OULU 2015
G 72

ACTA UNIVERSITATIS OULUENSIS

Anna Elsilä

ESSAYS ON EXECUTIVE EQUITY-BASED COMPENSATION AND EQUITY OWNERSHIP

UNIVERSITY OF OULU GRADUATE SCHOOL;
UNIVERSITY OF OULU,
OULU BUSINESS SCHOOL,
DEPARTMENT OF ACCOUNTING

ACTA UNIVERSITATIS OULUENSIS
G Oeconomica 72

ANNA ELSILÄ

ESSAYS ON EXECUTIVE EQUITY-BASED COMPENSATION AND EQUITY OWNERSHIP

Academic dissertation to be presented with the assent of The Doctoral Training Committee of Human Sciences, University of Oulu for public defence in the Arina auditorium (TA105), Linnanmaa, on 10 April 2015, at 12 noon

UNIVERSITY OF OULU, OULU 2015

Acta Univ. Oul. G 72, 2015

Supervised by
Professor Juha-Pekka Kallunki

Reviewed by
Professor Brian Cadman
Professor Ajay Patel

Opponent
Professor Eva Liljeblom

ISBN 978-952-62-0734-6 (Paperback)
ISBN 978-952-62-0735-3 (PDF)

ISSN 1455-2647 (Printed)
ISSN 1796-2269 (Online)

Cover Design
Raimo Ahonen

JUVENES PRINT
TAMPERE 2015

Elsilä, Anna, Essays on executive equity-based compensation and equity ownership.
University of Oulu Graduate School; University of Oulu, Oulu Business School, Department of Accounting
Acta Univ. Oul. G 72, 2015
University of Oulu, P.O. Box 8000, FI-90014 University of Oulu, Finland

Abstract

A major proposition of the agency theory is that the conflict of interests between an agent and a principal is reduced when the agent's wealth and compensation are tied to the performance of the firm. Apart from the direct predicted relation to corporate performance, compensating managers with equity instruments has implications for corporate risk-taking and payout policy choices. Additionally, equity-based compensation practices are to a large extent shaped by institutional factors, such as accounting regulations.

This dissertation seeks to enhance our understanding of the determinants and implications of equity-based compensation and equity-based ownership of public companies' executives through four interrelated essays. First, the dissertation re-examines the performance and risk-taking consequences of executive equity-based compensation and equity ownership using novel approaches. Second, the dissertation studies the side effects of equity-based compensation and the ways in which companies respond to the accounting regulations in the area of equity-based compensation.

The empirical results of the first essay show that CEO's equity incentives are economically more significant when measured relative to her outside non-firm wealth rather than relative to the total market value of the firm. These results also suggest that there is a positive relation between CEO's equity incentives measured relative to her outside wealth and future accounting performance. The second essay reports that executive risk-taking incentives resulting from stock options holdings are significantly positively related to the degree of risk a firm takes when offering its customers trade credit. The third essay provides empirical evidence that companies engage in timing equity grant dates before the release of favorable earnings news in order to minimize the subsequent compensation expense. The fourth essay documents an inverse relation between the executive cash dividend receipts resulting from the holdings of equity and the level of current cash compensation of CEOs, and suggests that equity ownership is indirectly interrelated with the structure of cash compensation via dividends. Collectively, the results of the dissertation are of interest to shareholders of public companies, executive compensation consultants and boards of directors.

Keywords: agency theory, equity-based incentives, executive compensation, stock options

Elsilä, Anna, Esseitä toimitusjohtajien osakesidonnaisista palkitsemisjärjestelmistä ja osakeomistuksesta.
Oulun yliopiston tutkijakoulu; Oulun yliopisto, Oulun yliopiston kauppakorkeakoulu, Laskentatoimen yksikkö
Acta Univ. Oul. G 72, 2015
Oulun yliopisto, PL 8000, 90014 Oulun yliopisto

Tiivistelmä

Agenttiteorian mukaan agentin ja päämiehen intressien ristiriita pienenee, kun agentin varallisuus ja palkkaus on sidottu yrityksen suorituskykyyn. Tämän suoran vaikutuksen lisäksi ylimmän johdon osakesidonnainen palkitseminen vaikuttaa sekä yrityksen riskinottoon että voitonjaon muotoon. Institutionaaliset tekijät, kuten tilinpäätöstä koskevat säännökset, vaikuttavat myös yritysten osakepohjaisten palkitsemiskäytäntöjen muotoutumiseen.

Tämän väitöskirjan tarkoituksena on lisätä ymmärrystämme pörssiyritysten ylimmän johdon osakepohjaisista palkitsemisjärjestelmistä ja osakeomistuksiin johtaneita syitä ja niiden seurauksia neljän osatutkimuksen avulla. Väitöskirjassa tarkastellaan ensinnäkin osakepohjaisten palkitsemisjärjestelmien ja osakeomistusten vaikutuksia yritysten suorituskykyyn ja riskinottoon lähestymällä kysymystä uudella tavalla. Toiseksi väitöskirja tarkastelee osakepohjaisten palkitsemisjärjestelmien sivuvaikutuksia ja yritysten reagointia palkitsemisjärjestelmiä koskeviin säännöksiin.

Ensimmäisen osatutkimuksen empiiristen tulosten mukaan toimitusjohtajan osakekannustimet ovat taloudellisesti merkittävämpiä silloin, kun ne on mitattu suhteessa toimitusjohtajan varallisuuteen sen sijaan, että ne olisi mitattu suhteessa yrityksen markkina-arvoon. Tulosten mukaan toimitusjohtajan osakekannustimien ja yrityksen tulevan kannattavuuden välillä on positiivinen suhde. Toisen osatutkimuksen tulosten mukaan ylimmän johdon osakeoptioiden riskinottokannustimet lisäävät yrityksen riskinottoa asiakasluotoissaan. Kolmas osatutkimus antaa empiiristä näyttöä siitä, että yritykset ajoittavat osakeluovutuspäivät minimoidakseen palkitsemiskustannuksia tilinpäätöksissään. Neljännessä osatutkimuksessa havaitaan käänteinen suhde toimitusjohtajan käteisosinkojen ja -palkan välillä, mikä viittaa siihen, että osakeomistus ja käteispalkan rakenne ovat epäsuoranaisesti yhteydessä toisiinsa osinkojen kautta. Kokonaisuudessaan väitöskirjan tulokset ovat mielenkiintoisia pörssiyritysten osakeomistajille, yritysjohtajien palkitsemisneuvonantajille sekä yritysten hallituksien jäsenille.

Asiasanat: agenttiteoria, johdon palkitseminen, osakeoptio, osakepohjainen kannustinjärjestelmä

Acknowledgements

In the course of writing the doctoral dissertation I acquired valuable knowledge of how to perform economic research and how to apply these research skills in practice. Reaching this important life milestone would, however, be impossible without advice and support of several people and organizations.

First and furthermost, I wish to express my sincere gratitude to my dissertation supervisor, Professor Juha-Pekka Kallunki. His attentive, insightful guidance and ability to inspire led me throughout the process and shaped my identity as a researcher. I also thank Professor Petri Sahlström, Professor Henrik Nilsson and Professor Seppo Ikäheimo for providing valuable advice during different stages of my doctoral studies. I am very grateful to the official dissertation pre-examiners, Professor Brian Cadman and Professor Ajay Patel for carefully reviewing my doctoral thesis and for their suggestions.

By sharing their experience a number of other wonderful colleagues, including Dr. Anna-Maija Lantto, Dr. Sinikka Moilanen, Dr. Alexandra Middleton and Dr. Henry Jarva, helped me to accomplish this project. I owe my frank gratitude to them. I also wish to thank all the academics, who commented on my dissertation project at various international conferences, workshops and seminars.

My research visit to the University of Utah has largely advanced the dissertation project and opened new research horizons to me. I wish to thank the Accounting Department faculty of the University of Utah and especially Professor Marlene Plumlee and Professor Rachel Hayes for providing me with an opportunity to spend a semester at the University of Utah. I gratefully acknowledge financial support from the Graduate School of Accounting, the Martti Ahtisaari International Doctoral Programme and Oulun Kauppaseuran Säätiö. I thank Virginia Mattila and Nicholas Kirkwood for proofreading my thesis.

Finally, I wish to thank my Mom and Dad. Your wise opinions have always been of great importance to me. They have contributed a lot to the progress of my dissertation project.

December 2014 Anna Elsilä

Abbreviations

2SLS	Two-Stage Least Squares
APB	Accounting Principles Board Opinion
CPI	Consumer Price Index
CEO	Chief Executive Officer
CFO	Chief Financial Officer
CRSP	Center for Research in Security Prices
FASB	Financial Accounting Standards Board
FE	Fixed Effects
IASB	International Accounting Standards Board
OLS	Ordinary Least Squares
ROA	Return on Assets
SEC	Securities and Exchange Commission
SOX	Sarbanes–Oxley Act
SFAS	Statement of Financial Accounting Standards
TARP	Troubled Asset Relief Program

List of original essays

This thesis is based on the introductory chapter and the following essays, which are referred throughout the text by their Roman numerals:

I Elsilä A, Kallunki JP, Nilsson H & Sahlström P (2013) CEO personal wealth, equity incentives and firm performance. Corporate Governance: An International Review 21(1): 26-41.

II Elsilä A (2014) Customer default risk management in interfirm trade: The role of executive risk-taking incentives. Manuscript.

III Elsilä A (2014) Share-based compensation expense and timing of equity grants: Evidence from post-SFAS 123R adoption period. Manuscript.

IV Elsilä A (2014) Executive dividend income and its role in compensation decisions. Manuscript.

Contents

1 Introduction

1.1 Background

Senior executives of public companies are responsible for corporate strategic operational, investment and financing decisions, which ultimately affect shareholder value. However, since the managers are not the sole owners and their effort is unobservable in running a company, they may pursue personal interests and undertake actions potentially detrimental to shareholders. Such opportunistic behavior is referred to as moral hazard and gives a rise to an agency conflict between shareholders (a principal) and a manager (an agent) (Berle & Means 1932).

In order to ensure that managers act in the shareholders' best interests, firm owners may either create governance mechanisms to perform a monitoring function or tie manager's compensation to the performance of a company. The latter is implemented by including accounting performance metrics in the managers' bonus contracts or by compensating managers with equity instruments, the value of which depends on the company's share price. As a result of share-based awards accumulation, a manager's ownership in the company increases and her interests become better aligned with those of shareholders.

Share-based compensation is provided primarily by granting the manager stock options and shares. Although the value of both is tied to the share price, these two equity instruments may differ in several important respects, including the right to receive dividends, the presence of incentives to take risks and accounting treatment. While shareholdings entitle managers to receive dividends, stock options are typically not dividend protected. In turn, because the time value of stock options increases with the volatility of an underlying asset, stock options help to curb managerial risk aversion and induce managers to accept risky net present value projects essential for value creation. Conversely, the value of shareholdings varies with the volatility of stock returns to a much lesser extent, thereby not providing sufficient incentives to take risks (Guay 1999). Finally, stock options have been subject to more favorable accounting treatment relative to stock awards over a long period. These distinct features of shares and stock options have important implications for the behavior of executives and corporate policies.

The issues surrounding executive equity-based compensation are not uncontroversial. Although well intended, share-based compensation may also have a dark side, for example, by creating perverse incentives to affect the share price on the equity grant, exercise and sale dates (Yermack 1997, Heron & Lie 2007, Dhaliwal et al. 2009, Cicero 2009, Cheng & Warfield 2005, Bergstresser & Philippon 2006). In addition, huge executive compensation packages, and especially the share-based components, continuously attract public attention as they are widely perceived as excessive. Whether managers are fairly compensated for their performance is a topic of a heated debate.

The bulk of the criticism leveled at executive share-based compensation, however, fails to appreciate the complexity of the issue and, specifically, no consensus exists on how to measure executive compensation and incentives in a particular context. Furthermore, while academic researchers and practitioners typically focus on the disclosed components of executive compensation, they fail to perceive that officially disclosed compensation does not always include all the components of executive firm-related income. Neglecting this undisclosed firm-related executive income may additionally distort comparisons of executive compensation packages and incentives.

Because corporate decision-making authority is concentrated in the hands of top executives, understanding the direct consequences and the side effects of executive equity-based compensation is crucial in the contemporary business world. The research in this area advances our understanding on the channels through which it is possible to enhance shareholder value and prevent opportunistic actions on the part of the executives.

1.2 Purpose of dissertation

The purpose of this dissertation is to investigate the effect of executive equity-based compensation and equity ownership on corporate outcomes and executives' actions, and further to provide insights on executive compensation and ownership measurement issues. Specifically, two essays investigate whether equity incentives encourage managers to take actions which affect corporate firm performance and risk profile. The other two essays identify sources of additional undisclosed income associated with executive equity-based compensation arrangements and highlight the importance of measurement issues when evaluating the amount of executive compensation.

The research questions addressed in the dissertation are:

- How does CEO's equity ownership affect firm performance?
- How should CEO's equity ownership be measured in the context of assessing an effect of CEO's equity ownership on firm performance?
- Do risk-taking incentives from stock options motivate corporate executives to undertake higher operating risk in terms of selecting less creditworthy customers?
- Do firms designate large grants of stock options and restricted stock to time periods when the stock is undervalued in order to provide higher compensation to executives and employees at lower expense?
- Do boards of directors consider CEOs' dividend income when setting the levels of compensation?
- Do CEOs receive additional compensation premium for the lack of dividend protection of options?

1.3 Contribution and structure of the dissertation

The dissertation contributes to the literature on equity-based executive compensation and incentives via four interrelated essays.

First, the dissertation contributes to the broad discussion on whether managers provided with greater equity-based incentives act in the best interests of shareholders as reflected in superior firm performance and higher risk-taking activity.

Specifically, the first essay develops a novel measure of incentives called total price-performance elasticity by assessing the strength of CEO's equity incentives in relation to her outside wealth, identifies its advantages over other traditionally used measures of equity incentives and investigates whether it affects firm performance.

The second essay contributes to the literature on the risk-taking consequences of executive equity ownership by investigating whether executive risk-taking incentives provided by stock options affect the degree of the company's involvement in business dealings with less creditworthy customers. While earlier papers in this area studied how executive equity incentives affect the riskiness of the financial and investment decisions of a company (Coles *et al.* 2006, Chava & Purnanandam 2010), this study is the first to scrutinize the relation between executive equity incentives and risky policies directly related to firm core operating activities.

Second, the dissertation provides insights into the side effects of share-based compensation by focusing on the share-based compensation arrangements which provide executives with an opportunity to receive additional undisclosed income. Specifically, the dissertation studies executives' incentives to obtain this additional income and the consequences of its receiving.

The third essay contributes to the literature on the management of the share-based compensation expense (Aboody *et al.* 2006, Hodder *et al.* 2006, Johnston 2006, Bartov *et al.* 2007, Bechmann & Hjortshøj 2009, Choudhary 2011, Carter & Lynch 2003, Carter *et al.* 2007, Choudhary *et al*. 2009) by studying whether firms make large employee grants of both restricted stock and stock options on dates when the firm's share is undervalued in the period after the adoption of Statement of Financial Accounting Standards (SFAS) 123R. It also adds to the stream of research on the strategic timing of CEOs' option awards for purposes of minimizing an option exercise price (Yermack 1997, Aboody & Kasznik 2000, Chauvin & Shenoy 2001, Heron & Lie 2007) by exploring whether different reasons – specifically the requirement to determine share-based compensation expense using the grant date share price – motivate firms to engage in equity grant date timing behavior.

The fourth essay builds on the fact that shareholdings entitle managers to receive dividends, while option holdings are not dividend protected, and explores whether this undisclosed dividend income is taken into account in setting the level of executive current cash compensation. This essay contributes to the literature on the determinants of executive compensation by showing that the undisclosed firm-related components of CEO's income are treated as substitutes for the disclosed pay. It suggests that there is a trade-off between disclosed and undisclosed components and highlights the importance of considering undisclosed components of pay when comparing the executive compensation packages.

Third, the dissertation adds to the literatures on corporate payout policy, trade credit and earnings management.

Particular attention in the dissertation is paid to the role of accounting rules and disclosure regulation in shaping the outcomes of the equity-based compensation. In the second essay I hypothesize that the accounting rules for equity-based pay motivate firms to engage in timing of grant dates. The role of the Securities and Exchange Commission (SEC) executive compensation disclosure rules and specifically the mandate for the disclosure of option granting practices is also discussed in the second essay. The fourth essay shows that CEOs require an additional premium for the lack of dividend protection of options,

which represented a compensation arrangement necessary to qualify for the favorable accounting treatment of option grants under SFAS 123.

The rest of the thesis is structured as follows. Section 2.1 describes the underpinnings of agency theory, which serves as a theoretical framework for studying executive compensation and ownership. Section 2.2 highlights the main differences between executive stock options and stock holdings, including the differences in the payoff structure, accounting treatment and dividend-paying incentives, and discusses the implications for corporate outcomes of compensating executives with these equity instruments. Section 3 reviews the empirical essays. The original essays are presented at the end of the thesis.

2 Theories

2.1 Agency theory and the relation between managerial equity incentives and firm performance

An agency relationship is established when a principal delegates a decision-making responsibility in a firm to an agent. Although a natural and inevitable stage in the evolution of the corporation, the resulting separation of ownership from control leads to an agency conflict, because the controlling mangers, whose actions are unobservable, may be tempted to pursue their personal goals when running a company. Such a moral hazard behavior may take a variety of forms, including overconsumption of perquisites, diversion of corporate resources and exertion of insufficient effort. This problem, recognized already by Smith (1776) and described in greater detail in Berle & Means (1932), is at the core of the two central theoretical frameworks for studying executive ownership and compensation.

The first line of research approaches the agency problem by contemplating managerial equity claims in the context of the ownership structure of the firm. Jensen & Meckling (1976) compare the behavior of a manager when she owns 100% of equity claims of the firm to the situation when she sells off a portion of these claims to outside shareholders. Using an example with non-pecuniary benefits they demonstrate, that while a partial manager-owner enjoys the full benefits of perquisite consumption, she bears only a portion of the associated costs equal to her partial ownership. The investors anticipate the overconsumption of perquisites by a manager and factor the associated agency costs into the price they are willing to pay for the stock. Within this framework the manager's fractional ownership represents a measure of severity of the agency conflict. The intuitive prediction of this theory is that with an increase in managerial ownership the interests of an agent and a principal become aligned, thereby inducing the agent to act in the best interests of a principal.

Early studies testing the "incentive alignment hypothesis" investigate whether higher levels of managerial fractional ownership are associated with superior firm performance (Morck *et al*. 1987, McConnell & Servaes 1990). These papers incorporate an additional prediction into the empirical tests: it is expected that managers with high enough levels of fractional ownership become more entrenched due to their ability to exercise greater control, resulting in a decrease

in firm value. Both studies mentioned above find empirical support for both the incentive alignment and the entrenchment hypotheses.

Although not ignoring the existence of the agency problem arising from managerial self-serving behavior, several studies criticize the theoretical grounds of the "incentive alignment" hypothesis by relying on market efficiency reasoning. Specifically, Demsetz & Lehn (1985) develop the so-called optimal contracting theory by arguing that the observed firm ownership structure is an endogenous outcome of a competitive selection in which costs and benefits are balanced to arrive at the equilibrium organization of the firm. In other words, the survival of the dispersed ownership implies that the benefits of this organizational form outweigh the costs to the shareholders and that the observed firm ownership structure is value-maximizing. In this context the degree of managerial self-serving behavior becomes irrelevant and no relation between fractional ownership and firm value should be expected ex ante. These arguments emphasize the importance of considering the endogenous nature of managerial fractional ownership in the empirical tests. Accordingly, when attempting to control for the endogeneity in the relationship between managerial ownership and firm performance, some studies have failed to find a positive relationship between the two (Demsetz & Lehn 1985, Himmelberg *et al.* 1999). However, several problems were encountered when applying econometric tools. Specifically, as noted by Zhou (2001), the firm fixed effect specification employed by Himmelberg *et al.* (1999) was unlikely to be powerful enough, because managerial ownership changes vary slowly over time, rendering detection of any positive relationship impossible.

With these caveats in mind, the subsequent studies in this area focus on refining econometric models, by both taking into account the endogeneity between managerial ownership and firm performance and attempting to overcome a problem of insufficient intertemporal variation in the levels of ownership. McConnell *et al.* (2008) approach the problem by investigating a short-term market reaction to increases in insider ownership resulting from share purchases and find a curvilinear relationship. Fahlenbach & Stulz (2009) examine the effect of large changes in managerial ownership on firm value and report an asymmetric relation: large increases in ownership increase firm value, while large decreases are not related to firm performance. Benson & Davidson (2009) investigate the relation between the dollar value of managerial ownership and firm performance by justifying their choice of ownership measure with the argument that the dollar value of ownership varies to a greater extent over time than the fractional

ownership. Overall, the question whether and how managerial ownership affects firm performance is still largely open.

The second large body of literature relevant to understanding executive compensation and ownership is efficient contracting. In contrast to the ownership structure theory, which builds its analysis by treating a manager as an existing partial owner of a company, the efficient contracting theory approaches the agency conflict ex ante. The fundamental question of the efficient contracting framework is: given the attributes of the firm's business environment and the manager, what should the managerial compensation contract look like to induce the exertion of maximum effort? The general answer, derived using analytical optimization modeling, is that when a manager's actions are not directly observable, the optimal response of a principal will be to offer a performance-sensitive compensation contract. In other words, this result, known also as the "informativeness principle" (Holmström 1979) suggests that any signal which provides information about the actions the manager took should be included in the compensation contract. Because a manager is assumed to be risk averse and firm performance may also be affected by factors beyond the manager's control, tying managerial wealth to firm performance is costlier to shareholders than providing fixed compensation only. Thus, given unobservability of managerial actions, the optimal performance-based contract represents the "second-best solution" to the agency problem. Were managerial actions observable, the contract consisting of the fixed amount of compensation would be optimal.

The solution to the principal-agent problem in general form (e.g. Holmström 1979) does not yield empirically testable predictions about the shape of the contract (Grossman & Hart 1983). Yet, in the special case of the general analytical model under the assumptions of linear compensation scheme, constant absolute risk aversion of an agent and normal distribution of the output performance measure, an optimal sharing rule reflecting the "incentive strength", takes the following form:

$$b = \frac{1}{(1 + r\sigma^2 c'')}, \tag{1}$$

where r is the agent's constant absolute risk aversion parameter, c'' is a second derivative of agent's personal cost of effort and σ^2 is the variance of the distribution of the performance measure (Holmström & Milgrom 1987). This

result suggests that less risk-averse and effort-averse agents should be provided with greater incentives, whereas firms operating in more uncertain environments should tie managerial compensation to the firm performance to a lesser extent.

Inspired by the efficient contracting framework, a number of empirical studies attempt to calibrate the propositions of the theoretical models using real world data. The first and the most straightforward prediction of the principal-agent framework concerns whether or not managerial compensation is tied to firm performance. The related concept of pay-for-performance sensitivity is thus defined as the responsiveness of CEO's firm-related income to the changes in firm performance. While the name "pay-for-performance" implies that incentives should stem from the current period compensation, most managers hold shares and options, the value of which depends on the changes in share price. Thus, total pay-for-performance sensitivity includes changes in all components of CEO's firm-related wealth.

In their influential study, Jensen & Murphy (1990) report that the median change in the US CEOs' firm-related wealth, consisting of annual cash compensation and revaluations of stock and options, equals $3.25 per thousand dollar change in shareholders' value. In addition, they find that the incentives are particularly low in the largest firms, which are the most important in the national economy. The authors conclude that such trivial observed managerial incentives are inconsistent with the predictions of formal agency models of optimal contracting.

In response to the low pay-for-performance puzzle and several other results inconsistent with optimal contracting, a new school of thought referred to as "managerial power theory" emerged as a critique of the conventional efficient contracting approach. The central argument of the managerial power hypothesis proposed by Bebchuk & Fried (2004) is that in reality the agency problem is not solved, because CEOs may influence the decisions of the board of directors regarding their compensation arrangements. In this view executive compensation is no longer a solution to the agency problem, but rather its manifestation. The degree of pay-for-performance sensitivity is also used as a major argument in assessing the fairness of high levels of executive compensation. Proponents of the managerial power approach attribute the lack of pay-for-performance sensitivity to weak governance mechanisms and managerial power over boards of directors.

The discussion above suggests that both the ownership structure theory and the efficient contracting theory deal with similar and to some extent overlapping

issues. Therefore, it is important to highlight similarities and differences between these two frameworks.

First, the respective relevant literatures lack consensus regarding the relation between managerial equity incentives and firm performance. On the one hand, if compensation contracts or ownership structure are viewed as an outcome of competitive market forces (Demsetz & Lehn 1985, Holmström & Milgrom 1987), no relation between executive compensation or equity ownership and firm performance should be expected. On the other hand, tests of the incentive alignment hypothesis (Morck *et al.* 1987) or a debate criticizing the lack of pay-for-performance sensitivities which exploded after Jensen & Murphy (1990) suggest that the relation should indeed exist.

Second, a theoretical measure of the "sharing rate" from the model of Holmström & Milgrom (1987), which appears in Equation (1), and its empirical proxy of dollar-to-dollar incentives (Jensen & Murphy 1990) are roughly equal to fractional ownership. While in the efficient contracting framework pay-for-performance is conceptualized in the form of compensation, executives derive most of their incentives through holdings of shares and options. For example, 77% of the Jensen & Murphy (1990) $3.25 estimate of dollar-to-dollar sensitivity is attributable to changes in the value of CEO's shareholdings, which corresponds to the 0.25% median fractional ownership. Hence, the pay-for-performance compensation arrangements of executives cannot be viewed in isolation from their existing equity holdings.

Third, an important stylized fact documented by both literatures, which questions the appropriateness of managerial fractional ownership as a measure of incentives, is an inverse relation between fractional ownership and firm size. Accordingly, Jensen & Murphy (1990) conclude that executives in the largest firms are least incentivized. This relation, however, is not surprising: the larger the firm, the greater the market value of a given fraction of ownership (e.g. Demsetz & Lehn 1985). Because executives are risk averse and do not possess sufficient wealth to hold a large fraction of a large company, the managerial fractional ownership drops as the company size increases (Hall & Liebman 1998). Hence, in evaluating pay-for-performance sensitivity it may be more appropriate to quantify changes in the shareholders' wealth in terms of stock returns rather than in terms of dollars as in Jensen & Murphy (1990), and to measure equity incentives as a change in manager's dollar wealth relative to the percentage change in stock return (Hall & Liebman 1998). A further extension of this line of reasoning implies that the same amount of income will be evaluated differently by

individuals with different amounts of outside wealth (Core & Guay 2010). Thus, by scaling a dollar value of managerial ownership with her outside wealth one may derive the most generalized version of incentives – percentage change in the manager's total wealth induced by a percentage change in the shareholder's value. This measure is independent of firm size and may be useful in assessing the relation between managerial equity ownership and firm performance. Measurement of executive equity incentives and their relation to firm performance represent the focus of the first essay.

2.2 Difference between stocks and stock options and implications for corporate policies and outcomes

As mentioned above, managers derive most of their incentives to increase firm value from their existing equity holdings, such as shares and stock options. Both options and shares may be granted to executives by the firm as a part of compensation. Such equity awards typically have a vesting period lasting from three to five years (Hall & Murphy 2002), during which the shares cannot be sold and options cannot be exercised. In addition to share-based compensation, shares and options may also be acquired through open market transactions. Thus, a manager typically holds a portfolio of restricted and unrestricted shares and options. While the primary goal of both shares and options is to align managerial interests with those of the shareholders, these equity instruments differ on several important dimensions, such as the slope and the convexity of the payoff structures, the right to receive dividends and accounting treatment. Due to these differences, compensating managers with options has different implications for corporate policies and outcomes than compensating managers with shares.

2.2.1 Stocks versus options: differences in the incentive structure of stocks and options and their implications for corporate risk-taking

Economics of incentive structure of options and stocks

A call stock option is a derivative equity instrument which represents a right to purchase a share in a company in the future at a pre-specified price called the exercise or strike price, and has a definite term after which the right expires. If the

future price drops below the exercise price on the option expiration date, the holder of a call option will not be able to exercise the right and the payoff will be zero. Because of the uncertainty associated with future payoff, the value of an option is lower than the value of a share and depends on the spread between a current share price and an option exercise price: the deeper options are in-the-money, the more certain is the payoff and the more valuable is the option. In contrast, the payoff function of a share is linear within the whole range of the share price realizations. Options with a zero intrinsic value, that is, with an exercise price in excess of the current share price, would still be valuable due to the probability that the share price will rise and the option will become exercisable before expiration. The value of a European call option is well approximated by the Black & Scholes (1973) model:

$$C = S_0 e^{-dT} N\left(\frac{\ln\left(\frac{S_0}{K}\right) + \left(r - d + \frac{\sigma^2}{2}\right)T}{\sigma\sqrt{T}}\right) - Ke^{-rT} N\left(\frac{\ln\left(\frac{S_0}{K}\right) + \left(r - d - \frac{\sigma^2}{2}\right)T}{\sigma\sqrt{T}}\right), \quad (2)$$

where S_o – current stock price, K – option exercise price, σ^2 – volatility of the stock returns, T – time to maturity, r – risk-free interest rate, d – dividend yield, $N(.)$ – cumulative probability function of normal distribution.

A comparison of payoff functions of shares and options is illustrated in Fig. 1. The graph illustrates option intrinsic value and Black-Scholes option value approximations using the following assumptions: exercise price = \$30, risk-free rate = 0.03, time to expiration = 7 years, dividend yield = 0, annualized volatility = 0.1 and 0.5.

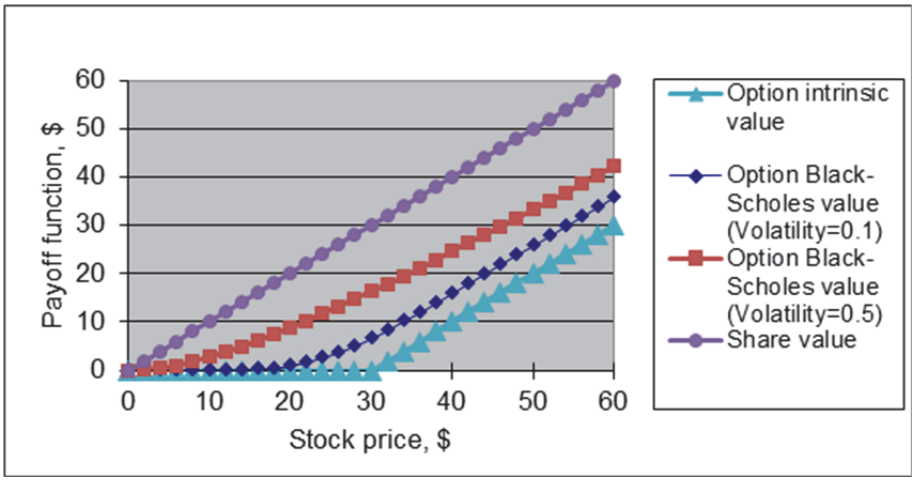

Fig. 1. Comparison of payoff functions of shares and options with different stock price volatilities.

As illustrated in Fig. 1, the option's payoff does not vary with changes in share price to the same extent as the payoff of the common stock: value of out-of-the-money options is quite insensitive to changes in the share price. However, the sensitivity of option value to changes in the share price approaches that of stock as the share price increases. Because the sensitivity of option value to changes in share price is less than one-to-one, in the calculation of managerial equity incentives it is appropriate to adjust the value or number of options with an adjustment factor. The adjustment factor (option delta) represents the first partial derivative of Black-Scholes option value with respect to share price:

$$Delta(call) = e^{-dT} N\left(\frac{\ln\left(\frac{S_0}{K}\right) + \left(r - d + \frac{\sigma^2}{2}\right)T}{\sigma\sqrt{T}}\right), \quad (3)$$

where S_o – current stock price, K – option exercise price, σ^2 – volatility of the stock price, T – time to maturity, r – risk-free interest rate, d – dividend yield, $N(.)$ – cumulative probability function of normal distribution.

Since the value of shareholdings is a linear function of changes in share price, delta on shareholdings is correspondingly equal to one.

The second observation from Fig. 1 is that the payoff structure of options may have different convexity. Because the payoff structure of the call option rewards upside risk without penalizing downside risk, the convexity of the option payoff depends on the volatility of the share price and, as illustrated, the greater the volatility, the more valuable is the option[1]. The sensitivity of the option value to the volatility of the share price (option vega) represents the first partial derivative of Black-Scholes option value with respect to stock return volatility:

$$Vega(call) = e^{-dt} S_0 \sqrt{T} N' \left(\frac{\ln\left(\frac{S_0}{K}\right) + \left(r - d + \frac{\sigma^2}{2}\right) T}{\sigma\sqrt{T}} \right), \quad (4)$$

where S_o – current price, K – option exercise price, σ^2 – volatility of the stock price, T – time to maturity, r – risk-free interest rate, d – dividend yield, $N'(.)$ – normal probability density function.

The above discussion implies that the incentive structure of shares and options differs along two important dimensions: (1) pay-for-performance provided by an option is lower than pay-for-performance from a share and option pay-for-performance increases as the share price increases; (2) the value of options increases with the riskiness of the underlying stock, while the value of share price is independent of changes in stock price volatility.

[1] Stock options are not the only source of the option-like payoff structures for executives. As pointed by Jensen & Meckling (1976), the total value of a levered firm represents a European call option of equity holders, with the exercise price equal to the face value of debt. Accordingly, the value of the common stock should increase with the volatility of firm's cash flows. However, as shown by Guay (1999) the risk-taking incentives provided by shares are trivial and may be neglected. Other examples of option-like payoff structures include the possibility of executive promotion to CEO position (Kini & Williams 2012) and also the possibility of employment termination (Chakraborty *et al.* 2007).

Executive option holdings, stock holdings and risk-related agency problem

Apart from the managerial tendency to exert low effort and appropriate corporate resources, another important agency problem stems from the fact that managers, being risk-averse and undiversified with respect to the company's value, may forgo risk-increasing net present value projects, which are in the best interests of shareholders. The assumption of manager's underdiversification arises because her wealth is expected to be tied to the shareholder value through the mechanism of pay-for-performance described earlier. As such, managers are not comparable to unrestricted investors, who are free to diversify their portfolios.

The executive delta and vega incentives provided by equity are related to this problem in the following way. First, higher sensitivity of equity holdings to share price may motivate a risk-averse and undiversified manager to forego sufficiently risky net present value projects, which are in the shareholders' best interests (Smith & Stulz 1985). This effect, however, is not unequivocal, since the general aim of pay-for-performance is to encourage a manager to increase shareholder value, and to take sufficient risks to generate such an increase. Therefore, the predicted relation between pay-for-performance and risk-taking activity is ambiguous. Second, higher sensitivity of equity holdings to stock volatility should mitigate these risk-related agency problems. As pointed out by Knopf *et al*. (2002), because of the opposing effects of value-increasing and risk-taking equity incentives, it is important to incorporate both of them into empirical tests when investigating the relation between managerial equity incentives and corporate risk policies.

The theory described above suggests two interrelated empirical predictions: (1) firms facing greater demand for risk-taking are expected to provide executives with greater risk-taking incentives, and (2) managers with higher risk-taking incentives are expected to make riskier investment and financing decisions. The interrelated nature of these empirical predictions implies the existence of a simultaneity bias in the relation between the two.

Smith & Stulz (1985) and Milgrom & Roberts (1992) suggest that the risk-related agency problems are most severe in growing firms, therefore growing firms are supposed to provide managers with more convex compensation structures. Consistent with this assertion Guay (1999) reports that managers in firms with more valuable growth opportunities have greater risk-taking incentives, whereas greater managerial risk-taking incentives are associated with higher stock return volatility. This finding implies that convex compensation

schemes affect the riskiness of investing and financing decisions. Coles *et al.* (2006) employ a simultaneous equations empirical research design and find that a higher vega implements riskier corporate policies, while at the same time riskier policy choices lead to compensation structures with higher vega and lower delta. The firm risky choices in their study are measures as higher R&D investment, lower capital expenditures, higher leverage, narrower corporate focus and greater stock return volatility. Low (2009) investigates how an exogenous shock to the corporate risk environment affects firm compensation policies and documents that companies respond to it by providing managers with greater risk-taking incentives. Chava & Purnanandam (2010) extend this line of research by comparing the effect of risk-taking incentives of both a CEO and a CFO on the broad set of corporate policies and find that the predicted relations are present when a particular executive has a greater discretion over a specific corporate choice. Other studies investigate the effect of managerial risk-taking incentives on other dimensions of corporate risk such as tax aggressiveness (Rego & Wilson 2012), risky financial reporting choices (Armstrong *et al*. 2013), volatility of idiosyncratic and systematic components of firm stock return (Armstrong & Vashishtha 2012), and degree of hedging activity (Knopf *et al.* 2002, Rogers 2002).

While extensively relied on in the empirical tests, the assumption that greater risk-taking incentives motivate greater risk taking is exposed to the effect of managerial risk-aversion, rendering the prediction ambiguous. Ross (2004) shows theoretically that for a risk-averse manager the compensation schedule moves the evaluation of a given gamble to a different part of the domain of her original utility function, where the manager may be less or more risk averse. In other words, the agent assesses the risk from the perspective of being wealthier and this effect may offset the impact of the compensation convexity. Lewellen (2006) takes into account the effect of managerial risk aversion and quantifies volatility cost of debt as a change in manager's certainty equivalent induced by changes is firm leverage. Her results suggest that stock options, especially those in-the-money, discourage managerial risk-taking. Hayes *et al.* (2012) use these arguments to explain the lack of reduction in the riskiness of corporate investment and financing policies following an exogenous decrease in managerial vega incentives triggered by the adoption of SFAS 123R.

In sum, the role of option-based compensation in mitigating risk-related agency problem is not fully understood. The second essay of the dissertation is devoted to this question.

2.2.2 Stocks versus options: Differences in accounting treatment and its impact on the structure and the level of executive equity-based compensation

The essence of share-based compensation is the exchange of labor for an equity claim. Its economics is better understood by disaggregating an equity grant into two separate transactions: issuing a share or an option to an outside shareholder and then using the cash proceedings to pay salaries to employees (Guay *et al.* 2003). A firm awarding share-based compensation thus increases contributed capital and at the same time incurs an operating expense equal to the fair value of the equity claim. For stock grants, the accounting treatment is straightforward, because their fair value is equal to the grant date share price multiplied by the number of shares. Stock options, in contrast, represent a contingent equity claim and therefore approximating their value for financial reporting purposes involves some difficulties.

Specifically, in the US, according to the initial accounting rule for the option compensation, Accounting Principles Board Opinion 25 (APB 25) issued in 1973, firms had to expense the intrinsic value of an option grant equal to the spread between a grant date share price and an exercise price of an option in the income statements. As illustrated in Fig. 1, when options are issued at- or out-of the money, their intrinsic value is zero. However, such options have a time value due to the probability that they will become exercisable before expiration and consequently, firms also incur an economic cost when granting at- or out-of-the-money options. Because the intrinsic value method of APB 25 failed to fully account for this cost, it made options an appealing equity instrument for share-based compensation purposes. Partially due to the favorable accounting treatment, the option-based compensation increased dramatically during 1990s and represented the most popular type of share-based compensation in the US at that time (Murphy 2012). The option awards were designed so as to avoid the income statement compensation charge: they were granted mostly at-the-money, that is, with the exercise price set equal to the grant date share price. There were also some additional restrictions to qualify for favorable APB 25 accounting treatment. Specifically, the exercise price of an option had to be known or fixed on the grant date. If the exercise price was indexed to the industry or market performance, or vesting of options was contingent upon the achievement of some performance goals, the accounting charge under APB 25 was greater. Similarly, options

entitling the holder to receive dividends were not viewed as fixed-plan options and did not receive the favorable accounting treatment.

Although sophisticated option valuation techniques, such as Black-Scholes and binomial valuation models were developed in the 1970s, the Financial Accounting Standards Board (FASB) was reluctant to approve their use for the measurement of option compensation expense over a long period. The main argument against applying these methods was that they did not estimate value of employee stock options reliably. Specifically, both Black-Scholes and binomial valuation models were developed for valuing options traded on stock exchanges by presumably diversified investors. In contrast, employee stock options are typically non-hedgeable, non-transferable and have vesting periods over which they cannot be exercised. Hence, they are not entirely comparable to traded options. In addition, because executives are assumed to be undiversified and risk-averse, they are expected to assign a lower value to their options relative to other investors (e.g. Lambert *et al.* 1991, Hall & Murphy 2002). In support of these assertions it has been demonstrated that executives typically exercise their options well before expiration (Hemmer *et al*. 1996, Bettis *et al.* 2005).

Because of the increasing political pressure and public criticism towards the intrinsic value method accounting for option-based compensation, in 1995 the FASB issued SFAS 123, which encouraged, but did not require expensing of grant date fair value of options in income statements, leaving APB 25 as an alternative. To address concerns regarding employee risk aversion and undiversification, companies were guided to use the expected instead of the actual time to expiration when calculating option fair value. If a company chose to apply the intrinsic value method of APB 25, the fair value of option grants had to be disclosed in the footnotes to financial statements. Despite the more conservative approach of SFAS 123, virtually all firms continued granting at-the-money fixed options and account for them using the intrinsic value method of APB 25.

The accounting treatment for options was finally changed in 2004 following the accounting scandals in the early 2000s and even greater political pressure on the FASB[2]. The new accounting standard, SFAS 123R, required expensing of the fair value of all option awards in income statements. It has been shown that firms responded to this regulatory change by substituting options with restricted stock

[2] At the same time the International Accounting Standards Board (IASB) issued International Financial Reporting Standard No. 2 Share Based Payment, which required income statement recognition of an employee stock option expense using grant date fair value.

and performance-based awards in executive and employee compensation packages (e.g. Carter *et al.* 2007; Brown & Lie 2012).

Apart from firms' propensity to grant fixed at-the-money options and thereby avoid an income statement charge, there were a number of other questionable practices associated with executive and employee option-based compensation documented primarily in samples ending before the adoption of SFAS 123R. First, several studies have found that higher option-based compensation was associated with earnings management and even accounting fraud for purposes of increasing executive personal option payoffs (Cheng & Warfield 2005, Bergstresser & Philippon 2006, Burns & Kedia 2006, Efendi *et al.* 2007). Second, another body of literature provides evidence that companies manipulate option valuation assumptions in order to underreport either the disclosed or recognized option-based compensation fair value (Aboody *et al.* 2006, Hodder *et al*. 2006, Johnston 2006, Bartov *et al.* 2007, Bechmann & Hjortshøj 2009, Choudhary 2011). Third, the results of a related stream of research suggest that companies structure share-based compensation transactions so as to avoid recognition of the option-based compensation expense (Carter and Lynch 2003, Carter *et al.* 2007, Choudhary *et al*. 2009). Fourth, in the mid-2000s a practice of option backdating, i.e. choosing an option grant or exercise date with the lowest share price retroactively, was discovered (Heron & Lie 2007, Dhaliwal *et al.* 2009, Cicero, 2009).

The opportunistic behavior associated with option-based compensation reveals its "dark side". There is, however, little evidence on the mechanisms triggering opportunistic behavior related to share-based compensation in the post-SFAS 123R period, when firms began to recognize fair value of all equity awards in income statements. Additionally, because before the adoption of SFAS 123R stock options were the dominant form of share-based compensation, there is no evidence as to whether similar dysfunctional behavior extends to other forms of share-based compensation. The third essay sheds light on these issues.

2.2.3 Stocks versus options: Corporate payout policy implications

Managerial equity ownership is related to the corporate payout policy in the following ways. First, it can mitigate a free cash flow problem, which arises when an entrenched manager spends internally generated cash flows on value-destroying projects instead of returning the funds to investors via dividends and share repurchases (Jensen 1986). If higher managerial ownership aligns the

interests of managers and shareholders, firms in which managers hold more equity are expected to have greater payouts. Testing this prediction, Fenn & Liang (2001) find that managerial stock ownership is associated with higher payouts, but only in firms characterized by the greatest agency problems – those with low managerial ownership and scarce growth opportunities.

Second, executive stock- and option holdings have different implications for the composition of the corporate payout. Specifically, dividend-protected option grants did not qualify for the favorable accounting treatment of APB 25 described earlier that caused virtually all companies to grant non-dividend protected options to their employees before the adoption of SFAS 123R (Murphy 1999). The value of non-dividend protected options, however, decreases with the dividend yield, as is also evident from Equation (2), and holders of such options forego dividends which they could otherwise receive were the options converted into shares. Thus, ceteris paribus, executives holding more options are expected to have a greater preference for stock repurchases relative to dividends as a form of corporate payout. In contrast, shareholdings capture both the dividends and value increases from stock repurchases to the same extent. The managers, however, are often restricted from selling their shares (Core & Guay 1999) and may not be able to immediately benefit from the share repurchases. In this respect, executives with greater shareholdings may favor dividends over repurchases as a form of corporate payout for personal liquidity reasons.

The results of empirical studies generally support the predictions on the relation between managers' share and option holdings and the structure of corporate payout. Fenn & Liang (2001) find that firms with greater managerial option holdings increase repurchases at the expense of dividends. Kahle (2002) reports that companies decide to repurchase options both in order to offset share dilution from broad-based option plans and when managerial wealth is expected to be adversely impacted by the dividend payments, that is, when managers hold many options. Cuny *et al*. (2009) find that executive stock options are associated with lower total payouts and conclude that incentives from the lack of dividend protection of options dominate those related to the antidilution effect of broad-based option plans in the decision on the magnitude of a total corporate payout. This implies that, in addition to incentives to alter the structure of corporate payouts, executive stock options may also exacerbate the free cash flow problem. In contrast, in their survey of financial executives Brav *et al.* (2005) find little support for the notion that companies prefer repurchases over dividends because employee stock options are not dividend protected. With respect to the prediction

that managerial stock ownership encourages payouts in the form of dividends, Brown *et al.* (2007) report that companies in which managers held large amounts of shareholdings increased dividend payments following the enactment of the Jobs and Growth Tax Relief Reconciliation Act in 2003, which reduced the dividend tax rate from 38.6% to 15%.

The findings regarding an impact of executive ownership structure on the corporate payout policy generally suggest that executives view dividends as an important component of their personal firm-related income. The role of this dividend income in the executive compensation decisions is studied in the fourth essay.

3 Summary of articles

3.1 Essay 1: CEO's personal wealth, equity incentives, and firm performance

The first essay analyses the determinants and performance implications of the novel measure of executive equity incentives, which takes into account the total wealth of an executive. Agency theory predicts that higher managerial ownership should align the interests of managers and shareholders and encourage managers to exert greater effort which, in turn, should enhance firm performance (Jensen & Meckling 1976). Yet the results of earlier studies using alternative measures of executive ownership such as managerial fractional ownership or dollar at stake, are mixed (e.g. Morck *et al.* 1988, Demsetz & Lehn 1985, Himmelberg *et al.* 1999, Mehran 1995, Zhou 2001, Core & Larcker 2002, Fahlenbrach & Stulz 2009, McConnell *et al.* 2008). We argue that the inconclusive evidence from these studies may stem, in part, from the imprecise measurement of executive equity incentives. Specifically, fractional ownership is spuriously dependent on firm size, while dollar at stake represents unscaled incentives. However, the same dollar at stake will be evaluated differently by individuals with different amounts of outside wealth. Thus, an executive's dollar at stake scaled with her outside wealth may more precisely capture the incentive effects of equity than the other traditional measures. Earlier studies have been unable to analyze this measure of equity incentives because of the confidential nature of the individual personal wealth information in many countries. We overcome the data limitations by using information on the CEOs' outside wealth obtained from the Swedish Tax Authorities.

The empirical results show that the CEOs' equity incentives are economically more significant when they are measured relative to CEOs' outside wealth rather than relative to the total market value of the firm. We also find that this measure of incentives is negatively associated with firm size and CEO's age and positively associated with the riskiness of firm operations. Finally, when controlling for the dynamic nature of endogeneity between CEO's ownership and firm performance, we document a positive relation between CEO's equity incentives and future accounting performance. The findings of the study have implications for compensation consultants and boards of directors.

3.2 Essay 2: Customer default risk management in interfirm trade: The role of executive risk-taking incentives

The second essay investigates whether greater vega incentives provided by stock options motivate executives to take greater operating risks through offering trade credit to financially distressed customers. Prior literature has mostly focused on whether executive vega incentives explain riskiness of traditional corporate investment and financing policies (Coles *et al.* 2006, Brockman *et al.* 2010, Chava & Purnanandam, 2010) and paid limited attention to the factors affecting the extent of firm operating risks. This question, however, is important, because according to the firm valuation framework, future free cash flows are primarily generated by firm operating activities. Hence, understanding the factors affecting riskiness of firm operating assets is of interest to investors concerned with estimating firm value.

In addition, in the trade credit literature there is a puzzling finding indicating that financially distressed firms are not denied trade credit (Petersen & Rajan 1997, Atanasova 2007, Giannetti *et al.* 2011). Essay 2 addresses this issue by focusing on the attributes of suppliers providing trade credit to financially distressed customers, and specifically on the equity incentive structure of the supplier company's management.

I measure the operating risk using an allowance for uncollectible debts which arises as a consequence of providing trade credit. In order to validate the empirical measures of the customer default risk I first investigate whether they are related to the overall riskiness of the firm as reflected in stock return volatility. Empirical analysis shows a positive relation between the allowance for uncollectible debts and stock return volatility after controlling for other factors affecting riskiness of the firm. The results also indicate that executive vega incentives are significantly positively related to the degree of risk a firm takes when offering trade credit to its customers. These inferences hold across alternative measures of executive vega incentives and the customer default risk, as well as when the regressions are estimated using a two-stage least squares technique.

3.3 Essay 3: Share-based compensation expense and timing of equity grants: Evidence from post-SFAS 123R adoption period

The third essay explores whether the accounting treatment of share-based compensation motivates firms to opportunistically time large equity grants close to earnings news releases. Evidence in the related literature suggests that share-based compensation expense is important for firms because they attempt to avoid or underreport it by manipulating option valuation assumptions (Aboody *et al.* 2006, Hodder *et al*. 2006, Johnston 2006, Bartov *et al.* 2007, Bechmann & Hjortshøj 2009, Choudhary 2011) and by structuring share-based compensation transactions to qualify for the favorable accounting treatment (Carter and Lynch 2003, Carter *et al.* 2007, Choudhary *et al*. 2009). Additionally, it has been documented that managers take opportunistic actions aimed at the minimization of exercise price of their stock options induced by the rule that option exercise price cannot be lower than the grant date share price to qualify for the compensation expense waiver in the income statement under SFAS 123 reporting (Yermack 1997, Aboody & Kasznik 2000, Baker *et al.* 2003, Heron & Lie 2007, McAnally *et al*. 2008, Baker *et al.* 2009). In this essay I combine the predictions of these literatures to investigate whether companies attempt to time dates of large equity awards, the value of which is determined with reference to the grant date share price in SFAS 123R reporting environment, for purposes of minimizing the associated share-based compensation expense.

The main findings of the study suggest that firms award large grants of equity – including both restricted stock and options – shortly before the releases of favorable earnings news, rather than shortly thereafter. These results appear to be stronger for grants of restricted stock than for options, which is likely to be due to reduced flexibility in determining the grant dates of options as a result of the 2006 SEC executive compensation disclosure reform and option backdating scandal. The results imply that the adverse consequences associated with share-based compensation may not be entirely resolved by substituting stock options with the restricted stock grants in executive and employee equity compensation packages under the SFAS 123R reporting regime.

3.4 Essay 4: Executive dividend income and its role in compensation decisions

The fourth essay sheds light on the role of an economically important, yet explicitly undisclosed component of executive compensation, namely executive dividend income and its role in executive compensation decisions. Despite the fact that the majority of companies in the global economy pay dividends and executives typically hold large amounts of equity, the literature on executive compensation and insider trading has paid limited attention to the fact that some executives derive the bulk of their firm-related cash income in the form of dividends. Dividend income, however, mitigates the current period liquidity needs of executives, thereby making executives who expect to receive high dividends less motivated to negotiate for higher current period cash salaries. In contrast to shareholdings, stock options are not dividend protected, hence executives holding large amounts of options may require a cash premium for the dividends foregone due to option holdings. These arguments are drawn from the streams of research suggesting that trading profits represent an alternative form of compensation (Roulstone 2003, Denis and Xu 2013) and that the absence of option dividend protection motivates executives with larger holdings of stock options to favor stock repurchases over dividends as a means of cash distribution to shareholders (Fenn and Liang 2001, Kahle 2002, Cuny *et al.* 2009, Aboody and Kasznik 2008).

The results of the essay show that firms pay less cash compensation to CEOs who receive larger dividends. Further, CEOs with larger dividends foregone due to the absence of dividend protection of stock options, receive a cash premium. The essay contributes to the literature on the determinants of executive cash compensation and provides evidence of the corporate mechanisms mitigating the absence of dividend protection of executive stock options.

List of references

Aboody D, Barth ME & Kasznik R (2006) Do firms understate stock option-based compensation expense disclosed under SFAS 123? Review of Accounting Studies 11(4): 429-461.

Aboody D & Kasznik R (2000) CEO stock option awards and the timing of corporate voluntary disclosures. Journal of Accounting and Economics 29(1): 73-100.

Aboody D & Kasznik R (2008) Executive stock-based compensation and firms' cash payout: The role of shareholders' tax-related payout preferences. Review of Accounting Studies 13(2-3): 216-251.

Armstrong CS, Larcker DF, Ormazabal G & Taylor DJ (2013) The relation between equity incentives and misreporting: The role of risk-taking incentives. Journal of Financial Economics 109(2): 327-350.

Armstrong CS & Vashishtha R (2012) Executive stock options, differential risk-taking incentives, and firm value. Journal of Financial Economics 104(1): 70-88.

Atanasova C (2007) Access to institutional finance and the use of trade credit. Financial Management 36(1): 49-67.

Baker T, Collins D & Reitenga A (2003) Stock option compensation and earnings management incentives. Journal of Accounting, Auditing and Finance 18(4): 557-582.

Baker TA, Collins DL & Reitenga AL (2009) Incentives and opportunities to manage earnings around option grants. Contemporary Accounting Research 26(3): 249-272.

Bartov E, Mohanram P & Nissim D (2007) Managerial discretion and the economic determinants of the disclosed volatility parameter for valuing ESOs. Review of Accounting Studies 12(1): 155-179.

Bebchuk L & Fried J (2004) Pay without performance: The unfulfilled promise of executive compensation, Cambridge, MA: Harvard University Press.

Bechmann KL & Hjortshøj TK (2009) Disclosed values of option-based compensation – incompetence, deliberate underreporting or the use of expected option life? European Accounting Review 18(3): 475-513.

Benson BW & Davidson III WN (2009) Reexamining the managerial ownership effect on firm value. Journal of Corporate Finance 15(5): 573-586.

Bergstresser D & Philippon T (2006) CEO incentives and earnings management. Journal of Financial Economics 80(3): 511-529.

Berle AA & Means GC (1932) The modern corporation and private property, New York: Macmillan.

Bettis JC, Bizjak JM & Lemmon ML (2005) Exercise behavior, valuation, and the incentive effects of employee stock options. Journal of Financial Economics 76(2): 445-470.

Black F & Scholes M (1973) The pricing of options and corporate liabilities. The Journal of Political Economy 81: 637-654.

Brav A, Graham JR, Harvey CR & Michaely R (2005) Payout policy in the 21st century. Journal of Financial Economics 77(3): 483-527.

Brockman P, Martin X & Unlu E (2010) Executive compensation and the maturity structure of corporate debt. The Journal of Finance 65(3): 1123-1161.
Brown JR, Liang N & Weisbenner S (2007) Executive financial incentives and payout policy: Firm responses to the 2003 dividend tax cut. The Journal of Finance 62(4): 1935-1965.
Brown LD & Lee Y (2011) Changes in option-based compensation around the issuance of SFAS 123R. Journal of Business Finance & Accounting 38(9-10): 1053-1095.
Burns N & Kedia S (2006) The impact of performance-based compensation on misreporting. Journal of Financial Economics 79(1): 35-67.
Carter ME & Lynch LJ (2003) The consequences of the FASB's 1998 proposal on accounting for stock option repricing. Journal of Accounting and Economics 35(1): 51-72.
Carter ME, Lynch LJ & Tuna I (2007) The role of accounting in the design of CEO equity compensation. The Accounting Review 82(2): 327-357.
Chakraborty A, Sheikh S & Subramanian N (2007) Termination risk and managerial risk taking. Journal of Corporate Finance 13(1): 170-188.
Chava S & Purnanandam A (2010) CEOs versus CFOs: Incentives and corporate policies. Journal of Accounting and Economics 97(2): 263-278.
Cheng Q & Warfield TD (2005) Equity incentives and earnings management. The Accounting Review 80(2): 441-476.
Choudhary P (2011) Evidence on differences between recognition and disclosure: A comparison of inputs to estimate fair values of employee stock options. Journal of Accounting and Economics 51(1-2): 77-94.
Choudhary P, Rajgopal S & Venkatachalam M (2009) Accelerated vesting of employee stock options in anticipation of FAS 123-R. Journal of Accounting Research 47(1): 105-146.
Cicero DC (2009) The manipulation of executive stock option exercise strategies: Information timing and backdating. The Journal of Finance 64(6): 2627-2663.
Coles JL, Daniel ND & Naveen L (2006) Managerial incentives and risk-taking. Journal of Financial Economics 79(2): 431-468.
Core JE & Larcker DF (2002) Performance consequences of mandatory increases in executive stock ownership. Journal of Financial Economics 64(3): 317-340.
Core J & Guay W (1999) The use of equity grants to manage optimal equity incentive levels. Journal of Accounting and Economics 28(2): 151-184.
Core JE & Guay WR (2010) Is CEO pay too high and are incentives too low? A wealth-based contracting framework. Academy of Management Perspectives 24(1): 5-19.
Cuny CJ, Martin GS & Puthenpurackal JJ (2009) Stock options and total payout. Journal of Financial and Quantitative Analysis 44(2): 391-410.
Demsetz H & Lehn K (1985) The structure of corporate ownership: Causes and consequences. Journal of Political Economy 93(6): 1155-1177.
Denis DJ & Xu J (2013) Insider trading restrictions and top executive compensation. Journal of Accounting and Economics 56(1): 91-112.

Dhaliwal D, Erickson M & Heitzman S (2009) Taxes and the backdating of stock option exercise dates. Journal of Accounting and Economics 47(1–2): 27-49.

Efendi J, Srivastava A & Swanson EP (2007) Why do corporate managers misstate financial statements? The role of option compensation and other factors. Journal of Financial Economics 85(3): 667-708.

Fahlenbrach R & Stulz RM (2009) Managerial ownership dynamics and firm value. Journal of Financial Economics 92(3): 342-361.

Fenn GW & Liang N (2001) Corporate payout policy and managerial stock incentives. Journal of Financial Economics 60(1): 45-72.

Giannetti M, Burkart M & Ellingsen T (2011) What you sell is what you lend? Explaining trade credit contracts. Review of Financial Studies 24(4): 1261-1298.

Grossman S & Hart O (1983) An analysis of the principal-agent problem. Econometrica 51(1): 7-45.

Guay W, Kothari S & Sloan R (2003) Accounting for employee stock options. American Economic Review 93(2): 405-409.

Guay WR (1999) The sensitivity of CEO wealth to equity risk: an analysis of the magnitude and determinants. Journal of Financial Economics 53(1): 43-71.

Hall BJ & Liebman JB (1998) Are CEOs really paid like bureaucrats? The Quarterly Journal of Economics 113(3): 653-691.

Hall BJ & Murphy KJ (2002) Stock options for undiversified executives. Journal of Accounting and Economics 33(1): 3-42.

Hayes RM, Lemmon M & Qiu M (2012) Stock options and managerial incentives for risk taking: Evidence from FAS 123R. Journal of Financial Economics 105(1): 174-190.

Hemmer T, Matsunaga S & Shevlin T (1996) The influence of risk diversification on the early exercise of employee stock options by executive officers. Journal of Accounting and Economics 21(1): 45-68.

Heron RA & Lie E (2007) Does backdating explain the stock price pattern around executive stock option grants? Journal of Financial Economics 83(2): 271-295.

Himmelberg CP, Hubbard RG & Palia D (1999) Understanding the determinants of managerial ownership and the link between ownership and performance. Journal of Financial Economics 53(3): 353-384.

Hodder L, Mayew WJ, McAnally ML & Weaver CD (2006) Employee stock option fair-value estimates: Do managerial discretion and incentives explain accuracy? Contemporary Accounting Research 23(4): 933-975.

Holmström B (1979) Moral hazard and observability. Bell Journal of Economics 10(1): 74-91.

Holmström B & Milgrom P (1987) Aggregation and linearity in the provision of intertemporal incentives. Econometrica 55(2): 303-328.

Jensen MC (1986) Agency costs of free cash flow, corporate finance, and takeovers. American Economic Review 76(2): 323-329.

Jensen MC & Meckling WH (1976) Theory of the firm: Managerial behavior, agency costs and ownership structure. Journal of Financial Economics 3(4): 305-360.

Jensen MC & Murphy KJ (1990) Performance pay and top-management incentives. Journal of Political Economy 98(2): 225.
Johnston D (2006) Managing stock option expense: The manipulation of option-pricing model assumptions. Contemporary Accounting Research 23(2): 395-425.
Kahle KM (2002) When a buyback isn't a buyback: open market repurchases and employee options. Journal of Financial Economics 63(2): 235-261.
Kini O & Williams R (2012) Tournament incentives, firm risk, and corporate policies. Journal of Financial Economics 103(2): 350-376.
Knopf JD, Nam J & Thornton Jr JH (2002) The volatility and price sensitivities of managerial stock option portfolios and corporate hedging. The Journal of Finance 57(2): 801-813.
Lambert RA, Larcker DF & Verrecchia RE (1991) Portfolio considerations in valuing executive compensation. Journal of Accounting Research 29(1): 129-149.
Lewellen K (2006) Financing decisions when managers are risk averse. Journal of Financial Economics 82(3): 551-589.
Low A (2009) Managerial risk-taking behavior and equity-based compensation. Journal of Financial Economics 92(3): 470-490.
McAnally ML, Srivastava A & Weaver CD (2008) Executive stock options, missed earnings targets, and earnings management. The Accounting Review 83(1): 185-216.
McConnell JJ & Servaes H (1990) Additional evidence on equity ownership and corporate value. Journal of Financial Economics 27(2): 595-612.
McConnell JJ, Servaes H & Lins KV (2008) Changes in insider ownership and changes in the market value of the firm. Journal of Corporate Finance 14(2): 92-106.
Mehran H (1995) Executive compensation structure, ownership, and firm performance. Journal of Financial Economics 38(2): 163-184.
Milgrom PR & Roberts J (1992) Economics, organization and management, Prentice-Hall Englewood Cliffs, NJ.
Morck R, Shleifer A & Vishny RW (1988) Management ownership and market valuation. An empirical analysis. Journal of Financial Economics 20: 293-315.
Murphy K (In press) Executive compensation: Where we are, and how we got there. In: Constantinides G, Harris M & Stulz R (eds) Handbook of the Economics of Finance. Amsterdam: North-Holland.
Murphy K (1999) Chapter 38 Executive compensation. In: Ashenfelter O & Card D (eds) Handbook of Labour Economics (Chapter 38). Amsterdam, North-Holland: 2485–2563.
Petersen M & Rajan R (1997) Trade credit: Theories and evidence. Review of Financial Studies 10(3): 661-691.
Rego SO & Wilson R (2012) Equity risk incentives and corporate tax aggressiveness. Journal of Accounting Research 50(3): 775-810.
Rogers DA (2002) Does executive portfolio structure affect risk management? CEO risk-taking incentives and corporate derivatives usage. Journal of Banking & Finance 26(2–3): 271-295.

Ross SA (2004) Compensation, incentives, and the duality of risk aversion and riskiness. The Journal of Finance 59(1): 207-225.

Roulstone DT (2003) The relation between insider-trading restrictions and executive compensation. Journal of Accounting Research 41(3): 525-551.

Smith A (1937) The wealth of nations (1776). New York, Modern Library.

Smith C & Stulz R (1985) The determinants of firms' hedging policies. Journal of Financial and Quantitative Analysis 20(4): 391-405.

Yermack D (1997) Good timing: CEO stock option awards and company news announcements. The Journal of Finance 52(2): 449-476.

Zhou X (2001) Understanding the determinants of managerial ownership and the link between ownership and performance: Comment. Journal of Financial Economics 62(3): 559-571.

List of original essays

I Elsilä A, Kallunki JP, Nilsson H & Sahlström P (2013) CEO personal wealth, equity incentives and firm performance. Corporate Governance: An International Review 21(1): 26-41

II Elsilä A (2014) Customer default risk management in interfirm trade: The role of executive risk-taking incentives. Manuscript.

III Elsilä A (2014) Share-based compensation expense and timing of equity grants: Evidence from post-SFAS 123R adoption period. Manuscript.

IV Elsilä A (2014) Executive dividend income and its role in compensation decisions. Manuscript.

Book orders:
Granum: Virtual book store
http://granum.uta.fi/granum/

UNIVERSITY OF OULU P.O. Box 8000 FI-90014 UNIVERSITY OF OULU FINLAND

ACTA UNIVERSITATIS OULUENSIS

UNIVERSITY of OULU
OULUN YLIOPISTO

ISBN 978-952-62-0734-6 (Paperback)
ISBN 978-952-62-0735-3 (PDF)
ISSN 1455-2647 (Print)
ISSN 1796-2269 (Online)