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Insider ownership and corporate performance: evidence from Germany

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INSIDER OWNERSHIP AND CORPORATE PERFORMANCE - EVIDENCE FROM GERMANY

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Insider Ownership and Corporate Performance -

Evidence from Germany*

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Insider Ownership and Corporate Performance -

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Abstract

In this paper we address the question whether insider ownership affects corporate performance. Evidence coming from studies dealing with Anglo-Saxon countries is rather inconclusive, especially because it seems that results are significantly affected by endogeneity. Economically, this is due to the fact that in these countries insider ownership seems to be mainly driven by management's compensation contracts. We argue that Germany is different in this regard, as insider ownership often is related to family control, stock-based compensation is less widespread and the market for corporate control is less developed. Starting from this presumption our data allows to make an unbiased observation as to whether insider ownership affects firm performance. Using a pooled data set of 648 firm observations for the years 2003 and 1998 we find evidence for a positive and significant relationship between corporate performance – as measured by stock price performance, market-to-book ratio and return on assets – and insider ownership. This relationship seems to be rather robust, even if we account for endogeneity by applying a 2SLS regression approach. Moreover, we also find outside block ownership as well as more concentrated insider ownership to have a positive impact on corporate performance. Overall the results indicate that ownership structure might be an important variable explaining the long term value creation in the corporate sector.

1 Introduction

Since the pathbreaking study of Berle and Means (1932), which was the first to put light on the fact that large American corporations were usually not run by their owners, a whole branch of research evolved investigating into the effects of the separation of ownership and control. However, the implications of the findings of Berle and Means remained almost unnoticed for a long time before Jensen and Meckling (1976) developed their "theory of the firm", a theoretical framework about the effects of the dispersion of ownership and control. The studies of Morck, Shleifer, and Vishny (1988) and McConnell and Servaes (1990) have been among the first to empirically test the effects of managerial equity ownership (i.e. insider ownership) on firm value. Since then several studies have been published on that issue.

Two important results emerge from this branch of literature. First, most of these studies provide evidence that insider ownership actually affects firm value, although the relationship seems not to be monotonic. A positive impact of insider ownership on firm value can be explained by the so-called *convergence-of-interest hypothesis*, stating that larger equity shares of insiders should be associated with higher market valuations due to lower agency costs. In contrast, a negative relation can be explained by the so-called *entrenchment hypothesis*, predicting that insider ownership above a certain threshold will have a value destroying effect due to the upcoming conflict between large blockholders (in this case the management) and the dispersed shareholders. These two hypotheses serve as an explanation for the bell-shaped relationship between insider ownership and firm value found by McConnell and Servaes (1990) or the piecewise-linear relationship discovered by Morck, Shleifer, and Vishny (1988) in their previous study.

However, a serious theoretical objection against the approach used in these studies has been put forward by Demsetz (1983). He argues that insider ownership is endogenously determined and, hence, cannot be a determinant of firm value. His arguments are supported by the evidence presented in Demsetz and Lehn (1985), where firm size, volatility, return on assets and industry affiliation are found to be relevant explanatory variables for the ownership structure of US corporations. Hence, it may well be that low levels of managerial ownership turn out to be an optimal incentive arrangement in those firms whose firm value tends do be lower than in other companies, where higher levels of insider ownership are optimal. As long as one cannot control for the variables being responsible for this relationship, i.e. there is *unobserved firm heterogeneity*, the detected correlation between ownership and firm performance might just be spurious.

Therefore, more recent studies pay special attention to this problem of *endogeneity*. In fact, the second important result emerging from the pertinent literature indicates that by using more advanced econometric methods that allow to partially control for endogeneity it seems that firm performance is not affected by managerial ownership.[1] However, some doubts are left preventing these results from being accepted as a final outcome. Evidently, in a perfect frictionless capital market competitive forces would make sure that every company puts a value maximizing ownership structure in place. By definition, insider ownership would be endogenous and presumably determined, among other factors, by the company's performance. Under such a theoretical perspective the question itself, whether firm performance

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[1]For a comprehensive overview of these studies see Demsetz and Villalonga (2001, pp. 231-233).

depends on the ownership structure, is irrelevant.[2]

However, pondering the vast corporate governance literature that emerged over the last decade may challenge this theoretical perspective. Several questions arise in this context. First of all, do corporate governance regimes really allow market forces to put value maximizing ownership structures in place? Isn't it true that in many countries, including the US, several existing mechanisms allow managers to shelter themselves from the market for corporate control? And, finally, isn't it true that ownership structure often is rather inert, making a flexible adjustment to changing market conditions unlikely? From these questions it follows immediately that more evidence on the ownership-performance relationship is needed, especially under different corporate governance regimes.

This study makes a contribution to the literature exactly under this perspective. First, as a code law country, Germany has a corporate governance regime that is very different from the regimes governing common law countries. As a stylized fact, in code law countries investor protection regularly is lower and the market for corporate control is more hampered.[3] This is particulary true for Germany, as Franks and Mayer (1990) or Wenger and Kaserer (1998a) have pointed out. Therefore, it might well be that ownership structure does not flexibly adapt to pressures coming from investors searching for value gains. This inertia in the ownership structure is enhanced by the fact that blockholdings have been of particular importance in Germany. These blockholdings were due to the presence of a large number of family-controlled companies and to a dense network of corporate cross-holdings.[4] It is interesting in this regard to note that according to a recently evolving branch of literature, which pays particular attention to a special case of insider ownership by looking at the impact of family ownership on firm performance, new evidence has been found corroborating the presumption that ownership structure matters to performance. From this it follows that the performance-ownership relationship in Germany might be less affected by endogeneity, as this is the case with data from Anglo-Saxon markets. In fact, our findings are in accordance with this presumption.

The second contribution of this paper is more technical, but nevertheless interesting. Almost all papers investigating the relationship between ownership structure and firm performance aim to measure the latter by Tobin's Q, i.e. by putting the market value of a company in relation to the replacement value of its assets. In practice, however, Tobin's Q is approximated by a firm's market-to-book ratio. Evidently, there might be some reservations as to whether the market-to-book ratio can really be taken as a proxy for firm value, especially in a Continental-European accounting context, where historical cost accounting is still important. Therefore, we use a broader approach by measuring corporate performance not only be the markte-to-book-ratio, but also by a long-run buy-and-hold stock return as well as by the return on assets. As we get rather robust results, our findings are less prone to methodological objections against the why how corporate performance is measured.

Our results indicate that there is a significantly positive relationship between insider ownership and firm performance as measured by stock price performance

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[2]See Stigler and Friedland (1983), Demsetz and Lehn (1985).

[3]Cf., among others, La Porta, Lopez-de Silanes, Shleifer, and Vishny (2000), La Porta, Lopez-de Silanes, and Shleifer (1999), and La Porta, Lopez-de Silanes, Shleifer, and Vishny (1998).

[4]For a detailed description of this network as of 1996 cf. Wenger and Kaserer (1998b, pp. 51-61); There is some indication that the density of this network has been reduced over the last 4 years. Cf. Höpner and Krempel (2005, pp. 10-11).

over a five year period. The results by using market-to-book ratio or return on assets as performance measures confirm the findings. In order to account for possible endogeneity we employ an instrumental variable two-stage least squares regression approach. It turns out that results seem not to be driven by endogeneity. Moreover, we also find outside block ownership as well as more concentrated insider ownership to have a positive impact on corporate performance. Hence, the paper corroborates the assertion that ownership may have an autonomous influence on firm performance.

The rest of the paper is organized as follows. Section 2 gives a brief literature review. Section 3 explains the research design as well as the data set, while section 4 presents the results. Section 5 concludes.

2   A Brief Review of the Literature

As has been mentioned, the first studies investigating into the relationship between insider ownership, as measured by top-managements' shareholdings, and firm value have been those of Morck, Shleifer, and Vishny (1988) and McConnell and Servaes (1990). Both papers found a significant, non-monotonic relationship. The most important theoretical objection against the approach used in these studies has been put forward by Demsetz (1983) and Demsetz and Lehn (1985). Basically, they argue that in a competitive capital market environment market forces will make sure that every company chooses its value maximizing ownership structure. Hence, inside ownership is an endogenously determined variable and any observed correlation of ownership and firm value is, basically, meaningless. In fact, the relationship of inside ownership with firm value might be due to some firm characteristics that are unobservable for the econometrician. As a consequence, an endogeneity problem arises, because ownership structure and firm value are determined simultaneously. In fact, Demsetz and Lehn (1985) show that ownership structure of US companies is plausibly determined by firm size, stock price volatility, industry affiliation, and some other variables. According to their view this corroborates the understanding that ownership structure is endogenously determined. Himmelberg, Hubbard, and Palia (1999) extend Demsetz and Lehns' results by using a fixed effects panel data model and instrumental variables to control for possible unobserved firm heterogeneity. They conclude that most variation in managerial ownership is explained by unobserved firm heterogeneity and that managerial ownership does not affect firm performance to an econometrically observable extent. Research presented by Loderer and Martin (1997) points in the same direction. They construct a simultaneous equation system for a set of companies involved in acquisitions which handles performance and insider ownership as endogenous variables. As a result, insider ownership does not have a predictive effect on performance in their model, but the other way round performance has a negative effect on insider ownership. Cho (1998), after being able to replicate the results of Morck, Shleifer and Vishny, builds a simultaneous equation system consisting of three equations where insider ownership, performance and investment are treated as endogenous variables. Similarly to Loderer and Martin performance seems to influence ownership but not vice versa.

An integrated approach, where insider ownership is treated as only one of seven corporate governance mechanisms, is taken by Agrawal and Knoeber (1996) who present evidence of interdependence among these mechanisms in a large sample

of US firms. The positive effect of insider ownership on firm performance, which was found if each mechanism was examined separately, disappears in the integrated model, broadly supporting Demsetz' theory of the optimal use of control mechanisms. A similar procedure is later taken by Bhagat and Jefferis (2002). They are able to find evidence for their hypothesis that takeover defenses, takeovers, management turnover, corporate performance, capital structure, and ownership structure are interrelated and, thus, should be examined in a system of simultaneous equations. However, they admit that "such a system of equations is nontrivial" and even looks less feasible for studies about non US markets, where data availability and quality often is a serious problem. Beiner, Drobetz, Schmid, and Zimmermann (2005), following the methodology of Agrawal and Knoeber (1996), model a simultaneous equation system which defines block ownership, a firm-specific corporate governance index, board size, outside representation of the board, and leverage as relevant corporate governance mechanisms besides insider ownership. Using a sample of 109 Swiss listed companies they find evidence for the widespread hypothesis of a positive relationship between corporate governance and performance.

Recently, a new branch in the literature has evolved which looks into the effects of family-control. Evidently, family ownership has to be seen mostly as a special case of insider ownership and therefore this new family business literature is quite relevant for the insider ownership issue as well. This is even more true for Germany, where family businesses traditionally attracted a lot of attention given their predominate economic role. For the US, recently Anderson and Reeb (2003) show that family ownership is present in a third of all S&P 500 companies and that family firms outperform non-family firms, thus suggesting that family ownership is an effective organizational structure. Villalonga and Amit (2005), looking at all Fortune 500 companies during 1994-2000, come to the conclusion that family ownership creates value for the case that the founder serves as CEO or as chairman of the family firm. We argue that family ownership is stickier than equity ownership of hired managers. Therefore, as it is quite unrealistic to assume that this type of ownership adjusts continuously to changing market conditions, it may be improbable that family ownership is endogenously determined, except in the very long run. Actually, these results are at least challenging from a perspective, where insider ownership and corporate value are simultaneously determined.[5]

While previous results are predominantly derived from US data, also some international evidence exists. For the UK, Davies, Hillier, and McColgan (2005) find that the insider ownership to corporate value relationship is co-deterministic giving further evidence to the work of Himmelberg, Hubbard and Palia or Cho. For Japan, Chen, Guo, and Mande (2003) are able to find a positiv relation between insider ownership and firm performance, if they control for fixed effects. Their results are stable to the treatment of insider ownership and Tobin's Q (as a measure of firm performance) as endogenous variables in a simultaneous equation system. For Switzerland, Beiner, Drobetz, Schmid, and Zimmermann (2005) also find a significantly positive effect of managerial ownership on firm valuation. Their findings also remain stable, if insider ownership is integrated in a simultaneous equation system, thus suggesting that the influence of insider ownership on performance does actually exist.

Given the fact that results coming from code law countries tend to be in conflict

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[5]Further studies about family firms are e.g. McConaughy, Walker, Henderson, and Mishra (1998), Chami (1999) or Burkart, Panunzi, and Shleifer (2003).

with US evidence, the presumption arises that the relationship between ownership structure and corporate performance might be influenced by the corporate governance regime. Therefore, it is very interesting that some studies dealing with German family firms corroborate the view that ownership matters for firm value. For instance, by looking at the long run performance (1903-2003) of a matching sample of 62 family and 62 non-family firms, Ehrhardt, Nowak, and Weber (2004) show that family businesses outperform non-family firms in operating performance, but not with respect to stock price performance. In an earlier study of 105 IPOs of German family-owned firms Ehrhardt and Nowak (2003) found that the long run abnormal performance of family firms was affected by the family ownership pattern during a three year post-IPO period. Bott (2002), who analyzes the effects of announcements of changes in shareholder structures with regard to shareholder concentration and shareholder identity, does not find convincing evidence that stock market reactions to those announcements depend on the identity of the shareholders.

Besides founding family ownership, the concentration of share ownership has attracted some German research recently. For example, Edwards and Weichenrieder (2004) show that for most types of large shareholders the benefits of concentrated ownership through greater monitoring of management and reduced agency conflicts equal or sometimes even significantly outweigh the harmful effects of concentration, e.g. private benefits through exploitation of minority shareholders. Hereby, they especially distinguish between control rights and cash flow rights, which usually differ when non-voting share classes exist. While looking at control rights seems appropriate for the examination of monitoring effects, cash flow rights seem to be the right measure for the investigation of alignment of interest effects. Hence, we define share ownership as the portion of cash flow rights throughout this study, because intuitively the monitoring effect of block ownership cannot be assumed to be present in the case of managerial ownership. The results of Edwards and Weichenrieder are in line with prior findings of Edwards and Nibler (2000) who concluded that ownership concentration is a more important factor in the German corporate governance system than banks, which originally were thought to posses a dominating role.

3 Methodology and Data

3.1 Methodolody

In this study, we use two cross-sections and a pooled sample of German listed companies to examine current shareholder structures and the phenomenon of insider ownership. Though being aware of the problems arising from the use of primarily cross-sectional data, we decided to use them because of the following reasons: First, since insider ownership in Germany experienced little attraction in research until now, we thought that it is still necessary to better understand shareholder structures at large and to learn more about the appropriate measurement of insider ownership before going into a deeper analysis. Second, since the historical availability of shareholder structure data in Germany is rather limited, the construction of a large and comprehensive panel data set faces an enormous effort. Furthermore, it is not clear if such an effort would be rewarded, because poor data quality might pose natural limits to the examination of low frequency (e.g. yearly) shareholder

structure data. Third, as we will show in section 4 inside ownership tends to be rather sticky, limiting the insights from a panel data analysis.

We will address our research question in a three step analysis. In a first step, explicit attention is paid to the descriptive statistics. This is done in section 3.4, where a comparison with prior findings for the German market is presented. In a second step, section 4 presents the results of an OLS-regression estimation in order to gain a more extensive understanding about the effectiveness of insider ownership as a corporate governance mechanism. Finally, we build a simultaneous equation system to treat insider ownership and performance as endogenous variables. In this way we should be able to control for endogeneity in our data set.

3.2 Sample Selection

The universe for the cross sectional samples comprises all companies, which were member of the CDAX, the broadest index representing the German equity market, at the end of 2003 or 1998, respectively. Furthermore, the companies must have been listed in the CDAX for at least one of the two five year periods ranging from 1998 to 2003 and 1993 to 1998.[6] The way in which the final samples were derived is shown in table 1.

Insert table 1

In 2003 (1998), from a total of 719 (520) share classes 652 (380) firms have been left in the data set after excluding dual share classes and financial firms. Then, 362 (22) companies which were not CDAX members during the whole required five year period dropped the sample, leaving us with a total of 290 (358) companies.[7] Because of firms with missing data, the number of complete data sets varies between 235-247 for the 2003 sub-sample and 212-220 for the 1998 sub-sample. Consequently, our sample captures approximately 37% (57%) of all non-financial CDAX companies as of 31.12.2003 (31.12.1998).

3.3 Definition of Variables

The ownership structure variables constitute a key element in this analysis and, hence, deserves additional attention. The shareholder structures have been taken from the 2004-I and 1999-I editions of Hoppenstedt Aktienführer.[8] Identified share-

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[6]The condition that companies must have been CDAX members for the five years preceding the cut-off dates (31.12.2003 and 31.12.1998) is introduced because we decided to track performance over this 60 months period.

[7]Most of the 362 firms dropped from the 2003 sub-sample had their IPO after the cut-off date 31.12.1998 and hence were not listed for the five year period. Therefore, especially firms which went public during the "heyday of the new economy" were excluded from our analysis. As a consequence, our analysis refers more to the "traditional" market. Out of the 362 firms, only 86 were either acquired by another listed companies or delisted after a squeeze-out. We are aware of the fact that this criterion may induce a sample selection bias into our analysis. However, since only few of these companies actually went bankrupt and we did not find any signs of systematic differences of these firms compared to the sample firms, we think that the potential bias is manageable from an econometric point of view.

[8]For a presentation and discussion of ownership disclosure requirements in Germany cf. Becht and Böhmer (2003).

holders have been classified manually according to a proprietary scheme which is further described in table 2.

<div align="center">Insert table 2</div>

In line with common research all members of both boards, i.e. the management board ("Vorstand") and the supervisory board ("Aufsichtsrat"), as well as their families are defined as being insiders (coded as MB and SB). For the case of the supervisory board, only stakes owned by individuals are taken into account while stakes of e.g. corporates, which also might send representatives to the supervisory board, are not classified as insider stakes.[9] In addition, we also identify a third group of "quasi-insiders", in which we classified all former members of the boards and their families (FBM). For this reason the insider definition used in this study deviates from that normally used in the literature. Nevertheless, this may be reasonable as in this way we account for a peculiarity of German companies, where former board members with large ownership stakes often exert considerable influence on "their'" former companies without being officially in charge. Because we have no a priori reason to believe that one measure of insider ownership dominates another we will test these single measures individually as well as in combination, where total insider ownership is defined as the total equity stake controlled altogether by the three insider groups (MB_SB_FBM).[10]

Besides insiders, we define corporates, investment companies, banks, institutional investors, insurance companies, government, outside individuals, treasury shares (of course not a real owner type), employees, and others as relevant outside ownership groups. As a result, for each company an ownership structure by owner type becomes available, where the individual variables express the percentage share owned by the respective groups. As mentioned in section 2, we decided to use cash flow instead of control rights for measuring ownership.[11] Alongside ownership type variables also two ownership concentration variables, BLOCK_O and BLOCK_NO, are computed, indicating the cumulative share owned by all outside blockholders owning at least 5% and the number of these outside blockholders, respectively. These variables are introduced because there is a widespread belief that block ownership constitutes an effective monitoring mechanism. Consequently, an interdependency between insider ownership and block ownership is probable.

An overview of all variables used in this study and their descriptions is given in table 3. Firm performance is measured as buy-and-hold total stock returns over a period of 60 months (BAHR) as well as on the basis of market-to-book ratios (MTBV) and return on assets (ROA). Hence, for the 2003 (1998) cross section sample BAHRs are measured during the 60 months period from December 1998 (1993) to December 2003 (1998).[12] The ratio of market value of equity to the book value of equity is essentially the same as Tobin's Q.[13] MTBVs are measured

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[9]For a discussion of "agents watching agents" see Woidtke (2002).

[10]We measure ownership at the ultimate level. Hence, stakes of insiders held through a interim holding company will be classified as MB_SB_FBM at the ultimate level. Cf. Köke (1999); Becht and Böhmer (2003).

[11]Meanwhile control rights are measured by the share of voting shares (usually ordinary shares), cash flow rights refer to the weighted portion of both voting and non-voting shares (usually preferred shares).

[12]Six values above 500% (4 in 1998 and 2 in 2003) were treated as outliers since the standardized residuals were above/below +/- 3 std. dev. in the regression analysis. Since four of the six cases showed MB_SB_FBM share over 40% (average: 35.2%) a bias in account of a positive relationship between insider ownership and performance might be introduced if any.

[13]See Gorton and Schmid (2000, p. 44).

at the end of the respective year and are computed as the sum of the market values of all share classes divided by the book value of equity capital and reserves. The market value of equity, i.e. the nominator of the fraction, by definition cannot become negative, while the book value of equity, i.e. the denominator, can do so. In those cases the MTBV can not be interpreted. Similarly, the MTBV becomes very large, if the denominator approaches zero even though the nominator might be very small. Hence, negative, zero and MTBVs above 15 were excluded from further analysis.[14] Finally, the return on assets (ROA) constitutes an accounting measure of the profitability of the firm. Since the latter two performance measures are subject to accounting distortions, which are especially important in a Continental-European accounting context, where historical cost accounting has long been prevalent,[15] we put more emphasis on the results where firm performance is measured on the basis of stock price returns.

It should be noted that our approach (focusing on stock returns), in a certain sense, is more conservative than the firm value approach (focusing on Tobin's Q) used in the US literature. To see this, assume that for whatever reason there is a positive relationship between insider ownership and firm performance. If the market is completely aware of this relationship, stock prices would react accordingly right at the moment when the ownership structure becomes public or changes. Hence, as long as there is no change in the ownership structure no under- or outperformance would be observable, even though insider controlled companies would be economically more successful. Under these conditions our approach would not be able to detect any relation between insider ownership and firm performance. However, if the market does not fully reflect the benefits of insider control right from the beginning, stock price returns would convey partial information about the market's assessment of the benefits of insider ownership. It seems plausible that the market is affected by such learning effects, especially if longer periods are taken into consideration. This is even more true as theory makes no clear prediction with respect to the impact of ownership on performance.[16] However, the longer the period of observation the more likely it is that even a rather sticky ownership variable is subject to changes and, hence, the stock price movement would be affected by such changes. For that reason we chose an observation period of 5 years, being sufficiently long in order to account for the market's learning effects, but sufficiently short not to be too much affected by changes in the insider ownership structure.[17] Moreover, by using two totally different 5 year periods it is implausible that results will be affected by some kind of a fixed time effect. All market data and accounting information are drawn from the Datastream database.

Insert table 3

Besides ownership and performance variables a number of control variables are introduced. The level of *outside blockholdings* (BLOCK_O), i.e. the cumulated shareholdings of all outsiders which individually hold at leat 5%, is used to account for possible substitutional effects between insider ownership, as an instrument to

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[14]Excluded negative/zero MTBVs: 7 (1998) and 14 (2003). Excluded MTBVs above 15: 17 (1998) and 3 (2003); cf. Drobetz, Schillhofer, and Zimmermann (2004, p. 17).

[15]Cf. Edwards and Weichenrieder (2004, p. 152).

[16]For a similar argument cf. Gompers, Ishii, and Metrick (2003); they label this approach as a kind of a long-run event study.

[17]A similar approach has been used in some recent corporate governance studies, e.g. Drobetz, Schillhofer, and Zimmermann (2004).

align shareholders' and management's interest, and outside block ownership, as an instrument for effective monitoring. In addition, the *number of outside blockholders* (BLOCK_NO) takes into account that the potential for effective monitoring might decrease if the control rights are split up among an increasing number of outside parties. *Firm Size* (LN_ASSETS), measured by the natural logarithm of total assets, is included to account for the fact that insider ownership in very large corporations is less widespread.[18] *Firm risk* (FIRM_RISK) measures the unsystematic, diversifiable portion of companies' total risk. It is measured as the residuals' sum of squares (SSE) from a regression of the individual stock returns on the returns of the market (CDAX) over the preceding 60 months. The *financial structure* (DEBT_RATIO), measured as total debt to firm value (total debt + market value of equity), reflects the disciplining effect of higher interest burdens on managements behavior.[19] The *growth potential* (SALES_G), which is expected to be captured in the market valuation of equity, is proxied by the average annual sales growth over the past three years. We include it in our analysis to differentiate higher market valuations arising from higher growth potential from those that might be the result of lower agency costs due to the alignment of interest among management and other shareholders. The dummy variable *dividends* (DIV) indicates whether dividends have been paid during the respective year.[20] In the pooled sample, the *year dummy variable* (YEAR_1998) is included to account for differences between the two sub-sample periods. Industry dummy variables are used (but not presented in the results) to account for heterogeneity among eight different industries.[21] Later on in the analysis, the *number of management board members* (MB_NO), a dummy variable indicating the presence of voting restrictions (VOTE), a dummy variable indicating whether the supervisory board of a company is subject to co-determination (CODET) and the ratio of intangible to total assets (INT_ASSETS) are introduced as further independent variables.

3.4 Descriptive Statistics

According to the data the mean ownership stake of insiders (MB_SB_FBM), as measured by cash flow rights, in 2003 adds up to 29.0%; it is interesting to see that this figure is quite close to the 29.6% of insider ownership recorded for 1998. The same is true for outside blockownership which is equal to 32.0% resp. 32.6%. As can be seen from the descriptive statistics in Panel A of table 4 incumbent executive board members (MB) control on average 10.7% of their firm's shares, while incumbent supervisory board members (SB) control 9.9% on average. The equity stake of former board members (FBM) averages 8.5%. As a further result it should be emphasized that outside blockholders altogether control 32.0% on average. Finally, table 4 gives summary information about all the other variables

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[18]See Graham and Harvey (2001, p. 195).

[19]See Demsetz and Villalonga (2001, p. 221).

[20]Cf. Beiner, Drobetz, Schmid, and Zimmermann (2005, p. 21); Edwards and Weichenrieder (2004, pp. 155-156).

[21]Our industry classification differs from the current scheme used by Deutsche Börse AG which classifies Prime Standard companies into 18 different industries, since the new classification scheme differs from the one in place at the end of 1998. Furthermore, we reduced the number of industry categories in place as of end 1998 by grouping from 15 to 8 non-financial categories in order to increase the number of cases in each category: automobile, chemicals, construction, consumers, electronics, food & beverages, industrial and utilities & transportation.

used in this study.

Insert table 4

As can be seen from table 5 there are no remarkable differences among six of the eight industry categories. However, the insider ownership pattern in the food&beverages- as well as in the utilities-industry is quite different from other industries. In fact, the former has an unusual high mean insider ownership share of 59.2%, while in the latter the opposite is true with an insider share of 4.8%. Presumably, this result is driven by a size effect and small group sizes of the food&beverages (n=13) and utilities industry (n=20). Moreover, it should be noted that utilities in Germany in many cases are formerly state owned companies. Anyhow, it can be stated that insider ownership is a widespread phenomenon in listed German companies.

Insert table 5

As has already been emphasized, there is only a very small number of studies analyzing the ownership structure of German companies. For instance, Bott (2002, pp. 279-280) reports that as measured by the number of directly held share blocks, as registered with authorities ("Bundesanstalt für Finanzdienstleistungsaufsicht (BaFin)") at the end of 1999, individuals represent the most important shareholder group in as much as they account for 33.1% of all registered share blocks. Franks and Mayer (2001, p. 947), investigating a sample of 171 German firms in 1990, find that family groups are the second most important owner group behind other corporates. The difference to our results, which are reported in table 6 and where corporates rank only second after insiders, could be explained by the fact that in 1990 disclosure of ownership stakes was only mandatory at the excess of control thresholds beyond 25%. Since in our sample the distribution of the ownership stakes of corporates is even more skewed than for individual insiders,[22] the changes in disclosure rules and the increasing transparency of ownership structures over the last decade revealed most notably also smaller ownership stakes.[23] This may be the reason why insider ownership has become more visible over the last years. The same effect may explain the relatively low mean ownership stake for individuals of 10.8%, which was found by Köke (1999, p. 16) for listed corporations over the period 1994 to 1998.

The 2003 mean insider ownership stake of 29.0% in our sample is relatively large compared with findings from other countries. For instance, Morck, Shleifer, and Vishny (1988, p. 297) find a mean combined stake of all board members of 10.6% for listed US firms, which is close to the 12.1% which were found by Cho (1998, p. 107). According to Davies, Hillier, and McColgan (2005, p. 651) the mean ownership stake held by the management of UK firms is 13.0%, while the same figure is equal to 17.3% for Switzerland, according to Schmid (2003, p. 39). Although the insider ownership definition used in these studies is slightly different from the definition used in this paper, as we include former board members, it is nevertheless safe to say that insider ownership plays a more important role in Germany than in other countries.[24] Moreover, the peculiarity of the shareholder structure in Germany

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[22]For corporates the mean equity stake is 19.4%, while the median is 0.0%. For insiders, the mean and median are equal to 29.0% and 21.1%, respectively.

[23]See footnote 6.

[24]This can also be seen from the fact that in our sample equity stakes of board members alone sum up to an average of 20.6% for 2003 and 22.5% for 1998.

becomes even more pronounced, if all blockholdings by current or former board members as well as by other external individuals, companies or the government are summed up. In that case it turns out that the mean freefloat in a German listed company is only 36.0% as of the year 2003.[25] Davies, Hillier, and McColgan (2005, p. 651) report that for the average UK firm the sum of management shareholdings plus external blockholdings is equal to 50.3%; from that one can conclude that the average freefloat should be equal to 49.7%.[26] For the US according to McConnell and Servaes (1990, p. 600) the sum of insider holdings and external blockholdings equals 37.4%. Hence, it is still true that dispersed ownership is less important in Germany than in the Anglo-Saxon world.

Insert table 6

From these figures it seems that dispersed ownership is unexpectedly low, even in the US or UK. However, it should be noted that these figures are unweighted means and, hence, systematic differences in small and large companies are not taken into account. In fact, the picture becomes substantially different, if market-cap-weighted means are calculated, as has been done in the second column of table 6. In that case the average insider ownership stake is equal to 11.3% and the average freefloat increases up to 46.7%. Evidently, managerial ownership is the more relevant the smaller the market capitalization of a company. Although a comparable figure is, to our knowledge, not available for the US or UK, it can be safely assumed that the market-cap-weighted mean freefloat would be substantially higher than the 49.7% reported above. In fact, Himmelberg, Hubbard, and Palia (1999, p. 362) find an average total managerial ownership stake of 13,4% for companies whose sales exceed \$ 188 million while smaller companies show significantly higher insider ownership stakes between 25,4% (\$ 22 million $\leq$ sales $\leq$ \$ 188 million) and 32,0% (sales $\leq$ \$ 22 million). Although these results do not include external blockholdings, it can be expected that even for such external stakes a clear size-effect exists.

A more precise picture of the size-effect can be gathered from table 7 where sample companies are grouped according to their insider ownership share. As indicated, the distribution of the insider ownership variable MB_SB_FBM is heavily positively skewed and in 44.1% of the companies the insiders own less than 10% of the company's cash flow rights.

Insert table 7

4   Empirical Results

4.1   A first look at ownership and performance

We start with a simple two-sample t-test in order to gather some basic information about the relationship between insider ownership and performance. For that purpose the 2003 sub-sample is split into two equally-sized sub-samples using the insider ownership as discriminating variable. As reported in table 8, the mean aggregated

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[25]Please note that according to panel A of table 4 the average blockholding, i.e. the sum of all external equity stakes individually larger than 5%, is 32.0%. Together with insider equity holdings of 29.0% this adds up to a closely-held equity stake of 61.0% on average. Again, this figure is very close to the corresponding figure for the year 1998 given in panel B of table 4, which reveals a closely-held equity stake of 62.2%.

[26]Similar figures for the UK are reported by Faccio and Lasfer (1999).

insider ownership stake (MB_SB_FBM) in the low insider ownership group amounts to 1.7%, while it adds up to 55.9% in the high insider ownership group. We find that the sub-sample with higher insider ownership exhibits lower mean buy-and-hold returns (-12.1% vs. -2.2%), similar market to book values (2.0 vs. 2.0) and higher average return on assets (3.2% vs. 2.3%). However, these differences are not significant. Nevertheless, the tests for differences in means, shown in table 8, highlight other interesting variations in firm characteristics.

Insert table 8

For example, low insider ownership companies have significant higher ownership share held by outside blockholders (56.9%) than high insider ownership companies (7.2%). This underlines the widespread existence of outside blockholdings and is in line with the evidence found by Becht and Böhmer (2003, p. 8) that 82.3% of listed German firms have a minority blockholders who controls more than 25%; 64.7% of listed firms are even majority controlled by blockholders. Thus, it seems that outside block ownership might be a substitute to insider ownership and, hence, both ownership phenomenons have to be taken into account in the analysis. This assumption is further supported by the significant negative correlation between outside blockholdings and insider ownership, as reported in table 9.[27] Furthermore, as shown in table 8 significant differences can be found for the number of outside blockholders, firm size, the number of management board members, and the two dummy variables relating to the existence of any kind of deviations from the one-share-one-vote principle and the presence of codetermination.

Insert table 9

Examining the correlation matrix we observe that the correlations between the insider ownership variable and the three performance variables are different in signs, albeit insignificant. Moreover, table 9 gives no strong indication that results might be affected by a multicollinearity problem. In the next sections the insider ownership-performance relationship will be analyzed in a multivariate regression framework.

4.2 Base case: OLS regression results

For the 2003 sub-sample OLS regression results are presented in table 10, where models 1 and 2 use stock returns (BAHR) as dependent variable, whereas models 3 to 6 use market-to-book ratios (MTBV) and return on assets (ROA). Since we felt the need to learn more about the appropriate measure for insider ownership in Germany, we carried out the regression analysis using the three insider ownership variables as separate regressors (i.e. MB, SB, and FBM) in models 1, 3 and 5 as well as the aggregated insider ownership variable (i.e. MB_SB_FBM) in models 2, 4 and 6. We had complete data sets for only between 235 to 247 companies depending on the choice of the respective performance measure. In contrast to the univariate analysis in section 4.1, in the multivariate analyses the signs of all but one (the exception is FBM in model 5) insider ownership coefficients in models 1 to 6 are

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[27]This result should be viewed with caution since insider ownership and block ownership are partial substitutes and, not surprisingly, are highly negatively correlated. However, as more than these two shareholder groups exist, both shares must not add up to 100% and, hence, observed correlations are not totally trivial.

positive, indicating a positive impact of insider ownership on firm performance. For the stock return models 1 and 2 all insider ownership coefficients turn out to be significantly different from zero at least on the 0.05 level. For the MTBV models 3 and 4 three of the four coefficients are significant at least on the 0.1 level and for the ROA models 5 and 6 only supervisory board ownership is significant (0.01 level). This yields a first, rather consistent indication that there might be an economic rationale for firm performance to be influenced by insider ownership.

Insert table 10

With regard to the explanatory power of the models it should be noted that the adjusted R^2 is equal to 36%, if stock returns are used as dependent variable, and around 18%, if MTBV or ROA are used. This is in line with the view that accounting performance measures might be rather noisy for German companies.[28] Thus, we will use model 2 (aggregated insider ownership and BAHR as dependent variable) as the base case, which will be discussed in more detail. The insider ownership coefficient of 82.6 — significant at the 0.01 level — states that on average an increase in insider ownership by 100 basis points results in an increase of the five year stock price performance of 83 basis points. Among the control variables, firm size, firm risk, growth potential and dividend payments have a positive effect on stock returns, while high levels of debt turn out to have a negative impact. While the positive effects of sales growth and dividend payments may be intuitively plausible, the remaining effects deserve further discussion. One possible explanation for the negative effect of high debt levels might be that small and highly leveraged firms experienced more serious devaluations in their stock prices during the market downturn from 2001 to 2003. On the other hand, the positive sign of the coefficient of firm risk could signify that those firms which managed to recover from their drops in market values of equity showed higher return variations than those which did not. Finally, the results strongly support the presumption that board ownership and outside blockholdings are a substitute to each other. In fact, according to model 2 in table 10 the marginal rate of substitution is equal to 82.6/93.9=0.88. Hence, a change in insider ownership by 100 basis points must be accompanied by an offsetting change of 88 basis points in external blockholdings in order not to have any impact on firm performance. In a very strict sense it follows from this that external blockholdings are more effective in terms of value creation. However, given the variance in the data one should not stress this result. As a corollary, it is interesting to note that the coefficient on the number of blockholders variable is significantly (0.01 level) negative. This is in line with the view that the benefits of outside control decrease the more dispersed blockholdings are.

4.3 Variations to the base case

After assuming a pure linear specification of the impact of insider ownership on performance in the previous section, we now investigate the possibility of alternative specifications. We search for the curvilinear relationship found by McConnell and Servaes (1990) by including the squared term of board member ownership, labeled as MB_SB_FBM_SQ in model 7 of table 11. As a result, the coefficient for MB_SB_FBM becomes negative but not on a significant level. The coefficient of the

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[28]Cf. in this regard also Edwards and Weichenrieder (2004, p. 152).

squared term (MB_SB_FBM_SQ) is positive and significant at the 0.05 level. Thus, we fail to find the bell-shape relationship found by McConnell and Servaes where insider ownership above a certain threshold becomes value destroying.[29] This is quite interesting, as the result is not in accordance with the view that large insider stakes are harmful to outside shareholders because of their expropriation via the consumption of private benefits by insiders.[30]

Insert table 11

We also checked whether it would be possible to replicate the piecewise-linear relationship found by Morck, Shleifer, and Vishny (1988) or Cho (1998). Dividing the insider ownership variable in three subvariables — one for low (MB_SB_FBM_0to5), medium (MB_SB_FBM_5to25) and high (MB_SB_FBM_25to100) insider ownership stakes — using the thresholds of 5% and 25% as proposed by Morck, Shleifer and Vishny, only the coefficient for insider ownership above 25% turned out to be significant (0.01 level). This can be seen from the results of model 8 in table 11. Even by looking at several different combinations of the thresholds we have not been able to improve the results. Hence, the linear relationship between insider ownership and firm performance, as used in model 2, seems to represent still the most convincing specification.

Suggestions to alter the insider ownership variable to reflect the concentration of insider ownership or the dollar value of the ownership share were implemented in models 9 to 11. In model 9, the coefficient for the average ownership share per board member (MB_SB_FBM_AV) is positive but less significant than in the base case. Nevertheless, we regard this result with caution because of the methodological issue involved: Since we are not able to obtain the number of all former board members (nor do we think that this would be especially useful), the divisor of the average insider ownership variable contains the share of all active and former board members while the denominator does only reflect all active board members. In model 10 we take a different approach to account for the concentration of insider ownership: Besides the cumulated shareholdings of insiders (MB_SB_FBM) we include the number of those registered insider shareholders (MB_SB_FBM_NO) as an additional explanatory variable. The result is similar to those previously found for the case of blockholders: While MB_SB_FBM is positive, MB_SB_FBM_NO is negative (both significant at the 0.01 and 0.05 level respectively) indicating that the positive effect declines, if the insider ownership share is spread across an increasing number of insiders. Even though the results of model 10 appear as plausible as the base case specification of model 2 we will stick to the base case model 2 in the next section because of the advantages associated with dealing with only one - and not two - possible endogenous insider variables. Finally, in model 11 inside ownership is measured in terms of the Euro-value instead in terms of the equity share. The accordingly defined variable (MB_SB_FBM_EUR) turns out to be insignificant. To summarize, it does not seem that any of the variations of the insider ownership variable discussed before generates more reliable results than the simple insider

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[29]We doubt the reliability of results including higher terms of insider ownership as independent variables because of the arising multicollinearity. In our sample the VIFs for MB_SB_FBM and MB_SB_FBM_SQ reach 16.5 and 12.6 respectively indicating presence of multicollinearity. We find no procedure to deal with this problem in McConnell and Servaes (1990).

[30]It should be noted that we also included higher terms of MB_SB_FBM as done by Davies, Hillier, and McColgan (2005) without obtaining more promising results than those found in our base case model 2.

ownership measure MB_SB_FBM used in the base case model 2 of the analysis.

4.4 Base case results in the pooled sample

Based on our conclusion that the insider ownership operationalizations of model 1 and 2, i.e. the simple individual insider ownership variables MB, SB and FBM as well as the aggregated measure MB_SB_FBM, best catch the phenomenon of insider ownership, table 12 summarizes the results of these equations for all three performance measures as well as for the sub-sample 2003 (Panel A), sub-sample 1998 (Panel B) and the pooled sample (Panel C). For the sake of clarity only the coefficients of the insider ownership variables, their respective t-statistics and the adjusted R^2 are presented.

Insert table 12

As can be seen, the results for the 1998 sub-sample confirm the results from the 2003 sub-sample. Moreover, for MTBV and ROA as performance measures, the number of significant positive coefficients is even larger than in the 2003 models. Moreover, results become even more conclusive when using the pooled sample as in Panel C; this may be an indication that the lack of significance of some coefficients obtained in the two preceding sub-sample estimations may be due to the relatively small sample size. In the pooled models (n=447-467), which also includes a year dummy variable controlling for a potential fixed time effect, all insider ownership coefficients in the stock return model are positive and significant on the 0.01 level. Furthermore, the coefficients of the aggregated insider ownership variable are positive and significant at least on the 0.05 level for all three alternative performance measures. None of the coefficients turns out to be negative. To summarize, these results corroborate the view that results are rather robust in the sense that they point in the same direction regardless of the performance measure and the time period under investigation. Hence, as far as the German capital market is concerned, a positive relationship between insider ownership and corporate performance is likely to exist.

4.5 The possible impact of endogeneity

In the OLS regression analysis insider ownership was implicitly assumed to be an exogenous variable. Because of the objections raised by Demsetz and Lehn (1985) and many others, which have been discussed in section 2, we follow the common approach to construct a simultaneous equation system in order to account for the potentially reciprocal dependence of insider ownership and firm performance.[31] Specifically, we estimate a simultaneous equation system treating insider ownership and corporate value as endogenous variables using the two-stage least squares (2SLS) method. Our systems consists of the following two equations:

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[31] Similar simultaneous equation systems were used, among others, by Agrawal and Knoeber (1996), Cho (1998) Davies, Hillier, and McColgan (2005), and Beiner, Drobetz, Schmid, and Zimmermann (2005) to address the potential endogeneity effect.

$$Corporate\ value = f(Insider\ ownership, firm\ characteristics) \qquad (1)$$

$$Insider\ ownership = g(Corporate\ value, firm\ characteristics) \qquad (2)$$

Equation (1), the corporate value equation, is the base case equation from section 4.2. Hence, the OLS results for model 12 in table 13 are the known results from our base case, i.e. model 2 in table 10. But treating insider ownership as an endogenous variable, while we further assume the other control variables to be exogenously determined, the 2SLS results in model 13 differ from those of the OLS regression.

Equation (2), the insider ownership equation, treats corporate performance, measured by stock returns, as an endogenous variable. To meet the specification condition for simultaneous equation systems we exclude the dividend payment variable (DIV) from equation (2), since we do not believe that insiders would choose their share participation level according to expected dividend payments. In addition to the other control variables from equation (1), we include four new variables which we expect to have an impact on the level of insider ownership.

We expect insider ownership to be lower in companies with a large number of management board members (MB_NO) and in codetermined companies (CODET).[32] In contrast, we believe that the existence of non-voting shares (VOTE), which facilitates the insiders to gain control rights in excess of their cash flow rights, and a high ratio of intangible assets to total assets (INT_ASSETS), a measure for discretionary power of management, will favorably influence the extent of insider ownership. Since it can be plausibly argued that insider ownership and corporate performance share common determinants,[33] we use the set of all exogenous variables from model 12 and 14 as instrumental variables for the endogenous variables in model 13 and 15. The OLS- and 2SLS regression results for both equations are shown in table 13.

Insert table 13

As the insider ownership variable in model 13 still has a positive coefficient (significant at the 0.05 level) while the corporate performance variable in model 15 is close to zero, we do not find evidence for the hypothesis that the OLS results might be strongly biased through the possible endogeneity of insider ownership.[34] Thus, our results conflict with the evidence presented by e.g. Agrawal and Knoeber (1996) and Cho (1998), who show that a positive impact of insider ownership on corporate value is a mere result of failing to control for endogeneity. In contrast, our findings are roughly in line with those of Beiner, Drobetz, Schmid, and Zimmermann (2005) who also find a positive impact of insider ownership on corporate performance, even when they account for the possible endogeneity of insider ownership.

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[32]German codetermination law requires that in companies of a certain size half of the supervisory board members must be representatives of the employees. Since this narrows the scope of managerial actions the managers might be restrained from owning larger stakes in such types of companies. Cf. Gorton and Schmid (2000).

[33]Cf. Himmelberg, Hubbard, and Palia (1999, p. 379).

[34]As a corollary it should be noted that the results of equation 13 indicate that insider ownership is more effective in value creation than external blockholdings, as the ratio of both coefficients is equal to 1.6.

As a final piece of evidence against endogeneity in the insider ownership variable the stickiness of this variable should be emphasized. For that purpose the question is addressed to what extent current insider ownership is explained by former insider ownership. More specifically, model 14 in table 13 is estimated once again as an OLS-regression. This corresponds to model 16 in table 14. Thereafter, a lagged insider ownership variable — measured as of the end of the year 1998 for the 2003 sub-sample and as of the end of the year 1993 for the 1998 sub-sample — is used as an additional independent variable. As can be seen from the results of model 17 in table 14, this variable adds perceivable explanatory power to the regression and is highly significant. Hence, current insider ownership structure depends significantly on former insider ownership confirming the view of the stickiness of this variable.

Insert table 14

To sum up, the results presented in this study corroborate the view that under the German corporate governance environment insider ownership may, to some extent, be resistant to market mechanisms. This view is supported by the argument of Edwards and Nibler (2000, p. 252) who justify their treatment of ownership concentration as exogenous variable by the observation that "...the ownership structures of many large German firms [...] do not change much over time". Later, Edwards and Weichenrieder (2004) test for endogeneity by dividing their sample in two parts, one with and one without changes in ownership structure. They infer that because the results for the two sub-samples are not different on a significant level, ownership probably is not endogenous. Weighing all known arguments and evaluating the empirical evidence, it may be plausible to treat insider ownership as an exogenous variable, at least for Germany. Under this perspective this study provides interesting evidence on the impact of insider ownership on firm performance.

4.6   Problems and Subjects of Further Research

It is well known that 2SLS-estimations are quite sensitive to the specification of the equation system. The theory for choosing instrumental variables is poor and variations in the choice of instruments can significantly effect the results.[35] This is a severe problem of all empirical studies dealing with simultaneous equation systems. As pointed out by Himmelberg, Hubbard, and Palia (1999, p. 379) *'instrumental variables for managerial ownership are difficult to find. The basic problem is that for any variable that plausibly determines the optimal level of managerial ownership, it is also possible to argue that the same variable might plausibly affect Tobin's Q [as a measure for corporate value].'* Hence, it was argued here that endogeneity is not only a question of how the results of an ordinary OLS-equation compare to the results of an appropriate 2SLS-estimation. It is also a question of economic and empirical reasoning. Given that it could have been showed that insider ownership is a rather inert variable, endogeneity may be perceived as less imminent than in the US data. There, insider ownership is much more related to firm performance, as it is to a large extent the result of compensation contracts. This is still very different from the German situation.

Of course, future research should still address the issue of endogeneity. One way to do so is to extend the pooled cross-sectional data set to a low frequency

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[35]Cf. Barnhart, Marr, and Rosenstein (1994) and Bøhren and Ødegaard (2004).

unbalanced panel data set. This would allow to use lagged variables as more plausible instruments and to increase the sample size in a pooled cross section analysis. This procedure is also suggested by Börsch-Supan and Köke (2002), who provide a comprehensive review of the problems involved in empirical corporate governance studies.

5   Conclusion

This paper addressed the question whether there is any empirical relationship between corporate performance and insider ownership. Although agency theory provides some good reasons why such a relationship should exist, empirical evidence is rather fuzzy in this regard. One reason is that most studies deal with Anglo-Saxon countries, where it seems that results are significantly affected by an endogeneity problem. This problem is due to the fact that in these countries insider ownership seems to be mainly driven by compensation contracts. Evidently, in such a case firm performance and insider ownership are simultaneously determined.

This paper deals with the German capital market. This is important for the following reasons. First, insider ownership in Germany is a widespread phenomenon that is only partially influenced by the fact that firms grant stock based compensation packages. In fact, insider ownership seems to be rather stable over time in Germany. Second, it seems that there is much more cross-sectional variation in the ownership structure in Germany as compared to the US. Starting from this presumption the results in this paper make a contribution to the literature for the following two reasons. First, if it is true that the relationship between firm performance and insider ownership is not significantly affected by endogeneity, the data will allow to make an unbiased observation as to whether insider ownership affects firm performance. Second, this study is among the first to give a comprehensive overview on the ownership structure of German corporations. Using a data set of 648 firm years for the years 2003 and 1998 we find robust evidence corroborating the presumption that insider ownership has a positive impact on corporate performance. This result holds regardless of the performance measure used, although evidence is most supportive when using stock price performance as opposed to market-to-book ratios or return on assets. Moreover, the sign and significance of the relationship does not change, even if we account for endogeneity by applying a 2SLS regression approach. Finally, we also find outside block ownership as well as more concentrated insider ownership to have a positive impact on corporate performance. Overall the results indicate that ownership structure might be an important variable explaining the long term value creation in the corporate sector.

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Table 1: Sample Selection 1998 - 2003

	1998	2003
Number of share classes represented in the CDAX as of 31.12.YYYY[a]	**520**	**719**
Number of dual listings (i.e. more than one share class is listed)	60	38
Number of companies represented in the CDAX as of 31.12.YYYY	**460**	**681**
Number of financial companies (i.e. investment companies, mortgage banks, credit banks, insurance companies)	80	29
Number of non-financial companies represented in the CDAX as of 31.12.YYYY	**380**	**652**
Number of non-financial companies which are not represented in the CDAX as of I) for 2003: 31.12.1998 and II) for 1998: neither 31.12.1993 nor 31.12.2003[a]	22	362
Total number of sample companies	**358**	**290**

The CDAX includes the shares of all domestic companies listed in Prime Standard and General Standard. The index represents the German equity market in its entirety, i.e. all companies listed on FWB Frankfurter Wertpapierbörse (Frankfurt Stock Exchange) in the official and regulated market.

[a] This restriction was introduced as the sample is part of a larger research project aiming to analyze changes in the ownership structures. Hence, companies must be listed in the CDAX for at least one five year period.

Table 2: Ownership Structure Classification Scheme

Category (CODE)	Description
Insider Ownership / Managerial Ownership	
Management board member (MB)	Active member of the management board ("Vorstand") including family members
Supervisory board member (SB)	Active member of the supervisory board ("Aufsichtsrat") including family members. Only stakes of individuals/families qualify for this category. The stakes of corporations sending representatives to the supervisory board are not incorporated.
Former board member (FBM)	Former member of the management and supervisory board including family members. Only stakes of individuals/families qualify for this category.
Outsider Block Ownership	
Corporates	Non-financial company
Investment companies	Investment companies (i.e. venture capital and buyout companies)
Banks	Mortgage, credit or investment bank (for own account)
Institutionals	Institutional Investors (asset management companies, pension funds, banks (for third party account), etc.)
Insurance companies	Insurance companies
Government	German municipal, state and federal government
Outside Individuals	Individual persons which are not insiders
Treasury Shares	Shares hold by the company itself (limited to 10% in § 71 Abs. 2 AktG)
Employees	Employees of the company excluding members of the boards
Others	All shareholders which can not be assigned to another category
Outsider Dispersed Ownership	
Freefloat	Freefloat portion of the shares calculated as 100% less sum of the shareholdings of all other categories

The scheme was developed for this specific research project and is characterized by the explicit consideration of insider ownership. Other, more common classification schemes only use the categories "private households", "individuals" or "families" without further distinguishing among different types of individuals (e.g. outsiders and insiders) and, hence, are not appropriate for our research purpose.

Table 3: Definition of Variables

Code	Description
BAHR	Buy-and-hold stock returns, measured over the preceding 60 months (i.e., from 12/1998 to 12/2003 and 12/1993 to 12/1998).
MTBV	Market-to-Book-Value (MTBV), measured as market value of equity (sum of all share classes) divided by the book value of equity as of 31.12.2003 and 31.12.1998.
ROA	Return on assets (ROA) in percent, measured as (((PAT + INTEREST × (1-TAX)) / TOTAL ASSETS)-1) × 100; with PAT = published after tax profit, INTEREST = total interest charges, TAX = tax rate, and TOTAL ASSETS = average (year beginning/end) of total assets for the years 2003 and 1998.
MB	Cumulated shareholdings (all voting and non-voting share classes) of all active members of the management board ("Vorstand") and their families in percent (as of 31.12.2003 and 31.12.1998).
SB	Cumulated shareholdings of all active members of the supervisory board ("Aufsichtsrat") and their families in percent (as of 31.12.2003 and 31.12.1998).
FBM	Cumulated shareholdings of all former members of the management and supervisory board and their families in percent (as of 31.12.2003 and 31.12.1998).
MB_SB_FBM	The sum of MB, SB and FBM (as of 31.12.2003 and 31.12.1998).
MB_SB_FBM_SQ	The squared value of MB_SB_FBM (as of 31.12.2003).
MB_SB_FBM_0to25	Variable for piecewise-linear regression (see Morck, Shleifer, and Vishny (1988, p. 298)). MB_SB_FBM is between 0 and 5 percent (as of 31.12.2003).
MB_SB_FBM_5to25	Variable for piecewise-linear regression (see Morck, Shleifer, and Vishny (1988, p. 298)). MB_SB_FBM is between 5 and 25 percent (as of 31.12.2003).
MB_SB_FBM_25to100	Variable for piecewise-linear regression (see Morck, Shleifer, and Vishny (1988, p. 298)). MB_SB_FBM is higher than 25 percent (as of 31.12.2003).
MB_SB_FBM_AV	Average shareholdings per board member calculated as MB_SB_FBM divided by the number of active members of both boards, including employees' representatives (as of 31.12.2003).
MB_SB_FBM_NO	Number of registered insider shareholders (as indicated in Hoppenstedt Aktienführer) as a measure of concentration of insider ownership (as of 31.12.2003).
MB_SB_FBM_EUR	Euro-value of the MB_SB_FBM shareholdings calculated as MB_SB_FBM multiplied by the average of monthly market values of equity during 2003 (as of 31.12.2003).
MB_SB_FBM_LAG	Lagged value of MB_SB_FBM as of 31.12.1998 for the 2003 sub-sample and as of 31.12.1993 for the 1998 sub-sample.
BLOCK_O	Cumulated shareholdings of all outside blockholders, who each hold a stake of at least 5 percent (as of 31.12.2003 and 31.12.1998).
BLOCK_NO	Number of outside blockholders, who each hold a stake of at least 5 percent (as of 31.12.2003 and 31.12.1998).
LN_ASSETS	Size of the company, measured as the natural logarithm of total assets (as of 31.12.2003 and 31.12.1998).
FIRM_RISK	Firm specific risk, measured as the sum of squared residuals (SSE) from a regression of individual stock returns on market returns (CDAX) over the preceding 60 months (i.e., from 12/1998 to 12/2003 and 12/1993 to 12/1998).
DEBT_RATIO	Debt ratio, proxied as the ratio of book value of total debt divided by the sum of book value of total debt and market value of equity (as of 31.12.2003 and 31.12.1998).
SALES_G	Annual sales growth, measured over the preceding 3 years (i.e., from 12/2000 to 12/2003 and 12/1995 to 12/1998).
DIV	Dummy variable: 1, if the company paid dividends during the year and 0 otherwise (2003 and 1998).
YEAR_1998	Dummy variable: 1, if the observation belongs to the 1998 sub-sample and 0 otherwise.
INDUSTRY DUMMIES	8 dummy variables (7 of them used in the regressions), based on a modified industry classification used for the CDAX in 1998.
MB_NO	Number of members of the management board (as of 31.12.2003 and 31.12.1998).
VOTE	Level of voting restrictions; 0 if no non-voting preference shares are issued and 1 divided by the ratio of ordinary share capital to preference share capital if non-voting preference shares are outstanding (as of 31.12.2003 and 31.12.1998).
CODET	Dummy variable that equals 1 if the company is subject to the codetermination law (i.e. the half of the supervisory board members are representatives of the employees) and 0 otherwise (as of 31.12.2003 and 31.12.1998).
INT_ASSETS	Ratio of total intangible assets divided by total assets (as of 31.12.2003 and 31.12.1998).

Table 4: Descriptive Statistics

Variable	N	Mean	Median	Std. Dev.	Minimum	Maximum
Panel A: 2003 (n=290)						
BAHR	285	-7.140	-22.584	85.251	-99.873	424.392
MTBV	238	2.024	1.537	1.671	0.233	11.212
ROA	251	2.747	3.695	10.317	-50.880	40.002
MB	290	0.107	0.000	0.216	0.000	0.873
SB	290	0.099	0.000	0.218	0.000	0.990
FBM	290	0.085	0.000	0.211	0.000	0.990
MB_SB_FBM	290	0.290	0.211	0.307	0.000	0.990
BLOCK_O	290	0.320	0.174	0.366	0.000	1.000
BLOCK_NO	290	1.080	1.000	1.188	0.000	6.000
LN_ASSETS	261	12.875	12.514	2.036	7.000	18.990
FIRM_RISK	286	1.504	0.731	1.954	0.015	12.060
DEBT_RATIO	253	0.318	0.280	0.269	0.000	0.939
SALES_G	260	-0.009	-0.022	0.368	-1.000	5.138
DIV	258	0.600	1.000	0.491	0.000	1.000
MB_NO	283	3.270	3.000	1.782	1.000	14.000
VOTE	290	0.119	0.000	0.292	0.000	1.000
CODET	285	0.320	0.000	0.466	0.000	1.000
INT_ASSETS	259	0.089	0.050	0.104	0.000	0.518
Panel B: 1998 (n=358)						
BAHR	240	23.184	3.316	84.529	-97.482	478.920
MTBV	319	3.054	2.257	2.340	0.482	14.809
ROA	281	5.449	4.854	9.097	-34.440	81.629
MB	358	0.141	0.000	0.247	0.000	0.988
SB	358	0.085	0.000	0.208	0.000	0.948
FBM	358	0.070	0.000	0.202	0.000	0.986
MB_SB_FBM	358	0.296	0.205	0.313	0.000	0.988
BLOCK_O	358	0.326	0.150	0.374	0.000	1.000
BLOCK_NO	358	0.910	1.000	1.043	0.000	6.000
LN_ASSETS	349	12.560	12.274	1.900	8.540	18.720
FIRM_RISK	244	0.536	0.356	0.624	0.005	4.740
DEBT_RATIO	342	0.204	0.152	0.201	0.000	0.832
SALES_G	327	0.169	0.065	0.566	-1.000	6.105
DIV	329	0.690	1.000	0.463	0.000	1.000
MB_NO	354	3.250	3.000	1.894	1.000	17.000
VOTE	358	0.139	0.000	0.305	0.000	1.000
CODET	256	0.290	0.000	0.457	0.000	1.000
INT_ASSETS	347	0.061	0.015	0.100	0.000	0.616

The definitions of all variables can be found in table 3.

Table 5: Insider Ownership across Industries (2003)

Industry	N	Mean	Median	Std. Dev.	Minimum	Maximum
Automobile	19	0.241	0.000	0.286	0.000	0.774
Chemicals	28	0.258	0.275	0.268	0.000	0.810
Construction	29	0.284	0.027	0.315	0.000	0.873
Consumers	65	0.367	0.392	0.323	0.000	0.990
Electronics	49	0.280	0.245	0.246	0.000	0.990
Food & Beverages	13	0.592	0.654	0.319	0.000	0.948
Industrial	67	0.267	0.050	0.326	0.000	0.963
Utilities & Transportation	20	0.048	0.000	0.129	0.000	0.465
All Industries	290	0.290	0.211	0.307	0.000	0.990

Insider ownership is defined as the total equity stake of incumbent and former board members including their families. This corresponds to the variable MB_SB_FBM defined in table 3; The industry classification differs from the current scheme used by Deutsche Börse AG which classifies Prime Standard companies into 18 different industries, since the new classification scheme differs from the one in place at the end of 1998. Furthermore, the number of industry categories was reduced by grouping from 15 to 8 non-financial categories.

Table 6: Ownership Structures - Cash Flow Rights in Percent (2003)

Ownership Group	Mean Ownership Share	
	Unweighted	Weighted by Market Value of Equity[a]
Freefloat	36.0	46.7
MB_SB_FBM	29.0	11.5
Corporates	19.4	15.2
Investment Companies	4.7	0.6
Banks	2.9	2.4
Institutionals	2.8	9.3
Insurance Companies	1.2	3.8
Government	1.2	6.3
Outsider Individuals	0.8	2.1
Treasury Shares	0.7	1.1
Employees	0.3	0.2
Others	0.9	0.9
Total	100.0	100.0

For the definition of the variables cf. tables 2 and 3.

[a] Average of monthly market values of equity during 2003.

Table 7: Insider Ownership Deciles (2003)

	N	Mean Market Value of Equity (in EUR million)	Mean Freefloat Portion (in Percent)[a]
0% ≤ MB_SB_FBM < 10%	128	3.155	33.9
10% ≤ MB_SB_FBM < 20%	16	163	54.0
20% ≤ MB_SB_FBM < 30%	13	300	51.7
30% ≤ MB_SB_FBM < 40%	22	2.425	53.9
40% ≤ MB_SB_FBM < 50%	26	1.311	44.2
50% ≤ MB_SB_FBM < 60%	31	992	39.0
60% ≤ MB_SB_FBM < 70%	17	241	27.8
70% ≤ MB_SB_FBM < 80%	13	113	26.2
80% ≤ MB_SB_FBM < 90%	11	62	14.7
90% ≤ MB_SB_FBM < 100%	13	216	4.4
All Inside Ownership Deciles	290	1.859	36.0

For the definition of the variables cf. table 3.

[a] Unweighted cash flow rights.

Table 8: Difference in Means Tests (2003)

	Full Sample (n=290)	High MB_SB_FBM (n=145)	Low MB_SB_FBM (n=145)	t-statistics	
MB_SB_FBM	0.290	0.559	0.017		
BAHR	-7.140	-12.097	-2.221	0.955	
MTBV	2.024	2.030	2.018	-0.055	
ROA	2.747	3.198	2.307	-0.684	
BLOCK_O	0.320	0.072	0.569	15.801	***
BLOCK_NO	1.080	0.550	1.610	8.497	***
LN_ASSETS	12.875	12.295	13.443	4.738	***
FIRM_RISK	1.504	1.667	1.344	-1.398	
DEBT_RATIO	0.318	0.336	0.301	-1.050	
SALES_G	-0.009	0.022	-0.038	-1.318	
DIV	0.6000	0.590	0.610	-0.355	
MB_NO	3.270	3.010	3.510	2.380	**
VOTE	0.119	0.148	0.089	-1.735	*
CODET	0.320	0.190	0.440	4.705	***
INT_ASSETS	0.089	0.090	0.088	-0.183	

*, ** and *** indicate significance on the 0.10, 0.05 and 0.01 level (2-tailed; equal variances assumed); for the definition of the variables cf. table 3.

Table 9: Pearson Correlation Matrix (2003)

	BAHR	MTBV	ROA	MB_SB_FBM	BLOCK_O	BLOCK_NO	LN_ASSETS	FIRM_RISK	DEBT_RATIO	SALES_G
BAHR										
MTBV	0.294 ***									
ROA	0.309 ***	0.055								
MB_SB_FBM	-0.011	0.006	0.005							
BLOCK_O	0.159 ***	0.093	0.031	-0.678 ***						
BLOCK_NO	-0.054	-0.100	0.051	-0.507 ***	0.525 ***					
LN_ASSETS	0.306 ***	0.099	0.197 ***	-0.304 ***	0.110	0.181 ***				
FIRM_RISK	-0.348 ***	0.063	-0.200 ***	0.060	-0.161 ***	-0.115	-0.367 ***			
DEBT_RATIO	-0.326 ***	-0.349 ***	-0.279 ***	0.088	-0.143 **	0.095	0.079	0.091		
SALES_G	0.103	-0.070 **	0.149 **	0.088	-0.075	-0.039	0.005	-0.081	0.021	
DIV	0.461 ***	0.126 **	0.273 ***	-0.061	-0.061	0.042	0.483 ***	-0.419 ***	-0.161 **	0.012

The definitions of all variables can be found in table 3; *, ** and *** indicate significance on the 0.10, 0.05 and 0.01 level (2-tailed).

Table 10: OLS-Regression Results − I (2003)

Dependent Variable	BAHR		MTBV		ROA	
Model No.	(1)	(2)	(3)	(4)	(5)	(6)
Intercept	-137.945 *	-140.738 *	-0.685	-0.822	-6.214	-5.112
	(-1.728)	(-1.747)	(-673)	(-0.830)	(-1.135)	(-0.908)
MB	67.875 **		0.797		3.859	
	(2.265)		(1.516)		(0.934)	
SB	91.900 **		0.859 **		9.189 ***	
	(2.338)		(1.965)		(2.842)	
FBM	82.465 **		1.421 *		-0.581	
	(2.383)		(1.912)		(-0.184)	
MB_SB_FBM		82.590 ***		1.080 **		3.979
		(2.622)		(2.205)		(1.317)
BLOCK_O	93.402 ***	93.867 ***	1.107 **	1.128 **	0.773	0.653
	(3.367)	(3.342)	(2.383)	(2.433)	(0.392)	(0.320)
BLOCK_NO	-11.152 ***	-10.985 ***	-0.126	-0.123	0.734	0.736
	(-2.885)	(-2.837)	(-1.544)	(-1.502)	(1.141)	(1.151)
LN_ASSETS	9.415 ***	9.738 ***	0.175 **	0.186 ***	0.794 **	0.734 **
	(2.645)	(2.708)	(2.450)	(2.703)	(2.234)	(2.036)
FIRM_RISK	5.175	4.726	0.231 ***	0.222 **	-0.219	-0.188
	(0.494)	(0.452)	(2.708)	(2.564)	(-0.376)	(-0.304)
DEBT_RATIO	-79.910 ***	-80.448 ***	-1.978 ***	-2.024 ***	-11.533 ***	-11.027 ***
	(-4.359)	(-4.227)	(-4.838)	(-5.153)	(-3.766)	(-3.501)
SALES_G	28.175 *	26.629 *	0.333 *	0.302 *	3.996	3.970
	(1.924)	(1.804)	(1.947)	(1.745)	(1.605)	(1.582)
DIV	61.620 ***	60.492 ***	0.220	0.187	2.253	2.400 *
	(3.940)	(3.907)	(0.952)	(0.835)	(1.597)	(1.684)
Industry Dummies	Yes	Yes	Yes	Yes	Yes	Yes
n	247	247	235	235	246	246
R^2	0.406	0.404	0.231	0.227	0.243	0.221
R^2 adj.	0.362	0.366	0.171	0.174	0.186	0.170

Heteroskedasticity robust White (1980) estimators are used. The definitions of all variables can be found in table 3. *, ** and *** indicate significance on the 0.10, 0.05 and 0.01 level (2-tailed). In our base case model 2, four of the eight industry dummies (including the intercept) enter the regression model on a significant level of at least 0.05. We believe the model to be rather stable to variations in the selection of the control variables, since the variance inflation factors (VIFs) of all variables are below 4.0; excluding the industry dummies all VIFs are below 2.6 (not shown in the table).

Table 11: OLS-Regression Results – II (2003)

Dependent Variable	BAHR									
Model No.	(7)		(8)		(9)		(10)		(11)	
Intercept	-99.631		-109.954		-149.507		-120.092		-73.145	
	(-1.488)		(-1.547)		(-1.900)	*	(-1.533)		(-1.125)	
MB_SB_FBM	-77.025						101.220			
	(-1.104)						(3.023)	***		
MB_SB_FBM_SQ	188.738									
	(2.056)	**								
MB_SB_FBM_0to5			-92.188							
			(-0.227)							
MB_SB_FBM_5to25			-52.321							
			(0.502)							
MB_SB_FBM_25to100			138.756							
			(2.707)	***						
MB_SB_FBM_AV					548.478					
					(2.359)	**				
MB_SB_FBM_NO							-17.013			
							(-2.135)	**		
MB_SB_FBM_EUR									-0,004	
									(-1.335)	
BLOCK_O	72.449		76.192		83.595		82.980		53.585	
	(2.981)	***	(2.922)	***	(3.346)	***	(2.954)	***	(2.893)	***
BLOCK_NO	-9.102		-8.817		-11.307		-9.267		-15.622	
	(-2.323)	**	(-2.107)	**	(-2.850)	***	(-2.243)	**	(-3.292)	***
LN_ASSETS	7.849		8.312		11.224		8.805		7.705	
	(2.444)	**	(2.485)	**	(2.912)	**	(2.482)	**	(2.373)	**
FIRM_RISK	4.714		5.234		2.448		6.156		4.922	
	(0.515)		(0.523)		(0.285)		(0.589)		(0.413)	
DEBT_RATIO	-80.980		-82.698		-84.098		-83.212		-79.858	
	(-4.556)	***	(-4.596)	***	(-4.803)	***	(-4.407)	***	(-3.853)	***
SALES_G	27.965		26.560		27.635		25.790		29.212	
	(1,869)	*	(1.808)	*	(1.848)	*	(1.776)	*	(1,964)	**
DIV	66.068		65.364		57.904		62.384		61.269	
	(4.169)	***	(3.946)	***	(4.206)	***	(4.018)	***	(3.537)	***
Industry Dummies	Yes		Yes		Yes		Yes		Yes	
n	247		247		247		247		247	
R^2	0.427		0.417		0.413		0.413		0.372	
R^2 adj.	0.388		0.373		0.375		0.372		0.331	

Heteroskedasticity robust White (1980) estimators are used. The definitions of all variables can be found in table 3. *, ** and *** indicate significance on the 0.10, 0.05 and 0.01 level (2-tailed). Variations of the insider ownership thresholds in equation 6 were performed. However, the results are not shown because none of these variations delivered considerably better results than those by using the 5% and 25% thresholds originally used by Morck, Shleifer, and Vishny (1988). In model 7 the VIFs for MB_SB_FBM and MB_SB_FBM_SQ are 16.5 and 12.6 respectively indicating the presence of multicollinearity.

Table 12: OLS-Regression Summary Results – III (2003, 1998 and Pooled Sample)

Panel A: 2003

Dependent Variable	BAHR	MTBV	ROA
	n=247	n=235	n=246
MB	67.875 (2.265) **	0.797 (1.516)	3.859 (0.934)
SB	91.900 (2.338) **	0.859 (1.965) **	9.189 (2.842) ***
FBM	82.465 (2.383) **	1.421 (1.912) *	-0.581 (-0.184)
MB_SB_FBM	82.590 (2.622) ***	1.080 (2.205) **	3.979 (1.317)
R^2 adj.	0.362 / 0.366	0.171 / 0.174	0.186 / 0.170

Panel B: 1998

Dependent Variable	BAHR	MTBV	ROA
	n=220	n=212	n=215
MB	56.734 (1.554)	1.849 (1.706) *	5.556 (1.695) *
SB	70.968 (2.579) ***	1.282 (1.658) *	11.217 (1.947) *
FBM	75.251 (2.259) ***	-0.178 (-0.329)	7.773 (2.210) **
MB_SB_FBM	69.304 (2.580) ***	0.841 (1.299)	8.630 (2.632) ***
R^2 adj.	0.334 / 0.339	0.142 / 0.117	0.086 / 0.085

Panel C: Pooled Sample[a]

Dependent Variable	BAHR	MTBV	ROA
	n=467	n=447	n=461
MB	63.499 (2.694) ***	1.517 (2.318) **	3.488 (1.162)
SB	79.678 (3.059) ***	1.146 (2.835) ***	9.061 (2.471) **
FBM	79.574 (3.243) ***	0.785 (1.523)	2.609 (0.980)
MB_SB_FBM	75.747 (3.490) ***	1.079 (2.768) ***	5.258 (2.090) **
R^2 adj.	0.352 / 0.354	0.160 / 0.160	0.128 / 0.118

Only the coefficients of the insider ownership variables and their respective t-statistics as well as the number of cases and R^2 adj. are presented. All regression equations included the same control variables (LN_ASSETS, FIRM_RISK, DEBT_RATIO, SALES_G, DIV) and 7 industry dummies as the regression models in tables 10 and 11 which are not presented for the sake of clarity. Heteroskedasticity robust White (1980) estimators are used. The definitions of all variables can be found in table 3. *, ** and *** indicate significance on the 0.10, 0.05 and 0.01 level (2-tailed).
a 2003 and 1998 sub-samples pooled. Equations include a year dummy to account for differences between the sub-sample periods.

Table 13: Simultaneous Equation System – OLS- and 2SLS-Regression Results (Pooled Sample)

Dependent Variable	BAHR				MB_SB_FBM			
Model No.	(12) OLS		(13) 2SLS		(14) OLS		(15) 2SLS	
Intercept	-138.029		-289.245		0.810		0.767	
	(-3.947)	***	(-2.880)	***	(8.346)	***	(6.802)	***
MB_SB_FBM	75.747		239.348					
	(4.435)	***	(2.395)	**				
BAHR					0.000[a]		0.000[b]	
					(3.899)	***	(0.165)	
BLOCK_O	63.030		146.035		-0.526		-0.513	
	(4.570)	***	(2.855)	***	(-18.235)	***	(-16.927)	***
BLOCK_NO	-3.858		4.427		-0.045		-0.048	
	(-1.059)		(0.689)		(-4.723)	***	(-4.771)	***
LN_ASSETS	10.947		16.367		-0.021		-0.015	
	(5.057)	***	(3.978)	***	(-2.564)	**	(-1.293)	
FIRM_RISK	3.063		2.961		0.002		-0.000	
	(0.809)		(0.708)		(0.241)		(0.043)	
DEBT_RATIO	-75.739		-67.262		-0.017		0.047	
	(-5.147)	***	(-3.952)	***	(-0.404)		(-0.758)	
SALES_G	31.356		32.913		-0.026		-0.011	
	(3.925)	***	(3.721)	***	(-1.189)		(-0.412)	
DIV	52.304		51.547					
	(6.441)	***	(5.727)	***				
YEAR_1998	4.583		7.412		-0.024		-0.022	
	(0.653)		(0.936)		(-1.245)		(-1.109)	
MB_NO					-0.009		-0.010	
					(-1.349)		(-1.466)	
VOTE					-0.017		-0.006	
					(-0.602)		(-0.187)	
CODET					-0.067		-0.073	
					(-2.866)	***	(-2.805)	***
INT_ASSETS					-0.230		-0.212	
					(-2.187)	**	(-1.955)	*
Industry Dummies	Yes		Yes		Yes		Yes	
n	467		447		473		238	
R^2	0.376		0.323		0.663		0,634	
R^2 adj.	0.354		0.299		0.649		0,602	

The definitions of all variables can be found in table 3. *, ** and *** indicate significance on the 0.10, 0.05 and 0.01 level (2-tailed).
[a] The exact value is $4.696 \; x \; 10^{-4}$.
[b] The exact value is $7.519 \; x \; 10^{-5}$.

Table 14: Endeogeneity of Insider Ownership – OLS-Regression Results (Pooled Sample)

Dependent Variable	MB_SB_FBM			
Model No.	(16) OLS		(17) OLS	
Intercept	0.810		0.517	
	(8.508)	***	(5.223)	***
BAHR	0.001		0.001	
	(3.712)	***	(3.550)	***
MB_SB_FBM_LAG			0.003	
			(7.068)	***
BLOCK_O	-0.526		-0.436	
	(-22.000)	***	(-14.489)	***
BLOCK_NO	-0.045		-0.030	
	(-5.180)	***	(-3.715)	***
LN_ASSETS	-0.021		-0.011	
	(-2.523)	**	(-1.400)	
FIRM_RISK	0.002		0.002	
	(0.199)		(0.110)	
DEBT_RATIO	-0.017		-0.003	
	(-0.376)		(-0.075)	
SALES_G	-0.026		-0.028	
	(-1.157)		(-1.408)	
YEAR_1998	-0.024		-0.013	
	(-1.278)		(-0.743)	
MB_NO	-0.009		-0.008	
	(-1.407)		(-1.349)	
VOTE	-0.017		-0.040	
	(-0.728)		(-1.820)	*
CODET	-0.067		-0.056	
	(-3.049)	***	(-2.694)	***
INT_ASSETS	-0.230		-0.220	
	(-2.016)	**	(-2.132)	**
Industry Dummies	Yes		Yes	
n	473		456	
R^2	0.663		0.717	
R^2 adj.	0.649		0.704	

Heteroskedasticity robust White (1980) estimators are used. The definitions of all variables can be found in table 3. *, ** and *** indicate significance on the 0.10, 0.05 and 0.01 level (2-tailed).