Two Essays on Institutions, Corporate Governance and Firms' Information Environments: Evidence from China

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To my parents and my brother

Abstract of Dissertation Presented to the Graduate School
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Abstract:

From an institutional perspective, my dissertation attempts to explain why firms operating in emerging markets such as China have inferior information environments. The main theme of this thesis is to provide firm-level evidence that the institutional settings in China change firms' incentives to provide firm-specific information to the stock market and thus impair the information environments and lower the idiosyncratic return volatilities of these firms.

Although idiosyncratic return volatility has been used in a number of studies to capture the informativeness of stock prices, the relation between the two is still under controversy. Researchers raise more questions about the existence of such a relation in emerging markets since the efficient market hypothesis (EMH) may not sustain in these markets. Therefore, use idiosyncratic return volatility estimated from the common asset pricing models as a measure of stock price informativeness becomes questionable. The first part of this thesis serves to validate the use of idiosyncratic return volatility as a stock price informativeness measure in the China settings. In particular, using a battery of information flow proxies, I empirically test the relation between stock price informativeness and idiosyncratic return volatility; the empirical evidence supports the existence of such a relation. However, there exists an inverse U-shape relation between firm-specific information and idiosyncratic return volatility. Therefore, in the second essay, when using idiosyncratic return volatility as a measure of informativeness of stock prices, I truncate the sample as Morck et al. (2000) do in their study.

The second part of this thesis addresses the research question on how firms' information environments are shaped by a country's institutions. Morck et al. (2000) document that more developed countries usually have better information environments, and vice versa. The authors offer an "institutional explanation" that attributes the poor information environments in emerging markets to the lack of property rights protections in these markets. However, previous literature provides only limited evidences on how institutions affect the supply of firm-specific information to the market. Hence, this paper uses China as case to investigate how extensive government interventions in China generate incentives for firms to hide their information. I find that, first, excessive local government in a region increases firms' incentives to hide their true performance, after controlling for firm characteristics. A further analysis shows that the directions of firms' hiding activities vary across firms and are contingent on the nature of the firms' ultimate owners, because of different political pressures exerted. In particular, I find that family firms are more likely to suppress good news to avoid governments' "grabbing hands", while State-owned Enterprises (SOEs) are more likely to hide their bad performances to protect local governments' image from being damaged. Second, firms' hiding activities do impair firms' information environment, resulting in lower idiosyncratic stock return volatilities. To strengthen this argument, I test the "information link" between firms' hiding activities and their information environments. I find that firms' incentives to hide their performances reduce market participants' motives to acquire private information, evident by fewer analyst following. Moreover, my results show that involvement of information intermediaries alleviates the negative effects of firms' hiding activities on the information environments.

Keywords: Institutions; information environments; performance hiding

摘要

本文從制度的角度出發，研究在新興市場（如中國）中上市公司的信息環境較發達市場更為遜色之原因。本文的主題是研究國家的制度環境如何影響企業提供公司信息的動機，并以此影響企業的信息環境，導致較低的股票回報異質波動（idiosyncratic return volatility）。

雖然早前已有許多研究以股票異質波動作為股價信息含量的替代變量，二者之間的關係在文獻中卻未有定論。在新興市場，研究者對該關係之不確定性有更大的懷疑，原因是許多新興市場都未能滿足市場有效之假設。因此，以股票定價模型估計所得之股票異質波動作為市場信息含量的替代變量便引發了研究者的更大疑問。本論文之第一部份作為第二部份的基礎，驗證了在中國市場上使用股票異質波動作為信息含量替代變量的合理性。主要的，我測試了股票異質波動與一系列信息流(information flow)的替代變量之間的關係，并驗證了二者之間存在著正向關係。亦即當股票異質波動越高，該股票的股價之信息含量也越高。同時，我還驗證了 Lee and Liu (2007) 在他們的研究中提出的關於股票異質波動與信息含量之間關係並非單調遞增的關係，并驗證在中國市場上，二者存在一個“倒 U 型”關係，亦即股價的信息含量先隨著股票異質波動增加，但是在股票異質波動最高的兩個十分位組合中，該關係被逆轉。這意味著當我們使用股票異質波動作為信息含量的替代變量是，我們應當保持謹慎，并銘記二者之間並非在所有的區間均呈單調遞增之關係。因此，在本論文的第二部份中，我跟隨 Morck et al. (2000)的做法，把樣本中的極值去掉，以保證在第二部份中股票異質波動反映的是股價的信息含量而非噪音（Noise）。

本文的第二部份研究國家的制度環境如何影響企業的信息環境。Morck et al. (2000)通過跨國研究表明，發達國家的企業信息環境普遍優於發展中國家。這幾位作者對此有趣現象提出了一個制度解釋：即發展中國家的企業信息環境較為遜色主要是由於這些國家缺乏產權保護所致。然而，已有的文獻對於一個國家的制度環境如何影響企業提供企業相關信息的動機并沒有提供公司層面的經驗證據。因此，本文使用中國作為一個案例，研究過度政府干預，即缺乏私有產權保護，是如何影響中國上市企業的利隱瞞（hiding）動機，從而減少其股票的異質波動的。本文的證據表明，政府過度干預會導致企業隱瞞其運營以及利潤，而這種隱瞞的動機並非在所有公司都表現一致。主要的，私營企業由於擔心政府會伸出掠奪之手(grabbing hands)，會傾向於隱瞞正向的利潤（hiding good news）；而國有企業則出於保存政府形象的考慮，更多地隱瞞負面的利潤（hiding bad news）。而這些隱瞞行為導致了企業減少了信息提供，從而降低了股票的異質波動。為了進一步證明隱瞞行為與股票異質波動之間的關係並非隨機的關係，我進一步研究了“信息環節”。亦即二者之間的聯繫是否由信息來連接的。通過研究證券分析師對這些公司的投資研究（analyst coverage），我測試企業的隱瞞行為是否削減市場對挖掘這些企業私有信息（acquire private information）的興趣。結果表明，隱瞞負面利潤的企業被證券分析師分析得更少，因而減少了股票的信息含量。最後，信息媒體的介入對企業的隱瞞行為造成信息環境的削弱有改善作用。

關鍵字：制度　　信息環境　　業績隱瞞

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PART I. INFORMATION ENVIRONMENTS IN CHINA: AVAILABILITY OF FIRM-SPECIFIC INFORMATION TO THE CAPITAL MARKET

Abstract

Motivated by a small yet growing stream of literature that uses the R^2 statistics from common asset pricing models to capture stock price informativeness, this study attempts to address two research questions. First, I investigate the validity of using R^2 statistic (i.e., the inverse measure of idiosyncratic return volatility) as a proxy for stock price informativeness in emerging markets such as China, where strong-form market efficiency hypothesis is usually not applicable. Second, along the line of Lee and Liu (2007), I investigate whether the linear relationship between the R^2 statistic and stock price informativeness exists throughout the whole sample. Using return data of all firms issuing A-shares on Shenzhen and Shanghai Exchange during 1998-2008, this paper confirms that the idiosyncratic return volatility (i.e., the inverse measure of R^2) reflects the stock price informativeness in China. However, such a relation does not exist in a linear fashion: the idiosyncratic return volatility first increases in the stock price informativeness and then decreases when the idiosyncratic return volatility is in the top decile of the sample. That is, I confirm Lee and Liu's (2007) proposition that there exists no parameter such that idiosyncratic return volatility monotonically increases with stock price informativeness. Indeed, I show that there exists an inverse U-shape relation between firm-specific information and idiosyncratic return volatility. These results indicate that idiosyncratic return volatility can generally serve as a good information measure, but may not sustain throughout the full sample.

CHAPTER 1.
INTRODUCTION

Stock price informativeness is of great importance since the *functional efficiency* of a stock market is vital to a country's economic well-being. At the heart of the financial development theory, efficient stock markets perform an economic role by generating prices that direct social resources to their highest use, and this role includes two parts. On the one hand, it prices assets correctly so that investors could use prices as indicators of the return of investments (e.g., Wurgler (2000)); on the other hand, it generates stock prices used by corporate managers as the feedbacks to adjust their investment strategies (e.g, Chen et al. (2007); Durnev et al. (2004)). This economic role is not accomplished if stock prices cannot reflect firms' fundamental values. Two types of information are relevant in pricing a firm: the common information, such as interest rates news or industry-related regulations, and the firm-specific information, such as earnings announcement or analyst forecasts. Although both types of information are useful in firm valuation, stock prices highly anchored on common information will be less useful to the investors that seek the highest uses of their resources.

In a seminal work, Morck et al. (2000) find that the extent to which stock prices anchored on market-wide information is negatively correlated with the country's economic growth. Empirically, Morck et al. (2000) use the R^2 statistic from common asset pricing models to evaluate the extent to which individual stock prices are anchored on the "common factors"[1], which indicates the informativeness of the stock prices. Since their study, many follow-up studies directly use the R^2 statistics to capture the stock price informativeness

[1] The model used in Morck et al (2000) is either $R_i = a_0 + \beta R_m + \varepsilon$, or $R_i = a_0 + \beta R_m + \gamma R_{ind} + \varepsilon$. In the former equation R_m is the common factor, whereas in the latter equation the market information as well as the industry-wide information are common factors.

(e.g.,Durnev et al. (2003);Piotroski and Roulstone (2004);Gul et al. (2009)). However, not all researchers agree that the low R^2 statistic is to be interpreted as rich firm-specific information in the market. For example, by studying six main economies around the world, Ashbaugh-Skaife et al. (2006) show that low R^2 does not efficiently capture stock price informativeness. Teoh et al. (2008) found that the low R^2 statistic indicates market inefficiency rather than dissemination of firm-specific information.

This study is motivated by this small yet growing literature which holds opposing views of the R^2 statistic. The general purpose of this study is to address the research question of whether R^2 statistic is good proxy for the informativeness of stock prices in emerging economies, where market efficiency hypothesis is questionable. This study serves as a foundation for the second essay of this thesis, in which I investigate how a country's institutions affect firms' information environments that are measured by the idiosyncratic return volatility (i.e., $1-R^2$).

The first research question to be answered in this study is whether or not idiosyncratic return volatility represents stock price informativeness in emerging markets. First, whether R^2 is an appropriate measure of information environment is debatable. Second, any analysis on the relation between R^2 and stock price informativeness virtually tests two joint hypotheses: (a) market is efficient and the market model is the correct asset pricing model, and (b) low R^2 statistics from the market model reflects high firm-specific information. However, the empirical evidence supporting the "information view" of R^2 are obtained in countries with developed capital markets (e.g., Durnev et al, (2003); Ferreira and Laux (2007)), yet the applicability of such a measure in emerging markets remains unclear.

To illustrate, in a stock market that is efficient to incorporate all available firm-specific information into stock prices, uncertainties associated with the stocks are resolved so that the observed low R^2 statistic can be interpreted as stock price informativeness (i.e., the "information hypothesis"). However, in a stock market that is inefficient, the fluctuations of the stock returns can be caused by random factors other than firm-specific news, leaving high uncertainties of the stocks unresolved (i.e., the "noise hypothesis"). In the latter case, the observed low R^2 statistic cannot be interpreted as information and the noise hypothesis dominates (see Teoh et al. (2008) for a detailed discussion on this issue).

The second research question to be answered in this paper is motivated by a study conducted by Lee and Liu (2007), who provide a view that in effect compromises the "information hypothesis" and the "noise hypothesis". In the analytical study, Lee and Liu (2007) derive a model that demonstrated a U-shape relation between price informativeness and idiosyncratic volatility (i.e., low R^2). That is, there exists a decreasing relation between idiosyncratic volatility whereas this relation reverses after a threshold is reached, which is determined by the demand of the noise traders in the economy. Lee and Liu's (2007) conclusions have important implications to researchers as well as practitioners: if the relation between R^2 and stock price informativeness is non-linear and "U"-shaped, it is not appropriate for researchers as well as investors to assume firms with the highest idiosyncratic volatility have best information environments. That is, even if R^2 statistic is a good measure of a firm's information environments, this measure could lose its validity when it is extremely low. To investigate whether the non-linear relation exists in an emerging market as China, I examine the applicability of the R^2 metrics across different portfolios formed by the magnitude of the market model R^2.

China offers a good setting for this study, because (a) China is an important emerging economy, whose economic importance is ever growing, (b) China's capital market started to operate in year 1991 and thus provides researchers with reasonably long trading history to investigate the issue, and (c) China's stock market is representative of many emerging economies' capital market in that China's market is, at best, in the semi-strong form of efficiency.

My sample consists of all A-share firms in the Chinese market during the fiscal years of 1998-2008. I first provide a comprehensive descriptive statistics on the R^2 metrics in China, and then estimate the regression of the R^2 metric on an array of information flow proxies to see whether the R^2 metric is related to stock price informativeness. Finally, for each year I divided the full sample into ten portfolios according to the deciles of the market model R^2 of listed companies, and re-estimate the regression between R^2 and information flows in each portfolio. The purpose is to examine whether the model fitness across the R^2 portfolios are monotonically increasing. That is, whether in the higher idiosyncratic volatility portfolio the R^2-information relation is stronger. If Lee and Liu's (2007) proposition is correct that there exists no parameter so that the idiosyncratic return volatility monotonically increases with stock price informativeness, we shall observe the model fitness of the R^2-information regressions are not monotonically increasing.

Two conclusions are drawn from the analyses presented in this study. First, regression results from the large-sample estimations of the R^2-information model support the "information view" of the R^2 metric. That is, idiosyncratic return volatility and stock price informativeness are positively correlated. Second, results from the re-estimations of the R^2-informaiton regressions across the R^2-decile portfolios suggest that in portfolios where idiosyncratic volatility is extremely high, idiosyncratic volatility is less correlated with stock price informativeness.

This study makes a number of contributes to the growing R^2 studies. First, this study demonstrates the validity of using the R^2 metric in emerging markets, where the capital markets are less than strong-form efficient. Second, this study sheds lights on the debate about whether R^2 statistic represents information or noise. The finding of this study suggests that although R^2 in general is a valid information measure, researchers shall remain cautious that this metric is unreliable under extreme circumstances. In the China setting, when in the top decile, idiosyncratic return volatility does not measure

The rest of this study is organized as the following: Section II is the review of prior literature and the theoretical background. Section III discusses the measurements and model specifications. Section IV presents the data and the descriptive statistics. Section V reports the multivariate regression results and elaborates their implications. Section VI addresses the robustness concerns and Section VII concludes.

CHAPTER 2.
THEORETICAL BACKGROUND AND LITERATURE REVIEW

This section is to review the prior studies on the market model R^2. Section 2.1 discusses the theoretical background of using R^2 as a measure of stock price informativeness. Why do researchers use R^2 as a measure of stock price informativeness? What are the theoretical determinants of the increase/decrease of R^2? Section 2.2 summarizes alternative interpretations of the R^2 statistic in prior studies. Section 2.3 reviews the prior studies that employ the R^2 statistics to investigate the causes and consequences of the increase/decrease of corporate information environments. Section 2.4 joins the recent debate on whether low R^2 is an indication of increased information impounded into stock prices or of increased noise trading, and discusses the potential issues of using this measure to capture firms' information environments in emerging markets. Finally, section 2.5 presents the research questions and develops the hypotheses.

2.1. Market model R^2: theoretical background

The *functional efficiency* of stock market is vital to a country's economic growth. At the heart of the financial development theory, efficient stock markets perform an economic role by generating prices that direct social resources to their highest use, and this role includes two parts. On the one hand, it prices assets correctly so that investors could use prices as indicators of the return of investments (e.g., Wurgler (2000)); on the other hand, it generates stock prices used by corporate managers as the feedbacks to adjust their investment strategies (e.g, Chen et al. (2007); Durnev et al. (2004)). This economic role is not accomplished if stock prices cannot reflect firms' fundamental values. That is, stock prices shall move with two types of information about corporate fundamentals: the common information, such as interest rates news or industry-related regulations, that affects the return of a group of firms in the markets, and the firm-specific information, such as earnings announcement or analyst forecasts, that impacts the return of an individual firm[2].

Although both types of information are useful in firm valuation, stock prices anchoring mainly on common information but lacking of firm-specific information are less useful to investors for distinguishing the good projects from the bad ones. Put to an extreme, if a company's stock return moves perfectly with the market return, investors will not be able to benefit from the firm's stock price to draw a conclusion on whether the firm outperforms or underperforms the rest of the market.

According to this rationale, the "informative" stock prices impounded with firm-specific information shall be more volatile relative to the market return, and thus of higher idiosyncratic volatility. Roll (1988) finds that in the U.S. only a small portion of price movements can be explained by the contemporaneous market-wide news releases, indicating the non-publicly disclosed information held by the investors could drive returns. Roll's (1988) study shows that one important venue for firm-specific information to be incorporated into stock price is through trading. When investors trade, they reveal their private information and thus move stock prices.

Dasgupta et al. (2008) further explains how transparency and firm-specific information could affect idiosyncratic volatility. In a simple regression of firm return on market return, the

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[2] Technically, there is no information affecting only "one" firm in the market because of information spillovers and information transfers among industries or even countries. However, "firm-specific news" is used in prior studies to refer to the news that affects mainly the firm, not the whole market or the whole industry. b

model R^2 can be expressed as:

$$R^2 = \frac{SSR}{SST} = \frac{\beta^2 S_{XX}}{\beta^2 S_{XX} + SSE} \quad \text{...(1)}$$

$$\textit{That is: } ASYNCH = (1 - R^2) = \frac{SSE}{\beta^2 S_{XX} + SSE} \quad \text{.....................(2)}$$

Equation (2) shows that an increase of a firm's idiosyncratic volatility (i.e., "asynchronicity", *ASYNCH*) comes from 3 sources: (a) an increase of *SSE*, *ceteris paribus*, (b) a decrease of market return volatility, S_{XX}, *ceteris paribus*, and (c) a decrease of β, *ceteris paribus*. If we observe high idiosyncratic volatility, it could be due to an increase in *SSE*, which could be caused by informed trading or trading with noises. High idiosyncratic volatility could also be induced by lower market volatility, which is not a concern in our context because we are dealing with only one market. Finally, high idiosyncratic volatility could be caused by low β, which means the stock does not comove with the market.

2.2. Interpreting the R2 statistic: the competing views

High R^2 statistic, or comomvement, is interpreted alternatively in prior studies. These interpretations include: (1) correlated corporate fundamentals, (2) lack of firm-specific information, (3) market friction or investor sentiments, and (4) (low R^2 is) noise.

Interpretation (1) and (2) are consistent with the "information view" of stock prices comovements. Although in different directions, both interpretations imply stock prices movements reflect the information impounded into the stock prices. Interpretation (1) views high R^2 as an indication of firm-specific information impounded into stock prices but these corporate fundamentals are highly correlated. That is, if prices are moved by investors' changing beliefs about firms' future cash flow, highly correlated corporate fundamentals will cause stock prices to move synchronously (e.g., see Barberis et al. (2005) for a discussion). Interpretation (2) views high R^2 statistic as an indication of lack of firm-specific information. Researchers holding this view also believe stock price movements are driven by news but the arrivals of news are uncorrelated. Rather, there must be some market-wide forces to move the stock prices of the whole market. For example, in countries where political influences to the market are strong, political rumors cause swings of the whole market and firm-specific information arbitrage will be less profitable. In these markets, high R^2 statistic suggests lack of firm-specific information incorporated into stock prices (e.g., Morck et al, (2000)).

Interpretation (3) and (4) attribute high R^2 statistics to irrational trading activities or noise trading. For example, Barberis et al. (2005) find investors tend to "group" stocks by personal preferences, which they dub "habitat". For example, some investors only choose to trade stocks close to their habitat, or in certain industries. These investors are not trading on private information yet they introduce a "common" factor to the stocks. Thus, the increased R^2 statistic reflects investors' irrationality or sentiment, and has nothing to do with firm-specific information. Similar results are presented by Green and Hwang (2009), who find investors categorized stocks based on price. In a different direction, researchers holding the view of interpretation (4) believe the low R^2 statistic is not an indication of information. That is, trading activities by noise traders or uninformed traders cause the fluctuations in stock returns but the volatilities resulted are not attributable to firm-specific information.

2.3. Prior studies on R^2 as stock price informativeness

A stream of studies investigate the relation between market model R^2 and corporate characteristics, assuming R^2 is an indicator of stock price informativeness. These studies investigate the cause and consequences of the low R^2, i.e., the improved corporate information environments. The findings of these studies are briefly summarized in this section.

2.3.1 Explaining the cross sectional variation in R^2: an information perspective

Several studies document and attempt to explain the cross-sectional variation in the market model R^2 statistics. Morck et al. (2000) document that, around the world, stock price synchronicity is negatively correlated with a country's GDP. These authors argue that the less developed countries are usually accompanied with "bad governments" that do not protect property rights. Weak property rights protection drives the information arbitrageurs away from the market because the latter fear that their profits are not sustainable. Jin and Myers (2006) also conclude that the lack of firm-specific information will lead to greater stock price comovement. In an analytical model, these authors show that when CEOs consume private benefit of control and conceal the economic truth of the company, the managers in effect shift the risks of the stock to their own, which leads to lower stock return volatilities and higher R^2. Therefore, lack of corporate transparency is the main reason of increased stock price synchronicity. Along this line, Fernandes and Ferreira (2008) provide evidence about the impact of a country's first-time enforcement of insider trading law on decreased stock price synchronicity. Furthermore, international cross listing activities also improve firms' information environments and thus decrease the R^2 statistics of these firms (Fernandes and Ferreira (2008)[b]).

Several studies have explained the cross-sectional variation in R^2 in the single-country setting and explore the relation between information content of stock prices and R^2 statistics. Durnev et al. (2003) show that firms with lower market model R^2 exhibit higher earnings-return associations, confirming that R^2 is an information measure. Piotroski and Roulstone (2004) document that, in the U.S., security analysts increase the incorporation of firm-specific information into stock prices, which decrease the R^2 statistics of the firms with extensive analyst following. Hutton et al. (2009) show that earnings management activities compromise firms' information environments and increase stock price synchronicity of these firms.

2.3.2 Explaining the cross sectional variation in R^2: corporate governance

Firms' are the providers of firm-specific information. Therefore, corporate disclosure incentives greatly affect firms' information environments. Haggard et al. (2008) provide evidences supporting that increased corporate voluntary disclosures will lead to lower R^2. Jin and Myers (2006) suggest that when managers consume private benefit of control from the firms, they tend to conceal firm-specific information from the investors. Such managerial incentives decrease corporate transparency and increase stock price synchronicity. Khanna and Thomas (2009) examines the relationship between stock price synchronicity and board interlocks in Chile, finding that firms with interlocking board will have reduced firm-level transparency and thus increased stock price synchronicity.

Corporate governance structures also affect investors demand for firm-sepcific information, and thus impact stock price synchronicity. Ferreira and Laux (2007) find that firms with more anti-takeover clause in their charters decrease information arbitrageurs' incentives to dig out firm-specific information, hence increases R^2 statistic of these firms. Gul et al. (2009) use a sample of firms in China and find that firms' ownership structure, auditor choice and presence of foreign holdings all have impact on firms' information environments.

2.3.3 Explaining the cross sectional variation in R^2: other perspectives

There are alternative perspectives on cross-sectional variation in the R^2 statistics across firms that attribute the firm-level variation of R^2 to firms' inherent natures rather than information or noise. Chun et al. (2005) conclude that creative destruction increases the firm-specific volatilities of stock returns and fundamentals, which increases idiosyncratic return volatilities. Irvine and Pontiff (2009) find that the intensive economy-wide competition increases the volatility of cash flows of firms, inducing higher idiosyncratic stock return volatilities. Similarly, Khanna and Thomas (2009) find interlocking boards lead to correlated fundamentals of the interlocking firms, increasing stock price synchronicity.

2.3.4 Consequences of decreased R^2

Studies on R^2 and information all lead to the important question of economic consequences of increased idiosyncratic return volatility. That is, why is reduced R^2 a desirable feature? Berger et al. (2006) document that firms with lower R^2 will have lower cost of capital. Jin and Myers (2006) and Hutton et al. (2009) conclude that firms with lower R^2 are more transparent and their stock prices are less likely to crash. Chen et al. (2007) also show that informative stock prices help firms to make efficient investment decisions.

2.4. Does low R^2 mean more information? The current debate in the literature

Although many studies use R^2 statistic as a measure of the information content of stock prices, not all researchers agree that low R^2 statistic is to be interpreted as rich firm-specific information incorporation into stock prices.

Roll (1988) finds that systematic risks account for only a limited portion of individual stock's return variance. He pointed out that idiosyncratic return volatility may be driven by "occasional frenzy unrelated to concrete information". That is, while informed trading activities move stock prices by impounding private information into them, noise trading could also drive idiosyncratic volatility.

In an international context, Ashbaugh-Skaife et al. (2006) replicate Durnev et al. (2003)'s analysis and conduct additional analysis in a sample of listed firms from 6 major equity markets. Their findings are inconsistent with the view that firm-specific information drives idiosyncratic return volatility. Kelly (2005) finds firms with lower idiosyncratic volatility are of inferior information environments. For example, they are smaller in size, or with fewer analyst following. He arrives at similar conclusion that idiosyncratic volatility is not an indication of higher information quality. Teoh et al. (2008) test several capital market anomalies across portfolios created based on the magnitude of the R^2 and find that market anomalies are not the weakest in the lowest-R^2 portfolio[3]. They conclude that low R^2 statistic

[3] The rationale of Teoh et al. (2008) is that, if lower R^2 suggests higher informational efficiency, we shall observe market anomaly to be weaker in stocks with low R^2. However, if low R^2 is an indication of noise, we will not observe weaker market anomalies in these stocks.

does not indicate high information efficiency, which rejects the "information" hypothesis of the R^2 statistic.

2.5. Research question and hypothesis development

2.5.1 R^2 and firm-specific information

Prior studies show that when information arbitrageurs trade, they incorporate their private information into stock prices (e.g, Kyle (1985)). Roll (1988), in explaining the low R^2 statistics observed in the U.S. market, argues that trading is an extremely important means to incorporate firm-specific information into stock prices. Thus, if idiosyncratic return volatility is caused by active information arbitrage activities, the informativeness of corporate news shall be related to the market model R^2 statistic of the firm.

2.5.2 Low R^2 in China: information or noise?

Whether idiosyncratic return volatility is a good measure of stock price informativeness in emerging markets is an empirical question. First, whether R^2 is a measure of information environment is under controversy (as discussed in section 2.4). Second, all the empirical evidences supporting the "information view" of R^2 are obtained in countries with developed capital markets. This is because any analysis in R^2 and information quality is a joint test of (a) market efficiency and (b) R^2 reflects firm-specific information. Therefore, it is unclear whether the R^2 statistic as a measure of information environment can be applied to emerging markets such as China, where capital markets are at best semi-strong form efficient.

To illustrate, in a stock market that is efficient to incorporate all available firm-specific information into stock prices, uncertainties associated with the stocks are resolved so that the observed low R^2 statistic can be interpreted as stock price informativeness (i.e., the "information hypothesis"). However, in a stock market that is inefficient, the fluctuations of the stock returns can be caused by random factors other than news, leaving high uncertainties of the stocks unresolved (i.e., the "noise hypothesis"). In the latter case, the observed low R^2 statistic cannot be interpreted as information and the noise hypothesis dominates.

Whether or not low R^2 statistic reflects more informative stock prices is an empirical question. One way to distinguish the "information view" vs. the "noise view" is to examine whether the R^2 statistics are correlated with the information flow measures. Durnev et al. (2003) test the relation between information content of earnings (ERC) and R^2 in the U.S. setting. They find that stocks with lower R^2 have higher ERC, indicating more informative prices of the low-R^2 stocks. Ferreira and Laux (2007) also provide indirect evidence on information flow and the R^2 metric in the U.S. Following these two studies, the first hypothesis of this study is:

H1. R^2 statistics are negatively associated with the amount of private information impounded in stock prices.

2.5.3 Does lower R^2 statistic suggests more informative stock prices across the whole sample?

This research question to be answered in this paper is motivated by a study conducted by Lee and Liu (2007), who provide a view that in effect compromises the "information hypothesis" and the "noise hypothesis". In the analytical study, Lee and Liu (2007) derive a model that demonstrated a U-shape relation between price informativeness and idiosyncratic volatility (i.e., low R^2). That is, there exists a decreasing relation between idiosyncratic volatility whereas this relation reverses after a threshold is reached, which is determined by the demand of the noise traders in the economy. Lee and Liu's (2007) conclusions have important implications to researchers as well as practitioners: if the relation between R^2 and stock price informativeness is non-linear and "U"-shaped, it is not appropriate for researchers as well as investors to assume firms with the highest idiosyncratic volatility have best information environments. That is, even if R^2 statistic is a good measure of a firm's information environments, this measure could lose its validity to proxy for firm-specific informatoin when it is extremely low. To investigate whether the non-linear relation exists in an emerging market as China, I examine the applicability of the R^2 metrics across different portfolios formed by the magnitude of the market model R^2.

H2. The regression model R^2's of idiosyncratic volatility and information flow metrics are monotonically increasing with idiosyncratic volatility.

CHAPTER 3.
EMPIRICAL CONSTRUCT: MEASUREMENTS AND MODEL SPECIFICATIONS

3.1. Idiosyncratic return volatility

Idiosyncratic return volatility is calculated as the log transformation of (1-R^2) over R^2, where R^2 is the model fitness statistic from the asset pricing model, and the logistic transformation turns the positive R^2 statistics to a continuous variable in both positive and negative spaces (e.g., Morck et al. (2000)). The logistic transformed inverse measure of R^2 is then dubbed "asynchronicity (*ASYNCH*)".

The asset pricing model to estimate the *ASYNCH* is the following:

$$R_{i,t} = \alpha_i + \beta_1 R_{m,t} + \beta_2 R_{ind,t} + \varepsilon_i ,$$

where $R_{i,t}$ is the weekly compounded stock return[4] of firm i in week t, R_m is the weekly compounded market return and R_{ind} is the weekly compounded industry return excluding firm i in question. Alternative asset pricing models are used as the robustness checks, and the results are discussed in Chapter 5.

3.2. Information flow

An array of information flow measures are used to test the relation between idiosyncratic volatility and stock price informativeness, including: (a) private information (*PRIVATE*) contained in stock prices as indicated in trading patterns (Llorente et al. (2002)), (b) the earnings response coefficient (*ERC*), (c) future earnings coefficients (*FERC*)(Collins et al. (1994)), and (d) abnormal trading volumes (*AVOL*) and abnormal return volatility around earnings announcements (*AVAR*) (Beaver (1968), Landsman and Maydew (2002)), and (e)

[4] Following prior literature, a firm's weekly return is compounded from Thursday to next Wednesday.

average turnover of a firm's stock scaled by shares outstanding (*TURN*) (Ferreira and Laux (2007)). These information flow measures are further discussed in the sub-sections.

(1) PRIVATE

PRIVIATE is the annual amount of private information contained in stock prices. It is estimated as the $b^a{}_{i2}$ from the time-series regression model:

$$R_{id} = b^a{}_{i0} + b^a{}_{i1} R_{i,d-1} + b^a{}_{i2} R_{i,d-1} V_{i,d-1} + \varepsilon^a{}_{id} \ ,$$

where R_{id} is daily stock return and V_{id} is log daily trading volume detrended by subtracting a 200 trading day moving average of turnovers. This measure captures the private information being used in trading.

The model is first developed and examined in Llorente et al. (2002), who find that trading activities based on private information tend to produce *continuing* return patterns whereas trading activities otherwise tend to produce *reversing* return patterns. That is, if the above regression model is estimated and $b^a{}_{i2}$ is positive and significant, it implies that the trading of stock is driven by private information.

(2) ERC and FERC

ERC is often used in the accounting literature to measure the informativeness of earnings. *FERC* (future earnings response coefficient) is included in the ERC regression to determine how informative the stock price is to reflect future earnings information. Durnev et al. (2003) argue that, as *ERC* and *FERC* capture the information content of firms' earnings numbers, both measures shall be positively correlated with stock price informativeness.

I estimate *ERC* and *FERC* by adapting the methodology in Durnev et al. (2003)'s study[5]. To control for the transitory nature of earnings in China, I include the level of earnings in the regressions to estimate *ERC* as well as *FERC* (Ali and Zarowin (1992)).

Specifically, *ERC* is estimated as the coefficient on the earnings surprise in the return-earnings regression, i.e., the b_1 in the following regression:

$$R_t = a + b_0 E + b_1 \Delta E_t + u_t$$

FERC is estimated as:

$$r_t = a + b_0 E + b_1 \Delta E_t + \sum_k b_k \Delta E_{t+k} + u_t$$

$$FERC \equiv \sum_k b_k$$

In this study, *FERC* is estimated by setting k=1[6].

(3) AVOL and AVAR

In a seminal work, Beaver (1968) investigates whether accounting information is used by investors and constructs two variables, *AVOL* and *AVAR,* to capture the information contents of earnings numbers. Both measures are justified by the follow-up studies. For example, Jennings and Starks (1985) argue that information content of earnings will affect the stock price adjustments process; Atiase and Bamber (1994) show that trading volume reactions to annual accounting earnings announcements are associated to information assimilation of the

[5] I estimated ERC and FERC by using firms' entire time-series history. Firms with less than 3 years of data available are eliminated from the sample.

[6] I also use k=2 to check the robustness of the results. Using k=2 will cause much more observation losses but the results are not significantly different.

stock market. Landsman and Maydew (2002) further confirm these two measures are to be used to measure information content of earnings.

AVOL (*AVAR*) is estimated by observing the trading volume (return volatility) during the 7-day window surrounding a firm's annual earnings announcement date. Specifically,

$AVOL_{it} = (X_{it} - X_i)/\sigma_i$,

Daily trading volume X_{it} is shares of firm i traded during day t, $t \in [-3, +3]$[7], relative to announcement day 0 for firm i, scaled by shares outstanding of firm i during day t. X_i and s_i are the mean and standard deviation in daily trading volume for firm i in the estimation period, i.e., $t \in [-325, -20]$.

Similarly, *AVAR* is estimated by the following formula:

$AVAR = u^2_{it} / \sigma_i^2$,

$u_{it} = R_{it} - (\hat{\alpha} + \hat{\beta} R_{mt})$, where R_{it} and R_{mt} are the individual stock return and equal weighted market portfolio return of day t, respectively, during the [-3, +3] event window. $\hat{\alpha}$ and $\hat{\beta}$ are firm i's market model parameter estimates, and the market model during the estimation period, i.e., the [-325, -20] period relative to announcement day 0.

(4) TURN

How intensive investors trade is theoretically linked to the quality or amount of private information acquired by the traders (e.g., Blume et al. (1994); Ferreira and Laux (2008)).

[7] Landsman and Maydew (2000) use the [-1,+1] window as the event window. However, Chinese listed companies are subject to information leakage problem so that I use a longer window as [-3, +3].

Thus, *TURN* is a natural measure for information flow. *TURN* is the average monthly trading volume scaled by the number of shares outstanding.

$TURN = \sum (X_m/X_o) / 12$

A detailed list of variables can be found in Appendix I.

3.3. Model specification: ASYNCH and information flow

Equation (1) is estimated to investigate to what extent *ASYNCH* is related to firm-specific information.

$$ASYNCH_i = \alpha_0 + \sum_{j=1}^{12} IND_j + \sum_{k=1}^{11} YEAR_k + \beta_1 INFO + \beta_2 ROA + \beta_3 VROA + \beta_4 MB + \beta_5 LEV + \beta_6 SIZE + \beta_7 LOGAGE + \varepsilon \qquad (1)$$

INFO is a vector of information flow proxies, which includes *PRIVATE, ERC, FERC, AVOL, AVAR, and TURN,* as discussed in section 3.2. To prevent the possible correlation among the information flow measures, these variables are entered into the regression one by one as well as all at once. The control variables include Return on Assets (*ROA*), volatility of ROA (*VROA*), market-to-book ratio(*MB*), leverage (*LEV*), log total assets (*SIZE*) and logarithm of firm age (*LOGAGE*). The control variables are added by following prior studies, e.g., Piotroski and Roulstone (2004) and Ferreira and Laux (2007). Industry as well as year dummies are included to control for the fixed effects, and the standard errors are adjusted for hetroskadasticity (White (1980)).

3.4. ASYNCH as a proxy for information environment across portfolios

To test the hypothesis that *ASYNCH* is a good measure of information environment across the whole sample, Equation (1) re-estimated in 10 portfolios constructed based on the magnitude of *ASYNCH*, and the R^2 statistics of these regressions are obtained. If AYSNCH reflects firm-specific information throughout the whole sample, we shall observe the R^2 statistics of equation (1) to be monotonically increasing when *ASYNCH* is decreasing.

CHAPTER 4
MULTIVARIATE REGRESSION RESULTS

4.1. Sample selection and descriptive statistics

I use a sample of publicly listed Chinese firms that are listed on the Shenzhen and Shanghai Stock Exchange in China during 1998-2008, and obtain the trading data as well as the financial data from the China Stock Market and Accounting Research (CSMAR) database. In order to be included in the sample, I require the firm to have sufficient accounting and trading data available in CSMAR. I then exclude the firm-year observations in the year of IPO, since post-IPO stock returns exhibit greater fluctuations.

To obtain reliable evidences on the relation between the R^2 statistics and the informativeness of accounting numbers, I limit my sample period to fiscal years between 1998 and 2008, since the new accounting standard was issued in year 1998[8]. Our final sample consists of 1,456 unique listed firms and 12,431 firm-year observations. The number of observations varies with model specification due to data availability. Sample selection process is presented in Appendix II.

4.1.1 Sample composition

Table 1 reports the composition of the sample used in this study. Geographically firms are located in 31 provinces in China, but are not balanced across regions: about 50% of the listed firms are clustered in Guangdong (11.25%) , Shanghai (11.09%), Jiangsu, Beijing, Zhejiang, Shandong and Sichuan. These provinces are among the most commercialized ones in China.

[8] Using full sample (1993-2008) does not change the results although makes the results weaker.

4.1.2 ASYNCH in China: Descriptive statistics

Table 2 presents the univariate statistics of the variable in interest: the *ASYNCH*. Panel A of table 2 reports the descriptive statistics of *ASYNCH* by fiscal year, and *ASYNCH* varies across years. Figure 1a demonstrates the trend of the change in *ASYNCH* historically, and Figure 1b exhibits the market condition during 1998-2008. It shows that idiosyncratic volatility statistics are the lowest in years of 2001-2002 and 2007-2008, and the common characteristics of these two time periods would be, if any, that the Chinese capital market was at the lowest points in these years. It indicates that market sentiment may affect the comovements of stocks[9].

Panel B of Table 2 presents the idiosyncratic volatility statistics across industries. Overall, the results suggest that the restrictive (or monopolistic) industries have lower idiosyncratic volatility. Specifically, construction, agriculture, utility, mining and transportation industries are those with the lowest idiosyncratic volatilities. This evidence is implicitly consistent with the conclusion that the costs of acquiring private information vary with firms' governance structures (Ferreira and Laux (2007)).

Panel C of Table 2 presents the *ASYNCH* statistics across 31 regions in China. The statistics are broadly consistent with the common wisdom that in regions where market is more developed, firms have better information environments, since firms located in more developed regions, such as Chong Qing, Tian Jin, Si Chuan and Shang Hai, and Zhe Jiang, are firms with higher idiosyncratic volatilities. However, the statistics also exhibit confounding

[9] This issue is out of the scope of this study. The conjecture is that when market sentiment is high (or during the bull market), speculative investors will spend more resources on acquiring private information and trade on these information. These trading activities increase idiosyncratic return volatilities.

evidences that firms located in Tibet and Qing Hai, where the economies are assumed to be less market oriented, have the highest idiosyncratic volatility. These evidences motivate our second research question on the applicability of the *AYSNCH* as an information measure throughout the whole sample.

4.1.3. Asynchronicity, information flow, and firms' financial characteristics

Table 3 presents the descriptive statistics of Asynchronicity, information flow, and firms' financial characteristics. It can be seen that *ASYNCH* is positively skewed, indicating most of the stocks in China's stock market move in extremely synchronous manners.

Table 4 reports the Pearson correlation between Asynchronicity, information flow, and firms' financial characteristics. First, the stock price asynchronicity, *ASYNCH,* is positively correlated with *ERC, AVAR,* and *TURN*, indicating that, consistent with the "information view", when more information flow is contained in stock prices, *ASYNCH* is higher. Second, *AYSNCH* displays significant relations with all the firm characteristic variables, highlighting the importance of controlling these variables in the multivariate regressions.

4.2. Multivariate regression results

4.2.1. Low R^2 in China: information or noise

The primary empirical test of this study examines whether the idiosyncratic return volatility (*ASYNCH*) is correlated with information flow contained in stocks.

H1. R^2 statistics are negatively associated with the amount of private information impounded in stock prices.

The hypothesis development is given in section 2.5.2., and Equation (1) is estimated to provide evidence on the hypothesis testing. That is:

$$ASYNCH_t = \alpha_0 + \sum_{j=1}^{12} IND_j + \sum_{k=1}^{11} YEAR_k + \beta_1 INFO + \beta_2 ROA + \beta_3 VROA + \beta_4 MB$$
$$+ \beta_5 LEV + \beta_6 SIZE + \beta_7 LOGAGE + \varepsilon$$

Table 5 reports the coefficients and the White's (1980) heteroskedasticity- adjusted t-statistics from various estimations of the equation (1). Column (1) presents the coefficients from the base-line model, where only firms' financial characteristics are included. Consistent with prior literature (e.g. Piotroski and Roulstone (2004)), stock price asynchronicity increases with profitability (*ROA*), growth opportunities (*MB*), leverage (*LEV*), and firm age (*LOGAGE*), and decreases with *SIZE*.

Columns (2)-(7) present the coefficients from estimations to examine the relation between asynchronicity and information flows. Results show that the private information contained in stock prices (*PRIVATE*), the extent to which stock returns reflect future earnings performances (*FERC*), abnormal trading activities around earnings announcement dates (*AVOL*) and abnormal return volatility around earnings announcement dates (*AVAR*) are all positively correlated with *ASYNCH*.

Columns (8)-(9) report results from estimations that include all information flow measures in the regression analysis. To avoid multicollinearity caused by the high correlation between *AVOL* and *AVAR*[10], these two variables enter into the regression analyses separately. It shows that *FERC*, *AVOL*, *AVAR* and *TURN* are positively correlated with the idiosyncratic

[10] The correlation between AVOL and AVAR is 0.96.

volatility.

Overall, the results reported in table 5 are consistent with the "information view" of idiosyncratic return volatility and validate using *AYSNCH* as a measure of information in China.

4.2.2. ASYNCH as an information measure throughout the full sample

One task of this study is to examine whether *ASYNCH* reflects firm-specific information across various portfolios constructed based on the magnitude of the *ASYNCH*. If *ASYNCH* reflects the extent to which firm-specific information incorporated into stock prices in a monotonic fashion, we shall observe that the relation between *ASYNCH* and information flows is strongest in firms with the highest *ASYNCH* statistics, and is weakest in firms with extremely low *ASYNCH* statistics, say, in the lowest decile. However, such a monotonic relation will not be observed if Lee and Liu (2007)'s analytical model predicts correctly, that there exists a U-shape relationship between *ASYNCH* and information flows.

Table 6 reports the coefficients and model R^2's from the estimations of equation (1) across various *ASYNCH* portfolios, and several observations are from this table. First, *PRIVATE* and *TURN* are significant and robust across ASYNCH portfolios. Second, in most of the specifications, the model R^2's increases monotonically from the low-*ASYNCH* portfolio to the high- *ASYNCH* portfolio, except that in portfolio 9 and 10 the model R^2's decrease.

Figure 2 presents the graphical illustration of the relationship between asynchronicity and information flows. The R^2 statistics of equation (1) estimated across various *ASYNCH* portfolios are plotted in Figure 2. It shows that the R^2 first increases when *ASYNCH* increases, by decreases when *ASYNCH* is high. This evidence indicates that when researchers use R^2 as an information measure, they shall first examine to what range R^2 correctly proxy for firm-specific information and then truncate the sample accordingly.

CHAPTER 5
ROBUSTNESS CHECKS

Since listed firms are unevenly distributed across industries, the inclusion of the industry return in the asset pricing models may affect the estimation of *ASYNCH.* Therefore, a more parsimonious asset pricing model is used to generate the R^2 statistics in order to calculate *ASYNCH.*

Table 7 reports the coefficient and t-statistics from the re-estimation of equation (1), by using the alternative *ASYNCH* as the dependent variable. The results presented in table 7 are weaker but broadly consistent with *H1*.

CHAPTER 6
CONCLUSION

This study entertains two research questions. First, in emerging markets where market efficiency is a strong assumption, is stock price asynchronicity a measure of stock price informativeness? Second, will asynchronicity monotonically increases with stock price informativeness?

Prior studies question whether asynchronicity represents rich firm-specific information or noise. Consistent with the "information hypothesis", I find that stock asynchronicity is positively correlated with information flow measures. Specifically, *ASYNCH* is positively correlated with private information contained in stock prices (*PRIVATE*), how a firm's stock returns corresponding to unexpected earnings news (*ERC*), to what extent a firm's stock returns reflect future earnings news (*FERC*), how investors react to earnings announcements (*AVOL* and *AVAR*), and the intensiveness of trading of a firm's stock (*TURN*).

In terms of the potential non-monotonic relationship between stock asynchronicity and information flows, the results of this study are consistent with Lee and Liu (2007)'s prediction that it exits a U-shape between asynchronicity and information flows.

This study has several contributes to the growing studies on the market model R^2. First, this study demonstrates the validity of using the R^2 metric in emerging markets, where the capital markets are less than strong-form efficiency. Second, this study sheds lights on the debate about whether R^2 statistic represents information or noise. The finding of this study suggests that although R^2 in general is a valid information measure, researchers shall remain the caution that this metric is unreliable under extreme circumstances. For example, in China when a firm's *ASYNCH* statistic falls into the top decile of the sample, the relation between firm-specific information and *ASYNCH* becomes weak.

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APPENDIX I-1. VARIABLE DEFINITION

NAME	Definition
Panel A. Idiosyncratic return volatility	
ASYNCH	logistic transformation of $(1-R^2)$, which equals $\log((1-R^2)/R^2)$, and R^2 is the model fitness statistics from the asset pricing model: $R_i = a + bR_m + R_{ind} + e$, where R_i is the daily stock return of firm I, R_m is the market portfolio return and R_{ind} is the industry portfolio return, excluding the firm in question.
Panel B. Information Flow	
PRIVATE	Annual amount of private information trading, following Llorente et al. (2002). It is the b_{i2} of the regression $R_{it} = b_{i0} + b_{i1}R_{i,t-1} + b_{i2} R_{i,t-1}V_{i,t-1} + e.$ where R_{it} is daily stock return and V_{id} is log daily turnover detrended by substracting a 200 trading day moving average.
ERC	Earnings response coefficient. It is the b_1 in regression: $CAR_{it} = a_i + b_{i1}UE_{it} + e$
FERC	Future *ERC*. It is the $b_2 + b_3$ in regresson: $CAR_{it} = a_i + b_{i1}UE_{it} + b_{i2}\, UE_{it+1} + b_{i3}\, UE_{i,t+2} + e$
AVOL	Abnormal trading volume in the [-3, +3] trading period around earnings announcement. Estimation period is the [-325, -20] following Landsman and Maydew, 2000.
AVAR	Abnormal return volatility in the [-3, +3] trading period around earnings announcement. Estimation period is the [-325, -20] following Landsman and Maydew, 2000.
TURN	Monthly share trading volume scaled by shares outstanding.
ROA	Return on Assets
VROA	Volatility of a firm's ROA
SIZE	= log (total assets)
MB	market to book ratio, which equals to market value of equity over book value of equity.
LOGAGE	Logarithm of age of the firm, where age equals to the difference between the current fiscal year and the listing year of the firm

APPENDIX I-2. SAMPLE SELECTION

Sample Selection:		
1998-2008:		14,930
(-):No return data to calculate *ASYNCH:*	181	14,749
(-):B-shares	1,382	13,367
(-):Return in the IPO year	770	12,597
(-):Firms with missing financial data:	166	
Final sample:		12,431
accounts for: 1,456 firms		
In the $R_i = R_m + R_{ind}$ specification		12,423
accounts for: 1,454 firms		

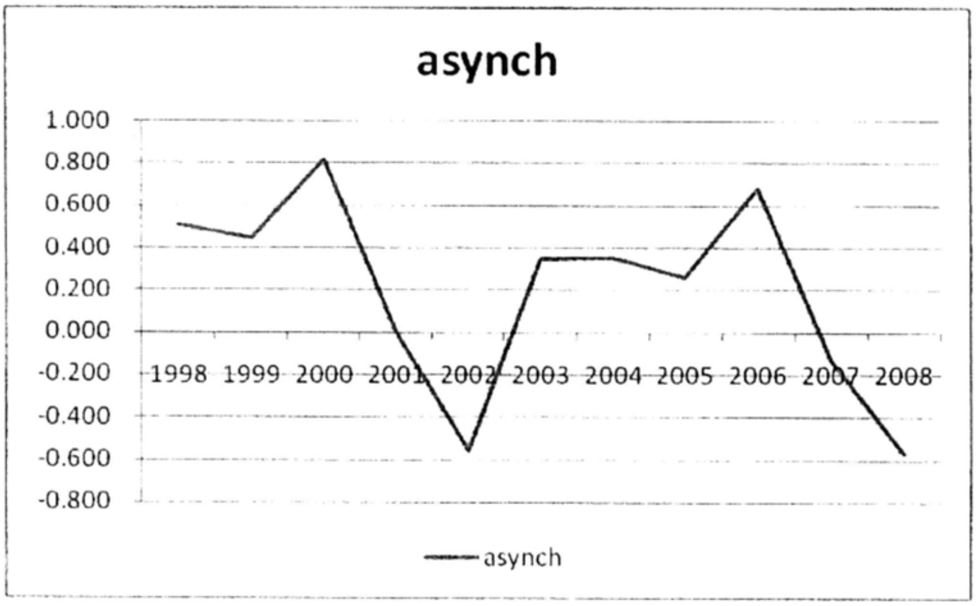


Figure 1a Historical *ASYNCH* statistics during years of 1998-2008

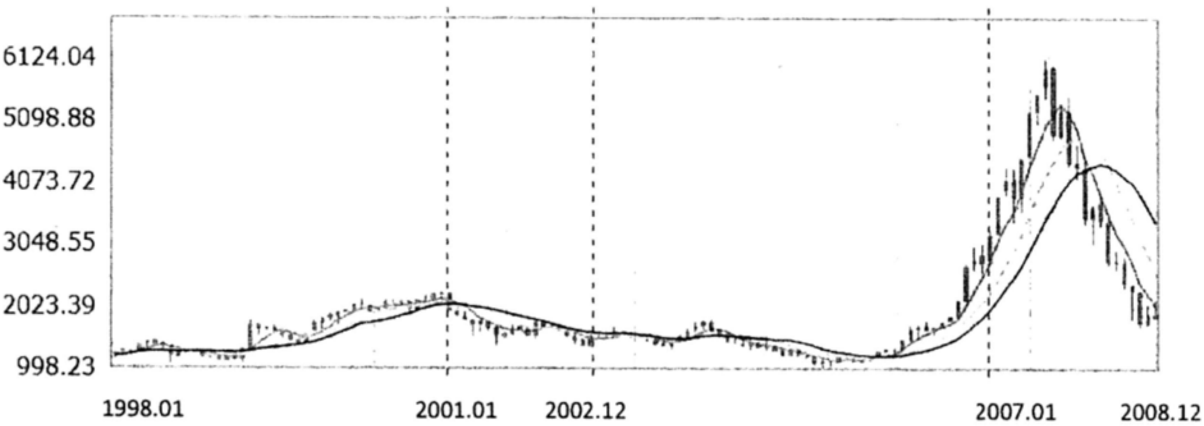
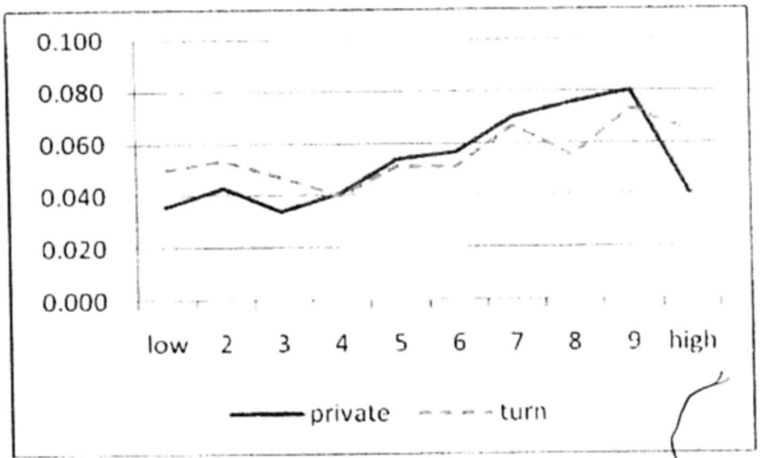
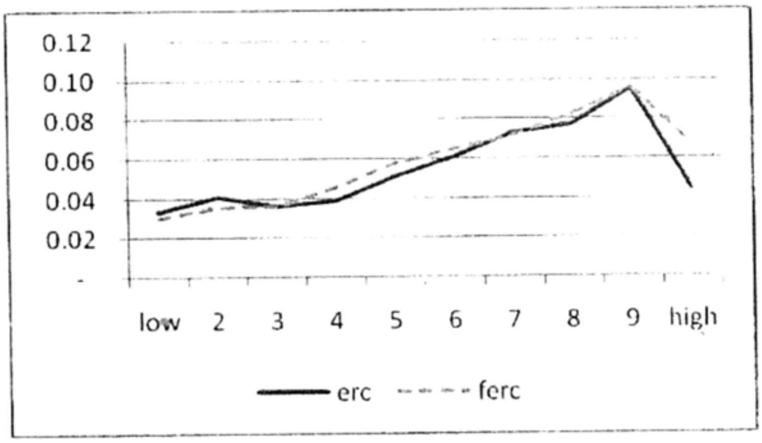


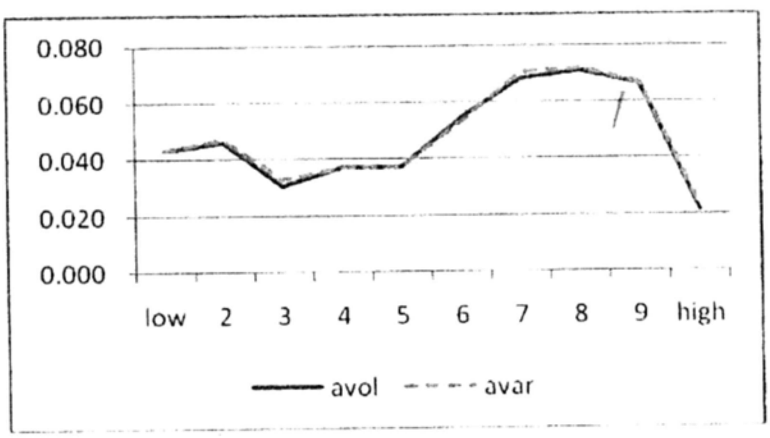
Figure 1b. Shanghai Exchange Composite during years of 1998-2008



(a) *PRIVATE* and *TURN*



(b) *ERC* and *FERC*



(c) *AVOL* and *AVAR*

Figure 2 R2 statistics of equation (1) estimated across ASYNCH portfolios

Table 1. Sample composition

This table presents the sample distributions across the 31 regions in China between fiscal year 1998 and 2008.

LOC	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total	%	cum%
Guang Dong	102	108	111	119	124	126	128	141	143	149	148	1399	11.25%	11.25%
Shang Hai	109	116	118	120	125	127	129	133	132	135	134	1378	11.09%	22.34%
Jiang Su	34	38	46	55	61	66	79	85	85	95	95	739	5.94%	28.28%
Bei Jing	25	32	43	55	64	70	75	81	81	89	88	703	5.66%	33.94%
Shan Dong	32	41	46	56	60	66	67	74	73	80	81	676	5.44%	39.38%
Zhe Jiang	30	34	40	49	51	57	64	81	83	90	90	669	5.38%	44.76%
Si Chuan	44	54	56	57	64	66	67	68	67	62	62	667	5.37%	50.12%
Hu Bei	32	39	45	53	56	56	56	60	60	57	56	570	4.59%	54.71%
Liao Ning	36	42	44	51	52	54	50	46	46	46	44	511	4.11%	58.82%
Fu Jian	31	33	36	40	39	43	45	47	46	45	45	450	3.62%	62.44%
Hu Nan	18	20	27	32	34	36	39	45	41	40	40	372	2.99%	65.43%
An Hui	12	17	18	24	26	32	36	44	45	46	46	346	2.78%	68.22%
Ji Lin	23	25	28	30	32	32	34	33	32	30	30	329	2.65%	70.86%
He Bei	16	20	24	26	27	32	34	36	37	37	37	326	2.62%	73.49%
Hei Longjian	16	20	25	30	31	33	33	30	26	25	25	294	2.37%	75.85%
He Nan	11	16	22	23	25	26	30	32	31	33	33	282	2.27%	78.12%
Chong Qing	16	16	19	22	22	23	23	25	25	24	23	238	1.91%	80.03%
Shaan Xi	16	18	20	22	22	24	23	23	24	23	23	238	1.91%	81.95%
Xin Jiang	10	11	14	19	21	23	26	27	27	29	29	236	1.90%	83.85%
Hai Nan	16	17	21	23	22	23	23	23	23	22	22	235	1.89%	85.74%
Shan Xi	9	13	13	17	18	19	22	23	23	26	26	209	1.68%	87.42%
Jiang Xi	11	11	12	15	17	22	23	24	23	23	24	205	1.65%	89.07%
Yun Nan	9	12	15	18	18	18	19	22	21	23	23	198	1.59%	90.66%
Tian Jin	11	12	14	15	20	20	21	21	21	21	21	197	1.58%	92.25%
Guang Xi	8	10	12	17	19	19	21	22	22	20	20	190	1.53%	93.77%
Nei Menggu	9	11	12	17	19	19	19	20	20	20	20	186	1.50%	95.27%
Gan Su	9	9	11	15	16	17	17	18	18	17	17	164	1.32%	96.59%
Gui Zhou	7	8	9	10	14	14	14	18	19	19	19	151	1.21%	97.80%
Ning Xia	4	7	8	10	10	10	11	11	11	11	11	104	0.84%	98.64%
Qing Hai	7	7	7	8	9	9	9	9	9	8	8	90	0.72%	99.36%
Tibet	5	5	6	7	8	8	8	8	8	8	8	79	0.64%	100.00%
Total	718	822	922	1055	1126	1190	1245	1330	1322	1353	1348	12431	100%	

Table 2. Descriptive statistics of asynchronicity (ASYNCH) in China

This table reports the univariate statistics of the inverse measure of stock price synchronicity: R^2. In order to make sense of the statistics, I do not apply the logisitic transformation of $(1-R^2)$ in Table 2.

R^2 is the fitness of the following model:

$$R_i = \alpha + \beta_1 R_m + \beta_2 R_{ind} + \varepsilon$$

Panel A. ASYNCH across years

fiscal year	N	Mean	Median	Std	Max	Min
1998	718	0.510	0.412	0.734	6.841	-1.183
1999	822	0.447	0.370	0.820	5.799	-1.784
2000	922	0.821	0.647	1.001	7.433	-1.190
2001	1053	-0.005	-0.147	0.946	7.781	-1.864
2002	1124	-0.557	-0.789	1.124	7.434	-2.799
2003	1188	0.349	0.205	0.901	6.667	-1.750
2004	1243	0.357	0.245	0.753	5.679	-1.375
2005	1330	0.262	0.191	0.701	4.521	-1.524
2006	1322	0.687	0.550	0.834	6.257	-1.054
2007	1353	-0.129	-0.179	0.591	2.415	-1.670
2008	1348	-0.567	-0.634	0.639	3.149	-2.343
total:	12423					

Panel B. ASYNCH across industry

Industry	N	Mean	Median	Std	Max	Min
InfoTech	108	0.334	0.371	0.980	3.995	-1.594
Financial	152	0.284	0.084	1.123	4.184	-2.178
Comprehensive	861	0.265	0.107	1.107	7.434	-2.049
Service	400	0.257	0.176	0.879	4.670	-1.988
Postal and communication	735	0.182	0.102	0.917	6.257	-2.432
Retail and wholesales	879	0.181	0.114	0.945	5.836	-2.799
Real Estate	864	0.178	0.102	0.951	4.635	-2.185
Manufacturing	6686	0.163	0.095	0.928	7.781	-2.431
Transportation	487	0.135	0.067	0.939	5.864	-2.317
Mining	204	0.121	0.063	0.886	3.390	-1.980
Utility	555	0.009	-0.099	0.846	3.581	-2.203
Agriculture	260	-0.001	-0.072	0.846	3.026	-2.209
Construction	232	-0.025	-0.052	0.744	2.275	-1.777
total:	12423					

Panel C. ASYNCH across regions

Location	N	Mean	Median	Std	Max	Min
Qing Hai	90	0.358	0.329	1.072	6.841	-1.881
Tibet	79	0.453	0.326	0.982	3.228	-1.579
Chong Qing	267	0.312	0.310	0.789	3.446	-1.554
Tian Jin	232	0.318	0.242	0.924	4.842	-1.930
Hei Longjiang	237	0.255	0.199	0.971	4.724	-1.935
Si Chuan	561	0.280	0.188	0.947	6.154	-2.004
Ning Xia	104	0.182	0.151	0.834	2.641	-1.388
He Nan	268	0.218	0.146	0.992	5.109	-2.096
Shang Hai	1,379	0.187	0.117	0.928	5.799	-2.383
Fu Jian	379	0.187	0.115	0.908	3.751	-2.278
Xin Jiang	232	0.242	0.105	0.994	5.836	-2.046
Yun Nan	180	0.259	0.102	1.022	3.436	-2.034
Shan Dong	653	0.171	0.101	0.968	4.863	-2.130
Gan Su	147	0.125	0.098	0.929	4.609	-2.343
Hu Nan	340	0.173	0.090	0.974	4.438	-1.757
Jiang Su	744	0.123	0.083	0.955	7.781	-2.432
Gui Zhou	129	0.146	0.079	0.900	3.620	-1.919
Hai Nan	200	0.194	0.079	0.925	3.511	-2.054
Guang Xi	190	0.090	0.072	0.933	5.679	-2.287
Jiang Xi	196	0.150	0.064	0.939	4.435	-2.203
Zhe Jiang	700	0.131	0.052	0.900	5.660	-2.112
Liao Ning	432	0.085	0.042	0.871	5.116	-2.081
Guang Dong	1,426	0.128	0.035	0.981	7.433	-2.799
Shan Xi	223	0.039	0.030	0.815	3.438	-1.980
Bei Jing	768	0.093	0.028	0.864	3.676	-2.317
Ji Lin	279	0.088	0.017	0.942	4.618	-2.431
He Bei	260	0.105	0.004	0.961	4.467	-2.102
Hu Bei	541	0.058	-0.023	0.874	4.064	-2.049
Shaan Xi	227	0.160	-0.045	0.988	4.344	-1.625
An Hui	357	0.014	-0.059	0.903	4.604	-1.864
Nei Menggu	157	-0.099	-0.092	0.757	2.553	-2.062

Table 3 Descriptive statistics of asynchronicity, information flow, and firms' financial characteristics

This table presents the descriptive statistics of asynchronicity, information flow, and firms' financial characteristics. *ASYNCH* is the logistic transformation of (1-R^2), *PRIVATE* measures the private information contained in stock prices, *ERC* is the earnings response coefficient, *FERC* is the future ERC, *AVOL* is the abnormal trading volume of the [-3.+3] window around earnings announcements, *AVAR* is the abnormal return volatility of the [-3.+3] window around earnings announcements, *TURN* is the monthly trading turnover of a stock, *ROA* is the return on assets, *VROA* is the standard deviation of ROA, *MB* is the market-to book ratio, *LEV* is the leverage, *SIZE* is logarithm of total assets, and *LOGAGE* is the logarithm of firm age. Detailed definitions of these variables are reported in Appendix I.

	N	Mean	Median	Std	Max	Min
Asynch						
ASYNCH	12,423	0.164	0.085	0.939	7.781	-2.799
Information flow						
PRIVATE	12,378	0.038	0.035	0.092	0.283	-0.183
ERC	12,218	0.343	0.248	0.735	3.301	-2.179
FERC	11,386	-0.024	0.026	0.834	2.604	-3.676
AVOL	10,676	0.518	0.192	1.182	4.464	-1.136
AVAR	10,759	0.641	0.308	1.172	4.679	-0.939
TURN	12,099	0.354	0.286	0.247	1.202	0.060
Firm characteristics						
ROA	12,423	0.024	0.033	0.085	0.205	-0.412
VROA	12,423	0.010	0.002	0.032	0.251	0.000
MB	12,423	1.715	1.268	1.741	11.142	-1.980
LEV	12,423	0.510	0.494	0.251	1.852	0.081
SIZE	12,423	21.183	21.079	1.034	24.474	18.860
LOGAGE	12,423	6.380	6.000	3.619	15.000	1.000

Note: All variables except for the *ASYNCH* are winsorized at top/bottom 1% of the sample.

Table 4. Correlation matrix

This table reports the Pearson correlation between the idiosyncratic return volatility, information flow of stock prices and financial characteristics of the sample. *ASYNCH* is the logistic transformation of (1-R^2), *PRIVATE* measures the private information contained in stock prices, *ERC* is the earnings response coefficient, *FERC* is the future ERC, *AVOL* is the abnormal trading volume of the [-3.+3] window around earnings announcements, *AVAR* is the abnormal return volatility of the [-3.+3] window around earnings announcements, *TURN* is the monthly trading turnover of a stock, *ROA* is the return on assets, *VROA* is the standard deviation of ROA, *MB* is the market-to book ratio, *LEV* is the leverage, *SIZE* is logarithm of total assets, and *LOGAGE* is the logarithm of firm age.

	ASYNCH	*PRIVATE*	*ERC*	*FERC*	*AVOL*	*AVAR*	*TURN*	*ROA*	*VROA*	*MB*	*LEV*	*SIZE*
ASYNCH	1.000											
PRIVATE	0.009	1.000										
ERC	**0.020**	**0.023**	1.000									
FERC	-0.008	-0.012	**-0.086**	1.000								
AVOL	0.008	**-0.086**	0.005	-0.004	1.000							
AVAR	**0.019**	**-0.078**	0.005	-0.005	**0.967**	1.000						
TURN	**0.023**	0.000	0.011	**-0.018**	**-0.255**	**-0.243**	1.000					
ROA	**-0.053**	**0.065**	**0.071**	-0.003	**-0.036**	**-0.036**	**-0.050**	1.000				
VROA	**0.108**	**-0.049**	**-0.069**	0.010	**-0.035**	**-0.030**	-0.001	**-0.301**	1.000			
MB	**0.162**	**-0.053**	-0.004	0.002	**-0.103**	**-0.101**	**0.202**	0.021	**0.036**	1.000		
LEV	**0.138**	**-0.088**	**-0.080**	**0.042**	0.017	**0.020**	**0.094**	**-0.525**	**0.368**	**0.016**	1.000	
SIZE	**-0.215**	**0.042**	0.008	**0.052**	**0.063**	**0.055**	**-0.048**	**0.220**	**-0.246**	**-0.236**	**0.020**	1.000
LOGAGE	**-0.063**	**-0.074**	0.001	**0.024**	**0.078**	**0.071**	**0.209**	**-0.138**	0.010	**0.127**	**0.227**	**0.146**

Note: The fonts in bold faces represent significance levels of 10% of better.

Table 5. Asynchronicity and information flow

$$ASYNCH_i = \alpha_0 + \sum_{j=1}^{12} IND_j + \sum_{k=1}^{11} YEAR_k + \beta_1 INFO + \beta_2 ROA + \beta_3 VROA + \beta_4 MB$$
$$+ \beta_5 LEV + \beta_6 SIZE + \beta_7 LOGAGE + \varepsilon$$

This table presents regression results on the relation between stock price asynchronicity and information flows. INFO is a vector of information flow measures which is, alternatively, *PRIVATE, ERC, FERC,AVOL, AVAR,* and *TURN.* Variables controlling for the firm characteristics include Return on Assets (ROA), volatility of ROA (VROA), leverage (LEV), market-to-book ratio(MB), log total assets (SIZE) and firm age (AGE). All variables are defined in Appendix I.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
PRIVATE		0.203**						0.116	0.125
		(2.339)						(1.301)	(1.411)
ERC			-0.008					-0.007	-0.007
			(-0.692)					(-0.487)	(-0.464)
FERC				0.040***				0.044***	0.042***
				(3.479)				(3.644)	(3.491)
AVOL					0.018**			0.025***	
					(2.384)			(3.337)	
AVAR						0.022***			0.026***
						(2.913)			(3.520)
TURN							0.053	0.162***	0.157***
							(1.354)	(3.469)	(3.374)
ROA	0.709***	0.670***	0.702***	0.676***	0.959***	0.957***	0.734***	0.883***	0.879***
	(6.282)	(5.955)	(6.167)	(5.693)	(6.762)	(6.802)	(6.858)	(6.409)	(6.408)
VROA	0.025	0.003	0.036	0.214	0.330	0.349	0.075	0.475*	0.489*
	(0.103)	(0.014)	(0.148)	(0.814)	(1.272)	(1.344)	(0.343)	(1.855)	(1.911)
MB	0.094***	0.094***	0.094***	0.094***	0.119***	0.120***	0.081***	0.108***	0.109***
	(15.531)	(15.381)	(15.459)	(14.511)	(16.583)	(16.787)	(14.820)	(15.238)	(15.418)
LEV	0.676***	0.667***	0.668***	0.669***	0.515***	0.511***	0.622***	0.460***	0.455***
	(17.019)	(16.765)	(16.634)	(16.073)	(11.192)	(11.130)	(16.074)	(10.327)	(10.223)
SIZE	-0.127***	-0.121***	-0.127***	-0.129***	-0.092***	-0.093***	-0.115***	-0.078***	-0.079***
	(-14.602)	(-14.001)	(-14.245)	(-13.830)	(-9.780)	(-9.891)	(-13.475)	(-8.000)	(-8.116)
LOGAGE	0.052***	0.048***	0.062***	0.078***	0.039***	0.040***	0.050***	0.065***	0.065***
	(4.327)	(3.996)	(4.673)	(4.811)	(3.163)	(3.229)	(4.488)	(4.203)	(4.185)
Constant	2.729***	2.569***	2.655***	1.532***	0.758***	1.911***	2.299***	1.597***	0.241
	(13.153)	(12.497)	(13.447)	(6.629)	(3.495)	(8.723)	(11.028)	(7.252)	(0.997)
N	12,423	12,378	12,218	11,386	10,676	10,759	12,099	9,666	9,738
Adj.R^2	0.304	0.307	0.303	0.302	0.297	0.298	0.318	0.315	0.316

White's (1980) heteroskedasticity-adjusted t-values are provided in parentheses below each coefficient.

*, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively (two-tailed test).

Industry and year dummies are included.

Table 6. Asynchronicity and information flow across ASYNCH portfolios

$$ASYNCH_i = \alpha_0 + \beta_1 INFO + \beta_2 ROA + \beta_3 VROA + \beta_4 MB + \beta_5 LEV + \beta_6 SIZE + \beta_7 LOGAGE + \varepsilon$$

This table presents regression coefficients and model R^2's on the relation between stock price asynchronicity and information flows across various ASYNCH portfolios. INFO is a vector of information flow measures which is, alternatively, *PRIVATE, ERC, FERC, AVOL, AVAR,* and *TURN.* Variables controlling for the firm characteristics include Return on Assets (ROA), volatility of ROA (VROA), leverage (LEV), market-to-book ratio(MB), log total assets (SIZE) and firm age (AGE). All variables are defined in Appendix I.

	PRVIATE		ERC		FERC	
ASYNCH	Coef.	Adj. R^2	Coef.	Adj. R^2	Coef.	Adj. R2
low	0.161	0.036	-0.007	0.034	0.008	0.030
2	0.235*	0.043	0.004	0.041	0.003	0.035
3	0.285**	0.034	0.009	0.037	0.006	0.036
4	0.475***	0.041	0.017	0.037	0.035*	0.046
5	0.486***	0.054	0.006	0.051	0.038**	0.058
6	0.421***	0.056	-0.001	0.057	0.04**	0.065
7	0.486***	0.070	-0.009	0.072	0.031	0.072
8	0.671***	0.076	-0.022	0.065	0.063***	0.083
9	0.628***	0.080	-0.022	0.081	0.031	0.096
high	0.721*	0.041	0.042	0.046	0.078	0.067

	AVOL		AVAR		TURN	
ASYNCH	Coef.	Adj. R^2	Coef.	Adj. R^2	Coef.	Adj. R^2
low	0.027**	0.043	0.024*	0.043	0.259***	0.050
2	0.013	0.046	0.017	0.047	0.212***	0.053
3	0.007	0.030	0.014	0.033	0.239***	0.047
4	0.009	0.037	0.011	0.037	0.169***	0.040
5	0.009	0.037	0.016	0.037	0.154***	0.051
6	0.027**	0.055	0.025**	0.053	0.079	0.051
7	0.017	0.068	0.019*	0.071	0.115**	0.066
8	0.008	0.071	0.014	0.072	0.060	0.055
9	0.006	0.067	0.006	0.067	-0.103*	0.073
high	0.030	0.022	0.044	0.023	-0.695***	0.065

Table 7. Robustness check: Alternative asynchronicity measure and information flow

$$ASYNCH_i = \alpha_0 + \sum_{j=1}^{12} IND_j + \sum_{k=1}^{11} YEAR_k + \beta_1 INFO + \beta_2 ROA + \beta_3 VROA + \beta_4 MB$$
$$+ \beta_5 LEV + \beta_6 SIZE + \beta_7 LOGAGE + \varepsilon$$

where *ASYNCH* is the logistic transformation of the $(1\text{-}R^2)$ from the parsimonious asset pricing model:

$$R_i = \alpha + \beta R_m + \varepsilon$$

This table presents regression results on the relation between stock price asynchronicity and information flows, by using an alternative *ASYNCH*. I All variables are defined in Appendix I.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
PRIVATE		**0.194***						0.113	0.128
		(1.768)						(1.147)	(1.293)
ERC			-0.010					-0.004	-0.004
			(-0.759)					(-0.278)	(-0.244)
FERC				**0.031****				**0.028****	**0.025***
				(2.326)				(2.145)	(1.958)
AVOL					0.006			**0.016****	
					(0.750)			(1.968)	
AVAR						0.010			**0.016***
						(1.153)			(1.952)
TURN							0.059	**0.199*****	**0.191*****
							(1.307)	(4.020)	(3.894)
ROA	**0.735*****	**0.688*****	**0.731*****	**0.706*****	**1.071*****	**1.070*****	**0.745*****	**1.013*****	**1.008*****
	(5.136)	(4.850)	(5.060)	(4.666)	(6.696)	(6.721)	(5.589)	(6.878)	(6.846)
VROA	0.054	0.035	0.058	0.229	0.418	0.437	0.125	**0.534****	**0.546****
	(0.197)	(0.126)	(0.204)	(0.761)	(1.530)	(1.600)	(0.506)	(2.052)	(2.101)
MB	**0.102*****	**0.104*****	**0.103*****	**0.102*****	**0.134*****	**0.135*****	**0.085*****	**0.118*****	**0.119*****
	(14.116)	(14.129)	(14.063)	(13.145)	(16.391)	(16.605)	(13.250)	(15.347)	(15.545)
LEV	**0.734*****	**0.720*****	**0.725*****	**0.727*****	**0.485*****	**0.483*****	**0.671*****	**0.425*****	**0.422*****
	(13.582)	(13.316)	(13.237)	(12.739)	(9.360)	(9.326)	(12.871)	(8.563)	(8.500)
SIZE	**-0.093*****	**-0.085*****	**-0.095*****	**-0.099*****	**-0.042*****	**-0.043*****	**-0.078*****	**-0.029****	**-0.031*****
	(-8.711)	(-8.077)	(-8.591)	(-8.603)	(-3.781)	(-3.913)	(-7.459)	(-2.568)	(-2.718)
LOGAGE	**0.056*****	**0.050*****	**0.067*****	**0.089*****	**0.039*****	**0.039*****	**0.054*****	**0.067*****	**0.066*****
	(4.084)	(3.692)	(4.418)	(4.737)	(2.736)	(2.770)	(4.318)	(3.950)	(3.925)
Constant	2.282***	1.893***	2.187***	1.034***	1.229***	1.188***	1.801***	0.853***	-0.433
	(9.033)	(8.260)	(9.410)	(4.125)	(5.142)	(4.601)	(7.053)	(3.427)	(-1.539)
N	12,431	12,386	12,226	11,394	10,683	10,766	12,099	9,666	9,738
Adj.R^2	0.268	0.271	0.267	0.267	0.267	0.268	0.298	0.308	0.309

White's (1980) heteroskedasticity-adjusted t-values are provided in parentheses below each coefficient.

*, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively (two-tailed test).

Industry and year dummies are included.

PART II. GOVERNMENT INTERVENTION, FIRMS' HIDING ACTIVITIES AND INFORMATION ENVIRONMENTS -- EVIDENCE FROM CHINA

Abstract:

This study investigates why emerging markets have inferior information environments and higher degree of stock price comovements, as documented in Morck et al. (2000). Specifically, looking from a unique perspective of firms' "hiding" activities in a country featured by economic structures that are highly political, this study provides evidence on the impact of excess government interventions to the market on firms' incentives to provide firm-specific information to outside investors. I first document that excess government interventions induce firms' incentives to conceal their true performances. A further analysis shows that such hiding incentives are associated with the various political pressures exerted on firms due to the different nature of the firms' ultimate owners. Particularly, non-state firms are more likely to suppress good news to avoid governments' "grabbing hands", while state-owned enterprises are more likely to hide their bad news to protect local governments' image. Second, I find that these firms' hiding incentives impair their information environments, resulting in lower idiosyncratic stock return volatilities. Finally, to strengthen the argument that firms' incentives to hide their performance reduce firm-specific information provision and thus lead to weaker information environments, I test the "information link" hypothesis. I find that the improvement of information intermediaries (*ANALYST*) alleviates the negative effects of firms' hiding activities on firms' information environments.

CHAPTER 7
INTRODUCTION

A country's institutional settings shape firms' information environments. In an important study, Morck et al. (2000) document that stock price comovements, an indication of inferior information environment, vary across countries and are negatively correlated to the country's GDP. Morck et al.'s analyses show that a country's institutions, such as government qualities, have important impact on the relation between stock price comovements and economic growth. From a demand-side perspective, these authors conjecture that strong political influences and lacking of property rights protection reduce market participants' incentives to acquire and trade on private information, leaving the stock markets less informative. From a supply-side perspective, characteristics of a country's institutions could affect firms' incentives to supply firm-specific information. Watts (1977) points out that that firms' reporting practices are outcomes of market and political processes. Recent studies find that a country's institutional settings affect listed companies' reporting practices, and change the properties of firms' earnings numbers (e.g., Ball et al. (2000) and Ball et al. (2003); Ali and Hwang (2000); Cahan et al. (2009); DeFond et al. (2007)).

However, prior studies provide only limited evidences on the channel through which lacking of property rights protection institutions affect firms' information environments. Therefore, the purpose of this study is to fill this void in literature by providing firm-level evidences on the impact of property rights institutions on firms' information environments. In particular, I investigate how weak property rights institutions create a unique incentive of the listed companies in China: the performance hiding incentives, which reduces these firms' provision of firm-specific information to the capital market.

Acemoglu and Johnson (2005) decompose a country's institutions into *property rights institutions* and *contracting institutions*, and property rights institutions are institutions "constrain government and elite expropriation". In countries where property rights institutions are weak, the states are usually "predatory" in nature (North (1981)). That is, excess government intervention, as often observed in emerging economies, is a manifest of insecure property rights protection.

Excessive government intervention creates a need for firms to conceal their true performances, and firms do so for two reasons. First, when the state becomes predatory, it reduces firms' incentives to report good news to the public. For example, an interesting example is given in Friedman et al.'s (2000) study: a western manager, when being asked about how government intervention affects the firm's operation decisions, answers: "It doesn't matter who it is: fire inspector, zoning committee member, mayor for that region, anybody can come and shut you down in 5 min[utes]. The fire guy could come, find fire hazards, and demand $50,000 into his overseas account. They know that if you shut down production for a few days, you're going to lose a lot more". To avoid being expropriated by the government, firms engage in "unofficial" activities as a response to "bureaucracy, corruption and weak legal system" (Friedman et al. (2000)).

Second, firms are reluctant to disclosure their true operations and performances because it would increase political costs associated with disclosure. For example, Piotroski et al. (2008) examine the listed state-owned enterprises (SOEs) in China and find that, during the events of national congress congregation, SOEs are more actively engaged in bad-news suppression activities, suggesting government's incentive to preserve image dominates firms' incentive to disclose firm-specific news.

Whether performance-hiding activities induced by government interventions damage information environment is an empirical question. As Verrecchia (1983) points out, information provision is feasible when benefits of doing so exceed costs associated with it. If disclosing true performances to the market increases the likelihood of being predated or intervened, firms will reduce information provision. However, the reduced public disclosures may or may not impair firms' information environments. On the one hand, if public disclosure is the most important means to communicate with investors, reduced public disclosures undermine firms' information environments and reduce idiosyncratic volatility. The rationale resembles that of the Jin and Myer's (2006), who argue that when managers consume private benefits from the company, they keep the company opaque, which they prove will hurt the information environments of listed companies. On the otheı hand, there might be alternative means for listed companies to communicate with investors. For example, as a country with no legal enforcement of the insider trading law, insiders could reveal the private information about the firm to the outsiders by intensive trading activities (Bhattacharya et al. (2000)). Other means are available for the purpose of communication such as private communications with CSRC, the banks, institutional investors, or security analysts (Ball et al. (2000)).

To provide more direct evidences on the proposition that excessive government intervention reduce firms' information provision to the market participants, I test the "information link" hypothesis. Particularly, I examine if performance hiding activities leads to reduced information provision and hence render a firm's stock unattractive to information intermediaries such as the security analysts.

A main challenge for the empirical analysis, which is common to the literature on tax evasion or underground economy, is that firms' "true performances" are not observable[11]. To overcome this difficulty, Cai and Liu (2008), using a proprietary dataset that provides firm-level production data in China, estimate the *imputed profits* by deducting intermediate inputs from gross outputs. Nonetheless, Cai and Liu's (2008) methodology is not perfect because their data is (a) not publicly available and (b) is only limited to the manufacturing industry. In this study, I use the Total Factor Productivity (TFP) estimated from firms' production functions to proxy for the true performances of firms, and "invent" a variable *HIDE* to capture the gap between a firm's "true performances" and its accounting performances. Operationally, I first rank firms in an industry by their TFP and ROA, respectively, and calculate the difference between these two rankings. The difference is then scaled by the number of firms in the industry in question to control for the size of the industry. It is a reasonable concern that the TFP *per se* may not be the "true performance" of the firm since the left-hand-side variable of the production function (either sales or value added) is obtained from the financial statement reported by firms. However, for the purpose of this study, we only need to assume that the TFP and the true performances are positively

[11] For example, Fisman and Wei (2004) the define an "evasion gap" as the difference between Hong Kong's reported exports to China at the product level and China's reported imports from Hong Kong. Friedman et al. (2000) use the electricity consumption in a country to predict the GDP of the country on an assumption that short-term electricity-GDP elasticity should be one, and any difference between the predicted GDP and the measured GDP proxies for the "unofficial" economy of that country. The problems of using these measures are (1) the data is not widely available and (2) they are not firm-level measures.

correlated, which is likely to hold since (a) production function is likely to reflect a firm's economic fundamentals, (b) TFP is estimated within industry where firms employ similar technology, and the ranking of TFP is used to minimize the measurement error, and (c) the capital employed (i.e., the PPE in use) and the labor used (i.e., the number of employers hired) are less subject to manipulations.

This measure adds value to this study in the following ways. First, this study is to investigate how excessive government interventions affect firms' behavior to conceal true performances and thus impair the information environment. This research question suggests that we study not only firms' accrual management which is conventional in the accounting research, but also firms' real transaction management activities. Empirically, *HIDE* captures any discrepancies between operation efficiency and accounting efficiency caused by firms' efforts to deviate their accounting performances from the economic fundamentals. These efforts include accrual earnings management (e.g., Aharony et al. (2000)), related party transactions (e.g., Jian and Wong (2008)) and other tunneling activities such as inter-corporate loans (Jiang et al. (2008)). Second, it is not the purpose of this study to distinguish various tactics that companies employ to hide themselves from the public. By comparing the TFP and the ROA, *HIDE* provides a comprehensive presentation of the outcomes of firms' hiding activities. Third, *HIDE* adds value to the earnings management literature: it is applicable to countries where the prevailing means for firms to achieve the earnings targets is more than accrual management, for example, firms in the East Asian countries (Bertrand et al. (2002); Fan and Wong (2002)).

This study utilizes the unique institutional structures of China. Contrary to the prior studies that rely on the heterogeneity of institutions across countries to draw broad inferences, this study refines these references and generates more contextual results by keeping the legal system and cultural background constant during the analysis. China's institutional settings provide a good opportunity to address our research questions. First, China portrays rich institutional variety across regions, yet under the same legal system and cultural background. The thirty-one provinces (regions) in China are developing towards the "market economy" at various stages due to the staggered timeline of economic reform (Fan and Wang (2006)), leaving diverse degrees of government interventions. Second, the fact that listed firms in China are controlled by ultimate owners with distinct natures adds an extra layer of complexity to the Chinese setting. This feature helps researchers to identify the different pressures exerted on the listed companies. Third, China is an important emerging economy with the essential component to answer the research question of this study: China's economy is under tight government control, and its stock price synchronicity ranks the 2^{nd} around the world (Morck et al. (2000)).

Using a sample consists of all A-share firms listed on the Shanghai and Shenzhen stock exchanges (firms in the financial industry excluded) during 1998-2008, I first test the hypothesis that excessive government intervention increase firms' incentive to conceal the operation performance. The results are quite counter-intuitive: I find that in regions of higher degree of market-oriented economy, firms exhibits stronger incentive to hide their good performances and weaker incentive to hide their bad performances, whereas *ex ante* I anticipate in both directions hiding incentive shall be weaker where arm's length transaction rule is more pervasive.

Further analyses suggest the cluster of firms in certain regions could explain such counter-intuitive results. Specifically, results from empirical estimations that examine the interaction effects between firms' ownership structures and local government interventions show that state-owned enterprises (SOEs) and privately-controlled firms display asymmetric incentives in performance hiding, and these results are as predicted by theory. First, it predicts that firms more subject to government's "grabbing hands" will actively conceal their "good news". Results from empirical analyses confirm this prediction and find that (a) privately-held firms operating in regions with lower level of government interventions and (b) firms with political connections demonstrate lower tendencies to conceal the good performances, indicating lower level of anxiety over government predation reduces hiding incentives. Second, I predict that firms under higher political pressures hide "bad news" in order to preserve government's image. As predicted, (a) SOEs operating in regions with higher level of government influences and (b) politically-connected firms demonstrate higher tendencies to suppress reporting of "bad news".

It turns out that various performance hiding activities have different impact on firms' information environments. I find efforts to artificially inflate accounting performance relative to operating performance (i.e., hiding of bad performances) impair firms' information environments. Such findings are consistent with the proposition developed by Jin and Myers (2006), that when insiders consume the downside risk by suppressing public disclosures, they reduce the stock return idiosyncratic volatility. On the contrary, concealments of good performances have insignificant impacts on firms' information environments. It indicates that concealing good performances publicly does not block firms' private communication to the market participants. This conjecture is formally examined in the "information link" hypothesis test.

Finally, when investigating the "information link" hypothesis, I find the hiding activities in different directions have distinct ramifications for analyst following. Specifically, the number of analyst following decreases if a firm engaging in more extensive "bad news" concealment whereas this number is not significantly changed if a firm engaging in "good news" concealment. Moreover, once followed by security analysts, the negative effects of performance hiding activities on information environments becomes smaller, indicating the information link in the observed relation between performance hiding and information environments.

This study contributes to the existing literature in many ways. First, it adds evidences on the literature that tries to explore the connections between a country's institution and the functional efficiency of capital markets. Prior studies relying on the cross-country settings do not provide firm-level evidence on the channel through which a country's institutions affect the informativeness of the stock market. This study shows that a country's institution change firms' incentives to provide information to the stock market and thus reduce stock price informativeness.

Second, this study builds on the stream of studies that conclude firm's reporting practices are shaped by a country's institutions. For example, Ali and Hwang (2000) suggest a country's institutional settings change the value relevance of earnings; Ball et al. (2003) conclude that firms reporting incentives are more important than accounting standards in shaping accounting quality. This study indicates that firm's incentives to conceal true performances are shaped by institutions, and have capital market consequences, such as reduced analyst following and decreased stock price informativeness.

Finally, this study complements the existing earnings management literature by introducing a variable that proxies for the comprehensive outcome of various earnings management instruments. Prior studies recognize that firms in emerging markets use various means to achieve earnings targets, including accrual manipulation, real transaction management, inter-group transfer related party transactions (e.g., Khanna and Thomas (2009); Jian and Wong (2008);Cheung et al. (2006)), and inter-corporate loans (Jiang et al. (2008)). In addition, firms keep some of their transactions "underground" as a reaction to corruption and bureaucracy (Friedman et al. (2000)). These activities, attributing to deviations of firms' reported outcomes from their economic operating efficiency, are captured by the *HIDE* variable used in this study.

The remainder of this paper is organized as the following. Chapter 8 discusses the prior literature and the hypotheses development, Chapter 9 discusses the measurement and model specification, Chapter 10 presents the data and descriptive statistics, followed by Chapter 11 in which multivariate regression results and their implications are discussed. Chapter 12 addresses the robustness concerns and Chapter 13 concludes.

CHAPTER 8
LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

8.1. Motivations and backgrounds

This study focuses on the impact of a country's institution on firms' information environments. Following Bushman et al. (2004), corporate transparency is defined as the wide-spread availability of firm-specific information to those market participants outside the publicly-traded firm. The extent to which firm-specific information incorporated into stock prices indicates the information environment of a listed company.

Information environment is vital to a country's economic well-being. In a seminal work, Morck et al. (2000) document that the stock price informativeness is higher in developed economies than in developing countries. Wurgler (2000) conclude that stock prices rich of firm-specific information help investors to identify the highest use of their resources. At a micro level, Chen et al. (2007) show improved information environments facilitate listed companies to make efficient investment decisions. Fernandes and Ferreira (2008) and Berger et al. (2006) find that good corporate information environments reduce the cost of capital, and promote corporate growth.

A country's institutional settings shape firms' information environments. In an important study, Morck et al. (2000) document that stock price comovements, an indication of inferior information environments, vary across countries and are negatively correlated to GDP. Their analyses show that a country's institutions, such as government qualities, have important impact on such a relationship. From a demand-side perspective, these authors conjecture that strong political influences and lacking of property rights protection reduce market participants' incentives to acquire and trade on private information, leaving the stock markets less informative. From a supply-side perspective, characteristics of a country's institutions could affect firms' incentives to supply firm-specific information. Watts (1977) points out that that firms' reporting practices are outcomes of market and political processes. Recent studies find that a country's institutional settings affect listed companies' reporting practices, and change the properties of firms' earnings numbers (e.g., Ball et al. (2000) and Ball et al. (2003); Ali and Hwang (2000); Cahan et al. (2009); DeFond et al. (2007)).

However, prior studies provide only limited evidences on the channel through which lacking of property rights protection institutions affect firms' information environments. Therefore, the purpose of this study is to fill this void in literature by providing firm-level evidences on the impact of property rights institutions on firms' information environments. In particular, I investigate how weak property rights institutions create a unique incentive of the listed companies in China: the performance hiding incentives, which reduces these firms' provision of firm-specific information to the capital market.

8.2. Property rights protection, government intervention and firm's hiding behaviors

8.2.1. Background: property rights protection institutions and firms' hiding behaviors in China

"Institutions" is defined as the "social, economic, legal and political organization" of a society. Acemoglu and Johnson (2005) unbundle a country's institutions into "property rights institutions" and "contracting institutions", and the former refers to the institutions that "[protect] citizens from being expropriated by the governments and elites". By the same token, excessive government intervention to the economy is an indication of insecure property rights protection. Prior studies recognize that excessively large government limits economic freedom, and restricts firms' choice set, distorts firms' behaviors, and does harm to a country's economic growth (Gwartney et al. (1998); Gwartney and Lawson (2009); World Bank (2006); Cull and Xu (2005)).

China's government, state or local, has extensive power to interfere with the day-to-day operation of the economy. According to the *"2009 Index of Economic Freedom"*, economic freedom score for China is 53.2, making the economy the 132nd around the world in that year (Miller and Holmes (2009). In 8 out of 10 economic freedom indicators, China scores below the world's average. Hence, firms operating in China are greatly influenced by the government's policy and regulations, and the fact that two thirds of the firms in China are owned by state or by local governments exacerbates this problem. Nonetheless, the privately-held companies are not immune to government intervention as the government greatly influences economic affairs through policies and regulations. For example, if a local government needs extra funding, it could levy certain fees from the firms operated in the region. These fees are in various categories and do not need congressional approval.

8.2.2. Firms' hiding behaviors under excessive government interventions.

Excessive government intervention creates a demand for firms to conceal their true performances for two reasons. First, when the state becomes predatory, it reduces firms' incentives to report good news to the public (Friedman et al. (2000)). Forfeitures of profits, windfall taxes on profitable operations, various categories of taxes and fees, and forced donations are among the common forms of government expropriation, and abundant anecdotal evidences in China confirm the existence of expropriation (e.g., Fisman and Wei (2004), Cai and Liu (2008)) .

Second, firms are reluctant to disclosure their true operations as well as performances because doing so would increase the political costs associated with disclosure. For example, Piotroski et al. (2008) examine the listed state-owned enterprises (SOEs) in China and find that, during the events of national congress congregation, SOEs are more actively engaged in bad-news suppression activities, suggesting pressures from the local governments deter firms' revelation of bad news.

H1a. Firms operating in regions with higher level of government intervention display stronger incentives to conceal their good performances.

H1b. Firms operating in regions with higher level of government intervention display stronger incentives to conceal their bad performances.

8.2.3. *Ultimate ownership, political connectedness and performance hiding*

In section 8.2.2 I develop the hypothesis that, when operating in regions where government influences dominate the economy, firms have higher tendencies to hide their true performances (either good news or bad news). In this section, I analyze the interaction between firms and government that contingent on the nature of the ultimate owners of the listed companies.

As widely acknowledged, pyramidal structure is commonly employed in emerging markets to reduce transaction costs (e.g., Fan et al. (2007); Khanna and Palepu (2000)). On the top of the pyramids, there exists an ultimate owner that controls the operation of the group. In China's context, the ultimate owners can be broadly classified as three types: the state, the local governments and the non-government entities. According to the natures of the ultimate owners, listed companies in China can be categorized as central-government-owned SOEs (CSOE), local-government-owned SOEs (LSOE) and privately-owned firms (PRIVATE). The nature of the ultimate owners of these three types of firms determines the interaction between government and the listed companies.

(1) State-owned Enterprises (SOEs)

SOEs are firms controlled by the government, with designated board of directors and managers. In addition, the embedded CCP party-related departments closely monitor the listed firms (Chen et al. (2009); Yu (2009)). As a consequence, government interferes with SOEs' operations by means of administrative orders and direct interventions, and the SOEs become tools for the government officials and bureaucrats to achieve political goals, as pointed out by

Boycko et al. (1996):

> *"Public enterprises around the world have proven to be highly inefficient, primarily because they pursue strategies, such as excess employment, that satisfy the political objectives of politicians who control them."*

Although inefficient in operation, SOEs are under pressures to demonstrate good performances to the society. Internally, the managers of the SOEs are usually politicians awaiting political promotions (Aharony et al. (2000)), and the likelihood of successful promotions relies heavily on the SOEs' performances. Externally, municipal and provincial administrators' promotions also hinge on the fiscal performances of the local economy. Thus, local government officials have strong incentive to "create" the good performances of the local SOEs. One famous anecdotal piece of evidence is the "Jinan Phenomenon": in May 16, 2003, the *"Shanghai Securities"* (in Chinese) reports that all 5 listed companies in Jinan, the capital city of the Shandong Province, are under financial distresses and the stocks of these companies are designated as "special treatment" (ST) stocks[12]. The revelation of this news immediately attracts tremendous media attentions, which imposes great pressures on the administrators of the Jinan city and the Shandong province. These administrators react quickly and allege to "fight to stop firms' ST status in one year". Two years later, the administrators from the Jinan government happily announce that all listed companies in Jinan have eliminated the ST designation from CSRC. Empirically, Piotroski et al. (2008) show that

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[12] The ST system was introduced on 22 April 1998 by the CSRC as part of a series of corporate governance reforms. Under this system a company is designated as a ST company if it satisfies one or more of the following six criteria: (a) the company has negative net profits for two consecutive fiscal years; (b) the shareholders' equity for the company is lower than the registered capital (the par value of the share); (c) the auditor has issued the company a disclaimer or an adverse audit opinion for the current year; (d) the company's operations have been stopped due to natural disaster or serious accident and have no hope of being restored within three months; (e) the company is involved in a damaging lawsuit or arbitration; or (f) the company is bankrupt.

Once a company receives the ST designation, additional controls are imposed on it. For example, it is required to provide audited semi-annual financial reports, and the maximum allowed daily fluctuation in the price of an ST share cannot exceed 5%.

SOEs in China, during the events of provincial leaders' promotions and China's National Congress congregations, suppress bad performances to help local government to achieve political goals[13].

In this study I attempt to extend their evidences to a more general setting and try to demonstrate that it is a general tendency for local governments to exert political influences on the SOEs, in order to suppress bad news reporting and preserve the image of the local government.

H2a. Excessive government intervention increase SOE's incentives to hide bad performance.

(2) Firms owned by private entities (PRIVATEs)

Non-state firms in China are owned by families or other private entities. Since the controlling shareholders are private investors, they are actively monitoring the firms and their objective functions are profit maximization and shareholder value maximization[14].

Usually, government officials cannot directly interfere with the day-to-day operation of the privately-held firms. Rather, state or local government issues various policies and regulations to change firms' behaviors and strategies. To increase fiscal revenues and meet political needs, local governments reach the "grabbing hands" towards privately controlled enterprises. The common means to transfer wealth from the privately controlled enterprises to

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[13] This study extends Piotroski et al.'s (2008) evidences to reach more generic conclusions that suppressing bad news are common among the SOEs due to the political influences exerted by the local governments. Furthermore, this study attempts to show the economic consequences of performance hiding: the reduced idiosyncratic return volatilities.

[14] It worth noting that shareholder value maximization may not be the true if speaking in the stand of minority shareholders. Prior studies indicate that family firms in Asia engage in "tunneling" activities and consuming private benefit of control, hurting the interests of the minority shareholder. The tunneling incentives are strongest in countries with weak investors protection institutions. (e.g., Defond and Hung (2004); Jiang et al. (2008)).

the government are levying taxes, collecting fees in various categories, forcing firms to donate to specific regions[15] (e.g., Friedman and Johnson (1999); Fisman and Wei (2004)). The "grabbing hand" effect is more pronounced in regions where the local economy is subject to higher degree of government interventions.

H2b. Higher degree of government intervention increases privately owned firms' (PRIVATE) anxiety of being expropriated, which increases the incentives for firms to hide good performances.

(3) Politically connected firms

Che and Qian (1998) develop a model to show that state ownership is a reliable way to dodge the government's "grabbing hands". An alternative way for the privately owned enterprises to achieve this goal is to build political connections with the government. The favors brought to the firms by political connectedness can take various forms, including preferential treatment by government owned enterprises (such as banks or raw material producers), lighter taxation, preferential treatment in competition for government contracts, relaxed regulatory oversight of the company in question, or stiffer regulatory oversight of its rivals, and many other forms (Faccio (2006)). Therefore, the anxiety over being expropriated by the government is reduced if the firm is politically connected, which also reduces the incentives for firms to hide their good performances. However, being connected could, but not necessarily, increase firms' incentives to hide bad news in order to preserve local

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[15] For example, in year 2006, the state called on the movement of "developing the great area of Northwest". This movement aims at developing the infrastructures in the less developed northwestern area in China, as well as boosting the GDP. In this movement, Wanxiang group, a family owned company located in southern coastal area of China, forced to spend 700 million RMB to support this movement.

government's images.

H2c. Politically connected firms are less concerned about governments' "grabbing hands" and thus reduce their incentives to hide good-performances. But they will be more likely to hide their bad performance to help local governments to preserve their image.

8.3. The impact of hiding activities on firms' information environments

8.3.1. Performance hiding activities and information environment

Whether performance-hiding activities induced by government interventions damage information environment is an empirical question. As Verrecchia (1983) points out, information provision is feasible when benefits of doing so exceed costs associated with it. If disclosing true performances to the market increases the likelihood of being predated or intervened, firms will reduce information provision. However, the reduced public disclosures may or may not impair firms' information environments. On the one hand, if public disclosure is the most important means to communicate with investors, reduced public disclosures undermine firms' information environments and reduce idiosyncratic volatility. The rationale resembles that of the Jin and Myer's (2006), who argue that when managers consume private benefits from the company, they keep the company opaque, which they proof to hurt the information environments of listed companies. On the other hand, there might be alternative means for listed companies to communicate with investors. For example, as a country with no legal enforcement of the insider trading law, insiders could reveal the private information about the firm to the outsiders by intensive trading activities (Bhattacharya et al. (2000)). Other means are available for the purpose of communication such as private communications with CSRC, the banks, institutional investors, or security analysts.

H3a. Idiosyncratic stock return volatility is decreasing with a firm's performance hiding activities.

8.3.2. The "information link"

One element of a firm's information environment is the market's willingness to acquire private information of the firm (e.g., Beyer et al. (2009)). To provide more direct evidences on the proposition that excessive government intervention reduce firms' information provision to the market participants, I test the "information link" hypothesis. Particularly, I examine if performance hiding activities leads to reduced information provision and hence render a firm's stock unattractive to information intermediaries such as the security analysts.

The creditability of a firm's reported information and the firm's corporate governance system will affect market's willingness to acquire private information of the firm (Ferreira and Laux (2007)). If a firm uses information of lower quality to cover up performance hiding activities, it reduces market participants' incentives to acquire and trade on the company's private information. Therefore, if the observed relation between performance hiding activities and information environments is not spurious and is connected with information flows, we shall observe the impact of firms' performance hiding activities on their information environment is consistent with the impact of firms' performance hiding activities on analyst following.

H3b. Other things equal, firms that are hiding their performance will have lower analyst *coverage.*

H3c. Other things equal, analyst coverage could mitigate the negative effect of firms' hiding activities on their information environments.

CHAPTER 9.
MEASUREMENT OF VARIABLES AND MODEL SPECIFICATION

9.1. Idiosyncratic return volatility

Prior studies indicate that idiosyncratic return volatility proxies for the quality of information environment of a firm (e.g., Durnev et al. (2003); Dasgupta et al. (2008); Morck et al. (2000);Jin and Myers (2006)). Part I of this thesis provides evidence consistent with this conclusion when data from China's capital market is analyzed. The idiosyncratic volatility, or asynchronicity (*ASYNCH*) is estimated by utilizing the R^2 statistics from the following regression:

$R_{i,t} = \alpha_i + \beta_1 R_{m,t} + \beta_2 R_{ind,t} + \varepsilon_i$, and

$$ASYNCH = Log[(1 - R^2)/R^2] \;.$$

9.2. Performance hiding activities

9.2.1. Firms' hiding incentives

It is very difficult to capture the firm-level revenue hiding incentives since whatever the firms are hiding will be unobservable to researchers. Therefore, prior studies use some clever designs to capture firms' hiding activities. The most interesting measures are the "missing imports" measure and the "electricity-GDP elasticity" measure. Fisman and Wei (2004) define an "evasion gap" that is estimated by the difference between the statistics of Hong Kong's reported exports to China and that of China's reported imports from Hong Kong, both at the product level. Fisman and Wei's (2004) evidence shows that there exists "missing imports" from the China's import statistics, which reveals the hiding activities undergoing on the

Chinese side[16]. Friedman et al. (2000) assuming that short-term electricity-GDP elasticity should be unity, argue that any difference between the predicted GDP and the measured GDP conveys information about the "unofficial" economy of that country. Cai and Liu (2008), using a proprietary dataset that provides firm-level production data in China, estimate the *imputed profits* by deducting intermediate inputs from gross outputs. Nonetheless, Cai and Liu's (2008) methodology is not perfect because their data is (a) not publicly available and (b) is only limited to the manufacturing industry.

In this study, I use the Total Factor Productivity (TFP) estimated from firms' production functions to proxy for the true performances of firms, and "invent" a variable *HIDE* to capture the gap between a firm's "true performances" and its accounting performances. Operationally, I first rank firms in an industry by their TFP and ROA, respectively, and calculate the difference between these two rankings. The difference is then scaled by the number of firms in the industry in question to control for the size of the industry. It is a reasonable concern that the TFP *per se* may not be the "true performance" of the firm since the left-hand-side variable of the production function (either sales or value added) is obtained from the financial statement reported by firms. However, for the purpose of this study, we only need to assume that the TFP and the true performances are positively correlated, which is likely to hold since (a) production function is likely to reflect a firm's economic fundamentals, (b) TFP is estimated within industry where firms employ similar technology, and the ranking of TFP is used to minimize the measurement error, and (c) the capital employed (i.e., the PPE in use) and the labor used (i.e., the number of employers hired) are less subject to manipulations.

[16] This conclusion implies that the Hong Kong export number is more creditable than the China's import number, which is a reasonable assumption given the anecdotal evidences in practice.

$$HIDE_i = \frac{RANK^{TFP}{}_{i,k} - RANK^{ROA}{}_{i,k}}{\text{number of firms in industry k}},$$

where i and k are the firm and industry subscript, respectively.

TFP is estimated as the residual from the following industry-level regression (which is the production function):

$$\ln(Y) = \alpha + \beta_1 \ln(K) + \beta_2 \ln(L) + \varepsilon,$$

where Y is the output (value-added or sales[17]), K is the capital in use and L is the labor employed. When operationalized, I use total salary paid to employees as L, and total PPE as K, which are easily accessed from financial statements. To ensure the robustness of the results, I also use the logarithm of the number of employees and the results are similar.

This measure adds value to this study in the following ways. First, this study is to investigate how excessive government interventions affect firms' behavior to conceal true performances and thus impair the information environment. This research question suggests that we study not only firms' accrual management which is conventional in the accounting research, but also firms' real transaction management activities. Empirically, *HIDE* captures any discrepancies between operation efficiency and accounting efficiency caused by firms' efforts to deviate their accounting performances from the economic fundamentals. These efforts include accrual earnings management (e.g., Aharony et al. (2000)), related party transactions (e.g., Jian and Wong (2008)) and other tunneling activities such as inter-corporate loans (Jiang et al. (2008)). Second, it is not the purpose of this study to distinguish various

[17] Value added is the value creation during production. VAD = profit before tax + distribution to employees + depreciation + interest payment. Using either value added or sales as dependent variable generates similar results.

tactics that companies employ to hide themselves from the public. By comparing the TFP and the ROA, *HIDE* provides a comprehensive presentation of the outcomes of firms' hiding activities. Third, *HIDE* adds value to the earnings management literature: it is applicable to countries where the prevailing means for firms to achieve the earnings targets is more than accrual management, for example, firms in the East Asian countries (Bertrand et al. (2002); Fan and Wong (2002)).

9.2.2. Firms' hiding incentives with directions: hiding good performance and hiding bad performance

Performance hiding can take place in both directions. That is, if operational efficiency of a firm is higher than its accounting efficiency, i.e., *HIDE* > 0, I assume the firm hides good performances. On the contrary, if operational efficiency of a firm is lower than its accounting efficiency, I assume the firm hides bad performances. In particular, I construct *HIDEGN (HIDEBN)* to measure firms' incentives to hide their good performances (bad performances).

$$\begin{cases} HIDEGN = ABS\ (HIDE),\ if\ HIDE > 0 \\ HIDEBN = ABS\ (HIDE),\ if\ HIDE < 0 \end{cases}$$

and ABS(•) is the absolute-value operator.

9.3. Property rights protection institutions: government interventions to the market

In this study, I use three sets of proxies to capture the degree of government intervention in each of the 31 regions in China. These proxies include (a) the marketization index constructed by Fan and Wang (2006), (b) the fiscal pressures that a region's local government is facing and (c) the reinvestment activities by private firms in a region.

The forces of the "visible hands" and the "invisible hands" are substitutes so that the extent to which government interferes with the economy is limited by the development of the market economy (e.g., Cull and Xu (2005)). Fan and Wang (2006) keep track of the historical market developments in all 31 regions in China and construct the "marketization index" to reflect the degree of political dominance of the regional economy. They find that regions where market-oriented reform is less successful have less effective social systems, including the less effective legal system, insecure property rights protections, lower level of product market maturity, and less professionalism of lawyers and accountants. Thus, I the marketization index (*MKT*) constructed by Fan and Wang (2006) to proxy for the degree of government interventions in the 31 regions[18].

The second set of proxies originates from the fact that government increases interference with the economy when there's strong fiscal pressures on the government (Piotroski et al. (2008)). Therefore, I use a region's GDP growth in previous year (*LESSPRESS1*) and the average GDP statistics of the previous 3 years (*LESSPRESS2*) as proxies for government's expectation of future GDP. One interesting observation emerged from the data is that, during the years of 1995-2008, there exists *no* negative GDP growth in any 31 regions in China. This suggests that local government officials are facing great pressures to maintain the economic growth in the region.

[18] *MKT* is the comprehensive index that assess a region's degree of market developments including (a) relationship between government and market, in terms of the role of government in the economy; (b) development of non-state business, in terms of the output of private sector to total output of the region; (c) development of product markets, in terms of the degree of regional trade barriers; (d) development of the factor markets and (e) development of market intermediaries as well as legal environment. One limitation of this index is the availability of data starts from fiscal year of 2001 and ends in year 2006. To overcome the data availability problem, I use the market indices for each region in year 2001 to replace the missing indices in years before 2001, and the indices of year 2006 to replace the missing indices in years after 2006.

The third set of measures capture the degree of property rights protection in a region. First, Cull and Xu (2005) suggest that in regions of good property rights protection, privately controlled firms are more likely to reinvest their profits to production. Following this argument, I use the proportion of fixed asset investment made by the private sector over the total investment made in a region to proxy for property rights protection (*PRPROTECT1*). Second, Claessens and Laeven (2003) conclude that in regions of weak property rights protection, firms invest more in tangible assets and less in intangible assets. Therefore, I use the proportion of firms' PPE over total assets in a region to proxy for the degree of a region's property rights protection (*PRPROTECT2*).

9.4. Model specifications

9.4.1. The impact of a region's property rights institution on firms' hiding behaviors

To investigate whether firms facing various political pressures engage in hiding activities, I estimate the following model as a baseline model:

$$HIDEDIR_i = \alpha_0 + \sum_{j=1}^{12} IND_j + \sum_{k=1}^{11} YEAR_k + \beta_1 INST + \beta_2 ROA + \beta_3 VROA + \beta_4 MB + \beta_5 LEV + \beta_6 SIZE + \beta_7 LOGAGE + \varepsilon \quad \ldots\ldots\ldots\ldots\ldots\ldots(1)$$

Although *H1* is concerning the impact of a region's property rights institutions on firms' hiding activities (without directions), I estimate equation (1) by using the *HIDEGN or HIDEBN* as dependent variables in order to generate consistent results throughout the analyses. *INST* is alternatively: (a) *MKT*, (b) *LESSPRESS1* (c) *LESSPRESS2*, (d) *PRPROTECT1*, and (e) *PRPROTECT2*. All variables are defined in Appendix II.

9.4.2. Ultimate owners, property rights protection and hiding behaviors

To investigate how government interventions impose different pressures on firms with distinct types of ultimate owners, I estimate the following equation.

$$HIDEDIR_i = \alpha_0 + \sum_{j=1}^{12} IND_j + \sum_{k=1}^{11} YEAR_k + \beta_1 INST + \beta_2 INST * OWN + \beta_3 ROA + \beta_4 VROA + \beta_5 MB$$
$$+\beta_6 LEV + \beta_7 SIZE + \beta_8 LOGAGE + \varepsilon$$

....(2)

In these estimations, *OWN* is the nature of the ultimate owners of the listed firms. *OWN* is alternatively *CSOE, LSOE* and *PRIVATE.* We focus on the coefficients on the interaction terms of *INST*OWN*. The interaction effects reveal the various pressures imposed by the government on the firms of different natures. For example, if the coefficient on *MKT*PRIVATE* is negative, it suggests that in a region where institutional environments are better (i.e. less government intervention), non-state firms will engage in fewer performance hiding activities. All other variables are defined in Table Appendix II.

9.4.3. Firms' information environment and hiding activities.

To demonstrate that performance hiding activities damage firms' information environments by reducing idiosyncratic return volatility, I estimate the following regression.

$$ASYNCH_i = \alpha_0 + \sum_{j=1}^{12} IND_j + \sum_{k=1}^{11} YEAR_k + \beta_1 HIDEDIR_i + \beta_2 INST + \beta_3 OWN + \beta_4 ROA + \beta_5 VROA + \beta_6 MB$$
$$+\beta_7 LEV + \beta_8 SIZE + \beta_9 LOGAGE + \varepsilon$$

....(3)

In these estimations, dependent variable is *ASYNCH* that captures the idiosyncratic stock return volatility of the firm in a particular year. *ASYNCH* is the proxy for the information environments of listed companies. Other variables are as defined before, and definitions of all variables are presented in Table 1.

9.4.4. The "information link" hypothesis.

The information link test is to confirm the observed relation impact of performance-hiding activities on firms' information environments is not spurious, and is inherently connected by information flows. First, I estimate the effect of firms' performance hiding activities on market's willingness to acquire private information of these firms. I thus estimate the following regression:

$$ANALYST_i = \alpha_0 + \sum_{j=1}^{12} IND_j + \sum_{k=1}^{11} YEAR_k + \beta_1 HIDEDIR_i + \beta_2 INST + \beta_3 OWN + \beta_4 ROA + \beta_5 VROA + \beta_6 MB$$
$$+\beta_7 LEV + \beta_8 SIZE + \beta_9 LOGAGE + \varepsilon$$

....(4.1)

As a second step, I examine whether the existence of information acquirers could mitigate the negative effects of firms' hiding activities on their information environments. I estimate the following regression:

$$ASYNCH = \alpha_0 + \sum_{j=1}^{12} IND_j + \sum_{k=1}^{11} YEAR_k + \beta_1 HIDEDIR + \beta_2 HIDEDIR * ANALYST$$
$$+\beta_3 ROA + \beta_4 VROA + \beta_5 MB + \beta_6 LEV + \beta_7 SIZE + \beta_8 LOGAGE + \varepsilon$$

... .(4.2)

In this estimation, I focus on the interaction effect between *HIDEDIR* and *ANALYST*. That is, if performance hiding activities deter firm-specific information incorporated into stock prices, it may be because these hiding activities reduce market's willingness to acquire firm-specific information. In the presence of market media to acquire and disseminate firm-specific information, the idiosyncratic return volatility of the firms will be increased.

CHAPTER 10
SAMPLE AND DESCRIPTIVE STATISTICS

10.1. Data

My sample starts from 13,643 firm-year observations over the period 1998-2008. These are firms traded on the A share market in China's Shenzhen Stock Exchange and Shanghai Stock Exchange. I obtain firms' financial statement and trading data from CSMAR database, and corporate governance variables from the WIND database. Both CSMAR and WIND are large and credible database providers in China. My data selection process is the following. (1) I exclude delisted firms from the analysis because some of the corporate governance variables cannot be obtained from the WIND database. (2) I exclude firms without enough financial data for analysis. I require all firm-year observations have non-missing data to calculate the ASYNCH, *HIDE* and important firm characteristics including *ROA*, market-to-book ratio (*MB*), leverage (*LEV*), size (*SIZE)*, and firm's age (*AGE*). (3) I delete firms in the financial sector, such as banks and insurance companies. (4) When calculate the *ASYNCH*, I trim the top/bottom 1% of this variable to get rid of extreme values[19]. This leaves 10,721 firm-year observations as the final sample. Among these firm-year observations, 4,149 are classified as *HIDEBN* and 4,843 as *HIDEGN*. 1,729 firm-years fall into neither of these classifications. In robustness tests I change the criteria to classify firms as *HIDEGN* or *HIDEBN* and find similar results.

[19] Deleting sample based on the percentage of the population is a conventional technique in accounting research. Therefore, in the main tests I deleted only top/bottom 1% of the sample. However, in the first essay of this thesis, I documented a much weaker relation between *ASYNCH* and firm-specific information when firms' *ASYNCH* is in the top decile of the population. Therefore, in section 12.5 I discussed the robustness test in which I deleted the top 10% of the sample based on the finding of the first essay.

10.2. Descriptive Statistics

Table 8 reports the descriptive statistics of the variables used in the analyses of this paper. Panel A tabulates the time-series distribution of the *ASYNCH* of the sample firms from 1998-2008. It suggests that firms' *ASYNCH* varies across years and the market conditions may be one determinant of the *ASYNCH*. Therefore, I control for yearly fixed effects in all of my regressions in order to decrease the impact of the structural change of market conditions over 1998-2008.

Panel B reports the descriptive statistics of variables on regional-level institutional settings, firm-level hiding activities, ownership structure, political connectedness, analyst coverage and financial characteristics. The number of observations with non-missing variables of our baseline regression is 10,721, but this number varies in some of the variables. For example, the analyst coverage data is available only in year 2001-2008, which reduced our sample to 3,812. In terms of firms' ultimate owners, about 17% of firms are owned by central government, 54% by local government and 24% by private entities, and the rest 5% by other form such as collective entities or diversified owners.

Table 9 presents a detailed univariate description of the main variable of our interest, the *HIDE*, which is new and has not been used in prior studies. I sort the full sample by the *HIDE* and form 5 portfolios based on the magnitude of this variable, and examine how *HIDE* is related to other variables. Several observations emerge from table 9. First, firms that hide good performances are larger in size, and the mean and median statistics of size across portfolios show that there are extremely large firms in the 5th quintile, where firms hide good performances. These results are consistent with the evidences provided by the prior studies that large firms face higher political costs. Second, firms in the regulated industries are more likely to hide bad performances. About 8 per cent of the firms in the 1st quintile are in regulated industries, while only 5 per cent of the firms in the 5th quintile are in regulated industry and the difference is statistically significant. Third, as predicted, firms that are connected to the government officials tend to hide bad performances, as shown in column (5), the CEO connectedness across portfolios. Finally, column (7) shows that market may valuate firms higher when they have consistent operational efficiency and accounting efficiency; firms in the third quintile have the highest Tobin's Q among the 5 portfolios.

Table 10 reports the Pearson and Spearman correlations between our research variables, with the Pearson correlations above the diagonal and the Spearman correlations under the diagonal. A number of relations are worthy of our attentions. First, *ASYNCH* is positively correlated with *CSOE* and *PRIVATE* but negatively correlated with *LSOE*, indicating that types of ultimate owners matters in regard of firms' information environments. Particularly, local government-owned companies have the worse information environments if compared to the other two types. Second, performance hiding activities are significantly correlated with many of the firm characteristics and the property rights protections variables, indicating the need to explicitly control for the firm-specific characteristics in the multivariate regressions.

CHAPTER 11
EMPIRICAL RESULTS FROM MULTIVARIATE REGRESSIONS

This section presents the primary analysis and the results of this paper. Section 11.1 presents regression results on the impact of property rights protection institutions on firms' performance hiding activities. Section 11.2 presents results from the estimations that extend previous analysis in section 11.1, to include the interaction effects of firms' ultimate ownership and the institutional variables as to identify the distinct pressures that government exerts on firms of different natures. Section 11.3 discusses the implication of firms' performance hiding activities to information environments, measured in idiosyncratic return volatilities. This section also presents and discusses the results from the "information link" tests.

11.1. Property rights protection and hiding behaviors

The first set of regressions examines the impact of a region's property rights protection on firms' performance hiding activities. The development of hypotheses are presented in section 8.2.2.

H1a. Firms operating in regions with higher level of government intervention display stronger incentives to conceal their good performances.

H1b. Firms operating in regions with higher level of government intervention display stronger incentives to conceal their bad performances.

The regression model is the following:

$$HIDEDIR_t = \alpha_0 + \sum_{j=1}^{12} IND_j + \sum_{k=1}^{11} YEAR_k + \beta_1 INST + \beta_2 ROA + \beta_3 VROA + \beta_4 MB$$
$$+ \beta_5 LEV + \beta_6 SIZE + \beta_7 LOGAGE + \varepsilon$$

Table 11a presents results of the multivariate regression on the relation between government interventions and firms' incentives to hide good performances. Several results are discussed here. First, the institutional variables (i.e., *MKT, LESSPRESS1, LESSPRESS2, PRPROTECT1* and *PRPROTECT2*) are predicted to be negatively correlated with *HIDE*, while Table 11a shows these variables are positively and significantly associated with *HIDEGN*. At the first glance, better property rights protection institutions do not reduce firms' incentives to hide good performances, which is not supporting my hypothesis *H1a*. One possible explanation is that it is related to the clustering of firms across regions. For example, in panel C of table 9 in this thesis, we observe that about 50 per cent of firms are clustered in regions with more developed economies, and about 60 per cent of firms are SOEs. If SOEs are more likely to smooth earnings (e.g., Ball et al. (2000)) then we will observe that performance hiding activities are more prevail in regions with higher degree of marketization. Untabulated results show that firms hiding good news do have smoother streams of earnings. Second, table 11a shows that, overall, non-state firms are more likely to hide their good performances compared to the SOEs. Third, firms with political connections are less likely to hide their good performances, which is consistent with our prediction that politically connected firms are of lower anxiety over being predated.

Table 11b reports regression results from the specifications using *HIDEBN* as the dependent variable, that is, how government interventions affect firms' incentives to hide bad performances. It shows that firms operating in regions with higher level of marketization reforms (i.e., *MKT*), less GDP pressures (*LESSPRESS1*), and more property rights protections (*PRPROTECT1* and *PRPROTECT2*) tend to hide less of their bad performances, which is consistent with hypothesis *H1b*.

11.2. The impact of government interventions on firms of distinct types of ultimate owners

In this section I discuss the regression results for the impact of institutions on firms' hiding behaviors, with interaction terms of the institutional variables and firms' ultimate ownership. The underlying assumption is that government interventions exert different pressures on firms with different objective functions, and thus induce asymmetric hiding behaviors across firms. Hypotheses developments are presented in section 8.2.3.

H2a. Excessive government intervention increase SOE's incentives to hide bad performance.

H2b. Higher degree of government intervention increases privately owned firms' (PRIVATE) anxiety of being expropriated, which increases the incentives for firms to hide good performances.

H2c. Politically connected firms are less concerned about governments' "grabbing hands" and thus reduce their incentives to hide good-performances. But they will be more likely to hide their bad performance to help local governments to preserve their images.

$$HIDEDIR_i = \alpha_0 + \sum_{j=1}^{12} IND_j + \sum_{k=1}^{11} YEAR_k + \beta_1 INST + \beta_2 INST * OWN + \beta_3 ROA + \beta_4 VROA + \beta_5 MB$$
$$+\beta_6 LEV + \beta_7 SIZE + \beta_8 LOGAGE + \varepsilon$$

11.2.1. Central state owned enterprises

Table 12a reports the regression results highlighting the interaction effects of the institutional variables and *CSOE*. In most of the specifications, the interaction terms between the institutional variables and *CSOE* are not statistically significant, suggesting that local government exerts few pressures on central SOEs and does not induce central government controlled SOEs to hide their true performances.

11.2.2. Local government owned enterprises

Table 12b reports the regression results highlighting the interaction effects of the institutional variables and *LSOE*. The results indicate that, generally, *LSOEs* are less likely to hide good performances and more likely to hide bad performances.

In the regressions where *HIDEGN* is the dependent variable, in 3 out of 5 specifications, the coefficients on the interaction term between LSOE and the institutional variables are positive and significant. These results indicate that what we observed in table 11a (that regions with better property rights protections have higher *HIDEGN*) could be driven by the LSOEs, that are not much concerned about government's grabbing hand but more concerned about helping the governments to preserve their image.

In the regression where *HIDEBN* is the dependent variable, the coefficients on the interaction term of *LSOE* and the institutional variables are negative and significant. The results are consistent with hypothesis *H2a* that argues better property rights protection decrease firms' hiding of their bad performances.

11.2.3. Firms owned by private entities

Table 12c reports the regression results highlighting the interaction effects of the institutional variables and *PRIVATE*. Results indicate that, generally speaking, privately controlled firms are more likely to hide good performances and less likely to hide bad performances. This is consistent with our hypothesis *H2b* that privately controlled firms are more concerned about government's grabbing hands and thus conceal their good performances.

In the regression where *HIDEGN* is the dependent variable, the coefficients of the interaction terms between our institutional variables and firms' ownership are negative and statistically significant. These results are consistent with the hypothesis *H2b* that non-state firms in regions with better property rights protection will hide less of their good performances. Similarly, in the regression where *HIDEBN* is the dependent variable, the coefficients on the interaction terms are all negative and significant. Although hypothesis *H2b* do not predict the direction of non-state firms' hiding activities about bad performances, these results indicate that in regions with better protection, non-state firms will also hide less of bad performances.

11.2.4. Politically connected firms

Hypothesis *H2c* predicts that firms with political ties are less concerned about government's grabbing hands so that they will be less likely to hide their good performances. Alternatively, firms with political ties may collude with and are influenced by the government officials hence "help" the local governments to achieve their political goals.

In table 12a-12c, it is evident that politically connected firms are less likely to hide their good performances but more likely to hide their bad performances. These results are very robust across various specifications. Therefore, hypothesis *H2c* is strongly supported.

11.3. Hiding activities and firms' information environments

This section discusses how the performance hiding activities affect firms' information environments. The hypotheses developments are presented in section 8.3.

H3a. Idiosyncratic stock return volatility is decreasing with a firm's performance hiding activities.

$$ASYNCH_i = \alpha_0 + \sum_{j=1}^{12} IND_j + \sum_{k=1}^{11} YEAR_k + \beta_1 INST + \beta_2 OWN + \beta_3 ROA + \beta_4 VROA + \beta_5 MB$$
$$+ \beta_6 LEV + \beta_7 SIZE + \beta_8 LOGAGE + \varepsilon$$

11.3.1. Hiding activities and firms' information environments

Table 13 reports the regression results. It seems that different performance hiding activities have asymmetric impact on firms' information environments. Hiding of good performances is less likely to reduce firms' idiosyncratic stock return volatilities but hiding of bad performances worsens firms' information environments. That is, the coefficients on *HIDEGN* are not statistically significant in 4 over 5 specifications while coefficients on *HIDEGN* are negative and statistically significant in all 5 specifications.

Several results also emerge in Table 13. First, firms located in regions with better property rights protections have better information environments. That is, coefficients on the institutional variables (*MKT, LESSPRESS1, LESSPRESS2, PRPROTECT1* and *PRPROTECT2*) are positive and significant across most of our specifications. Second, firms owned by private entities have better information environments than the other two types of firms. The coefficients on the *PRIVATE* variable are positive and statistically significant in 9 over 10 specifications, while the coefficients of the *CSOE* variable are insignificant.

11.3.2. An "information link" hypothesis

To further strengthen my argument that the observed relation between firms' hiding behaviors and their information environments are connected by firm-specific information, I test the "information link" hypothesis. I first test whether firms' hiding activities change market participants' (analysts') incentives to acquire and disseminate private information about the firms. Then I examine that, other things being equal, whether increase in analyst following changes firms' information environments.

$$ANALYST_i = \alpha_0 + \sum_{j=1}^{12} IND_j + \sum_{k=1}^{11} YEAR_k + \beta_1 INST + \beta_2 OWN + \beta_3 ROA + \beta_4 VROA + \beta_5 MB + \beta_6 LEV + \beta_7 SIZE + \beta_8 LOGAGE + \varepsilon$$

$$ASYNCH = \alpha_0 + \sum_{j=1}^{12} IND_j + \sum_{k=1}^{11} YEAR_k + \beta_1 HIDEDIR + \beta_2 HIDEDIR * ANALYST + \beta_3 ROA + \beta_4 VROA + \beta_5 MB + \beta_6 LEV + \beta_7 SIZE + \beta_8 LOGAGE + \varepsilon$$

Table 14a shows the results of how firms' hiding activities could impact analysts followings of these firms. It shows that firms that hide their good performances do not have increased or decreased analyst coverage; the coefficients are statistically insignificant. However, firms that hide their bad performances are less likely to be covered by security analysts. These results are conceptually consistent with Jin and Myers (2006).

Table 14a also presents some firm characteristics in China that are associated with more analysts following. It can be seen that firms in regions with better property rights protections are followed by more analysts. In the *HIDEGN* specification, central government owned SOEs are covered by more analysts. In addition, firms with higher ROA and lower volatility of ROA, large firms, and firms with better growth prospects (*MB*) are followed by more analysts.

Table 14b reports that, other things being equal, market participants' incentives to acquire private information about the firms could change firms' information environments. After controlling analyst following, both hiding of good performances and hiding of bad performances are harmful to firms' information environments. However, increase in security analyst following will mitigate the negative effects of performance hiding on firms' information environments. That is, the coefficients on the *HIDEGN*ANALYST* (*HIDEBN*ANALYST*) are positive and statistically significant. These results support the "information link" hypothesis.

CHAPTER 12
ROBUSTNESS CHECKS

12.1. Robustness check on HIDE.

To relieve the concern that one definition of *HIDE* drives the result, I use several alternative *HIDE* definitions.

(1) I define *HIDE* as a dummy variable, where *HIDE* = 1 if a firm's TFP > industry median TFP while its ROA < industry median ROA. As such, *HIDEGN* is when HIDE = 1 and *HIDEBN* is when HIDE = 0;

(2) I define *HIDEGN* and *HIDEBN* using different cut-offs. For example, I define a firm as *HIDEGN* when its TFP ranks the top 25% in the industry while its ROA ranks the bottom 25% of the industry, and define *HIDEBN* as a firm's TFP ranks bottom 25% of the industry while its ROA ranks the top 25% of the industry. Using this definition weakened some of my results, but the pattern is still consistent.

The untabulated results show that the main results are not changed when we use these alternative definitions of *HIDE*.

12.2. Does HIDEGN capture accounting conservatism?

In table 11a, we observe firms operating in more developed regions have higher tendencies to hide good performances. One possibility is that my *HIDEGN* variable is indeed measuring firm strategies other than profit hiding but accounting conservatism. That is, firms of higher degree of conservatism reduce the accounting earnings by recognizing bad news more timely so that high TFP does not necessarily result in high ROA.

To address this concern, I estimate the Basu (1997) model in the subsample where HIDEGN >0 (eq. 5.1), and where HIDEBN >0 (eq. 5.2), respectively.

$$X_{it} / P_{i,t-1} = \alpha_0 + \alpha_1 DR_{it} + \beta_0 R_{it} + \beta_1^{GN} R_{it} * DR_{it} + \varepsilon_i \quad (5.1)$$

$$X_{it} / P_{i,t-1} = \alpha_0 + \alpha_1 DR_{it} + \beta_0 R_{it} + \beta_1^{BN} R_{it} * DR_{it} + \varepsilon_i \quad (5.2)$$

If *HIDEGN* captures firms' tendencies to recognize bad news more timely, we shall observe $\beta_1^{GN} > \beta_1^{BN}$.

Alternatively, I estimate an adapted Basu model to include an interaction term of a dummy variable, *HD*, to indicate the occurrence of hiding good performances.

$$\begin{aligned} X_{it} / P_{i,t-1} = {} & \alpha_0 + \alpha_1 DR_{it} + \alpha_2 HD_{it} + \alpha_3 DR_{it} * HD_{it} + \beta_0 R_{it} + \beta_1 R_{it} * DR_{it} \\ & + \beta_2 R_{it} * HD_{it} + \beta_3 R_{it} * DR_{it} * HD_{it} + \varepsilon_{it} \end{aligned} \quad (6)$$

If *HIDEGN* captures firms' tendencies to recognize bad news more timely, we shall observe β_3 to be positive and significant.

Table 15 presents the results from estimating both equations. Panel A of table 15 reports the results from estimating equation (5.1) and (5.2). It shows that β_1^{BN} is positive and significant while β_1^{GN} is positive but not significant. Panel B of table 15 reports the regression results from estimating equation (6). The coefficient on the interaction term of R_{it} * HD_{it} is negative and significant, indicating weakened relationship between return and earnings when firms engage in performance hiding activities. The coefficient on the interaction term of R_{it} * HD_{it} * DR_{it}, however, is not statistically significant, indicating that firms engage in activities that conceal the good performances do not have higher degree of conservatism. These results reject the hypothesis that the *HIDEGN* variable captures the higher degree of conservatism in these firms.

12.3. Does HIDEBN capture government subsidies to SOEs?

One concern of the *HIDEBN* variable is that this measure may capture the government subsidies granted to SOEs. If this is the case, one can argue that *HIDE* does not capture the fact that firms conceal part of their performances but rather captures a special operation dynamics[20].

To address this concern, I obtain the government subsidy data from listed firms' annual reports and investigate the correlation between *HIDEBN* and subsidy. I then re-estimate the regressions by using the re-defined ROA, with revenues from government subsidies excluded.

Table 16a reports the correlation between government subsidies and the *HIDE* measures. It shows that *HIDEBN* is not significantly correlated with *SUBSIDY*.

Table 16b reports the regression results when replicating table 12a-c by using the newly defined *ROA* measure to calculate the *HIDE* measures. That is, I exclude the subsidy revenue from the net income when calculating ROA, and then use this variable to calculate firms' HIDEGN and HIDEBN measures. Table 16b shows that, although the results are weaker than those in table 12a-c, they are not significantly different.

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[20] *HIDE* is calculated as the difference of a firm's ranking of TFP and its ranking of ROA in the industry it belongs to. If government grants subsidy to some firms but not the others, these firms' ROA might be higher even if their TFP is lower. This would cause a firm appear in the "*HIDEBN*" group while they are not trying to hide anything.

12.4. The "information link"

I test the "information link" by using firms' stock turnover (*TURN*) in place of *ANALYST*. The underlying assumption is that investors' trading activities is an alternative means to reveal their private information acquisition activities. I find similar results that firms' hiding behaviors reduce stock turnover, which indicates that investors' trading activities help firms to improve information environments.

12.5. Cut ASYNCH at the Top Decile

To be consistent with the findings in Essay I, where I find that *ASYNCH* in its top decile does not capture information but noise, I cut the *ASYNCH* measure at the top decile to see whether the results still hold.

Table 17 presents the regression results. These results reinforce the results in table 13 where we find that firms that hide bad performance have inferior information environments.

CHAPTER 13
CONCLUSION

Morck et al. (2000) document that the extent to which firm-specific information is incorporated into stock price (measured by market model R^2) is positively correlated to the country's GDP, and suggests an "institutional development" explanation that attributes poor information environments in developing countries to lack of property rights protection in these countries. This study investigates how extensive government interventions in China generate incentives for firms to "hide under the table". Using China as a case, I find that, first, a powerful local government in a region increases firms' incentives to hide their true performance, after controlling for firm characteristics. A further analysis shows that the directions of firms' hiding activities vary across firms and are contingent on the nature of firms' ultimate owners, because of different political pressures exerted. In particular, I find that non-state firms are more likely to suppress good news to avoid governments' "grabbing hands", while SOEs are more likely to hide their bad news to save local governments' images from being damaged. Second, firms' hiding activities do harm to firms' information environment, resulting in lower idiosyncratic stock return volatilities. To strengthen this argument, I test the "information link" between firms' hiding activities and their information environments and find that an improvement of information intermediaries (*ANALYST*) alleviates the negative effects of firms' hiding activities. Overall, the results in this study highlight the importance of a country's property rights institutions on firms' information environments.

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APPENDIX II. VARIABLE DEFINITIONS

NAME	Definition
Panel A. Idiosyncratic return volatility	
ASYNCH	logistic transformation of $(1-R^2)$, where R^2 is the adjusted R^2 from the market model
Panel B. Hiding measures	
HIDE	the difference between the ranking of a firm's TFP(total factor productivity) and ROA, divided by total number of firms in the industry.
HIDEGN	Hiding of good news. = ABS (HIDE), if HIDE > 0
HIDEBN	Hiding of bad news. = ABS (HIDE), if HIDE < 0.
Panel C. Institution variables	
MKT	Natural logarithm of the market development index constructed by Fan and Wang (2006).
LESSPRESS1	GDP pressures faced by local government officials. The higher the LESSPRESS, the lower pressures on local government officials. LESSPRESS1 = previous year's GDP of the region.
LESSPRESS2	LESSPRESS2 = previous 3 years' average GDP of the region.
PRPROTECT1	Property rights protection of the region. PRPROTECT1 = the proportion of new investments in the region that is made by the private sector.
PRPROTECT2	Property rights protection of the region. PRPROTECT2 = the average ratio of PPE over total assets of all listed firms in the region, multiplied by -1.
Panel D. Firm characteristics	
CONNECT	Political connectedness, proxied by long-term debt ratio of a firm (Fan et al, 2006).
CSOE	Central-government-controlled SOEs
LSOE	Local-government-controlled SOEs.
PRIVATE	Firms controlled by private entities including education institutions, collective communities, and foreign entities
ROA	Return on Assets
VROA	Volatility of a firm's ROA
SIZE	= log (total assets)
MB	market to book
AGE	age of the firm, = fiscal year - establish year of the firm

Table 8. Descriptive statistics of idiosyncratic return volatility and firms financial characteristics

Panel A. *ASYNCH*

Fiscal year	N	mean	p50	sd	max	min
1998	531	0.54	0.42	0.75	4.08	-1.19
1999	688	0.5	0.42	0.77	z3.98	-1.12
2000	777	1.02	0.89	0.95	4.26	-0.96
2001	917	0.04	-0.14	0.94	4.35	-1.64
2002	928	-0.46	-0.63	0.92	4.28	-1.72
2003	1,055	0.46	0.24	1.12	4.17	-1.69
2004	1,141	0.36	0.22	0.87	4.31	-1.56
2005	1,091	0.23	0.14	0.86	4.03	-1.67
2006	1,167	0.89	0.76	0.83	4.27	-1.06
2007	1,238	0.23	0.12	0.82	4.11	-1.47
2008	1,188	-0.44	-0.55	0.72	4.33	-1.72
Total	10,721	0.28	0.17	0.98	4.35	-1.72

Panel B. institutions, ownership, and financial characteristics

Regional level institution variables						
MKT	10,721	1.91	1.93	0.34	2.34	-1.11
LESSPRESS1	10,708	11.71	11.6	2.25	23.8	5.1
LESSPRESS2	10,664	11.4	11.13	1.97	20.63	5.27
PRPROTECT1	9,580	0.24	0.25	0.11	0.53	0
PRPROTECT2	10,721	-0.44	-0.44	0.17	-0.05	-0.82
Firms' hiding incentives						
HIDE	10,721	0.00	-0.01	0.24	0.88	-0.55
HIDEGN	4,149	0.21	0.15	0.19	0.99	0.00
HIDEBN	4,843	0.17	0.14	0.14	0.86	0.00
Ownership structures, connectedness and analyst coverage						
CSOE	10,721	0.17	0	0.38	1	0
LSOE	10,721	0.54	1	0.5	1	0
PRIVATE	10,721	0.24	0	0.43	1	0
CONNECT	10,721	0.06	0	0.14	0.86	-0.38
ANALYST	3,812	4.29	3	4.3	29	1
Firm-level financial characteristics						
ROA	10,721	0.05	0.04	0.05	0.21	-0.07
SIZE	10,721	21.23	21.12	0.97	24.17	19.19
LEV	10,721	0.47	0.47	0.18	0.93	0.08
VROA	10,720	0.00	0.00	0.01	0.06	0.00
LOGAGE	10,721	1.75	1.95	0.69	2.94	0
MB	10,721	1.42	1.11	1.12	6.53	0.10

ASYNCH is trimmed at the top/bottom 1%.
Firm-specific control variables (ROA, SIZE, LEV, AGE and MB) are winsorized at top/bottom 1%.

Table 9. Firms' performance hiding activities: univariate analysis

		(1)		(2)		(3)		(4)	
		HIDE		*SIZE*		*LOGAGE*		*Regulated industry*	
quintile	N Obs	Mean	Median	Mean	Median	Mean	Median	Mean	Median
low	2130	-0.32	-0.29	2.65	1.35	1.73	1.79	0.08	0.00
2	2138	-0.12	-0.12	3.13	1.44	1.72	1.79	0.07	0.00
3	2145	-0.02	-0.02	3.38	1.4	1.72	1.79	0.06	0.00
4	2154	0.09	0.08	3.43	1.6	1.72	1.95	0.06	0.00
high	2154	0.37	0.32	5.57	1.62	1.79	1.95	0.05	0.00
difference:									
1-3		-0.30***	-0.27***	-0.73*	-0.05	0.01	0.00	0.01	0.00
3-5		-0.39***	-0.34***	-0.30***	-0.16***	-0.08***	-0.15***	0.01	0.00
1-5		-0.69***	-0.61***	-2.19***	-0.22***	-0.06***	-0.15***	0.02***	0.00***

	(5)		(6)		(7)		(8)	
	CEO connection		*Board connection*		*Tobin's Q*		*1-yr raw return*	
quintile	Mean	Median	Mean	Median	Mean	Median	Mean	Median
1	0.23	0	0.58	1	1.13	1.01	0.25	0
2	0.21	0	0.56	1	1.12	1.02	0.27	0
3	0.20	0	0.56	1	1.15	1.03	0.24	-0.01
4	0.20	0	0.55	1	1.1	1.02	0.24	-0.02
5	0.18	0	0.56	1	1.13	1.02	0.24	-0.03
difference:								
1-3	0.03**	0.00**	0.01	0	-0.02*	-0.02***	0.00	0.01
3-5	0.016	0.00	0.01	0	0.03**	0.01*	0.01	0.02
1-5	0.04***	0.00***	0.02	0	0.01*	-0.01*	0.01	0.03

Table 10. Correlation matrix (Pearson Correlation / Spearman Correlation)

	HIDEGN	HIDEBN	ASYNCH	MKT	LESSPRESS1	LESSPRESS2	PRPROTECT1	PRPROTECT2	CSOE	LSOE	PFIRM	CONNECT	ANALYST	ROA	VROA	MB	SIZE	LOG_AGE	LEV
HIDEGN	1	.	**0.058**	**0.068**	0.009	**0.034**	**-0.013**	**0.092**	0.017	-0.023	0.013	0.036	**-0.035**	**-0.288**	**0.141**	-0.004	-0.013	**0.075**	**0.165**
HIDEBN	.	1	-0.008	-0.006	**-0.059**	**-0.034**	**-0.037**	0.001	**0.020**	-0.009	-0.018	-0.035	**-0.055**	**0.168**	-0.011	0.017	**-0.054**	**-0.010**	**-0.103**
ASYNCH	**0.033**	-0.008	1	0.017	**-0.087**	**-0.019**	**-0.078**	-0.009	**0.054**	**-0.072**	0.051	**0.057**	**0.214**	**0.054**	**0.103**	**0.032**	**0.013**	**0.012**	**0.025**
MKT	**0.075**	-0.009	**0.019**	1	**0.533**	**0.559**	**0.537**	**0.379**	**0.032**	**-0.143**	**0.112**	**0.045**	**0.152**	**0.013**	**-0.083**	-0.009	**0.179**	**0.235**	**0.014**
LESSPRESS1	0.011	**-0.048**	**-0.083**	**0.579**	1	**0.889**	**0.724**	**0.098**	0.005	**-0.132**	**0.135**	**0.051**	**0.248**	-0.006	**-0.107**	-0.013	**0.179**	**0.281**	**0.024**
LESSPRESS2	**0.039**	**-0.023**	-0.005	**0.603**	**0.888**	1	**0.717**	**0.175**	0.015	**-0.148**	**0.146**	**0.046**	**0.269**	**0.031**	**-0.092**	-0.012	**0.153**	**0.213**	**0.023**
PRPROTECT1	-0.002	**-0.031**	**-0.064**	**0.621**	**0.804**	**0.712**	1	**-0.008**	-0.003	**-0.145**	**0.156**	**0.067**	**0.235**	-0.018	**-0.122**	0.003	**0.219**	**0.305**	**0.034**
PRPROTECT2	**0.098**	-0.008	**-0.007**	**0.374**	**0.076**	**0.181**	**-0.093**	1	**0.031**	**-0.112**	**0.106**	**0.008**	**0.114**	**0.076**	**0.028**	**0.007**	-0.027	**-0.102**	-0.014
CSOE	0.032	0.012	**0.055**	**0.030**	0.001	0.019	**0.032**	0.020	1	**-0.477**	**-0.267**	**0.121**	**0.094**	0.038	**-0.057**	-0.019	**0.125**	-0.004	**-0.008**
LSOE	-0.042	0.002	**-0.076**	**-0.146**	**-0.136**	**-0.153**	**-0.169**	**-0.105**	**-0.477**	1	**-0.614**	**-0.035**	**-0.059**	0.035	**-0.109**	0.003	**0.112**	0.021	**-0.017**
PFIRM	0.020	-0.025	0.055	**0.119**	**0.146**	0.150	**0.154**	**0.034**	**-0.267**	**-0.614**	1	**-0.054**	-0.001	-0.080	**0.169**	**0.012**	**-0.213**	-0.026	**0.026**
CONNECT	-0.005	-0.040	0.002	**-0.040**	0.011	-0.005	0.029	**-0.059**	**-0.029**	**0.165**	**-0.118**	1	**0.209**	**0.001**	**-0.056**	-0.012	**0.328**	0.007	**-0.001**
ANALYST	**-0.059**	-0.036	**0.240**	**0.166**	**0.290**	**0.323**	**0.293**	**0.078**	**0.074**	**-0.060**	0.016	**0.170**	1	**0.217**	**-0.130**	**0.018**	**0.472**	-0.022	**0.051**
ROA	**-0.190**	**0.252**	**0.131**	0.000	**-0.028**	0.029	**-0.105**	**0.101**	0.018	**0.002**	-0.025	**-0.034**	**0.284**	1	**-0.387**	-0.005	**0.187**	**-0.242**	**-0.094**
VROA	**0.063**	**-0.027**	**0.089**	**-0.137**	**-0.146**	**-0.130**	**-0.204**	**0.037**	-0.027	**-0.084**	**0.117**	**-0.147**	**-0.179**	**-0.232**	1	**0.032**	**-0.315**	**0.045**	**0.068**
MB	0.012	-0.005	**-0.019**	**-0.103**	**-0.065**	-0.038	-0.010	**0.107**	**-0.039**	**-0.055**	**0.073**	**-0.162**	**0.041**	**0.024**	**0.129**	1	-0.049	**0.029**	-0.020
SIZE	0.014	**-0.038**	-0.018	**0.180**	**0.196**	**0.161**	**0.310**	**-0.090**	**0.089**	**0.149**	**-0.225**	**0.512**	**0.366**	**0.074**	**-0.326**	**-0.297**	1	**0.161**	-0.099
LOG_AGE	**0.061**	-0.010	**-0.005**	**0.279**	**0.357**	**0.284**	**0.492**	**-0.097**	-0.014	0.005	-0.002	**0.061**	**-0.011**	**-0.290**	**0.137**	0.077	**0.225**	1	**0.029**
LEV	**0.161**	**-0.132**	**0.067**	**0.088**	**0.141**	**0.104**	**0.182**	**-0.061**	**-0.045**	**-0.017**	**0.088**	**0.306**	**0.027**	**-0.455**	0.101	**0.033**	**0.213**	0.300	1

The Pearson correlation coefficients are reported above the diagonal and Spearman below the diagonal.
Boldface fonts represent significance levels of 10% or better.

Table 11a. Institutions and firms performance hiding: hiding good performances

$$HIDEDIR_i = \alpha_0 + \sum_{j=1}^{12} IND_j + \sum_{k=1}^{11} YEAR_k + \beta_1 INST + \beta_2 ROA + \beta_3 VROA + \beta_4 MB$$
$$+ \beta_5 LEV + \beta_6 SIZE + \beta_7 LOGAGE + \varepsilon$$

This table presents the results of how government intervention affects the directions of firm's hiding of good performances. The dependent variable is *HIDEGN*, which equals to the absolute value of *HIDE* where *HIDE* > 0; All variables are defined in Appendix II.

Dep. Variable	*HIDEGN*	*HIDEGN*	*HIDEGN*	*HIDEGN*	*HIDEGN*
MKT	**0.056*** **				
	(3.901)				
LESSPRESS1		**0.005***			
		(1.835)			
LESSPRESS2			**0.006****		
			(1.996)		
PRPROT1				-0.000	
				(-0.652)	
PRPROT2					**0.107*****
					(4.131)
CSOE	0.006	0.008	0.008	0.006	0.006
	(0.505)	(0.639)	(0.608)	(0.490)	(0.504)
PRIVATE	**0.022****	**0.022****	**0.022****	**0.029*****	**0.018***
	(2.108)	(2.144)	(2.111)	(2.704)	(1.766)
CONNECT	**-0.023****	**-0.032****	**-0.038****	**-0.040****	**-0.035****
	(-2.863)	(-2.203)	(-2.415)	(-2.488)	(-2.316)
VROA	**4.841****	**5.205****	**5.015****	**5.194****	**5.020****
	(2.178)	(2.325)	(2.245)	(2.287)	(2.261)
MB	2.196	**2.501***	**2.751****	**2.594***	2.236
	(1.611)	(1.836)	(2.011)	(1.840)	(1.624)
SIZE	0.006	0.009	**0.010***	**0.009***	0.008
	(1.156)	(1.621)	(1.741)	(1.662)	(1.473)
LOG_AGE	-0.007	-0.003	-0.002	-0.000	-0.006
	(-0.594)	(-0.252)	(-0.210)	(-0.018)	(-0.506)
LEV	**0.082*****	**0.081*****	**0.082*****	**0.077*****	**0.081*****
	(3.057)	(2.996)	(3.045)	(2.764)	(3.034)
ABN_ACC	0.014	0.012	0.013	0.022	0.011
	(0.594)	(0.513)	(0.575)	(0.916)	(0.489)
Constant	-0.072	-0.085	-0.118	-0.020	0.048
	(-0.615)	(-0.695)	(-0.948)	(-0.169)	(0.401)
N	4,149	4,145	4,124	3,709	4,149
Adj. R-sqr	0.099	0.094	0.095	0.096	0.099

White's (1980) heteroskedasticity-adjusted t-values are provided in parentheses below each coefficient.

*, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively (two-tailed test).

Industry and year dummies are included.

Table 11b. Institutions and firms hiding incentives with directions (cont'd)

This table presents the results of how government intervention affects the directions of firm's hiding of bad performances. The dependent variable is *HIDEBN*, which equals to the absolute value of *HIDE* where HIDE < 0. All other variables are as defined in Appendix II.

Dep. Variable	*HIDEBN*	*HIDEBN*	*HIDEBN*	*HIDEBN*	*HIDEBN*
MKT	**-0.02*** **				
	(-2.992)				
LESSPRESS1		**-0.01***			
		(-1.765)			
LESSPRESS2			-0.01		
			(-1.484)		
PRPROT1				**-0.01***	
				(-1.731)	
PRPROT2					**-0.057*** **
					(-3.264)
CSOE	0.011	0.011	0.012	0.013	0.013
	(1.320)	(1.325)	(1.333)	(1.521)	(1.489)
PRIVATE	-0.008	-0.008	-0.008	-0.009	-0.007
	(-1.122)	(-1.064)	(-1.064)	(-1.122)	(-0.986)
CONNECT	**0.049*** **	**0.048** **	**0.045** **	**0.047** **	**0.047** **
	(2.592)	(2.554)	(2.394)	(2.514)	(2.531)
VROA	**-8.263*** **	**-8.259*** **	**-8.206*** **	**-8.128*** **	**-8.315*** **
	(-4.450)	(-4.458)	(-4.423)	(-4.387)	(-4.458)
MB	**-3.143*** **	**-3.176*** **	**-3.349*** **	**-2.982** **	**-3.066*** **
	(-2.681)	(-2.699)	(-2.862)	(-2.509)	(-2.591)
SIZE	**-0.015*** **	**-0.015*** **	**-0.015*** **	**-0.016*** **	**-0.015*** **
	(-3.825)	(-3.793)	(-3.760)	(-3.982)	(-3.916)
LOG_AGE	**0.022*** **	**0.023*** **	**0.023*** **	**0.024*** **	**0.025*** **
	(2.894)	(2.917)	(2.916)	(3.122)	(3.220)
LEV	**-0.065*** **	**-0.065*** **	**-0.066*** **	**-0.065*** **	**-0.068*** **
	(-3.396)	(-3.409)	(-3.394)	(-3.251)	(-3.546)
ABN_ACC	0.013	0.013	0.010	0.021	0.013
	(0.731)	(0.723)	(0.555)	(1.173)	(0.776)
Constant	0.497***	0.514***	0.506***	0.507***	0.480***
	(5.875)	(5.917)	(5.811)	(5.923)	(5.760)
N	4,843	4,840	4,827	4,325	4,843
Adj. R-sqr	0.129	0.129	0.128	0.128	0.133

White's (1980) heteroskedasticity-adjusted t-values are provided in parentheses below each coefficient.

*, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively (two-tailed test).

Industry and year dummies are included.

Table 12a. Institutions, ultimate ownership and firms' hiding activities: CSOEs

$$HIDEDIR_i = \alpha_o + \sum_{j=1}^{12} IND_j + \sum_{k=1}^{11} YEAR_k + \beta_1 INST + \beta_2 INST * OWN + \beta_3 ROA + \beta_4 VROA + \beta_5 MB$$
$$+ \beta_6 LEV + \beta_7 SIZE + \beta_8 LOGAGE + \varepsilon$$

This table presents the regression results on the relationship between property rights protection institutions and firms' hiding behaviors with the interaction terms of firms' ultimate ownership and the region's property rights protection measures. In these regressions, the dependent variables are hiding good performance (bad performance), i.e., *HIDEGN (HIDEBN)*, and the independent variables are the proxies for a regions' property rights protection institutions and control variables. All variables are as defined in Appendix II.

Dep. Variable	*HIDEGN*	*HIDEBN*	*HIDEGN*	*HIDEBN*	*HIDEGN*	*HIDEBN*	*HIDEGN*	*HIDEBN*	*HIDEGN*	*HIDEBN*
MKT	**0.064*** **	0.008								
	(5.573)	(1.218)								
*CSOE*MKT*	**0.041***	**-0.029***								
	(1.745)	(-1.788)								
LESSPRESS1			**0.004** **	-0.001						
			(2.052)	(-0.530)						
*CSOE*LESSPRESS1*			0.004	-0.002						
			(1.498)	(-0.910)						
LESSPRESS2					**0.006*** **	0.000				
					(2.593)	(0.149)				
*CSOE*LESSPRESS2*					0.004	-0.002				
					(1.164)	(-0.951)				
PRPROT1							-0.000	**0.000*** **		
							(-1.284)	(2.796)		
*CSOE*PRPROT1*							-0.000	-0.000		
							(-0.113)	(-0.602)		
PRPROT2									**0.132*** **	**-0.058*** **
									(6.625)	(-4.614)
*CSOE*PRPROT2*									-0.024	-0.002
									(-0.638)	(-0.062)
CSOE	**-0.084***	**0.064** **	-0.051	0.033	-0.044	0.036	-0.002	**0.015** **	-0.012	0.010
	(-1.830)	(2.079)	(-1.505)	(1.257)	(-1.191)	(1.276)	(-0.165)	(1.985)	(-0.680)	(0.761)
CONNECT	**-0.039** **	**0.045*** **	**-0.049** **	**0.044*** **	**-0.054*** **	**0.041*** **	**-0.054*** **	**0.044*** **	**-0.053*** **	**0.043*** **
	(-1.971)	(3.490)	(-2.458)	(3.436)	(-2.734)	(3.221)	(-2.613)	(3.246)	(-2.700)	(3.415)
MB	1.664	**-4.583*** **	**2.100***	**-4.621*** **	**2.314** **	**-4.802*** **	**2.260***	**-4.434*** **	1.746	**-4.414*** **
	(1.433)	(-5.006)	(1.801)	(-5.038)	(1.977)	(-5.230)	(1.872)	(-4.710)	(1.496)	(-4.780)
SIZE	0.003	**-0.010*** **	0.005	**-0.010*** **	**0.006***	**-0.010*** **	0.005	**-0.011*** **	0.005	**-0.011*** **
	(0.794)	(-4.178)	(1.542)	(-4.187)	(1.696)	(-4.154)	(1.473)	(-4.303)	(1.594)	(-4.417)
LOG AGE	-0.006	**0.008*** **	-0.004	**0.008*** **	-0.004	**0.008*** **	-0.003	**0.009*** **	-0.005	**0.009*** **
	(-1.480)	(2.600)	(-0.944)	(2.621)	(-0.990)	(2.610)	(-0.755)	(2.704)	(-1.224)	(2.877)
LEV	**0.097*** **	**-0.065*** **	**0.096*** **	**-0.065*** **	**0.096*** **	**-0.065*** **	**0.094*** **	**-0.065*** **	**0.097*** **	**-0.068*** **
	(4.812)	(-4.361)	(4.761)	(-4.350)	(4.761)	(-4.332)	(4.359)	(-3.994)	(4.853)	(-4.509)
ABN ACC	**0.198*** **	0.013	**0.190*** **	0.015	**0.186*** **	0.010	**0.184*** **	0.015	**0.189*** **	0.015
	(5.574)	(0.546)	(5.351)	(0.595)	(5.216)	(0.407)	(4.898)	(0.573)	(5.337)	(0.609)
Constant	0.037	0.406***	0.033	0.430***	-0.004	0.416***	0.098	0.431***	0.153**	0.402***
	(0.521)	(8.117)	(0.442)	(8.250)	(-0.057)	(7.907)	(1.279)	(8.162)	(2.130)	(8.180)
N	4,149	4,843	4,145	4,840	4,124	4,827	3,709	4,325	4,149	4,843
Adj. R^2	0.107	0.112	0.100	0.111	0.101	0.111	0.099	0.112	0.107	0.115

White's (1980) heteroskedasticity-adjusted t-values are provided in parentheses below each coefficient.

*, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively (two-tailed test).

Industry and year dummies are included.

Table 12b. Institutions, ultimate ownership and firms' hiding activities: LSOEs

$$HIDEDIR_i = \alpha_0 + \sum_{j=1}^{12} IND_j + \sum_{k=1}^{11} YEAR_k + \beta_1 INST + \beta_2 INST * OWN + \beta_3 ROA + \beta_4 VROA + \beta_5 MB$$
$$+ \beta_6 LEV + \beta_7 SIZE + \beta_8 LOGAGE + \varepsilon$$

Dep. Variable	*HIDEGN*	*HIDEBN*	*HIDEGN*	*HIDEBN*	*HIDEGN*	*HIDEBN*	*HIDEGN*	*HIDEBN*	*HIDEGN*	*HIDEBN*
MKT	**0.046*****	**-0.025****								
	(3.725)	(-2.567)								
*LSOE*MKT*	0.022	**-0.044*****								
	(1.229)	(-3.926)								
LESSPRESS1			0.002	**-0.004****						
			(0.981)	(-2.284)						
*LSOE*LESSPRESS1*			**0.005***	**-0.004****						
			(1.868)	(-2.217)						
LESSPRESS2					0.003	**-0.003***				
					(1.126)	(-1.737)				
*LSOE*LESSPRESS2*					**0.006***	**-0.003***				
					(1.956)	(-1.743)				
PRPROT1							-0.000	-0.000		
							(-1.270)	(-0.026)		
*LSOE*PRPROT1*							**0.001***	0.000		
							(1.881)	(1.481)		
PRPROT2									**0.098*****	**-0.081*****
									(3.839)	(-4.590)
*LSOE*PRPROT2*									0.024	**-0.045****
									(0.695)	(-2.016)
LSOE	**-0.058***	**0.086*****	**-0.072****	**0.048****	**-0.080****	**0.041***	**-0.029*****	-0.010	-0.004	0.018
	(-1.657)	(-3.903)	(-2.383)	(-2.212)	(-2.431)	(-1.752)	(-3.141)	(-1.542)	(-0.221)	(1.625)
CONNECT	**-0.039***	**0.054*****	**-0.051****	**0.054*****	**-0.056*****	**0.051*****	**-0.056****	**0.054*****	**-0.055****	**0.053*****
	(-1.801)	(3.913)	(-2.320)	(3.919)	(-2.604)	(3.679)	(-2.428)	(3.672)	(-2.510)	(3.820)
MB	0.003	**-0.010*****	0.003	**-0.010*****	0.003	**-0.010*****	0.004	**-0.009*****	0.003	**-0.010*****
	(0.867)	(-3.759)	(0.626)	(-3.734)	(0.822)	(-3.976)	(0.918)	(-3.339)	(0.735)	(-3.781)
SIZE	0.000	**-0.010*****	0.002	**-0.010*****	0.003	**-0.010*****	0.002	**-0.011*****	0.002	**-0.011*****
	(0.116)	(-4.079)	(0.592)	(-4.078)	(0.755)	(-4.050)	(0.358)	(-3.993)	(0.580)	(-4.184)
LOG_AGE	0.002	0.006	0.008	0.006	0.008	0.007	0.012	0.009*	0.005	0.009**
	(0.301)	(1.263)	(1.127)	(1.377)	(1.122)	(1.383)	(1.470)	(1.790)	(0.683)	(1.976)
LEV	**0.090*****	**-0.088*****	**0.092*****	**-0.089*****	**0.095*****	**-0.088*****	**0.086*****	**-0.091*****	**0.090*****	**-0.090*****
	(3.928)	(-6.242)	(3.991)	(-6.271)	(4.134)	(-6.224)	(3.453)	(-5.978)	(3.929)	(-6.374)
ABN_ACC	**0.191*****	0.013	**0.183*****	0.014	**0.179*****	0.010	**0.179*****	0.015	**0.185*****	0.015
	(5.369)	(0.531)	(5.149)	(0.578)	(5.035)	(0.407)	(4.742)	(0.558)	(5.206)	(0.614)
Constant	0.020	0.494***	0.020	0.490***	-0.010	0.475***	0.075	0.452***	0.107	0.404***
	(0.258)	(8.943)	(0.238)	(8.585)	(-0.117)	(8.312)	(0.901)	(7.941)	(1.363)	(7.548)
N	4,149	4,843	4,145	4,840	4,124	4,827	3,709	4,325	4,149	4,843
Adj. R^2	0.096	0.120	0.091	0.118	0.093	0.117	0.093	0.118	0.097	0.122

White's (1980) heteroskedasticity-adjusted t-values are provided in parentheses below each coefficient.

*, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively (two-tailed test).

Industry and year dummies are included.

Table 12c. Institutions, ultimate ownership and firms' hiding activities: privately controlled firms

$$HIDEDIR_i = \alpha_0 + \sum_{j=1}^{12} IND_j + \sum_{k=1}^{11} YEAR_k + \beta_1 INST + \beta_2 INST*OWN + \beta_3 ROA + \beta_4 VROA + \beta_5 MB$$
$$+ \beta_6 LEV + \beta_7 SIZE + \beta_8 LOGAGE + \varepsilon$$

Dep. Variable	*HIDEGN*	*HIDEBN*	*HIDEGN*	*HIDEBN*	*HIDEGN*	*HIDEBN*	*HIDEGN*	*HIDEBN*	*HIDEGN*	*HIDEBN*
MKT	0.097***	-0.018**								
	(6.268)	(-2.515)								
*PRIVATE*MKT*	-0.040**	-0.041***								
	(-2.143)	(-3.012)								
LESSPRESS1			0.007***	0.000						
			(3.133)	(0.226)						
*PRIVATE*LESSPRESS1*			-0.007**	-0.006***						
			(-2.430)	(-2.731)						
LESSPRESS2					0.009***	0.001				
					(3.165)	(0.701)				
*PRIVATE*LESSPRESS2*					-0.006*	-0.006**				
					(-1.886)	(-2.389)				
PRPROT1							-0.000	-0.000***		
							(-0.744)	(-3.189)		
*PRIVATE*PRPROT1*							-0.000	-0.000**		
							(-0.872)	(-2.128)		
PRPROT2									0.129***	-0.050***
									(5.766)	(-3.611)
*PRIVATE*PRPROT2*									-0.015***	-0.041
									(-3.690)	(-1.537)
PRIVATE	0.101***	-0.068**	0.111***	-0.066**	0.096**	-0.058*	0.036***	0.001	0.012	-0.029**
	(2.744)	(-2.507)	(2.936)	(-2.236)	(2.390)	(-1.928)	(2.962)	(0.141)	(0.661)	(-2.251)
CONNECT	-0.042*	0.055***	-0.054**	0.055***	-0.060***	-0.051***	-0.061***	-0.055***	-0.057***	0.053***
	(-1.909)	-3.947	(-2.489)	-3.972	(-2.771)	(-3.74)	(-2.627)	(-3.735)	(-2.596)	-3.856
MB	0.004	-0.010***	0.003	-0.010***	0.004	-0.010***	0.005	-0.009***	0.003	-0.010***
	(0.938)	(-3.744)	(0.736)	(-3.754)	(0.951)	(-3.987)	(1.082)	(-3.297)	(0.854)	(-3.700)
SIZE	0.001	-0.012***	0.003	-0.011***	0.004	-0.011***	0.003	-0.012***	0.003	-0.012***
	(0.272)	(-4.558)	(0.833)	(-4.399)	(0.985)	(-4.391)	(0.729)	(-4.364)	(0.733)	(-4.668)
LOG_AGE	0.001	0.005	0.008	0.005	0.008	0.005	0.012	0.007	0.005	0.008*
	(0.131)	(1.024)	(1.093)	(1.106)	(1.108)	(1.101)	(1.539)	(1.456)	(0.620)	(1.800)
LEV	0.087***	-0.085***	0.088***	-0.087***	0.091***	-0.087***	0.082***	-0.089***	0.088***	-0.089***
	(3.782)	(-6.029)	-3.817	(-6.172)	-3.955	(-6.099)	-3.29	(-5.845)	-3.81	(-6.244)
ABN_ACC	0.189***	0.018	0.181***	0.017	0.178***	0.013	0.176***	0.019	0.184***	0.019
	(5.321)	(0.737)	(5.120)	(0.677)	(5.014)	(0.516)	(4.678)	(0.709)	(5.187)	(0.768)
Constant	-0.082	0.457***	-0.088	0.471***	-0.122	0.457***	0.004	0.477***	0.089	0.456***
	(-1.026)	(8.384)	(-1.042)	(8.216)	(-1.421)	(7.884)	(0.046)	(8.180)	(1.084)	(8.392)
N	4,149	4,843	4,145	4,840	4,124	4,827	3,709	4,325	4,149	4,843
Adj. R^2	0.101	0.120	0.093	0.120	0.094	0.119	0.094	0.121	0.098	0.123

White's (1980) heteroskedasticity-adjusted t-values are provided in parentheses below each coefficient.

*, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively (two-tailed test).

Industry and year dummies are included.

Table 13. Performance hiding and firms' information environments

$$ASYNCH_i = \alpha_0 + \sum_{j=1}^{12} IND_j + \sum_{k=1}^{11} YEAR_k + \beta_1 HIDEDIR_i + \beta_2 INST + \beta_3 OWN + \beta_4 ROA + \beta_5 VROA + \beta_6 MB$$
$$+\beta_7 LEV + \beta_8 SIZE + \beta_9 LOGAGE + \varepsilon$$

This table presents the regression results on the relationship between performance hiding and firms' information environments. The dependent variable is *ASYNCH,* the idiosyncratic return volatility for each firm year. The independent variables are as defined in previous tables.

	Dep. Variable: ASYNCH									
	Firms hiding good performances					Firms hiding bad performances				
HIDEGN	0.202 (1.340)	0.185 (1.243)	0.186 (1.245)	**0.261*** (1.741)	0.196 (1.299)					
HIDEBN						**-0.341***** (-2.614)	**-0.332**** (-2.536)	**-0.331**** (-2.525)	**-0.341**** (-2.494)	**-0.335**** (-2.568)
MKT	**0.144*** (1.764)					**0.170**** (2.413)				
LESSPRESS1		**0.021*** (1.670)					**0.023**** (2.016)			
LESSPRESS2			**0.017*** (1.951)					**0.026**** (2.178)		
PRPROT1				0.000 (1.021)					**0.000*** (1.855)	
PRPROT2					**0.121**** (2.080)					0.050 (0.510)
CSOE	0.067 (1.225)	0.064 (1.169)	0.064 (1.176)	0.058 (1.052)	0.067 (1.227)	0.075 (1.598)	0.074 (1.572)	0.074 (1.579)	0.050 (1.059)	0.077 (1.628)
PRIVATE	**0.139***** (2.590)	**0.135**** (2.474)	**0.133**** (2.455)	**0.139**** (2.469)	**0.136**** (2.499)	**0.096**** (2.009)	**0.091*** (1.918)	**0.094**** (1.981)	0.068 (1.418)	**0.083*** (1.749)
ROA	**4.018***** (5.386)	**3.938***** (5.316)	**3.957***** (5.344)	**3.546***** (4.698)	**4.018***** (5.356)	**4.980***** (10.524)	**5.002***** (10.578)	**4.989***** (10.580)	**4.660***** (9.440)	**4.968***** (10.479)
VROA	0.960 (0.083)	-0.644 (-0.056)	-0.587 (-0.051)	5.259 (0.411)	-0.491 (-0.043)	14.560 (1.134)	13.999 (1.095)	14.120 (1.106)	20.426 (1.570)	13.811 (1.075)
SIZE	0.042 (1.145)	0.035 (0.956)	0.036 (0.967)	0.007 (0.199)	0.037 (1.012)	**0.114***** (4.661)	**0.111***** (4.567)	**0.112***** (4.611)	**0.082***** (3.280)	**0.109***** (4.469)
LOG AGE	0.019 (0.500)	0.022 (0.562)	0.021 (0.551)	-0.020 (-0.484)	0.023 (0.589)	0.015 (0.444)	0.015 (0.440)	0.013 (0.407)	-0.031 (-0.888)	0.016 (0.472)
LEV	**0.671***** (4.281)	**0.693***** (4.448)	**0.690***** (4.415)	**0.683***** (4.368)	**0.678***** (4.320)	**0.332**** (2.492)	**0.377***** (2.850)	**0.373***** (2.824)	**0.385***** (2.910)	**0.361***** (2.709)
Constant	-1.796** (-2.436)	-1.691** (-2.393)	-1.757** (-2.416)	-1.706** (-2.533)	-2.044** (-2.829)	-2.829*** (-4.426)	-2.840** (-4.418)	-2.847** (-4.456)	-2.938** (-5.727)	-3.031** (-4.789)
N	1,610	1,610	1,610	1,438	1,610	2,227	2,227	2,227	1,997	2,227
Adj. R-sqr	0.404	0.403	0.403	0.412	0.403	0.402	0.401	0.401	0.398	0.400

White's (1980) heteroskedasticity-adjusted t-values are provided in parentheses below each coefficient.

*, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively (two-tailed test).

Industry and year dummies are included.

Table 14a. Firms' hiding activities and analyst coverage

$$ANALYST_i = \alpha_0 + \sum_{j=1}^{12} IND_j + \sum_{k=1}^{11} YEAR_k + \beta_1 HIDEDIR_i + \beta_2 INST + \beta_3 OWN + \beta_4 ROA + \beta_5 VROA + \beta_6 MB$$
$$+ \beta_7 LEV + \beta_8 SIZE + \beta_9 LOGAGE + \varepsilon$$

This table reports regression results on the relation between firms' hiding activities and analyst coverage. The dependent variable, *ANALYST*, is the natural logarithm of the number of analyst covering the firm (= log (analystcover + 1)). The independent variables are defined as in the previous tables.

	Dep. Variable: ANALYST									
	Firms hiding good performances					Firms hiding bad performances				
HIDEGN	-0.115	-0.076	-0.092	-0.103	-0.092					
	(-1.080)	(-0.732)	(-0.893)	(-0.914)	(-0.866)					
HIDEBN						-0.203	-0.204*	-0.207*	-0.254**	-0.234*
						(-1.604)	(-1.663)	(-1.695)	(-2.002)	(-1.868)
MKT	0.136**					0.272***				
	(2.015)					(4.303)				
LESSPRESS1		0.061***					0.067***			
		(6.268)					(7.547)			
LESSPRESS2			0.070***					0.080***		
			(6.178)					(7.315)		
PRPROT1				0.000***					0.000***	
				(4.340)					(5.227)	
PRPROT2					-0.040					-0.073
					(-0.396)					(-0.790)
CSOE	0.086*	0.082*	0.081*	0.086*	0.092*	0.033	0.038	0.040	0.067	0.037
	(1.836)	(1.799)	(1.775)	(1.838)	(1.955)	(0.750)	(0.907)	(0.944)	(1.507)	(0.849)
PRIVATE	0.086*	0.057	0.052	0.068	0.103**	0.064	0.031	0.012	0.045	0.099**
	(1.806)	(1.198)	(1.087)	(1.355)	(2.218)	(1.454)	(0.694)	(0.271)	(0.983)	(2.247)
CONNECT	0.194	0.208*	0.222*	0.156	0.156	0.416***	0.401***	0.432***	0.501***	0.364***
	(1.619)	(1.750)	(1.840)	(1.249)	(1.301)	(3.682)	(3.625)	(3.893)	(4.177)	(3.243)
ROA	4.782***	4.974***	4.900***	5.109***	4.859***	4.101***	4.094***	4.082***	4.475***	4.208***
	(8.168)	(8.694)	(8.630)	(8.256)	(8.320)	(12.512)	(12.684)	(12.656)	(13.093)	(12.678)
VROA	-11.734**	-9.211**	-8.590**	-10.130**	-12.468**	-18.817**	-16.538**	-15.470**	-16.691**	-20.416**
	(-2.827)	(-2.249)	(-2.057)	(-2.280)	(-3.020)	(-4.470)	(-4.017)	(-3.696)	(-3.581)	(-5.056)
SIZE	0.331***	0.322***	0.319***	0.330***	0.340***	0.267***	0.259***	0.251***	0.258***	0.276***
	(15.805)	(16.148)	(15.914)	(15.465)	(16.100)	(13.176)	(12.169)	(11.625)	(11.219)	(13.359)
LOG AGE	-0.034	-0.047	-0.046	-0.034	-0.032	-0.044	-0.061**	-0.067**	-0.041	-0.031
	(-0.962)	(-1.356)	(-1.332)	(-0.926)	(-0.895)	(-1.541)	(-2.101)	(-2.251)	(-1.325)	(-1.075)
LEV	-0.112	-0.136	-0.137	-0.104	-0.121	-0.026	-0.082	-0.074	-0.033	-0.068
	(-0.882)	(-1.078)	(-1.084)	(-0.779)	(-0.940)	(-0.239)	(-0.751)	(-0.674)	(-0.286)	(-0.620)
MB	0.104***	0.090***	0.088***	0.074***	0.104***	0.109***	0.090***	0.085***	0.072***	0.107***
	(6.008)	(5.266)	(5.156)	(4.239)	(5.846)	(8.164)	(6.973)	(6.670)	(5.373)	(8.049)
Constant	-6.435***	-6.706***	-6.737***	-6.259***	-6.351***	-5.325***	-5.380***	-5.335***	-4.688***	-4.981***
	(-14.995)	(-16.399)	(-16.516)	(-14.386)	(-14.310)	(-12.261)	(-12.420)	(-12.063)	(-10.081)	(-11.586)
N	1,370	1,370	1,370	1,245	1,370	2,070	2,070	2,070	1,881	2,070
Adj. R-sqr	0.393	0.415	0.416	0.410	0.391	0.314	0.335	0.342	0.336	0.305

White's (1980) heteroskedasticity-adjusted t-values are provided in parentheses below each coefficient.

*, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively (two-tailed test).

Industry and year dummies are included.

Table 14b. Firms' hiding activities, analyst coverage and information environments

$$ASYNCH = \alpha_0 + \sum_{j=1}^{12} IND_j + \sum_{k=1}^{11} YEAR_k + \beta_1 HIDEDIR + \beta_2 HIDEDIR * ANALYST$$

$$+ \beta_3 ROA + \beta_4 VROA + \beta_5 MB + \beta_6 LEV + \beta_7 SIZE + \beta_8 LOGAGE + \varepsilon$$

	Dep. Variable: *ASYNCH*									
	Firms hiding good performances					Firms hiding bad performances				
HIDEGN	**-0.601****	**-0.767*****	**-0.715****	**-0.843*****	**-0.554***					
	(-2.079)	(-2.639)	(-2.499)	(-2.798)	(-1.934)					
*HIDEGN*ANALYST*	**0.909*****	**1.022*****	**0.995*****	**1.106*****	**0.909*****					
	(4.932)	(5.536)	(5.410)	(5.905)	(4.939)					
HIDEBN						**-1.238*****	**-1.418*****	**-1.469*****	**-1.716*****	**-1.240*****
						(-4.938)	(-5.616)	(-5.799)	(-6.243)	(-4.889)
*HIDEBN*ANALYST*						**0.587*****	**0.708*****	**0.747*****	**0.924*****	**0.559*****
						(4.018)	(4.794)	(5.012)	(5.712)	(3.779)
MKT	0.063					0.035				
	(0.661)					(0.434)				
LESSPRESS1		**0.069*****					**0.065*****			
		(4.315)					(4.842)			
LESSPRESS2			**0.059*****					**0.080*****		
			(3.460)					**(6.032)**		
PRPROT1				**0.000*****					**0.000*****	
				(5.527)					(6.803)	
PRPROT2					**0.630*****					**0.382*****
					(4.573)					(3.480)
ANALYST	**0.337*****	**0.388*****	**0.380*****	**0.421*****	**0.328*****	**0.225*****	**0.276*****	**0.287*****	**0.277*****	**0.223*****
	(5.051)	(5.921)	(5.745)	(6.430)	(4.936)	(4.160)	(5.159)	(5.319)	(5.146)	(4.182)
CSOE	0.098	0.103	0.102	**0.113***	**0.119***	**0.129****	**0.126****	**0.125****	**0.102***	**0.141****
	(1.460)	(1.543)	(1.530)	(1.656)	(1.791)	(2.320)	(2.282)	(2.266)	(1.839)	(2.525)
PRIVATE	0.028	0.068	0.061	0.109	0.073	-0.055	0.002	0.022	0.021	-0.038
	(0.444)	(1.059)	(0.953)	(1.618)	(1.133)	(-0.993)	(0.035)	(0.387)	(0.369)	(-0.690)
CONNECT	0.179	0.137	0.141	0.188	0.171	0.213	0.179	0.145	0.064	0.204
	(0.841)	(0.665)	(0.687)	(0.864)	(0.831)	(1.497)	(1.285)	(1.046)	(0.418)	(1.444)
ROA	**8.403*****	**8.195*****	**8.301*****	**7.784*****	**8.456*****	**7.076*****	**7.112*****	**7.106*****	**6.803*****	**7.059*****
	(10.032)	(10.106)	(10.170)	(8.789)	(10.075)	(13.763)	(14.312)	(14.386)	(13.159)	(13.812)
VROA	-1.279	-4.221	-3.947	-4.697	-2.504	14.656*	11.592	10.562	9.148	14.333*
	(-0.198)	(-0.642)	(-0.604)	(-0.659)	(-0.388)	(1.696)	(1.325)	(1.196)	(1.031)	(1.653)
SIZE	-0.059	-0.053	-0.053	-0.065*	-0.040	0.039	0.048	0.055*	0.031	0.043
	(-1.580)	(-1.459)	(-1.445)	(-1.735)	(-1.092)	(1.228)	(1.563)	(1.794)	(0.991)	(1.365)
LOG AGE	0.026	0.043	0.038	0.034	0.024	-0.017	0.009	0.016	0.014	-0.008
	(0.472)	(0.814)	(0.715)	(0.624)	(0.454)	(-0.382)	(0.208)	(0.357)	(0.313)	(-0.188)
LEV	**1.087*****	**1.116*****	**1.110*****	**1.097*****	**1.026*****	**0.787*****	**0.818*****	**0.811*****	**0.801*****	**0.715*****
	(5.366)	(5.558)	(5.540)	(5.400)	(5.107)	(4.558)	(4.784)	(4.755)	(4.756)	(4.123)
MB	**-0.221*****	**-0.208*****	**-0.209*****	**-0.184*****	**-0.198*****	**-0.186*****	**-0.173*****	**-0.168*****	**-0.151*****	**-0.175*****
	(-8.688)	(-8.340)	(-8.334)	(-7.186)	(-7.826)	(-8.347)	(-7.728)	(-7.532)	(-6.751)	(-7.771)
Constant	0.880	1.461*	1.330*	1.071	0.069	-0.959	-0.454	-0.447	-0.768	-1.279**
	(1.147)	(1.963)	(1.777)	(1.413)	(0.092)	(-1.483)	(-0.731)	(-0.735)	(-1.239)	(-2.022)
N	1,370	1,370	1,370	1,245	1,370	2,070	2,070	2,070	1,881	2,070
Adj. R-sqr	0.158	0.172	0.166	0.172	0.171	0.165	0.179	0.183	0.176	0.170

White's (1980) heteroskedasticity-adjusted t-values are provided in parentheses below each coefficient.

*, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively (two-tailed test).

Industry and year dummies are included.

Table 15. Robustness check: does *HIDEGN* captures accounting conservatism?

This table presents results from estimations that test whether the *HIDEGN* captures conservatism. The Basu (1997) model is used. X_{ir} is the Net Income; P_{it} is the price in the beginning of the period; R_{it} is the 12-month return of firm *i* cumulated from 9 months before fiscal year-end to three months after fiscal year-end; DR_{it} is a dummy variable that equals to 1 if $R_{it} < 0$, and 0 otherwise. HD_{it} is a dummy variable, which equals to 1 if a firm's ranking of TFP within the industry is larger than its ranking of ROA within the industry, and equals to 0 otherwise.

Panel A. Basu (1997) model tested in different subsamples

$$X_{it} / P_{i,t-1} = \alpha_0 + \alpha_1 DR_{it} + \beta_0 R_{it} + \beta_1 R_{it} * DR_{it} + \varepsilon_i$$

	Hiding bad news		Hiding good news	
	Coefficient	Std. error	Coefficient	Std. error
Intercept	0.041***	(0.001)	0.031***	(0.001)
DR_{it}	**-0.014*****	(0.002)	**-0.009*****	(0.001)
R_{it}	**0.010*****	(0.001)	**0.013*****	(0.001)
R_{it}*DR_{it}	**0.009****	(0.004)	0.005	(0.004)
N	4,149		4,843	
Adj R2	0.161		0.179	

Panel B. Interaction terms included in the Basu model: full sample estimation

	Coefficient	Std. error
Intercept	0.037***	(0.001)
DR_{it}	**-0.012*****	(0.001)
HD_{it}	**-0.005*****	(0.002)
DR_{it} * $HD_{it\,t}$	0.001	(0.003)
R_{it}	**0.012*****	(0.001)
R_{it} * DR_{it}	**0.007****	(0.003)
R_{it} * HD_{it}	**-0.005*****	(0.002)
R_{it} * HD_{it} * DR_{it}	0.004	(0.009)
Adj R2	0.178	
NOBS	8,992	

Table 16a. Does *HIDEBN* capture government subsidies?-- Univariate test

This table presents the Pearson pair-wise correlation between *HIDEBN* and *SUBSIDY*.

Var	Mean	std	Min	Max
HIDEBN	0.13	0.34	0	1
SUBSIDY	7.43	21.52	0	158

	subsidy
HIDEBN	-0.01
	(0.33)

Note: P-value in the parentheses.

Table 16b. Does *HIDEBN* capture government subsidies?—Re-estimate equation (2) by excluding subsidy income from the calculation of ROA.

This table presents the regression results by replicating table 12a-c. The purpose of this table is to eliminate the subsidy revenue from the net income when calculating ROA. All the variables are defined as in Appendix II.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
VARIABLES	*HIDEGN*	*HIDEBN*	*HIDEGN*	*HIDEBN*	*HIDEGN*	*HIDEBN*	*HIDEGN*	*HIDEBN*	*HIDEGN*	*HIDEBN*
Panel A. CSOEs										
MKT	**0.061*****	0.006								
	(5.790)	(0.989)								
*CSOE*MKT*	0.033	**-0.051*****								
	(1.217)	(-2.984)								
LESSPRESS1			**0.005****	-0.001						
			(2.165)	(-0.841)						
*CSOE*LESSPRESS1*			0.002	-0.001						
			(0.716)	(-0.534)						
LESSPRESS2					**0.006****	-0.001				
					(2.566)	(-0.591)				
*CSOE*LESSPRESS2*					-0.000	-0.002				
					(-0.042)	(-0.638)				
PRPROTECT1							0.000	0.000		
							(0.270)	(1.550)		
*CSOE*PRPROTECT1*							-0.000	-0.000		
							(-0.591)	(-0.948)		
PRPROTECT2									**0.123*****	**-0.054*****
									(5.863)	(-4.257)
*CSOE*PRPROTECT2*									-0.032	-0.039
									(-0.756)	(-1.289)
Panel B. LSOEs										
MKT	**0.055*****	**-0.022****								
	(4.460)	(-2.298)								
*LSOE*MKT*	0.018	**0.039*****								
	(0.970)	(3.424)								
LESSPRESS1			0.003	**-0.004****						
			(1.187)	(-2.161)						
*LSOE*LESSPRESS1*			0.004	**-0.004****						
			(1.442)	(-2.161)						
LESSPRESS2					0.004	**-0.003***				
					(1.452)	(-1.715)				
*LSOE*LESSPRESS2*					0.004	**-0.003***				
					(1.349)	(-1.714)				
PRPROTECT1							-0.000	0.000		
							(-0.495)	(0.218)		
*LSOE*PRPROTECT1*							0.000	0.000		
							(0.782)	(1.297)		
PRPROTECT2									**0.102*****	**-0.085*****
									(3.950)	(-4.803)
*LSOE*PRPROTECT2*									0.023	**-0.046****
									(0.651)	(-2.082)

Panel C. PRIVATEs

MKT	0.080***	0.011								
	(5.982)	(1.601)								
*PFIRM*MKT*	-0.039**	-0.036***								
	(-2.116)	(-2.585)								
LESSPRESS1			0.006***	0.000						
			(2.795)	(0.273)						
*PFIRM*LESSPRES*			-0.005	-0.008***						
			(-1.627)	(-3.320)						
LESSPRESS2					0.007***	0.001				
					(2.784)	(0.575)				
*PFIRM*LESSPRES*					-0.003	-0.007***				
					(-0.960)	(-3.009)				
PRPROTECT1							-0.000	0.000**		
							(-0.030)	(2.287)		
*PFIRM*PRPROTE*							-0.000	-0.000**		
							(-0.055)	(-2.492)		
PRPROTECT2									0.122***	-0.050***
									(5.529)	(-3.766)
*PFIRM*PRPROTE*									-0.027	-0.036
									(-0.667)	(-1.355)

White's (1980) heteroskedasticity-adjusted t-values are provided in parentheses below each coefficient.

*, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively (two-tailed test).

Industry and year dummies are included.

Table 17. Cut ASYNCH at top 10%: Re-estimation of Eqation (3)

This table presents the results of a robustness check, where the sample firms in the top 10% of the *ASYNCH* statistics are excluded from the analysis. All the variables are as defined in Appendix II.

	Dep. Var: ASYNCH									
	Firms Hiding Good Performances					Firms Hiding Bad Performances				
HIDEGN	**0.208***	**0.191***	**0.191***	**0.206***	**0.198***					
	(1.790)	(1.655)	(1.653)	(1.675)	(1.702)					
HIDEBN						**-0.254****	**-0.248****	**-0.248****	**-0.286*****	**-0.249****
						(-2.501)	(-2.437)	(-2.441)	**(-2.726)**	(-2.459)
MKT	**-0.124***					-0.089				
	(-1.823)					(-1.616)				
LESSPRESS1		**-0.026***					-0.007			
		(-1.923)					(-0.883)			
LESSPRESS2			-0.011					-0.012		
			(-0.683)					(-1.401)		
PRPROTECT1				-0.000					**-0.000****	
				(-0.802)					(-2.055)	
PRPROTECT2					-0.078					-0.018
					(-0.847)					(-0.230)
CSOE	0.004	0.002	0.001	-0.009	0.004	0.029	0.029	0.029	0.014	0.030
	(0.097)	(0.054)	(0.029)	(-0.216)	(0.083)	(0.870)	(0.876)	(0.870)	(0.408)	(0.894)
PRIVATE	0.053	0.052	0.046	0.043	0.049	0.014	0.008	0.012	0.004	0.006
	(1.242)	(1.230)	(1.099)	(0.953)	(1.131)	(0.366)	(0.226)	(0.326)	(0.094)	(0.152)
ROA	**3.639*****	**3.531*****	**3.559*****	**3.224*****	**3.602*****	**3.688*****	**3.688*****	**3.691*****	**3.511*****	**3.673*****
	(6.685)	(6.532)	(6.565)	(5.759)	(6.621)	(11.063)	(10.966)	(11.014)	(9.788)	(10.935)
VROA	-2.639	-2.722	-2.451	1.360	-2.427	-0.997	-0.864	-0.943	-0.453	-0.755
	(-0.625)	(-0.640)	(-0.578)	(0.302)	(-0.575)	(-0.213)	(-0.183)	(-0.200)	(-0.085)	(-0.160)
SIZE	0.000	-0.004	-0.005	-0.011	-0.004	**0.046****	**0.044****	**0.045****	0.026	**0.044****
	(0.014)	(-0.196)	(-0.214)	(-0.493)	(-0.180)	(2.564)	(2.481)	(2.521)	(1.376)	(2.440)
LOG AGE	0.019	0.019	0.019	-0.018	0.020	0.019	0.018	0.018	-0.019	0.019
	(0.678)	(0.651)	(0.671)	(-0.577)	(0.712)	(0.793)	(0.754)	(0.741)	(-0.708)	(0.764)
LEV	**0.413*****	**0.429*****	**0.426*****	**0.389*****	**0.420*****	**0.264*****	**0.285*****	**0.285*****	**0.360*****	**0.280*****
	(3.456)	(3.588)	(3.559)	(3.023)	(3.500)	(2.831)	(3.051)	(3.050)	(3.646)	(3.012)
ANALYST	**0.232*****	**0.234*****	**0.234*****	**0.243*****	**0.233*****	**0.159*****	**0.158*****	**0.158*****	**0.173*****	**0.158*****
	(7.435)	(7.511)	(7.466)	(7.589)	(7.435)	(6.407)	(6.363)	(6.389)	(6.858)	(6.387)
Constant	-0.306	-0.935**	-1.148**	-0.671	-0.497	-1.762***	-1.813***	-1.786***	-1.669***	-1.869***
	(-0.684)	(-2.029)	(-2.412)	(-1.481)	(-1.111)	(-4.264)	(-4.348)	(-4.303)	(-4.344)	(-4.566)
Observations	1.337	1.337	1.337	1.195	1,337	1.973	1.973	1.973	1.791	1.973
Adjusted R-squared	0.375	0.376	0.374	0.385	0.374	0.420	0.419	0.420	0.425	0.419

White's (1980) heteroskedasticity-adjusted t-values are provided in parentheses below each coefficient.

*, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively (two-tailed test).

Industry and year dummies are included.