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The Effects of Ownership through Insiders and Institutional Investors on Firm Value

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To my lovely parents and sisters

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Abstract

This study explains the relationship between ownership structure and firm value. In particular, it highlights the effects of ownership by insiders and institutional investors using a measure of firm performance Tobin's Q and return on assets as an alternative measure. The study examines a large sample of publicly listed firms in the US for a period of 10 years. It confirms that managerial wealth effect on firm performance is clearly positive and the entrenchment effect has clearly a negative effect on firm performance. Further, ownership by institutional investors shows a distinctly positive effect on firm performance which can be addressed by their monitoring and disciplinary activities. The effects resulting from size, leverage and beta have also been examined for both measures.

Deutscher Abstract

Die vorliegende Studie untersucht den Zusammenhang zwischen der Eigentümerstruktur und dem Unternehmenserfolg. Die Eigentümerstruktur und ihr Einfluss auf den Unternehmenserfolg sind seit einigen Jahren zunehmender Bestandteil zahlreicher empirischer Studien, welche sich jedoch in ihren Rückschlüssen widersprechen. Die Arbeit erforscht im Besonderen den Eigenkapitalanteil von Insidern und institutionellen Anlegern sowie ihren Einfluss auf den Unternehmenserfolg. Als Erfolgsmaß dient dabei das Tobin's Q, welches den Unternehmenserfolg in Marktwerten bemisst. Das auf Buchwerte basierende Erfolgsmaß, Return on assets, wird in der Untersuchung als alternative Messgröße herangezogen. Die Studie durchleuchtet hierbei eine umfangreiche Stichprobe von börsennotierten Unternehmen in den USA für einen Zeitraum von 10 Jahren. Demzufolge wird ein Zusammenhang zwischen Unternehmenserfolg und dem Eigenkapitalanteil von Insidern bestätigt. Zudem stellt ein hoher Eigenkapitalanteil von institutionellen Investoren einen wesentlich positiven Einfluss auf den Unternehmenswert dar. Die Auswirkungen von Unternehmensgröße, Verschuldungsgrad und Beta, als Risikomaß, werden ebenfalls sowohl in marktwertorientierter als auch in buchhalterischer Hinsicht auf den Unternehmenserfolg analysiert.

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Abbreviations

2SLS	Two-Stage-Least-Squares
CDFL	Claessens, Djankov, Fan, and Lang
et al.	Et alii (And others (Latin))
GMM	Generalized methods of moments
GMY	Gugler, Mueller, and Yurtoglu
Marketcap	Market Capitalization
MSV	Mørck, Shleifer and Vishny
OLS	Ordinary Least Squares
ROA	Return on assets
ROE	Return on equity
SIC	Standard Industry Code
T _q	Tobin's Q
UK	United Kingdom
US	United States of America

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1 Introduction

The relationship between ownership structure and performance has been the subject of many major studies showing an ongoing debate in the corporate finance literature. Managers act as agents of their principals, the shareholders. Therefore they have the duty to maximize their principal's wealth. However, managers' can have divergent interests with their principals. So their primary interest may be to maximize personal wealth instead of shareholders' wealth. Early in the 20th century, Berle and Means' (1932) work argues that with a too dispersed ownership the managers might deploy the corporate assets to their own benefits rather than to drive shareholder value maximization.

Today, decades after Berle and Means the wealth effect of various ownership categories is not yet clear. Inconsistent results of studies investigating the relationship of ownership structure and firm value continue. According Demsetz (1983), the relationship between ownership structure and firm value should be considered to contain endogeneity and the ownership structure of a firm is thus an endogenous outcome of a process to maximize shareholder value. Later the findings of Demsetz and Lehn (1985) show no significant relationship between ownership and firm value which confirms the equilibrium hypothesis of Demsetz (1983). Mørck, Shleifer and Vishny (1988) in contrast show a significant relationship between ownership structure and firm value. Their results suggest a positive-negative-positive relationship between insider ownership and firm value. However, the study conveys its main criticism because they ignore the endogeneity problem completely. Later on many other academic studies examined the situation with inconsistent results.

This study attempts to investigate the effects of ownership by insiders and institutional investors on firmvalue by employing different OLS regressions.

The relationship of ownership through insiders has been examined in terms of incentive-alignment and managerial entrenchment hypotheses. An additional view is given on the ownership by institutional investors which convey an increasing importance in the US equity market. The US equity market is characterized by a high degree of dispersed ownership which attracts interest for investigations on the effects of both insider ownership and institutional ownership. Tobin's Q is employed as primary performance measure whereby ROA is used as alternative. To mitigate the endogeneity problem I have used lagged variables for the insider ownership coefficients because the underlying data set is limited and does not allow other ways to overcome endogeneity. The investigation is based on a data set which consists of 47543 observations for a 10 years period of the years 2000 and 2009.

The paper proceeds as follows: The theoretical background regarding the ownership structure and firm value relationship is described in section 2. Section 3 describes the main methodical issues and the model. The underlying US data is discussed in section 4. In section 5 the results of the regressions are presented with the robustness check. Section 6 forms a discussion on the main results and conclusions are drawn in section 7.

2 Theoretical Framework

This section provides an overview about the definitions and economic characters of insider ownership, institutional ownership and performance measures. Further theoretical background is given for the associated corporate governance part. This section ends with a review of previous research studies on ownership effects on firm performance.

2.1 Definitions and economic characteristics

There are several vital aspects which should be taken into consideration while investigating the ownership effects by insiders and institutional investors on firm performance. In the relationship between managerial ownership and firm performance many factors play a role, especially corporate governance and management compensation. Ownership by institutional investors demonstrates also an important effect on firm value due to disciplinary effects. In the following, I will briefly explain ownership by insiders and institutional investors and the measurement of performance. The coherence between correlation, causality and endogeneity will conclude this sub item.

2.1.1 Ownership by Insiders

Jensen and Meckling (1976) assume that with a higher degree of management ownership the agency problem would decrease and thus affect positively the value of a firm which is called the incentive effect of managerial ownership. Further they argue that the use of debt can decrease the need of outside stock and therefore contribute to lower agency costs. However, the

managers of a company act as an agent of their principals, the shareholders of the company. This situation creates an agency problem because the divergence in interests between the agent and the principal which can lead to high agency costs and would consequently affect the value of the corporation. Section 2.3 will provide a broader theoretical view into the relation of insider ownership and the agency problem.

2.1.2 Ownership by Institutional Investors

The higher the share of institutional owners, the larger is their impact in the company and also in the capital markets. Therefore, a high level of institutional ownership raises the question whether institutional owners enhance, diminish or have no effect on firm performance. Shleifer and Vishny (1986) examine the role of large shareholders and further Coffee (1991) discusses the monitoring role of institutional owners. The shareholdings through institutional investors like pension funds and mutual funds have increased severely in the past three decades. Institutional investors also face difficulty in selling large amounts of stocks without depressing the prices.¹ Consequently, institutional investors see themselves forced to get actively involved in corporate policy decisions and to monitor management activities more effectively with the intention of increasing stock performance. The monitoring activities of institutional owners and the potential for large shareholders to use disciplinary pressures on management can be combined with the debt effect. Jensen (1986) argues that managers are motivated to achieve a greater level of efficiency with additional borrowing because of the pressure of making debt service payments. The disciplinary pressures of active institutional ownership and debt financing are to be assumed as substitutes regarding Grier and Zychowicz (1994). They find that institutional concentration of ownership may act as substitute for the

¹ Conley and O'Barr, 1992

disciplinary and signaling role of debt because their observations show a significant negative relationship between debt and shares owned by institutional investors. Thus, Grier and Zychowicz (1994) suggest that monitoring and disciplinary activities of institutional investors act as substitute for disciplinary and signaling theory of debt.² Pozen (1994) examines the methods used by institutional investors to affect managerial decision making. These methods vary from informal discussion with management to proxy fights for company control³. Further Jensen et al. (1999)⁴ analyze the institutional investors monitoring and the effects of insider holdings with other variables like dividends and debts. The predominance of institutional ownership of shares is an essential feature of capital markets. Their impact is already beyond trading volume and day-to-day market price swings and could affect corporate governance issues. Demsetz (1983) and Shleifer and Vishny (1986) argue that the economic interests of institutional owners can create incentives to efficiently monitor managerial activities. Previous studies have addressed the question within the context of corporate events such as anti-takeover changes, proxy fights and report contradictory results. There are studies assuming that institutional ownership influence management decisions of firms. Institutional activism has further been examined in studies which investigate the voting behavior or large shareholders during proposed anti-takeover charter amendments and the associated shareholder wealth effects⁵.

² Grier and Zychowicz, 1994

³ Pozen, 1994

⁴ Crutchley, Jensen, Jahera, and Raymond, 1999

⁵ See Agrawal and Mandelker (1990) and Brickley, Lease, and Smith (1988)

2.1.3 Performance Measurement

The measurement categories for firm performance can be classified in general by the investor's perspective measures and accounting perspective measures. Thus the categories of performance measurement are either market based or accounting based measures. Consequently the most commonly used market based measures are Tobin's Q and Total Shareholder Return and accounting measures are ROA, ROE, and growth in sales. Here, the key difference between these two categories is defined by the point of view in time. The market based measures try to outline future expected performance whereas accounting measures use the actually realized performance.

It was common to use mainly accounting based performance measures in empiric studies on firm performance prior to James Tobin's introduction of the ground breaking market based performance measure Tobin's Q in 1967. McFarland (1987) explains that the introduction of Tobin's Q has caused major critic on accounting performance measures. However, although there are differences among various performance measures their common goal is to measure firm performance. Given that, one could assume a correlation among the individual measures whether accounting based or market based ones. Though, this assumption does not come true. Several studies, as Geroski (1998) and McGahan (1999) show no correlation between individual performance measures. As McGahan reports the correlation between Tobin's Q and accounting profit is 0.246⁶. Similar results are reported by Geroski's study which shows low correlation between the individual measures and even a negative one between accounting profit and sales⁷. Therefore the decision regarding appropriate choice of the performance measures seems - not surprisingly - definitely highly critical.

⁶ McGahan, 1999

⁷ Geroski, 1998

2.1.4 Correlation, Causality and Endogeneity

Although ignored in many studies, the relationship between insider ownership and firm performance contains a severe endogeneity problem. This issue conveys the main criticism against the work of Mørck, Shleifer and Vishny (1988) which ignores endogeneity completely. Demsetz (1983) claims that the ownership structure of a corporation as an endogenous outcome of decisions that reflect the influence of shareholders and of trading of market shares. The correlation between two variables itself does not contribute to a causal interdependence. This study will mitigate the endogeneity problem by involving a further, lagged, variable to measure insider ownership

2.2 *Ownership and the Principal-agent theory*

Adam Smith (1776) was the most famous economist to point out the potential for conflict of interests between managers and shareholders in joint-stock companies.⁸ Smith describes in “The Wealth of Nations” as following:

“The directors of such 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.”⁹

⁸ Dennis C. Mueller, 2003

⁹ Adam Smith, 1776

Fama and Jensen (1983) define agency costs as “costs of structuring, monitoring, and bonding a set of contracts among agents with conflicting interests”¹⁰. Further, Gilson and Whitehead (2007) describe that public shareholders and agency costs are the two of the sides of the same coin. Agency costs emerge if companies in need of residual risk capital and public investors are the cheapest risk-bearers.¹¹ The cheap capital provided is managed by an agent whose interests are not perfectly aligned with those of the capital lender. This divergence in interest has been described early in the 20th century in the well known work by Adolph Berle and Gardiner C. Means (1932), “The Modern Corporation and Private Property”. Its main topic puts a light on the subject of the separation of ownership from control in corporations.¹²

The situation of management and the principal-agent-problem by Berle and Means (1932) is further described by the following statement:

“The body of men who, in law, have formally assumed the duties of exercising domination over the corporate business and assets.....The separation of ownership and management or control creates potential agency costs. Agency costs occur when managers or directors take actions adverse to shareholders’ interests”¹³.

Hence, Berle and Means suggest that the higher the ownership concentration is, the higher the performance will be, thus the existence of a positive correlation between each other. They claim that managers were in effective control of a company whenever its outstanding shares were widely dispersed that no single shareholder, person or group held 20 percent or more. Additional arguments indicate that corporate assets might be deployed to

¹⁰ Fama and Jensen, 1983

¹¹ Gilson and Whitehead, 2007

¹² Gugler, Mueller, and Yurtoglu, 2008

¹³ Berle and Means, 1932

benefit managers rather than shareholders, when shareholders are too dispersed to enforce value maximization. With the continuing growing dispersion of ownership, the management gained higher control. Robert Lerner (1966) indicates that by mid 1960s the control of some 75 percent of the 200 largest US corporations had fallen to management.¹⁴

Similar views are presented in the working paper of Jensen and Meckling (1976) in a broader context. They incorporate elements from the theory of agency, the theory of property rights and the theory of finance that develop a theory of the ownership structure of the firm. Jensen and Meckling (1973) characterize the agency relationship as a contract under which one or more persons – principals – engage another person – agent – to perform some service on their behalf which involves delegating some decision making authority to the agent. If the interests of the principal and the agent differ from each other, then the agent will not always act in the principal's best interest. This situation is strengthened if both parties are acting toward utility maximization. The value loss generated from different objectives of principal and agent is called agency costs. As in corporations where a separation of owners and managers exist, agency costs will be there. Corporate governance tries to mitigate the divergence of interests between owners and managers by a set of mechanisms. However, generally it is impossible for the principal or the agent to ensure that the agent will make optimal decision from the principal's perspective. Agency costs show up in different forms as following:¹⁵

- Monitoring expenditures by principal,
- Bonding expenditures by agent, and
- Residual loss

¹⁴ Dennis C. Mueller, 2003

¹⁵ Jensen and Meckling, 1976

Monitoring costs are expenses incurred by the principal in the process of monitoring the agent's activities. Bonding incur by the agent in the practice of demonstrating that he acts in the best interest of the principal. Residual loss is defined by Jensen and Meckling (1976) as the dollar equivalent of the reduction in welfare experienced by the principal as a result of this divergence is also a cost of the agency relationship.

So, the principle-agent problem emerges with the existence of the separation of ownership and control. Jensen and Meckling (1976) point out that the situations in which corporate managers are the agents of outside shareholders, it brings a relationship fraught with conflicting interests.

Managers bear incentives to move their firms beyond the optimal size. Growth strengthens the power of manager by increasing resources to their rule. Murphy (1985) highlights the fact by the increase in managers' compensation, because changes in compensation are positively related to the growth in sales. The tendency of firms to reward middle managers through promotion rather than bonus payouts creates another strong incentive toward growth (Baker 1986).¹⁶ Jensen (1986) describes that one manifestation of agency costs is that managers of free cash flow over invest internally generated funds, especially if the firm does not have enough positive net present value investment opportunities. According to the free cash flow / agency costs hypothesis, the excess returns to a dividend change will be negatively related to the amount of inside ownership and positively related to any attribute of ownership which increases monitoring of firms' use of free cash flow.¹⁷

¹⁶ Jensen, 1986

¹⁷ Bajaj, Vijh, and Westerfield, 2002

There is no limit to the number of owners a corporation can have and to the fraction, share each owner holds of the entire corporation. Additional distinctive feature of a corporation is given on that there is no constraint on the identity of its stock which allows to free trade the ownership. Therefore corporations can raise substantially high amounts of capital. Thus, the corporation enables high flexibility in ownership transfer which is one of the most important advantages of organizing a firm as a corporation rather than as sole proprietorship, partnership, or LLC.¹⁸

Two major developments in the last quarter of the twentieth century have taken place that curbed the dimension of the separation of ownership from control in the United States. First, the hostile takeover wave which replaced management of acquired companies. Further, as Michael Jensen foresaw ahead of time¹⁹, Gilson and Whitehead (2007) record a large movement of public companies into private ownership through leveraged acquisitions by private equity firms.²⁰ Second, institutional investors mainly pension funds, mutual funds and other investment funds which concentrate share holdings have grown immensely. Shareholdings in the United States today are more concentrated than Larner found in the early 1960s.²¹

¹⁸ Jonathan Berk, Peter DeMarzo, 2006

¹⁹ Jensen, 1989

²⁰ Gilson and Whitehead, 2007

²¹ Dennis C. Mueller, 2003

2.3 Ownership and Corporate Governance

The central importance in this study is demonstrated by the associated part with Corporate Finance and Corporate Governance. Shleifer and Vishny (1997) define this situation as following:

“Corporate Governance deals with the agency problem: the separation of management and finance. The fundamental question of corporate governance is how to assure financiers that they get a return on their financial investment”²²

Another shareholder-wealth based view is defined by Mayer (2003):

“Corporate Governance is concerned with ways of bringing the interests and objectives of investors and managers into line and ensuring that firms are run for the benefit of investors”²³

Both definitions above are based on the shareholder approach to corporate governance. Contradictory to the above given definitions is the one of Tirole (2001) which finds this traditional approach too restricted. Rather to focus on the investors' interests purely, Tirole (2001) argues for a broader definition of corporate governance which covers the interests of all stakeholders and how they are affected by the firm's decision.

“The traditional shareholder value approach is too narrow a view for an economic analysis of corporate governance. I will, perhaps unconventionally for an economist, define corporate governance as the design of institutions that induce or force management to internalize the welfare of stakeholders. The provision of managerial

²² Shleifer and Vishny, 1997

²³ Mayer, 2003

incentives and the design of a control structure must account for their impact on the utilities of all stakeholders (natural stakeholders and investors) in order to, respectively, induce or force internalization. I will argue that, if a case is to be made in favor of shareholder value, this case must rest on a careful consideration of the economics of incentives and control”²⁴

However, as the essence of this study conveys the focus on the relation of managers and firm value, the shareholder perspective to corporate governance sets the main foundation. Along with the shareholder perspective to corporate governance, one can make further classification mainly into dispersed and concentrated ownership. The main factor which determines whether the market for corporate shares characterizes itself by dispersed or concentrated ownership is the level of shareholder protection. As La Porta, Lopez-de-Silanes and Shleifer (1999) present, in their investigation on ownership structures of large corporations in 27 economies, a different picture of the ownership structure than the widely accepted in the finance literature. The dispersed ownership structure of the corporation, as Berle and Means suggest, is only a common organizational form for large firms in the richest common law countries, above all the United States. Outside the United States, especially in markets with poor shareholder protection, even the largest firms tend to have controlling shareholders.

Therefore one needs to distinguish between such different markets as Gugler (2001) presents in ‘Corporate Governance and Economic Performance’, a theoretical framework of the European Corporate Governance Network with regard to the separation of ownership and voting power as outlined in the Executive Report by Becht (1997). An overview is given by table 1 and table 2 in the following. The much of the existing empirical literature compares quadrant

²⁴ Tirole, 2001

I and quadrant IV companies where quadrant I is characterized with high liquidity and agency problems as consequence of missing direct monitoring. Quadrant IV, in contrast is characterized by direct monitoring and shows low liquidity, high capital costs and risk of rent-extraction by majority owners resulting from the agency conflict with minority holders. The classical position where the principal-agent may occur is also represented by quadrant I. The US equity market which is investigated in this work is therefore determined by the attributes of quadrant I. As given below, table 1 and table 2 explain the basic trade-offs encountered with the dispersion and concentration of cash flow and control rights²⁵.

Table 1 - Dispersion-Concentration tradeoffs for investors²⁶

DISPERSED OWNERSHIP	
Quadrant I	Quadrant II
Dispersed Voting Power Advantages: Liquidity Diversification (risk sharing) Low cost of capital Disadvantages: Lack of direct monitoring (free-riding problem, absenteeism) Implications: ‘Strong Managers, Weak Owners’ (Roe, 1994) Takeovers possible Management Control or Market Control (Becht and Mayer 2001) Possible research questions: Are OC firms more profitable than MC firms? What are the consequences of (hostile) takeovers? Is there management entrenchment?	Concentrated Voting Power Advantages: Direct monitoring Liquidity Diversification Lower cost of capital than in Quadrant IV Disadvantages: Cash flow and control incentives misaligned Potential collusion (manager-block-holder) Extraction of private benefits Implications : ‘Strong Voting Block-holders, Weak Minority Owners’ Takeovers impossible Possible research questions: Is there rent extraction by block-holders? Does the identity of investors matter? What are the effects of pyramiding?

²⁵ Gugler, 2001

²⁶ Notes: OC = owner controlled; MC = manager controlled

Gugler (2001) with underlying sources: Becht (1997); Becht and Mayer (2001)

Table 2 – Tradeoffs for investors with ownership concentration²⁷

CONCENTRATED OWNERSHIP	
Quadrant III	Quadrant IV
Dispersed voting power Advantages: Some protection of small shareholders from voting right restrictions Disadvantages: Cash-flow and control incentives misaligned Few means of intervention Low liquidity Low diversification opportunities High cost of capital Implications: Mostly disadvantages ‘Strong Managers, Weak Owners’ Takeovers difficult Possible research questions: Is there management entrenchment?	Concentrated voting power Advantages: Direct monitoring Cash flow and control interests aligned Disadvantages: Low liquidity Low diversification High cost of capital Potential rent extraction by majority-owner Implications : ‘Weak Managers, Weak Minority Owners, Strong Majority Owners’ Possible research questions: Are OC firms more profitable than MC firms? Is there rent extraction by large shareholders? Does the identity of investors matter?

Cremers and Nair (2005) present in their work a variety of corporate governance mechanisms and their interactions. These are firm-level mechanisms associated with the governance of public corporations. The firm-level mechanisms can be classified broadly into internal and external governance mechanisms. Primary internal monitoring mechanisms are blockholders and the board of directors while takeovers and the market for corporate control are the primary external mechanisms. The study takes the percentage of share ownership by public pension funds and, institutional investors, and the percentage of share ownership by the largest blockholder as proxies for internal governance. Their findings show that in relation with long-term abnormal returns and accounting measures of profitability the external and internal governance mechanisms are strong complements and this complementary interaction is stronger for low leverage firms.²⁸ Within the

²⁷ Notes: OC = owner controlled; MC = manager controlled

Gugler (2001) with underlying sources: Becht (1997); Becht and Mayer (2001)

²⁸ Cremers and Nair, 2005

corporate governance mechanisms an additional importance is given by the owner identity because different types of owners will follow different interests. Owners tend not always to maximize shareholder value rather they tend to maximize their own utility which does not necessarily lead always to shareholder value maximization. Therefore a problem can occur between major stock holders and minority owners. The quadrant IV is characterized by this attributes. However, as the US market is characterized by dispersed ownership, as described in quadrant I, the study will not handle further the owner identity.

2.4 *Previous Research*

Mørck, Shleifer and Vishny (1988) highlight that the larger fraction of a company's shares held by its managers, the value diminishing effect will emerge. This circumstance is called the entrenchment effect. Shleifer and Vishny (1997) argue that large shareholders are the address of the agency problem because they have both a general interest in profit maximization and enough control over the assets to have their interests respected. The agency costs in this relation, the entrenchment costs and costs of large shareholders are modeled by Stulz (1988). Mørck, Shleifer and Vishny (1988) further find empirically that higher insider ownership can serve to entrench managers, however, and thus increase agency costs. Their findings on managerial ownership and firm value for US firms show an inverse U-shaped relationship. In the range of insider ownership where the increased entrenchment effect is dominant, the excess returns of a dividend change need not be negatively related to the amount of inside ownership.

Corresponding to the findings of Mørck, Shleifer and Vishny (1988) is Jensen and Meckling's argumentation on the existing convergence between shareholder and manager interests which increases with an increase in managerial ownership.²⁹ Besides the findings of Mørck, Shleifer and Vishny, several studies have found a non-linear relationship between insider ownership and firm performance which, under the agency model, indicates managerial entrenchment. Other studies which state a significant non-linear relationship between insider ownership and firm performance are done by McConnell and Servaes (1990), Denis and Sarin (1999) in US and Short and Keasey (1999) and

²⁹ Jensen and Meckling, 1976

Weir et al. (2002) in the UK .³⁰ A theory on similar outcomes as the empirical study of McConnell and Servaes (1990) is given by Stulz (1988). In his model, Stulz predicts also a concave relationship between management ownership and firm value. The model shows the increasing managerial ownership and control, a negative effect on firm value related with the managerial ownership begins to surpass the incentive benefits of managerial ownership.

As stated, the relationship between ownership and corporate performance was subject to a number of researches and however numbers of these researches show inconsistent conclusions. One of the most famous supporting studies has been done by Mørck, Shleifer and Vishny (1988) as given above. Other studies such as McConnell and Servaes (1990) with Hermalin and Weisbach (1991) contribute further evidence that insider ownership is an effective tool in reducing agency costs. On the other hand Demsetz and Lehn (1985) lead the part of investigations which show no evidence between the insider ownership and corporate value relation. Others are for instance Loderer and Sheehan (1989), Denis and Loderer and Martin (1997). There might be possible explanations for contradicting results in many ways. Farinha (2003) argues that many studies do not properly distinguish the possibility of alignment of interests across a certain range of ownership and the possibility of entrenchment over another range of ownership. Further Farinha (2003) claims that the analysis do not take into account the likelihood that several different mechanisms for alignment of interests can be used simultaneously which leads to substitution effects with insider ownership. Different compositions of corporate governance mechanisms by different companies, however each based on optimal usage, lead to unobservable relationship between performance and any of definite mechanisms used.³¹

³⁰ McKnight and Weir, 2009

³¹ Farinha, 2003

Harold Demsetz and Kenneth Lehn (1985) present results which support the arguments Demsetz (1983) has reported previously. Harold and Demsetz (1983) argue that the ownership structure of a firm is an endogenous outcome of a process to maximize shareholders' interest and this should be taken into account when estimating its effect on firm performance. This, the equilibrium hypothesis of Demsetz (1983), suggests no systematic relationship between the change in the ownership structure and the change in firm performance. Thus, the ownership structure is endogenously determined in equilibrium and reflects optimizing behavior of managers and investors. As the optimal ownership structure differs across firms, differences in ownership structure occur but there is no systematic relation given cross-sectionally. According to that, Demsetz and Lehn (1985) estimate a simple linear relationship between accounting profit rates and ownership by large shareholders. Their study of 511 large US companies on measures of ownership concentration investigates the percentage of shares owned by the most important shareholders; the five largest and twenty largest, and an approximation of the Herfindahl concentration index. Their findings show no significant relation between ownership concentration and accounting profit rate. This however is inconsistent with the Berle and Means (1932) thesis but the evidence is in line with the equilibrium argument of Demsetz (1983)³²

However, together as mentioned above with Mørck, Shleifer, and Vishny (1988) there is a body of evidence that suggest alternative hypotheses. Mørck, Shleifer, and Vishny estimate a piecewise linear regression in which they use Tobin's Q and profit rate³³ as the dependent variable and investigate its

³² Demsetz and Lehn, 1985

³³ Profit rate is defined as rate as the ratio of the firm's net cash flows (less the inflation adjusted value of depreciation) to the replacement cost of the firm's tangible assets.

relationship to the fraction of shares owned by managers. In the 1980 cross-section sample of 371 Fortune 500 firms, they find evidence of a significant nonmonotonic relationship. Their results suggest a positive relation between ownership and Tobin's Q as Q increases in the 0 percent to 5 percent range, then a negative and less distinct relation in the 5 percent to 25 percent range, and a further positive relation beyond 25 percent and slightly higher as ownership by board of directors rises.

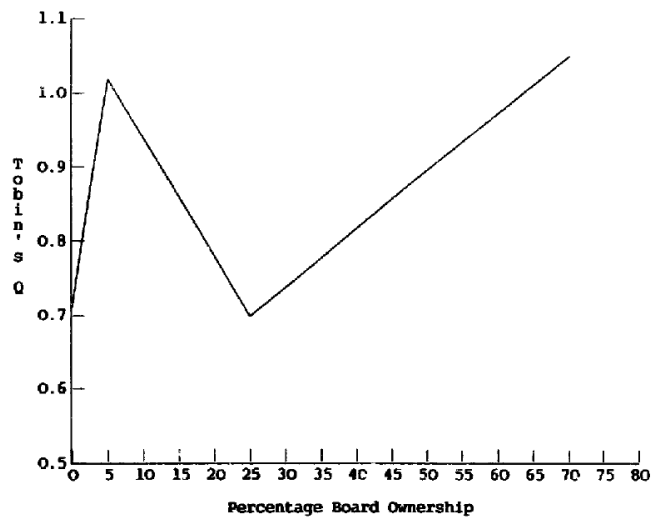


Figure 1 – The relationship between board ownership and Tobin's Q implied by the piecewise linear ordinary least squares regression of 1980 for 371 Fortune 500 firms.³⁴

Using the profit rate as an alternate dependent variable to measure management performance, Mørck, Shleifer and Vishny show similar piecewise linear relationship as Tobin's Q, given that the statistical significance is lower. Nevertheless, the following differences exist between their procedures and the one of Demsetz and Lehn (1985). First, MSV focus only on equity stakes of the boards of directors, whereas Demsetz and Lehn (1985) measure concentration of ownership, weighting ownership by members of the board and by other large shareholders equally. Second, Demsetz and Lehn estimate a linear relationship between ownership concentration and the profit rate. When MSV estimate a

³⁴ Morck, Shleifer, Vishny, 1988

simple linear relationship between the profit rate and their board stake variable, they get consistent results to Demsetz and Lehn (1985). MSV argues with the failure of Demsetz and Lehn to find a relationship between ownership concentration and profitability is probably due to their use of linear specification that does not cover an important non-monotonicity.³⁵

Loderer and Sheehan (1989) investigate the action of insider owners in corporations that experience large declines in equity value over an extended period of time. These are firms that filed for bankruptcy between 1971 and 1985. They claim that the stock of the median bankrupt corporation experiences a cumulative abnormal return of minus 92 percent during the 1,300 trading days preceding the announcement of bankruptcy filings. Loderer and Sheehan find no evidence that officers and directors systematically bail out prior bankruptcy. Further, in spite of substantial and protracted wealth loss, there is little evidence that insider shareholdings in bankrupt firms are lower than those observed for similar insiders in control firms. Though, Loderer and Sheehan also mention that this could have two major reasons. First, insiders of failing firms are unable to predict changes in firm value better than the market or they are reluctant to trade. Such reluctance to trade is rooted, among others, in concerns about sending adverse signals to suppliers and employees, the possibility of resigning before selling the shares, laws against insider trading, or fears of lawsuits from displeased shareholders. However, Loderer and Sheehan do not find convincing evidence supporting any of the above explanations.³⁶

McConnell and Servaes (1990), use a similar approach to Mørck, Shleifer, and Vishny (1988). They investigate the cross section relationship between Tobin's Q and management equity ownership for a large sample of New York

³⁵ Morck, Shleifer and Vishny, 1988

³⁶ Loderer and Sheehan, 1989

Stock Exchange and American Stock Exchange listed companies; 1,173 companies in 1976 and 1,093 companies in 1986. Similar as Mørck, Shleifer and Vishny, they use the accounting profit rate as their alternative performance. The main difference to MSV is that McConnell and Servaes look at two years compared to one year. Other differences include the number of firms which is roughly twice as large for McConnell and Servaes, the sample is more heterogeneous in terms of firm size and besides the aggregate insider holdings McConnell and Servaes include two additional governance mechanisms; ownership concentration and the fraction held by institutional investors. An important point can be that in this work the term insider covers not only directors but also officers. For both sample of years McConnell and Servaes (1990) find a significant curvilinear relation between Tobin's q and management ownership. Tobin's q tends to increase at a lower rate as ownership becomes more important until inside ownership reaches 40 percent to 50 percent, and then to slope downward as shares become concentrated in the hands of managers and members of the board of directors. McConnell and Servaes' findings confirm only 0 percent and 5 percent of management ownership range from the study of Mørck, Shleifer, and Vishny (1988) and fail to confirm the findings of MSV beyond 5 percent. They find additionally a strong positive relation between Tobin's q and shares held by institutional investors. For the relationship between block ownership and firm value no significance can be reported. McConnell and Servaes also point out that their results are consistent with neither theoretical arguments of Demsetz (1983) nor the empirical findings of Demsetz and Lehn (1985).³⁷

In the above given studies one can see contradictory results on the relationship between managerial ownership and firm performance. Stacey R. Krole (1995) investigates the contradictory results on the managerial ownership

³⁷ McConnell and Servaes, 1990

and firm performance. In her study she argues that solely the differences in managerial ownership data - as given above between Demsetz and Mørck, Shleifer, and Vishny - cannot explain contradictory empirical evidence on the relation between ownership and entrenchment of managers.³⁸

Loderer and Martin (1997) examine in their study the evidence that managers' shareholdings give incentives to avoid share-price-decreasing decisions and to seek out share-price-increasing ones. The study investigates the empirical evidence on the effect of executive stock ownership to better performance in the context of acquisitions of publicly traded corporations. In doing so, Loderer and Martin, measure acquisition performance with the abnormal stock returns at the time of the acquisition announcement. They mostly find a positive but a very weak relation between acquisition performances against executive stock ownership in particular. The same situation investigated in a simultaneous equations framework, no evidence that larger ownership stake increases performance. In contrast, performance seems to affect the level of stock ownership of executives. Further, while expecting that more profitable acquisitions appear to encourage larger stockholdings, they find out that higher Q ratios induce smaller holdings. This behavior is supported by their assumption that Q ratios measure growth opportunities already capitalized in the stock price and thus there is little reason to hold stock of firms with high Q ratios. Moreover, since managers' human capital might already be tied to their firms' fortunes, high Q ratio could induce them to liquidate at least a part of executive holdings. These empirical findings do not seem to be exclusive of acquisitions, Loderer and Martin find the same pattern when replicating the analysis by focusing more generally on firm performance. The positive and significant influence of managerial ownership on firm value in a standard single-equation framework vanishes in a simultaneous equations

³⁸ Krole, 1995

context. Finally, the study also considers the influence of large outside blockholders and financial institutions on acquisition decisions and firm performance but there is no evidence for a convincing pattern in this relation.³⁹

Another study which is challenging the work of Mørck, Shleifer, Vishny (1988) is done by Cho (1998). His paper examines the relation among ownership structure, investment and firm value. Cho explores first how ownership structure affects corporate value with the hypothesis that ownership structure affects investment which in turn affects corporate value. Second, Cho test whether ownership structure is exogenous. According to this study, the possibility that ownership structure, investment and firm value are endogenously determined, as Demsetz and Lehn (1985) argue, is given if the ordinary least squares (OLS) will generate inconsistent parameter estimates which might lead to misinterpretation of regression results and incorrect management decisions. With the cross-section analysis of Fortune 500 manufacturing companies in 1991, a significant relation between insider ownership and corporate value is appearing in a consistent way corresponding with the Mørck, Shleifer, and Vishny (1988). The study also presents a non-monotonic relation between insider ownership and investment, where investment is measured as capital expenditures and research and development (R&D) expenditures. The relation is positive below an insider ownership level of 7 percent, negative between 7 percent and 38 percent, and positive for levels above 38 percent.

³⁹ Loderer and Martin, 1997

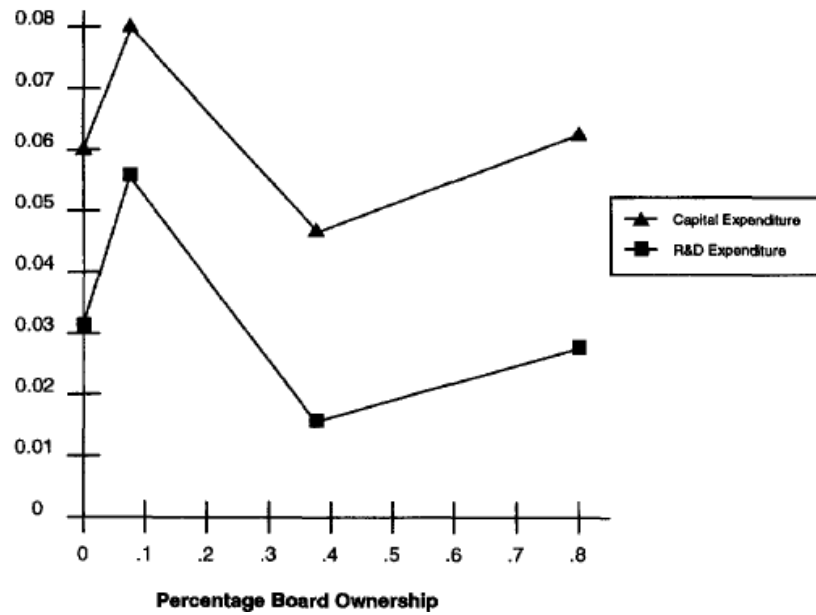


Figure 2 – The relationship between insider ownership and investment in capital expenditures and research and development (R&D) expenditures implied by the piecewise linear ordinary least squares regression of 1991 investment on insider ownership and other firm characteristics for 326 Fortune 500 firms. Capital expenditures and R&D expenditures are divided by the replacement cost of assets to control firm size.⁴⁰

This result might lead to a false conclusion that ownership structure affects investment and thus firm value. However, this specification does not account for endogeneity. Estimating a simultaneous equation regression instead of OLS to control endogeneity, Cho finds out that firm value affects ownership structure but not vice versa. However, the reverse affection is not given which challenges the implicit assumption that ownership structure is exogenously determined. Cho argues that the implicit assumption of exogenous ownership structure conveys misconception of the results because OLS regression results are highly influenced. Thus, he questions the outcomes in previous studies which examine ownership structure as exogenous.

⁴⁰ Cho, 1998

Agrawal and Knoeber (1996) examine the use of seven selected mechanisms to control agency problems between managers and shareholders. These mechanisms are as following: insider shareholdings, outside directors, debt policy, corporate control market activity, institutional shareholdings, large blockholders, and managerial labor market. The investigation finds out that there is a significant relationship between firm performance and the first four of the above given mechanisms existing when each is included in a separate OLS regression. Their work investigates the empirical relation between firm performance as measured by Tobin's q and the extent to which the various control mechanisms are used. Agrawal and Knoeber argue that since alternative control mechanisms exist, a greater use of a single mechanism need not be positively related to firm performance. Distinction among the mechanisms can be done through inside or outside determination. The use of four out of the seven control mechanisms is decided by firm's internal decisions and the use of the other three is affected by outside parties. Internal decisions cover insider shareholding, outside representation on the board, reliance on debt financing, and reliance on external labor markets. External ones are given as institutional shareholdings, outside blockholdings, and activity in the market for corporate control. A greater use of each mechanism yields a benefit by improving managerial incentives but also conveys costs. An equally good performance can be generated even when one specific mechanism is used less, while others may be used more. Agrawal and Knoeber view regressions of a single mechanism to firm performance difficult to interpret because of the existence of alternative control mechanisms and their possible interdependences, such regression fail to consider interrelations among control mechanisms. As the extent to which several of the control mechanisms are used is decided within a firm, Agrawal and Knoeber suppose like Demsetz and Lehn that the choice of the use and its extent will be made to maximize firm value. The degree of the use of a mechanism is determined by the match of marginal costs and marginal benefits to the firm. Their study is the first to address directly the empirical importance

of the interdependence among control mechanisms on estimates of the effects of the above given control mechanisms on firm value. The empiric data cover nearly 400 large US firms on which insider shareholding, institutional shareholding, shareholding of large block holders, outside board members, debt, external labor market for managers, and takeover activity is measured. Main aspects of this study is first to find evidence of interdependence among control mechanisms, second to examine the empirical relation between the mechanisms and firm performance. Their results for the single mechanisms OLS regression, where Tobin's q is regressed on the entire set of control mechanisms, show statistically significant positive relation between firm performance and insider ownership, while the relationship with outside representation on the board of directors, debt financing, and corporate control activity is significantly negative. In the expanded OLS regression, in which all mechanisms are put together, the relationship between insider ownership and firm performance disappeared but rest remains same. The simultaneous equations estimations, in which all mechanisms are put together, the effects of insider ownership, debt, and corporate control activity, are all statistically insignificant but the outsiders on the board show a continual negative effect. This finding is inconsistent with most other s as the use of outsiders in the board usually conveys positive effects.⁴¹

The study of Holderness, Kroszner, and Sheehan (1999) provides a comprehensive cross section comparison of about 1,500 publicly traded US corporations in 1935 with a modern benchmark of more than 4,200 exchange-listed companies in 1995. Their main aim is to examine a number of important issues such as the changes in characteristics of firms and managers have changed as the economy, the financial system, and regulation have changed in this time frame. Additionally, the long term comparison enables to examine

⁴¹ Agrawal, Knoeber, 1996

three alternative hypotheses about the change of costs and benefits of managerial ownership. First, as managerial ownership is one of many mechanisms to mitigate agency problems: The study finds no evidence for substitution hypothesis, which argues that insider ownership is substituting for alternative mechanisms. This could be incentive-based compensation, monitoring by board of directors, market for corporate control or product-market competition. The second hypothesis considers a link between firm performance and managerial ownership where firm performance is measured with Tobin's q . Their findings show for 1935 a similar pattern to Mørck, Shleifer, and Vishny (1988), for 1995 this pattern still exists but in a weaker shape. The third hypothesis concerns how firm-specific characteristics which are associated with costs and benefits of monitoring affect the level of managerial ownership. The study documents no change in the comparison. Most factors, such as firm size and regulation, have similar effects on managerial ownership in 1935 and 1995.⁴²

By adding new variables to Demsetz and Lehn (1985), Himmelberg, Hubbard and Palia (1999) extended their work to enlighten variations in ownership structure. They use panel data of 600 firms from 1982 to 1992. Himmelberg et al. show that managerial ownership can be explained both by observable characteristics and unobserved features of the firm's contracting environment. The control for various possible unobserved heterogeneities and for the endogeneity issue, they utilize a fixed effects panel data model and instrumental variables. They highlight that visible characteristics of the company affect the level of insider ownership. Himmelberg et al. conclude that most variations in managerial ownership are explained by unobserved firm

⁴² Holderness, Kroszner, and Sheehan, 1999

heterogeneity and managerial ownership does not affect firm performance in a significant way.⁴³

Demsetz and Villalonga (2001) highlight like Cho (1998) the issue of endogeneity of ownership structure in their investigation of the relationship between ownership and firm performance. Coefficients of single equation models of the effect of ownership on performance might be biased. Additional bias emerges might likely to yield from complex interest relations which are linked with each other. They are using an econometric model which has two equations to examine, for both as OLS and 2SLS regressions. The first takes firm performances as a dependent variable, Tobin's q into account. The second uses the fraction of shares owned by management as dependent variable. Demsetz and Villalonga argue that their study shows unambiguous evidence for the endogeneity of ownership structure. For OLS the results imply ownership structure is significant in explaining performance. The 2SLS results show no significant relationship. However, their results are consistent with the view that the ownership structure is systematically chosen in the way to value maximize firm performance.⁴⁴

Claessens, Djankov, Fan, and Lang (2002) study the ownership patterns following to La Porta et al. (1999). In their study they first identify the immediate shareholders of a corporation which in most cases are corporate entities, nonprofit foundations, or financial institutions. Then, identify their owners, the owners of the owners, and the like. In eight East Asian economies they investigate 1301 corporations and try to disentangle the incentive and entrenchment effects of the largest owners by studying cash flow and voting rights. Besides the work of Gugler, Mueller, Yurtoglu (2008) they have also tried

⁴³ Himmelberg, Hubbard, Palia, 1999

⁴⁴ Demsetz, Villalonga, 2001

to separate wealth effect between the entrenchment effects of insider ownership. Claessens et al. suggest to measure wealth effect with cash flow rights and the entrenchment effect with control rights of large shareholders. A further view on this will be shown in Section III. The findings explain consequently that cash flow rights of the largest owner are positively related to firm value as incentive alignment effect. The voting rights of the largest owner are negatively related to firm value, which demonstrates the entrenchment effect.⁴⁵

A highly interesting contribution to the literature is done by Gugler, Mueller, and Yurtoglu (2008). Their work mainly presents a clean method for separating the positive wealth effect from the negative entrenchment of insider ownership. The effect of insider ownership is measured by both Tobin's (average) q and different to the previous studies, the marginal q . Most studies follow Mørck, Shleifer, and Vishny (1988) and use Tobin's q to measure firm performance. However, there are several studies which question whether ownership is exogenous in relation to the firm performance. Therefore Gugler, Mueller, and Yurtoglu use marginal q as a measure of firm performance which does not convey endogeneity. Management decisions in fact affect firm value; this can be observed in decisions of over-investment such as mergers amongst other. To measure wealth effects of insider ownership they employ a variable which is the value of insiders' shareholdings (VS) which can measure proportional effects on firm value and thus effects on the net wealth of the manager in an accurate manner compared to the fraction of shares managers hold (INS). INS , in prior studies a measure to examine both wealth and entrenchment effects of insider ownership, is used in this study merely to measure the entrenchment effect. The estimate of marginal q is given by the

⁴⁵ Claessens, Djankov, Fan, and Lang, 2002

ratio of a firm's return on investment to its cost of capital.⁴⁶ The investigation covers US, non-US Anglo-Saxon countries and European Civil Law countries. To separate the wealth effect from the entrenchment effect it has used the value of a control group's shareholdings to capture positive wealth effect and the fractional holdings to capture the negative entrenchment effect. The results show significant positive wealth effect and negative significant entrenchment effect. ⁴⁷

⁴⁶ For further studies on the methodology estimating marginal q see: Mueller and Reardon (1993), Mueller and Yurtoglu (2000), Gugler and Yurtoglu (2003b), Gugler et al. (2003a,b, 2004)

⁴⁷ Gugler, Mueller, Yurtoglu, 2008

3 Methodology

For our firm value regression with control variables that Mørck, Shleifer and Vishny (1998) advanced as important determinants of Tobin's Q. Following a number of previous studies in this field, my primary performance measure is Tobin's Q. As an alternative measure I choose the accounting profit rate measure return on assets (ROA). Further, the control variables include firm size, leverage, beta and both industry and year dummies. Industry dummies are based on two-digit Standard Industrial Classification (SIC) codes.

3.1 *Wealth effects of manager-shareholder conflicts*

As some possible manifestations of agency problems we first count empire building and growth maximization as a goal for managers. This was investigated by Marris (1964)⁴⁸. This occurs as ways for managers to take advantage of the separation of ownership from control. Gugler, Mueller, Yurtoglu (2008), hereafter GMY, highlight that growth-maximizing managers will invest more than optimal in relation to the shareholder wealth, thus returns on the investment will be lower than its cost of capital. In this context GMY describes implications of the managerial over-investment with the following example:

„...assume that a company is expected to earn profits of π from now to infinity, and pays all profits out as dividends. The market value of its equity is then $M = \pi / i$, where i is its cost of capital. Assume its initial capital stock equals

⁴⁸ Marris, 1964, 1998

its market value, $M=K$, so that Tobin's q is 1.0. The managers choose to expand the firm's capital stock by α percent through an investment I , $I=\alpha K$. For argument's sake, assume that the return on this investment is zero, and it is funded by issuing new shares. Assuming rational expectations on the part of the stock market, the value of the firm's existing shares falls by α percent, as soon as the managers announce the sale of shares to finance the unprofitable investment. If the managers own shares in their company, they will suffer a wealth loss of α percent of the value of their shareholdings. Thus, the bigger the value of their shareholdings, the greater is their wealth loss from an unprofitable expansion of their company..."⁴⁹

As the above given example describes, for all decisions of this kind, which have proportional effects on firm value, the proper way of measuring wealth effects is given by using the value of insiders' shareholdings. Similar steps are taken by managers in mergers and acquisitions activities.

3.2 Entrenchment effect of insider ownership

Gugler, Mueller, Yurtoglu (2008) assume the negative entrenchment effect of managerial ownership to be nonlinear. Previous studies have used the fraction of insider shareholding to measure both positive wealth effects and negative entrenchment effects. However, GMY (2008) claim that all positive effects of insider ownership should be captured by the wealth of insider shareholdings, and insider shareholdings will have a purely negative effect on performance. By doing so, they are making the joint hypothesis that (1) the proportional effects of managers' decision on shareholders' wealth dominate the absolute effects,

⁴⁹ Gugler, Mueller, Yurtoglu, 2008

and (2) insider shareholdings measures the negative entrenchment effects and insider's wealth the positive wealth effects. However, Claessens et al. (2002, hereafter CDFL) have attempted earlier to separate the wealth and entrenchment effects of managerial shareholdings. Their study is affected by the advantage of highly concentrated shareholdings in East Asia. Further, the fact that cash flow and control rights sometimes differ for large shareholders contributes another advantage. Claessens et al. (2002) argue to measure the wealth effects of ownership with a measure of cash flow rights, and the entrenchment effects by using control rights of large shareholders. GMY argue that the method used by CDFL conveys several shortcomings. First, because of the absence of large shareholders and of the kinds of corporate pyramids and multiple-vote shares which consequently leads to the divergence of cash flow and control rights this cannot be applied to the US. Even markets, as the German, which are characterized with concentrated ownership and large shareholders cash flow rights and control rights represent the same for the most of the shareholders.

3.3 Endogeneity between insider ownership and firm performance

The nature of investment opportunities of a firm may make managerial ownership to be endogenous. To mitigate the endogeneity effects in relation to the ownership structure and firm performance, as above mentioned in Section II with Demsetz (1983) and the others, here a different approach is to be utilized compared to the before mentioned studies. The underlying data set allows limited flexibility to mitigate endogeneity effects. This situation can however be solved with a firm solution by using a lagged variable for insider shareholdings and insider wealth whereby the value of insider ownership and insider wealth

of $t-2$ are taken into account. Only the robustness check, however will employ the values in $t=0$ for insider ownership and insider wealth variables.

3.4 Model Specification

If we assume managers to be risk averse, a nonlinear relationship between the value of managers' shareholdings and company performance can be expected because the managers' utility will increase nonlinearly with their wealth. This nonlinearity is captured by including both linear and quadratic terms in VS in the equation with a positive coefficient predicted for VS and a negative coefficient for VS^2 . The negative entrenchment effect of insider ownership might also be nonlinear as stated above. Therefore I use a similar approach to GMY and estimate two slopes for the insider ownership variable. There are reasons for a negative relationship with firm performance and company size. Further, entrenchment can be expected to increase with the size of managerial shareholdings. Additionally, keeping managerial shareholdings constant, entrenchment may also increase with the size of the firm. In the perfect capital market outsiders could easily raise required funds to takeover a poorly performing company. Therefore size is not a protection for managers engaging in substantial on-the-job-consumption. Yet if capital markets are less than perfect, size can play a considerable role in protecting managers from takeovers. Another reason for the negative company size and firm performance relationship arises from the case that small companies may have limitation to raise sufficient funds to finance further wealth generating investments because of asymmetric information. Thus, their q might lie above one⁵⁰. Another

⁵⁰ Further information about the relationship between asymmetric information problem and investment, see Myers and Majluf (1984), Oliner and Rudebusch (1992). Both use size to identify firms subject to asymmetric information problems.

important variable to be included in the model is leverage. However, this variable itself is likely to be function of some variables in the model as several different hypotheses treat leverage as a function of insider concentration. Moreover, there are different opinions whether the relationship between leverage and firm performance is a negative or a positive one. However, since the goal of the study is not to measure determinants of leverage, a deeper investigation of its interdependencies does not effectively contribute to the aim. If we use leverage in the equations it picks generally a negative coefficient except while measuring just size, leverage and beta separately. With the aim of measuring risk, as a measure of instability, we use beta which is given by value line beta in our data set. On regressing Tobin's q, the coefficient for value line beta shows a positive value. Thus, we have our following specification ready for testing the impact of insider ownership and institutional ownership as determinants of firm value defined by Tobin's and to be compared with the accounting profit measure return on assets (ROA):

$$q = c + \beta_0INS + \beta_1INS^2 + \beta_2INS^3 + \beta_3VS + \beta_4VS^2 + \beta_5ITN + \beta_6ITN^2 + \beta_7S + \beta_8L + \beta_9B + \mu,$$

where c is the constant, β_0 is the coefficient on INS for managerial shareholdings and β_2 the coefficient for shareholders' wealth VS, β_4 the coefficient for institutional shareholdings and ITN for institutional shareholdings, etc.

Furthermore, to exclude astronomic values for Tobin's q, I have limited the output of Tobin's q to the values between 0 and 10. Another important condition is to take values where the insider ownership of two preceding years is not equal to 0 because the aim of this study is to analyze the effects of insider shareholdings to mitigate endogeneity.

4 Data

The financial data taken in this study for the period has been compiled by Damodaran⁵¹. As published Damodaran made use of following sources to gather the data:

Value Line Database: tracks about 7000+ firms and provides accounting and market data on them monthly.

Morningstar: follows all trades on US stocks and has information on 8000+ companies. Any mutual fund data is also obtained from Morningstar.

Most of the accounting data reflects the most recent annual report or 10K. The trailing 12 month net income and sales reflect the numbers as of the last four quarters.

The samples from year 2000 to 2009, a 10 year period, have been used for the study. From this initial data, banks and financial institutions and some service industries (SICs 6000 through 6999 and above 8100) are excluded because otherwise it would bias the results as the nature of capital and investment in these industries is not comparable to that of non-financial firms. Thus, a data set of 47543 observations remains. From this basis further exclusion is made on observations with insider ownership to pursue the goal of the investigation.

⁵¹ The Data Page by Damodaran, accessed in May 2010:

http://pages.stern.nyu.edu/~adamodar/New_Home_Page/data.html

4.1 Definition of Variables

Table 3 – Variables and definitions

Variable	Definition
t_q	Tobin's Q = Firm Value / Total Assets
roa	Return on Asset = EBIT / Total Assets
ins	Number of shares held by insiders (as defined by the SEC to include corporate officers, directors and those holding more than 5percent of the outstanding stock) as a percent of total stock outstanding
ins_t2	ins but in year t-2
itn	Number of shares held by mutual funds, pension funds and trusts as a percent of total stock outstanding.
vs	Insiders' wealth: INS * Estimated market value of equity, obtained by multiplying the number of shares outstanding by the share price.
vs_t2	As vs but in t-2
size	Size measured by log(Total Assets)
leverage	Leverage = Total debt / Total Assets
beta	Estimated by regressing weekly returns on stock against NYSE composite, using 5 years of data or listed period (if less than 5 years). If data is available for less than 2 years, the beta is not estimated).

4.2 Descriptive Statistics

As shown in table 4 the average Tobin's Q is 1.68 with a median of 1.32. The average ROA is 12.48 percent with a median of 0.1293. The data shows further an average insider ownership of 10.49 percent for ins_t2 together and 9.30 percent for ins. In the investigation ins_t2 represents the main variable for insider ownership because it is the fraction shares managers held in t-2. Consequently, this will mitigate possible endogeneity problems. Ins represents the share ownership by managers in t=0. Further, the data shows an average institutional ownership of 71.07 percent.

Table 4 – Summary statistics on main study data set

Variable	Obs	Mean	Q1	Median	Q3	Std. Dev.	Min	Max
t_q	7684	1.680891	0.8965388	1.32280	2.05945	1.23848	0.00984	9.92754
				0.12925	0.18113	0.12098	-	1.38775
Roa	7682	0.1247781	0.0838223	6	4	2	1.852886	5
Ins	7372	0.0930017	0.022	0.0459	0.0969	0.13457	0.0005	1
						0.14322		
Ins_t2	7684	0.1049066	0.024	0.0509	0.115	4	0.0005	1
						0.22222		
ltn	7075	0.7106556	0.6142	0.7671	0.87	2	0	0.9999
				95.7578	250.458	3025.21		94380.3
Vs	7372	420.3973	37.17023	7	2	9	0.0068	7
				106.095	279.517	3175.14		103671.
vs_t2	7684	487.1396	42.57834	4	7	8	0	9
				7.46965	8.47350	1.47019	2.20827	
size	7684	7.563309	6.534479	4	8	7	4	13.5285
				0.20798	0.33590	0.20504		3.67550
leverage	7684	0.2253743	0.053051	2	7	6	0	7
						0.34800		
beta	7579	1.134279	0.9	1.1	1.3	4	0	3.05

4.3 Correlations

The data is not a fully balanced panel and working with unbalanced panel (Wooldridge, 2006) is not necessarily an issue, if the reason for missing data is not correlated with the idiosyncratic errors. The following table presents the correlations between the variables. As mentioned in the theoretical section, similarly to the findings of Geroski (1998) and McGahan (1999) the two variables, Tobin's Q and the accounting profit rate ROA, are in the underlying data nearly uncorrelated with a value of 0.2608.

Table 5 – Correlations on main study data set

	t_q	roa	ins	ins_t2	itn	vs	vs_t2	size	leverage	beta
t_q	1									
Roa	0.2608	1								
		-								
Ins	0.0233	0.0174	1							
		-								
Ins_t2	0.0506	0.0073	0.8848	1						
Itn	0.0592	0.1952	-0.207	-0.202	1					
					-					
Vs	0.0739	0.045	0.1853	0.1671	0.0736	1				
					-					
vs_t2	0.0535	0.0409	0.1698	0.1996	0.0734	0.9471	1			
					-					
size	0.1457	0.2039	-0.23	0.2409	0.1055	0.1769	0.1903	1		
								-		
leverage	0.1297	0.0277	0.0535	0.0527	-0.067	0.0055	-0.008	0.2131	1	
								-		
beta	0.0246	0.2993	0.0463	0.0311	0.0016	0.0447	0.0223	0.0709	-0.0305	1

4.4 Additional sample characteristics

To analyze further the main variables of the core sample, I categorize the mean values in groups by insider ownership deciles, I get the values of each decile as shown in Table 6. One can observe low managerial ownership in higher capitalized companies as assumed but after decile 7 the share of insiders increase with the market capitalization. However, this pattern is slightly similar to the relationship between insider ownership and size. As nearly uncorrelated, Tobin's Q and ROA show different patterns within the insider ownership deciles. Table 6, below, provides more values regarding the characteristics of the sample data.

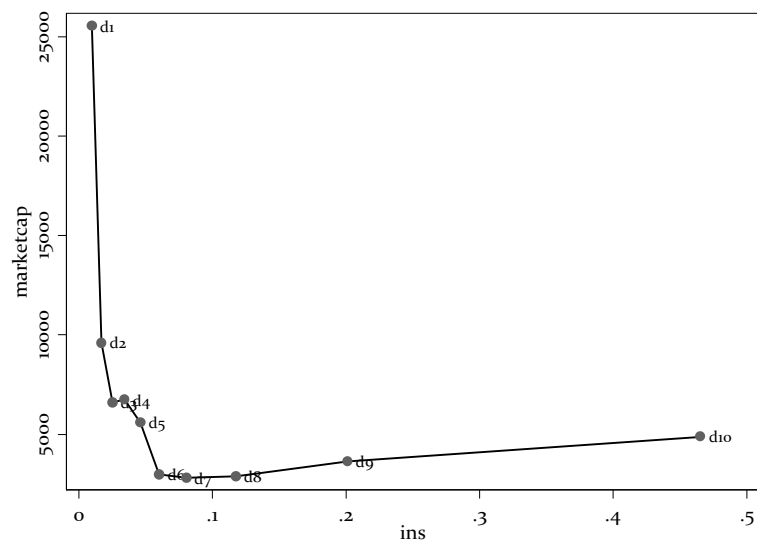


Figure 3 – Market Capitalization per insider decile

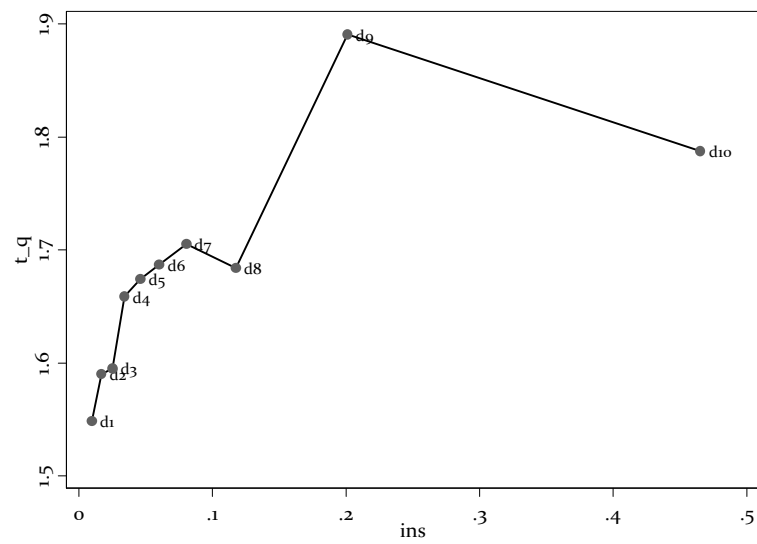


Figure 4 – Tobin's Q by insider decile

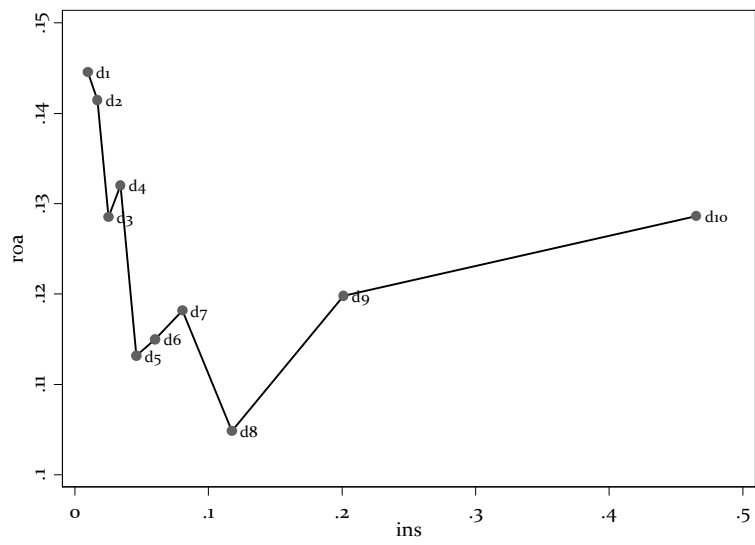


Figure 5 – ROA by insider decile

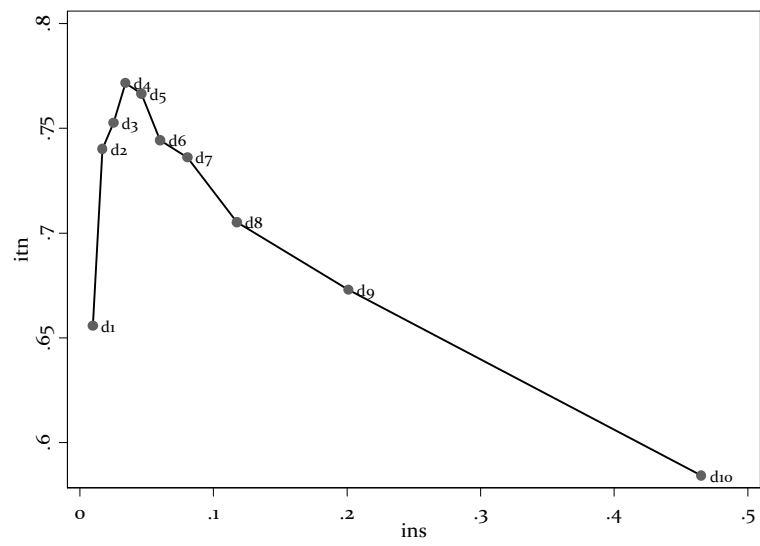


Figure 6 – Institutional owners' share by insider decile

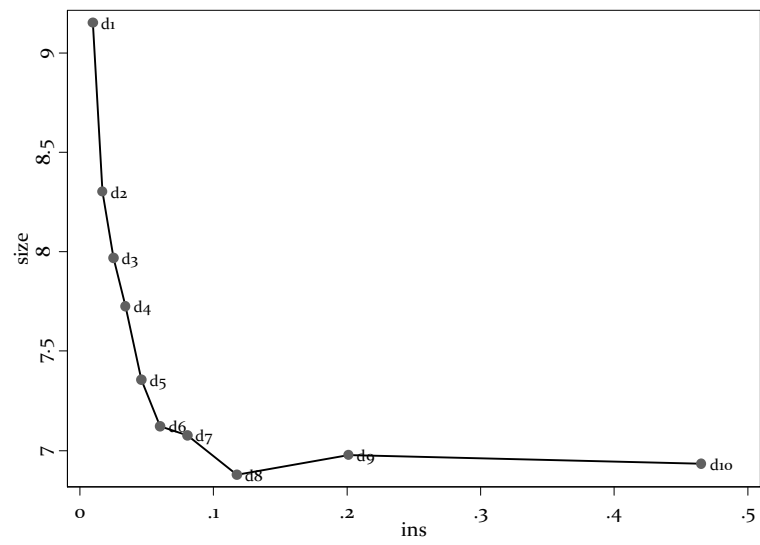


Figure 7 Size by insider ownership decile

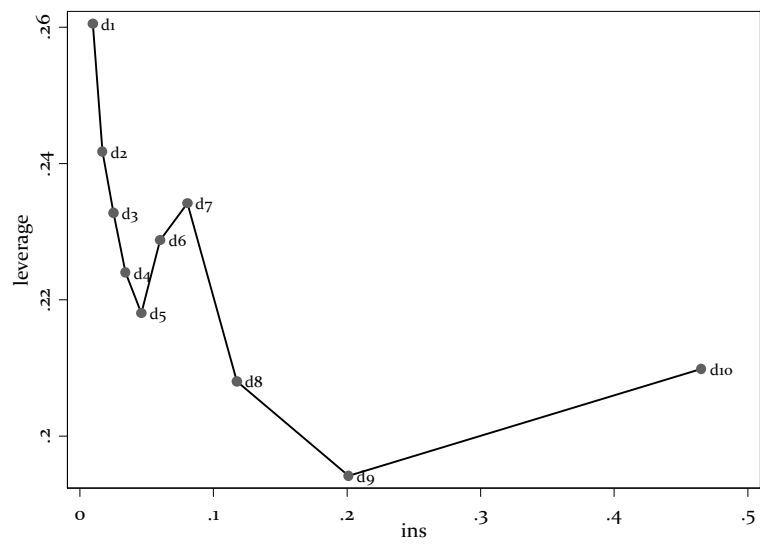


Figure 8 – Leverage by insider ownership decile

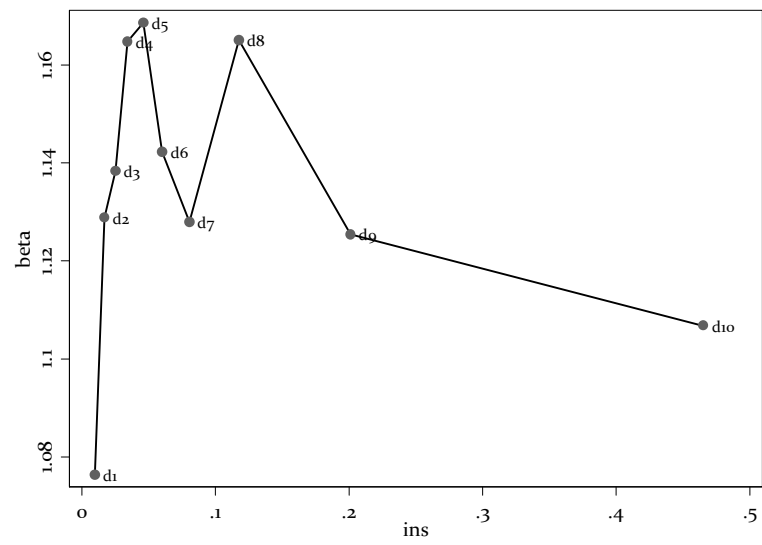


Figure 9 - Beta by insider ownership decile

Table 6 – Means for each coefficients by decile groups

Means	ins_t2	ins2_t2	ins3_t2	itn	size	leverage	beta	vs_t2	vs2_t2	t_q	roa	Marketcap
d1	0.0096548	0.0000969	9.91E-07	0.6557654	9.150273	0.2604458	1.076384	240.1982	262839.7	1.548249	0.1445666	25535.71
d2	0.0168226	0.0002888	5.05E-06	0.7401842	8.302198	0.2417739	1.128856	167.8108	123879.5	1.590044	0.1414523	9612.108
d3	0.0250399	0.0006332	0.0000162	0.7525693	7.968822	0.2327438	1.138382	159.1914	92641.14	1.595287	0.1285016	6614.883
d4	0.0340115	0.001165	0.0000402	0.7716909	7.725191	0.2240211	1.164763	229.0425	414039.6	1.659	0.1320345	6764.44
d5	0.0459165	0.0021233	0.0000989	0.7666057	7.355952	0.2179972	1.168561	239.4583	1048625	1.673982	0.1131559	5601.356
d6	0.0600651	0.0036276	0.0002203	0.7443205	7.122717	0.2287108	1.14227	193.1	503829.1	1.686771	0.1149848	2998.575
d7	0.080284	0.0065022	0.0005312	0.7360683	7.076556	0.2341542	1.127989	224.6946	229988.5	1.705082	0.1181564	2823.793
d8	0.11744	0.0140262	0.0017034	0.7051169	6.878476	0.2080612	1.16511	359.1763	777937.7	1.683995	0.1048104	2901.62
d9	0.2011893	0.0417116	0.0089081	0.6728078	6.978115	0.194168	1.125468	716.9425	2576989	1.890904	0.1198175	3634.332
d10	0.4654346	0.2465477	0.1491058	0.5841787	6.933512	0.2098429	1.106776	2347.684	9.75E+07	1.787472	0.1286265	4883.978

5 Results

This section describes the results of the investigation and the implications are discussed later. The underlying investigation employs 36 regressions for the main study and auxiliary for its robustness check.

Please note that, to attain the aim of the study, the figures hereafter marked with an asterisk (*), explain the relationship between the dependent variable and the selected independent variables and the intercept only. The effect of other variables are not integrated in the relation, so that the dependent value can be depicted in different extent than the actual values.

The main regressions and the robustness check regressions differ from each other both in the dependent variable and in the independent variable for insider shareholding deviations as described in the methodology section:

Main regression:

- Tobin's Q, whereby lagged variables $INS(n-2)$, $VS(n-2)$ replaced INS and VS .
- Return on assets, whereby lagged variables $INS(n-2)$, $VS(n-2)$ replaced INS and VS

Primarily, the aim of this study is to analyze the results for Tobin's Q whereby a possible endogeneity effect is mitigated with a lagged value for share insider ownership as described in the previous section. The control variable, return on assets, here is similarly lagged as it is the case for Tobin's Q.

After analyzing these both variables with several regressions, I will continue with a robustness check for specifically for the institutional ownership effect because in the main study there are several observations without institutional ownership. Finally, I will make another robustness check for the results presented in 5.1 by ignoring the endogeneity effect in order to compare.

5.1 Results for Tobin's Q and Return on Assets

As given above, table 10 presents the results for the regressions where Tobin's Q and Return on assets are regressed as dependent variable. All equations include a set of two-digit industry dummies and also year dummies but their coefficients are not reported to save space.

Equation 1 to Equation 6

Equation 1 and equation 2 show the relationship as linear function with contradictory signs for the coefficients for the regression on Tobin's Q and return on assets.

In equation 3, the significance for a squared relation seems very high, even more than for the cubic relationship in equation 5. The control variable ROA, equation 4, shows contradictory signs for its coefficients compared to the ones in equation 3.

Equation 5 and equation 6 present the nonlinear relationship with all three terms in the cubic equation is not highly significant. Anyway, the results for the cubic relationship are not fully corresponding to the results of Gugler, Mueller and Yurtoglu (2008) but the pattern of signs corresponds in the same way to a cubic relationship rather as MSV estimation of a piece-wise linear regression.

The regression results on return on asset have contradictory signs to the ones on Tobin's Q but in this case the coefficients for Tobin's Q are not significant.

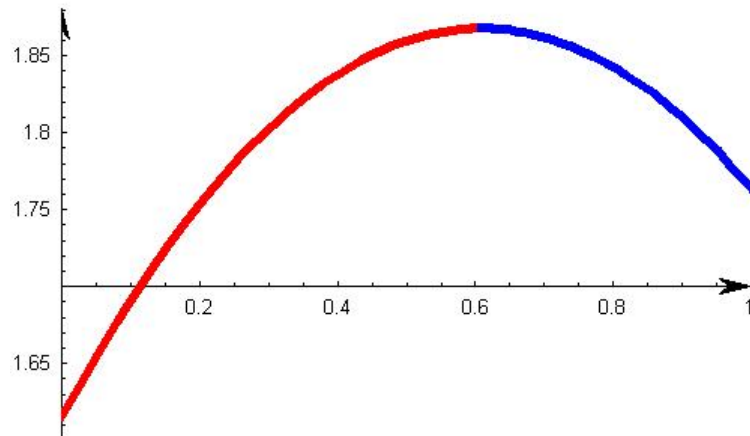


Figure 10* – Equation 3: INS and INS2 in relation with Tobin's Q

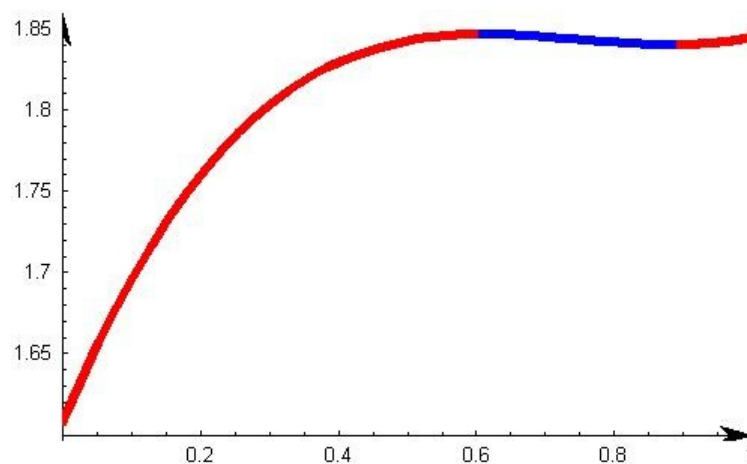


Figure 11* – Equation 5 : INS, INS2 and INS3 in relation with Tobin's Q

On analyzing the turning points for insider ownership in these equations we see that for the inversed u shaped relation in equation 3 the maximum is at the level of 60.93 percent. This is corresponding to the maximum level in the cubic relation given in equation 5 but nevertheless the minimum in this equation is at the level of 88.42 percent.

Equation 7 to Equation 10

The equations 7 to 10 present the effect of purely by institutional ownership. There is a strongly significant positive relationship observable on both Tobin's Q and return on assets as equation 7 and equation 8 present. In equation 9 and 10 we additionally involve INS2 as insider ownership square. As expected the second coefficient for both 9 and 10 is negative but also notably at an insignificant level also for both. Further, if we compare these coefficients here with the one of the previous equations it is remarkable that the sign for the regressions of Tobin's Q and return on assets do not contradict as previously in equation 1 to 6.

The linear relation between insider ownership and firm value is highly significant which leads to a theoretical maximum level at 100 percent institutional ownership. However, this would even exceed by analyzing the mathematical maximum which is at the level of 125.04 percent which obviously does not contribute to the study.

Equation 11 to Equation 18

Equations 11 to 16 take the independent variables for both insider ownership and institutional ownership together and add further control variables as size, leverage, and beta. In this group of equation, I employ a cubic relationship for insider ownership and the company value. Thus, given that the insider ownership and firm value is explained as cubic, all coefficients for insider ownership do not significantly contribute to Tobin's Q. Comparing the effects of institutional ownership in the equation 7 to 10 and here we see that there is a slight decrease in the coefficient ITN and a slight increase in ITN2b by adding further variables into the relation. The coefficients for ITN and ITN2 do not show nor an important increase and decrease but still its significance level

increases with more dependent variables in the regression. The pattern on ROA is different, there coefficient in equation 12 is in a similar level as in 6 but by adding control variables it decreases from a level in equation 12 of 0.1362 for ITN to 0.0663 in 14 and to 0.0597 in 16.

The size contributes a highly significant negative effect on Tobin's Q similarly as leverage whereby the coefficient for leverage is much higher than for size. Its effect on ROA is slightly different. Here we have again a negative effect by leverage on the dependent variable but a positive one with considerably higher significance by the firm size. Beta contributes in equation 15 and equation 16 a negative value to both Tobin's Q and ROA whereby its significance is not given for Tobin's Q but it plays an even bigger role on return on assets. Compared to size and leverage it contributes in a much more importantly way to ROA. In equation 16, its coefficient with -0.1036 is more than as twice high as the leverage with -0.0436.

Equation 17 and equation 18 point out further the effects merely given by the control variables size, leverage and beta. Both equations show similar results as given by equation 15 and equation 16.

Turning points vary much between equation 11, and the other in equation 13 and 15 in the relation between insider ownership and Tobin's Q. Equation 11 shows a maximum at 67.63, and a negative minimum. Equation 13 has minimum at 8.07 percent and a maximum at 72.01 percent. Similarly with equation 15 which shows a minimum at 7.96 percent and a maximum at 72.98 percent of insider ownership. For insider ownership range between 0 and 100 percent, it shows more a squared picture of relationship rather than a cubic one as given as in equation 13 and 15. However, this pattern results from the insignificant coefficients.

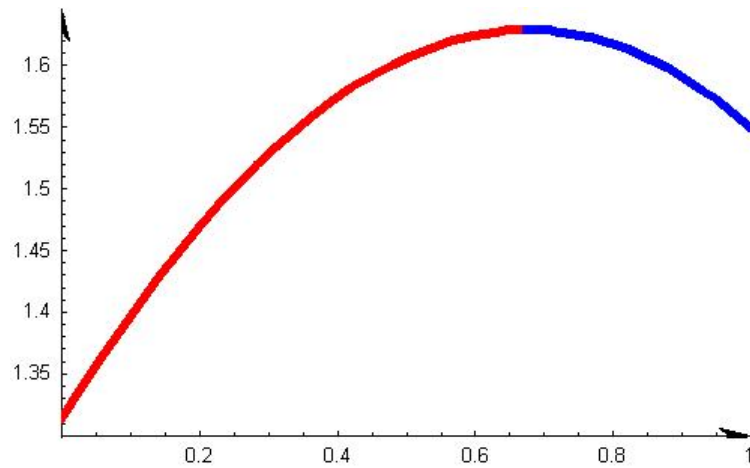


Figure 12* - Equation 11: INS, INS2 and INS3 in relation with Tobin's Q

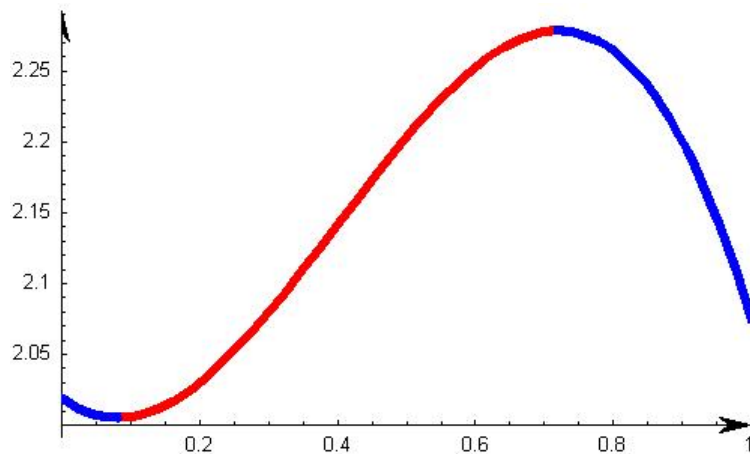


Figure 13* - Equation 13: INS, INS2 and INS3 in relation with Tobin's Q

From equation 11 to equation 18, the turning points for institutional ownership lie out of the range of 0 and 100 percent. Further, the coefficients for institutional ownership are given in an insignificant level.

Equation 19 to Equation 22

Equation 19 and equation 20 show for the coefficient INS a strongly significant positive effect on the dependent variable. Whereby, institutional ownership effect, as split here in ITN and ITN2, does not show any significance

for both coefficients. The control variables size, leverage and beta continue the same pattern as described above.

Equation 21 and 22 differs from the previous two because of the two added coefficient VS and VS2 which measure the wealth effect of the insider owners. In equation 21, where the regression is made on Tobin's Q, we can easily observe an important change. The coefficient, however still in the same range as in 19, changes its sign. On the other hand, VS delivers a positive effect and VS2 an additional but very low negative effect arising from insider ownership. Institutional ownership is kept in a squared relationship with the dependent variables. Both coefficients, ITN and ITN2, do not show any significant coefficients. A further remarkable point here is that the size effect on Tobin's Q has increased. So did the intercept as well, it show an increase from 1.9964 to 2.4960 in 21 for Tobin's Q.

Turning points for insiders' wealth and institutional ownership are out of the range of 0 and 100 percent ownership.

Equation 23 to equation 28

Equation 23 and equation 24 differs from the previous one only by the case that institutional ownership is represented by only one coefficient, ITN. Thus, the main difference in here is that institutional ownership shows highly significant positive coefficients in both regressions. The coefficients for insider ownership INS, VS and VS2 do not show significant changes.

In the equations 25 to 28, insider ownership is described to have a cubic relation with firm value, without the VS and VS2 coefficients for the insider wealth. For INS and INS3, the signs are negative and for INS2 positive. This

pattern describing the effect of insider ownership is the case on both Tobin's Q and ROA. The effect by institutional investors is given by the ITN still which is positive for Tobin's Q and ROA. The effect by the control variables continue to hold the same pattern and do not change significantly.

For equation 23 and 24, insider ownership turning points are not given as it is measure with INS only. Turning points arising from the effect of insider ownership on firm value are given for the cubic relation from equation 25 to 28. Yet both on Tobin's Q and return on assets, coefficients are not significant. Further, as above stated for shareholder wealth in equation 20 and 21, the turning points for shareholder wealth is out of the range of 0 and 100 percent ownership. For institutional ownership, there are no turning points because as simply represented by only one variable, ITN, from equation 23 to equation 28.

The coefficients for insider ownership in equation 25 and 27 on Tobin's Q are not significant but the turning points are very close. Maximum points are the same for 25 and 27 with 72.86 percent insider ownership. The minimum for equation 25 is at 7.62 percent and for equation 27 at 7.55 percent insider ownership. For the turning points in relation to ROA in equation 26 and 28, closeness is observable.

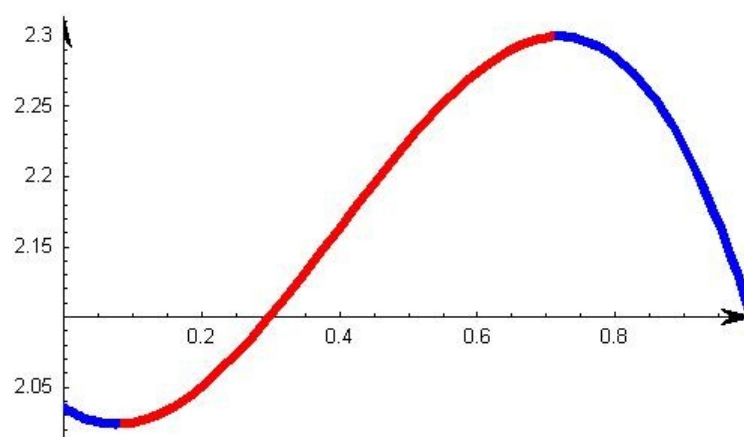


Figure 14* – Equation 25: INS, INS2 and INS3 in relation with Tobin's Q

Equation 29 to equation 32

In equation 29 and equation 30 we have the variable INS, VS and VS2 representing its effect on firm value. Again, we have a negative coefficient for INS and positive VS and negative VS2 similar as for the ones as above described for equation 23 but the existing insignificant effect by VS and VS2 on ROA is further decreasing in the significance level. Beta has not been taken into account for the equations 29 and 30. Its effect was nevertheless insignificant for Tobin's Q. The size effect on Tobin's Q nearly doubled even with higher significance to -0.1299. The effect of leverage on Tobin's Q decreased to -0.5865.

In equation 31 and equation 32 the effect of insider ownership is solely represented by INS. It shows a highly significant positive coefficient on Tobin's and ROA. As institutional ownership is represented by INS only, as before, there are no remarkable changes on its effect. The effect emerging from the control variables are as in equation 29 and 30.

Shareholder wealth shows here the similar pattern as in the above explained situation in equation 21 to 24.

Equation 33 to equation 36

In equation 33 and 34 the effect of all variables has been taken into account. Insider ownership shows here a clear cubic relation with Tobin's Q and also with ROA. INS, INS3 and VS2 have negative coefficients whereas INS2 and VS have positive coefficients. Institutional ownership represented by ITN and ITN2 do not show significant coefficient neither on Tobin's Q nor on ROA. Size has shows further significant negative effect on Tobin's and a positive one on

ROA. Leverage has significant negative effect on both Tobin's and ROA. The effect of Beta on Tobin's Q remains negatively but still insignificant but on ROA it shows a significant negative effect.

Equation 35 and equation 36 employ the same coefficients for insider ownership but only one for institutional ownership. Compared to equations 33 and 34 the rest of the variables remain the same. The effect by its coefficients and its significances remain similar on Tobin's Q. The insider ownership effect on ROA is not significant for INS as in equation 34. In this equation the difference is on the institutional ownership which is represented by only one variable, ITN. The coefficient is slightly higher than in equation 33 but its significance has arisen to a very important level. The same is observable with its relation on ROA.

Turning points for insider ownership represented by the variables INS, INS2 and INS3, are very close together in the relation on both Tobin's and return on assets. Equation 33 shows a minimum at 24.45 percent, corresponding to the minimum of insider ownership in equation 35 with 24.58 percent. The maximum in equation 33 is at the level of 59.13 percent, also corresponding to the one in equation 35 with 59.19 percent. The maximum for 34 and 35 is at 60.62 percent and 60.92 percent respectively. The minimum is given at 6.21 percent and 7.38 percent respectively.

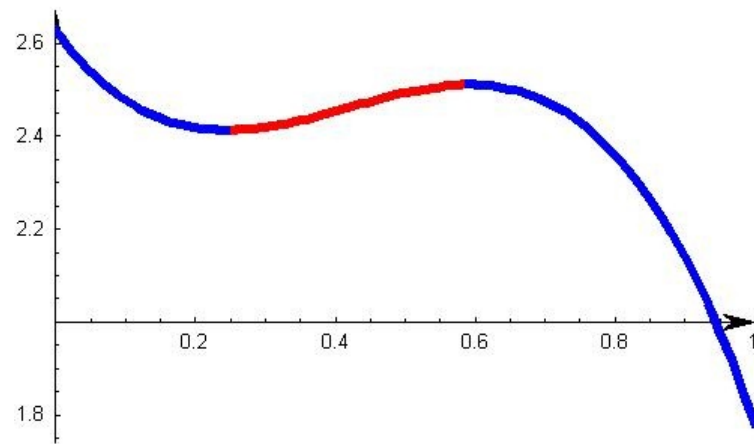


Figure 15* - Equation 33: INS, INS2 and INS3 in relation with Tobin's Q

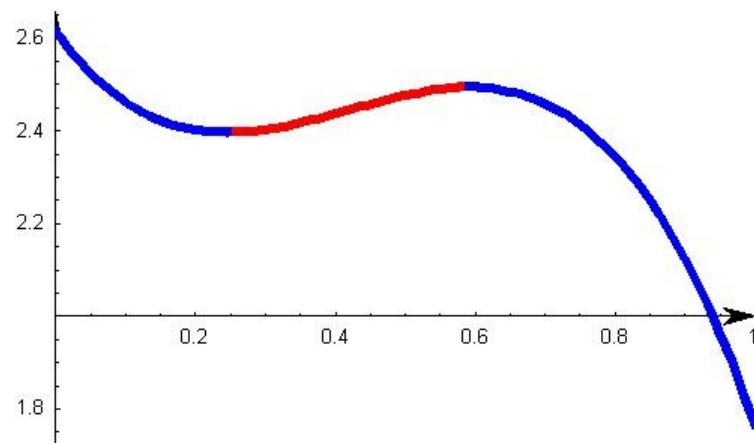


Figure 16* - Equation 35: INS, INS2 and INS3 in relation with Tobin's Q

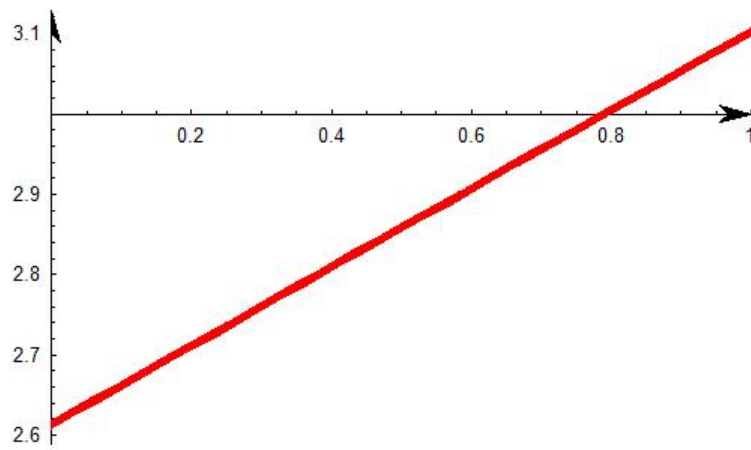


Figure 17* – Equation 35: Institutional Ownership in relation with Tobin's Q

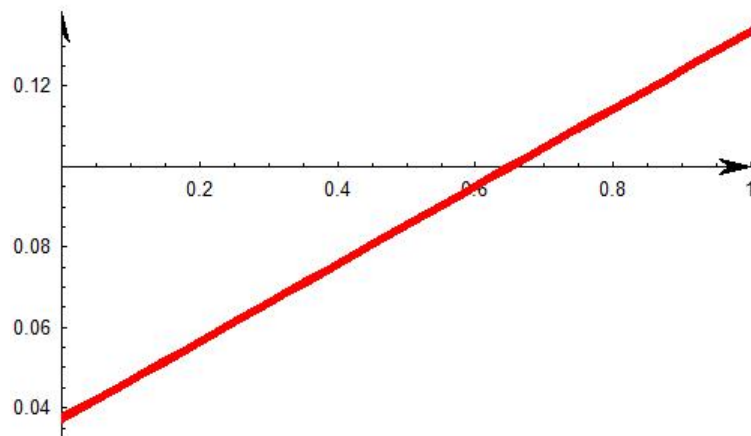


Figure 18* – Eq. 36, Institutional Ownership in relation with ROA

Table 7 – Regressions for Tobin's Q (Q) and Return on assets (ROA)

		Ins	Ins2	Ins3			Itn	Itn2	Size	Leverage	Beta	VS	VS2	Intercept	R ²	# Obs.						
1	Q	0.406633	4.31											1.638232	0.1208	7684						
2	ROA	-0.02362	-2.24											0.127256	0.0748	7682						
3	Q	0.827361	3.46	-0.67898	-2.07									1.615494	0.1212	7684						
4	ROA	-0.09671	-3.62	0.117945	3.05									0.131205	0.0761	7682						
5	Q	1.012271	2.15	-1.40252	-0.87	0.625882	0.47							1.608883	0.1212	7684						
6	ROA	-0.32915	-6.61	1.027344	5.68	-0.78661	5.01							0.139514	0.0798	7682						
7	Q							0.346412	5.19					1.452968	0.1206	7075						
8	ROA							0.104408	10.2					0.049794	0.1079	7073						
9	Q							0.625166	2.62	-0.24998	-1.17			1.39346	0.1208	7075						
10	ROA							0.126242	3.25	-0.01957	-0.66			0.200538	0.108	7073						
11	Q	0.894479	1.84	-0.58273	-0.35	-0.07744	-0.06	0.467247	1.94	-0.04185	-0.19			1.314608	0.124	7075						
12	ROA	-0.364	-7.19	1.28074	6.87	-1.00712	-6.23	0.136208	3.53	-0.02485	-0.85			0.054814	0.1154	7073						
13	Q	-0.36444	-0.71	2.510052	1.48	-2.08956	-1.52	0.537565	2.23	-0.09786	-0.45	-0.06635	-5.27	-0.68257	-4.43	7075						
14	ROA	-0.04204	-0.8	0.453804	2.4	-0.4479	-2.78	0.066239	1.87	0.028004	1.02	0.020694	12.4	-0.04163	-2.75	7073						
15	Q	-0.32257	-0.62	2.247728	1.32	-1.85152	-1.34	0.497357	2.02	-0.06692	-0.31	-0.06185	-4.86	-0.79381	-5.14	-0.00659	-0.14	2.035074	0.1434	6979		
16	ROA	-0.02129	-0.42	0.323668	1.79	-0.33067	-2.16	0.059736	1.7	0.032602	1.21	0.019851	12.2	-0.04359	-3.11	-0.10356	-20.3	0.036879	0.2299	6977		
17	Q													-0.06704	-6.01	-0.6981	-4.97	-0.04045	-0.89	2.397011	0.1374	7529
18	ROA													0.019055	12.3	-0.04532	-3.45	-0.10189	-19.9	0.106612	0.1938	7577
19	Q	0.297092	2.99					0.473375	1.93	-0.05317	-0.24	-0.05834	-4.86	-0.79642	-5.16	-0.00806	-0.17	1.996411	0.1432	6979		
20	ROA	0.038888	3.67					0.061598	1.75	0.029235	1.08	0.019892	12.9	-0.04417	-3.15	-0.10382	-20.2	0.036161	0.2289	6977		

		Ins	Ins2	Ins3	Itn	Itn2	Size	Leverage	Beta	VS	VS2	Intercept	R ²	# Obs.										
21	Q	-0.32191	-2.85		0.338608	1.4	0.114825	0.53	-0.12558	-9.18	-0.69202	-4.63	-0.02369	-0.51	0.000187	7.39	-1.9E-09	-6.31	2.496007	0.1652	6979			
22	ROA	0.03282	2.66		0.059587	1.68	0.031	1.14	0.019259	10.9	-0.04292	-3.02	-0.10415	-20.3	2.38E-06	1.95	-3.4E-11	-2.45	0.041322	0.2295	6977			
23	Q	-0.32989	-294		0.466163	6.73			-0.12592	-9.19	-0.68971	-4.63	-0.02326	-0.5	0.000186	7.4	-1.9E-09	-6.31	2.471605	0.1651	6979			
24	ROA	0.030668	2.43		0.094035	9.9			0.019168	10.8	-0.04229	-2.97	-0.10404	-20.2	2.27E-06	1.9	-3.3E-11	-2.42	0.034719	0.2293	6977			
25	Q	-0.33698	-0.66	2.467703	1.45	-2.07173	-1.51	0.429199	6.24		-0.06572	-5.21	-0.68481	-4.46					2.035907	0.1408	7075			
26	ROA	-0.04992	-0.95	0.466	2.48	-0.45305	-2.82	0.097259	9.92		0.020515	12.1	-0.04099	-2.7					-0.09425	0.1589	7073			
27	Q	-0.30352	-0.59	2.2173	1.3	-1.83813	-1.33	0.422951	6.05		-0.06143	-4.82	-0.79527	-5.16	-0.00683	-0.15			2.047056	0.1434	6979			
28	ROA	-0.0306	-0.6	0.338586	1.88	-0.33725	-2.21	0.095997	9.98		0.019651	12	-0.04288	-3.06	-0.10345	-20.2			0.031029	0.2296	6977			
29	Q	-0.31254	-2.79		0.471616	6.93			-0.12986	-9.55	-0.58651	-3.96			0.000188	7.47	-1.9E-09	-6.36	2.439369	0.1629	7075			
30	ROA	0.043283	3.25		0.094834	9.81			0.020314	11.1	-0.04075	-2.64			1.68E-06	1.34	-2.4E-11	-1.74	-0.09394	0.1577	7073			
31	Q	0.325176			0.419607				-0.0622		-0.68685								1.991707	0.1406	7075			
32	ROA	0.04764	4.13		0.094878	9.75			0.020756	12.9	-0.04158	-2.73							-0.09701	0.1574	7073			
33	Q	-2.03776	-3.66	5.889753	3.24	-4.69795	-3.1	0.408922	1.68	0.072147	0.33	-0.13832	-9.25	-0.68172	-4.58	-0.02062	-0.44	0.000194	7.32	-2E-09	-6.27	2.627222	0.1665	6979
34	ROA	-0.0424	-0.78	0.376305	2.03	-0.37539	-2.39	0.057853	1.64	0.03448	1.27	0.019023	10.1	-0.04206	-2.95	-0.1039	-20.4	2.79E-06	2.21	-3.9E-11	-2.73	0.043791	0.2307	6977
35	Q	-2.05639	-3.7	5.918457	3.26	-4.70916	-3.11	0.489076	6.98		-0.13868	-9.26	-0.68027	-4.58	-0.02035	-0.43	0.000194	7.33	-2E-09	-6.27	2.613695	0.1664	6979	
36	ROA	-0.05133	-0.95	0.39012	2.11	-0.38081	-2.43	0.096172	10.08		0.018851	9.87	-0.04136	-2.9	-0.10377	-20.24	2.68E-06	2.17	-3.8E-11	-2.7	0.037312	0.2304	6977	

5.2 *Robustness Check*

Here, I would to check for major change in the regression output in different conditions.

First, I will analyze the results for the insignificant relation of institutional ownership and firm value. As the used data includes observations with zero institutional ownership, I will limit all observations with a given institutional ownership.

Second, as insider ownership of t-2 has been used to mitigate possible endogeneity, be the output without respect to the endogeneity issue might deliver interesting conclusions.

Robustness Check:

5.2.1: Robustness check for ownership by institutional investors

- Selected regressions, whereby only observations with institutional ownership not equal to 0 are taken into account.

5.2.2: Similar regressions as in 5.1 but without mitigating endogeneity issue

- Tobin's Q, whereby insider ownership coefficient from same year
- Return on assets, whereby insider ownership coefficient from same year

5.2.1 Robustness on Institutional Ownership

In the above part squared relationship between institutional ownership was not significant enough. So, focusing solely on companies with a given institutional ownership which is greater than 0 the below given outcome by table 8 will result.

Equation 7 to equation 10

For equation 7 and 8 we see just a slight increase in the coefficient and similarly slight increase in its coefficients. Equation 9 and equation 10 employ two variables, ITN and ITN2 into the regression. For both 9 and 10 we observe insignificant coefficients in ITN2. This pattern is not given for the equation 9* and 10*. For both ITN and ITN2 the level of significance increases. It shows also an increase in the coefficient.

Equation 33 to equation 36

Equation 33* and 34* do not show major changes for the coefficients of insider ownership and of control variables. However, this is also the case for institutional ownership coefficients. We have only a higher coefficient for ITN with also higher significance level but as in equation 33 we have still insignificant coefficient for ITN2. In equation 34* which measures the effect on ROA, both ITN and ITN2 coefficient are significant which was not the case in equation 34.

Observing equation 35* and 36* we find that the coefficient ITN affects both Tobin's Q and return on assets in a stronger extend with 0.5810 instead of 0.4891 and 0.1337 instead of 0.0962 respectively.

Table 8 – Institutional Ownership robustness table. Selected equations revised.

Eq.	Ins	Ins2		Ins3		Itn		Itn2		Size		Leverage		Beta		VS		VS2		Intercept	R ²	# Obs.	
7						0.346412	5.19													1.452968	0.1206	7075	
8						0.104408	10.2													0.049794	0.1079	7073	
7*						0.398585	5.28													1.408808	0.1193	6944	
8*						0.135081	10.9													0.025936	0.1197	6942	
9						0.625166	2.62	-0.24998	-1.17											1.39346	0.1208	7075	
10						0.126242	3.25	-0.01957	-0.66											0.04513	0.108	7073	
9*						1.141092	3.91	-0.61767	-2.52											1.220087	0.12	6944	
10*						0.356404	5.54	-0.18403	-3.96											-0.03037	0.1263	6942	
33	-2.03776	-3.66	5.889753	3.24	-4.69795	-3.1	0.408922	1.68	0.072147	0.33	-0.13832	-9.25	-0.68172	-4.58	-0.02062	-0.44	0.000194	7.32	-2E-09	-6.27	2.627222	0.1665	6979
34	-0.0424	-0.78	0.376305	2.03	-0.37539	-2.39	0.057853	1.64	0.03448	1.27	0.019023	10.1	-0.04206	-2.95	-0.1039	-20.4	2.79E-06	2.21	-3.9E-11	-2.73	0.043791	0.2307	6977
33*	-2.14077	-3.82	6.304293	3.44	-5.01111	-3.29	0.996936	3.21	-0.34462	-1.35	-0.1357	-9.01	-0.69216	-4.59	-0.02165	-0.46	0.000191	7.25	-2E-09	-6.22	2.416101	0.1657	6848
34*	-0.06787	-1.26	0.487418	2.61	-0.45919	-2.9	0.29309	4.87	-0.13202	-3.06	0.018801	10.2	-0.03791	-2.69	-0.10291	-20.4	2.48E-06	1.92	-3.4E-11	-2.33	-0.03412	0.2483	6846
35	-2.05639	-3.7	5.918457	3.26	-4.70916	-3.11	0.489076	6.98			-0.13868	-9.26	-0.68027	-4.58	-0.02035	-0.43	0.000194	7.33	-2E-09	-6.27	2.613695	0.1664	6979
36	-0.05133	-0.95	0.39012	2.11	-0.38081	-2.43	0.096172	10.1			0.018851	9.87	-0.04136	-2.9	-0.10377	-20.2	2.68E-06	2.17	-3.8E-11	-2.7	0.037312	0.2304	6977
35*	-2.05793	-3.68	6.117587	3.35	-4.90252	-3.22	0.580975	7.15			-0.13414	-8.89	-0.69906	-4.64	-0.02313	-0.49	0.000192	7.27	-2E-09	-6.23	2.509191	0.1655	6848
36*	-0.03595	-0.66	0.415272	2.24	-0.41714	-2.65	0.133662	11.3			0.019394	10.2	-0.0406	-2.83	-0.10346	-20.3	2.8E-06	2.2	-3.8E-11	-2.63	0.001636	0.2451	6846

5.2.2 Robustness without respect for endogeneity mitigation

The below given table12 shows the regression results for the robustness check in which a possible endogeneity issue between insider ownership and firm value has completely been ignored. Thus, the insider ownership related coefficients and the firm value variables are from the same year. These insider ownership related coefficients are the following ones: INS, INS2, INS3, VS, VS2, ITN and ITN2.

Equation 33.1 and 34.1

Equation 33.1 to equation 36.1 will be the ones of key interest. The coefficients for insider ownership are higher but insider wealth VS seems slightly lower. All coefficients show also a higher significance level. Further in equation 33.1 and 34.1 the effect of institutional ownership, given by ITN and ITN2, is here as well not significant.

Equation 35.1 and 36.1

As described for equation 35 and 36 in the above part, similar way for the equations 35.1 and 36.1, there is only one variable, ITN, employed for the effect of institutional ownership. The effect of institutional ownership remains highly significant with similar coefficient values. The insider ownership effect increases in both coefficients and its significance level. The similar pattern is observable for insider wealth.

Table 9 – Regressions without respect to potential endogeneity issues.

	Ins	Ins2	Ins3	Itn	Itn2	Size	Leverage	Beta	VS	VS2	Intercept	R ²	Obs.
1.1	0.38156 3	4.05									1.72817 7	0.111 6	1095 5
2.1	- 0.04144	- 4.73									0.13564 7	0.070 6	1095 0
3.1	1.23077 4	5.24	- - 1.35699 4.23								1.68331 4	0.113 5	1095 5
4.1	- 0.12676	- 5.63	0.13631 2 4.34								0.14015 2	0.072 6	1095 0
5.1	1.93664 5	4.22	- - 4.11751 2.61	2.37877 7 1.85							1.65849 8	0.113 2	1095 5
6.1	- 0.24494	- 6.09	0.59852 4 4.17	- - 0.39825 3.21							0.14430 6	0.073 6	1095 0
7.1				0.36183 9 5.8							1.52956 7	0.111 1	1019 5
8.1				0.08238 1 7	11.						0.07400 8	0.092 5	1019 0
9.1				0.47388 1 4	2.1 0.10088	- - 0.51					1.50543 6	0.111 2	1019 5
10.				0.07626 1 4	3.1 0.00550	0.28					0.07532 7	0.092 5	1019 0
11.	1.86268 1	3.92 3.09052	- - -1.9	1.44223 6 1.09	0.25521 9 4	1.1 0.18262					1.38703 8	0.115 3	1019 5
12.	-0.2765 1	6.69 7	0.84241 5.61	- - 0.61562 4.75	0.09374 1 2	3.8 0.01099	- - 0.56				0.08407 3	0.097 0	1019 0
13.	- 0.42018	- 0.82	2.45704 7 1.46	- - 2.12467 1.58	0.38196 1 9	1.6 0.00079	- - 0	0.13498 -11	- - 0.89813 6.54		2.71688 7	0.154 5	9347
14.	- 0.07229	- 1.62	0.35746 9 2.23	- - -0.3082 2.26	0.04177 7 3	1.6 0.03351	1.65 4	0.01389 10.1	- - 0.02729 2.25		- 0.01502	0.117 7	9342
15.	- 0.31416	- 0.62	1.96949 1.18	- - 1.72553 -1.3	0.30099 5 1	1.3 0.05333	0.26 8	- - 0.12497 10.2	- - 1.02137 7.62	0.07326 1 1.72	2.61580 9	0.156 7	9183
16.	- 0.05951	0.28716 6	1.9	- - 0.25228 1.96	0.02189 1 0.9	0.04800 9 2.44	0.01348 10.2	- - 0.03426 3.03	- - 0.09251 21.7		0.10052	0.181 5	9178
17.								-0.1328 12.3	- - 0.90985 7.26	0.04943 5 1.19	2.90109 7	0.154 3	9924
18.								0.01298 10.4	- - 0.03107 2.93	- - 0.09122 21.6	0.14351 7	0.156 4	9919

6 Discussion

The results presented in section 5.1 convey prevalent outcomes for the equation 35 and 36. Therefore, I will analyze these two equation in detail.

According to Gugler, Mueller, Yurtoglu (2008) the variables INS, INS2, INS3 capture the entrenchment effect of insider ownership whereas the wealth effect is captured by the variables VS, and VS2.

Based on the means as in table 6, section 4, I will try to merge the separated entrenchment effect with the wealth effect and describe its cumulated relationship with firm value measured both by Tobin's Q and return on assets. Later the relationship between each the variables with the insider ownership variables within each decile will be discussed.

6.1 Review on the results for Tobin's Q

The product of table 6 and equation 35 is given below in table 10. The table shows the total effect of each coefficient on Tobin's Q.

The aim here is to analyze the cumulative effect of insider ownership, so I take the values for the coefficients INS, INS2, INS3, VS and VS2 together from Table 6 and use it with the coefficient values of equation 35 to get the total function for insider ownership as following:

$$-0.685632827x + 5.085333737x^2 - 5.135149834x^3 + 2.613695$$

Based on the above function I get the following relationship:

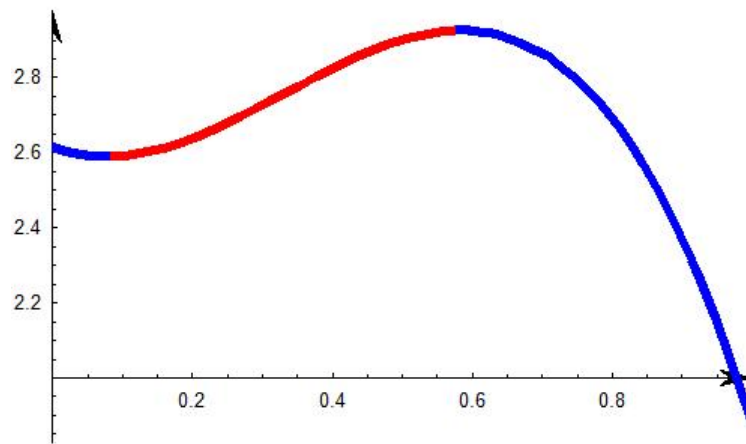


Figure 19* – Equation 35 Insider ownership cumulated in relation to Tobin's Q

The figure above shows the relationship between insider ownership and Tobin's Q. The local minimum is given at the level of 7.62 percent of insider ownership. The local maximum is given at 58.40 percent of insider ownership. This relationship describes clearly a initial entrenchment effect until an insider ownership of 7.62 percent which is followed by the managers' incentive effect to an insider ownership level of 58.40 percent. Finally after 58.40 percent of insider ownership the entrenchment effect lasts.

The results are corresponding to the hypothesis that the ownership structure of equity has an important influence on firm value. They are consistent with the common prediction by Mørck, Shleifer and Vishny of a nonlinear relation between firm value and the fraction of shares held by managers. The results are also consistent with the more specific prediction by Stulz (1988) of a curvilinear relation between the fraction of shares controlled by managers and with the efficient-monitoring hypothesis of Pound (1988) which predicts a positive relation between corporate performance and the fraction of shares held by institutional investors.

The two figures below describe both an increase in the wealth effect of insiders and entrenchment effect of insiders with a higher insider ownership decile.

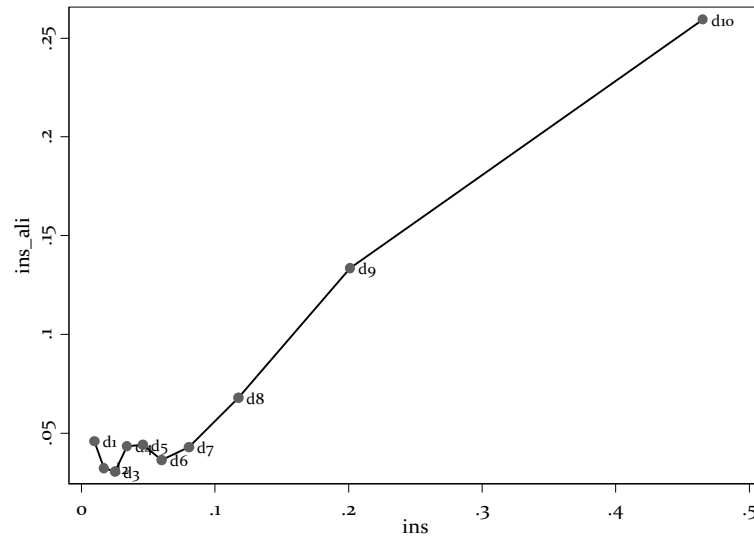


Figure 20 – Insiders' alignment effect by insider ownership decile

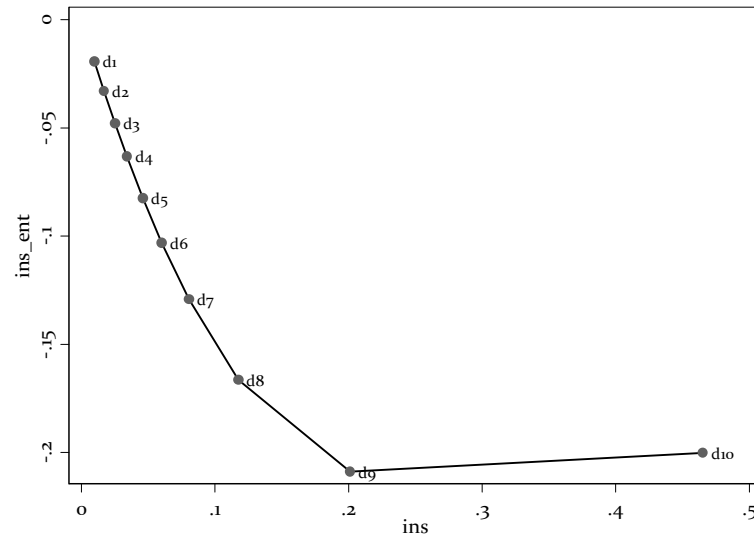


Figure 21 – Insiders' entrenchment effect by insider ownership decile

By taking the means together with the coefficients into considerations I continue with analyzing equation 35. The figure below shows the total effect of insider ownership for each insider ownership decile. Here, it seems that 2

groups out of 10 contribute to firm value, whereas one group seems neither to contribute nor to entrench but 7 groups show management entrenchment.

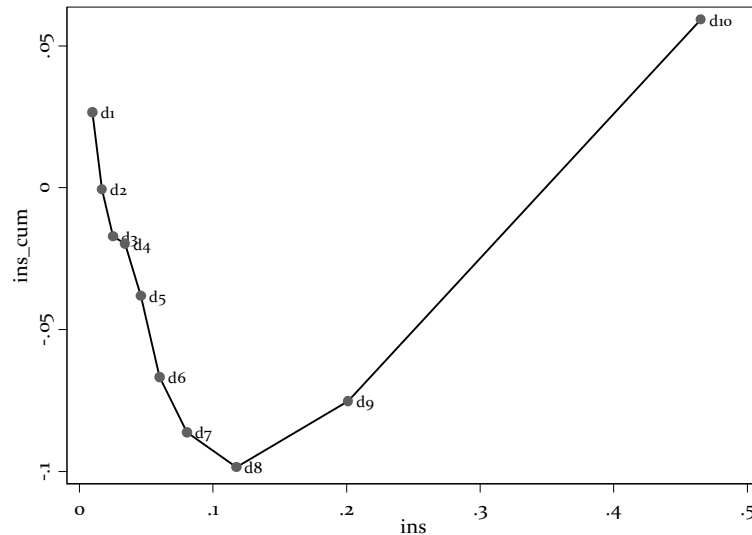


Figure 22 – The cumulated effect of the insiders on Tobin's Q within each decile of insider ownership.

However, the suggestion of McConnell and Servaes (1990) that institutional ownership reinforces the positive effect of insider ownership on corporate value is questionable because our results do not increase the intercept by adding institutional ownership (ITN) and institutional ownership squared (ITN2) as independent variables along with INS, INS2 and INS3. Here we observe a decrease in the intercept from 1.6585 to 1.3870 in type (a) and again a fall from 1.6088 to 1.3146 in equation 11. The decrease of the intercept is also the case if we include just one coefficient, ITN, for institutional investors, the intercept is at 1.3236. However, if we include all control variables to our regression, as given in equation 35, this will change. The intercept as above mentioned increases to 2.6137.

The figure below, Figure 14, show the effect of institutional investors to Tobin's Q. From decile 1 to decile 4, an increase of the positive effect of

institutional owners are notable but after that point this effect diminishes with higher share of insider ownership

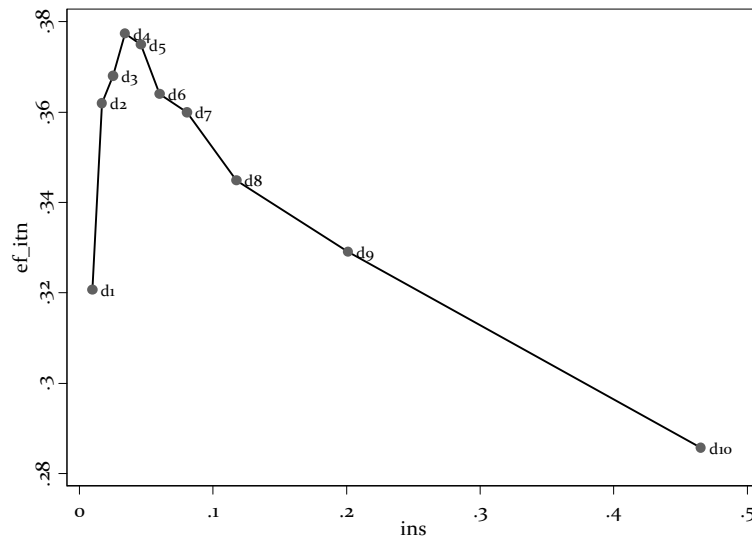


Figure 23 – Institutional Investors effect by insider ownership decile

The figure below demonstrates the cumulated effect of insider ownership with regard to institutional ownership for each decile class. The incentive effect of management ownership coincides with a lower institutional ownership incentive except for decile class 2. The rest show that a higher effect of institutional ownership coincides with the entrenchment effect of insider ownership. However, this is not enough to set further assumptions.

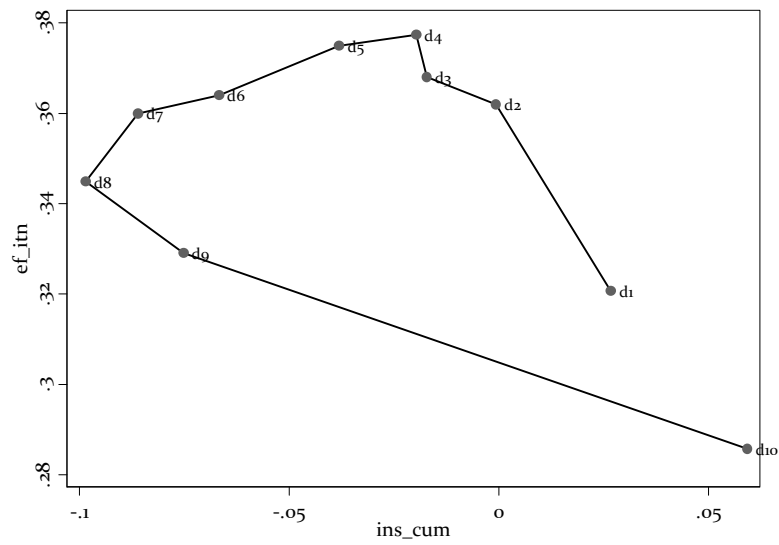


Figure 24 - Insider Ownership total effect in relation to the effect of institutional ownership given in decile classes for insider ownership

The figure also describes that the effect of institutional ownership to the firm value is much higher than the cumulated effect of insider ownership.

Further, as given in equation 35 size with a coefficient of -0.1387, curbs the firm value. In the decile group 1, size has his highest negative effect with a value of -1.2689. Though, this negative effect decreases with higher deciles for insider ownership.

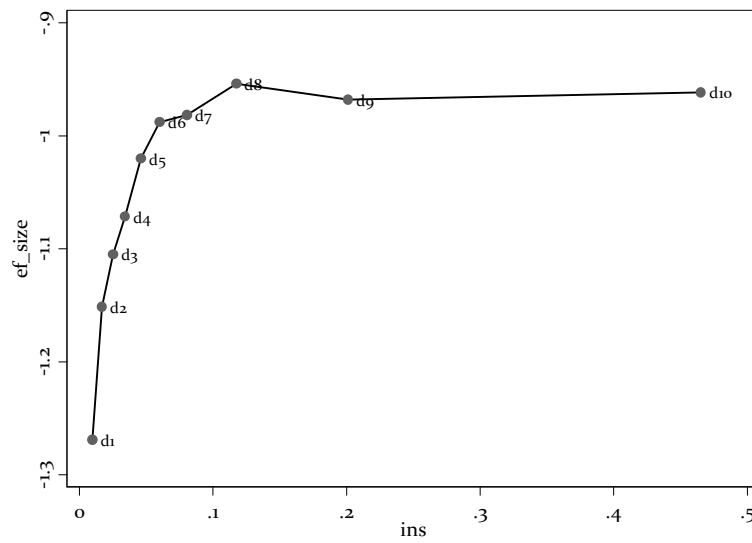


Figure 25 – Size effect in relation to insider ownership

After size, the leverage has the highest diminishing effect to firm value, as measured by Tobin's Q. The figure below shows that in the first decile it is at his highest diminishing level which decreases slightly with the next decile groups.

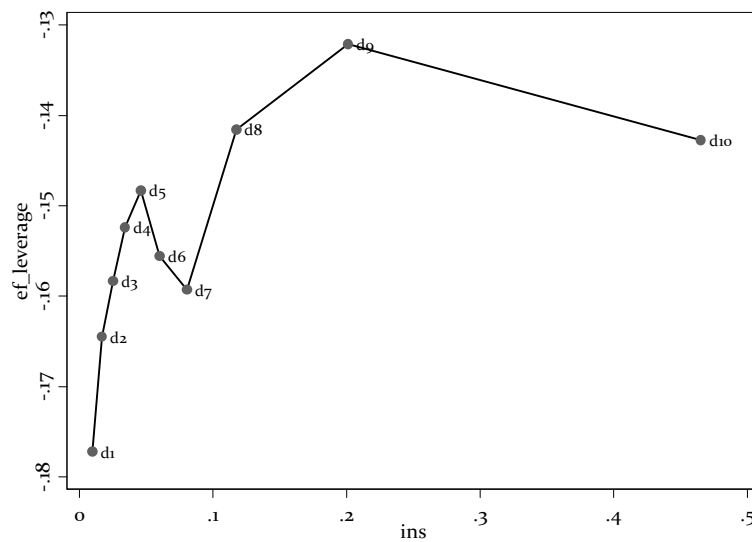


Figure 26 – Leverage effect to Tobin's in relation with insider ownership

Beta has a much lower effect on Tobin's Q. Here, there is no clear pattern remarkable. Nevertheless, in our main equation, beside its low coefficient, beta is represented in insignificant level.

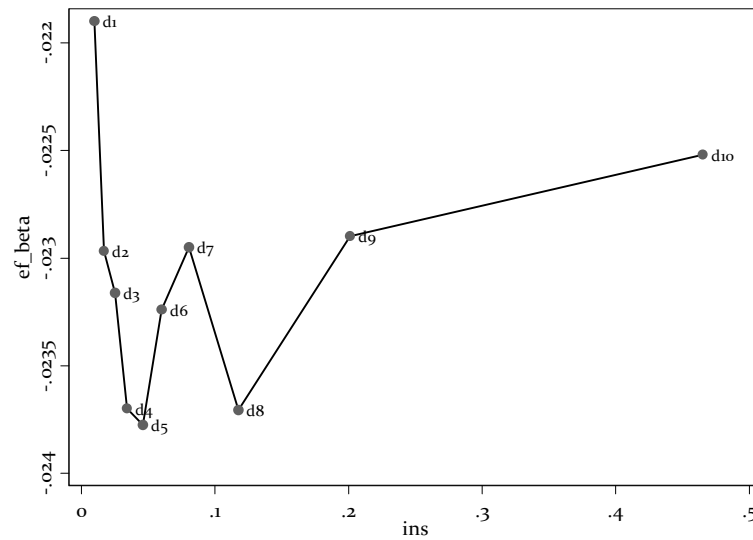


Figure 27 – Beta effect on Tobin's Q in relation to insider ownership

Table 10 – Means as given by Table 5 multiplied by the coefficients as given in equation 35

Eq. 35	ins	ins2	ins3	itn	size	leverage	beta	vs_t2m	vs2_t2m	intercept				
	-2.056394	5.918457	-4.709158	0.4890757	-0.138678	-0.680273	-0.020346	0.0001935	-2.00E-09	2.613695		ins_ent	ins_ali	ins_cum
d1	-0.019854	0.0005735	-4.67E-06	0.3207189	-1.268939	-0.177174	-0.0219	0.0464784	-0.000526	-	0.019285	0.0459527	0.026667	
d2	-0.034594	0.0017093	-2.38E-05	0.3620061	-1.15133	-0.164472	-0.022968	0.0324714	-0.000248	-	0.032908	0.0322236	-0.00068	
d3	-0.051492	0.0037476	-7.63E-05	0.3680634	-1.105098	-0.158329	-0.023162	0.0308035	-0.000185	-	0.047821	0.0306183	-0.0172	
d4	-0.069941	0.006895	-0.000189	0.3774153	-1.071312	-0.152395	-0.023698	0.0443197	-0.000828	-	0.063235	0.0434916	-0.01974	
d5	-0.094422	0.0125667	-0.000466	0.3749282	-1.020107	-0.148298	-0.023776	0.0463352	-0.002097	-	0.082321	0.0442379	-0.03808	
d6	-0.123518	0.0214698	-0.001037	0.3640291	-0.987762	-0.155586	-0.023241	0.0373649	-0.001008	-	0.103085	0.0363572	-0.06673	
d7	-0.165096	0.038483	-0.002502	0.3599931	-0.981361	-0.159289	-0.02295	0.0434784	-0.00046	-	0.129114	0.0430184	-0.0861	
d8	-0.241503	0.0830135	-0.008022	0.3448555	-0.953891	-0.141538	-0.023705	0.0695006	-0.001556	-	0.166511	0.0679447	-0.09857	
d9	-0.413724	0.2468683	-0.04195	0.3290539	-0.967709	-0.132087	-0.022899	0.1387284	-0.005154	-	0.208806	0.1335744	-0.07523	
d10	-0.957117	1.459182	-0.702163	0.2857076	-0.961523	-0.14275	-0.022519	0.4542769	-0.195	-	0.200098	0.2592769	0.059179	

6.2 Review on the results on Return on Assets

As above for Tobin's Q, similarly table 11 shows the product of Table 6 and equation 36. The table represents the effect of each coefficient by insider ownership decile on ROA. So, the aim is to analyze the cumulative effect of insider ownership, represented by INS, INS2, INS3, VS and VS2, to firm value, which is here measured by return on assets. Cumulating the results for insider ownership I get the following function:

$$-0.032258552x + 0.3821408x^2 - 0.415267x^3 + 0.0373124$$

The above given function show the following relationship between insider ownership and return on assets:

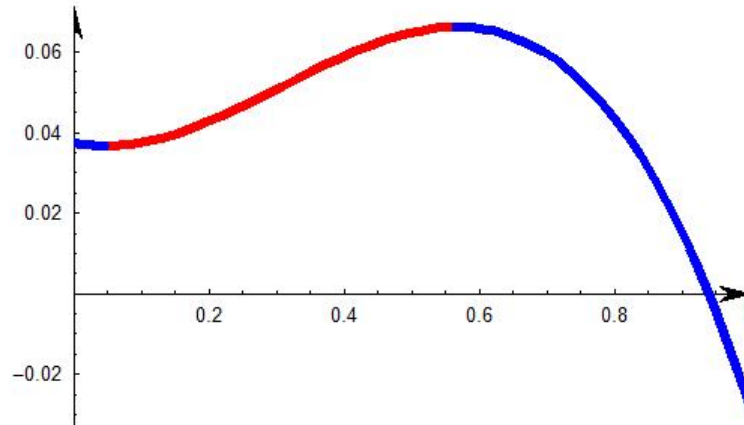


Figure 28* – Equation 36: Insider ownership cumulated in relation to ROA

The relationship between insider ownership and return on assets is characterized by a local minimum at the level of 4.57 percent of insider ownership as illustrated in the above figure. A maximum is at the level of 56.78 percent of insider ownership. Compared with figure 19, the pattern is similar on return on assets. The initial entrenchment effect until the insider ownership

level of 4.57 percent changes to the incentive effect until 56.78 percent. After this level of insider shareholdings the entrenchment effect lasts.

The three figures below describe the relation between insider ownership with insiders' wealth and entrenchment and both of them cumulated. Figure 29, contradictory as above to Tobin's Q, shows a rise of insider entrenchment until decile 7 but however afterwards it diminishes and becomes also positive with decile 9 and 10.

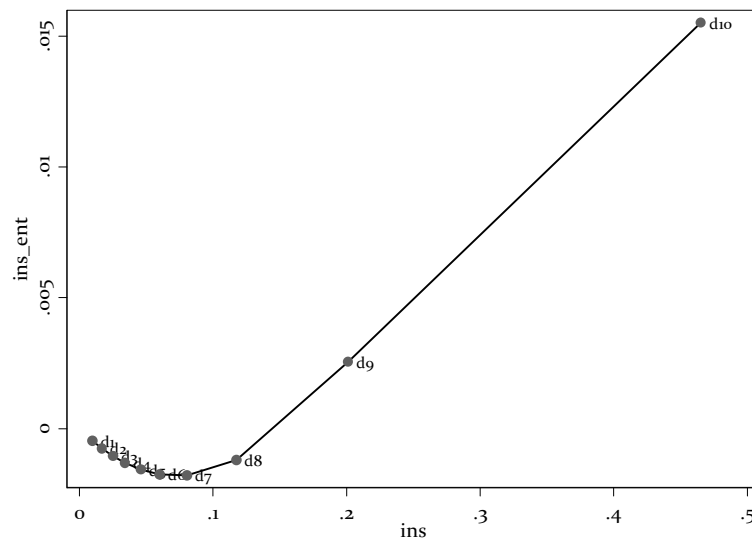


Figure 29 – Insiders' entrenchment effect to ROA within each decile

The insiders' wealth effect on ROA, however, shows a zigzag relationship until decile 6 which afterwards rises with higher insider ownership.

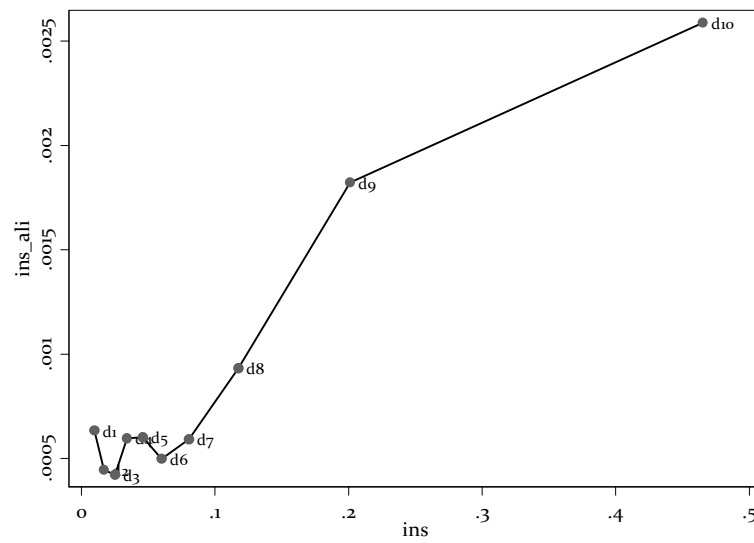


Figure 30 – Insiders’ alignment effect within each decile

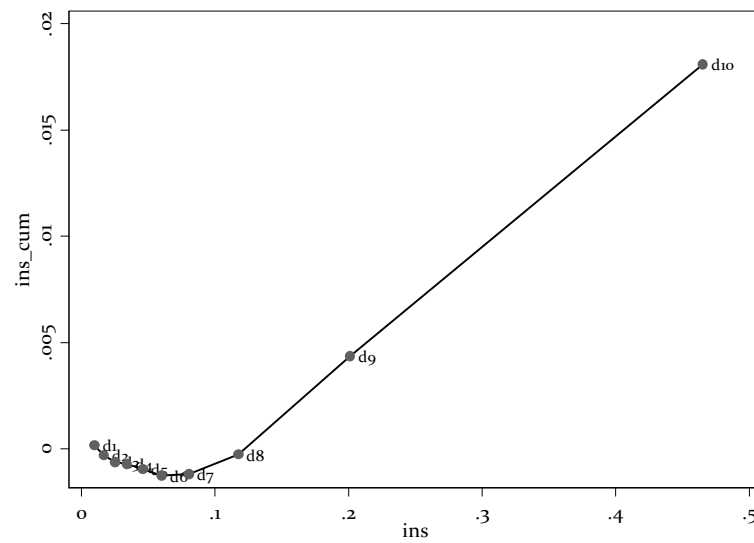


Figure 31 – The cumulative effect on ROA by the insider decile.

The below above demonstrates the cumulated effect of insider ownership on return on assets with regard to institutional ownership for each decile class. The incentive effect of management ownership is the coincides with the lowest institutional ownership incentive effects as d1, d9, d10 show. The rest show that

a higher effect of institutional ownership coincides with. the entrenchment effect of insider ownership. This case shows that the effects on ROA by insiders and institutional investors are also similar as the effects as shown above to Tobin's Q.

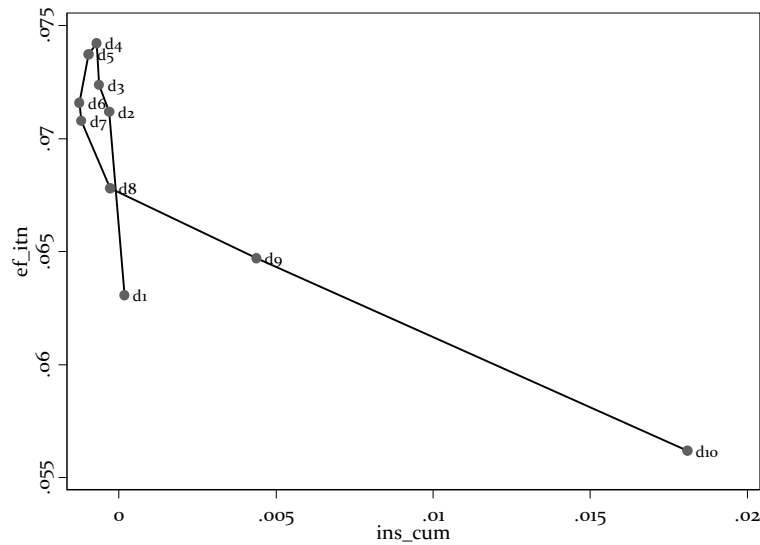


Figure 32 – Cumulated effect by insider ownership in relation with the effect of institutional ownership by insider decile.

The figure below demonstrates the effect of institutional ownership to return on assets for each decile of insider ownership. First, there is a strong increase from the first to the 4th decile, after that the positive effect diminishes with higher insider ownership stake.

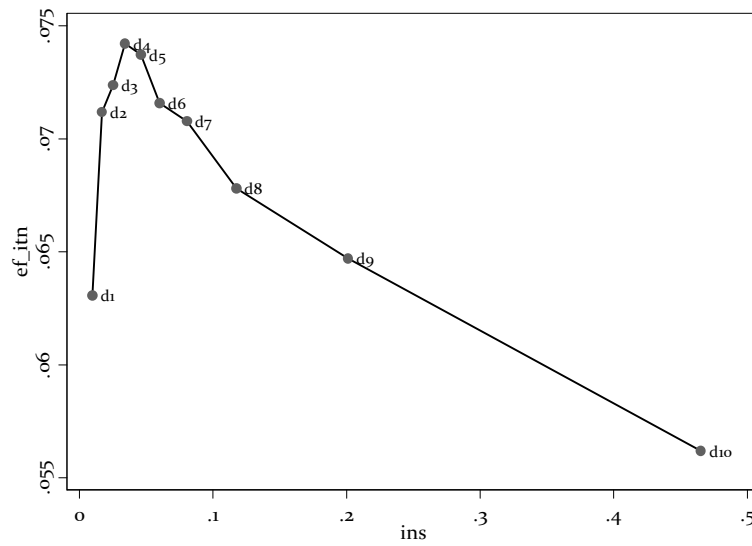


Figure 33 – Institutional ownership effect to ROA by insider decile.

For ROA, the size effect plays the most important role among the variables. However, contradictory to its negative effect on Tobin's Q, size shows demonstrates a positive effect on return on assets. This effect is at its highest point with the lowest insider ownership stake. With higher stake of insider ownership this positive size effect decreases. After d8, insider ownership stake of 11.74 percent, the size effect keeps about the same level.

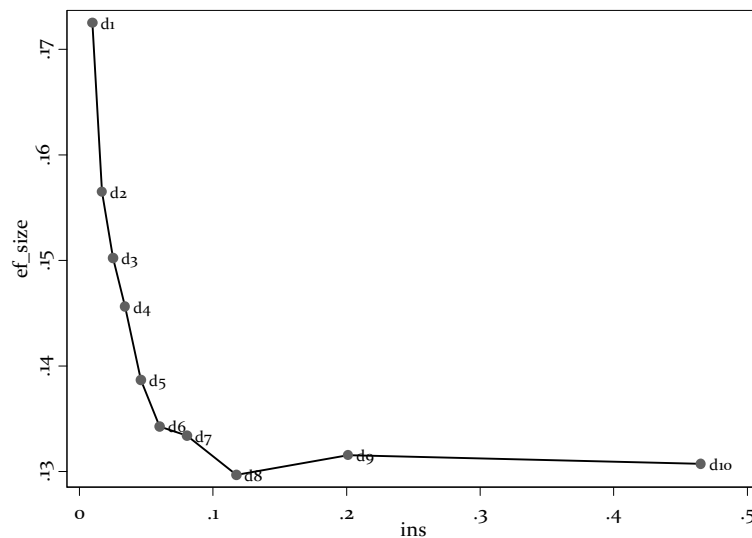


Figure 34 – The size effect on ROA by insider decile

The return on assets is negatively affected by leverage as shown in the below figure. However, here we can also assume the negative leverage effect is decreasing with higher insider ownership stake level.

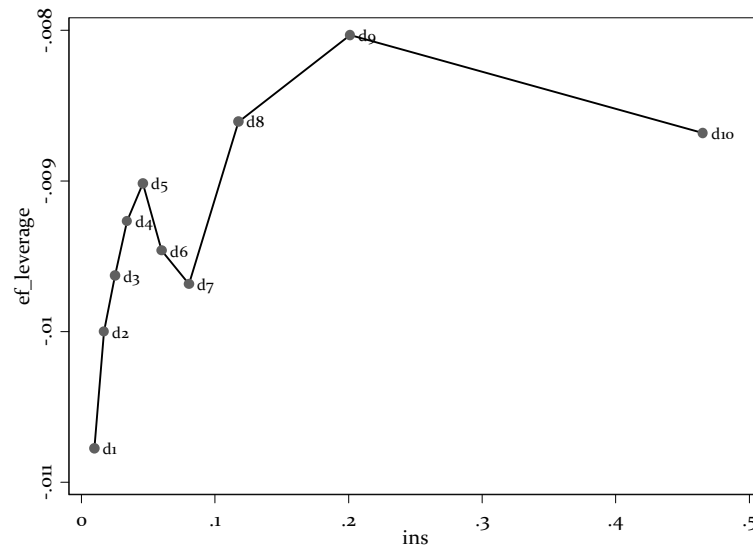


Figure 35 - Leverage effect on ROA by insider decile

Beta on the other hand shows much a zigzag relationship. However, the impact seems important but still insignificant for ROA as also for Tobin's Q.

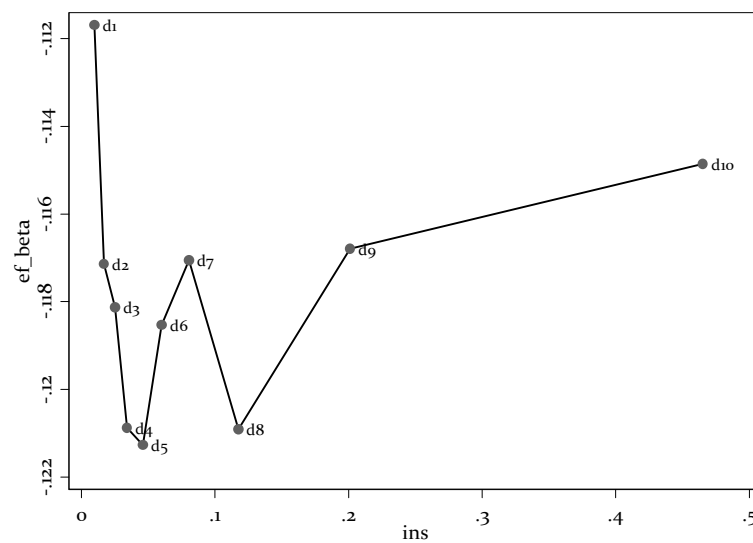


Figure 36 - Beta effect on ROA by insider decile

Table 11 - Means as given by Table 5 multiplied by the coefficients as given in equation 36

Eq. 36	ins	ins2	ins3	itn	size	leverage	Beta	vs	vs2	intercept / roa	ins_ent	ins_ali	ins_cum
	-0.0513339	0.3901201	-0.38081	0.0961721	0.018851	-0.041362	-0.103772	2.68E-06	-3.80E-11	0.0373124			
d1	-0.000495619	3.78E-05	-3.77E-07	0.0630663	0.1724918	-0.010773	-0.111698628	0.0006437	-9.99E-06		-0.000458	0.0006337	0.0001755
d2	-0.00086357	0.0001127	-1.92E-06	0.0711851	0.1565047	-0.01	-0.117143758	0.0004497	-4.71E-06		-0.000753	0.000445	-0.000308
d3	-0.001285396	0.000247	-6.17E-06	0.0723762	0.1502203	-0.009627	-0.118132291	0.0004266	-3.52E-06		-0.001045	0.0004231	-0.000621
d4	-0.001745943	0.0004545	-1.53E-05	0.0742151	0.1456276	-0.009266	-0.120869903	0.0006138	-1.57E-05		-0.001307	0.0005981	-0.000709
d5	-0.002357073	0.0008283	-3.77E-05	0.0737261	0.1386671	-0.009017	-0.121264029	0.0006417	-3.98E-05		-0.001566	0.0006019	-0.000964
d6	-0.003083376	0.0014152	-8.39E-05	0.0715829	0.1342703	-0.00946	-0.118535757	0.0005175	-1.91E-05		-0.001752	0.0004984	-0.001254
d7	-0.004121291	0.0025366	-0.000202	0.0707892	0.1334002	-0.009685	-0.117053787	0.0006022	-8.74E-06		-0.001787	0.0005934	-0.001193
d8	-0.006028653	0.0054719	-0.000649	0.0678126	0.1296662	-0.008606	-0.120905911	0.0009626	-2.96E-05		-0.001205	0.000933	-0.000272
d9	-0.010327831	0.0162725	-0.003392	0.0647053	0.1315444	-0.008031	-0.116792178	0.0019214	-9.79E-05		0.0025524	0.0018235	0.0043759
d10	-0.023892573	0.0961832	-0.056781	0.0561817	0.1307036	-0.00868	-0.11485247	0.0062918	-0.003705		0.0155096	0.0025868	0.0180964

7 Conclusion

The relationship between ownership and firm value has been studied widely. However, the results of different studies are not consistent with each other. In this study I have investigated the relationship of insider ownership and institutional ownership with firm value. By doing so, I have tried to separate the positive wealth effect of insider ownership from the negative entrenchment effect. This has been done by adding additional coefficients capturing insiders' wealth in to the equation.

The main measure which I have used for firm performance is Tobin's Q, which is the measure of average performance – average Q. However, Marginal Q would have been suitable but this could not be used due to insufficient information in the data set. To mitigate the endogeneity effect of insider ownership, I have used a lagged variable for insider ownership which represents the fraction of shares owned two years ago by management.

The study highlights that ownership structure affects firm value. On separating the wealth effect and entrenchment effect of insider ownership, the results show without exception that the wealth effect is positive and significant and the entrenchment effect is negative and significant. However, the same equations show some exceptions to return on assets which has been used as an alternative variable with respect to firm performance. The relationship between managerial shareholdings and firm performance is given by a cubic relationship which demonstrates a convergence of interest with outside shareholders.

On combining wealth and entrenchment effect of insider ownership, I found that until there is insider ownership of 7.62 percent there is a decrease in Tobin's Q. Between 7.62 percent and 58.40 percent, an increase in Tobin's Q

which corresponds to the alignment effect on insider ownership. After 58.40 percent I find again an entrenchment effect. The same effect is also the case with return on assets. The return on assets initially decreases to with increasing ownership until 4.57 percent and rises after-wards until its peak at 56.78 percent of insider ownership. Then the entrenchment effect pulls the return on assets down.

In general, the share of institutional owners contributes in a much higher extent to the firm value compared to the fraction of shares held by insiders. The predominance of institutional ownership conveys interesting developments in the capital markets. The monitoring and disciplinary activities through institutional owners lead to increase the firm value. Consequently, the ownership by institutional investors shows a significant positive effect on firm value. However, I found out that the relation between institutional ownership and firm value is rather a linear relation than a squared one.

The study describes a negative size effect on Tobin's Q but a positive one on ROA in which the severity of both decreases with a higher stake of insider ownership. The negative effect of leverage on both Tobin's Q and ROA shows a similar pattern. So does the negative effect of beta too.

This study investigated the US equity market which is characterized by highly dispersed ownership. Further research in markets where the ownership is more concentrated would contribute to the literature. Additionally to that, the effects of different owner identities on firmvalue in such markets are another interesting point which could be evaluated.

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Internet Data Sources

The Data Page by Damodaran, accessed in May 2010:

http://pages.stern.nyu.edu/~adamodar/New_Home_Page/data.html

Appendices:

Appendix 1: ADDITIONAL SUMMARY STATISTICS

General statistics on the data set

As given in the data section we have adjusted our data set. The summary statistic below shows an overview on the data set.

Table 12 – Summary statistics on general data set

Variable	Obs	Mean	Q1	Median	Q3	Std. Dev.	Min	Max
t_q	47543	4.076376	0.769732	1.279417	2.424875	33.74464	0	3926.92
roa	46389	-0.09852	-0.02124	0.089148	0.15625	1.412149	-119.55	6.32692
ins	11080	0.10249	0.024	0.05	0.11	0.143171	0.0005	3
ins_t2	7723	0.105086	0.025	0.052	0.116	0.143338	0.0005	1
itn	42085	0.392212	0.0694	0.3531	0.6866	0.320584	0	0.9999
vs	11080	440.1851	35.621	92.4546	252.6512	2984.872	0	103671.
vs_t2	7723	493.8599	42.699	106.335	280.8894	3193.045	0	103671.
size	47543	5.022745	3.317816	5.125154	6.840974	2.661779	-2.30259	9
leverage	42986	0.386047	0.008116	0.176165	0.376666	1.771399	0	13.5285
beta	43533	0.942034	0.65	0.9	1.2	0.435124	0	111
								7.9

However this statistics show astronomic values for t_q which is our main variable in this study. Therefore we see a need for further adjustments with regard to Tobin's Q.

Filtered for INS not equal to 0

Table 13 - Summary statistics on robustness test data set

Variable	Obs	Mean	Q1	Median	Q3	Std. Dev.	Min	Max
t_q	10955	1.767102	0.899807	1.351352	2.15002	1.37209	0.00984	9.96768
roa	10950	0.131422	0.087035	0.132759	0.18610	0.11472	9	5
					1	4	-1.4883	1.38775

ins	10955	0.102016	0.024	0.049	0.109	4	0.14274	0.0005	1
ins_t2	7372	0.103544	0.024	0.0509	0.114	2	0.14175	0.0005	1
itn	10195	0.691417	0.5802	0.7446	0.8575	6	0.22508	0	0.9999
vs	10955	423.3251	35.2146	91.5381	248.011	1	2926.14	0.0068	103671.
vs_t2	7372	483.3922	43.7455	107.257	280.996	5	3220.21	0	103671.
size	10955	7.46332	6.422597	7.350067	8.38233	8	1.45438	3.15273	9
leverage	10099	0.223551	0.046273	0.204974	0.33987	9	0.20191	6	13.5285
Beta	10733	1.119356	0.9	1.05	1.3	5	0.34963	0	3.67550
									7
									3

Appendix 2: ADDITIONAL CORRELATION INFORMATION

General Correlation Matrix

Table 14 – Correlations on general data set

	t_q	roa	ins	ins_t2	itn	vs	vs_t2	size	lev	beta
t_q	1									
roa	-0.137	1								
		-								
ins	0.0534	0.0253	1							
		-								
ins_t2	0.0569	0.0074	0.8838	1						
	-		-	-						
itn	0.0674	0.1556	0.2326	0.2026	1					
					-					
vs	0.1085	0.0425	0.1965	0.1747	0.0712	1				
					-					
vs_t2	0.0652	0.0421	0.1704	0.2048	0.0738	0.9293	1			
	-		-	-						
size	0.1522	0.2816	0.2311	0.2398	0.586	0.1735	0.1909	1		
leverag		-	-	-	-	-	-	-		
e	0.17	0.2847	0.0428	0.0528	0.0926	0.0094	0.0101	0.1872	1	
	-		-	-		-			-	
beta	0.0226	0.0344	0.0507	0.0301	0.3005	0.0235	-0.022	0.2723	0.0496	1

As used in 5.2.2 robustness check. Data filtered for ins not equal to 0:

Table 15 – Correlations on robustness check data set

	t_q	roa	ins	ins_t2	itn	vs	vs_t2	size	leverage	beta
t_q	1									
roa	0.2582	1								
		-								
ins	0.0472	0.0231	1							
		-								
ins_t2	0.0523	0.0105	0.8848	1						
		-	-							
itn	0.0593	0.1534	0.2302	0.2015	1					
		-	-	-						
vs	0.0885	0.0369	0.1858	0.1671	0.0679	1				
		-	-	-	-					
vs_t2	0.0551	0.0397	0.1698	0.1961	0.0803	0.9471	1			
	-	-	-	-	-	-	-			
size	0.1976	0.1224	0.2302	0.2467	0.0717	0.1788	0.1878	1		
	-	-	-	-	-	-	-	-		
leverage	0.1689	0.0135	0.0417	0.0572	0.0414	0.0059	0.0086	0.2464	1	
	-	-	-	-	-	-	-	-	-	
beta	0.0121	0.2654	0.0519	-0.027	0.0376	0.0254	0.0197	0.0288	-0.0552	1

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