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# Managerial Ownership and Financial Performance

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## Preface and acknowledgement

*Some of the most wonderful in the sphere of intellectual phenomena are the ways  
a single glimpse of light, a single precious hint, may order and put life to a  
human's entire world of ideas. Some people search for this light and never find it.  
But most don't even search.*

Kipling

Now I know that the relation between managerial ownership and financial performance is part of a large area of research in economic and legal matters that frequently is referred to as corporate governance. Ten years ago when I was a B.Sc. student at the Department of Economics, Copenhagen University, Denmark, I did not know that, but at that time my interest in corporate governance originated. I was astonished to find that ordinary people in Denmark had accumulated enormous fortunes in savings through institutional investors and that these investors, in turn, owned a large share of the Danish stock market as well as the Danish bond market. Ever since that time I have been studying issues in corporate governance. The subject of the present dissertation was chosen because it is a classic phenomenon that has been studied and discussed at least since Adam Smith wrote his famous book *'The Wealth of Nations'* in 1776. As a result, it is a mature academic topic for which it is relatively easy to find papers on theory as well as empirical studies that have attempted to test the theories about the phenomenon. I find this attractive because it gives the best opportunity to learn from the experiences of other researchers, an essential task for any Ph.D. student. However, to choose a mature topic is also more challenging in the sense that it becomes more difficult to come up with something new that has not been published already, and I find this challenge equally appealing.

One of the most daunting features about doing research is that it typically is necessary to specialize very highly in order to be able to delve deeply enough into a matter to discover something new. However, it is also necessary to have comprehensive knowledge about general issues because otherwise one risks ending up with no understanding of the big picture. Such a lack of perspective may also hinder the development of new ideas since new ideas often are made simply by applying techniques from other fields to the field that one has specialized in. For these reasons I have tried both to specialize in managerial ownership and financial performance, while at the same time remembering to read about other topics in economics and, in particular, to learn about topics in corporate governance. Nevertheless, two and a half years ago I was worried about handing in a highly specialized dissertation that only would be read by at most 20 other researchers. I was also worried that no one would ever benefit from the effort I had made in accumulating knowledge about corporate governance in general. Therefore, I decided to start the development of a website about general issues in corporate governance in the hope that other scholars as well as practitioners of corporate

governance would find some of the information useful. This website has been more successful than I had hoped and today it has been visited by more than 50,000 unique visitors who have generated about 1 million hits and traffic to this website is still growing (for statistics see <http://www.encycogov.com/webstat>). Unfortunately, the work on this website, as well as a few other jobs, delayed my dissertation by about two years. I did not ask for other funding for these two years because I thought the project was too unconventional and risky to be approved. Nevertheless, I have no regrets because I was given a unique opportunity to do something different and challenging that would be far more difficult to do later on when one's life is more tightly scheduled than it is working as a Ph.D. student in Denmark. Moreover, because I did all the technical work involved in building this website I no longer have PC problems that I cannot overcome. This is a great advantage because I can still remember those days when I was unable to work efficiently because I had to wait for somebody to come and debug my PC.

I am in debt to the many individuals who helped me with the work on this dissertation: to my adviser Steen Thomsen, professor at Department of International Economics and Management, Copenhagen Business School (CBS), for giving me countless valuable suggestions and for allowing me to pursue my own agendas, such as developing my website; to Lisbeth la Cour, associate professor at Department of Economics, CBS, for advising me on the development of the regression models and for taking time to help me with statistical problems; to Michael Møller, professor at Department of Finance, CBS, for reading and commenting on the crucial chapters on theory and empirical analysis; to Patricia Plackett, Ph.D. candidate at Department of Industrial Economics and Strategy, CBS, for her dedicated work on proofreading the entire dissertation and for taking time to teach me about the English language; to B.V. Phani, Ph.D. candidate at the Indian Institute of Management, Calcutta, for his generous help with writing the Excel macros that made it possible to work with very large data samples and to order data so that they could be used as input for the SAS System; to Kasper Svendsen, the bright son of one of my colleges at Department of International Business and Management, CBS, for helping me to write an Excel Macro that made it possible to obtain data on managerial remuneration; to Jeanne Albrecht-Beste, secretary at Department of International Economics and Management, CBS, for helping me with databases as well as with the list of references; to the many people at CBS library and IT services for their timely and professional assistance; and finally to my family and friends for their unrelenting support, despite the fact that my work took almost all of my time and energy.

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## Dissertation summary

This dissertation investigates whether financial performance is a function of managerial ownership. It also explores whether managerial ownership is a function of performance. In terms of transaction cost economics, it analyses whether a particular incentive mechanism, namely ownership by managers, is able to reduce the transaction costs of a particular agency problem, specifically the managerial agency problem, and whether performance also affects the incentive mechanism. This is a rather specific research topic since managerial ownership is merely one among many kinds of incentive mechanisms, such as remuneration systems and product market competition that have been claimed to govern the agency relation between top managers and their principals. However, the managerial agency problem is generally thought to be important because the potential economic losses from mismanagement of firms could be huge and managerial ownership may have a substantial role in reducing these kinds of losses.

The research on managerial ownership and financial performance has attracted much academic interest for a long period of time. Adam Smith raised the question as early as 1776 when he argued that the separation of ownership and control in large publicly listed corporations created poor incentives for professional managers to operate the firms efficiently: “The directors of such [joint-stock] companies, however, being the managers rather of other people’s money than of their own, it cannot well be expected, that they should watch over it with the same anxious vigilance with which the partners in a private copartnery frequently watch over their own.” (Jensen and Meckling [1976], quoting Adam Smith, *The Wealth of Nations* [1776]). However, since the early days of Adam Smith several other kinds of explanations have emerged to explain the relation between managerial ownership and financial performance. For instance, instead of predicting that financial performance increases by increasing managerial ownership, as implied by the Smith argument, it may also be that this relation is negative because of managerial entrenchment. In particular, it has been argued that high levels of managerial ownership entrench managers in the sense that the managers become powerful enough to pursue personal interests, such as growth maximization, at the expense of profit maximization. There are also several arguments that predict a positive relation from financial performance to ownership. For instance, the *reward argument* states that managers are rewarded with ownership stakes when firms have performed well historically. Another example is the *insider investment argument* stating that



managers with favorable expectations about future stock performance increase their ownership stakes today in order to capitalize on their knowledge. Furthermore, different versions of the economics of the natural selection argument have been used to assert that there can be no empirical correlation between ownership and performance because firms with inefficient ownership structures become bankrupt and subsequently exit the marketplace so that only the firms performing equally well will remain. These as well as other theories or arguments are reviewed in this dissertation.

This dissertation also invests much effort in reviewing the results of the empirical studies on managerial ownership and financial performance. A total of 84 empirical studies are reviewed and they are summarized in two tables in Appendix 2. Nevertheless, most of the effort in this review of empirical studies is spent on discussing the problems associated with testing the hypotheses on ownership and performance. In particular, the following issues are discussed: 1) testing for non-linearity of ownership as a function of performance, 2) statistical implications of functional specification errors, 3) problems regarding endogeneity of explanatory variables, 4) problems regarding omitted variables that are correlated with explanatory variables, 5) timing implications regarding the theories of ownership and performance, 6) statistical implications of measurement errors in applied variables, 7) sample biases, 8) timing problems regarding measurement procedures for certain variables, 9) problems of measuring managerial ownership and 10) problems in measuring different kinds of financial performance. The ambition, with both the theoretical as well as the empirical reviews, is to produce a comprehensive analytic overview that may be useful for other scholars doing research on managerial ownership and financial performance. However, the review is also believed to be of more general interest because many of the problems discussed are equally relevant for other research areas in which there is an interest in studying the interaction between incentive mechanisms (or institutions) and financial performance.

The first part of the thesis focuses on reviewing the work of other researchers, but the latter and final part is devoted to my own empirical work. In particular, the thesis develops and tests a multivariate and simultaneous regression model with three equations and three endogenous variables - financial performance, managerial ownership and a proxy for expected financial performance. The analysis is novel in several respects. First, the theories on managerial ownership and financial performance are tested on more firms than any previous studies on cross-sectional data have been able to do. Specifically, this study

investigates all firms that are listed at any of the public US stock exchanges (about 11,000 firms and for half of these firms it was possible to acquire a complete set of the data which is necessary for regressions). Second, the proposed statistical model is among the first to test performance as a function of both managerial ownership and managerial compensation. Third, the proposed statistical model is the first to model and test for the possible endogeneity between managerial ownership and financial performance via partially adaptive performance expectations. Finally, the proposed statistical model is more structural in the sense that it tests for more theories on managerial ownership and financial performance than any previous study using a single coherent model has attempted.

The main statistical finding regarding financial performance is that it increases significantly with increasing managerial ownership in the 0 to 0.5% interval, but for all other intervals the evidence is not robust enough to identify a particular pattern. In other words, Smith's argument about incentive alignment appears to be confirmed for very low levels of ownership, whereas the economics of natural selection may rule for all other levels of ownership. An interesting control variable is managerial compensation. Here the finding is that financial performance increases significantly for intermediate levels of managerial compensation, whereas it appears to be insignificant, or in some cases significantly decreasing, for the highest levels of managerial compensation. With regard to managerial ownership it increases significantly with better past financial performance, a finding that supports the reward argument mentioned above. Furthermore, managerial ownership is a significantly increasing function of the proxy for expected financial performance. This evidence is consistent with the insider investment argument mentioned above. Finally, the proxy for expected performance is a significant and positive function of current financial performance, a result supporting the idea that the endogeneity of ownership and performance could be caused by partially adaptive performance expectations. In conclusion, there is strong evidence that managerial ownership as an incentive mechanism is a function of financial performance. Furthermore, there is some evidence that financial performance is better for firms in which the managers own at least 0.5% of the shares.

Several measures have been taken to ensure that the statistical results are reliable. First, each of the three endogenous variables has been tested on two alternative definitions of the variables. Second, all the regressions have been run on equally weighted regressions as well as on size weighted regressions. Third, all regressions have been run on two samples -

the full sample of most firms on all US stock exchanges and a sample of the majority of firms from New York Stock Exchange. The NYSE sample is similar to that used in many of the previous studies on ownership and performance. However, it is shown to be seriously biased when compared to the full sample, which is about four times larger and which therefore should be less biased when the intention is to reveal the general behavior of publicly listed firms. A fourth precaution has been to run the regressions using both the classic ordinary least squares (OLS) method, as well as some of the instrumental estimation methods. Unfortunately, given the particular regression model and the available data, it is not possible to find an ideal test method. However, it is argued that the ‘least bad’ method is the classic OLS method, and evidence from comparisons of the results of the various methods also appears to support this view.

Finally, the empirical work of this thesis follows three principles that make it possible for others to independently verify all of the statistical results. The first principle is to exclusively use data from databases that are beyond personal control and that are publicly accessible. The second principle is to make publicly available the exact sample of firms that has been used to generate all descriptive and analytical results, and the third principle is to completely document how all raw data are prepared for analytical use. The main point is that by adhering to these three verification principles, as this study does, it becomes possible for others to check the empirical results independently. So far, no other study in the literature on ownership and performance has made this possible.

## Dissertation summary in Danish: Resumé

Denne afhandling undersøger, om finansiel performance er en funktion af ledelsens ejerskab. Det undersøges også om ledelsens ejerskab er en funktion af performance. Sagt med terminologi fra transaktionsomkostningsteorien, da undersøges det, om en bestemt incitamentsmekanisme, nemlig ledelsesejerskab, er i stand til at reducere transaktionsomkostningerne fra et bestemt agentproblem, nemlig det ledelsesmæssige agentproblem, samt hvorvidt performance også påvirker incitamentsmekanismen. Dette er et temmelig specifikt problem, da ledelsens ejerskab blot er en blandt mange typer af incitamentsmekanismer, såsom ledelsesaflønnning og konkurrence på produktmarkederne, hvor det har været hævdet at mekanismerne er i stand til at styre agentrelationen mellem topledelsen og deres principaler. Det ledelsesmæssige agentproblem er dog generelt opfattet som værende økonomisk betydningsfuldt, fordi de potentielle tab fra dårlig ledelse af firmaer kan være enorme, og ledelsens ejerskab spiller muligvis en stor rolle med hensyn til at reducere disse tab.

Forskningen i ledelsesejerskab og finansiel performance har i mange år tiltrukket en del akademisk interesse. Adam Smith rejste spørgsmålet så tidligt som i 1776, hvor han argumenterede, at adskillelsen af ejerskab og kontrol i de store aktieselskaber resulterede i dårlige incitamenter for, at de professionelle ledelser drev virksomhederne optimalt: “The directors of such [joint-stock] companies, however, being the managers rather of other people’s money than of their own, it cannot well be expected, that they should watch over it with the same anxious vigilance with which the partners in a private copartnery frequently watch over their own.” (Jensen and Meckling [1976], der igen citerer Adam Smith, *The Wealth of Nations* [1776]). Siden Adam Smith er der imidlertid fremkommet en række alternative forklaringer på, hvordan ledelsens ejerskab er forbundet med finansiel performance. For eksempel, i stedet for at forudsige finansiel performance er en stigende funktion af ledelsens ejerskab, som impliceret ved Smiths argument, da kan det også være at denne relation er negativ som følge af ledelsesmæssig barrikerering. Det vil sige, det har været fremført, at et højt ejerskab blandt ledelsen barrikerer ledelsen forstået på den måde, at den bliver så magtfuld, at den vil være i stand til at forfølge personlige interesser, såsom vækstmaksimering på bekostning af profitmaksimering. Der er ligeledes adskillige argumenter, der forudsiger en positiv relation fra finansiel performance til ledelsens ejerskab.

Eksempelvis anfører belønningsargumentet, at ledelsen bliver belønnet med ejerandele, hvis de har været i stand til at fremlægge historisk høje afkast. Et andet eksempel er insider investeringsargumentet, som anfører, at ledelser med høje forventninger til det fremtidige aktieafkast anskaffer sig aktier i dag for at kapitalisere deres viden. Desuden har forskellige versioner af den økonomiske teori for naturlig udvælgelse været brugt til at hævde, at der ikke kan være nogen sammenhæng mellem ejerskab og finansiel performance, fordi firmaer med ikke-optimale ejerskabsstrukturer går konkurs og forsvinder, så kun de effektive firmaer består. Disse, såvel som andre teorier, bliver gennemgået i denne afhandling.

Denne afhandling investerer ligeledes en del ressourcer på at gennemgå resultaterne fra empiriske studier om ledelsens ejerskab og finansiel performance. Omkring 84 empiriske studier bliver gennemgået, og de er opsummeret i to tabeller i appendiks 2. Ikke desto mindre er de allerstørste anstrengelser med at gennemgå de empiriske studier udmøntet på at diskutere de problemer, denne litteratur har med at teste hypoteserne om ejerskab og performance. Mere specifikt bliver de følgende emner diskuteret: 1) tests for ikke-linearitet af ejerskabet som en funktion af performance, 2) statistiske implikationer af funktionelle specifikationsfejl, 3) problemer vedrørende endogenitet i de forklarende variable, 4) problemer vedrørende ikke-inkluderede variable, der er korreleret med de forklarende variable, 5) tidsmæssige implikationer vedrørende teorierne for ejerskab og performance, 6) statistiske implikationer af målefejl i de anvendte variable, 7) database skævhed, 8) tidsmæssige problemer vedrørende måleprocedure for visse variable, 9) problemer med at måle ledelsens ejerskab og 10) problemer med at måle finansiel performance. Ambitionen med gennemgangen af både de teoretiske såvel som de empiriske studier er at lave en omfattende analytisk oversigt som kan være til nytte for andre akademikere, der forsker i ledelsens ejerskab og finansiel performance. Denne gennemgang har sandsynligvis også bredere interesse, da mange af de diskuterede problemstillinger er mindst ligeså relevante for andre forskningsområder, der beskæftiger sig med interaktionen mellem incitamentsmekanismer (eller institutioner) og finansiel performance.

Den første del af afhandlingen er beskæftiget med at gennemgå andre forskeres arbejde, mens den anden og sidste del er dedikeret til mit eget empiriske arbejde. Mere specifikt udvikler og tester denne afhandling en multivariant og simultan regressionsmodel med tre endogene variable: finansiel performance, ledelsens ejerskab samt en proxy for forventet finansiel performance. Analysen er nyskabende på flere måder. For det første bliver

teoriene for ledelsens ejerskab og finansiel performance testet på flere virksomheder, end nogen tidligere studier over tværnsnitsdata har været i stand til at gøre. Mere specifikt undersøger dette studie alle firmaer, der er noteret på aktiebørserne i USA (omkring 11.000 firmaer og for halvdelen af disse var det muligt at skaffe et fuldstændigt datasæt, som er nødvendigt for at kunne køre regressionerne). For det andet er den foreslåede statistiske model blandt de første, som tester performance som en funktion af både ledelsesejerskab og ledelsesaf lønning. For det tredje er den foreslåede statistiske model den første, der forklarer og tester den mulige endogenitet mellem ledelsens ejerskab og finansiel performance via delvist adaptive performance forventninger. Endelig er den foreslåede statistiske model mere strukturel i den forstand, at den tester samtidigt for flere teorier om ledelsesejerskab og finansiel performance, end andre studier har forsøgt ved brug af en enkelt sammenhængende model.

Hovedkonklusionen med hensyn til finansiel performance er, at den vokser signifikant for stigende ledelsesejerskab i intervallet 0 til 0,5%, men for alle øvrige intervaller er de statistiske resultater ikke robuste nok til at konkludere, at der er nogen speciel sammenhæng. Med andre ord, Smiths argument om incitamentsforenelighed lader til at være underbygget for lave ejerskabsniveauer, mens det ser ud til, at den økonomiske teori for naturlig udvælgelse dominerer for alle øvrige niveauer af ledelsesejerskab. En interessant kontrolvariabel er ledelsens aflønning. Her er resultatet, at den finansielle performance stiger signifikant for mellemliggende niveauer af ledelsesaf lønning, mens den lader til at være statistisk insignifikant eller i nogle tilfælde er signifikant faldende for de højeste niveauer af ledelsesaf lønning. Med hensyn til ledelsesejerskabet da er dette ejerskab signifikant stigende for bedre finansiel performance historisk set, hvorfor dette resultat støtter belønningsargumentet, der blev nævnt ovenfor. Ledelsesejerskabet er desuden en signifikant stigende funktion af proxyen for den forventede finansielle performance. Denne observation understøtter insider investeringsargumentet ligeledes nævnt ovenfor. Til slut bliver det bekræftet, at proxyen for den forventede finansielle performance er signifikant og positivt bestemt af den nuværende finansielle performance, hvilket understøtter ideen om, at endogeniteten af ledelsens ejerskab og den finansielle performance muligvis skyldes, at forventningerne til den finansielle performance er delvist adaptive. Konklusionen er, at der er stærke statistiske indicier for at ledelsesejerskabet som incitamentsmekanisme er en funktion

af finansiel performance. Desuden tyder de statistiske resultater på, at den finansielle performance er højere for firmaer hvori ledelsen ejer mindst 0,5% af aktierne.

Der er taget adskillige forholdsregler for at sikre, at de statistiske resultater er pålidelige. For det første er hver af de tre endogene variable blevet testet ved brug af to alternative definitioner af variablene. For det andet er alle regressionerne kørt som både ligeligt vægtede regressioner og som størrelsesvægtede regressioner. For det tredje er alle regressionerne kørt på to forskellige databaser; en fuldstændig database med de fleste firmaer fra alle børserne i USA, såvel som en database med de fleste firmaer fra New York Stock Exchange. NYSE databasen er meget lig de databaser, som tidligere studier har anvendt til at teste ejerskab og performance. Det kan dog vises, at NYSE databasen er meget skævt fordelt i forhold til den fuldstændige database, som er omkring fire gange større og derfor burde være mindre skævt fordelt, hvis intentionen er at afsløre den generelle adfærd for børsnoterede firmaer. En fjerde forholdsregel har været at køre regressionerne ved brug af både den klassiske mindste kvadraters (MK) metode samt ved brug af nogle af metoderne, der er baseret på instrumentvariable. Uheldigvis, når man betragter den specifikke regressionsmodel og de tilgængelige data, er det ikke muligt at udpege en ideel testmetode. Det bliver imidlertid argumenteret, at den 'mindst dårlige' metode er den klassiske MK-metode, hvilket da også bliver understøttet af observationer ved at sammenligne resultaterne fra de forskellige metoder.

Endelig efterlever det empiriske arbejde for denne afhandling tre principper, som gør det muligt for andre at lave en uafhængig verifikation af alle de empiriske resultater. Det første princip er udelukkende at benytte data fra databaser, der er udenfor personlig kontrol, og som er offentlig tilgængelige. Det andet princip er at offentliggøre den præcise liste med firmaer, der er blevet brugt til at generere alle de deskriptive og analytiske resultater. Det tredje princip er fuldstændigt at dokumentere, hvordan alle rå-data er blevet forberedt til statistik brug. Pointen er, at ved at følge disse tre verifikationsprincipper, som det er gjort i denne afhandling, da kan andre kontrollere de empiriske resultater helt uafhængigt. Hidtil er der ikke andre studier inden for litteraturen om ledelsesejerskab og finansiel performance, der har muliggjort dette.