(CPI_transformed)	Predictor	Trim outliers
(Date_months)	Predictor	Derive duration: months Trim outliers
(EUR_ZAR_transformed)	Predictor	Trim outliers
(GDP_transformed)	Predictor	Trim outliers
(PPI_transformed)	Predictor	Trim outliers
(SAGB10_transformed)	Predictor	Trim outliers
(SAGB30_transformed)	Predictor	Trim outliers
(UR_transformed)	Predictor	Trim outliers
(USD_ZAR_transformed)	Predictor	Trim outliers

If the original field name is X, then the transformed field is displayed as (X_transformed). The original field is excluded from the analysis and the transformed field is included instead. One or more records were excluded because of a predictor or target that is missing, a frequency weight that is missing or less than one after rounding, or a regression weight that is

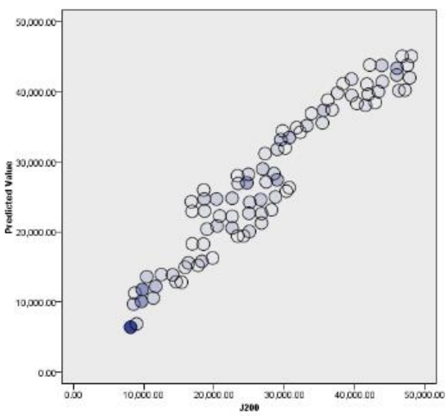
Predictor Importance

Target: J200



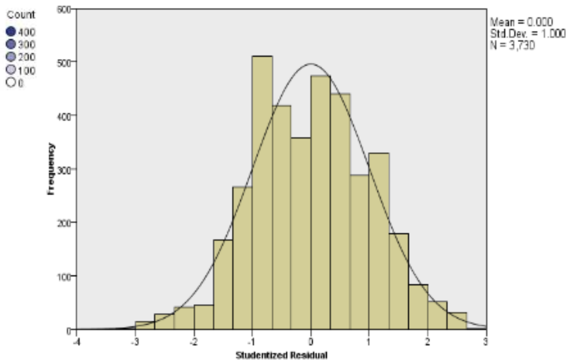
Predicted by Observed

Target: J200



Residuals

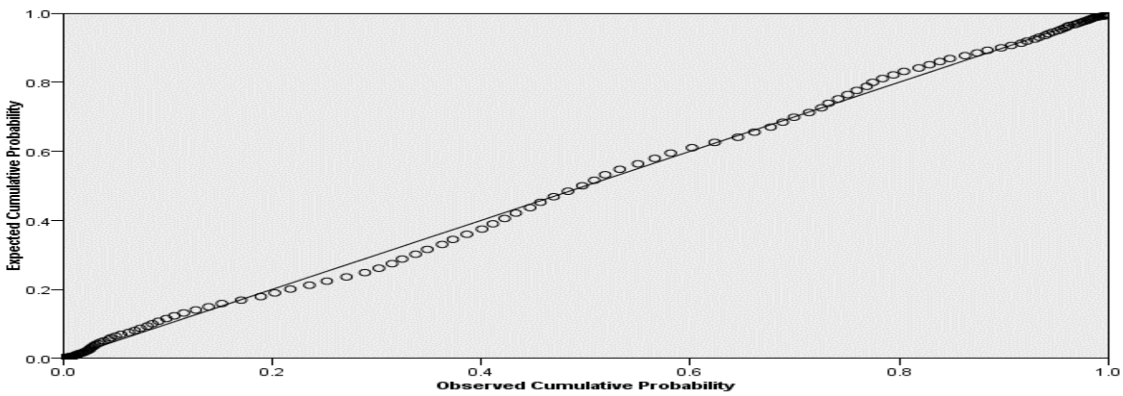
Target: J200



The histogram of Studentized residuals compares the distribution of the residuals to a normal distribution. The smooth line represents the normal distribution. The closer the frequencies of the residuals are to this line, the closer the distribution of the residuals is to the normal distribution.

Residuals

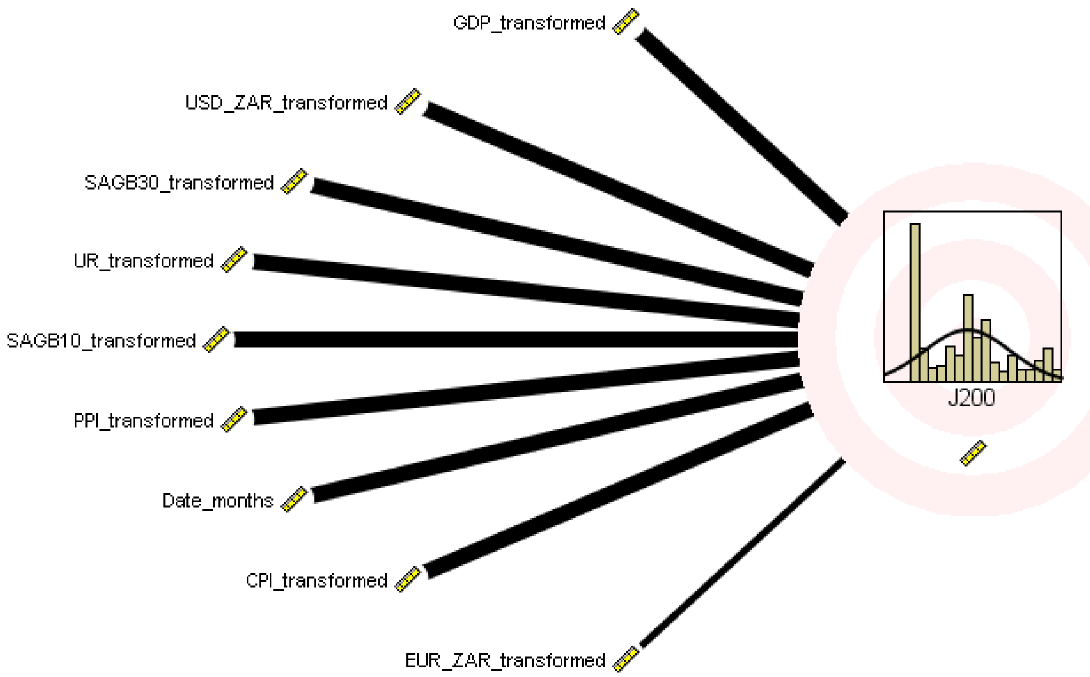
Target: J200



The P-P plot of Studentized residuals compares the distribution of the residuals to a normal distribution. The diagonal line represents the normal distribution. The closer the observed cumulative probabilities of the residuals are to this line, the closer the distribution of the residuals is to the normal distribution.

Effects

Target: J200



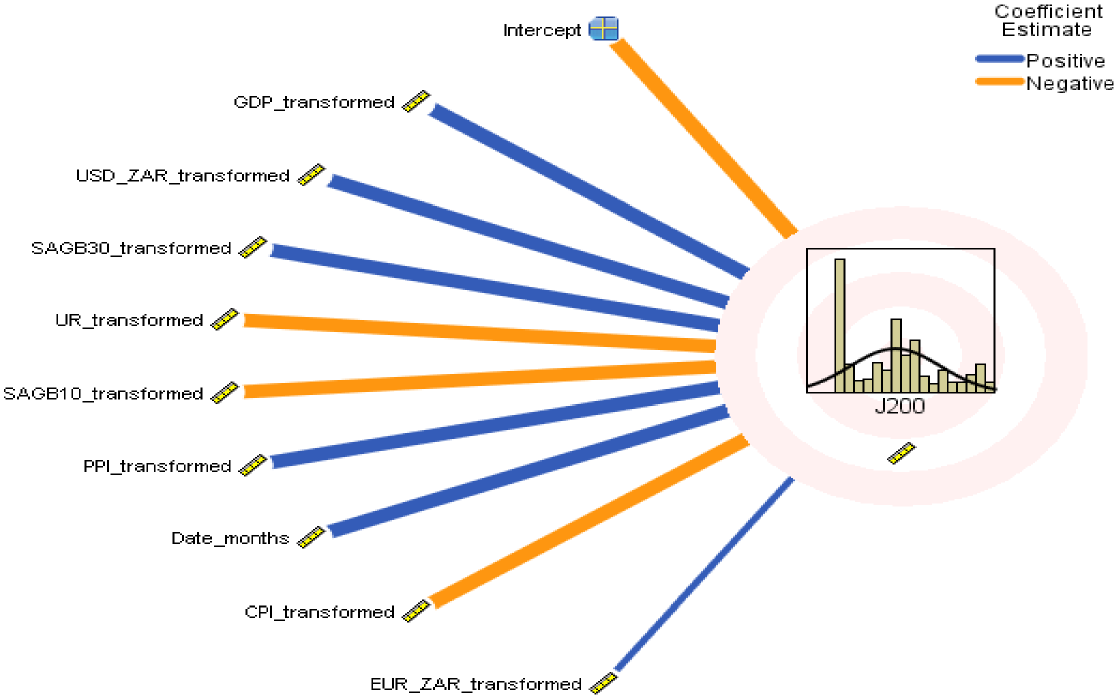
Effects

Target: J200

Source	Sum of Squares	df	Mean Square	F	Sig.	Importance
Corrected Model ▼	513,039,935,571.100	9	57,004,437,285.678	7,316.446	.000	
GDP_transformed	4,485,174,218.052	1	4,485,174,218.052	575.666	.000	0.377
USD_ZAR_transformed	1,705,391,806.112	1	1,705,391,806.112	218.885	.000	0.143
SAGB30_transformed	1,607,637,773.215	1	1,607,637,773.215	206.338	.000	0.135
UR_transformed	1,151,956,262.371	1	1,151,956,262.371	147.852	.000	0.097
SAGB10_transformed	1,021,901,287.180	1	1,021,901,287.180	131.160	.000	0.086
PPI_transformed	634,857,506.100	1	634,857,506.100	81.483	.000	0.053
Date_months	619,468,821.758	1	619,468,821.758	79.508	.000	0.052
CPI_transformed	617,180,529.184	1	617,180,529.184	79.214	.000	0.052
EUR_ZAR_transformed	51,488,471.298	1	51,488,471.298	6.608	.010	0.004
Residual	28,983,539,420.941	3,720	7,791,274.038			
Corrected Total	542,023,474,992.041	3,729				

Coefficients

Target: J200



Coefficients

Target: J200

Model Term	Coefficient ▼	Std.Error	t	Sig.	95% Confidence Interval Lower	95% Confidence Interval Upper	Importance
Intercept	-65,671.332	4,107.717	-15.987	.000	-73,724.929	-57,617.735	
GDP_transformed	754.904	31.463	23.993	.000	693.217	816.591	0.377
USD_ZAR_transformed	944.404	63.834	14.795	.000	819.252	1,069.557	0.143
SAGB30_transformed	2,266.642	157.795	14.364	.000	1,957.269	2,576.015	0.135
UR_transformed	-532.894	43.825	-12.159	.000	-618.818	-446.969	0.097
SAGB10_transformed	-1,747.546	152.591	-11.452	.000	-2,046.716	-1,448.376	0.086
PPI_transformed	503.124	55.737	9.027	.000	393.846	612.401	0.053
Date_months	176.863	19.835	8.917	.000	137.975	215.752	0.052
CPI_transformed	-490.590	55.121	-8.900	.000	-598.661	-382.520	0.052
EUR_ZAR_transformed	220.315	85.703	2.571	.010	52.287	388.344	0.004

Model Building Summary

Target: J200

		Step								
		1	2	3	4	5	6	7	8	9
Information Criterion		60,853.412	60,216.233	59,895.726	59,720.316	59,473.297	59,424.970	59,397.301	59,326.843	59,199.606
Effect	PPI_transformed	✓	✓	✓	✓	✓	✓	✓	✓	✓
	GDP_transformed		✓	✓	✓	✓	✓	✓	✓	✓
	CPI_transformed			✓	✓	✓	✓	✓	✓	✓
	USD_ZAR_transformed				✓	✓	✓	✓	✓	✓
	UR_transformed					✓	✓	✓	✓	✓
	EUR_ZAR_transformed						✓	✓	✓	✓
	Date_months							✓	✓	✓
	SAGB30_transformed								✓	✓
	SAGB10_transformed									✓

The model building method is Forward Stepwise using the Information Criterion.
A checkmark means the effect is in the model at this step.

J201

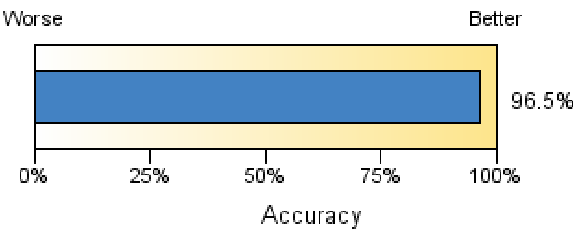
Case Processing Summary

	N	Percent
Included	3730	99.4%
Excluded	21	0.6%
Total	3751	100.0%

Model Summary

Target	J201
Automatic Data Preparation	On
Model Selection Method	Forward Stepwise
Information Criterion	61,202.363

The information criterion is used to compare to models. Models with smaller information criterion values fit better.



Automatic Data Preparation

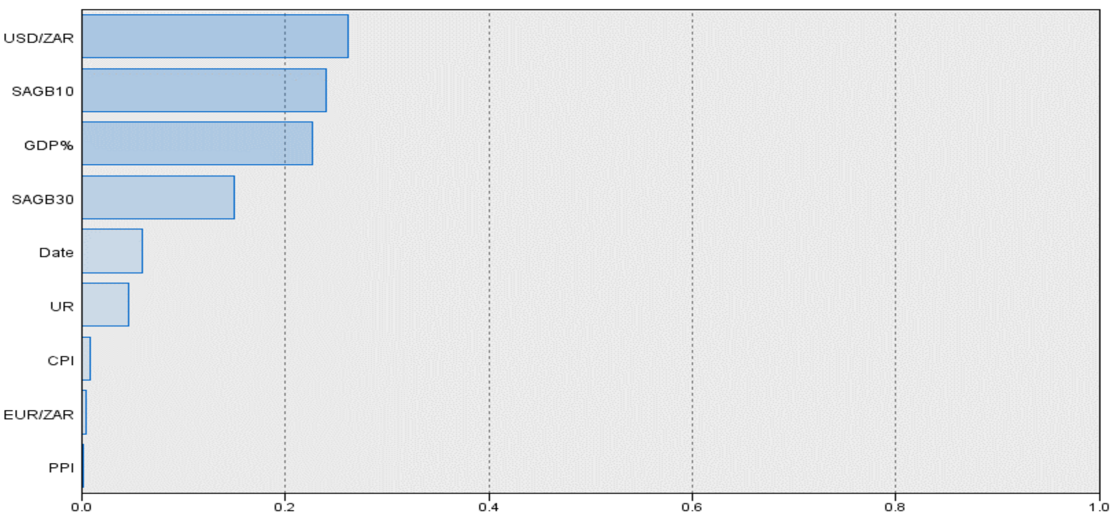
Target: J201

Field	Role	Actions Taken
(CPI_transformed)	Predictor	Trim outliers
(Date_months)	Predictor	Derive duration: months Trim outliers
(EUR_ZAR_transformed)	Predictor	Trim outliers
(GDP_transformed)	Predictor	Trim outliers
(PPI_transformed)	Predictor	Trim outliers
(SAGB10_transformed)	Predictor	Trim outliers
(SAGB30_transformed)	Predictor	Trim outliers
(UR_transformed)	Predictor	Trim outliers
(USD_ZAR_transformed)	Predictor	Trim outliers

If the original field name is X, then the transformed field is displayed as (X_transformed). The original field is excluded from the analysis and the transformed field is included instead. One or more records were excluded because of a predictor or target that is missing, a frequency weight that is missing or less than one after rounding, or a regression weight that is missing, negative, or zero.

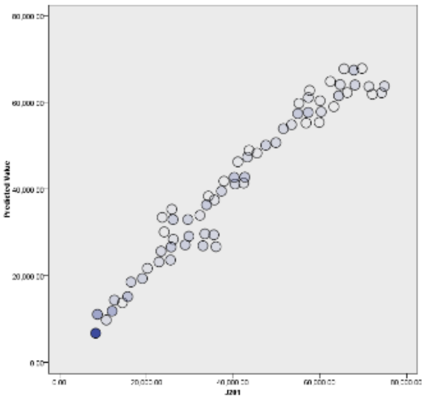
Predictor Importance

Target: J201



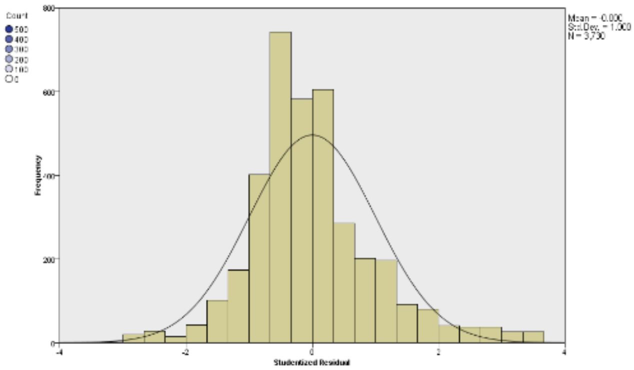
Predicted by Observed

Target: J201



Residuals

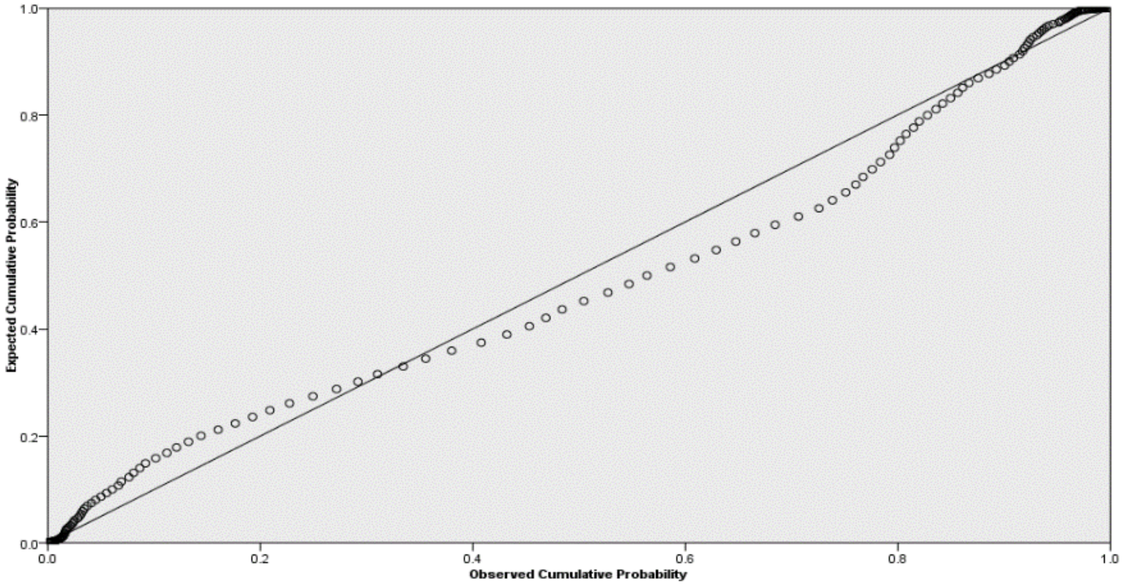
Target: J201



The histogram of Studentized residuals compares the distribution of the residuals to a normal distribution. The smooth line represents the normal distribution. The closer the frequencies of the residuals are to this line, the closer the distribution of the residuals is to the normal distribution.

Residuals

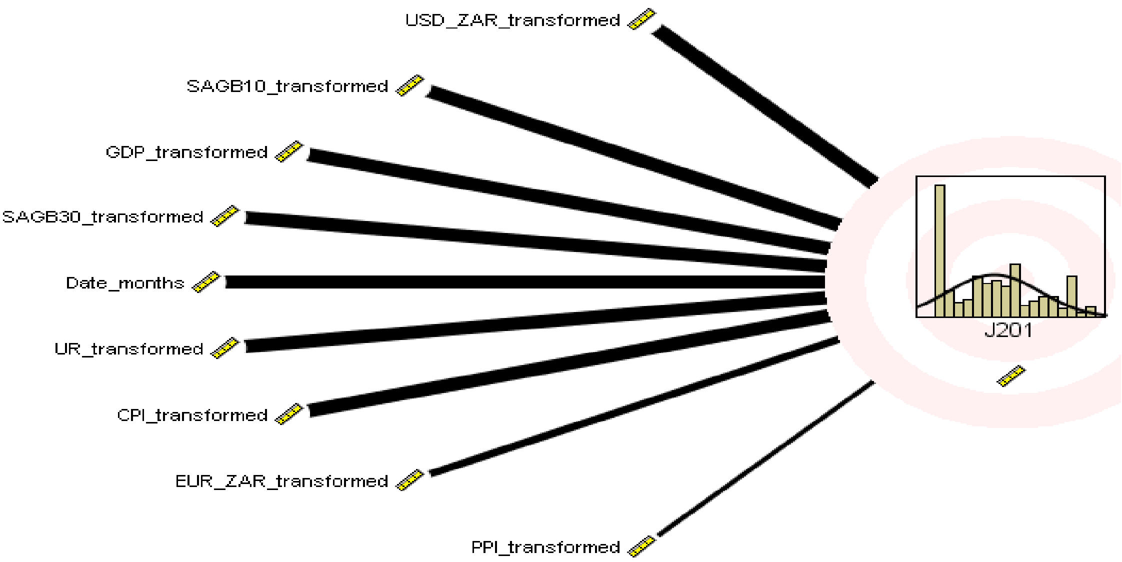
Target: J201



The P-P plot of Studentized residuals compares the distribution of the residuals to a normal distribution. The diagonal line represents the normal distribution. The closer the observed cumulative probabilities of the residuals are to this line, the closer the distribution of the residuals is to the normal distribution.

Effects

Target: J201



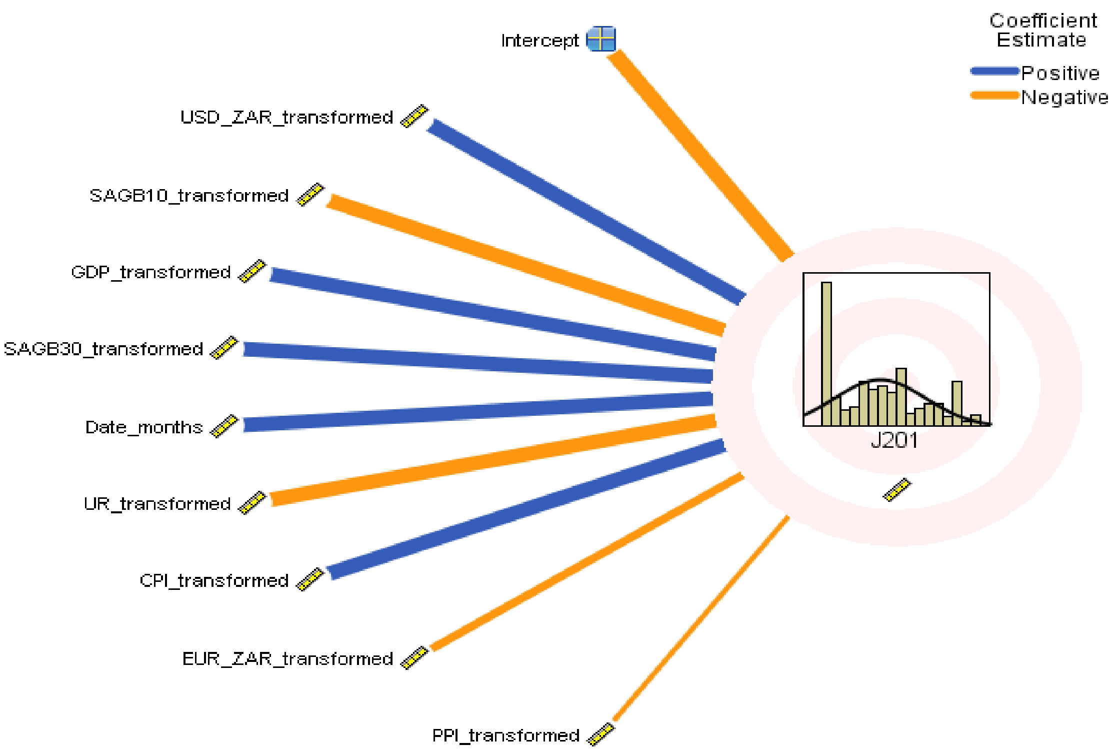
Effects

Target: J201

Source	Sum of Squares	df	Mean Square	F	Sig.	Importance
Corrected Model ▼	1,376,757,257,474.290	9	152,973,028,608.254	11,476.772	.000	
USD_ZAR_transformed	6,248,894,449.602	1	6,248,894,449.602	468.822	.000	0.262
SAGB10_transformed	5,737,003,392.639	1	5,737,003,392.639	430.418	.000	0.241
GDP_transformed	5,392,596,564.209	1	5,392,596,564.209	404.579	.000	0.226
SAGB30_transformed	3,563,696,447.052	1	3,563,696,447.052	267.366	.000	0.150
Date_months	1,422,715,052.359	1	1,422,715,052.359	106.739	.000	0.060
UR_transformed	1,097,615,893.432	1	1,097,615,893.432	82.348	.000	0.046
CPI_transformed	211,024,065.422	1	211,024,065.422	15.832	.000	0.009
EUR_ZAR_transformed	103,899,513.432	1	103,899,513.432	7.795	.005	0.004
PPI_transformed	45,275,450.690	1	45,275,450.690	3.397	.065	0.002
Residual	49,583,597,706.142	3,720	13,328,924.115			
Corrected Total	1,426,340,855,180.430	3,729				

Coefficients

Target: J201



Coefficients

Target: J201

Model Term	Coefficient ▼	Std.Error	t	Sig.	95% Confidence Interval		Importance
					Lower	Upper	
Intercept	-104,594.324	5,372.715	-19.468	.000	-115,128.079	-94,060.570	
USD_ZAR_transformed	1,807.788	83.492	21.652	.000	1,644.094	1,971.482	0.262
SAGB10_transformed	-4,140.632	199.582	-20.747	.000	-4,531.933	-3,749.331	0.241
GDP_transformed	827.754	41.153	20.114	.000	747.069	908.438	0.226
SAGB30_transformed	3,374.731	206.389	16.351	.000	2,970.084	3,779.377	0.150
Date_months	268.032	25.943	10.331	.000	217.168	318.897	0.060
UR_transformed	-520.173	57.322	-9.075	.000	-632.558	-407.788	0.046
CPI_transformed	286.866	72.096	3.979	.000	145.515	428.217	0.009
EUR_ZAR_transformed	-312.965	112.095	-2.792	.005	-532.739	-93.191	0.004
PPI_transformed	-134.359	72.901	-1.843	.065	-277.289	8.571	0.002

Model Building Summary

Target: J201

		Step								
		1	2	3	4	5	6	7	8	9
Information Criterion		62,903.217	62,380.854	61,849.608	61,625.597	61,561.921	61,288.525	61,214.485	61,203.757	61,202.363
Effect	Date_months	✓	✓	✓	✓	✓	✓	✓	✓	✓
	USD_ZAR_transformed		✓	✓	✓	✓	✓	✓	✓	✓
	GDP_transformed			✓	✓	✓	✓	✓	✓	✓
	EUR_ZAR_transformed				✓	✓	✓	✓	✓	✓
	SAGB10_transformed					✓	✓	✓	✓	✓
	SAGB30_transformed						✓	✓	✓	✓
	UR_transformed							✓	✓	✓
	CPI_transformed								✓	✓
	PPI_transformed									✓

The model building method is Forward Stepwise using the Information Criterion.
A checkmark means the effect is in the model at this step.

J202

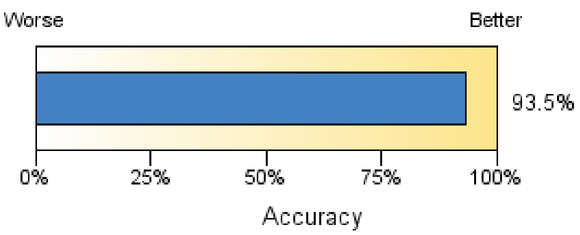
Case Processing Summary

	N	Percent
Included	3730	99.4%
Excluded	21	0.6%
Total	3751	100.0%

Model Summary

Target	J202
Automatic Data Preparation	On
Model Selection Method	Forward Stepwise
Information Criterion	62,142.061

The information criterion is used to compare to models. Models with smaller information criterion values fit better.



Automatic Data Preparation

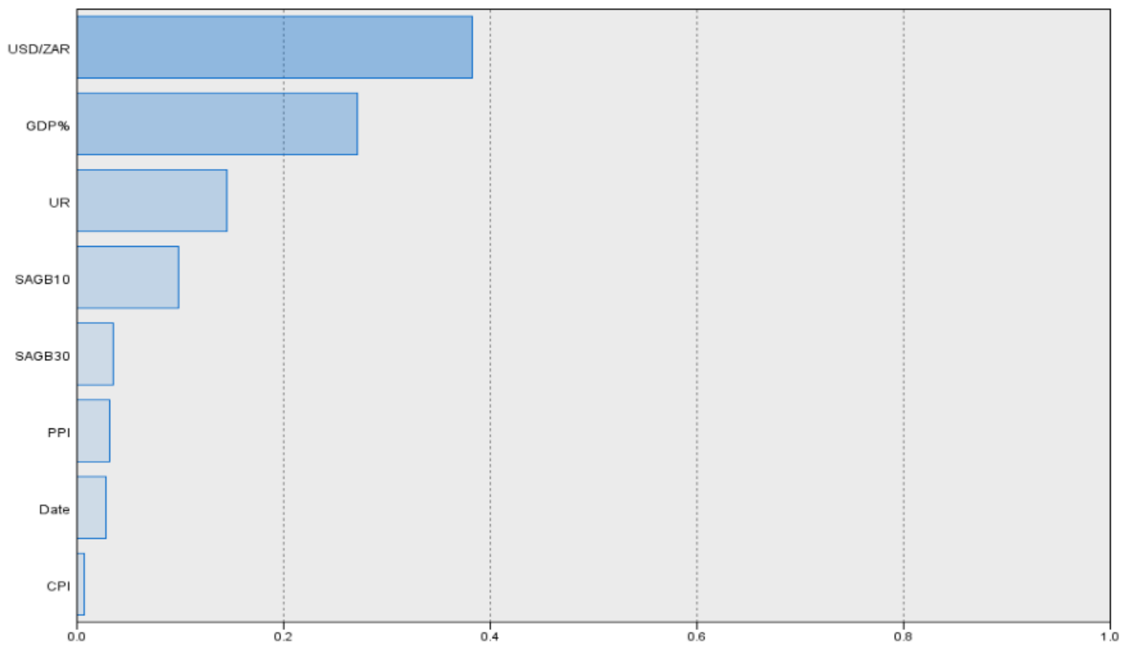
Target: J202

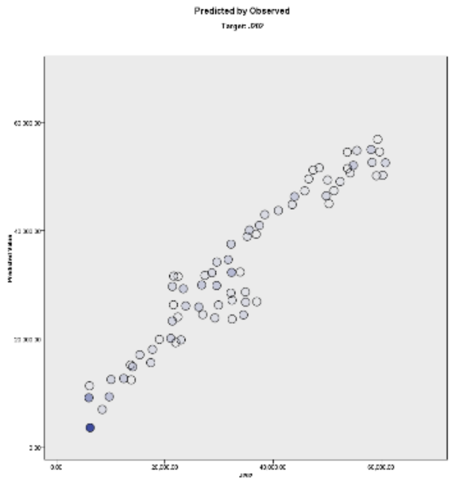
Field	Role	Actions Taken
(CPI_transformed)	Predictor	Trim outliers
(Date_months)	Predictor	Derive duration: months Trim outliers
(EUR_ZAR_transformed)	Predictor	Trim outliers
(GDP_transformed)	Predictor	Trim outliers
(PPI_transformed)	Predictor	Trim outliers
(SAGB10_transformed)	Predictor	Trim outliers
(SAGB30_transformed)	Predictor	Trim outliers
(UR_transformed)	Predictor	Trim outliers
(USD_ZAR_transformed)	Predictor	Trim outliers

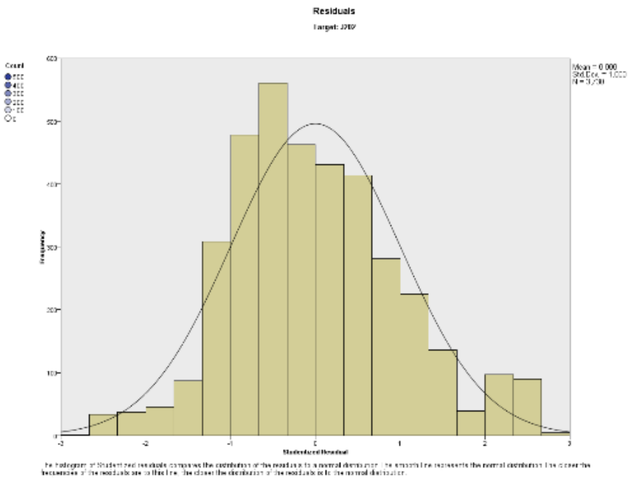
If the original field name is X, then the transformed field is displayed as (X_transformed). The original field is excluded from the analysis and the transformed field is included instead. One or more records were excluded because of a predictor or target that is missing, a frequency weight that is missing or less than one after rounding, or a regression weight that is missing, negative, or zero.

Predictor Importance

Target: J202

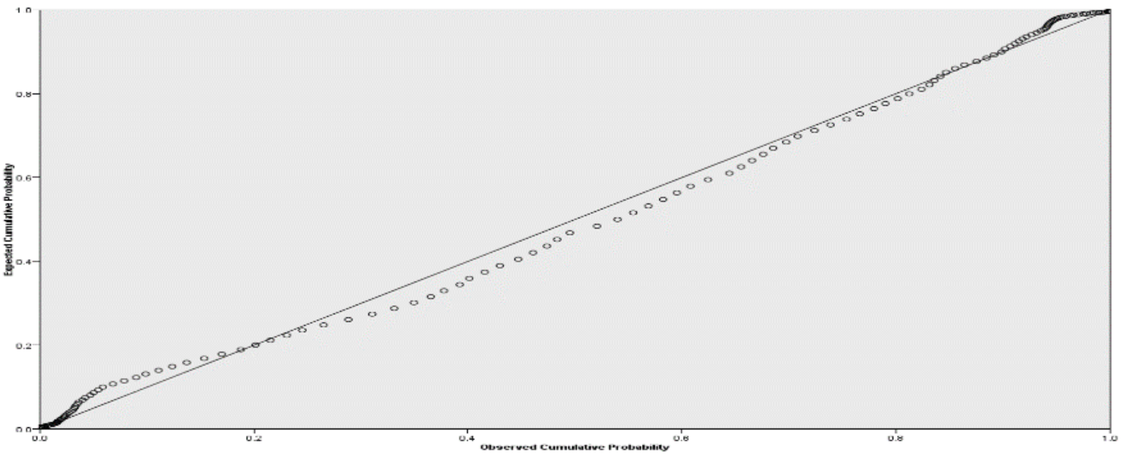






Residuals

Target: J202



The P-P plot of Studentized residuals compares the distribution of the residuals to a normal distribution. The diagonal line represents the normal distribution. The closer the observed cumulative probabilities of the residuals are to this line, the closer the distribution of the residuals is to the normal distribution.

Effects

Target: J202

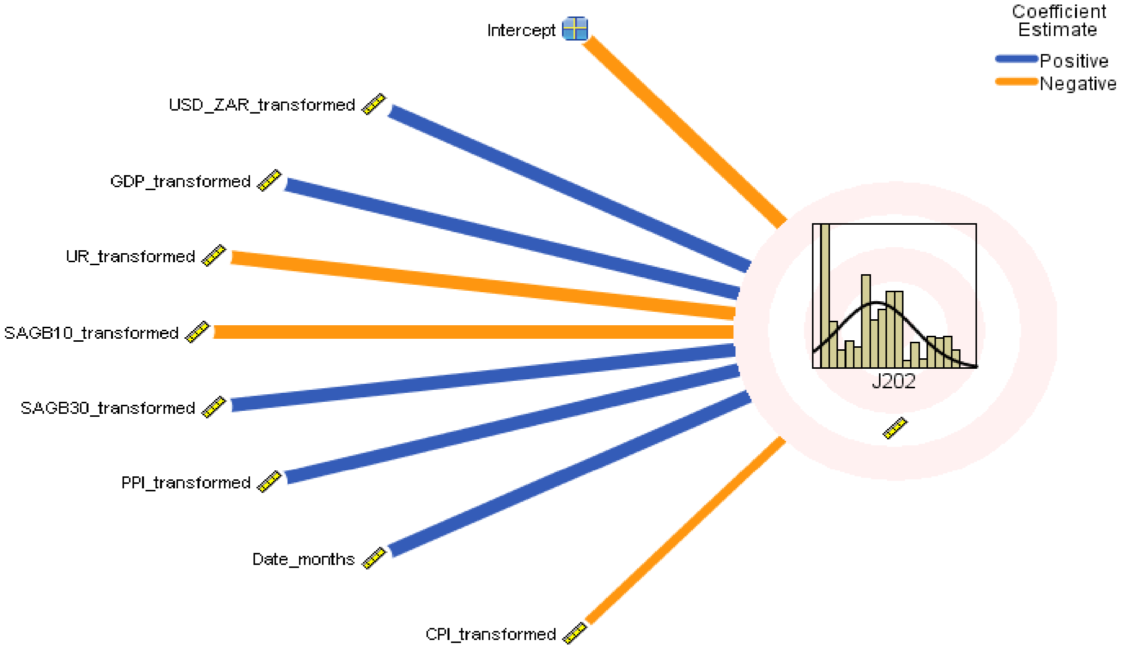
Effects

Target: J202

Source	Sum of Squares	df	Mean Square	F	Sig.	Importance
Corrected Model ▼	923,041,589,798.432	8	115,380,198,724.804	6,726.778	.000	
USD_ZAR_transformed	9,093,567,799.111	1	9,093,567,799.111	530.164	.000	0.383
GDP_transformed	6,444,403,021.944	1	6,444,403,021.944	375.715	.000	0.271
UR_transformed	3,432,784,499.921	1	3,432,784,499.921	200.135	.000	0.145
SAGB10_transformed	2,334,603,479.741	1	2,334,603,479.741	136.110	.000	0.098
SAGB30_transformed	843,224,992.098	1	843,224,992.098	49.161	.000	0.036
PPI_transformed	759,812,210.305	1	759,812,210.305	44.298	.000	0.032
Date_months	658,175,681.800	1	658,175,681.800	38.372	.000	0.028
CPI_transformed	180,844,783.356	1	180,844,783.356	10.543	.001	0.008
Residual	63,823,974,435.444	3,721	17,152,371.523			
Corrected Total	986,865,564,233.875	3,729				

Coefficients

Target: J202



Coefficients

Target: J202

Model Term	Coefficient ▼	Std.Error	t	Sig.	95% Confidence Interval		Importance
					Lower	Upper	
Intercept	-64,125.848	6,049.665	-10.600	.000	-75,986.831	-52,264.865	
USD_ZAR_transformed	1,748.555	75.941	23.025	.000	1,599.666	1,897.445	0.383
GDP_transformed	903.225	46.598	19.383	.000	811.865	994.584	0.271
UR_transformed	-908.641	64.229	-14.147	.000	-1,034.569	-782.714	0.145
SAGB10_transformed	-2,346.606	201.139	-11.667	.000	-2,740.960	-1,952.253	0.098
SAGB30_transformed	1,327.825	189.379	7.011	.000	956.529	1,699.122	0.036
PPI_transformed	414.657	62.301	6.656	.000	292.509	536.805	0.032
Date_months	177.525	28.658	6.195	.000	121.338	233.713	0.028
CPI_transformed	-245.569	75.628	-3.247	.001	-393.845	-97.293	0.008

Model Building Summary

Target: J202

		Step									
		1	2	3	4	5	6	7	8	9	10
Information Criterion		63,414.034	63,098.037	62,663.786	62,477.491	62,294.225	62,239.376	62,184.194	62,182.208	62,150.605	62,142.061
Effect	Date_months	√	√	√	√	√	√	√	√	√	√
	USD_ZAR_transformed		√	√	√	√	√	√	√	√	√
	CPI_transformed			√	√	√	√	√			√
	GDP_transformed				√	√	√	√	√	√	√
	UR_transformed					√	√	√	√	√	√
	SAGB10_transformed						√	√	√	√	√
	SAGB30_transformed							√	√	√	√
	PPI_transformed									√	√

The model building method is Forward Stepwise using the Information Criterion.
A checkmark means the effect is in the model at this step.

J203

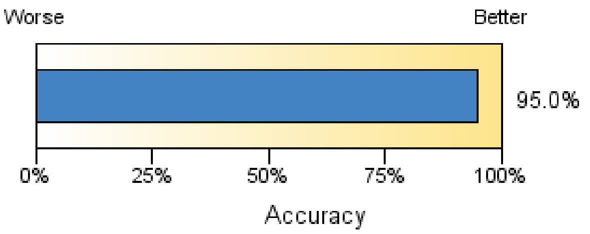
Case Processing Summary

	N	Percent
Included	3730	99.4%
Excluded	21	0.6%
Total	3751	100.0%

Model Summary

Target	J203
Automatic Data Preparation	On
Model Selection Method	Forward Stepwise
Information Criterion	59,856.590

The information criterion is used to compare to models. Models with smaller information criterion values fit better.



Automatic Data Preparation

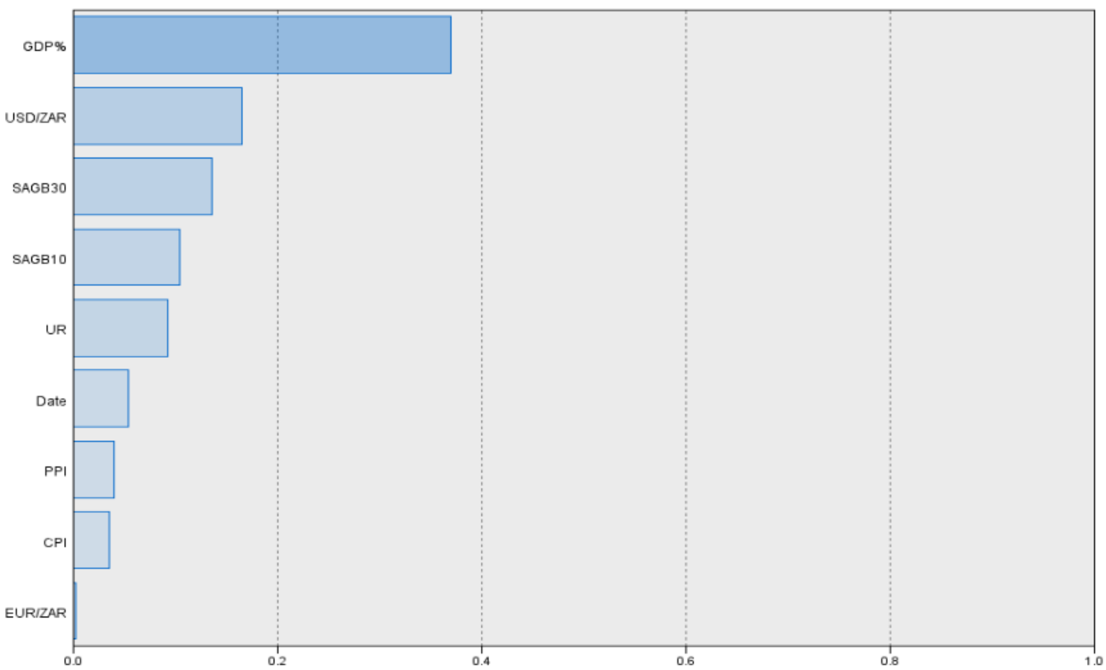
Target: J203

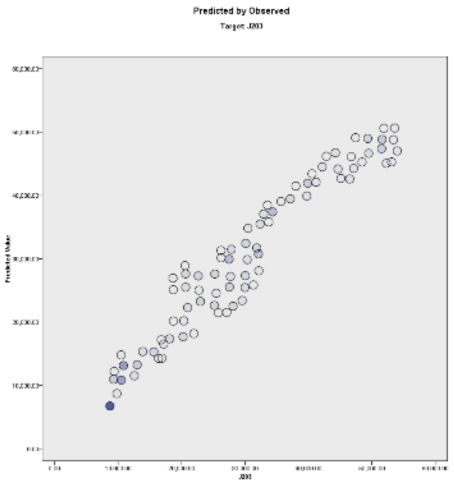
Field	Role	Actions Taken
(CPI_transformed)	Predictor	Trim outliers
(Date_months)	Predictor	Derive duration: months Trim outliers
(EUR_ZAR_transformed)	Predictor	Trim outliers
(GDP_transformed)	Predictor	Trim outliers
(PPI_transformed)	Predictor	Trim outliers
(SAGB10_transformed)	Predictor	Trim outliers
(SAGB30_transformed)	Predictor	Trim outliers
(UR_transformed)	Predictor	Trim outliers
(USD_ZAR_transformed)	Predictor	Trim outliers

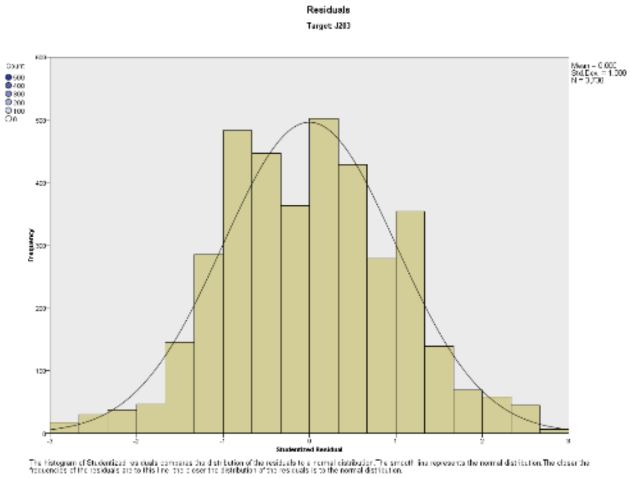
If the original field name is X, then the transformed field is displayed as (X_transformed). The original field is excluded from the analysis and the transformed field is included instead. One or more records were excluded because of a predictor or target that is missing, a frequency weight that is missing or less than one after rounding, or a regression weight that is missing, negative, or zero.

Predictor Importance

Target: J203

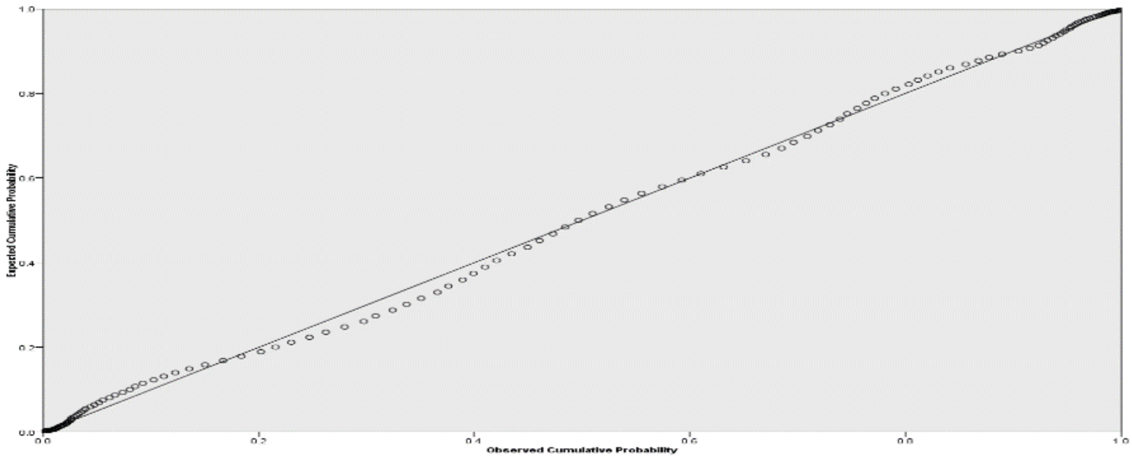






Residuals

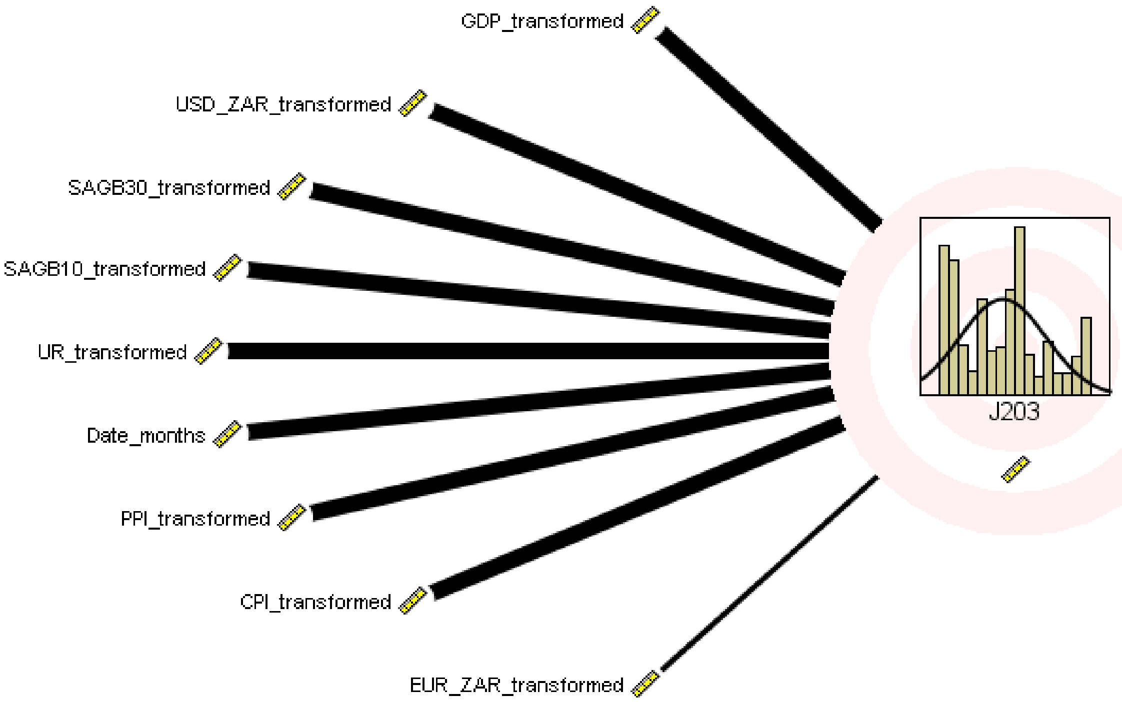
Target: J203



The P-P plot of Studentized residuals compares the distribution of the residuals to a normal distribution. The diagonal line represents the normal distribution. The closer the observed cumulative probabilities of the residuals are to this line, the closer the distribution of the residuals is to the normal distribution.

Effects

Target: J203



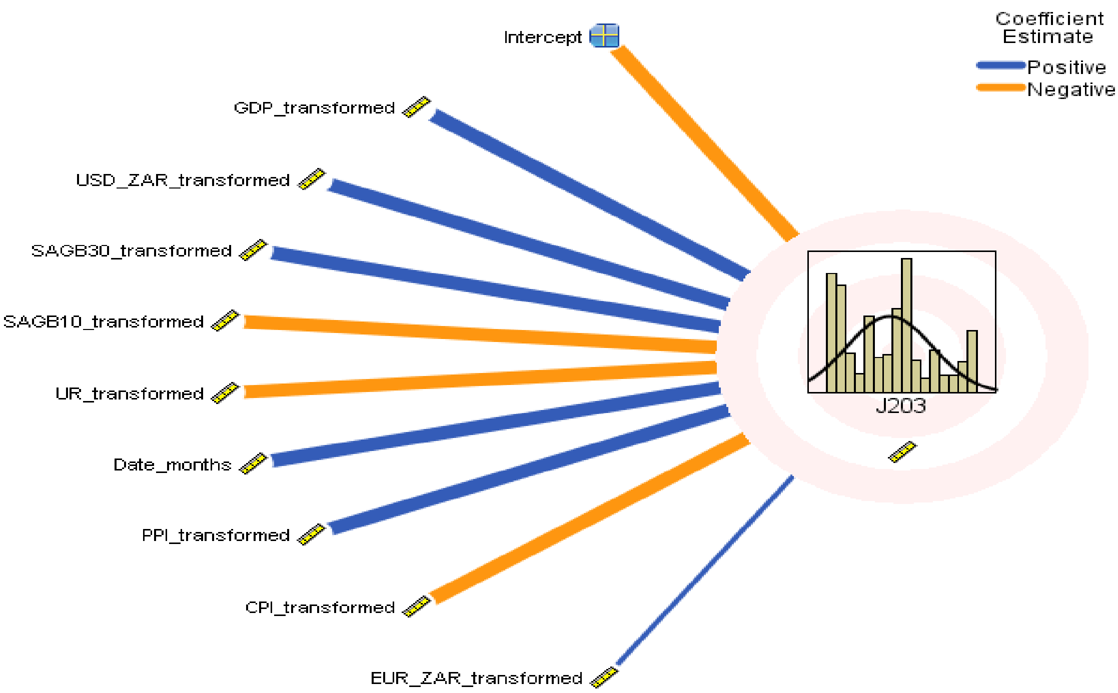
Effects

Target: J203

Source	Sum of Squares	df	Mean Square	F	Sig.	Importance
Corrected Model ▼	663,202,185,429.796	9	73,689,131,714.422	7,930.499	.000	
GDP_transformed	5,250,048,203.947	1	5,250,048,203.947	565.016	.000	0.369
USD_ZAR_transformed	2,353,828,365.782	1	2,353,828,365.782	253.321	.000	0.166
SAGB30_transformed	1,933,156,415.073	1	1,933,156,415.073	208.048	.000	0.136
SAGB10_transformed	1,480,830,056.102	1	1,480,830,056.102	159.368	.000	0.104
UR_transformed	1,320,628,790.804	1	1,320,628,790.804	142.127	.000	0.093
Date_months	771,817,698.282	1	771,817,698.282	83.064	.000	0.054
PPI_transformed	567,980,675.253	1	567,980,675.253	61.127	.000	0.040
CPI_transformed	505,470,342.540	1	505,470,342.540	54.399	.000	0.036
EUR_ZAR_transformed	33,055,249.771	1	33,055,249.771	3.557	.059	0.002
Residual	34,565,739,792.764	3,720	9,291,865.536			
Corrected Total	697,767,925,222.560	3,729				

Coefficients

Target: J203



Coefficients

Target: J203

Model Term	Coefficient	Std.Error	t	Sig.	95% Confidence Interval Lower	95% Confidence Interval Upper	Importance
Intercept	-73,947.013	4,485.880	-16.484	.000	-82,742.039	-65,151.987	
GDP_transformed	816.740	34.360	23.770	.000	749.374	884.106	0.369
USD_ZAR_transformed	1,109.515	69.710	15.916	.000	972.841	1,246.189	0.166
SAGB30_transformed	2,485.549	172.322	14.424	.000	2,147.694	2,823.403	0.136
SAGB10_transformed	-2,103.666	166.639	-12.624	.000	-2,430.378	-1,776.954	0.104
UR_transformed	-570.575	47.860	-11.922	.000	-664.410	-476.741	0.093
Date_months	197.417	21.661	9.114	.000	154.949	239.886	0.054
PPI_transformed	475.887	60.868	7.818	.000	356.549	595.224	0.040
CPI_transformed	-443.977	60.196	-7.376	.000	-561.997	-325.958	0.036
EUR_ZAR_transformed	176.526	93.592	1.886	.059	-6.971	360.024	0.002

Model Building Summary

Target: J203

		Step 1	Step 2	Step 3	Step 4	Step 5	Step 6	Step 7	Step 8	Step 9
Information Criterion		61,516.695	60,800.703	60,586.235	60,438.651	60,172.896	60,113.612	60,057.301	60,011.048	59,856.590
Effect	PPI_transformed	✓	✓	✓	✓	✓	✓	✓	✓	✓
	GDP_transformed		✓	✓	✓	✓	✓	✓	✓	✓
	CPI_transformed			✓	✓	✓	✓	✓	✓	✓
	USD_ZAR_transformed				✓	✓	✓	✓	✓	✓
	UR_transformed					✓	✓	✓	✓	✓
	EUR_ZAR_transformed						✓	✓	✓	✓
	Date_months							✓	✓	✓
	SAGB30_transformed								✓	✓
	SAGB10_transformed									✓

The model building method is Forward Stepwise using the Information Criterion.
A checkmark means the effect is in the model at this step.

J204

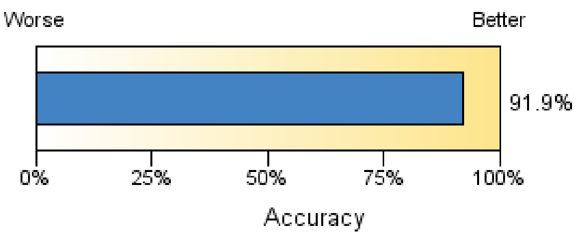
Case Processing Summary

	N	Percent
Included	3480	92.8%
Excluded	271	7.2%
Total	3751	100.0%

Model Summary

Target	J204
Automatic Data Preparation	On
Model Selection Method	Forward Stepwise
Information Criterion	43,627.224

The information criterion is used to compare to models. Models with smaller information criterion values fit better.



Automatic Data Preparation

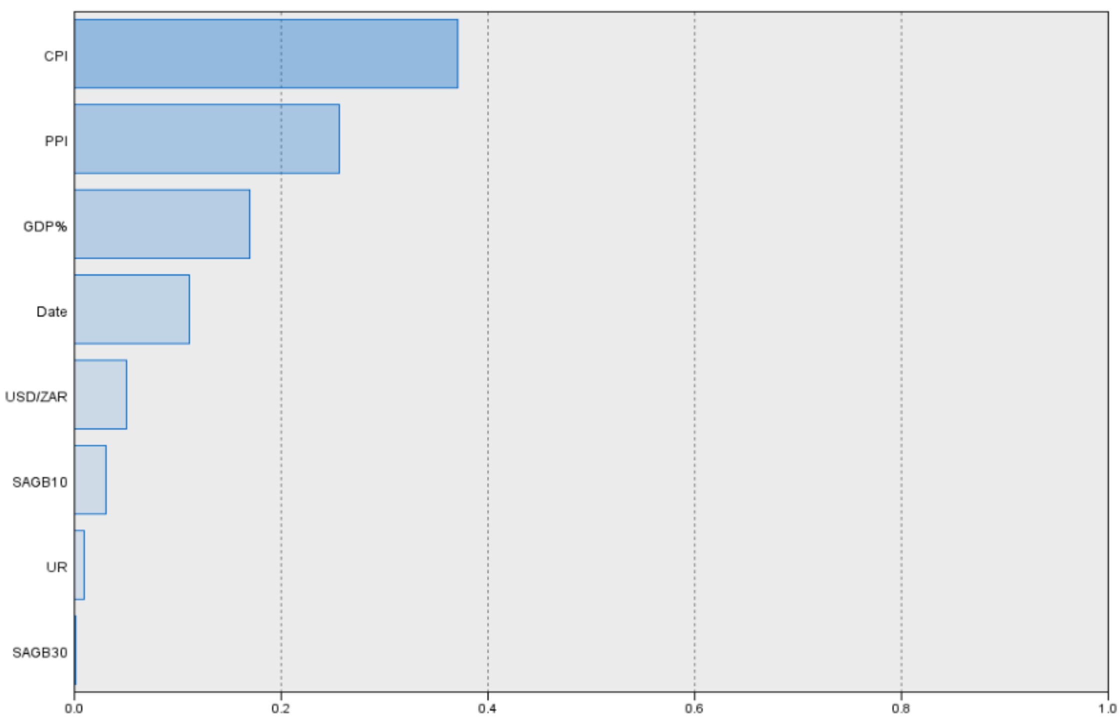
Target: J204

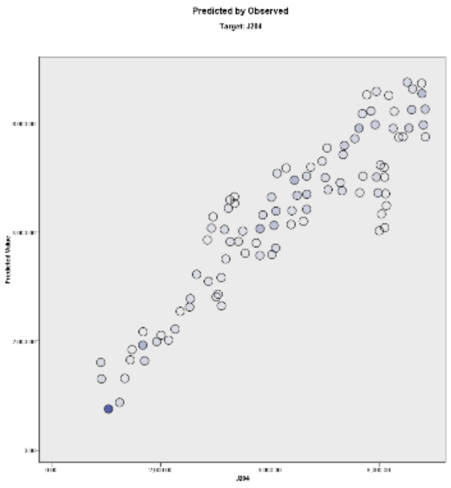
Field	Role	Actions Taken
(CPI_transformed)	Predictor	Trim outliers
(Date_months)	Predictor	Derive duration: months Trim outliers
(EUR_ZAR_transformed)	Predictor	Trim outliers
(GDP_transformed)	Predictor	Trim outliers
(PPI_transformed)	Predictor	Trim outliers
(SAGB10_transformed)	Predictor	Trim outliers
(SAGB30_transformed)	Predictor	Trim outliers
(UR_transformed)	Predictor	Trim outliers
(USD_ZAR_transformed)	Predictor	Trim outliers

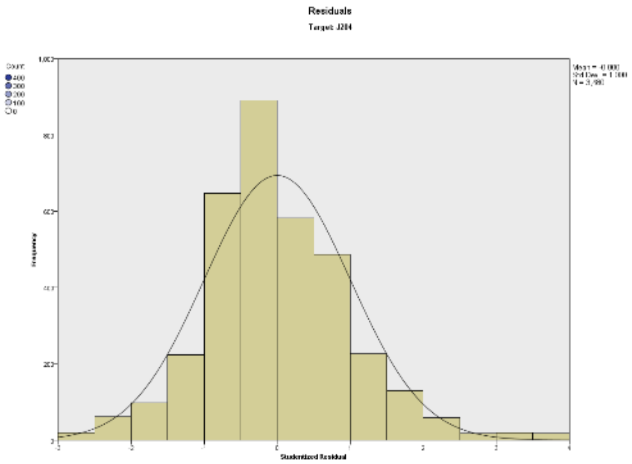
If the original field name is X, then the transformed field is displayed as (X_transformed). The original field is excluded from the analysis and the transformed field is included instead. One or more records were excluded because of a predictor or target that is missing, a frequency weight that is missing or less than one after rounding, or a regression weight that is missing, negative, or zero.

Predictor Importance

Target: J204

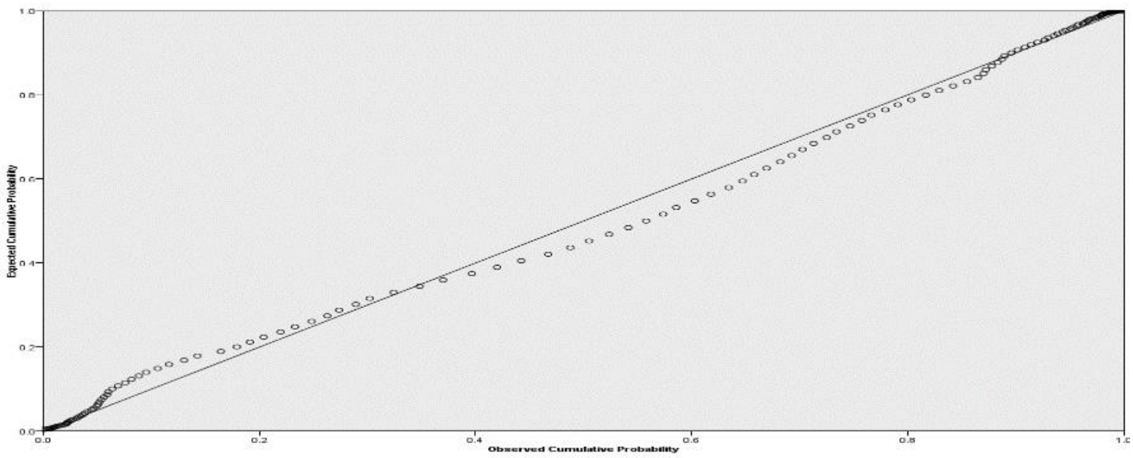






Residuals

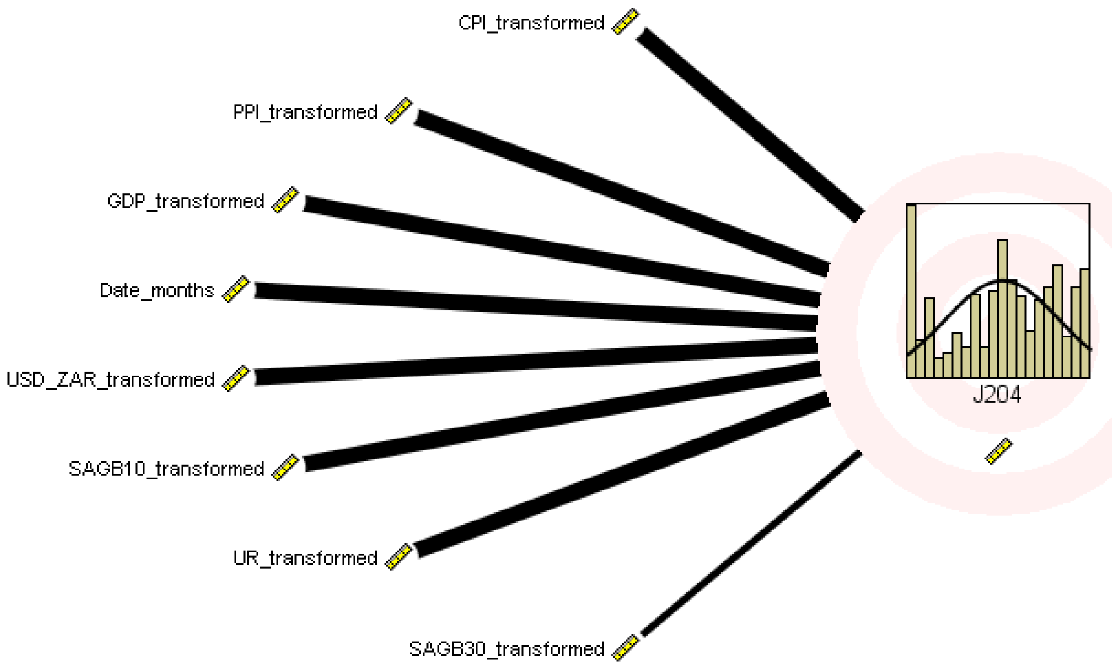
Target: J204



The P-P plot of Studentized residuals compares the distribution of the residuals to a normal distribution. The diagonal line represents the normal distribution. The closer the observed cumulative probabilities of the residuals are to this line, the closer the distribution of the residuals is to the normal distribution.

Effects

Target: J204



© University of Pretoria

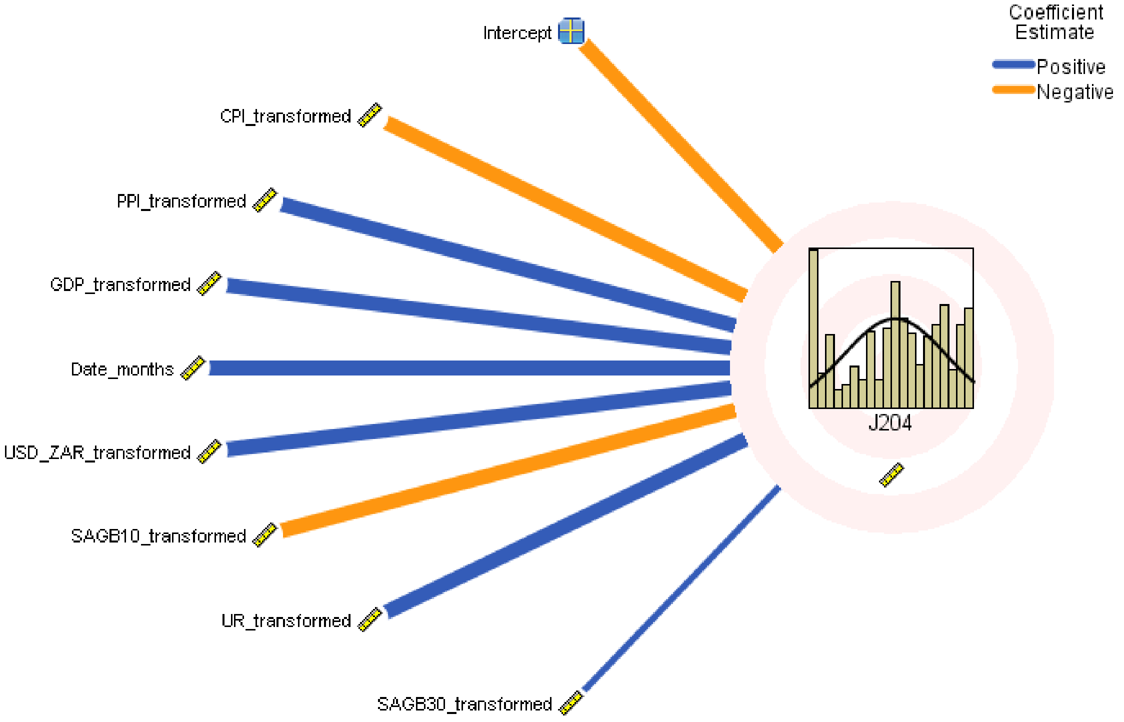
Effects

Target: J204

Source	Sum of Squares	df	Mean Square	F	Sig.	Importance
Corrected Model ▼	11,001,633,811.187	8	1,375,204,226.398	4,953.785	.000	
CPI_transformed	438,945,208.379	1	438,945,208.379	1,581.176	.000	0.371
PPI_transformed	302,946,316.278	1	302,946,316.278	1,091.279	.000	0.256
GDP_transformed	200,546,513.715	1	200,546,513.715	722.412	.000	0.170
Date_months	131,797,170.825	1	131,797,170.825	474.762	.000	0.111
USD_ZAR_transformed	60,041,492.316	1	60,041,492.316	216.283	.000	0.051
SAGB10_transformed	36,196,220.648	1	36,196,220.648	130.387	.000	0.031
UR_transformed	11,035,870.135	1	11,035,870.135	39.754	.000	0.009
SAGB30_transformed	1,397,042.627	1	1,397,042.627	5.032	.025	0.001
Residual	963,573,080.946	3,471	277,606.765			
Corrected Total	11,965,206,892.132	3,479				

Coefficients

Target: J204



Coefficients

Target: J204

Model Term	Coefficient	Std.Error	t	Sig.	95% Confidence Interval Lower	95% Confidence Interval Upper	Importance
Intercept	-16,006.377	855.878	-18.702	.000	-17,684.452	-14,328.301	
CPI_transformed	-456.713	11.486	-39.764	.000	-479.233	-434.194	0.371
PPI_transformed	289.726	8.770	33.035	.000	272.531	306.922	0.256
GDP_transformed	165.727	6.166	26.878	.000	153.638	177.816	0.170
Date_months	84.500	3.878	21.789	.000	76.897	92.104	0.111
USD_ZAR_transformed	150.376	10.225	14.707	.000	130.328	170.424	0.051
SAGB10_transformed	-332.713	29.138	-11.419	.000	-389.842	-275.585	0.031
UR_transformed	67.975	10.781	6.305	.000	46.837	89.113	0.009
SAGB30_transformed	67.521	30.099	2.243	.025	8.508	126.534	0.001

Model Building Summary

Target: J204

		Step 1	Step 2	Step 3	Step 4	Step 5	Step 6	Step 7	Step 8
Information Criterion		46,935.241	45,468.981	44,744.016	44,162.650	43,876.812	43,692.706	43,630.256	43,627.224
Effect	Date_months	✓	✓	✓	✓	✓	✓	✓	✓
	CPI_transformed		✓	✓	✓	✓	✓	✓	✓
	PPI_transformed			✓	✓	✓	✓	✓	✓
	GDP_transformed				✓	✓	✓	✓	✓
	SAGB10_transformed					✓	✓	✓	✓
	USD_ZAR_transformed						✓	✓	✓
	UR_transformed							✓	✓
	SAGB30_transformed								✓

The model building method is Forward Stepwise using the Information Criterion.
A checkmark means the effect is in the model at this step.