# Three essays on corporate control

by

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*To Emilie and Lars*

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# 1 Introduction

This dissertation consists of the three papers “Stakeholder rights and economic performance: The profitability of nonprofits”, “Stakeholder conflicts and dividend policy: A cleaner test”, and “Ownership and the decision to go public”.

A fundamental question in economics is how economic activity should be organized. Seminal work by (Jensen & Meckling, 1976) suggests that the firm may be considered as a nexus of contracts between the firm's stakeholders. Suppliers of goods and capital contract with customers and workers, and the firm can be thought of as this bundle of contracts. Ownership rights (i.e., control rights and cash flow rights) can, in principle, be assigned to any of these stakeholders, or shared between them. [1]

In the modern capitalist society, the stockholder owned firm is very prevalent. According to (Hansmann, 1996), the stockholder owned firm can be viewed as a cooperative ownership structure, where ownership rights are assigned to the suppliers of capital. Fundamentally, this organizational form is not different from a cooperativ owned by for example suppliers of other input factors, or by customers. Indeed, large parts of the economy are run by firms owned by other stakeholder groups than capital providers. In fact, some firms are organized as nonprofits which means they have no owners whatsoever.

Each ownership structure comes with its own costs. These costs include contracting costs between owners and non-owners, coordination costs between owners, and costs related to delegated management. A rich literature has evolved describing how these costs can be minimized. (Fama, 1980) argues that in large organizations, the main mechanism for discipline and control of management is the competitive environment in which the firm operates.

This dissertation looks at this fundamental governance issue from three angles. First, we shed some light on the question of what is the optimal organizational form. We document that firms with very different governance structures successfully compete in a single industry (paper 1). Then we go on to investigate how the stakeholders that do control the firm treat non-controlling stakeholders. We find that controlling stakeholders use their power carefully not to alienate non-controlling stakeholders (paper 2). Finally, we investigate what makes the firm's controlling owners willing to relinquish some of their ownership rights. Our findings suggest that owners with large holdings are more reluctant to take their firm to the public market (paper 3).

[1] Like (Hansmann, 1996), we use the term owner for someone who has both formal control rights and residual cash flow rights in the firm.

The public, stockholder owned firm with delegated control has been thoroughly analyzed in the literature. In this dissertation we depart from the standard setup and look at privately held and nonprofit firms. We find that they can successfully compete with stockholder owned firm. Private and nonprofit firms enjoy benefits from not being under the scrutiny of the public capital market, while they are disciplined by substitute governance mechanisms, like product market competition and leverage.

## 1.1 Stakeholder rights and economic performance: The profitability of nonprofits

A common view in the UK and the US is that firms should maximize profits, and that residual claimants should hold all the ownership rights. In contrast, conventional wisdom in Continental Europe, Japan, and Scandinavia is that firms should have multiple goals and allocate ownership rights to more stakeholder types than just the residual claimants.

The standard corporate governance model suggests that firms with shareholder wealth maximization as their only goal will be more profitable than firms with multiple goals. The existing literature has barely addressed this question empirically. Rather, it has analyzed extensively whether cross-sectional differences in ownership structure correlate with differences in performance. Moreover, these studies only compare firms that all have owners, i.e., stakeholders who possess both components of the ownership right. Therefore, the current empirical literature leaves unanswered the more fundamental question of whether firms need owners for governance reasons in the first place. That question cannot be answered unless firms with owners are compared to firms that do not have owners.

We address this issue empirically by exploring whether the allocation of ownership rights among the firm's stakeholders matter for its economic performance. In our sample we include two types of firms: Firms where the ownership rights are held by the suppliers of capital (the stockholder owned firm) and firms which have no owners, and where the control rights (but no cash flow rights) are distributed to a wide range of stakeholders (the nonprofit firm). Both types of firms compete in the same industry and are facing the same regulatory regime. Hence we are able to compare the relative performance of firms with two very different corporate governance structures.

Surprisingly, we find that nonprofit firms are no less profitable than shareholder owned firms. This supports the idea that managers of firms with potential agency problems can be disciplined by other governance mechanisms than monitoring by owners. We find evidence suggesting that product market competition plays such a substitute role. We conclude that once one account for the disciplining effect of competition on firm behavior, organizational form is no longer a primary determinant of performance.

## 1.2 Stakeholder conflicts and dividend policy: A cleaner test

Two types of potential conflicts of interest (agency problems) between the firm's stakeholders are common. The first agency problem is between the firm's owners and management. Stockholders may worry that management follows their own agenda, which might not be to the benefit of the firm's stockholders. In other words, management may extract control benefits at the expense of the owners. The second agency problem might arise between large controlling owners and small minority owners. The large owners may choose to use their power to divert firm assets to their own best use at the expense of the minority. This may for example happen in related party transactions (tunneling).

Both types of potential conflict of interests bare costs for the firm. For instance, under the second agency problem, minority shareholders may be reluctant to provide the firm with new equity financing. This will increase the cost of capital and decrease the firm's investments in labor and productive assets.

Dividend policy can be used to influence these two types of agency costs. Firms with dispersed shareholdings are likely to have a more intense conflicts between management and owners (the first agency problem). If dividend policy is being used to alleviate this cost, we would expect higher dividends from firms with more dispersed shareholding. On the other hand, if ownership becomes more concentrated, the second agency problem will become more costly. If a majority owner wants to use dividend policy to alleviate this cost, firms with concentrated ownership will pay higher dividends.

There is an existing literature investigating how dividend policy is used to influence these two agency costs. However, most empirical papers relate stakeholder conflicts to dividend policy by regressing the firm's payout ratio on its ownership concentration. Unfortunately, this approach ignores that fact that the two existing dividend theories (the substitution model and the outcome model) makes opposite predictions for how ownership concentration relates to dividend payments under the two agency problems. By allowing ownership concentration to vary widely across the sample firms, the relative importance of the two agency problems also varies. Therefore, it is difficult to tell which dividend theory is consistent with the data.

We study an environment where the conflicts between large and small owners is small because a binding legal constraint makes ownership concentration low in every firm. In contrast, the potential seriousness of the conflicts between owners and non-owners varies more than usual, due to differences in organizational form. In one firm type, majority control is allocated to the owners, while in the other it is allocated to non-owner stakeholders (employees, customers, and community citizens). Thus,

ownership concentration is unusually low in both firm types, and owners are strong relative to other stakeholders in one firm type and weak in the other. Overall we find that the larger the potential agency problem, the more of the firm's earnings is paid out as dividends. This supports the notion that dividend policy is used to mitigate agency costs.

## 1.3 Ownership and the decision to go public

The going public decision involves a choice by current owners to give up some or all of the control benefits they consumed while the company was private. There is a rich theoretical literature explaining the decision to go public. However, the question is so far not well explored empirically. The main challenge in an empirical study is lack of detailed data on private firms. It is obviously problematic that one does not observe historical accounting information, ownership structure, and other characteristics for IPO firms prior to the listing date. However, it is equally limiting not to observe the firms that decide to stay private. The main contribution of this paper is to analyze the determinants of the IPO decision using data where this information is available for a very large sample of private firms over an extensive time period.

In related studies, firms are observed for a particular reason which is not directly related to the IPO. For example, it may study firms that have a relationship with particular banks, firms with publicly traded debt, firms in the manufacturing industry, or firms that are public, but decide to go private. The existing studies suffer from not observing all firms that might go public, but choose not to. Also, it is generally difficult to observe ownership structure for firms that stay private. These studies find support for the idea that firms do an IPO to access the public capital markets, to acquire other firms, and to adjust their capital structure after a period of high investments.

Our data allow us to perform a detailed study of firms that decide to go public as well as of firms that decide to stay private, independently of the firm's specific setting. We use accounting information and ownership structure data for all limited liability firms incorporated in Norway.

We corroborate earlier findings that firms go public to access the capital markets. Moreover, we find new evidence supporting the idea that large owners keep their firms private to enjoy control benefits. Our results suggest that their opportunity to consume control benefits decrease when the firm is highly levered. This suggest high leverage is a control mechanism. Also, we find that having institutional owners make the firms more likely go public.

# 2 Stakeholder rights and economic performance: The profitability of nonprofits[1]

With Øyvind Bøhren


## Abstract

This paper explores whether ownership matters in a fundamental sense by comparing the performance of stockholder-owned firms to the much less analyzed nonprofit firms. No stakeholder has residual cash flow rights in nonprofit firms, and the control rights are held by customers, employees, and the community. Accounting for differences in size and risk and only comparing firms within the same industry, we find that stockholder-owned firms do not outperform nonprofits. This result is consistent with the notion that the governance function of residual claimants may be successfully replaced by other mechanisms. We find evidence that product market competition plays this role as a substitute disciplining device.



Keywords: Corporate governance, stakeholders, ownership, nonprofits, competition, banks

JEL classification codes: G21, G34



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## 2.1 Introduction

The objective of the firm and the allocation of ownership rights (i.e., control rights and residual cash flow rights) among its stakeholders are two related issues that attract considerable public attention. A common view in the UK and the US is that firms should maximize profits, and that residual claimants should hold all the ownership rights (Macey & O'Hara, 2003). In contrast, conventional wisdom in Continental Europe, Japan, and Scandinavia is that firms should have multiple goals and allocate ownership rights to more stakeholder types than just the residual claimants (Allen, Carletti, & Marquez, 2009).

Our paper addresses this issue empirically by exploring whether the allocation of ownership rights among the firm's stakeholders matters for its economic performance. We focus on socalled nonprofit firms, in which no stakeholder has both control rights and residual cash flow rights (Hansmann, 1996). In addition, the nonprofit firms in our sample have multiple objectives. This setting allows us to test the agency-inspired prediction that returns to capital invested in nonprofit firms with multiple objectives will be lower than in firms that are controlled by residual claimants and have maximum profits as the only goal (Jensen & Meckling, 1976). We find that this hypothesis is not carried out in the data, and we analyze the economic mechanisms which may be driving this result.

The existing literature has barely addressed this question empirically. Rather, it has analyzed extensively whether cross-sectional differences in ownership structure correlate with differences in performance (see (Becht, Bolton, & Röell, 2003) for a survey). Moreover, these studies only compare firms that all have owners, i.e., stakeholders who possess both components of the ownership right (Hansmann, 1996). Therefore, the current empirical literature leaves unanswered the more fundamental question of whether firms need owners for governance reasons in the first place. That question cannot be answered unless firms with owners are compared to firms that do not have owners. By definition, nonprofits have no owners, as no stakeholder in such a firm can have both control rights and cash flow rights. Although called nonprofits, these firms can still make profits. However, the profits cannot be distributed to stakeholders with control rights. Consequently, our empirical setting allows us to compare the performance of profit-maximizing firms with owners to the performance of multiple-objectives firms without owners.[2]

[2] Empirical tests of stakeholders and corporate governance have not focused on the firm's performance, but its behavior, such as productive efficiency (Mester, 1991), pricing strategy (Ashton & Letza, 2003; Cummins, Rubio-Misas, & Zi, 2004), risk taking (Esty, 1997a; 1997b), cost minimization (Mester, 1989), transition between organizational forms (Ostergaard, Schindele, & Vale, 2009), and governance

Understanding the governance of nonprofits is also useful per se, as these firms play a significant role in the economy. For instance, estimates from the US in the 1990s show that nonprofits account for 64% of hospital care, 56% of day care for children, 20% of college and university education, and 10% of primary and secondary training (Hansmann, 1996, p.227).

We do not analyze why the different organizational forms in our sample actually exist. For instance, contracting theory shows that firms may not be most efficiently owned by their capital providers, but rather by other stakeholders, such as suppliers, customers, and employees. Such an allocation of ownership rights is more efficient the stronger the firm's market power over these stakeholders, the more firm-specific their human capital, and the less symmetric the information between the contracting parties (Hansmann, 1996). To ensure a sufficient focus of the paper, we take the variation in observed organizational forms as exogenously given. To ensure a homogenous contracting environment across the sample firms, they are all taken from the same industry.

We use firm-level data from the population of Norwegian banks, which differ widely in how cash flow rights and control rights are distributed among the stakeholders. One firm type is the standard stock company. These are commercial banks, where profit maximization is the goal, stockholders have all the cash flow rights, and stockholders control the board. In contrast, no stakeholder has cash flow rights in an ownerless (nonprofit) bank. That is, nobody can claim the firm's assets and the free cash flow once the creditors have been paid off. The ownerless firms in our sample also have multiple objectives, and the control (voting) rights are shared by the employees, customers, and community citizens. There is also a third firm type in the sample which is a mixture of the two pure types. The three firm types have equal access to the same, unsegmented product market and operate under the same regulatory regime.

The power of our tests is increased by this combination of high heterogeneity in stakeholder structure and low heterogeneity in contracting environment, market opportunities, and regulation. If a key to economic success involves profit maximization as the goal and control by residual claimants as a governance mechanism, this should at least show up as performance differences between firms that operate in the same

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activity (Crespi, Garcia-Cestona, & Salas, 2004). Moreover, the stakeholder structures are quite homogenous across sample firms in these studies. With very few exceptions (Crespi, Garcia-Cestona, & Salas, 2004; Ostergaard, Schindele, & Vale, 2009), the analyzed firms have at least one stakeholder with both cash flow rights and voting rights, such as equity investors in regular stock companies, depositors in S&Ls, policy-holders in insurance mutuals, and producers in cooperatives. Thus, all these firm types have owners.

environment, but represent the largest possible difference in objectives and control structure.

Specifically, the agency logic suggests that compared to profit-maximizing firms controlled by stockholders, ownerless firms with multiple objectives have a double handicap regarding their ability to produce high returns to capital invested. Therefore, commercial banks should produce higher returns than other banks because their owners monitor the management team and because concern for non-owner stakeholders may be costly for the owners. The performance of the hybrid banks should be somewhere in between the two pure types.

Our major finding is that owned banks do not outperform ownerless banks. This result does not imply that stockholders produce no value beyond providing capital. However, it does suggest that other mechanisms can successfully replace the governance function of residual claimants. That is, managers of ownerless firms may be efficiently disciplined by substitutes for ownership.

The three owner substitutes we consider are regulation, capital constraints, and product market competition. First, it may be argued that the public banking supervisor has a monitoring function because it supervises all firms in our sample. However, supervisors do not mimic the governance role of stockholders, as the supervisors' job is to limit the downside risk and ensure firm survival rather than encourage the highest possible return to capital invested. Second, one may argue that because ownerless banks cannot raise equity, the lacking access to such funding makes ownerless banks less prone to agency-induced overinvestment. We find no empirical support for this explanation.

The third potential substitute for owner monitoring is the need to perform under competitive pressure. It has been argued repeatedly that only efficient firms survive when competition is strong (Machlup, 1967; Schmidt, 1997). (Giroud & Mueller, 2010; 2011) have recently given empirical support to this idea in a corporate governance setting. For instance, they show in their sample of stockholder-owned firms that monitoring by owners and product market competition are substitute governance mechanisms. In fact, governance quality matters for operating efficiency only in non-competitive markets. In our setting, which is more general by also involving nonprofits, the corresponding argument would be that competition disciplines a firm regardless of its stakeholder structure. Therefore, ownerless firms will only persist in competitive markets if they perform as well as owned firms. By disciplining all firms, competition mitigates the governance handicap of ownerless firms. We find support for this interpretation of our major finding, using firm-level data on the relationship between firm performance and competitive pressure.

We conclude that the observed relationship between stakeholder structure and economic performance is inconsistent with the agency logic.

This suggests there is a serious challenger to the classic organizational form of enterprise that assigns full control rights and cash flow rights to the capital providers of profit-maximizing firms. Neither the one-dimensional objective of profit-maximization nor the stockholders' monitoring function of management may be critical for creating high returns to capital invested. In either case, competitive markets may be the underlying mechanism that does the job in the absence of residual claimants.

Section 2 in the following describes the governance structure of the three firm types, and section 3 presents the data set and key industry characteristics. We analyze the economic performance in section 4, while section 5 summarizes and concludes.

## 2.2 Firm types and governance structures

The ownerless firms in our sample are pure savings banks (*sparebank*), which are controlled by depositors, employees, and the local government. These firms should not be confused with mutuals, which are not ownerless, but owned by their customers, suppliers or employees. Thus, ownerless banks are fundamentally different from S&Ls in the US, which are consumer cooperatives mutually owned by their depositors. However, our ownerless savings banks resemble the so-called mutual savings bank in the US. Despite their name, these banks are in fact ownerless firms, as no stakeholder has residual cash flow rights.

Commercial banks (*forretningsbank*) are listed companies fully owned by stockholders. The third type, which we call a PCC bank (*grunnfondsbank*), has voluntarily transformed itself from an pure savings bank into a hybrid form by issuing Primary Capital Certificates (hence PCC). These are regular equity securities with voting rights and residual cash flow rights, providing returns in terms of dividends and capital gains. Like the equity security in commercial banks, PCC securities are held by the general public and are most often publicly listed. Thus, a PCC bank is partly ownerless, partly owned.

Given these differences in stakeholder structure, it is no surprise that the objective function varies across the three organizational forms. Commercial banks have profit maximization as their goal, whereas ownerless savings banks (hereafter non-PCC banks) have multiple goals. Other goals beyond making profits include promoting saving in society and offering bank services to a wide range of citizens. The hybrid PCC banks also have multiple goals, but the objective function also reflects that stockholders own part of the equity. Non-PCCs distribute on average 4% of their earnings for social purposes over the sample period. PCCs distribute 1%, whereas the figure for commercial banks is not available.

Table 1 shows how control (voting) rights and cash flow rights are distributed among the four stakeholders in the three firm types. The

ownerless non-PCC bank has a committee of representatives with members appointed by the employees (25% of the votes), depositors (37.5%), and community citizens (37.5%). This committee elects the board, and the two bodies jointly hire and fire the CEO. No stakeholder has residual cash flow rights.

Commercial banks have stockholders who write the corporate charter and hold 73% of the votes for appointing directors. [3] Stockholders have a 100% claim on the residual cash flow. The holders of PCC securities are owners with a fractional claim on the residual cash flow. This fraction corresponds to their share of the book equity, which varies between 5% and 92% across the sample. The remaining fraction is the ownerless equity. The owners' voting right is 25% by law. All three bank types have a two-tiered board structure. Except for charter amendments, which require a two thirds majority, all decisions in both tiers are made by simple majority.

The first Norwegian ownerless savings bank was established in 1822, followed by the first stockholder-owned commercial bank in 1848. New regulation in 1985 allowed for the first conversion by an ownerless savings bank (non-PCC) to a PCC bank in 1988. Germany (Krahnen & Schmidt, 2004), Norway, and Spain (Crespi, Garcia-Cestona, & Salas, 2004) are the three European countries in which savings banks have a prevalent position in the economy, accounting for roughly half the banking assets. Only Norway and Spain have ownerless banks, as German savings banks are owned by local governments. Unlike in Norway, the founders of Spanish ownerless banks are on the board.[4] PCC banks only exist in Norway, but recent regulation has opened up for PCCs in Spain as well.

Norwegian banks went through a systemic crisis in 1988-1992 (Moe, Solheim, & Vale, 2004). The first bank failure occurred in the fall of 1988, 13 small and medium sized banks failed in 1988–1990, and large commercial banks started failing towards the end of 1990. As government support of distressed banks sometimes required the write-off of existing equity, the three largest commercial banks came under full state ownership in 1992. The industry regained profitability in 1993, and the state gradually reduced its ownership thereafter. By the end of our sample period, the state

[3] Limited liability firms with more than 200 employees are required by law to have one third of their directors elected by and among the employees. Special regulation reduces this fraction to 27% in commercial banks. All commercial banks in our sample have more than 200 employees.

[4] No existing study of Spanish banks relates the stakeholder structure to value creation. Some do not distinguish between owned banks and ownerless banks (Fuentelsaz, Gomez, & Polo, 2002; Maudos, 1998; Prior, 2003). Those who do focus on differences in governance activity (Crespi, Garcia-Cestona, & Salas, 2004), cost efficiency (Grifell-Tatje & Lovell, 1997; Maudos & Pastor, 2003; Tortosa-Ausina, 2002a; 2002b), and credit risk (Salas & Saurina, 2002).

held a 47.8% stake in the largest commercial bank and had sold all their shares in the two others.

## 2.3 Industry characteristics

All banks in our sample have access to the same, unsegmented product markets throughout the sample period. There are no major regulatory barriers preventing the banks from entering each others' product markets or geographical regions. The three bank types are subject to the same capital coverage constraints and reporting requirements. They are monitored by the same public banking inspector according to the same set of monitoring principles. Thus, neither their business nor their regulatory environment suggests that the potential for consuming private benefits differs systematically across the three bank types.

Our data set includes every Norwegian savings bank (non-PCC and PCC) and all listed Norwegian commercial banks from 1985 to 2002. There are 2668 firm years, of which non-PCC banks, PCC banks, and commercial banks account for 2288, 214, and 166, respectively. As shown by panel (a) of table 2, the number of non-PCC banks and commercial banks drops over time from 191 to 103 and from 15 to 2, respectively. The number of PCC banks grows from 3 to 24. The drop in the number of non-PCC banks is mainly a result of conversion to PCC banks and national industry consolidation, while the drop in the number of commercial banks is a result of national and Nordic industry consolidation.

Panel (b) of table 2 shows total bank assets across bank types. Savings banks as a group (i.e., PCCs and non-PCCs) gain market share over the sample period, but non-PCCs gradually lose market share to PCCs, primarily because large non-PCCs convert to PCCs. Whereas aggregate PCC assets are just half of non-PCC assets in 1988, they are almost three times bigger in 2002. Descriptive statistics for size per bank is reported in panel (c). Every distribution reflects that each type includes a few unusually large banks. The median commercial bank is about five times larger than a PCC bank, which is twelve times the size of a non-PCC. This suggests that controlling for differences in firm size is potentially important in empirical tests.

Table 3 shows that interest rates on deposits do not differ systematically between bank types. However, the average lending rate on home mortgages, which is the largest asset in every bank type, is lower in commercial banks every year except the first. Thus, the average interest margin is higher in stakeholder-oriented firms, reflecting a less aggressive pricing policy.

Since non-PCC banks are not listed, we cannot use market returns to estimate risk measures like stock beta or the volatility of stock returns. Instead, we use accounting figures for all three bank types. Following (Esty,

1997a; 1997b), our basic risk measures are estimated from the balance sheet, using the composition of the assets and liabilities to proxy for asset risk and liability risk, respectively. As a robustness check, we measure risk by the volatility of asset returns in section 4.2.

Panel (a) of table 4 describes the asset structure across bank types. We divide the assets into seven categories and construct averages by value-weighting across firms per year and equally-weighting across years. The risk of the assets is generally increasing from left to right in the table. The figures show that ownerless banks hold less risky assets than other banks. Amortizable loans, which is the largest asset component in every bank type, is much higher in savings banks than commercial banks (75% vs. 49%). Short-term assets, which are the second largest asset component for every bank type, are slightly more common in commercial banks (21% vs. 17%).

We classify the liabilities into four categories. Liability risk is higher the more the bank is financed with debt, and the more risky the components of the debt.[5] This means that in panel (b) of table 4, liability risk increases from left to right. The table shows that ownerless banks have more equity than other banks.[6] Also, the composition of the debt reflects a lower tendency by ownerless banks to take on risk. They rely much more on deposits (75% vs. 47%), use less subordinated debt, borrow less in the interbank market, and finance less from other debt sources. Thus, non-PCC banks fund their assets more by deposits and less by market borrowing than commercial banks. PCC banks are roughly midway between the two.[7]

This observed relationship between stakeholder structure and bank behavior is generally consistent with the existing theory and empirics. For

[5] Because deposits are insured by a fund collectively financed by the banks, and because the government is a lender of last resort, there is no deposit risk for customers. As Due to banks and Other liabilities represent market funding, these liabilities are sensitive to interest rate movements and may also be more costly to roll over under adverse market conditions. Thus, banks relying more on market funding are generally more risky.

[6] Equity was about 7% for non-PCCs and 3% for the other two types when the banking crisis ended. All bank types and particularly non-PCCs become permanently less leveraged afterwards. Regulation says total liable capital must be at least 8% of total risk-weighted assets. This ratio may differ considerably from the corresponding ratio based on unweighted assets.

[7] To check these relationships more formally, we estimate a multinomial logit model that predicts bank type from the bank's size, growth, and balance sheet structure in any given year. The model is estimated separately for the whole period (1985-2002), the crisis years (1988-1992), and the post-crisis period (1993-2002). The results, which are available upon request, support the impression from table 4. For instance, over the period as a whole and also during the crisis, the probability that a randomly selected bank is a commercial bank rather than a non-PCC is significantly higher the larger the bank and the more risky its liabilities.

instance, (Allen, Carletti, & Marquez, 2009) show theoretically that if a firm starts internalizing their employees' private layoff costs under financial distress, it will take less risk, reduce size, and price its products less aggressively. (Esty, 1997b) finds empirically that when depositor-owned S&Ls in the US convert to stockholder-owned commercial banks, they take on more risk.[8]

In summary, the ownerless non-PCC banks are generally smaller and carry less risk on both sides of the balance sheet than banks that stockholders own fully (commercial banks) or partially (PCC banks).[9] The three bank types are subject to the same regulatory constraints, operate in the same unsegmented product markets, and are not protected by major barriers to entry.

[8] The banking literature generally shows that customers and owners may disagree on what constitutes the bank's optimal size and risk-taking. First, banking relationships are valuable for the customers and particularly for start-up firms with limited access to alternative debt financing. This has been shown both theoretically (Bhattacharya & Chiesa, 1995; Boot & Thakor, 1994; Campbell, 1979; Diamond, 1991; Fama, 1985; Rajan, 1992; Von Thadden, 1995; Yosha, 1995) and empirically (Hubbard, Kuttner, & Palia, 1999; Ongena, Smith, & Michalsen, 2003; Slovin, Sushka, & Polonchek, 1993). Second, (Karceski, Ongena, & Smith, 2005) document that customers may be adversely affected when a bank is insolvent or merge. Third, (Berger & Udell, 1995; Peek & Rosengren, 1996) show that as banks grow, they reduce the supply of loans to small businesses. Fourth, (Stein, 2002) provides a theoretical explanation for a size effect in lending, where large banks lend to large firms and small banks lend to small firms in equilibrium. Finally, the risk effect also follows from the options pricing model (Black & Scholes, 1973). This implies that because equity is a call option on the underlying assets, higher asset volatility increases the value of equity at the expense of other claimholders. Therefore, unlike non-PCC banks, a commercial bank may act in its owners' best interest by increasing cash flow volatility without rewriting the contract with its non-owner stakeholders.

[9] Differences in stakeholder structure may not be the only reason why balance sheets differ. First, because commercial banks are much larger than savings banks, they may be tempted to take excessive risk. However, this moral hazard problem of feeling too big to fail is not due to the stakeholder structure, but to the regulator's concern for credit contagion. Second, non-PCCs may have low risk because they cannot raise new equity. Unlike the two other types, they may have to keep higher equity buffers and hence lower liability risk to protect themselves from adverse effects of market downturns. Finally, non-PCCs that want to grow and take more risk may decide to become PCCs. These two last explanations may bias our results towards finding larger size and risk differences between bank types than what is justified by their stakeholder structures. We cannot address the potential moral hazard problem, but section 4.3 shows that lacking access to new equity is not a binding constraint in non-PCCs. Neither do we find that endogeneity in terms of self-selection explains why non-PCC and PCC banks differ.

## 2.4 Stakeholders and performance

There are no observable market values for non-PCC banks. Hence, we choose book return on assets (ROA) as the basic performance measure. ROA is operationalized as net income divided by the book value of assets. We use net income in the numerator of ROA because net income is after funding costs, i.e., interest paid on liabilities. Funding costs are typically 75% of a bank's total costs in our sample. Thus, gross ROA (i.e., ROA based on income before funding costs) would ignore the major driver of a bank's competitive cost advantage, which is its funding ability. Also, income before funding costs is completely dominated by the bank's interest income. This implies that gross ROA moves in tandem with the general level of interest rates, independently of the bank's ability to create returns on capital invested.

Both distortions are absent in our (net) ROA measure. Not surprisingly, this is also a common performance measure in the banking literature (e.g., Berger, DeYoung, Genay, & Udell, 2000; Crespi, Garcia-Cestona, & Salas, 2004; Esty, 1997a; 1997b). We will still analyze alternative performance measures in section 4.2, including gross ROA and return on equity.[10] Notice that because our ROA is net income divided by total assets, it will produce lower return figures than gross ROA. For the same reason, it cannot be meaningfully compared to standard benchmarks like the riskless rate or the market risk premium.

Panel (a) of table 5 shows the average ROA across bank types and years. Ownerless banks have the highest performance over the period as a whole, being 0.88% in non-PCC banks, 0.41% in PCCs, and 0.32% in commercial banks, respectively. Non-PCCs have higher average ROA than commercial banks in 15 of the 18 sample years, and PCC banks are considerably closer to commercial banks than to non-PCCs.[11] However, panel (b) shows that the statistical significance of these performance differences is much weaker after the banking crisis (which occurred in 1988-1992) than before and during the crisis. Thus, the average performance does not differ systematically across the three groups outside the crisis period, and commercial banks were most negatively hit by the crisis. The latter observation is not surprising, given our earlier finding that commercial banks

[10] Although return on equity is a more direct performance measure from the stockholders' perspective, it is unsuitable in our context because its denominator is periodically very low and even negative in the crisis years. This produces very volatile and sometimes meaningless figures. For instance, average return on equity in commercial banks is –152% in 1991 and 18% in 1997, and one commercial bank had equity of –11.5 bill. NOK in 1989.

[11] A study of governance activity in Spanish banks over a similar period finds higher average ROA in ownerless savings banks (1.28%) than in stockholder-owned commercial banks (1.13%) (Crespi, Garcia-Cestona & Salas, 2004, table 2).

pursue more risky investment and financing strategies. This makes their ROA move more strongly with overall market movements.

Thus, as expected, ownerless banks do better relative to other banks the weaker the market conditions. The surprising feature in table 5 is that at least according to the raw ROA figures, ownerless banks are on average not outperformed by partially or fully owned banks in more normal times.

### 2.4.1 The base case

Since we have repeated observations for the same firm over time, we use a random effects model to account for unobserved firm effects in the panel. We use year dummies to capture unobserved industry effects on the performance of the banking sector as a whole (Hsiao, 2003). The robustness tests in section 4.2 will explore what happens when we ignore these unobservable firm and industry effects. We estimate the model separately for the full sample period (1985-2002), the banking crisis years (1988-1992), and for the post-crisis period (1993-2002).

The base case model is estimated in table 6. PCC and Com are the two key variables in the model. Both are dummy variables that equal one if the bank is of the said type and zero otherwise. Thus, both are zero for a non-PCC bank. The agency logic predicts that the two dummy variables have positive coefficients, and that the commercial bank coefficient is the more positive of the two.

As for control variables, we proxy for asset risk by the ratio 1- ((cash+amortizable loans+fixed assets)/total assets) and for liability risk by 1- (due to customers/total assets). Although we have to deal with accounting returns from operations rather than market returns on traded securities, we still expect that unless the banking industry is grossly out of equilibrium over extended periods, risk and return are positively related also in an accounting sense. Thus, we predict positive coefficients for the two risk proxies. Since the evidence on scale economies in banking is ambiguous (Berger & Humphrey, 1995; Hughes, Mester, & Moon, 2001), we do not predict the sign for the size coefficient. Notice, however, that the size proxy may account for the alternative explanation that although ownerless banks have a governance handicap, this is mitigated by the benefit of being small in an industry with diseconomies of scale. This logic predicts a negative coefficient for the size proxy and positive coefficients for the two bank dummies.

According to the first column of results, which shows the estimates for the full period, the model explains 31% of the variation in ROA, and the model as a whole is highly significant. After having accounted for risk and size differences, the estimates show that a non-PCC bank is expected to outperform a PCC bank by 0.18 ROA units and a commercial bank by 0.77. The riskiness of the assets and the liabilities are both positively related to

returns, and there are diseconomies of scale. All these findings are statistically significant by wide margins. The second column of results estimates the basic model over the crisis years. Every sign is maintained, and both the economic and statistical significance increase considerably except for asset risk. Thus, what holds for the full sample period is even more pronounced in the systemic crisis. This supports the notion that the lower risk of non-PCC banks makes them do better than other banks in downturns.

The right column shows that the result for the full period is driven by the exceptional crisis years. Although the coefficients of the bank type dummies keep their negative sign, they are much smaller, the commercial bank dummy is no longer significant, and the PCC dummy is only significant at 9%. Thus, there is no obvious performance difference between bank types after the crisis.[12]

The remarkable result is that owned banks do not outperform ownerless banks in normal times. This suggests the governance of ownerless firms is not inferior to that of owned firms. In the following, we first analyze the robustness of the base-case result. Next, we explore substitutes for the governance role of the missing owners in ownerless firms.

### 2.4.2 Robustness

We analyze the robustness of the base-case by (i) applying alternative methods for utilizing the panel structure, (ii) using sized-matched samples, (iii) proxying for risk by ROA volatility, and by (iv) measuring performance in alternative ways.

Table 7 documents that the econometric technique used to handle the panel structure influences the estimates. Model (a) is the base-case from table 6, (b) ignores unobservable performance effects at the firm level by only considering time-varying fixed effects for the banking industry, and model (c) ignores both. The estimates show that if we just run OLS on the pooled sample in model (c), the adjusted $R^2$ drops by almost 90% for the full period and by roughly two thirds in the two sub-periods. Notice also from models (a) and (b) that what matters for overall model fit is industry effects rather than firm effects. Thus, the key unobservable characteristic is the time-varying determinants of performance which influence all three firm types in the same way.

The base-case results may be influenced by the fact most non-PCCs are small compared to PCCs and commercial banks. For instance, table 2

[12] Three pairs of independent variables are relatively strongly correlated: firm size and financial risk (0.68), firm size and the commercial bank dummy (0.48), and financial risk and the commercial bank dummy (0.52). Nevertheless, table 6 shows that the individual coefficients for are almost always significantly different from zero.

shows that the median commercial bank is sixty times larger than the median non-PCC bank. Although our base-case model does control for size, the fact that size is so consistently different across bank types may create a sample heterogeneity that is not properly picked up by our size proxy. For instance, the technology used by small banks may deviate so much from that of large banks that just a proportional control for size on performance does not capture this difference. To handle size heterogeneity better, we construct a matching sample where size is much more homogeneous across bank types. The matched sample only contains non-PCC banks that are larger than the smallest commercial bank. Moreover, we keep at least as many non-PCC banks as commercial banks in the sample. These restrictions reduce sample size by roughly 80% to 473 firm years, of which 185, 127, and 161 are for non-PCCs, PCCs, and commercial banks, respectively. The median size of a commercial bank in this sample is 3.4 times the median non-PCC, compared to 60 in the base-case.

Panel (a) of table 8 shows that when we re-estimate the base-case model in the matched sample, the main results persist, although the bank type dummies have weaker statistical significance due to much smaller samples. This also suggests that the possibly higher margins in product markets chosen by the smaller, ownerless banks is not driving our main result.

To address this question directly, we account for differences in market-driven profit opportunities by adding the interest margin as a new independent variable in the base-case model. In unreported regressions that are available upon request, we find that the interest margin does have a positive impact on the bank's performance. However, accounting for the margin does nothing substantial to any other relationship, including the role of bank type. Thus, the performance effect of being ownerless, which often involves being small, is not driven by higher margins in these firms' product markets. Notice also that the base-case model in table 6 shows economies of scale in the post-crisis period. Still, there is no significant performance effect of being owned vs. ownerless once size is controlled for.

In panel (b), we measure risk by ROA volatility rather than by the risk proxies from the balance sheet that we used in the base-case model. We estimate ROA volatility in year *t* as the standard deviation of the bank's ROA from *t-1* to *t+1*.[13] The table shows that the relationship between bank type and performance from table 6 is generally upheld. However, the economic and statistical significance drops, and non-PCCs differ less from PCCs. Also, the relationship between risk and return becomes negative and is stronger in the full period than in the two sub-periods. We suspect this

[13] Just like we found using risk measures from the balance sheet in table 4, ROA volatility is highest in commercial banks and lowest in non-PCCs. ROA volatility for all bank types peaks around the banking crisis.

result is due to two fundamental data problems in our estimates of ROA volatility. First, we only have annual data and a maximum of 18 observations per firm. Second, the structural relationship between ROA and ROA volatility is unstable over time. In particular, volatility is very high and performance is very low in the crisis. Thus, even if we had a longer time series, we may not have been able to improve the precision of the risk estimates by extending the estimation window beyond the three years used in table 8. For these reasons, we put more trust in the risk measures from the balance sheet as used in the base-case model.

The fourth robustness test replaces ROA by alternatively the gross ROA (i.e., returns to assets before funding costs), ROE (return on equity), profit margin (net income over revenues), and the interest margin (net interest income over assets). Table 9 shows the findings, which are more consistent with those under ROA from table 6 if we measure performance by gross ROA, ROE, or the profit margin than by the interest rate margin. For instance, ROA, gross ROA, ROE, and the profit margin all produce a negative, significant coefficient for the PCC and Commercial dummies in the full period and the crisis period. Also, they produce a positive, significant sign for asset risk in ten of twelve cases. The only difference is that unlike the ROA, the ROE, and the profit margin, the gross ROA indicates that commercial banks do significantly better than the two other types after the crisis. As discussed earlier, however, (net) ROA is a more suitable performance measure for banks. Unlike gross ROA, it reflects the ability to manage the most important cost component (funding costs), and it does not move in tandem with market interest rates. It is reassuring that our major finding is quite insensitive to how performance is measured.

So far, we have ignored any endogeneity caused by the possibility that poorly performing non-PCCs may have converted to PCCs in order to raise new equity. In fact, (Ostergaard, Schindele, & Vale, 2009) find that low equity is the strongest predictor of conversion from non-PCC to PCC. Ignoring this possibility may bias our results towards overestimating the relative performance of non-PCCs. Hence, we have re-estimated the base-case model by first pooling non-PCCs and PCCs into one group. Subsequently, we exclude all PCCs and also the non-PCCs that later convert to the PCC form. These two robustness tests, which are available upon request, produce no material changes to the base-case results in table 6.

### 2.4.3 Two alternative explanations

The major finding so far is that after controlling for differences in size and risk, performance is not higher in owned firms than in ownerless firms. This is a puzzling result in an agency perspective. Certainly, the controlling stakeholders in ownerless firms have incentives to make the firm survive in order to provide them with future control benefits, such as below-market

product prices paid by customers, inflated wages paid to employees, and sponsoring of community projects. However, and as a direct consequence of such private benefits of control, the stakeholders of ownerless firms lack the incentive to maximize returns to capital invested.

We will analyze two reasons why our finding may still be plausible from an economic point of view. First, suppose the stockholders are forced to be passive for exogenous reasons, such as regulation. If that happens, the key governance mechanism in agency theory will not be allowed to operate in the owned firms. Hence, owned firms would have the same governance handicap as ownerless firms according to the agency logic, and we would expect no performance differences.

Second, any firm with any stakeholder structure may be disciplined by other and even more powerful governance mechanisms than the owners' monitoring of management. One example is product market competition. In such a case, residual claimants may not be critical for making the firm perform well. We will analyze the governance role of several potential owner substitutes in our sample.

### 2.4.4 Restrictions on ownership

Are the owners of commercial banks and PCC banks able to execute their control rights in a value-creating way? If not, they would be like ownerless banks in the sense that there is no monitoring of management by residual claimants. Governance research has found that the firm's performance tends to improve when ownership rights are held directly by persons rather than indirectly through intermediaries and when some owners have sufficiently strong incentives and power to monitor (Becht, Bolton, & Röell, 2003). Applying this logic to our sample, table 10 reports the aggregate equity fraction per owner type in panel (a) and the fraction held by the largest owner and the five largest owners in panel (b). Panel (a) shows that the average direct (personal) ownership is about 50% in a PCC bank and 20% in a commercial bank. The corresponding figure in other Norwegian firms is 18% over a similar period (Bøhren & Ødegaard, 2006). This high incidence of direct ownership in our sample suggests that being ownerless is more of a governance handicap in banking than in other industries. This feature increases the power of our test.

The opposite impression follows from panel (b), which shows that ownership concentration in banks is considerably below the typical level in Norwegian industry, which is about 30% for the largest owner and 55% for the five largest (Bøhren & Ødegaard, 2006). The low concentration in banking is due to regulation, which mandates permission from the Ministry of Finance to own more than 10% for any stockholder or alliance of

stockholders.[14] This cap is binding for the median commercial bank in our sample, and it reduces the power of our test.

Nevertheless, a 10% ownership stake represents no trivial amount in terms of inherent monitoring incentives. For instance, 10% of the equity in the largest and smallest commercial bank in 2002 is NOK 2.5 billion and 0.2 billion, respectively. Thus, although regulation forces ownership concentration below its optimum level, it does not destroy the potential for active monitoring by the owners of PCCs and commercial banks.

### 2.4.5 Substitutes for the governance role of ownership

Pressure from owners is not critical for performance if other governance mechanisms can do the job at comparable costs. We consider three such substitutes for the monitoring function of owners: (i) regulators in all firms, (ii) capital constraints in ownerless firms and (iii) competition in all firms.

The public banking supervisor monitors according to the same, detailed rules in every bank. Thus, it may be argued that high-quality banking supervision plays the governance role of owners. If it does, the regulator may make owners redundant in owned firms and heal the governance handicap of ownerless firms. However, the banking supervisor's job is not to maximize the risk-adjusted return to bank assets. Rather, it is to limit downside risk.[15] Therefore, the existence of a public supervisor may explain why depositors are willing to leave their money with banks whose owners benefit from risk-taking. It may also explain why most banks survive. But it cannot explain why a given bank or bank type is more profitable than others. This is supported by a study of 244 banks in 44 countries, which finds no clear relationship between the value of a bank and the way it is controlled by the banking supervisor (Caprio, Laeven, & Levine, 2007).

The second potential owner substitute is based on the fact that by construction, non-PCC banks cannot raise new equity. Thus, whereas owned banks can equity-finance overinvestment with both earnings and proceeds from stock issues, ownerless banks can only use earnings. This financial constraint may discipline managers of ownerless banks in similar ways that active owners can discipline managers of owned banks. If this happens, it would force overinvesting ownerless banks to finance growth more heavily with debt than other banks. Therefore, the agency logic predicts that ownerless banks have higher leverage and are closer to the regulatory

[14] The mean exceeds this median because the state held very large stakes in a few banks around the banking crisis and held 47.8% of the equity in the largest commercial bank at the end of the sample period.

[15] The Norwegian Financial Services Authority states that its main purpose is 'to promote financial stability and well functioning markets' (Finanstilsynet, 2006).

minimum for equity. This tendency would be particularly strong when the industry is growing fast. The start of our sample period coincides with the beginning of a deregulation regime which gave banks more flexibility, including the ability to compete on interest rates (Moe, Solheim, & Vale, 2004). We would therefore expect overinvesting non-PCC banks to be more equity constrained than other banks under such market conditions.

Table 11 does not support this hypothesis. The average equity capitalization ratio is 9.8% in non-PCCs and 7.1% in commercial banks. The former is significantly larger than the latter in 15 of the 18 sample years, and the maximum ratio in any year is normally more than twice as large in non-PCCs.[16] Consequently, ownerless banks are further away from minimum equity requirements than owned banks. This suggests that the inability to raise new equity does not discipline ownerless banks in ways that substitute well for owner monitoring.[17]

Competition is our third candidate to substitute for ownership. The general idea is that more competition reduces admissible inefficiency in any enterprise, regardless of its organizational form. This means that when competition is soft, it takes actively monitoring owners to ensure high managerial effort, but the firm may still survive due to its market power even if such owner qualities are missing. In contrast, firms facing strong competition will fail under low managerial effort, regardless of whether the owners are strong, weak, or nonexistent. Thus, market pressure and the agents' incentives to extend effort in order to maintain their human capital jointly create the urge to expend effort. This makes performance independent of monitoring quality under strong competition, whereas the two are positively related when competition is soft.

The very limited empirical literature supports this logic. (Palmer, 1973) finds that ownership structure and performance correlate more

[16] The legal minimum ratio uses a weighting system across the asset classes. As we cannot reconstruct this weighting exactly, we use unweighted assets, defining the capital coverage ratio as equity plus subordinated debt divided by assets. However, as non-PCCs have less risky assets than PCCs and commercials, they would have had even higher relative capitalization ratios if we could use the correct weighting formula. The upward shift in capitalization in 1992 and 1993 coincides with the end of the banking crisis and the implementation of the Basel accord. Equity capitalization is highest in all three bank types around 1995, moving slowly downwards thereafter.

[17] Notice also that although the free cash flow of a non-PCC bank is automatically suppressed by the inability to raise equity, the opposite effect comes from the fact that all earnings are retained. (Easterbrook, 1984) argues that dividend payout and the resulting need to issue stock for investments purposes is a powerful governance mechanism. Hence, the non-PCC bank is neither disciplined by the cash drain from dividend payments nor by the scrutiny of the capital market in equity issues. It does not seem that this lack of discipline induces overinvestment.

strongly the higher the firm's market power. (Giroud & Mueller, 2010) study what happens to firms when takeover threats fall through the passage of statewide antitakeover law. They find that in industries with strong product market competition, neither the firm's market value nor its operating performance changes as the takeover threat falls. In contrast, firms in non-competitive industries experience abnormally low stock returns and operating performance. Similarly, a companion paper finds that firms in non-competitive industries benefit more from improved governance quality than similar firms in competitive industries (Giroud & Mueller, 2011).

The potential sources of competitive pressure in our setting are the product market, the labor market, and the market for corporate control. The latter source cannot explain our findings, since ownerless firms cannot be traded. Labor market competition is probably rather weak, since overall unemployment is only 4.2% on average and never exceeds 6.0% in the sample period.[18] However, the demand for managerial talent may be modest in smaller communities. Thus, savings bank managers in particular may be disciplined by potential loss of human capital when the bank is underperforming.

Product market competition is the stronger candidate for rationalizing our results. We have already pointed out that all banks in the sample have access to the same product market, and that there are no major economic or regulatory barriers to entry. Moreover, the Norwegian banking market is reasonably competitive by international standards.[19] However, this is at best only indirect evidence. To fully test the competition hypothesis, one would need two industries with both owned firms and ownerless firms, and where competition is strong in one industry and weak in the other. According to the theory, owned firms would only outperform ownerless firms in the non-competitive industry.

Our setting does not allow for such an ideal test. We choose a related approach by analyzing whether an individual bank's local competitive environment influences its performance relative to the performance of other banks. The base-case model is augmented by a firm-specific competition proxy. Moreover, we interact this competition proxy with the bank type. We alternatively measure competition by the number of branches and by the number of unique banks present in the same municipalities as the bank in question. Both measures account for the fraction of the bank's total assets that is exposed to competition in the different municipalities.[20]

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[18] Source: Statistics Norway.

[19] Data for the period 1990-2002 shows that market concentration in Norwegian banking is medium among 16 European countries and consistently lower than elsewhere in Scandinavia. Source: Central Bank of Norway.

[20] We are grateful to Charlotte Ostergaard, Ibolya Schindele and Bent Vale, who generously made their hand-collected data set on bank industry competition

The findings are reported in table 12, where Branch comp and Bank comp are the branch-based and bank-based competition measures, respectively. For the sample period as a whole, three features emerge which are consistent with the competition logic. First, the bank type dummies are no longer significant determinants of relative performance. Thus, the type of stakeholder control is irrelevant for performance differences once competitive pressure is taken into account. This result supports the idea that competition is a stronger disciplining device than the allocation of cash flow rights and control rights. Second, the interaction terms between competition and bank type are negative and significant for commercial banks in both models. Hence, more competition reduces the importance of cross-sectional differences in stakeholder structure for differences in performance. Third, the insignificant competition dummies suggest that competition per se does nothing to performance levels. This is consistent with the theoretical result that the net effect of competition on performance levels is ambiguous.[21]

During the banking crisis, the relationship between competition and performance differences is stronger statistically and economically than in the full period. Finally, like in the full period, the stakeholder structure is irrelevant in the post-crisis period. The interaction terms are not significant.

These findings show that product market competition is an important determinant of the relationship between the firm's stakeholder structure and its performance. This evidence is in line with recent findings from a setting which does not involve ownerless firms, but where, instead, monitoring quality provided by stockholders varies cross-sectionally (Giroud & Mueller, 2010; 2011). We conclude that among the alternative economic reasons why ownerless firms are not underperforming relative to owned firms, product market competition is the only reason that is consistent with the evidence.

Give our results, one may wonder what remains of the classic arguments for organizing ownerless banks (Hansmann, 1996). Although this question is outside the scope of our paper, our findings may still shed some light on the answer. Unlike in earlier periods, it does not seem true anymore that their customers (i.e., lenders and borrowers) would face excessive contracting costs in commercial banks, that they have particularly homogenous preferences as a group, that they would lack regulatory protection against moral hazard by commercial bank owners, or that

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available to us. Among the six competition measures used in (Ostergaard, Schindele, & Vale, 2009), we report our findings for the two measures that produce the cleanest results. The findings for the four other measures are available upon request.

[21] More competition produces stronger incentives for agents to work harder. This is because more competition reduces profits, which increases liquidation risk and reduces the value of firm-specific investment. But more competition also reduces product prices and thereby erodes the value of cost-reducing effort. These opposing effects may make it optimal for the principal to induce less effort (Schmidt, 1997).

ownerless banks are so small that their agency costs are negligible. Nevertheless, our findings are inconsistent with the argument that because ownerless firms retain all their earnings and are immune to the market for corporate control, they represent the only firm type in our sample that can survive long after having lost their competitive advantage as an organizational form (Hansmann, 1996, p. 262). If this were a valid explanation, banks organized as nonprofits would have had the weakest performance. This is not what we find. Rather, it seems that once one accounts for the effect of competition, organizational form becomes, at best, of secondary importance to performance.

## 2.5 Summary and conclusion

Economists tend to take for granted that when residual cash flow rights are separated from control rights, closer monitoring by stockholders will improve the firm's economic performance. Similarly, we seldom question the conventional wisdom that stockholders will lose if they internalize welfare effects of their actions on other stakeholders, such as customers and employees. Our paper challenges these ideas by analyzing whether the existence of multiple corporate objectives and stakeholders with residual cash flow rights matter for the firm's economic performance.

We compare the return to capital invested in multiple objective firms organized as nonprofits (i.e., ownerless firms, where no stakeholder has both control rights and residual cash flow rights) to the return in profit-maximizing firms owned by stockholders. This setting allows us to analyze whether firms can be successful without owners rather than the more narrow question of whether the ownership structure matters for firms that are already organized as owned enterprises.

Our results do not support the idea that performance is higher the more profit-dominated the firm's objectives and the stronger the ownership rights of the capital providers. After having accounted for differences in risk, size, and unobservable firm and industry effects, we find that ownerless firms are not outperformed by firms owned fully or partially by stockholders.

Economic theory would argue that regardless of stakeholder structure, managers of firms with potential agency problems can be disciplined by other governance mechanisms than monitoring by residual claimants. For the ownerless firms in our sample, we find that product market competition plays such a substitute role. This interpretation is supported by similar findings in a setting which does not involve nonprofits, but where the monitoring quality provided by stockholders varies cross-sectionally. Overall, we conclude that once one accounts for the disciplining effect of competition on firm behavior, organizational form is no longer a primary determinant of performance.

**Table 1: The distribution of control rights and cash flow rights across stakeholders**

| | Control rights, % | | | | Residual cash |
|---|---|---|---|---|---|
| **Bank type** | **Stockholders** | **Employees** | **Depositors** | **Community** | **flow rights, %** |
| Non-PCC | 0 | 25 | 37.5 | 37.5 | Nobody |
| PCC | 25 | 25 | 25 | 25 | Stockholders: 5-92 |
| Commercial | 73 | 27 | 0 | 0 | Stockholders: 100 |

The table shows the distribution of control (voting) rights and residual cash flow rights across four stakeholder groups in non-PCC banks, PCC banks, and commercial banks during the sample period 1985-2002. Non-PCC banks have no owners. PCC banks have issued equity securities to the general public in terms of Primary Capital Certificates (PCC). The remaining equity in PCC banks is ownerless. The stakeholder groups are the stockholders, the employees, the depositors, and the community.

## Table 2: Industry characteristics

**(a): Number of banks**

| | All | Commercial | Savings banks | | | |
|---|---|---|---|---|---|---|
| Year | banks | banks | All | Non-PCC | PCC | Listed PCC |
| 1985 | 206 | 15 | 191 | 191 | | |
| 1986 | 206 | 16 | 190 | 190 | | |
| 1987 | 172 | 13 | 159 | 159 | | |
| 1988 | 173 | 14 | 159 | 156 | 3 | 0 |
| 1989 | 158 | 14 | 144 | 137 | 7 | 4 |
| 1990 | 154 | 10 | 144 | 137 | 7 | 3 |
| 1991 | 147 | 11 | 136 | 128 | 8 | 4 |
| 1992 | 145 | 11 | 134 | 125 | 9 | 4 |
| 1993 | 142 | 10 | 132 | 124 | 8 | 4 |
| 1994 | 141 | 9 | 132 | 122 | 10 | 8 |
| 1995 | 140 | 8 | 132 | 118 | 14 | 12 |
| 1996 | 141 | 8 | 133 | 117 | 16 | 13 |
| 1997 | 137 | 7 | 130 | 114 | 16 | 14 |
| 1998 | 137 | 7 | 130 | 109 | 21 | 19 |
| 1999 | 134 | 4 | 130 | 107 | 23 | 20 |
| 2000 | 135 | 4 | 131 | 107 | 24 | 22 |
| 2001 | 132 | 3 | 129 | 105 | 24 | 22 |
| 2002 | 129 | 2 | 127 | 103 | 24 | 22 |

**(b): Aggregate size per bank type**

| | All | Commercial | Savings banks | | |
|---|---|---|---|---|---|
| Year | banks | banks | All | Non-PCC | PCC |
| 1985 | 653 | 376 | 276 | 276 | |
| 1986 | 782 | 471 | 311 | 311 | |
| 1987 | 951 | 542 | 409 | 409 | |
| 1988 | 925 | 537 | 388 | 259 | 129 |
| 1989 | 928 | 579 | 348 | 199 | 149 |
| 1990 | 925 | 589 | 336 | 197 | 139 |
| 1991 | 858 | 551 | 307 | 143 | 164 |
| 1992 | 816 | 517 | 299 | 134 | 165 |
| 1993 | 775 | 469 | 307 | 138 | 169 |
| 1994 | 776 | 456 | 320 | 121 | 199 |
| 1995 | 792 | 456 | 336 | 118 | 219 |
| 1996 | 921 | 549 | 372 | 124 | 248 |
| 1997 | 996 | 585 | 411 | 133 | 278 |
| 1998 | 1051 | 603 | 448 | 131 | 317 |
| 1999 | 1147 | 619 | 528 | 138 | 389 |
| 2000 | 1258 | 665 | 593 | 159 | 434 |
| 2001 | 1083 | 440 | 642 | 169 | 473 |
| 2002 | 1113 | 432 | 680 | 182 | 499 |
| Total assets | 931 | 524 | 406 | 186 | 265 |

**(c): Size per bank**

| | All | Commercial | Savings banks | | |
|---|---|---|---|---|---|
| | banks | banks | All | Non-PCC | PCC |
| Mean | 5.4 | 78.3 | 2.5 | 1.4 | 20.2 |
| Std | 22.6 | 98.0 | 9.9 | 3.2 | 33.9 |
| Median | 0.7 | 43.5 | 0.7 | 0.7 | 7.9 |
| Min | 0.03 | 10.2 | 0.03 | 0.03 | 0.50 |
| Max | 238.7 | 238.7 | 125.7 | 28.6 | 134.6 |

Panel (a) shows the total number of Norwegian banks (All banks), the number of listed commercial banks, savings banks (non-PCC banks and PCC banks), and listed PCC banks. Panel (b) shows aggregate total assets per bank type. Panel (c) shows the mean total assets for an individual bank, its standard deviation, the median, minimum, and maximum. Non-PCC banks are ownerless savings banks), and PCC banks used to be ownerless savings banks that transformed themselves into PCC savings banks by issuing equity securities to the general public in terms of Primary Capital Certificates (PCC). Commercial banks are regular stock companies.The figures in panels (b) and (c) are in billion NOK as of year 2002. The sample is all non-PCC banks, PCC banks, and listed commercial banks over the period 1985-2002.

**Table 3: Interest rates**

| | Home mortgages | | Ordinary deposits | | Margin | |
|---|---|---|---|---|---|---|
| Year | Savings banks | Commercial banks | Savings banks | Commercial banks | Savings banks | Commercial banks |
| 1992 | 13.85 | 14.32 | 8.02 | 8.24 | 5.83 | 6.08 |
| 1993 | 11.24 | 10.83 | 4.07 | 4.06 | 7.17 | 6.77 |
| 1994 | 10.20 | 9.74 | 3.84 | 3.98 | 6.36 | 5.76 |
| 1995 | 9.63 | 8.78 | 3.70 | 3.70 | 5.93 | 5.08 |
| 1996 | 8.62 | 8.03 | 3.12 | 3.05 | 5.51 | 4.98 |
| 1997 | 8.11 | 7.17 | 2.71 | 2.58 | 5.40 | 4.59 |
| 1998 | 11.52 | 11.44 | 6.03 | 6.03 | 5.49 | 5.41 |
| 1999 | 9.64 | 9.45 | 4.06 | 4.18 | 5.58 | 5.27 |
| 2000 | 10.72 | 10.37 | 5.44 | 5.58 | 5.27 | 4.78 |
| 2001 | 10.94 | 10.39 | 5.72 | 5.76 | 5.22 | 4.63 |
| 2002 | 10.12 | 9.93 | 5.85 | 5.74 | 4.27 | 4.19 |
| Average | 10.42 | 10.04 | 4.78 | 4.81 | 5.64 | 5.23 |

This table reports the average interest rate on home mortgages and on ordinary deposits for all savings banks (PCCs and non-PCCs) and commercial banks. The margin is the difference between the two rates. Source: Central Bank of Norway.

**Table 4: Balance sheet structure**

**(a): Assets**

| Bank type | Fixed assets | Amortizable loans | Short-term assets | Overdraft facilities | Building loans | Other loans | Losses |
|---|---|---|---|---|---|---|---|
| Non-PCC bank | 2.3 | 73.1 | 17.6 | 5.8 | 2.8 | 0.3 | -2.0 |
| PCC bank | 2.8 | 74.6 | 16.0 | 6.2 | 2.6 | 0.0 | -2.2 |
| Commercial bank | 3.2 | 49.1 | 21.3 | 7.9 | 2.0 | 18.9 | -2.4 |

**(b): Liabilities**

| Bank type | Equity | Subordinated debt | Due to customers | Due to banks | Other liabilities |
|---|---|---|---|---|---|
| Non-PCC bank | 8.6 | 0.3 | 75.0 | 9.5 | 6.6 |
| PCC bank | 5.3 | 3.0 | 63.0 | 13.6 | 15.2 |
| Commercial bank | 5.0 | 3.2 | 47.0 | 18.9 | 25.8 |

All figures in this table are reported as percentages of total assets, and they are value weighted averages across banks and equally weighted across years. Fixed assets in panel (a) is buildings and investments in affiliated companies, and Amortizable loans is loans that involve gradual repayment of the principal. Short-term assets is cash, cash equivalents and securities held for trading, while Overdraft facilities is trade credits and other fixed limit loans. Building loans is fixed limit loans, and Other loans is every remaining loan type, such as credit card debt and leasing. Losses is allowances for losses on all loan portfolios. Equity in panel (b) is total funds for savings banks (including PCC capital for PCC banks) and total shareholder equity for commercial banks. Subordinated debt is debt that can be regarded as capital for capital requirement purposes, Due to customers is regular deposits from customers, Due to banks is inter-bank loans including loans from the central bank, and Other liabilities is securites issued. The sample is all Norwegian Non-PCC banks, PCC banks, and listed commercial banks over the period 1985-2002.

**Table 5: Return on assets**

| | (a): Mean ROA | | | (b): Difference | | |
|---|---|---|---|---|---|---|
| **Year** | **1: Non-PCC** | **2: PCC** | **3: Com** | **1 - 2** | **2 - 3** | **1 - 3** |
| 1985 | 0.43 | | 0.35 | | | 0.08 |
| | | | | | | (1.57) |
| 1986 | 0.46 | | 0.35 | | | 0.11* |
| | | | | | | (1.79) |
| 1987 | 0.55 | | 0.07 | | | 0.49*** |
| | | | | | | (4.60) |
| 1988 | 0.40 | -0.15 | -0.97 | 0.55*** | 0.82 | 1.37* |
| | | | | (3.20) | (1.02) | (1.74) |
| 1989 | 0.64 | -0.05 | -0.51 | 0.69*** | 0.46 | 1.15 |
| | | | | (2.86) | (0.52) | (1.36) |
| 1990 | 0.50 | -1.00 | -0.19 | 1.50 | -0.81 | 0.69** |
| | | | | (1.37) | (-0.71) | (2.31) |
| 1991 | 0.33 | -1.14 | -1.91 | 1.47** | 0.78 | 2.25** |
| | | | | (2.04) | (0.71) | (2.61) |
| 1992 | 2.60 | 0.01 | -0.59 | 2.58*** | 0.60 | 3.18*** |
| | | | | (2.85) | (0.50) | (3.93) |
| 1993 | 1.41 | 1.55 | 0.98 | -0.13 | 0.57* | 0.44*** |
| | | | | (-0.45) | (1.82) | (3.65) |
| 1994 | 1.15 | 0.99 | 0.96 | 0.16 | 0.03 | 0.19 |
| | | | | (1.32) | (0.14) | (0.88) |
| 1995 | 1.27 | 0.80 | 1.16 | 0.47 | -0.37 | 0.10 |
| | | | | (1.58) | (-0.98) | (0.43) |
| 1996 | 0.67 | 0.56 | 0.92 | 0.11 | -0.36 | -0.25 |
| | | | | (1.05) | (-1.34) | (-0.99) |
| 1997 | 1.06 | 0.84 | 1.03 | 0.22 | -0.19 | 0.03 |
| | | | | (1.58) | (-0.98) | (0.19) |
| 1998 | 0.83 | 0.80 | 0.74 | 0.03 | 0.06 | 0.09 |
| | | | | (0.40) | (0.49) | (0.89) |
| 1999 | 1.11 | 1.05 | 0.92 | 0.06 | 0.14 | 0.20 |
| | | | | (0.72) | (0.95) | (1.59) |
| 2000 | 1.18 | 1.00 | 0.91 | 0.17* | 0.09 | 0.27** |
| | | | | (1.92) | (0.66) | (2.20) |
| 2001 | 0.76 | 0.66 | 0.86 | 0.10 | -0.20 | -0.10 |
| | | | | (1.07) | (-1.19) | (-0.67) |
| 2002 | 0.52 | 0.22 | 0.63 | 0.31 | -0.41** | -0.11 |
| | | | | (1.56) | (-2.18) | (-1.66) |
| 1988-1992 | 0.89 | -0.46 | -0.84 | 1.36*** | 0.37 | 1.73*** |
| | | | | (5.49) | (0.65) | (8.33) |
| 1993-2002 | 1.00 | 0.85 | 0.91 | 0.15*** | -0.06 | 0.09 |
| | | | | (5.26) | (-1.72) | (0.98) |
| 1985-2002 | 0.88 | 0.41 | 0.32 | 0.47*** | 0.09*** | 0.57*** |
| | | | | (4.19) | (3.07) | (9.51) |

This table shows the mean return on assets (ROA) across the three bank types. ROA is net income divided by total assets. The mean ROA per year is equally weighted across firms, and the average over multiple years at the bottom of the table is equally weighted across years. We report the mean for each bank type, the pairwise difference in means, and its t-value in brackets. Statistically significant differences at the 10%, 5%, and 1% level are labelled as *, **, and ***, respectively. The sample is all Norwegian non-PCC banks, PCC banks, and listed commercial banks.

**Table 6: Base-case perfomance regressions**

| Independent variable | 1985-2002 | 1988-1992 | 1993-2002 |
|---|---|---|---|
| PCC | -0.181** | -1.510*** | -0.095* |
| | (-2.27) | (-4.63) | (-1.70) |
| Com | -0.765*** | -2.741*** | -0.119 |
| | (-5.61) | (-6.84) | (-0.96) |
| Asset risk | 1.419*** | 1.352* | 1.321*** |
| | (5.27) | (1.74) | (5.89) |
| Liability risk | 0.836*** | 4.385*** | -0.482*** |
| | (3.65) | (6.33) | (-2.71) |
| Bank size | -0.063*** | -0.219*** | 0.053*** |
| | (-2.78) | (-3.18) | (2.95) |
| Adj. $R^2$, % | 31.11 | 37.20 | 33.08 |
| Wald $chi^2$ | 1110.67 | 450.40 | 736.30 |
| Prob. of $chi^2$, % | 0.00 | 0.00 | 0.00 |
| n | 2660 | 738 | 1362 |

The table relates a bank's economic performance to its hypothesized determinants as specified in the leftmost column. Performance is measured as return on assets (ROA), which we operationalize as net income divided by total assets at year end. PCC (Com) is a dummy variable that equals 1 if the bank is a PCC bank (Commercial bank) and zero otherwise. Asset risk is the fraction of assets which is not cash, claims on the central bank, amortizable loans, or fixed assets. Liability risk is one minus deposits divided by total assets. We assume that the lower these two measures, the smaller the risk. Bank size is the log of the bank's assets in constant 2002 NOK.

The model is estimated with fixed time effects and random firm effects. We report the estimated regression coefficients and its t-statistic in brackets. Statistically significant relationships at the 10%, 5%, and 1% level are labelled as *, **, and ***, respectively. The bottom section of the table shows the adjusted $R^2$, the Wald $chi^2$, its p-value, and the number of observations. The sample is all Norwegian non-PCC banks, PCC banks, and listed commercial banks.

**Table 7: Alternative estimation techniques**

| Independent variable | 1985-2002 (a) | 1985-2002 (b) | 1985-2002 (c) | 1988-1992 (a) | 1988-1992 (b) | 1988-1992 (c) | 1993-2002 (a) | 1993-2002 (b) | 1993-2002 (c) |
|---|---|---|---|---|---|---|---|---|---|
| Constant | | | 1.835*** | | | 6.437*** | | | 2.020*** |
| | | | (4.80) | | | (5.93) | | | (6.60) |
| PCC | -0.181** | -0.319*** | -0.316*** | -1.510*** | -1.168*** | -1.098*** | -0.095* | -0.206*** | -0.157*** |
| | (-2.27) | (-4.75) | (-4.00) | (-4.63) | (-4.55) | (-3.65) | (-1.70) | (-4.99) | (-3.36) |
| Com | -0.765*** | -0.745*** | -0.922*** | -2.741*** | -2.156*** | -2.092*** | -0.119 | -0.321*** | -0.074 |
| | (-5.61) | (-7.71) | (-8.52) | (-6.84) | (-7.72) | (-6.39) | (-0.96) | (-3.94) | (-0.84) |
| Asset risk | 1.419*** | 2.001*** | 0.256 | 1.352* | 2.074*** | 1.211*** | 1.321*** | 1.923*** | 2.461*** |
| | (5.27) | (8.78) | (1.12) | (1.74) | (3.16) | (1.81) | (5.89) | (10.40) | (12.22) |
| Liability risk | 0.836*** | 0.799*** | 0.696*** | 4.385*** | 3.171*** | 2.587*** | -0.482*** | -0.132 | -0.591*** |
| | (3.65) | (4.22) | (3.27) | (6.33) | (6.18) | (4.36) | (-2.71) | (-0.89) | (-3.71) |
| Bank size | -0.063*** | -0.057*** | -0.015 | -0.219*** | -0.223*** | -0.187*** | 0.053*** | 0.064*** | 0.053*** |
| | (-2.78) | (-3.97) | (-0.93) | (-3.18) | (-5.28) | (-3.80) | (2.95) | (5.72) | (4.17) |
| Year dummies | yes | yes | no | yes | yes | no | yes | yes | no |
| Random effects | yes | no | no | yes | no | no | yes | no | no |
| Adj. $R^2$, % | 31,11 | 30,88 | 3,76 | 37,20 | 37,10 | 13,92 | 33,08 | 33,43 | 12,97 |
| F-value (Wald $chi^2$) | 1110,67 | 55,00 | 21,77 | 450,40 | 49,30 | 23,68 | 736,30 | 49,83 | 41,58 |
| Probability of F, % | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 |
| n | 2660 | 2660 | 2660 | 738 | 738 | 738 | 1362 | 1362 | 1362 |

The table relates a bank's economic performance to its hypothesized determinants as specified in the leftmost column. The models (a), (b), and (c) represent three alternative ways of handling the panel data structure as specified in the two first rows in the bottom section of the table. Performance is measured as return on assets (ROA), which we operationalize as net income divided by total assets at year end. PCC (Com) is a dummy variable that equals 1 if the bank is a PCC bank (Commercial bank) and zero otherwise. Asset risk is the fraction of assets which is not cash, claims on the central bank, amortizable loans, or fixed assets. Liability risk is one minus deposits divided by total assets. We assume that the lower these two measures, the smaller the risk. Bank size is the log of the bank's assets in constant 2002 NOK. The sample is all Norwegian non-PCC banks, PCC banks, and listed commercial banks.

In the Year dummies row, a yes (no) reflects that we include (do not include) a time dummy to capture time-varying fixed effects. A yes (no) in the Random effects row means that we use (do not use) random effects estimation to capture unobserved heterogeneity at the firm level. We report the estimated regression coefficients and its t-statistic in brackets. Statistically significant relationships at the 10%, 5%, and 1% level are labelled as *, **, and ***, respectively. The bottom section of the table shows the adjusted $R^2$, the F-value (Wald $chi^2$ for random effects regressions), the corresponding p-value, and the number of observations.

**Table 8: Size matching and ROA risk**

| Independent | (a): Size matching | | | (b): ROA risk | | |
|---|---|---|---|---|---|---|
| variable | 1985-2002 | 1988-1992 | 1993-2002 | 1985-2002 | 1988-1992 | 1993-2002 |
| PCC | -0.220 | -0.289* | -0.145 | -0.027 | -0.921*** | -0.033 |
| | (-1.18) | (-1.84) | (-0.84) | (-0.38) | (-3.44) | (-0.63) |
| Com | -0.652** | -0.639*** | -0.570*** | -0.466*** | -1.156*** | -0.154 |
| | (-2.57) | (-3.75) | (-3.06) | (-3.90) | (-4.12) | (-1.29) |
| Asset risk | 1.578 | 2.135* | -3.106*** | | | |
| | (1.25) | (1.76) | (-2.89) | | | |
| Liability risk | 0.927* | 0.965 | 0.376 | | | |
| | (1.80) | (2.66) | (0.97) | | | |
| ROA risk | | | | -28.422*** | -26.734*** | -5.046 |
| | | | | (-9.03) | (-4.65) | (-1.41) |
| Bank size | -0.032 | -0.031 | 0.045 | -0.073*** | -0.125** | 0.016 |
| | (-0.38) | (-0.63) | (0.87) | (-3.60) | (-2.54) | (0.89) |
| Adj. $R^2$, % | 28.27 | 16.79 | 30.27 | 38.95 | 46.26 | 25.17 |
| Wald $chi^2$ | 162.34 | 24.27 | 101.60 | 1451.59 | 738.56 | 2778.02 |
| Prob. of $chi^2$, % | 0.00 | 0.39 | 0.00 | 0.00 | 0.00 | 0.00 |
| n | 473 | 145 | 229 | 2236 | 725 | 1220 |

This table reestimates the base-case model with size-matched samples in panel (a), and by using the volatility of ROA as a proxy for risk in panel (b). We only include savings banks in panel (a) that are larger than the smallest commercial bank, while ensuring that the sample has at least as many non-PCC banks as commercial banks. Performance is measured as return on assets (ROA), which we operationalize as net income divided by total assets at year end. PCC (Com) is a dummy variable that equals 1 if the bank is a PCC bank (Commercial bank) and zero otherwise. Asset risk is the fraction of assets which is not cash, claims on the central bank, amortizable loans, or fixed assets. Liability risk is one minus deposits divided by total assets. We assume that the lower these two measures, the smaller the risk. ROA risk in panel (b) is measured as the standard deviation of ROA over a 3-year window. Bank size is the log of the bank's assets in constant 2002 NOK.

The sample is all Norwegian non-PCC banks, PCC banks, and listed commercial banks. All regressions account for time-varying industry effects and random firm effects. We report the estimated regression coefficients and its t-statistic in brackets. Statistically significant relationships at the 10%, 5%, and 1% level are labelled as *, **, and ***, respectively. The bottom section of the table shows the adjusted $R^2$, the Wald $chi^2$ statistic, its p-value, and the number of observations.

**Table 9: Alternative performance measures**

| | 1985 – 2002 | | | | 1988 - 1992 | | | | 1993 - 2002 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Independent variable | Gross return on assets | Return on equity | Profit margin | Interest rate margin | Gross return on assets | Return on equity | Profit margin | Interest rate margin | Gross return on assets | Return on equity | Profit margin | Interest rate margin |
| PCC | -0.383*** | -11.516*** | -2.640*** | 0.247*** | -1.483*** | -1.510*** | -11.217*** | 0.148 | -0.256*** | -0.974 | -1.546* | 0.116** |
| | (-4.70) | (-3.14) | (-3.96) | (6.13) | (-4.88) | (-4.63) | (-4.83) | (1.49) | (-4.02) | (-1.57) | (-1.95) | (2.46) |
| Com | -0.447*** | -28.526*** | -5.915*** | -0.272** | -2.478*** | -2.741*** | -18.471*** | -0.695*** | 0.489*** | 1.713 | -1.074 | -0.839*** |
| | (-3.09) | (-5.39) | (-5.43) | (-2.04) | (-6.76) | (-6.84) | (-6.77) | (-4.25) | (3.44) | (1.29) | (-0.60) | (-5.33) |
| Asset risk | 1.079*** | -1.221 | 15.441*** | -0.550*** | 0.264 | -0.219*** | 13.249** | -0.814*** | 1.223*** | 1.793*** | 18.380*** | 0.002 |
| | (3.92) | (-1.56) | (6.82) | (-4.09) | (0.37) | (-3.18) | (2.43) | (-3.24) | (4.79) | (9.50) | (5.87) | (0.01) |
| Liability risk | 1.452*** | 29.160*** | 4.362** | -2.211*** | 5.302*** | 4.385*** | 29.663*** | -2.625*** | 1.068*** | -7.134*** | -10.964*** | -1.804*** |
| | (6.14) | (2.83) | (2.29) | (-17.29) | (8.29) | (6.33) | (6.14) | (-11.20) | (5.26) | (-3.55) | (-4.33) | (-12.35) |
| Size | 0.045* | 15.109 | -0.191 | -0.185*** | -0.084 | 1.352 | -1.699*** | -0.111*** | 0.077*** | -3.013 | 1.096*** | -0.093*** |
| | (1.86) | (1.22) | (-1.08) | (-8.28) | (-1.34) | (1.74) | (-3.72) | (-3.73) | (3.76) | (-1.19) | (4.26) | (-3.86) |
| Adj. $R^2$ | 77.27 | 3.45 | 40.23 | 68.02 | 30.21 | 37.2 | 42.02 | 63.79 | 69.79 | 35.08 | 24.43 | 69.23 |
| Wald $chi^2$ | 9933 | 94 | 1749 | 23172 | 359 | 450 | 548 | 616 | 3916 | 630 | 460 | 19362 |
| Prob. of $chi^2$ | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| n | 2660 | 2652 | 2660 | 2660 | 738 | 738 | 738 | 738 | 1362 | 1362 | 1362 | 1362 |

Accounting for random firm effects and time-varying industry effects, this table re-estimates the base-case model under four alternative performance measures specified at the top of each column. Gross return on assets is income before funding costs divided by assets, return on equity is net income divided by book equity, profit margin is net income divided by revenues, and interest rate margin is net interest income divided by assets. Asset risk is measured as the fraction of assets which is not cash, claims on the central bank, amortizable loans, or fixed assets. Liability risk is operationalized as one minus deposits divided by total assets. We assume that the larger these two measures, the higher the risk. Size is the log of the bank's assets in constant 2002 NOK.

We report the estimated regression coefficients and its t-statistic in brackets. Statistically significant relationships at the 10%, 5%, and 1% level are labelled as *, **, and ***, respectively. The bottom section of the table shows the adjusted $R^2$, the Wald $chi^2$, its p-value, and the number of observations. The sample is all Norwegian non-PCC banks, PCC banks, and listed commercial banks .

**Table 10: Ownership structure**

**(a): Owner types**

| | State | | Personal | | Financial | | Industrial | | Foreign | |
|---|---|---|---|---|---|---|---|---|---|---|
| Year | PCC | Com | PCC | Com | PCC | Com | PCC | Com | PCC | Com |
| 1989 | 3.0 | 0.0 | 30.0 | 23.3 | 37.7 | 29.7 | 13.3 | 28.5 | 14.0 | 16.6 |
| 1990 | 3.3 | 0.0 | 28.0 | 25.4 | 42.8 | 31.9 | 13.2 | 24.3 | 10.5 | 16.8 |
| 1991 | 2.5 | 3.7 | 30.5 | 26.6 | 48.3 | 20.0 | 11.2 | 35.0 | 5.2 | 12.9 |
| 1992 | 2.4 | 10.8 | 38.6 | 24.9 | 35.8 | 25.4 | 18.6 | 28.9 | 2.6 | 8.1 |
| 1993 | 12.0 | 17.3 | 37.4 | 22.3 | 25.4 | 25.4 | 18.8 | 23.6 | 4.2 | 9.3 |
| 1994 | 6.8 | 13.0 | 33.5 | 21.5 | 28.6 | 21.4 | 25.0 | 32.3 | 4.3 | 9.6 |
| 1995 | 5.2 | 12.3 | 43.9 | 21.1 | 16.9 | 21.3 | 29.2 | 24.8 | 2.8 | 18.3 |
| 1996 | 2.1 | 11.6 | 50.5 | 19.8 | 13.9 | 26.1 | 27.0 | 21.4 | 4.4 | 19.3 |
| 1997 | 2.6 | 11.6 | 52.6 | 19.0 | 13.4 | 25.9 | 25.5 | 22.8 | 3.9 | 18.9 |
| 1998 | 2.4 | 11.6 | 50.7 | 18.4 | 19.5 | 23.2 | 22.3 | 21.1 | 3.2 | 23.8 |
| 1999 | 2.0 | 16.7 | 55.2 | 22.2 | 15.3 | 23.5 | 20.9 | 22.5 | 4.3 | 13.8 |
| 2000 | 2.0 | 15.0 | 55.3 | 24.2 | 15.2 | 29.8 | 20.4 | 21.2 | 5.1 | 8.2 |
| 2001 | 2.0 | 12.4 | 54.0 | 24.0 | 15.4 | 30.2 | 19.5 | 21.0 | 6.8 | 10.4 |
| 2002 | 1.8 | 13.2 | 55.7 | 24.2 | 16.4 | 24.6 | 19.5 | 22.2 | 4.5 | 13.8 |
| Average | 2.9 | 9.8 | 48.7 | 22.4 | 20.0 | 25.7 | 21.3 | 25.3 | 5.0 | 14.9 |

**(b): Ownership concentration**

| | Largest owner | | | | Five largest owners | | | |
|---|---|---|---|---|---|---|---|---|
| | Mean | | Median | | Mean | | Median | |
| | PCC | Com | PCC | Com | PCC | Com | PCC | Com |
| 1989 | 18.3 | 11.7 | 9.5 | 10.0 | 36.2 | 33.7 | 27.0 | 31.0 |
| 1990 | 9.8 | 14.8 | 9.5 | 13.0 | 31.3 | 34.8 | 31.0 | 32.0 |
| 1991 | 20.3 | 14.0 | 12.5 | 11.0 | 39.5 | 41.7 | 33.0 | 43.0 |
| 1992 | 10.0 | 22.1 | 11.0 | 17.5 | 29.2 | 47.5 | 33.0 | 43.0 |
| 1993 | 16.2 | 23.8 | 7.0 | 11.0 | 31.4 | 42.4 | 25.0 | 34.0 |
| 1994 | 11.0 | 19.9 | 6.5 | 11.5 | 26.8 | 39.6 | 23.5 | 32.0 |
| 1995 | 8.6 | 19.6 | 6.0 | 13.0 | 20.9 | 35.9 | 19.0 | 28.0 |
| 1996 | 6.1 | 18.6 | 4.5 | 10.0 | 15.7 | 37.1 | 13.0 | 32.0 |
| 1997 | 4.6 | 17.0 | 4.5 | 10.0 | 13.5 | 40.9 | 14.0 | 44.0 |
| 1998 | 4.8 | 16.2 | 5.0 | 10.0 | 15.4 | 37.0 | 15.0 | 39.0 |
| 1999 | 6.1 | 15.7 | 6.0 | 9.5 | 16.4 | 36.7 | 18.0 | 31.5 |
| 2000 | 7.0 | 16.6 | 7.0 | 10.0 | 17.1 | 38.4 | 17.0 | 28.0 |
| 2001 | 7.4 | 16.6 | 8.0 | 10.0 | 18.0 | 36.2 | 18.0 | 32.0 |
| 2002 | 7.4 | 16.6 | 8.0 | 10.0 | 19.0 | 37.0 | 19.0 | 28.0 |
| Average | 8.1 | 17.2 | 6.0 | 10.0 | 20.1 | 38.3 | 18.0 | 35.5 |

Panel (a) reports the mean ownership fraction per firm across five owner types in PCC banks and commercial banks. Panel (b) shows the mean and median ownership fraction for the largest owner and for the five largest owners, respectively. We exclude observations where the largest owner holds 90% or more. The sample is all Norwegian PCC banks and listed commercial banks.

**Table 11: Capitalisation ratio across years and bank types**

| | Mean values | | | Difference in means | | | Extreme values | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | | | | Non-PCC | | PCC | | Com | |
| Year | Non-PCC | PCC | Com | 1 - 2 | 2 - 3 | 1 - 3 | Max | Min | Max | Min | Max | Min |
| 1985 | 6.11 | | 5.54 | | | 0.57 | 13.95 | 2.36 | | | 9.17 | 3.86 |
| | | | | | | (1.28) | | | | | | |
| 1986 | 5.82 | | 6.12 | | | -0.30 | 14.00 | 0.00 | | | 9.91 | 3.51 |
| | | | | | | (-0.69) | | | | | | |
| 1987 | 7.01 | | 5.53 | | | 1.48*** | 18.31 | 2.29 | | | 8.72 | 3.36 |
| | | | | | | (3.45) | | | | | | |
| 1988 | 6.82 | 5.78 | 5.01 | 1.04 | 0.77 | 1.81* | 16.98 | -1.62 | 7.18 | 4.67 | 7.93 | -6.84 |
| | | | | (1.34) | (0.63) | (1.83) | | | | | | |
| 1989 | 7.41 | 5.43 | 4.86 | 1.97*** | 0.57 | 2.54* | 17.36 | 3.32 | 7.55 | 2.87 | 7.55 | -11.55 |
| | | | | (3.40) | (0.41) | (1.94) | | | | | | |
| 1990 | 7.86 | 4.29 | 5.82 | 3.57** | -1.53 | 2.04*** | 17.50 | 1.03 | 7.50 | -3.53 | 8.31 | 2.94 |
| | | | | (2.48) | (-1.02) | (3.73) | | | | | | |
| 1991 | 7.71 | 5.63 | 6.13 | 2.08*** | -0.50 | 1.58** | 17.97 | -16.20 | 8.67 | 2.70 | 9.67 | 4.22 |
| | | | | (2.86) | (-0.61) | (2.59) | | | | | | |
| 1992 | 10.70 | 6.67 | 7.60 | 4.03*** | -0.93 | 3.11*** | 19.30 | 4.70 | 10.36 | 0.43 | 12.35 | 4.79 |
| | | | | (4.05) | (-0.80) | (4.32) | | | | | | |
| 1993 | 11.53 | 9.10 | 11.33 | 2.43*** | -2.23 | 0.20 | 21.46 | 6.30 | 10.98 | 6.14 | 28.62 | 5.80 |
| | | | | (3.62) | (-1.07) | (0.10) | | | | | | |
| 1994 | 12.27 | 9.23 | 9.47 | 3.05*** | -0.24 | 2.81*** | 22.43 | 5.77 | 11.95 | 7.72 | 11.31 | 8.35 |
| | | | | (6.15) | (-0.50) | (6.85) | | | | | | |
| 1995 | 13.03 | 10.20 | 9.97 | 2.83*** | 0.23 | 3.06*** | 24.20 | 6.27 | 16.53 | 7.44 | 12.75 | 8.59 |
| | | | | (3.81) | (0.28) | (5.08) | | | | | | |
| 1996 | 13.23 | 10.91 | 8.78 | 2.31*** | 2.13** | 4.45*** | 26.06 | 6.52 | 19.09 | 8.47 | 10.20 | 6.87 |
| | | | | (2.86) | (2.51) | (7.84) | | | | | | |
| 1997 | 12.93 | 10.90 | 8.86 | 2.03** | 2.04** | 4.07*** | 26.40 | 7.29 | 19.04 | 7.55 | 10.07 | 6.78 |
| | | | | (2.24) | (2.16) | (7.45) | | | | | | |
| 1998 | 12.88 | 10.78 | 9.29 | 2.10*** | 1.49* | 3.59*** | 25.96 | 7.22 | 18.23 | 5.51 | 10.90 | 6.54 |
| | | | | (2.77) | (1.72) | (5.53) | | | | | | |
| 1999 | 12.85 | 10.58 | 8.66 | 2.27*** | 1.91* | 4.18*** | 26.88 | 8.31 | 17.70 | 6.72 | 10.63 | 6.65 |
| | | | | (3.42) | (1.88) | (4.58) | | | | | | |
| 2000 | 12.51 | 10.00 | 8.78 | 2.51*** | 1.23 | 3.74*** | 26.65 | 7.82 | 17.32 | 6.32 | 10.92 | 6.72 |
| | | | | (4.27) | (1.22) | (3.92) | | | | | | |
| 2001 | 11.98 | 9.65 | 8.12 | 2.33*** | 1.52* | 3.85*** | 26.15 | 7.29 | 16.10 | 7.09 | 9.51 | 6.78 |
| | | | | (4.53) | (1.72) | (4.53) | | | | | | |
| 2002 | 11.49 | 9.16 | 7.74 | 2.33*** | 1.42 | 3.74*** | 26.75 | 6.90 | 15.92 | 5.25 | 8.78 | 6.70 |
| | | | | (4.44) | (1.27) | (3.42) | | | | | | |
| Average | 9.82 | 9.38 | 7.14 | 0.44*** | 2.24 | 2.68*** | 21.57 | 3.64 | 13.61 | 5.02 | 10.96 | 4.12 |
| | | | | (3.48) | (0.65) | (3.76) | | | | | | |

This table shows distributional characteristics of the capitalisation ratio, which we operationalize as the book value of equity plus subordinated loans divided by the book value of assets. Statistically significant relationships at the 10%, 5%, and 1% level are labelled as *, **, and ***, respectively. The sample is all Norwegian non-PCC banks, PCC banks, and listed commercial banks.

**Table 12: Product market competition**

| Independent variable | 1985-2002 | | 1988-1992 | | 1993-2002 | |
|---|---|---|---|---|---|---|
| PCC | -0.039 | 0.144 | 0.687 | 1.478** | -0.105 | -0.117 |
| | (-0.32) | (0.87) | (1.08) | (2.09) | (-1.56) | (-1.31) |
| Com | -0.001 | 0.283 | -0.640 | -0.262 | -0.205 | -0.161 |
| | (0.00) | (0.83) | (-1.40) | (-0.46) | (-1.23) | (-0.76) |
| Asset risk | 1.570*** | 1.570*** | 1.436** | 1.441** | 1.318*** | 1.296*** |
| | (4.95) | (4.91) | (2.07) | (2.01) | (6.18) | (6.04) |
| Liability risk | 1.240*** | 1.305*** | 5.689*** | 6.081*** | -0.291 | -0.290 |
| | (3.84) | (4.05) | (6.51) | (6.89) | (-1.49) | (-1.48) |
| Bank size | -0.081** | -0.089** | -0.273*** | -0.269*** | 0.043** | 0.040** |
| | (-2.27) | (-2.47) | (-4.31) | (-4.16) | (2.48) | (2.32) |
| Branch comp | 0.009 | | -0.008 | | 0.017 | |
| | (0.17) | | (-0.08) | | (0.62) | |
| Branch comp * PCC | -0.208 | | -6.107*** | | 0.019 | |
| | (-1.14) | | (-3.92) | | (0.21) | |
| Branch comp * Com | -3.667*** | | -6.035*** | | 0.097 | |
| | (-7.01) | | (-7.23) | | (0.27) | |
| Bank comp | | 0.002 | | 0.014 | | -0.003 |
| | | (0.09) | | (0.29) | | (-0.20) |
| Bank comp * PCC | | -0.180* | | -2.498*** | | 0.016 |
| | | (-1.91) | | (-4.69) | | (0.33) |
| Bank comp * Com | | -1.490*** | | -2.477*** | | -0.003 |
| | | (-5.78) | | (-5.82) | | (-0.02) |
| Adj. $R^2$, % | 32.49 | 32.59 | 44.79 | 43.96 | 34.70 | 34.55 |
| Wald $chi^2$ | 1098.14 | 1078.09 | 600.55 | 579.32 | 777.74 | 777.58 |
| Prob. of $chi^2$, % | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| n | 2209 | 2209 | 717 | 717 | 1348 | 1348 |

The table relates a bank's economic performance to its hypothesized determinants as specified in the leftmost column. Performance is measured as return on assets (ROA), which we operationalize as net income divided by total assets at year end. PCC (Com) is a dummy variable that equals 1 if the bank is a PCC bank (Commercial bank) and zero otherwise. Asset risk is the fraction of assets which is not cash, claims on the central bank, amortizable loans, or fixed assets. Liability risk is one minus deposits divided by total assets. We assume that the lower these two measures, the smaller the risk. Bank size is the log of the bank's assets in constant 2002 NOK. Competition is alternatively measured by the number of branches (Branch comp) and by the number of unique banks (Bank comp) operating in the same municipalities as the bank in question. Both measures account for the fraction of the bank's total assets that is exposed to competition in the different

The model is estimated with fixed time effects and random firm effects. We report the estimated regression coefficients and its t-statistic in brackets. Statistically significant relationships at the 10%, 5%, and 1% level are labelled as *, **, and ***, respectively. The bottom section of the table shows the adjusted $R^2$, the Wald $chi^2$, its p-value, and the number of observations. The sample is all Norwegian non-PCC banks, PCC banks, and listed commercial banks.

# 3 Stakeholder conflicts and dividend policy: A cleaner test[1]

With Øyvind Bøhren and Pål E. Steen


## Abstract

This paper compares the dividend policy of firms controlled by owners to firms where owners are a minority relative to non-owning employees, customers, and community citizens. Using an approach which avoids a serious identification problem in the existing literature, we find that regardless of whether owners or non-owners control the firm, the strong stakeholder uses the dividend decision to mitigate rather than intensify the conflict with the weak stakeholder. This evidence is consistent with the substitution model of payout policy, by which power abuse in agency conflicts is discouraged by costly consequences at a later stage.



Keywords: Organizational form, Corporate governance, Stakeholders, Dividends

JEL classification codes: G34, G35



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## 3.1 Introduction

Stockholders invest in firms to obtain returns on their investment. However, conflicts of interest between the firm's stakeholders may reduce these returns. For instance, stockholders may worry that management extracts private benefits at stockholders' expense. If this agency problem appears threatening to stockholders, they may hesitate to put their money at management's disposal (Jensen & Meckling, 1976). This reluctance to finance the firm may have negative effects on the real economy by increasing the firm's cost of capital and decreasing its investment in labor and productive assets.

Our paper analyzes empirically how dividend policy influences the seriousness of this conflict between the firm's owners and non-owners. In particular, we study whether firms use their dividend payout to mitigate or intensify the conflict. Overall, we find that the larger the potential agency problem, the more of the firm's earnings is paid out as dividends. This is consistent with the notion that reduction of agency costs is an important concern when firms choose their dividend policy.

The conflict between owners and non-owners has been called the first agency problem in the corporate governance literature (Villalonga & Amit, 2006). The institutional setting of our sample firms allows us to focus on this first agency problem while ignoring the second, which concerns conflicts between large owners and small owners.[2] This empirical context allows for a cleaner test than earlier of the two existing theories of how dividends interact with stakeholder conflicts. These theories are the outcome model and the substitution model, respectively (La Porta, Lopez-de-Silanes, Shleifer, & Vishny, 2000).

The outcome model predicts that when given the opportunity, non-owner stakeholders will use dividend policy to capture private benefits. In contrast, the substitution model argues that non-owner stakeholders will benefit from a dividend policy that reduces potential conflicts with the owners. Hence, our finding that payout decreases with stockholder power supports the substitution model, which holds that stockholder power and dividend payout are alternative ways of disciplining non-owner stakeholders.

[2] Higher ownership concentration reduces the first agency problem, but may increase the second (Becht, Bolton, & Röell, 2003). The first agency problem is considered the more serious in common law countries, whereas the second is thought to dominate under civil law, where ownership concentration is generally higher (Shleifer & Vishny, 1997). The first agency problem has been analyzed as conflicts of interest between owners and managers or between owners and creditors (Becht, Bolton, & Röell, 2003), but much less as a conflict between owners and other stakeholders, such as workers (Fauver & Fuerst, 2006). The empirical literature on the second agency problem has focused on the majority stockholders' expropriation of the minority (Faccio, Lang, & Young, 2001).

Most existing empirical tests relate stakeholder conflicts to dividend policy by regressing the firm's payout on its ownership concentration (Khan, 2006; Moh'd, Perry, & Rimbey, 1995; Renneboog & Trojanowski, 2007; Rozeff, 1982; Szilagyi & Renneboog, 2007). Unfortunately, this approach creates a serious ambiguity which is due to the fact that a given dividend theory makes opposite predictions for how ownership concentration relates to dividends under the two agency problems. By allowing ownership concentration to vary widely across the sample firms, the relative importance of the two agency problems varies correspondingly. Therefore, one cannot tell which dividend theory is consistent with the data. In particular, the most common finding in the literature is that dividends fall as ownership concentration grows. This is consistent with the substitution model in firms where the first agency problem is more serious than the second. If the second agency problem dominates, however, the data is in line with the outcome model.

Such ambiguities may be avoided by ensuring that one of the two agency problems remains constant across the sample firms. Hence, ownership concentration should be relatively stable in the cross-section. In other words: Cross-sectional differences in stakeholder power should come from other sources than differences in ownership concentration. Our approach meets this requirement.

We study an environment where the second agency problem (i.e., conflicts between large and small owners) is small because a binding legal constraint makes ownership concentration low in every firm. In contrast, the potential seriousness of the first agency problem (i.e., conflicts between owners and non-owners) varies more than usual, but not because of cross-sectional differences in ownership concentration. Rather, it varies due to differences in organizational form, which allocates majority control to the owners in one firm type and to the non-owner stakeholders (employees, customers, and community citizens) in the other. Thus, (i) ownership concentration is unusually low in both firm types, and (ii) owners are strong relative to other stakeholders in one firm type and weak in the other.

Our sample is the population of listed Norwegian commercial banks and savings banks. Commercial banks are regular stock companies that are controlled by their owners. In contrast, the owners of a savings bank hold only one fourth of the control rights. The remaining part is split equally between employees, depositors, and the municipality. In either organizational form, no single stockholder or alliance of stockholders can own or vote for more than one tenth of the equity. Both organizational forms face the same product market opportunities and the same regulatory constraints.

We test the predictions of the two competing dividend models under the first agency problem. The outcome model predicts that commercial banks will pay higher dividends than savings banks. According to this

model, the owners in commercial banks will use their controlling power to minimize the cash flow under the non-owner stakeholders' discretion. Correspondingly, the controlling non-owner stakeholders in savings banks will ensure their access to a high cash flow by paying low dividends.

In contrast, the substitution model predicts that commercial banks will pay lower dividends than savings banks. The controlling owners of commercial banks will use their power to monitor management directly and precisely through involvement rather than indirectly and coarsely through high dividends. Similarly, the controlling non-owners in savings banks think they will benefit later by paying high dividends now because a large payout reduces the owners' fear of expropriation.

Our major finding is that savings banks, which are controlled by non-owner stakeholders, pay significantly higher dividends than the owner-controlled commercial banks. Also, more is paid out when the bank is small and grows fast. These results survive when we control for dividend persistence, financial leverage, stock liquidity, ownership structure, and unobservable firm and industry effects. The findings are also robust to using alternative data sets, econometric techniques, and dividend payout measures.

This evidence is consistent with the substitution model of how dividend payments and stakeholder conflicts interact. It is inconsistent with the outcome model. Our findings support the notion that the strong stakeholder uses the dividend policy to reduce the agency conflict with the weak stakeholder, as this behavior serves the best interest of the strong stakeholder in the longer run. This is true regardless of whether the strong stakeholder is the owners or the non-owners.

Section 2 reviews the literature, whereas section 3 makes the basic prediction and presents the institutional setting of our sample firms. Descriptive statistics follow in section 4, and section 5 reports the statistical tests. We conclude in section 6.

## 3.2 Existing research

Studying how the aggregate dividend payout of a country relates to its legal regime, (La Porta, Lopez-de-Silanes, Shleifer, & Vishny, 2000) introduce the outcome model and the substitution model as two alternative perspectives on how stakeholder conflicts and dividends interact.[3] We apply

[3] The authors do not develop these two models formally, but regard them as intuitive tools for understanding the relationship between dividends and stockholder protection across different legal regimes (La Porta, Lopez-de-Silanes, Shleifer, & R. W. Vishny, 2000, p. 5). Formal models that reflect different components of the La Porta et al. logic have been developed by (Fluck, 1999; Gomes, 2000; Myers, 2000; Rozeff, 1982). Like (Khan, 2006; Renneboog & Trojanowski, 2007; Szilagyi & Renneboog, 2007), we apply the La Porta et al. framework within a given legal regime rather than across different regimes. Unlike these papers, however, which

this logic to the individual firm within a given legal regime, and we focus on the first agency problem. The outcome model rests on the idea that stakeholders use their control rights in myopic ways. It predicts that when given the power, owners pay high dividends and non-owners pay low dividends. This is because a large payout reduces the ability of non-owner stakeholders to expropriate owners' wealth, such as financing perks for managers, overprotecting employees, underpricing output to customers, or sponsoring community projects.

The substitution model assumes more sophisticated stakeholders and makes the opposite prediction: Owners with power are expected to pay low dividends, whereas powerful non-owners pay high dividends. In general, the dividend decision in the substitution model is disciplined by potentially adverse effects for the controlling party at a later stage. The idea is that controlling owners try to influence the firm as directors in the boardroom or discussion partners with management rather than by bluntly blocking management's access to liquid assets. Owners also realize that high current dividends may create costly underinvestment later This may happen if new investors interpret a stock issue as signals of overvaluation (Goergen, Da Silva, & Renneboog, 2005; Myers & Majluf, 1984). Thus, firms with strong owners choose low dividends in the substitution model. In contrast, firms controlled by non-owners will pay high dividends. These stakeholders realize that if they instead retain the earnings and use it to destroy the owners' wealth, they may suffer later on. For instance, management's pay may fall and their career opportunities may deteriorate because the stock price drops. Moreover, high dividends may be a way for growing firms to build reputation for subsequent equity issues. It may also reduce information asymmetry costs for small firms in particular by forcing the firm more often to the issue market (Easterbrook, 1984). This suggests that non-owner controlled firms with high growth and small size will pay high dividends.

The existing tests of these two models relate dividends to ownership concentration, which is allowed to vary in the cross-section. This approach makes the first agency problem dominate in firms where ownership concentration is low, whereas the second does in high-concentration firms. Figure 1 illustrates the resulting problem for empirical tests. Under the first agency problem in the upper half of the figure, the outcome model conjectures that higher ownership concentration produces higher dividend payments (graph A). In contrast, the substitution model posits that dividends will fall (B). Similarly, under the second agency problem in the bottom half of the figure, the outcome model predicts that higher ownership concentration induces lower dividends. The substitution model predicts the

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vary relative stakeholder power by varying ownership concentration, we vary the organizational form across firms that all have low ownership concentration.

opposite. Graphs C and D illustrate these two latter hypotheses, respectively.[4]

This setting implies that when the relative importance of the two agency problems is allowed to vary across the sample, one cannot infer which dividend model has generated the data. In particular, most papers find that dividends and ownership concentration are inversely related. This is consistent with the substitution model if the first agency problem is more serious than the second (graph B). In firms where the second agency problem dominates, however, the result is in line with the outcome model (C). Correspondingly, a finding that dividends and ownership concentration are positively related would be consistent with both A (outcome model) and D (substitution model).

To illustrate the inherent identification problem in the literature, (Szilagyi & Renneboog, 2007 p. 2) reject the substitution model based on their analysis of Dutch firms. They conclude that "…we find no evidence that concentrated shareholders would allow firms to relax their dividend policy further. Rather, financial institutions and managers who efficiently mitigate agency problems as shareholders, actually force higher payouts. In other words, it seems that dividends often *complement* rather than *substitute* shareholders' efforts to alleviate agency concerns." When the first agency problem is small, however, as the authors implicitly argue in their second sentence above, high ownership concentration makes the second agency problem the more important. Therefore, their finding that dividends do not decrease with increasing ownership concentration questions the outcome model and supports the substitution model (graph C vs. graph D in figure 1). This is the opposite of what the authors argue.

A corresponding ambiguity is reflected in the concluding comments of (Khan, 2006, p. C186): "To summarise, there are several possible explanations for the relationships found between dividends and ownership structure. It is possible that shareholders are using dividend policy (i) to substitute for poor monitoring abilities/efforts, […] or (ii) to expropriate other stakeholders" (Khan (itemization added by us). Interpretation (i) applies the substitution model to the first agency problem, whereas (ii) applies the outcome model to the second agency problem.

In general, if one cannot assume that one of the two agency problems dominates the sample, one cannot use the observed relationship between ownership structure and dividends to distinguish between

[4] Graphs C and D implicitly assume that the potential seriousness of the second agency problem increases monotonically as ownership concentration grows. This may not happen for sufficiently high concentration. For instance, the majority stockholder has the strongest incentive to consume high private benefits and pay low dividends the closer his holding is to 50 %.

alternative explanations of how stakeholder conflicts interact with dividend policy.

### 3.3 Basic hypothesis and institutional setting

We avoid the identification problem of existing research by studying firms where the second agency problem is small. This is ensured by regulation, which allows no owner or alliance of owners to hold or vote for more than 10 % of the firm's equity. In contrast, the seriousness of the first agency problem varies more than usual due to differences in organizational form rather than ownership concentration. The owners hold the majority in commercial banks (*forretningsbank*), which is one of the two organizational forms we study. In savings banks (*grunnfondsbank*), however, owners only hold a minority stake, as the firm is controlled by its employees, customers, and the community citizens (i.e., non-owner stakeholders). Hence, ownership concentration is low and homogenous by an exogenous constraint, there is large heterogeneity in stakeholder control rights, and this heterogeneity is unrelated to ownership concentration. The other dividend determinants are quite homogenous across the sample, as both firm types are listed, face the same market opportunities, and are subject to the same regulation.

Our basic hypothesis is illustrated in figure 2. The figure shows that according to the outcome model, the first agency problem makes commercial banks pay higher dividends than savings banks. The substitution model predicts the opposite. Notice also that, unlike in figure 1, the independent variable is not ownership concentration, but owner control.

Table 1 shows how control rights and stockholders' residual cash flow rights are distributed in the two organizational forms. We measure control rights as the fraction of the board seats elected for by the stakeholder in question. Cash flow rights is the fraction of earnings and equity the stockholder can claim. The commercial bank is fully owned and controlled by its stockholders, as they hold 73 % of the votes and all the cash flow rights. Employees hold the remaining votes for directors and no cash flow rights. Thus, commercial banks are like other firms regarding stockholders' ownership rights.[5]

The stockholders of a savings bank hold only 25 % of its voting rights. The remaining 75 % is split equally between employees, depositors, and the municipality. Similarly, stockholders cannot claim the full cash flow or the full equity, but only a fraction which varies between 5 % and 74 %

[5] Limited liability firms in Norway with more than 200 employees are required by constitutional law to have one third of their directors elected by and among the employees. Special regulation reduces this fraction to 27 % for commercial banks. All commercial banks in our sample have more than 200 employees.

across the sample. This fraction equals the stockholders' share of the firm's equity. The remaining cash flow rights are ownerless in the sense that no stakeholder can claim any part of it.

This organizational form for savings banks was created in 1985 by a law which allows for the issue of equity securities by banks that used to be nonprofits. This means they are entirely ownerless, since no stakeholder has a right to the residual cash flow (Hansmann, 1996). Thus, a savings bank is a hybrid between an ownerless company and a regular stock company. Except for the restricted voting right, the equity securities of savings banks carry the same ownership rights as equity securities of commercial banks.[6]

Like all Norwegian firms above a certain size, banks have a two-tiered board structure. Except for charter amendments, which require a two thirds majority, all decisions in both tiers are made by simple majority. The supervisory board writes the corporate charter, hires and fires the CEO, sets the CEO salary, and appoints the executive board.[7] The CEO has a vote on the executive board, but cannot be its chairman.[8]

The dividend is proposed by the executive board in either bank type. The final dividend decision in commercial banks is made by majority vote in the stockholder meeting. In savings banks, the supervisory board makes the decision by majority vote among the four stakeholder types. The dividend proposed by the executive board can be reduced by these two bodies, but not increased.[9] Dividends are paid once a year. No regulation mandates a minimum dividend, and the tax system is neutral regarding dividends and capital gains, both at the firm level and the investor level.

The earnings of a savings bank is generated by both the stockholders' equity and the ownerless equity. Hence, the earnings that belong to stockholders are total earnings multiplied by the stockholders' share of total equity (i.e., their fractional cash flow right). To illustrate, suppose total earnings are 300, that stockholders own 40 % of the firm's equity, and that dividends are 100. This implies that stockholders own 120 of

[6] Stockholder-owned equity is senior to ownerless equity by construction. Hence, the equity claim is less risky in a savings bank than in a commercial bank.

[7] The supervisory board of commercial banks must have either 15, 30 or 45 members. There is no such rule for savings banks. The executive board of commercial banks must have between 5 and 9 members. The minimum in savings banks is 4 members.

[8] The stockholder meeting of commercial banks elects 73 % of the supervisory board members, while the remaining 23 % is elected by the employees. The supervisory board of savings banks is elected by the employees, stockholders, customers and local politicians, who each choose 25 % of the members. See table 1.

[9] The supervisory board in either firm type normally states its dividend policy rather vaguely in the annual report, a common term being "competitive dividend payout". Nevertheless, some banks are quite specific, making statements like "we generally pay the earnings out as dividends rather than retain them".

the earnings, and that 100 of it is paid out to them. Thus, the payout ratio is 83 %. The remaining 20 of stockholders' earnings is retained, as well as the 180 (300-120) that is ownerless. This latter amount can never be paid out, as regulation prevents the stockholders from expropriating the ownerless equity. Thus, stockholders can be paid all the earnings they own, but not more (120 plus any retained stockholder earnings from earlier years in the example). The remainder must be retained, since nobody can claim it (180 plus the ownerless earnings from earlier years). Hence, the controlling stakeholders of savings banks can use dividend policy to reduce the potential agency conflict with stockholders. The larger the fraction of stockholders' earnings they pay, the less room there is for agency costs.

Overall, this institutional environment implies that the controlling party in either organizational form has wide discretion over the dividend policy. In particular, any firm can choose to pay no dividend whatsoever. The maximum ratio of dividends to stockholders' earnings for any sample firm is 100 % if the dividend is only paid out of stockholders' earnings for the same year. The ratio is negative if retained stockholders' earnings from earlier years are the only dividend source. It exceeds 100 % if the controlling party chooses to use all stockholders' earnings for the year plus part of their past retained earnings.

### 3.4 Descriptive statistics

According to table 2, roughly 40 % of the 287 sample years come from commercial banks, which are more numerous than savings banks in the first half of the period and less in the second. The commercial bank sector is in the aggregate about twice as large as the savings bank sector. The average commercial bank is four times the size of the average savings bank.

Table 3 shows descriptive statistics for risk, return, stock liquidity, and growth. Savings banks are less risky than commercial banks according to balance sheet proxies for total risk, but the difference as measured by systematic stock return risk is not statistically different from zero.[10] The two bank types have similar book returns on assets and market returns on equity. This may suggest that the two organizational forms have comparable economic efficiency. Savings banks have higher dividend yield, lower stock liquidity, and higher growth. The higher dividend yield in savings banks is a first sign of support for the substitution model. It reflects that although the stock return of the two firm types does not differ, the dividend component of the stock return is higher in the firm type with the weakest owner control and the highest growth.

[10] The risk figures based on the balance sheet are consistent with findings from the US that the bank's total risk increases when more control rights are assigned to stockholders relative to depositors (Esty, 1997a; 1997b).

Ownership characteristics are reported in table 4. The median equity holding of the largest owner is 10 % in commercial banks and 6 % in savings banks. This concentration, which is one third the typical level at the Oslo Stock Exchange, reflects a binding regulatory constraint.[11] Aggregate personal (i.e. direct) ownership is typically 20 % in commercial banks and 52 % in savings bank. The latter figure is about three times higher than for the Oslo Stock Exchange as a whole (Bøhren & Ødegaard, 2006).

The two organizational forms we described in table 1 reflect that the division of power between owners and non-owners is driven by bank type: Owners control the commercial bank, and non-owners control the savings bank. For given organizational form, however, there is also a second determinant of power sharing which stems from the difference between stockholders' cash flow rights and control rights. We measure this wedge by the separation ratio, which we define as $sep \equiv (c\text{-}v)/c$. Here, $c$ is the owners' fraction of cash flow rights in the firm and $v$ is their fraction of voting rights.[12] A *sep* of 0 means there is no separation, a positive *sep* means stockholders have less voting rights than cash flow rights, and a negative *sep* reflects the opposite. The separation ratio is 0.27 in all commercial banks, as stockholders always control 73 % of the votes for directors ($v$ = 0.73) and hold all the cash flow rights ($c$ = 1). In contrast, *sep* varies considerably across savings banks. Although their owners always hold 25 % of the voting rights, table 1 showed that their fraction of cash flow rights varies between 5 % and 74 %. This heterogeneity produces a mean *sep* for savings banks of 0.18, varying between -0.15 and +0.49.

Table 5 describes dividend policy by the payout propensity in panel A, by the payout ratio in panel B, and by the retention ratio in panel C. Panel A shows that most banks pay dividends, and that savings banks do so more often than commercial banks (89 % vs. 68 % of the time, respectively). Unlike commercial banks, most savings banks also pay dividends during the banking crisis in 1988-1992, when all banks experienced a series of negative earnings shocks.[13]

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[11] The typical concentration is 30 % in Norway (Bøhren & Ødegaard, 2006) and 40 % in continental Europe (Barca & Becht, 2001). The mean exceeds the median for commercial banks in table 4 because the state held very large stakes in a few banks around the banking crisis in 1988-1992. The state owned 48 % of the equity in the largest commercial bank at the end of our sample period.

[12] No bank has multiple share classes, and we disregard potential ownership through pyramids.

[13] 13 small and medium sized banks failed in 1988–1990, and large commercial banks started failing towards the end of 1990. As government support of distressed banks sometimes required the write-off of existing equity, the three largest commercial banks came under full state ownership in 1992. The industry regained profitability in 1993, and the state holdings were gradually reduced (Moe, Solheim,

The payout ratio in panel B is measured as cash dividends divided by stockholders' earnings. The earnings component (i.e. the denominator) of the payout ratio in commercial banks is total earnings, since this belongs to the stockholders, since this is the part of total earnings that can potentially by expropriated from stockholders. In savings banks, however, the denominator of the payout ratio is only the part of earnings that is owned by the stockholders. This amount is always less than total earnings.

Panel B only includes the subsample of dividend payers from panel A. It shows that banks in general distribute a high portion of earnings to their stockholders. Both the payout propensity and the payout ratio are unusually large by national standards.[14] Although there is considerable variation from bank to bank, and particularly among the savings banks**,** the average payout ratio is significantly higher in savings banks than in commercial banks. This is true for the period as a whole, during the banking crisis years, and in eight of the fourteen sample years. In fact, most savings banks pay out all the stockholders' earnings as dividends. This means that practically the only stockholder asset withheld by savings banks is the cash that stockholders paid in at the equity offering. In contrast, a typical commercial bank withholds these proceeds plus roughly 55 % of the earnings.[15]

This aggregate dividend pattern supports the substitution model, since the strong non-owners in savings banks pay out more of stockholders' earnings than the strong owners in commercial banks. Notice, however, that because savings banks are also financed by ownerless equity, to which no dividend can be paid, the high payout does not imply that only a small part of a savings bank's total earnings is retained. Panel C documents that the average fraction of total earnings retained is 59 % in savings banks, which is not statistically different from the 52 % in commercial banks. According to the medians, the savings banks retain significantly more. Thus, the differential payout policy in the two organizational forms is not necessarily crucial for how retained equity can finance regulatory capital requirements and future growth. However, the difference does reflect how dividends may influence the seriousness of the conflict between owners and other stakeholders.

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& Vale, 2004). By the end of our sample period, the state held a minority stake in the largest commercial bank and had sold their shares in the two others.

[14] The median payout propensity at the Oslo Stock Exchange is 47 % in the sample period, and the median payout ratio is 38 % for firms that pay dividends (Source: Oslo Stock Exchange).

[15] The mean and median payout ratios in savings banks sometimes exceed 100 %. This happens because dividends in year *t* can be paid both from year *t* earnings and from undistributed earnings generated before *t*. Since earnings vary over time, a policy of stable, high dividends per share may easily produce a payout ratio above 100 % in a given year. This is more likely to happen in years when earnings are unusually low.

We argued in section 2 that the dividend policy of firms controlled by non-owners may be disciplined by several mechanisms, such as the need to raise new equity in the future. Moreover, table 3 showed that the growth rate is higher in savings banks than in commercial banks, which does suggest a higher financing need. More direct evidence based on the firms' equity issues is provided in table 6. The table shows that although commercial banks go more often to the issue market than savings banks, both bank types expand their share capital by roughly the same proportion when issues occur. A typical savings bank sells new equity about every six years and increases its share capital (owned plus ownerless) by about 15 % on these occasions.

Summarizing, the descriptive statistics has shown that the savings banks in our sample, which are controlled by non-owner stakeholders, have similar asset returns, stock returns, and systematic risk as commercial banks, which are owned and controlled by stockholders. Savings banks are smaller, have higher growth, more of their equity is held by personal owners, and they are as dependent on the equity issue market as commercial banks. Savings banks pay dividends more often and distribute more of stockholders' earnings when they pay.

## 3.5 Statistical tests

We report the estimates from the base-case model in section 5.1, followed by a series of robustness tests in section 5.2.

### 3.5.1 The base-case model

We specify the base-case relationship between dividends and its potential determinants for firm *i* at time *t* as follows:

$$(1)\quad Dividend_{it} = \alpha + \beta_1 Savings_i + \beta_2 Dividend_{it-1} + \beta_3 Leverage_{it} + \beta_4 Liquidity_{it} + \beta_5 Growth_{it} + \beta_6 Size_{it} + \varepsilon_{it}$$

*Dividend* is cash dividends divided by stockholders' earnings. *Savings* is a dummy variable which is 1 for a savings bank and zero for a commercial bank, *Leverage* is the book value of debt divided by the book value of assets, *Liquidity* is the value of traded equity divided by its market value, *Growth* is the relative increase in the book value of assets over the year, and *Size* is the log of the book value of assets. Flow variables are measured over the full year, and the other variables are measured at year-end.

The key determinant in (1) is the savings bank dummy, and its coefficient $\beta_1$ is predicted to be negative in the outcome model and positive in the substitution model. The remaining determinants, which are well-known from the literature (Allen & Michaely, 2003; Kalay & Lemmon, 2008), do not relate specifically to the first agency problem. Moreover, their relationship to dividends may at least initially be considered independent of

bank type. Thus, we leave potential interactions between organizational form and other dividend determinants to the robustness tests.

(Lintner, 1956) was the first to document that most firms have much more stable dividends than earnings. We account for such dividend persistence by the lagged payout ratio and predict a positive $\beta_2$. The expected sign of $\beta_3$ for financial leverage is indeterminate from a corporate governance point of view. Both dividends and debt may be used to reduce the free cash flow, which means they may be both substitutes (negative $\beta_3$) and complements (positive $\beta_3$). More debt may also induce stronger conflicts between owners and creditors. Lower dividends may reduce this problem, implying a negative $\beta_3$. Finally, we expect a negative $\beta_3$ from a regulatory perspective, as more debt brings the firm closer to the minimum capital coverage constraint. The closer it gets, the less dividends can be paid.[16]

We predict a negative $\beta_4$ for stock liquidity, as an illiquid security makes it more costly for investors to undo the firm's dividend policy by trading in the stock. The predicted sign of the growth coefficient $\beta_5$ is indeterminate. The pecking order logic suggests that higher growth induces lower dividends, as retained earnings are the cheapest source of financing under asymmetric information. On the other hand, growing firms are more dependent on new equity than other firms. Therefore, they have stronger incentives to establish a good reputation in the stock market in order to reduce the cost of new equity. This may be particularly true when the owners are weak, such as the stockholders in savings banks. As we argued under the substitution model, paying consistently high dividends is a way to build reputation for not wasting free cash flow. High dividends is also a vehicle for exposing the firm to scrutiny in the market for new issues. In this context, growth may induce more dividends rather than less. Lacking a formal model of the equilibrium relationship between these two opposing forces, we leave $\beta_5$ unspecified. Finally, since high dividends may be a way for small firms to reduce information asymmetry, we predict a negative $\beta_6$.

The base-case model (1) is estimated with OLS, pooled data, year dummies, and standard errors that are adjusted for clustering at the firm level. The year dummies control for unobservable, time-varying effects for the banking industry, which we assume have the same impact on dividend policy in both firm types. We cannot account for unobservable, firm-specific dividend determinants by fixed effects estimation, since we need a time-invariant dummy to control for firm type. Although random effects estimation would allow for this, it cannot handle lagged dependent variables, which is necessary to capture dividend persistence (Hsiao, 2003). We

[16] The minimum capital coverage as specified by regulation uses a weighting system for the asset classes. As we lack balance sheet data to implement this system, we use unweighted assets by setting the capital coverage ratio equal to the leverage ratio.

eliminate the effect of extreme outliers by winsorizing the 5 %/95 % tails of each variable except the dummies. Section 5.2 examines the robustness of the base-case estimates to these assumptions.

We standardize every variable except the bank type dummy by deducting the mean value of the variable from each observation and dividing the difference by the variable's standard deviation. The coefficient estimate for the standardized variable has the same t-value as for the unstandardized variable, but expresses economic significance more directly. By having an expected value of zero and a standard deviation of one, its regression coefficient shows the number of standard deviations the payout ratio is expected to change if the dividend determinant changes by one standard deviation. Thus, the higher the absolute value of the standardized coefficient, the stronger the economic significance of the determinant.

Table 7 shows that the estimates of the base-case model explains 62 % of the variation in dividend payout.[17] The key result is that the estimated coefficient for the savings bank dummy ($\beta_1$) is positive and statistically significant. This is consistent with the substitution model and refutes the outcome model. The relationship is also considerably stronger economically than for any other determinant.

As expected, dividends are persistent ($\beta_2>0$). Dividends do not respond systematically to changes in debt financing ($\beta_3$), suggesting that closeness to capital coverage constraints is not an important concern when dividend decisions are made.[18] Neither is stock liquidity ($\beta_4$), which means firms with lower stock liquidity do not pay higher dividends to offset their owners' higher costs of transforming capital gains into cash or vice versa. Higher growth makes the firm pay more dividends ($\beta_5>0$), which supports the reputation logic of the substitution model. Finally, small firms pay more dividends than large firms ($\beta_6<0$). To the extent that larger size reflects better information transparency, this result supports the idea that dividends reduce the future cost of new equity.[19]

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[17] The correlation matrix does not suggest serious multicollinearity problems. The only variables which correlate considerably are size and leverage, where the correlation coefficient is 0.57.

[18] As a robustness check, we alternatively classify subordinated debt as equity in the leverage ratio. We also test a version of (1) with a 0/1 dummy variable which is 1 if and only if leverage is close to the legal minimum, using alternative definitions of closeness. The results, which are available upon request, show that the findings based on (1) are robust to such alternative specifications of leverage.

[19] The estimates of the time dummy coefficients (not reported in table 7) show that the industry-wide dividends to earnings ratio is significantly lower in 1991-1993, which is towards the end of the banking crisis. We return to such fixed industry effects in section 5.2.

### 3.5.2 Robustness

We first analyze whether the base-case results from model (1) are sensitive to using non-winsorized data and alternative econometric techniques. Second, we replace the classic dividend ratio used so far by three alternative measures proposed in the literature. Third, (1) is estimated without lagged dividends to check whether dividend persistence makes the bank type dummy act as a proxy for dividend growth rather than stakeholder control. Fourth, we analyze whether stakeholder control interacts with the relationship between dividends, size, and growth. Finally, we add more ownership characteristics to (1) than just organizational form.[20]

The first column of results in table 8 repeats the base-case results from table 7. According to the second column, including observations outside the 5 %/95 % bounds does not change our major result that firms pay more dividends when non-owner stakeholders are in control. No other determinant is statistically significant, however, and the model explains just 9 % of variations in the payout ratio, compared to 62 % with winsorized data. Thus, including the outliers reduces the precision of the estimates.

The third and fourth columns account for unobservable firm-specific effects by a random effects model. Since such a model cannot handle lagged dependent variables, the lagged payout ratio from (1) must be dropped. As is evident by comparing the fourth column to the second, replacing OLS by random effects estimation has no material effect in the non-winsorized data set beyond increasing the coefficient of determination from 9 % to 20 %. The third column shows that the combination of winsorized data and random effects estimation reproduces the base case results in the first column, except that liquidity becomes significant at the 10 % level and size becomes even more significant both statistically and economically. As already mentioned, however, the random effects model is problematic because it must ignore the lagged dependent variable, which is a highly significant determinant both in our OLS model and in tests reported in the literature. Thus, like in table 7, we estimate the models with pooled, winsorized data, fixed time effects, and cluster-adjusted standard errors in the following.

The second robustness test analyzes the effect of using alternative payout measures. Table 9 summarizes the results. The first model is the base-case from table 7, the second adds stock repurchases to the regular cash dividend, whereas models three and four normalize these two alternative numerators by cash flow from operations rather than earnings. The table

[20] We have also augmented the base-case model by ROA to check whether the relationship between the payout ratio and stakeholder conflicts depends on the firm's overall return to capital invested. The estimates, which are available upon request, show that the base-case relationship between dividends and bank type remains unchanged.

documents that the main result is insensitive to whether we include stock repurchases in the payout or normalize payout by cash flow. The control variables tend to be more significant when we normalize by cash flow, and these two models explain more of the variation in dividend policy.

We have found that dividends are persistent in every model, and that savings banks pay more dividends than commercial banks. This may imply, however, that the bank dummy in (1) does not reflect differences in dividend levels. Rather, it may reflect dividend growth, since the dividend level effect is already picked up by the lagged dividend term. In unreported regressions which are available upon request, we delete lagged dividends from the base-case model. We find that the role of the bank dummy remains unchanged. As expected, the other determinants become more significant compared to the base-case model.

The analysis so far suggests that, in addition to organizational form and last year's dividend, the firm's growth and size matter for the payout decision. In particular, dividends are larger in firms with high growth and low size, which supports the substitution model. Our fourth robustness test explores whether this relationship differs across the two bank types. We analyze this in table 10 by interacting firm type with growth and size, respectively. According to the table, higher growth induces higher dividends, and this effect does not differ between the two bank types. For firm size, the tendency for smaller firms to pay higher dividends is only pronounced in the savings banks. Thus, firms controlled by non-owners seem to reduce size-related information asymmetry costs by means of dividend policy.

Corporate governance research argues theoretically and shows empirically that performance may improve when some owners have sufficiently strong incentives and power to monitor management (Becht, Bolton, & Röell, 2003). This suggests that certain properties of the ownership structure matter for the firm's key decisions, such as dividend policy. The final robustness test considers how dividends relate to the firm's ownership concentration and to the separation between cash flow rights and voting rights. We also control for dividend clientele effects by adding a dummy variable which is one if the largest stockholder is a person and zero otherwise.

According to the outcome model, higher ownership concentration means higher dividend payout as a way of reducing the first agency problem. The substitution model predicts the opposite. We use the stake of the firm's largest stockholder to measure ownership concentration. However, since ownership concentration is consistently low across the sample, it would be disturbing if this variable is significant in the regression. Indeed, such a result would question our rationale for ignoring the second agency problem in the first place and hence our argument for having made a particularly clean test.

Like in table 3, we measure separation by the ratio *sep = (c-v)/c*, where *c* is the owners' fraction of cash flow rights in the firm and *v* is their fraction of voting rights. A higher *sep* means more separation and hence weaker stockholder control. Hence the predicted relationship between *sep* and dividends is negative under the outcome model and positive under the substitution model. This is the agency effect of separation on dividend payout.

Due to peculiarities in our sample, however, *sep* also reflects the financing effect of separation on dividends. Because *v* is a constant 25 % in all savings banks, differences in *sep* across savings banks are exclusively due to differences in the owners' fraction of residual cash flow rights, *c*. In particular, *sep* increases monotonically with *c* in the savings bank sample. This implies that the stronger the separation as measured by a high *sep*, the more dividends it takes to achieve a given payout ratio. To illustrate, suppose total earnings is 100 and that the firm chooses a payout ratio of 80 %. This means it takes a dividend of 8 if stockholders own 10 % of the equity. If they own 70 %, however, the required dividend for a 80 % payout is 56 rather than just 8. Thus, for a fixed payout ratio, the drain on retained earnings increases proportionally as *sep* grows. Due to the cost of raising new equity (Myers and Majluf, 1984), the drainage effect on retained earnings dictates a negative relationship between *sep* and dividends. Overall, this means that under the outcome model, both the agency effect and the financing effect imply a negative relationship between *sep* and dividends. Under the substitution model, the relationship is positive if the agency effect dominates and negative if the financing effect is the stronger.

Table 11 reports the results across the four alternative payout measures. Four features emerge. First, the role of the savings bank dummy is unchanged. Second, and reassuringly, ownership concentration is not a significant determinant of payout. Third, the relationship between separation and dividends is negative and significant. Considering the consistent findings in favor of the substitution model so far, we interpret this as evidence that the financing effect of separation dominates the agency effect. Finally, the positive relationship between dividends and personal ownership under two of the payout measures supports the clientele argument that the mix of stockholder types in the firm influences its dividend decision.

Summarizing, we have shown that after having accounted for differences in past dividends, financial leverage, stock liquidity, firm growth, firm size, and unobservable firm and industry effects, dividends are significantly higher both statistically and economically in firms controlled by non-owner stakeholders than in firms controlled by owners. The robustness tests document that this result survives under alternative data sets, dividend payout measures, and when we control for ownership structure differences, for interaction effects, for the separation between ownership and control, and for unobservable firm characteristics. Also, more of stockholders' earnings

are paid out when the firm is small and when it grows fast. Overall, this evidence, which is based on the full population rather than a sample, is consistent with the substitution model and inconsistent with the outcome model.

(Szilagyi & Renneboog, 2007) make the opposite conclusion in favor of the outcome model, arguing that their findings from the Netherlands could be extended to other stakeholder-oriented governance regimes. Our sample firms do operate in a more extreme stakeholder-oriented regime, as non-owner stakeholders have voting majority in one of the two organizational forms. Nevertheless, we find strong support for the substitution model. We suspect their conclusion is driven by the inability to distinguish between the two agency problems in the test, which is a challenge in most existing studies.

Notable exceptions to this ambiguity problem are (Faccio, Lang, & Young, 2001) and (John & Knyazeva, 2006). Their findings are in line with ours, as they both report evidence in favour of the substitution model in samples involving regular stock companies, only. In particular, (Faccio, Lang, & Young, 2001) find that dividends in corporate pyramids are higher the stronger the control chain through the pyramid, and the larger the difference between the controlling block's voting rights and cash flows rights in firms with strong control chains. Since the second agency problem is the dominating one in such firms, their findings support the substitution hypothesis. (John & Knyazeva, 2006) relate dividends to overall governance quality rather than just one of its components, such as ownership structure. They find support for the substitution model under both agency problems, as dividends increase with decreasing governance quality.

## 3.6 Conclusions

Conflicts of interest between the firm's stakeholders may reduce the creation of wealth for the firm's stakeholders as a group. This paper analyzes whether dividend policy plays a role in this context by influencing the level of potential conflict between the stakeholders. We use an approach which avoids the inherent identification problem in most earlier tests of the outcome model and the substitution model, which are the two competing theories of how stakeholder conflicts and dividend policy interact. This is ensured by only studying firms where the agency conflict between large owners and small owners can be ignored because regulation mandates low ownership concentration in all firms. In contrast, potential conflicts between owners and non-owners vary more than usual. Moreover, this cross-sectional variation does not happen because ownership concentration varies from firm to firm, which is why existing research has produced ambiguous results. Rather, the variation occurs because firm control belongs to the owners in one organizational form and to non-owner stakeholders in the other. These

two parties may have opposing views on the firm's optimal dividend policy. This sample property is our key to a cleaner test of how stakeholder conflicts influence the firm's dividend policy.

Our major finding is that firms controlled by non-owner stakeholders pay out significantly more dividends than comparable firms controlled by owners. This evidence, which is robust to alternative model specifications and econometric techniques, is consistent with the substitution model and inconsistent with the outcome model. It suggests that dividends are used to mitigate agency conflicts rather than to intensify them. The potential agency conflict is high, but the actual conflict is made smaller by the dividend payout. This inference is supported by indirect evidence which may reflect that the strong non-owner stakeholders use dividend policy to build a good reputation with the weak owners.

**Figure 1: The predicted relationship between ownership concentration and dividend payout under the first and the second agency problem**

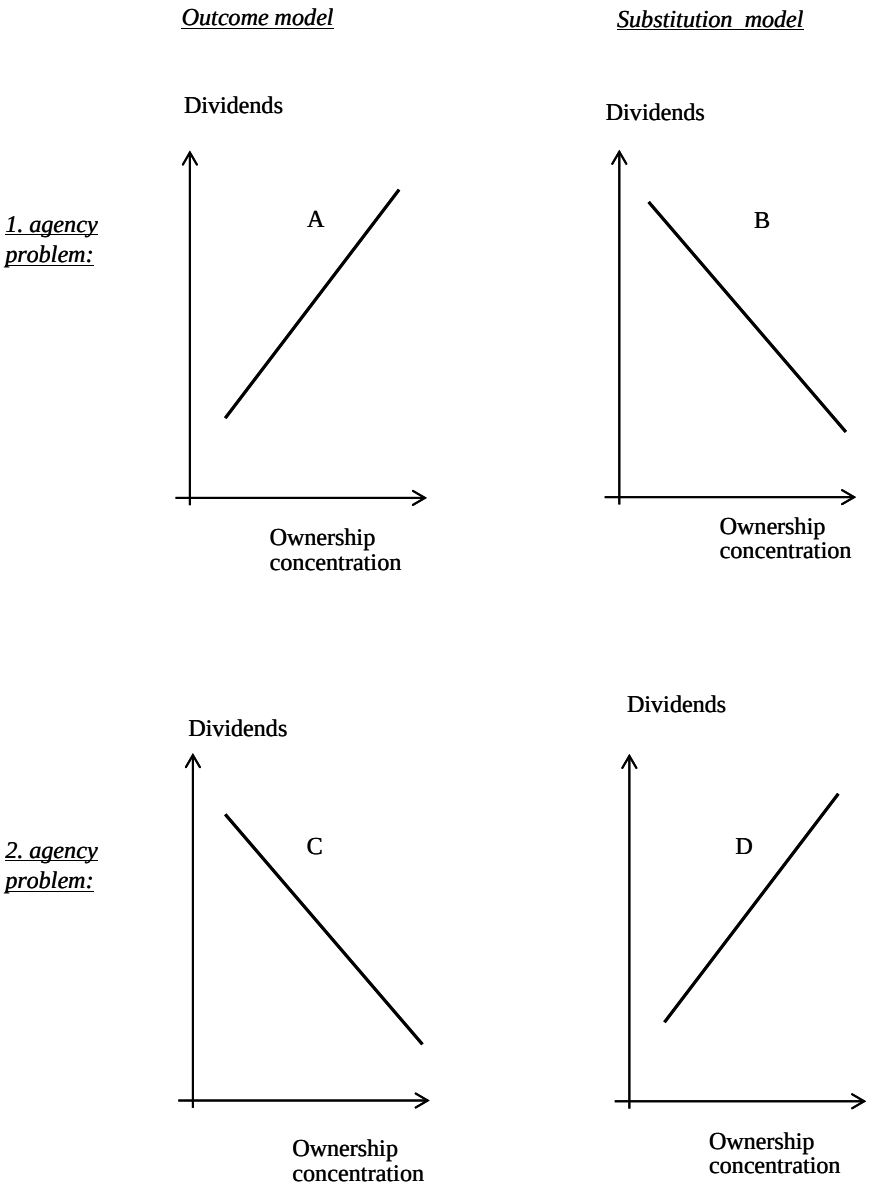

**Figure 2: The predicted relationship between owner control and dividend payout in our sample**

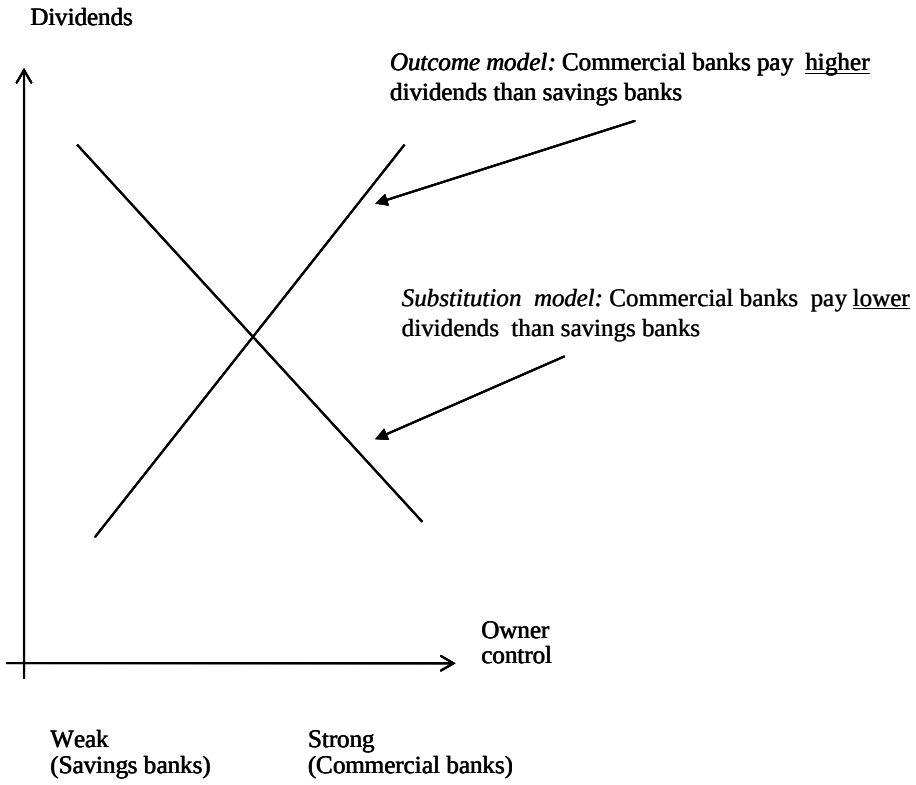

**Table 1: Firm types, control rights, and cash flow rights**

| | Stakeholders' control rights, % | | | | Stockholders' |
|---|---|---|---|---|---|
| Firm type | Stockholders | Employees | Depositors | Community | cash flow rights, % |
| Commercial banks | 73 | 27 | 0 | 0 | 100 |
| Savings banks | 25 | 25 | 25 | 25 | 5 - 74 |

This table shows the distribution of stakholders' control rights and stockholders' residual cash flow rights in the two firm types (commercial banks and savings banks) in our sample. The cash flow rights in a savings bank that do not belong to the stockholders are ownerless.

**Table 2: Sample size, aggregate size per firm type, and size per firm**

| | | Number of firms | | Aggregate size | | Size per firm | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Commercial banks | | Savings banks | |
| Year | All | Commercial banks | Savings banks | Commercial banks | Savings banks | Mean | Median | Mean | Median |
| 1989 | 16 | 13 | 3 | 403.29 | 12.42 | 31.02 | 7.76 | 4.14 | 2.13 |
| 1990 | 13 | 10 | 3 | 430.83 | 12.54 | 43.08 | 9.35 | 4.18 | 2.18 |
| 1991 | 12 | 8 | 4 | 258.55 | 83.08 | 32.32 | 9.26 | 20.77 | 5.39 |
| 1992 | 14 | 10 | 4 | 265.61 | 83.73 | 26.56 | 7.33 | 20.93 | 5.18 |
| 1993 | 14 | 10 | 4 | 352.46 | 88.34 | 35.25 | 8.62 | 22.08 | 5.90 |
| 1994 | 17 | 9 | 8 | 350.29 | 148.27 | 38.92 | 11.29 | 18.53 | 12.54 |
| 1995 | 21 | 9 | 12 | 386.27 | 184.13 | 42.92 | 22.01 | 15.34 | 7.86 |
| 1996 | 21 | 8 | 13 | 444.44 | 212.46 | 55.55 | 19.13 | 16.34 | 5.88 |
| 1997 | 23 | 9 | 14 | 516.93 | 244.87 | 57.44 | 16.95 | 17.49 | 5.42 |
| 1998 | 28 | 9 | 19 | 546.59 | 285.69 | 60.73 | 18.32 | 15.04 | 3.74 |
| 1999 | 26 | 6 | 20 | 577.18 | 356.22 | 96.20 | 24.53 | 17.81 | 4.30 |
| 2000 | 28 | 6 | 22 | 638.83 | 413.74 | 106.47 | 26.80 | 18.81 | 4.86 |
| 2001 | 27 | 5 | 22 | 425.68 | 460.03 | 85.14 | 28.23 | 20.91 | 5.19 |
| 2002 | 27 | 6 | 21 | 709.10 | 263.52 | 118.18 | 32.47 | 12.55 | 5.52 |
| Sum | 287 | 118 | 169 | 6306.06 | 2849.05 | 829.78 | 242.03 | 224.93 | 76.09 |
| Mean | 21 | 8 | 12 | 450.43 | 203.50 | 59.27 | 17.29 | 16.07 | 5.44 |
| Median | 21 | 9 | 13 | 428.25 | 198.29 | 49.32 | 12.77 | 17.65 | 5.03 |
| St.dev. | 6 | 2 | 8 | 133.04 | 142.50 | 31.72 | 8.54 | 86.29 | 2.53 |

This table shows the total number of firms in the sample (All), the number of firms per type (commercial banks and savings banks), the aggregate size per firm type, and the mean and median size per individual firm of each type. We measure size as total assets in billion NOK as of year 2002. The sample is all commercial banks and savings banks listed on the Oslo Stock Exchange by year-end.

**Table 3: Descriptive statistics for risk, return, liquidity, and growth**

| | Commercial banks | | | Savings banks | | | Difference | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Characteristic | Mean | Std | Median | Mean | Std | Median | Mean | (t) | Median | (z) |
| *Risk* | | | | | | | | | | |
| Asset risk, % | 14.39 | 5.83 | 13.45 | 8.40 | 2.88 | 7.81 | 6.00 | (12.12) | 5.63 | (11.81) |
| Liability risk, % | 54.75 | 24.07 | 48.96 | 33.77 | 12.48 | 33.74 | 20.98 | (10.99) | 15.22 | (9.17) |
| Leverage, % | 94.29 | 2.92 | 94.40 | 91.79 | 3.15 | 92.85 | 2.50 | (6.92) | 1.55 | (6.78) |
| Earnings risk, % | 1.69 | 1.91 | 1.34 | 0.48 | 0.40 | 0.42 | 1.21 | (2.64) | 0.92 | (1.96) |
| Systematic risk | 0.78 | 0.39 | 0.74 | 0.89 | 0.46 | 0.89 | -0.11 | (-0.92) | -0.15 | (-0.83) |
| *Return* | | | | | | | | | | |
| ROA, % | 0.42 | 0.85 | 0.78 | 0.45 | 0.76 | 0.75 | 0.02 | (-0.09) | -0.30 | (0.37) |
| Stock returns, % | 20.44 | 73.76 | 9.04 | 14.83 | 38.47 | 9.67 | 5.61 | (0.72) | -0.63 | (-0.04) |
| Capital gain, % | 15.74 | 73.57 | 5.51 | 6.66 | 39.27 | -0.40 | 9.07 | (1.19) | 5.92 | (0.87) |
| Dividend yield, % | 4.70 | 4.69 | 5.03 | 8.18 | 2.63 | 8.46 | -3.48 | (-7.52) | -3.43 | (-8.43) |
| *Liquidity* | | | | | | | | | | |
| Turnover, % | 60.18 | 66.32 | 40.01 | 27.01 | 25.13 | 17.28 | 33.17 | (6.16) | 22.73 | (5.10) |
| *Growth* | | | | | | | | | | |
| Asset growth, % | 9.92 | 21.73 | 7.91 | 13.71 | 9.45 | 12.39 | -3.79 | (-1.94) | -4.48 | (-3.52) |
| Tobin's Q | 1.01 | 0.43 | 1.00 | 1.21 | 0.29 | 1.17 | -0.20 | (-4.77) | -0.18 | (-5.94) |

The table shows the mean value, the standard deviation (std), and the median value for proxies of risk, return, liquidity, and growth. We measure Asset risk as the percentage of assets which is not cash, claims on the central bank, amortizable loans, or fixed assets. Liability risk is the percentage of liabilities which is not deposits, Leverage is total debt as a percentage of total seets, while Earnings risk is the standard deviation of ROA (net income over total assets). Systematic risk is the stock's beta estimated over the sample period from monthly stock returns. Stock return is capital gains plus dividend yield, and Turnover is the value of the trade in the stock during the year in percent of its market value at year-end. Asset growth is the relative increase in total assets over the year, and Tobin's Q is measured as the market value of stock divided by its book value. The means and medians are equally-weighted across firms and years. The sample is all commercial banks and savings banks listed on the Oslo Stock Exchange by year-end at least once over the period 1989-2002.

**Table 4: Ownership structure**

| | Commercial banks | | Savings banks | | Difference | | | |
|---|---|---|---|---|---|---|---|---|
| Characteristic | Mean | Median | Mean | Median | Mean | (t) | Median | (z) |
| Largest owner, % | 15.99 | 10.00 | 6.98 | 6.00 | 9.01 | (7.46) | 4.00 | (8.94) |
| Five largest owners, % | 37.61 | 32.00 | 18.06 | 17.00 | 19.55 | (12.84) | 15.00 | (10.53) |
| Personal owners, % | 21.66 | 20.00 | 50.56 | 52.00 | -28.89 | (-11.62) | -32.00 | (-9.34) |
| Separation | 0.27 | 0.27 | 0.18 | 0.38 | 0.09 | (1.75) | -0.11 | (-2.57) |

The table shows ownership characteristics across the two firm types (savings banks and commercial banks). We report the percentage equity holding of the firm's largest owner, the aggregate percentage holding of the five largest owners, and the aggregate percentage holding in the firm by personal owners (individuals). Separation reflects the wedge between the stockholders' cash flow rights and control rights. We operationalize Separation as the difference between the stockholders' contractual fraction of cash flow rights and their contractual fraction of board seats, divided by the stockholders' fraction of cash flow rights. The sample is all commercial banks and savings banks listed on the Oslo Stock Exchange by year-end at least once over the period 1989-2002. Data source: Verdipapirsentralen ASA.

## Table 5: Dividend characteristics

*A. Payout propensity*

| Year | All | Commercial banks | Savings banks |
|---|---|---|---|
| 1989 | 56.25 | 46.15 | 100.00 |
| 1990 | 38.46 | 20.00 | 100.00 |
| 1991 | 16.67 | 0.00 | 50.00 |
| 1992 | 14.29 | 10.00 | 25.00 |
| 1993 | 57.14 | 40.00 | 100.00 |
| 1994 | 88.24 | 88.89 | 87.50 |
| 1995 | 95.24 | 100.00 | 91.67 |
| 1996 | 95.24 | 87.50 | 100.00 |
| 1997 | 95.65 | 88.89 | 100.00 |
| 1998 | 100.00 | 100.00 | 100.00 |
| 1999 | 100.00 | 100.00 | 100.00 |
| 2000 | 100.00 | 100.00 | 100.00 |
| 2001 | 96.30 | 100.00 | 95.45 |
| 2002 | 88.89 | 66.67 | 95.24 |
| Mean | 74.45 | 67.72 | 88.92 |
| Median | 92.06 | 88.19 | 100.00 |
| St.dev. | 31.66 | 37.13 | 22.66 |

*B. Payout ratio for dividend payers*

| | All | Commercial banks | | Savings banks | | Difference | | | |
|---|---|---|---|---|---|---|---|---|---|
| Year | Mean | Mean | Median | Mean | Median | Mean | (t) | Median | (z) |
| 1989 | 83.53 | 60.04 | 51.47 | 130.50 | 125.70 | -70.46 | (-4.89) | -74.23 | (-2.32) |
| 1990 | 121.39 | 89.68 | 89.68 | 142.53 | 138.45 | -52.85 | (-2.66) | -48.77 | (-1.73) |
| 1991 | 147.25 | n.a. | n.a. | 147.25 | 147.25 | n.a. | (n.a.) | n.a. | (n.a.) |
| 1992 | 27.97 | 6.82 | 0.07 | 49.12 | 49.12 | -42.31 | (n.a.) | -49.05 | (-1.00) |
| 1993 | 53.41 | 25.66 | 0.27 | 81.17 | 69.83 | -55.51 | (-2.80) | -69.56 | (-2.31) |
| 1994 | 62.33 | 50.32 | 42.99 | 76.05 | 80.74 | -25.73 | (-1.60) | -37.74 | (-2.08) |
| 1995 | 62.68 | 53.94 | 45.81 | 69.04 | 57.99 | -15.11 | (-1.13) | -12.17 | (-1.25) |
| 1996 | 75.11 | 44.71 | 41.49 | 91.49 | 99.15 | -46.78 | (-4.95) | -57.67 | (-3.13) |
| 1997 | 75.92 | 45.63 | 44.35 | 93.23 | 103.13 | -47.60 | (-4.91) | -58.77 | (-3.41) |
| 1998 | 106.14 | 47.78 | 47.76 | 133.78 | 96.36 | -86.00 | (-1.46) | -48.60 | (-3.57) |
| 1999 | 79.69 | 46.87 | 51.14 | 89.41 | 96.66 | -42.54 | (-4.38) | -45.52 | (-2.85) |
| 2000 | 78.56 | 36.37 | 35.16 | 89.32 | 98.90 | -52.95 | (-5.74) | -63.74 | (-3.06) |
| 2001 | 89.49 | 38.46 | 40.58 | 101.32 | 102.97 | -62.87 | (-6.11) | -62.39 | (-3.11) |
| 2002 | 129.90 | 45.94 | 50.00 | 145.02 | 104.76 | -99.09 | (-0.66) | -54.76 | (-2.47) |
| All | 84.71 | 47.38 | 44.72 | 103.73 | 102.18 | -56.35 | (-4.40) | -57.46 | (-9.98) |
| St.dev. | 98.72 | 25.65 | | 114.73 | | | | | |

*C. Retention ratio for dividend payers*

| | All | Commercial banks | | Savings banks | | Difference | | | |
|---|---|---|---|---|---|---|---|---|---|
| Year | Mean | Mean | Median | Mean | Median | Mean | (t) | Median | (z) |
| 1989 | 40.84 | 39.96 | 48.53 | 42.60 | 49.65 | -2.64 | (-0.18) | -1.12 | (-0.05) |
| 1990 | 25.36 | 10.32 | 10.32 | 35.38 | 44.20 | -25.07 | (-1.37) | -33.88 | (-0.58) |
| 1991 | 20.25 | | | 20.25 | 20.25 | -20.25 | (n.a.) | -20.25 | (n.a.) |
| 1992 | 86.62 | 93.18 | 93.18 | 80.06 | 80.06 | 13.12 | (n.a.) | 13.12 | (1.00) |
| 1993 | 65.92 | 74.34 | 73.30 | 57.51 | 71.30 | 16.83 | (1.04) | 1.99 | (0.58) |
| 1994 | 55.78 | 49.68 | 57.01 | 62.75 | 64.27 | -13.07 | (-0.90) | -7.26 | (-0.81) |
| 1995 | 58.05 | 46.06 | 54.19 | 67.85 | 66.77 | -21.79 | (-2.12) | -12.59 | (-1.79) |
| 1996 | 60.51 | 55.29 | 58.51 | 63.31 | 58.98 | -8.02 | (-1.14) | -0.46 | (-0.59) |
| 1997 | 59.04 | 54.37 | 55.65 | 61.71 | 58.27 | -7.34 | (-0.98) | -2.62 | (-0.55) |
| 1998 | 48.68 | 52.22 | 52.24 | 47.00 | 59.73 | 5.21 | 0.20 | -7.49 | (-1.4) |
| 1999 | 64.77 | 53.13 | 48.86 | 67.68 | 68.04 | -14.54 | (-2.12) | -19.19 | (-1.56) |
| 2000 | 69.28 | 63.63 | 64.84 | 70.30 | 68.70 | -6.67 | (-1.02) | -3.86 | (-0.92) |
| 2001 | 67.12 | 61.54 | 59.42 | 68.18 | 65.40 | -6.63 | (-0.92) | -5.98 | (-0.96) |
| 2002 | 35.69 | 54.06 | 50.00 | 32.79 | 66.27 | 21.27 | (0.27) | -16.27 | (-0.82) |
| All | 56.62 | 52.41 | 54.64 | 58.52 | 65.38 | -6.11 | (-0.89) | -3.18 | (-3.18) |

This table shows the percentage of firms in the sample that pay cash dividends (panel A), the payout ratio for dividend payers (panel B), and the retention ratio of payers (panel C). The payout ratio is cash dividends divided by the earnings that belong to stockholders. The retention ratio is the fraction of total earnings not paid out as dividends to stockholders. All ratios are percentages. The sample is all commercial banks and savings banks listed on the Oslo Stock Exchange by year-end.

**Table 6: Equity issue activity**

*A. Issue propensity*

| Year | Commercial banks | Savings banks |
|---|---|---|
| 1989 | 46.15 | 66.67 |
| 1990 | 50.00 | 33.33 |
| 1991 | 37.50 | 50.00 |
| 1992 | 30.00 | 25.00 |
| 1993 | 40.00 | 50.00 |
| 1994 | 22.22 | 37.50 |
| 1995 | 11.11 | 8.33 |
| 1996 | 12.50 | 15.38 |
| 1997 | 11.11 | 21.43 |
| 1998 | 55.56 | 10.53 |
| 1999 | 33.33 | 10.00 |
| 2000 | 33.33 | 13.64 |
| 2001 | 40.00 | 13.64 |
| 2002 | 33.33 | 14.29 |
| Mean | 31.30 | 17.75 |
| Median | 33.33 | 18.41 |
| St. dev. | 14.12 | 18.34 |

*B. Issue volume*

| | Commercial banks | | Savings banks | | Difference | | | |
|---|---|---|---|---|---|---|---|---|
| Year | Mean | Median | Mean | Median | Mean | (t) | Median | (z) |
| 1989 | 55.87 | 26.41 | 33.61 | 33.61 | 22.26 | (0.37) | -7.20 | (-0.33) |
| 1990 | 5.75 | 3.18 | 2.07 | 2.07 | 3.68 | (n.a.) | 1.11 | (0.88) |
| 1991 | 38.82 | 40.93 | 17.72 | 17.72 | 21.10 | (0.82) | 23.22 | (1.16) |
| 1992 | 332.34 | 64.02 | 17.49 | 17.49 | 314.85 | (n.a.) | 46.52 | (0.45) |
| 1993 | 35.91 | 31.47 | 19.41 | 19.41 | 16.49 | (0.94) | 12.05 | (0.93) |
| 1994 | 12.84 | 12.84 | 36.49 | 24.78 | -23.65 | (-1.16) | -11.95 | (-1.73) |
| 1995 | 10.43 | 10.43 | 42.28 | 42.28 | -31.85 | (n.a.) | -31.85 | (-1.00) |
| 1996 | 0.68 | 0.68 | 7.35 | 7.35 | -6.67 | (n.a.) | -6.67 | (n.a.) |
| 1997 | 0.54 | 0.54 | 21.45 | 20.40 | -20.91 | (n.a.) | -19.86 | (-1.34) |
| 1998 | 18.14 | 13.84 | 19.57 | 19.57 | -1.42 | (-0.12) | -5.73 | (-0.39) |
| 1999 | 10.18 | 10.18 | 6.27 | 6.27 | 3.90 | (n.a.) | 3.90 | (n.a.) |
| 2000 | 16.97 | 16.97 | 0.59 | 0.52 | 16.38 | (1.33) | 16.45 | (n.a.) |
| 2001 | 4.58 | 4.58 | 5.72 | 0.31 | -1.14 | (-0.15) | 4.27 | (0.58) |
| 2002 | 9.15 | 9.15 | 5.36 | 0.44 | 3.79 | (0.42) | 8.71 | (1.16) |
| Mean | 45.81 | 13.67 | 15.95 | 15.95 | 29.86 | (1.15) | -2.28 | (-0.68) |

This table describes the firms' equity issuing behavior. Panel A shows the percentage of banks issuing new equity, and panel B shows new share capital as a percentage of existing share capital (owned plus ownerless share capital in savings banks) for issuing firms. The sample is all commercial banks and savings banks listed on the Oslo Stock Exchange by year-end.

**Table 7: Estimates of the base-case model**

| Characteristic | Hypothesis | Coefficient |
|---|---|---|
| Savings bank dummy | O: - ; S: + | 0.793*** |
| | | (3.34) |
| Lagged payout | + | 0.302* |
| | | (1.72) |
| Leverage | ? | -0.040 |
| | | (-0.69) |
| Liquidity | - | 0.090 |
| | | (1.47) |
| Growth | ? | 0.124** |
| | | (2.08) |
| Size | - | -0.142* |
| | | (-1.73) |
| Constant | | -1.623*** |
| | | (-2.82) |
| Sample size | | 211 |
| $R^2$ adjusted | | 0.62 |
| F-ratio | | 19.06*** |

This table relates a bank's dividend payments to potential determinants. The dependent variable is cash dividends divided by stockholders' earnings. Savings bank dummy equals one if the bank is a savings bank and zero otherwise. Lagged payout is the dependent variable one period earlier. Leverage is total debt over total assets, and Liquidity is the market value of the trade in the stock over the year divided by its market value at year-end. We measure Growth as the relative increase in assets over the year, while Size is the log of total assets in NOK1000. In the Hypothesis column, O refers to the Outcome model, S is the Substitution model, and the signs reflect the predicted relationship between dividends and the independent variable in question. The model is estimated on the pooled sample with year dummies (not reported), and we use standard errors adjusted for clustering at the firm level. Non-dummy data are winsorized at the 5% and 95% tails. We standardize every non-dummy variable by deducting the mean value of the variable from each observation and dividing the difference by the variable's standard deviation. The t-values are shown in parentheses, and statistically significant relationships at the 10%, 5%, and 1% level are labelled as *, **, and ***, respectively. The sample is all commercial banks and savings banks listed on the Oslo Stock Exchange by year-end at least once over the period 1989-2002.

**Table 8: The base-case model with non-winsorized data and random effects**

| | Pooled estimation | | Random effects estimation | |
|---|---|---|---|---|
| Characteristic | Base case | Non-winsorized data | Winsorized data | Non-winsorized data |
| Savings bank dummy | 0.793*** | 0.694*** | 1.163*** | 0.669*** |
| | (3.34) | (3.79) | (9.00) | (4.31) |
| Lagged payout | 0.302* | 0.053 | | |
| | (1.72) | (0.68) | | |
| Leverage | -0.04 | -0.019 | 0.039 | -0.01 |
| | (-0.69) | (-0.62) | (0.57) | (-0.12) |
| Liquidity | 0.09 | 0.071 | 0.098* | 0.076 |
| | (1.47) | (1.48) | (1.85) | (1.02) |
| Growth | 0.124** | -0.26 | 0.145** | -0.102 |
| | (2.08) | (-0.70) | (2.43) | (-0.37) |
| Size | -0.142* | -0.045 | -0.236*** | -0.057 |
| | (-1.73) | (-0.42) | (-3.40) | (-0.71) |
| Constant | -1.623*** | -0.829** | -0.951*** | -0.415 |
| | (-2.82) | (-2.62) | (-3.20) | (-0.85) |
| Sample size | 211 | 211 | 259 | 259 |
| $R^2$ adjusted | 0.62 | 0.09 | 0.65 | 0.20 |
| F-ratio | 19.06*** | 2.13*** | 297.18*** | 59.32*** |

This table compares the use of non-winsorized data and random effects estimation to the base-case approach from table 7, which uses pooled data winsorized at 5%/95%. The dependent variable is cash dividends over stockholders' earnings. Savings bank dummy equals one if the bank is a savings bank and zero otherwise. Lagged payout is the dependent variable one period earlier. Leverage is total debt over total assets, and Liquidity is the market value of the trade in the stock over the year divided by its market value at year-end. We measure Growth as the relative increase in assets over the year, while Size is the log of total assets in NOK1000. and we use standard errors adjusted for clustering at the firm level. Non-dummy data are winsorized at the 5% and 95% tails. We standardize every non-dummy variable by deducting the mean value of the variable from each observation and dividing the difference by the variable's standard deviation. Every model is estimated with year dummies (unreported), and the pooled estimation uses standard errors adjusted for clustering at the firm level. The t-values are shown in parentheses, and statistically significant relationships at the 10%, 5%, and 1% level are labelled as *, **, and ***, respectively. The sample is all commercial banks and savings banks listed on the Oslo Stock Exchange by year-end at least once over the period 1989-2002.

**Table 9: Alternative dividend payout measures**

| | Payout measure | | | |
|---|---|---|---|---|
| Characteristic | Div/ E | (Div+Rep)/ E | Div/ CF | (Div+Rep)/ CF |
| Savings bank dummy | 0.793*** | 0.784*** | 0.501*** | 0.507*** |
| | (3.34) | (3.34) | (3.90) | (4.00) |
| Lagged payout | 0.302* | 0.310* | 0.458*** | 0.458*** |
| | (1.72) | (1.75) | (4.82) | (4.83) |
| Leverage | -0.04 | -0.066 | -0.156*** | -0.165*** |
| | (-0.69) | (-1.10) | (-3.47) | (-3.69) |
| Liquidity | 0.09 | 0.09 | 0.109* | 0.110* |
| | (1.47) | (1.49) | (1.83) | (1.85) |
| Growth | 0.124** | 0.125** | 0.173** | 0.171** |
| | (2.08) | (2.13) | (2.68) | (2.63) |
| Size | -0.142* | -0.123 | -0.095* | -0.088 |
| | (-1.73) | (-1.49) | (-1.77) | (-1.64) |
| Constant | 0.796 | 1.08 | 3.185*** | 3.327*** |
| | (0.99) | (1.29) | (3.48) | (3.63) |
| Sample size | 211 | 211 | 211 | 211 |
| $R^2$ adjusted | 0.62 | 0.63 | 0.72 | 0.72 |
| F-ratio | 19.06*** | 19.55*** | 29.75*** | 29.87*** |

This table reports the effect of estimating the base-case model with alternative dividend payout measures, which are (i) cash dividends (Div) over earnings (E), (ii) cash dividends and repurchases (Rep) over earnings, (iii) cash dividends over cash flow from operations (CF), and (iv) cash dividends and repurcases over cash flow from operations. The denominater in the payout ratio reflects only the earnings or cash flow that belongs to the stockholders. Savings bank dummy equals one if the bank is a savings bank and zero otherwise. Lagged payout is the dependent variable one period earlier, Leverage is total debt over total assets, and Liquidity is the market value of the trade over the year divided by the market value of the stock at year-end. We measure Growth as the relative increase in assets over the year, while Size is the log of total assets in NOK1000.

We standardize every non-dummy variable by deducting the mean value of the variable from each observation and dividing the difference by the variable's standard deviation. Non-dummy data are winsorized at 5% and 95%. The models are estimated on the pooled sample with year dummies (not reported), and we use standard errors adjusted for clustering at the firm level. The t-values are shown in parentheses, and statistically significant relationships at the 10%, 5%, and 1% level are labelled as *, **, and ***, respectively. The sample is all commercial banks and savings banks listed on the Oslo Stock Exchange by year-end at least once over the period 1989-2002.

**Table 10: Interacting stakeholder control with growth and size**

| Characteristic | Coefficient |
|---|---|
| Savings bank dummy | 0.989*** |
| | (4.38) |
| Lagged payout | 0.199 |
| | (1.12) |
| Leverage | -0.011 |
| | (-0.17) |
| Liquidity | 0.098* |
| | (1.85) |
| Growth | 0.158* |
| | (1.72) |
| Size | 0.014 |
| | (0.22) |
| Growth * Savings bank dummy | -0.142 |
| | (-1.46) |
| Size * Savings bank dummy | -0.342** |
| | (-2.72) |
| Constant | -1.842*** |
| | (-2.82) |
| Sample size | 211 |
| $R^2$ adjusted | 0.65 |
| F-ratio | 19.96 |

This table expands the base-case model from table 7 by interacting stakeholder control with the firm's growth and size. The dependent variable is cash dividends divided by stockholders' earnings. Savings bank dummy equals one if the bank is a savings bank and zero otherwise. Lagged payout is the dependent variable one period earlier. Leverage is total debt over total assets, and Liquidity is the market value of the trade in the stock over the year divided by its market value at year-end. We measure Growth as the relative increase in assets over the year, while Size is the log of total assets in NOK1000. We include two interaction terms where we multiply the savings bank dummy with the growth variable and the size variable, respectively. We standardize every non-dummy variable by deducting the mean value of the variable from each observation and dividing the difference by the variable's standard deviation. Non-dummy data are winsorized at 5% and 95%. The models are estimated on the pooled sample with year dummies (not reported), and we use standard errors adjusted for clustering at the firm level. The t-values are shown in parentheses, and statistically significant relationships at the 10%, 5%, and 1% level are labelled as *, **, and ***, respectively. The sample is all commercial banks and savings banks listed on the Oslo Stock Exchange by year-end at least once over the period 1989-2002.

**Table 11: Accounting for ownership structure characteristics**

| Characteristic | Hypothesis | Div/ E | (Div+Rep)/ E | Div/ CF | (Div+Rep)/ CF |
|---|---|---|---|---|---|
| Savings bank dummy | O: - ; S: + | 0.902*** | 0.893*** | 0.818*** | 0.819*** |
| | | (3.34) | (3.33) | (3.84) | (3.88) |
| Largest holding | O: - ; S: + | 0.017 | 0.022 | -0.09 | -0.087 |
| | | (0.21) | (0.28) | (-1.30) | (-1.25) |
| Separation | O: - ; S: ? | -0.345*** | -0.376*** | -0.346*** | -0.354*** |
| | | (-2.78) | (-3.05) | (-3.20) | (-3.30) |
| Largest is person | + | 0.097** | 0.098** | 0.023 | 0.023 |
| | | (2.26) | (2.25) | (0.64) | (0.64) |
| Lagged payout | + | 0.224 | 0.224 | 0.382*** | 0.380*** |
| | | (1.20) | (1.21) | (3.51) | (3.48) |
| Leverage | ? | -0.013 | -0.039 | -0.088 | -0.099 |
| | | (-0.18) | (-0.55) | (-1.40) | (-1.63) |
| Liquidity | - | 0.087 | 0.087 | 0.097 | 0.098 |
| | | (1.37) | (1.37) | (1.42) | (1.43) |
| Growth | ? | 0.033 | 0.032 | 0.075 | 0.073 |
| | | (0.54) | (0.52) | (1.42) | (1.36) |
| Size | - | -0.115 | -0.094 | -0.087 | -0.079 |
| | | (-1.34) | (-1.12) | (-1.62) | (-1.50) |
| Constant | | -0.29 | -1.785*** | -0.656 | -0.657 |
| | | (-0.42) | (3.23) | (-0.97) | (-0.98) |
| Sample size | | 202 | 202 | 202 | 202 |
| $R^2$ adjusted | | 0.63 | 0.64 | 0.72 | 0.72 |
| F-ratio | | 133.87*** | 133.51*** | 228.08*** | 275.05*** |

This table expands the models from table 9 by variables that account for ownership concentration, direct (personal) ownership, and for the separation between ownership and control, respectively. The alternative dependent variables are (i) dividends (Div) over earnings (E), (ii) dividends and repurchases (Rep) over earnings, (iii) dividends over cash flow from operations (CF), and (iv) dividends and repurcases over cash flow from operations. The denominators of these payout ratios only reflect the earnings or cash flow that belongs to the stockholders. Savings bank dummy equals one if the bank is a savings bank and zero otherwise. Largest holding is the ownership fraction of the largest owner, and Separation is aggreagte cash flow rights in the firm minus aggregate voting rights divided by aggregate cash flow rights. Largest is person is a dummy variable which is 1 if the largest owner is a person and zero otherwise. Leverage is total debt over total assets, Liquidity is the market value of the trade in the stock over the year divided by its market value at year-end. We measure Growth as the relative increase in assets over the year, while Size is the log of total assets in NOK1000. In the Hypothesis column, O refers to the Outcome model, S is the Substitution model, and the signs reflect the predicted relationship between dividends and the independent variable in question.

We standardize every non-dummy variable by deducting the mean value of the variable from each observation and dividing the difference by the variable's standard deviation. Non-dummy data are winsorized at 5% and 95%. The models are estimated on the pooled sample with year dummies (not reported), and we use standard errors adjusted for clustering at the firm level. The t-values are shown in parentheses, and statistically significant relationships at the 10%, 5%, and 1% level are labelled as *, **, and ***, respectively. The sample is all commercial banks and savings banks listed on the Oslo Stock Exchange by year-end at least once over the period 1989-2002.

# 4 Ownership and the decision to go public[1]


## Abstract

This paper investigates what motivates firms to go public. Using the population of all Norwegian non-listed firms from 2000 to 2008, we document that the going public decision is influenced by the ownership structure of the firm prior to the listing date. Firms with more dispersed owners and firms with more institutional ownership are more likely to go public. These findings suggest that controlling owners use their power to avoid going public. Possibly to continue consuming control benefits.



JEL classification: G32, G34

Keywords: Initial Public Offering, Corporate Governance, Private Firms, Control Benefits



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## 4.1 Introduction

The going public decision involves a choice by current owners to give up some or all of the control benefits they had while the company was private. The Initial Public Offering (IPO) is usually a large equity offering that, due to the listing requirements of the stock exchange, is sold to many outside investors. This transaction dilutes the ownership of pre-IPO owners. In addition, post IPO, the firm's management is being monitored by both new owners and new potential investors. The public firm is also exposed to scrutiny by regulators, analysts, and the stock exchange it lists on. Thus, the loss of control benefits happens both directly through dilution and indirectly through increased monitoring. This paper investigates empirically how the ownership structure influence the decision to go public.

The main challenge in an empirical study of the going public decision is lack of detailed data on private firms. It is obviously problematic that one does not observe historical accounting information, ownership structure, and other characteristics for IPO firms prior to the listing date. However, it is equally limiting not to observe the firms that decide to stay private. To understand why firms go public, one should study both firms that choose to go public and firms that choose to stay private. The main contribution of this paper is to analyze the determinants of the IPO decision using data where this type of information is available for a very large sample of private firms over an extensive time period.

We use accounting information for the population of Norwegian limited liability firms over a sample period starting in 2000 and ending in 2008. During this period there is a total of 319,038 unique firms in the data—of which more than 99 per cent are non-listed. Although many of these firms do not have the option to become listed, a large number will enter our sample of listing candidates. In addition to the scope of information on private firms, our data has several advantages when compared to data used in other studies. First, private and public Norwegian companies are required by law to file audited annual statements. Hence the data quality is unusually high.[2] Second, the accounting data is augmented by detailed information on ownership structure for all firms. Third, we observe the population of private firms. Hence we do not have to worry about the endogeneity question of why a firm is included in the dataset in the first place. In related studies, the private firms are observed for a particular reason. For example, (Pagano, Panetta, & Zingales, 1998) rely on data on firms that have a relationship with particular banks. (Boehmer & Ljungqvist, 2004) look at firms with publicly traded debt. In contrast, our data allow us to perform a detailed investigation

[2] A failure to submit audited statements causes liquidation. This process normally takes less than 17 months.

of firms that decide to go public as well as of firms that decide to stay private, independently of the firm's specific setting.

Our main and novel finding is that the going public decision is significantly influenced by the ownership structure of the firm prior to the listing date. Firms with more institutional investors and firms that have more dispersed ownership are more likely to do an IPO. This is consistent with the notion that controlling owners keep the firm private to retain their control benefits. Moreover, the probability of going public decreases with the age and increases with the size and leverage of the firm. This finding is consistent with the idea that firms do IPOs to access capital markets.

These results are important because they shed new light on the relevance of corporate governance in the IPO decision. At the hart of corporate governance stands the separation of ownership and control. The agency problems created by this separation are extensively studied in (Jensen & Meckling, 1976) and the voluminous literature that followed this seminal paper. Compared with the amount of research that has been done on understanding the effects of separating ownership from control, much less research asks why or why not such a separation happens in the first place. Our paper contributes to this literature by showing how the IPO decision is influenced by the costs and benefits of separating ownership from control.

One reason this governance question has received less attention in the literature is that it has been viewed as an inherent feature of the life-cycle of a firm: When a firm grows, it becomes too complex to be run by a single owner-manager. Moreover, increased demand for capital leaves the owner-manager unable to provide sufficient funding when the firm reaches a certain size. Consequently, the firm is taken over by a team of professional managers and funded through capital markets.

Although this is an accurate description of what happens in many firms, it is still not a satisfactory explanation for all firms. First, there are many large firms where ownership and control are not separated. Second, the typical degree of separation varies dramatically between countries.

The latter observation has motivated a number of researchers to investigate why companies typically have dispersed ownership and professional managers in some countries, but are closely-held with family-based management in others. (La Porta, Lopez-de-Silanes, Shleifer, & Vishny, 1997) find that countries with weaker investor protection have less developed capital markets. One interpretation of this finding is that investors are willing to provide funding for corporations if they are protected against the consumption of control benefits by managers and controlling shareholders. This view is supported by (La Porta, Lopez-de-Silanes, & Shleifer, 1999) and (Dyck & Zingales, 2004). The latter paper documents that control benefits are indeed higher in countries with less developed capital markets and weaker investor protection.

The international evidence suggests that controlling owners are either unable or unwilling to relinquish control to professional managers or co-investors if the control benefits are large. Rather than investigating the issue at the aggregate level, this paper investigates it at the firm level and relates it specifically to the IPO decision.

Our findings suggest that controlling owners that may consume control benefits are reluctant to take the firm public. In contrast, institutional owners are more likely to take the firm public. A possible reason is that unlike personal owners, institutional owners have lower potential and ability to consume control benefits.

The rest of the paper is organized as follows. Section 2 discusses the theory and existing empirical work as a background for our study. The details of our data are described in section 3. Section 4 describes the methodological choices we are making. Results are presented in section 5, and section 6 concludes.

## 4.2 Existing literature

This section considers potential explanations for the going public decision and points out why the Norwegian data allows us to investigate questions that have been hard to address using data from other countries.

Going public is a major decision where the firm has to balance the cost of going public against the benefits. There are huge costs in preparing for the IPO, both directly, for example through advisory fees, and indirectly, for instance through management time and attention. In the U.S., (Lee, Lochhead, Ritter, & Zhao, 1996) estimate the direct cost of an IPO at 11% of the issue proceeds, and as much as 19% if underpricing is taken into account.

There are also recurring costs of being a public company. For instance, the firm faces higher costs caused by tighter regulations. In the sample analysed by (Doidge, Karolyi, & Stulz, 2010), foreign firms delist from the US equity markets as a reaction to decreased delisting costs caused by the Exchange Act Rule 12h-6.

In the following section we summarize the existing empirical work and outline the theoretical background of the IPO decision. We group the discussion into five categories: Access to capital, information, liquidity, control benefits, and diversification.

### 4.2.1 Access to capital

The most immediate benefit of the IPO is normally a large capital injection. (Leone, Rock, & Willenborg, 2007) report that in their sample pre-IPO owners typically retain 65% of the shares in the company. The IPO might, however, not include a capital injection, as all shares sold to outside

investors might be shares sold by the current owners rather than newly issued shares.

An IPO is a natural solution for many firms that need capital to finance future growth. Seminal work by (Modigliani & Miller, 1963) and (Scott, 1976) suggests there is an optimal capital structure for each firm. Highly levered firms, firms not paying dividends, firms with large capital expenditures, and firms that have grown recently are more likely to be below the optimal equity ratio.

(Pagano, Panetta, & Zingales, 1998) investigate the financing question using data on Italian private firms for the sample period 1982–1992. They conclude that Italian companies go public to rebalance their balance sheet after a period of high investments and high growth. Thus the IPO is not to finance future growth. In fact investments in their sample declines after the IPO. Furthermore, they find that large firms and firms in industries with high market to book ratios are more likely than others to go public.

In contrast, using an extensive sample of IPOs from 38 countries, (Kim & Weisbach, 2008) find that a significant amount of the cash raised in the IPO is used to finance future investments. They conclude that IPO proceeds are used over future time periods to fund a series of R&D and investment projects.

(Boehmer & Ljungqvist, 2004) argues that because a firm's probability of going public varies with time, one cannot use standard logit or probit techniques to analyze the chance of this event. They suggest using a so called hazard analysis, where they estimate a hazard function for the time-varying probability of going public. Their sample includes 330 German firms that have indicated an intention to go public in the short or medium term. They find that companies going through with the transaction have more investment opportunities and higher valuations than other firms. However, although their sample is limited to firms that have stated that they intend to go public, it is unclear how strong this intention has to be in order to enter the sample.

(Chemmanur, He, & Nandy, 2010) study the going public decision using a sample of U.S. manufacturing firms. They corroborate the finding that firms go public after a period of high growth. However, capital expenditures for manufacturing firms in their sample continue to grow after the IPO, at least for a few years. Since the stockmarket plays a relatively limited role in the Italian economy ((Pagano, Panetta, & Zingales, 1998) p. 28), and since (Chemmanur, He, & Nandy, 2010) focus on manufacturing firms only, it is interesting to revisit the life cycle explanation for IPOs using a dataset that does not suffer from these limitations. Our dataset includes firms from all industries. In addition, the Norwegian market for external

capital is well developed and of a similar size, relative to the economy, as the U.S. market.[3]

### 4.2.2 Information

(Leland & Pyle, 1977) and (Stewart C Myers & Majluf, 1984) suggest there is an informational asymmetry between the firm's insiders and outsiders. Due to adverse selection and moral hazard, outside finance might therefore be more expensive. (Campbell, 1979) and (Yosha, 1995) suggests that public firms may have to disclose sensitive information that reduces their competitiveness relative to private firms. That is, a requirement to disclose more information hurts the competitive position of the public firm. As the firm grows larger or exists for a longer time, however, its competitive position gets more analyzed and the increased disclosure after an IPO is less costly. Also, firms in mature industries might have fewer opportunities to benefit from privacy. Hence, these firms are more likely to go public.

When there is a separation between ownership and control, managers need to be monitored. (Chemmanur & Fulghieri, 1999) suggests that with dispersed ownership, the cost of monitoring might be duplicated. This means each owner must bear the same monitoring cost. Having one or a few large owners reduces this cost. This effect increases the cost of being a public company. An opposite effect is suggested by (Subrahmanyam & Titman, 1999). A broad investor base will produce information serendipitously. Investors might read about the firm in a newspaper, on the Internet, or try some of its products (i.e., without explicitly looking for firm specific information). This information will then be conveyed to all investors through the stock price. Firms with extensive public contact might benefit more from this type of information production. Therefore, they are more likely to go public.

(Merton, 1987) presents a model where the value of a firm increases with the investor base, or what he calls degree of investor recognition. 'If you don't know it you can't by it'. Firms would therefore want to go public to increase their investor base. This is particularly true for private firms with concentrated ownership, which may benefit the most informationally.

(Ritter & Welch, 2002) suggest insiders will take advantage of a market overvaluation. Thus, they will make the firm public when it faces favorable market conditions and insiders believe the firm is overvalued. Under these circumstances, outside investors might pay more than the true value of the firm. This is corroborated by (Kim & Weisbach, 2008), who finds that, at least for seasoned equity offerings, the firm's owners try to time

[3] At the end of 2009 the shares listed on the Oslo Stock Exchange were valued at 68% of the 2009 Norwegian GDP, compared to 103% for publicly traded shares in the U.S. Source: CIA Factbook

the market and sell more shares when the firm has a high market-to-book ratio.

### 4.2.3 Liquidity

(Zingales, 1995), (Mello & Parsons, 1998), (Bolton & von Thadden, 1998), and (Boot, Gopalan, & Thakor, 2006) suggest there is an important IPO gain from increased liquidity of the firm's shares. By going public, the shares can be traded less costly, and the cost of capital will decrease. However, this may be less important in firms that are already dispersedly held and have low inside ownership.

(Brau & Fawcett, 2006) interview 336 Chief Financial Officers (CFOs) in companies that either have gone public, or have the opportunity to do so, but have decided to stay private. They conclude that the main reason for going public is to facilitate acquisitions, while the main reasons to stay private is to retain control. Also, CFOs claim that they time the IPO according to overall market conditions, and that they are aware of the underpricing phenomenon.

(Celikyurt, Sevilir, & Shivdasani, 2010) corroborates the idea of the IPO as prelude to M&A activity. They find, in their sample of 793 U.S. IPO firms, that acquisitions increase dramatically after the IPO. It is also significantly higher for IPO firms than for seasoned firms.

### 4.2.4 Control benefits

Large owners can extract control benefits at the expense of smaller owners. This possibility is particularly acute when the minority is dispersed, and when the largest owner's share is marginally above the threshold to exert control (normally 50%). Similarly, (Maug, 1996) suggests that managers with large ownership stakes can ensure that they keep their highly paid jobs (entrenchment). By staying private, the owner-manager keeps her decision autonomy, limits the agency costs between managers and owners, and continues to consume control benefits.

(Helwege & Packer, 2009) investigate private firms that have to file with the SEC, typically because they have publicly traded debt or particularly dispersed ownership. They conclude that the reason for the high leverage in their sample of 181 U.S. firms is the managers' determination to avoid outside equity. Firms that conduct a private placement of shares are more likely go public at a later stage. They suggest maintaining control is an important reason to stay private. However, their sample of firms that are required to report to the SEC may not be particularly representative for firms in general that may choose to go public.

### 4.2.5 Diversification

Large owners may have a disproportionally large share of their wealth invested in their firm. Making an IPO is a way of diversifying their holding into other assets.

(Bodnaruk, Kandel, Massa, & Simonov, 2008) use a sample of 124 IPOs from Sweden and study how the degree of portfolio diversification among the pre-IPO shareholders affect the going public decision. Their main finding is that firms with less diversified shareholders are more likely to go public.

(L. Pastor, Taylor, & Veronesi, 2009) study the diversification benefits of an IPO in a model with symmetric information and learning. Their model has implications for firm profitability around the IPO that is supported in a study of more than 7,000 U.S. IPOs. They conclude that diversification benefits are important for the IPO decision.

While consumption of control benefits may make controlling owners reluctant to make an IPO, the implication of the importance of diversification pulls in the other direction. Large owners wanting to diversify their portfolio may want to take the firm public to enjoy the benefits of diversification.

Our data includes information on the 50 largest owners for all private firms in Norway. Compared to the study of (Bodnaruk, Kandel, Massa, & Simonov, 2008), who are limited to a matching sample of 277 firms that did not go public, our data allows a unique opportunity to investigate the importance of the ownership structure for the decision to go public or remain private.

One way to circumvent the problem of accessing comprehensive data on private companies is to study public firms, i.e., firms that have already gone through with the IPO. Firms that are public still have to balance the costs and benefits of staying public. Therefore, we can learn about this tradeoff by looking at public firms that decide to go private. (Bharath & Dittmar, 2010) takes this approach and suggest looking at the going private decision of public companies. They analyze 1,023 companies in the U.S. that went private in the period 1980-2004.

In the sample analysed by (Bharath & Dittmar, 2010), the typical firm that go private has less stock turnover, less analyst coverage, less institutional ownership, and more concentrated ownership. Firms going private also have more free cashflow and engage in fewer acquisitions. This supports theories suggesting that companies go public for informational reasons, for access to capital, for liquidity, and for corporate control reasons. They find these characteristics already at the IPO date, which on average is 13 years prior to the going private date.

All studies in the literature suffer from a possibly biased sample. This is because the researchers lack reliable information on private

companies. Researchers have so far had to rely on samples of firms where there is data, which are the firms that went public. These firms might not be representative for all firms that might go public.

Table 1 summarizes theories and empirical findings in the existing literature. We build on this, and go on to isolate the effect of ownership structure on the likelihood of making an IPO. We hypothesize that large controlling owners prefer to keep their firms private to continue consuming control benefits. We expect a positive relationship between ownership concentration and the likelihood of the IPO. Similarly we expect firms with institutional owners to be more likely to go public. Table 2 shows the empirical proxies we will use for investigating the reasons to go public.

## 4.3 Data and sample selection

Our study use accounting information and ownership structure data from the Centre for Corporate Governance Research (www.bi.no/ccgr) for the population of limited liability firms in Norway. The CCGR gets data from Experian (www.experian.no), which collects their data from a governmental registry called Brønnøysundregistrene (www.brreg.no). Norwegian companies, private and public, are required by law to file audited annual statements according to the same format.

Our sample period is 2000 – 2008. Observations are recorded at year end, resulting in a maximum time-series length of nine years per firm. There is a total of 319,038 unique firms in the data, of which the overwhelming majority are non-listed. However, due to the listing requirements of the Oslo Stock Exchange, most of these firms do not have the option to become listed.

The two ways to list at the Oslo Stock Exchange are the Main list and the Axess list. The formal listing requirements for the Main list is a minimum of NOK 300 million in total assets, at least 500 shareholders, and at least 25 per cent of the shares widely held. A firm should have been in operation for at least three years. On the Oslo Axess list, the requirements are a minimum of NOK 8 million in total assets, at least 100 shareholders, and at least 25 per cent of the shares widely held. As Oslo Axess was established only in 2007, we will not consider which market place a firm lists on.

To construct the sample of firms that could possibly list on the Oslo Stock Exchange (listing candidates), we replace the formal listing requirement by a requirement that a firm must have been in business for at least three years, and that there are accounting data for at least these three years. More precisely, a company-year is included in the sample of non-listed companies if (1) the company is not already listed or was listed in the past, (2) the company has positive revenues for the current year and the last three years, and (3) the total assets for the current year exceeds NOK 4 million. We do not take into account the current spread of ownership, as this

typically changes during the IPO process. We include firms which are smaller than the formal listing requirement threshold because firms can use the IPO process to increase their total assets.

Table 3 provides descriptive information for the sample of 179,701 company years. Comparing the descriptive statistics for the firms that are going public in Panel A with those for candidate firms that are staying private in Panel B, we see that the going public firms are on average much larger than the firms that choose not to go public. The median IPO firm has total assets of NOK 152 million, while the median of all firms in the sample is NOK 10 million. The difference in terms of sales is reversed. The median staying private firm turns over NOK17 million, while the median IPO firm turns over NOK6 million. This suggests IPO firms are much more capital intensive and sell much less than candidate firms that choose to stay private.

IPO firms have a lower debt to asset ratio than private firms. This suggest there are other reasons than concern for the capital structure to go public, as it seems IPO firms do not rely on debt to the same extent as firms that stay private. However, IPO firms are less profitable, with a median ROA of zero. Staying private firms have a median profitability of 9 per cent. 34 per cent of staying private firms pay dividends in a given year, while 21 per cent of IPO firms do the same. Thus, by this metric, IPO firms seem more capital constrained than the staying private firms.

The ownership variables show that the median Herfindahl index[4] of ownership concentration is 0.82 for private firms and 0.23 for IPO firms. The typical private (non-IPO) firm has a large owner with 90 per cent of the shares, while in the typical IPO firm the largest owner has 41 per cent of the shares. The CEO typically owns 50 per cent of the shares in the private firm sample, but only 14 per cent in the IPO firms. This suggests that large owners prefer to keep their firms private. When the ownership structure gets more diluted, the probability of doing an IPO increases.

## 4.4 Methodology

The defining feature of the data is that a firm stays in one state (non-listed) for a number of periods, and then possibly exits the sample by going public (listed). Thus, the IPO decision lends itself naturally to being analyzed by a hazard model approach. This methodology is used in, for example, (Bharath & Dittmar, 2010) . In the language of hazard models, we will treat an IPO as a terminating event. In other words, a non-listed firm is kept in our sample until it does an IPO, at which point it exits the sample. If the firm exits for

[4] The Herfindahl index of ownership is calculated by summing the squared fraction of shares held by each owner. A firm owned by a single owner will have a Herfindahl index of one, while a very dispersedly owned firm will have an index close to zero.

other reasons, or if the sample period ends, we treat it as a right-truncation of the data. Since our sample period starts in 2000, there are a number of firms that entered the sample with a long history of not going public. This issue will be referred to as left-truncation of the data. Note also that the variable of interest, the probability of IPO, might vary over time. Our estimation will investigate cross-sectional differences between firms as well as changes over time.

Our implementation of a hazard model follows (Shumway, 2001). He shows that a standard logit model estimation where each firm-year is treated as a unique observation is equivalent to running a hazard model. We use the (Cox, 1972) proportional hazard model with the (Breslow, 1974) approximation to resolve ties. The model to be estimated is

$$h(t,X(t)) = h(t,0)\exp(\beta' X(t)),$$

where $h(t,X(t))$ is the hazard rate at time $t$ for a firm with covariates $X(t)$. This model is flexible enough to handle both censoring and time variation. The Cox regression allows us to estimate the coefficient vector $\beta$ without imposing any restrictions on the baseline hazard, $h(t,0)$. A positive coefficient suggests that a higher value of the variable is linked to a higher hazard rate, implying that the firm is more likely to go public.

## 4.5 Results

### 4.5.1 Base case

Table 4 presents the base case results.[5] The table shows that firms are more likely to go public when they are large, have low profitability, and do not pay dividends. This is in line with previous findings and our predictions in table 2. Large firms may have exhausted other sources of capital, and go public to tap the public markets. Second, paying dividends may be a sign that the firm is generating sufficient capital internally, and do not need to go public for accessing the public equity market. Finally, we get a negative coefficient for profitability, suggesting that firms with lower profitability go public. Firms with high profitability may have easier access to other sources of capital, either internally generated or by having sufficient debt capacity. These findings support the argument of the firm going public to more easily access capital.

Looking at the ownership variables, there is a significantly negative coefficient for the fractional holding of the largest owner. This suggest large owners prefer to keep their firms private, and does not support the idea that

[5] There seems to be no serious multicolinearity, as the correlation coefficients are less than 0.2 for all base case variables.

large owners take the firm public for diversification reasons.[6] The coefficient for the fraction of shares held by institutional owners is positive but not significant at a 10 percent level. The findings corroborate findings in earlier work and the idea that a going public decision trades off benefits of control with the benefits being a publicly traded company.

Our results also indicate that younger firms are more likely to go public. This seems to go against the information story that adverse selection makes outside finance more expensive. Older, well known, firms might have easier access to private capital, both internally and externally. They can therefore avoid the IPO. This finding might also be due to the left censoring of the data. An older firm that has not gone public before we start observing, might have firm-specific characteristic that we do not observe. These characteristics may make it less likely to go public in our observation window. For instance, the firm may have an exceptional source of capital or a particularly entrenched manager caused by tenure and charisma.

### 4.5.2 Alternative empirical proxies

In table 5 we measure the theoretical variables in alternative ways. We also add more variables to the model. In the first column we use the Herfindahl index of ownership as a measure of ownership dispersion instead of the holding of the largest owner. In the second column we control for the growth of total assets in. The main results do not change. However, the coefficient for the Growth variable is significantly positive. This corroborates findings from for example (Pagano, Panetta, & Zingales, 1998) that firms that experience high growth subsequently go public. The coefficients for Size, Largest owner, and Age keep their significance. This corroborates our findings in the base case regression.

In column three we use an alternative measures for Investments. Moreover, we measure ownership concentration by the fraction of shares owned by the five largest owners. The coefficient for Investments measured as capital expenditures over fixed assets is significantly positive. This further corroborates the previous result on growth. The coefficient for the alternative ownership concentration variable is similar to the base case coefficient, supporting our result on ownership concentration.

We have run unreported regression of the base case model on the whole population of Norwegian limited liability firms, rather than just our IPO candidates. We get the same signs on the coefficients, but the inclusion of non-candidate firms adds considerable noise. Therefore, we lose significance on most variables except for size, which is still significant. This

[6] Unfortunately, we do not have data on the owners' total investment portfolios. Therefore we are unable to explore this question further as done in (Bodnaruk, Kandel, Massa, & Simonov, 2008).

is as expected when we include all firms, most of which are very small. This result also shows that to keep power in the test statistics, it is important to exclude firms that do not have the option to list.

Summarizing, our findings are robust to alternative ways of measuring the theoretical variables. Moreover, to increase the power of the tests, it is important to include only candidate firms in the sample.

### 4.5.3 Ownership

It is ultimately the owners who decide to take a firm public or to keep it private. Ownership structure and control concerns are therefore likely to be important for the IPO decision. The findings reported in table 4 and 5 support this idea, showing that the more concentrated the ownership, the less likely a firm is to be taken public. In the following, we investigate further how a controlling owner may influence the going public decision. More specifically, we look more closely at how the likelihood of going public depends on the holdings of the largest owner.

In table 6 we construct a dummy variable that takes the value one if the largest owner holds more than 50 per cent of the shares in the firm and zero otherwise. We define this as being a controlling owner. A controlling owner might be in a position to enjoy control benefits from controlling the firm, and can also decide if the firm should go public. Since the IPO decision entails trading off control benefits for the value of being a public company, firms with a controlling owner should be less likely to go public. In column I we find that this dummy variable by itself does not have a coefficient significantly different from zero.

In column II we interact this dummy variable with the absolute size of the controlling owner's shareholding. None of these coefficients are significantly different from zero.

These results suggest that, beyond the effect of ownership concentration in general, having a controlling owner does not alter the likelihood of making an IPO. This is consistent with the idea that there exists strong minority protection, and that crossing the threshold of control does not by itself increase the possibilities of consuming control benefits for the controlling owner.

The management of the firm might also be in a position to enjoy control benefits. This problem might be particularly acute if the firm is dispersedly owned and lacks a controlling owner. High leverage may still discipline the firm's management. That is, increased monitoring by creditors might lead to a decrease in the possibilities of consuming control benefits for management. In column III we investigate this by interacting the control dummy with the leverage variable. The Control variable itself is not significant. The coefficient for the Leverage variable is significantly negative, while the coefficient for the interaction term takes on almost the

exact same positive value. The negative coefficient for Leverage suggests that firms with high leverage are less likely to go public, while the positive coefficient for the interaction term suggests that this is only true for firms without a controlling owner. This result is consistent with the idea that high leverage is a substitute for owner monitoring.

In column IV we include both interaction terms. The coefficients do not significantly change from what we found in column II and III.

To further investigate how ownership influences the IPO decision, we split our dataset into three subsamples based on the holdings of the largest owner. Column I of table 7 gives the results for the firms were the largest owner has less then a 50 per cent holding. In column II the largest owner has from 50 to 75 per cent while in column III we include all firms where the largest owner holds more than 75 per cent of the shares. Our estimates suffer from the fact that each subsample includes few IPOs, being between 7 and 66 for each subsample. As a result, many coefficients lose their significance.

Most coefficients keep the same sign as our previous tables. Interestingly, we find that for the group of firms in the 50 – 75 per cent region, the coefficient for the Largest owner becomes close to zero, while in the two other groups it is still significantly negative. One interpretation might be that in firms with a controlling owner, there is less scope for management to consume control benefits, as the controlling owner has the incentive and the power to monitor and discipline the management of the firm. Hence, as soon as you reach the threshold where there is a controlling owner, there is less reason to go public to limit the consumption of control benefits by management. However, when the minority ownership becomes very small (75 – 100 pre cent region), the controlling owner herself has more scope for consuming control benefits, and the likelihood of making an IPO decreases.

Our findings suggest that majority owners may use their control rights to consume control benefits. When there is no controlling owner, the management of the firm has more scope to consume control benefits. However, this possibility seems to be limited when the firm is highly levered.

## 4.6 Conclusion

This paper investigates the determinants of a firm's decision to go public and list its shares on an exchange. We use a very rich and accurate dataset for Norwegian private firms. We take advantage of the fact that, regardless of listing status, all firms have to publish audited financial statements each year.

Our findings support previous studies on the costs and benefits of being a publicly traded firm. However, we augment earlier models by

ownership characteristics, and find support for the idea that the owners trade private benefits of control with the benefits of being a public firm. Our findings suggest that majority owners keep their firms private to enjoy control benefits. Managers in dispersedly owned firms may consume private benefits, while their opportunity to do so decreases if the firm is highly levered. We find that firms with institutional owners are more likely to make an IPO. Contrary to previous research, we do not find a tendency for large owners taking the firm public for diversification reasons.

**Table 1: Theoretical predictions for reasons to go public**

**Access to capital**

1. Cost of capital (Modigliani & Miller, 1963; Scott, 1976): Non-dividend paying firms.
2. Overcoming financial constraints (Stewart C Myers & Majluf, 1984): Highly levered firms, firms with large capital expenditure, and firms with high growth.

**Information**

3. Adverse selection (Leland & Pyle, 1977; Ritter & Welch, 2002): Large, older firms in mature industries. Firms in industries with a high market-to-book ratio.
4. Duplicate monitoring (Chemmanur & Fulghieri, 1999): Firms with high institutional ownership.
5. Serendipitous information production (Subrahmanyam & Titman, 1999): Firms in industries with extensive public contact.
6. Investor recognition (Merton, 1987): Firms with concentrated ownership.

**Liquidity**

7. Stock as currency (Brau & Fawcett, 2006): Firms that seek to be taken over.
8. Benefit of liquidity (Bolton & von Thadden, 1998; A. W. a Boot, Gopalan, & Anjan V. Thakor, 2006; Mello & Parsons, 1998; Zingales, 1995): Firms seeking the liquidity provided by a listed stock.

**Control**

9. Benefits of control (A. W. a Boot, Gopalan, & Anjan V. Thakor, 2006; Brau, Francis, & Kohers, 2003; Mello & Parsons, 1998; Zingales, 1995): More dispersedly held firms. Firms with lower inside ownership. Firms without a controlling owner. Firms with low leverage.

**Diversification**

10. Owner diversification (Bodnaruk, Kandel, Massa, & Simonov, 2008; L. Pastor, Taylor, & Veronesi, 2009): Firms with concentrated ownership.

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This table summarizes the hypotheses on the determinants of the IPO decision. Under each headline we highlight the characteristic which the theory suggests will make a firm more likely to go public.

**Table 2: Empirical proxies**

**Access to capital**

1. Profitability: EBITDA over total assets; EBITDA over total sales
2. Dividend: Dummy equalling 1 if the firm pays dividends and zero otherwise
3. Leverage: Debt-to-asset ratio; EBITDA over interest expense
4. Investment: Captal expenditure over total asset; captial expenditure over fixed assets
5. Growth: Percentage increas in total assets over the year

**Information**

6. Size: The log of total assets; the log of total sales (in million NOK)
7. Age: The log of the age of the firm in years
8. Institutional: The proportion of equity owned by institutional investors

**Control**

9. Dispersion: The total number of owners; the percentage ownership of the five largest owners
10. Herfindahl: The Herfindahl index of ownership

**Diversification**

11. Largest owner: The percent equity holding of the largest owner

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This table describe the empirical proxies used in the analysis. Total assets and Total sales are adjusted for inflation.

**Table 3: Descriptive statistics**

**Panel A: Company years in which the company went public**

| Variable | Observations | mean | std | min | median | max |
|---|---|---|---|---|---|---|
| Total assets | 120 | 6 983 | 57 363 | 0.09 | 152.34 | 610 228 |
| Fixed assets | 120 | 1 556 | 10 497 | 0.00 | 72.44 | 108 733 |
| Long term debt | 120 | 908 | 6 193 | 0.00 | 6.44 | 63 719 |
| Sales | 120 | 1 433 | 13 398 | -0.03 | 6.22 | 146 060 |
| EBITDA | 120 | 327 | 3 252 | -2189 | -1.23 | 34 965 |
| Debt over assets | 120 | 0.20 | 0.28 | 0.00 | 0.06 | 1.57 |
| Investment (total assets) | 98 | 0.03 | 0.17 | -0.46 | 0.00 | 0.91 |
| Investment (fixed assets) | 95 | -0.18 | 2.30 | -22.00 | 0.00 | 2.08 |
| Owned by institutions | 107 | 13.96 | 23.19 | 0.00 | 0.00 | 100 |
| Herfindahl | 107 | 0.43 | 0.39 | 0.02 | 0.23 | 1.00 |
| Number of owners | 107 | 1.03 | 7.98 | 0.00 | 0.00 | 79.83 |
| Pct largest owner | 107 | 51.94 | 34.53 | 6.70 | 41.07 | 100 |
| Pct five largest owners | 107 | 75.84 | 23.39 | 26.17 | 79.39 | 100 |
| Age | 109 | 10.83 | 19.74 | 0.00 | 5.00 | 149.00 |
| Asset growth | 98 | 240.89 | 1376 | -0.50 | 0.21 | 10 153 |
| Number of employees | 82 | 255.52 | 1411 | 0.00 | 2.50 | 10 293 |
| EBITDA over total assets | 120 | -0.10 | 0.40 | -3.35 | 0.00 | 0.42 |
| EBIDTA over sales | 90 | -13.55 | 61.52 | -517.54 | -0.08 | 1.28 |
| Dividends | 120 | 0.13 | 0.34 | 0 | 0 | 1 |

**B. Company years in which the company did not go public**

| Variable | Observations | mean | std | min | median | max |
|---|---|---|---|---|---|---|
| Total assets | 179 581 | 72.02 | 948 | 4.00 | 9.99 | 112 532 |
| Fixed assets | 179 581 | 42.54 | 778 | -3.39 | 2.90 | 100 712 |
| Long term debt | 179 581 | 22.17 | 427 | -10.4 | 1.65 | 59 078 |
| Sales | 179 581 | 78.06 | 728 | -13.1 | 17.30 | 84 017 |
| EBITDA | 179 581 | 9.31 | 305 | -1 828 | 0.97 | 43 562 |
| Debt over assets | 179 581 | 0.24 | 0.31 | -2.23 | 0.15 | 31.93 |
| Investment (total assets) | 179 581 | -0.04 | 3.03 | -990.57 | -0.02 | 1.00 |
| Investment (fixed assets) | 177 038 | -2.34 | 726.74 | -305 590 | -0.10 | 9.56 |
| Owned by institutions | 173 236 | 7.48 | 24.20 | 0.00 | 0.00 | 100 |
| Herfindahl | 173 122 | 0.70 | 0.31 | 0.00 | 0.82 | 1 |
| Number of owners | 173 242 | 1.63 | 11.88 | 0.00 | 0.00 | 100 |
| Pct largest owner | 173 205 | 74.61 | 28.12 | 0.00 | 90 | 100 |
| Pct five largest owners | 173 205 | 97.26 | 9.98 | 0.00 | 100 | 100 |
| Age | 173 647 | 16.37 | 14.67 | 0.00 | 13 | 200 |
| Asset growth | 179 581 | 0.21 | 10.36 | -1.00 | 0.04 | 3 855 |
| Number of employees | 81 637 | 31.13 | 219.44 | 0.00 | 10 | 21 850 |
| EBITDA over total assets | 179 581 | 0.11 | 0.20 | -10.40 | 0.09 | 20 |
| EBIDTA over sales | 179 581 | -0.21 | 17.07 | -3 424 | 0.06 | 2 176 |
| Dividends | 179 581 | 0.35 | 0.48 | 0 | 0 | 1 |

Panel A of this table gives summary statistics for the firms that make an IPO in the next period (the IPO sample). Panel B gives summary statistics of firms that stay private the next period. Relevant figures are adjusted for inflation. The sample is all non-listed Norwegian limited liability firms in the period 2000 - 2008 with total assets larger than NOK 4 million and a three year history of positive sales.

**Table 4: Logistic regression**

| | Coefficient | Std | Z-value | Prob |
|---|---|---|---|---|
| Size | 0.846 | 0.047 | 18.14 | 0.00 |
| Leverage | -0.894 | 0.454 | -1.97 | 0.05 |
| Investment | 0.944 | 0.594 | 1.59 | 0.11 |
| Profitability | -0.003 | 0.001 | -3.55 | 0.00 |
| Largest owner | -0.042 | 0.004 | -10.82 | 0.00 |
| Age | -0.060 | 0.014 | -4.3 | 0.00 |
| Dividends | -1.221 | 0.301 | -4.06 | 0.00 |
| Institutional | 0.008 | 0.004 | 1.81 | 0.07 |
| Observations | 167369 | | | |
| Pseudo $R^2$ | 0.224 | | | |
| $Chi^2$ | 386.77 | | | |

This table shows the base case regression. The coefficients are estimated using a Cox proportional hazard model where the dependent variable is the probability of an IPO. Size is the log of total assets, Leverage is debt over total assets, Investments is capital expenditure over total assets, Profitability is EBIDTA over sales, Largest owner is the proportion of shares held by the largest owner, Age is the log of the number of years since the firm was incorporated, Dividends is a dummy variable equalling 1 if dividends were paid and 0 otherwise, while Institutional is the proportion of shares held by institutional investors. The sample is all non-listed Norwegian limited liability firms in the period 2000 - 2008 with total assets larger than NOK 4 million and a three year history of positive sales.

**Table 5: Robustness tests**

| | I | II | III | IV |
|---|---|---|---|---|
| Size | 0.898*** | 0.851*** | 0.709*** | 0.870*** |
| | (18.94) | (17.92) | (16.51) | (18.57) |
| Leverage | -0.579 | -0.820 | -0.467 | -0.672 |
| | (-1.29) | (-1.78) | (-1.06) | (-1.50) |
| Investment (total assets) | 0.000973 | | | 0.00131 |
| | (0.07) | | | (0.09) |
| Investment (fixed assets) | | 0.429 | 1.725** | |
| | | (0.69) | (2.69) | |
| Profitability (sales) | -0.00334*** | -0.00311*** | | -0.00321*** |
| | (-3.90) | (-3.71) | | (-3.99) |
| Profitability (assets) | | | -0.841*** | |
| | | | (-3.56) | |
| Dividends | -1.179*** | -1.180*** | -0.834** | -1.189*** |
| | (-3.93) | (-3.92) | (-2.79) | (-3.95) |
| Institutional | 0.00971* | 0.00964* | 0.0132*** | 0.00880* |
| | (2.29) | (2.29) | (3.43) | (2.10) |
| Largest owner | | | | -0.0448*** |
| | | | | (-11.38) |
| Five largest owners | | | -0.0492*** | |
| | | | (-14.61) | |
| Herfindahl | -4.620*** | -4.187*** | | |
| | (-11.62) | (-10.97) | | |
| Age | -0.0588*** | -0.0633*** | -0.0560*** | -0.0574*** |
| | (-4.36) | (-4.44) | (-4.03) | (-4.24) |
| Growth | | 0.00294** | | |
| | | (3.14) | | |
| Observations | 165027 | 167290 | 167369 | 165104 |
| Pseudo $R^2$ | 0.252 | 0.241 | 0.230 | 0.237 |
| $Chi^2$ | 418.6 | 416.3 | 396.8 | 393.8 |

This table shows the regressions with alternative and new proxies. The coefficients are estimated using Cox proportional hazard model where the dependent variable is the probability of an IPO. Size is the log of total sales or log of total assets, Leverage is debt over total assets, Investments is capital expenditure over total assets or capital exenditure over fixed assets, Profitability is EBIDTA over sales, Largest owner is the proportion of shares held by the largest owner, Five largest owners is the proportion of shares held by the five largest owners, Age is the log of the number of years since the firm was incorporated, while Dividends is a dummy variable equalling 1 if dividends were paid and 0 otherwise. The t-values are shown in paranthesis, and statistically significant relationships at the 10%, 5%, and 1% level are labelled as *, **, and *** respectively. The sample is all non-listed Norwegian limited liability firms in the period 2000 - 2008 with total assets larger than NOK 4 million and a three year history of positive sales.

**Table 6: Controlling owners**

| | I | II | III | IV |
|---|---|---|---|---|
| Size | 0.846*** | 0.820*** | 0.859*** | 0.835*** |
| | (18.19) | (16.97) | (18.37) | (17.20) |
| Leverage | -0.886 | -0.788 | -2.311*** | -2.258*** |
| | (-1.95) | (-1.73) | (-4.12) | (-3.90) |
| Investment | 0.913 | 0.832 | 1.122 | 1.063 |
| | (1.53) | (1.37) | (1.91) | (1.80) |
| Profitability | -0.00295*** | -0.00296*** | -0.00289*** | -0.00295*** |
| | (-3.68) | (-3.88) | (-3.33) | (-3.61) |
| Dividends | -1.222*** | -1.173*** | -1.257*** | -1.217*** |
| | (-4.07) | (-3.89) | (-4.19) | (-4.05) |
| Largest owner | -0.0476*** | -0.0616*** | -0.0459*** | -0.0598*** |
| | (-6.83) | (-5.82) | (-6.63) | (-5.67) |
| Age | -0.0592*** | -0.0577*** | -0.0586*** | -0.0571*** |
| | (-4.28) | (-4.20) | (-4.22) | (-4.13) |
| Institutional | 0.00774 | 0.00832* | 0.00903* | 0.00947* |
| | (1.85) | (1.98) | (2.20) | (2.30) |
| Control | 0.460 | -0.995 | -0.354 | -1.769 |
| | (1.05) | (-1.03) | (-0.74) | (-1.83) |
| Control * Leverage | | | 3.031*** | 3.000*** |
| | | | (4.47) | (4.43) |
| Control * Largest owner | | 0.0270 | | 0.0266 |
| | | (1.79) | | (1.78) |
| Observations | 167369 | 167369 | 167369 | 167369 |
| Pseudo $R^2$ | 0.225 | 0.227 | 0.233 | 0.235 |
| $Chi^2$ | 387.8 | 391.2 | 401.8 | 405.1 |

This table shows coefficients estimated using Cox proportional hazard model where the dependent variable is the probability of an IPO. Size is the log of total sales or log of total assets, Leverage is debt over total assets, Investments is capital expenditure over total assets or capital exenditure over fixed assets, Profitability is EBIDTA over sales, Largest owner is the proportion of shares held by the largest owner, Herfindahl is the Herfindahl indeks of share ownership, Age is the log of the number of years since the firm was incorporated, Dividends is a dummy variable equalling 1 if dividends were paid and 0 otherwise, Control is a dummy variable equalling 1 if the larges shareholder holds more than 50 percent of the shares and 0 otherwise. The t-values are shown in paranthesis, and statistically significant relationships at the 10%, 5%, and 1% level are labelled as *, **, and *** respectively. The sample is all non-listed Norwegian limited liability firms in the period 2000 - 2008 with total assets larger than NOK 4 million and a three year history of positive sales.

**Table 7: Splitting ownership concentration**

| | Largest owner | | |
|---|---|---|---|
| | **0 - 50** | **50 - 75** | **75 - 100** |
| Size | 1.053*** | 1.307*** | 0.619*** |
| | (14.95) | (6.23) | (8.49) |
| Leverage | -2.406*** | -0.740 | 0.569 |
| | (-3.79) | (-0.47) | (1.03) |
| Investment | 1.235 | 3.155 | 1.941 |
| | (1.66) | (1.45) | (1.64) |
| Profitability | -0.00504*** | -0.000954 | -0.00243 |
| | (-3.57) | (-0.33) | (-1.49) |
| Dividends | -1.471*** | -0.471 | -1.579* |
| | (-3.72) | (-0.55) | (-2.19) |
| Largest owner | -0.0401** | -0.0228 | -0.0817*** |
| | (-3.20) | (-0.46) | (-3.45) |
| Age | -0.0984*** | -0.0576 | -0.0436 |
| | (-4.25) | (-1.30) | (-1.95) |
| Institutional | 0.0150* | 0.0320* | 0.00940 |
| | (2.53) | (2.45) | (1.51) |
| Observations | 34234 | 40522 | 92613 |
| Pseudo $R^2$ | 0.298 | 0.348 | 0.157 |
| $Chi^2$ | 265.3 | 41.68 | 77.51 |

In each column in this table, only firms with a largest owner with a ownership share falling in the specified region is included. The coefficients are estimated using Cox proportional hazard model where the dependent variable is the probability of an IPO. Size is the log of total sales or log of total assets, Leverage is debt over total assets, Investments is capital expenditure over total assets or capital exenditure over fixed assets, Profitability is EBIDTA over sales, Largest owner is the proportion of shares held by the largest owner, Five largest owners is the proportion of shares held by the five largest owners, Age is the log of the number of years since the firm was incorporated, while Dividends is a dummy variable equalling 1 if dividends were paid and 0 otherwise. The t-values are shown in paranthesis, and statistically significant relationships at the 10%, 5%, and 1% level are labelled as *, **, and *** respectively. The sample is all non-listed Norwegian limited liability firms in the period 2000 - 2008 with total assets larger than NOK 4 million and a three year history of positive sales.

## References


Allen, F., Carletti, E., & Marquez, R. (2009). Stakeholder capitalism, corporate governance and firm value. *Working paper*.

Allen, F., & Michaely, R. (2003). Payout policy. In G. M. Constantinides, M. Harris, & R.M. Stulz (Eds.), *Handbook of the Economics of Finance*. Elsevier.

Ashton, J. K., & Letza, S. (2003). The differential returns offered by mutually owned and proprietary UK depository institutions: 1993-2000. *The Annals of Public and Cooperative Economics*, *74*, 183-204.

Barca, F., & Becht, M. (Eds.). (2001). *The Control of Corporate Europe*. *The Control of Corporate Europe*. Oxford University Press.

Becht, M., Bolton, P., & Röell, A. (2003). Corporate governance and control. In George M Constantinides, Milton Harris, & René M Stulz (Eds.), *Handbook of the Economics of Finance*. Elsevier.

Berger, A. N., DeYoung, R., Genay, H., & Udell, G. F. (2000). Globalization of financial institutions: Evidence from cross-border banking performance. *Brookings Wharton Papers on Financial Services*, *2000*, 23-120.

Berger, A. N., & Humphrey, D. (1995). Bank scale economies, mergers, concentration, and efficiency: The US experience. *Working Paper, Wharton School, University of Pennsylvania*.

Berger, A. N., & Udell, G. F. (1995). Relationship lending and lines of credit in small firm finance. *Journal of Business*, *68*, 351-381.

Bharath, S. T., & Dittmar, A. K. (2010). Why do firms use private equity to opt out of public markets? *Review of Financial Studies*, *23*, 1771-1818.

Bhattacharya, S., & Chiesa, G. (1995). Proprietary information, financial intermediation, and research incentives. *Journal of Financial Intermediation*, *3*, 2-50.

Black, F., & Scholes, M. S. (1973). The Pricing of options and corporate liabilities. *Journal of Political Economy*, *7*, 637-654.

Bodnaruk, A., Kandel, E., Massa, M., & Simonov, A. (2008). Shareholder Diversification and the Decision to Go Public. *Review of Financial Studies*, *21*, 2779-2824.

Boehmer, E., & Ljungqvist, A. (2004). On the decision to go public: Evidence from privately held firms. *SSRN working paper*.

Bolton, P, & von Thadden, E. L. (1998). Liquidity and control: A dynamic theory of corporate ownership structure. *Journal of Institutional and Theoretical Economics*, *154*, 177-209.

Boot, A. W. A., & Thakor, A. V. (1994). Moral hazard and secured lending in an infinitely repeated credit market game. *International Economic Review*, *35*, 899-920.

Boot, A. W. A., Gopalan, R., & Thakor, A. V. (2006). The entrepreneur's choice between private and public ownership. *Journal of Finance, 61*, 803-836.

Brau, J. C., & Fawcett, S. E. (2006). Initial public offerings: An analysis of theory and practice. *Journal of Finance*, *61*, 399-436.

Brau, J. C., Francis, B., & Kohers, N. (2003). The choice of IPO versus takeover: Empirical evidence. *Journal of Business, 76*, 583-612.

Breslow, N. (1974). Covariance analysis of censored survival data. *Biometrics*, *30*, 89-99.

Bøhren, Ø., & Ødegaard, B. A. (2006). Governance and performance revisited. In P. Ali & G. Gregouriu (Eds.), *International Corporate Governance after Sarbanes-Oxley*. Wiley.

Campbell, T. (1979). Optimal investment financing decisions and the value of confidentiality. *Journal of Financial and Quantitative Analysis*, *14*, 913-924.

Caprio, G., Laeven, L., & Levine, R. (2007). Governance and bank valuation. *Journal of Financial Intermediation*, *16*, 584-617.

Celikyurt, U., Sevilir, M., & Shivdasani, A. (2010). Going public to acquire? The acquisition motive in IPOs. *Journal of Financial Economics*, *96*, 345-363.

Chemmanur, T. J., & Fulghieri, P. (1999). A Theory of the Going-Public Decision. *Review of Financial Studies*, *12*, 249-279.

Chemmanur, T. J., He, S., & Nandy, D. K. (2010). The Going-Public Decision and the Product Market. *Review of Financial Studies*, *23*, 1855-1908. SSRN.

Cox, D. R. (1972). Regression models and life-tables. *Journal of the Royal Statistical Society. Series B (Methodological)*, *34*, 187-220.

Crespi, R., Garcia-Cestona, M. A., & Salas, V. (2004). Governance mechanisms in Spanish banks. Does ownership matter? *Journal of Banking and Finance*, *28*, 2311-2330.

Cummins, J. D., Rubio-Misas, M. R., & Zi, H. (2004). The effect of organizational structure on efficiency: Evidence from the Spanish insurance industry. *Journal of Banking and Finance*, *28*, 3113-3150.

Diamond, D. (1991). Monitoring and reputation: the choice between bank loans and privately placed debt. *Journal of Political Economy*, *99*, 689-721.

Doidge, C., Karolyi, G. A., & Stulz, R. M. (2010). Why do foreign firms leave U.S. equity markets? *Journal of Finance*, *65*, 1507-1553.

Dyck, A., & Zingales, L. (2004). Private benefits of control: An international comparison. *Journal of Finance*, *59*, 537-600.

Easterbrook, F. H. (1984). Two agency-cost explanations of dividends. *American Economic Review*, *74*, 650-659.

Esty, B. C. (1997a). Organizational form and risk taking in the savings and loan industry. *Journal of Financial Economics*, *44*, 25-55.

——— (1997b). A case study of organizational form and risk taking in the savings and loan industry. *Journal of Financial Economics*, *44*, 57-76.
Faccio, M., Lang, L. H. P., & Young, L. S. F. (2001). Dividends and expropriation. *American Economic Review*, *91*, 54-78.
Fama, E. F. (1980). Agency Problems and the theory of the firm. *Journal of Political Economy*, *88*, 288-307.
——— (1985). What's different about banks? *Journal of Monetary Economics*, *15*, 29-39.
Fauver, L., & Fuerst, M. (2006). Does good corporate governance include employee representation? Evidence from German corporate boards. *Journal of Financial Economics*, *82*, 673-710.
Finanstilsynet (2006). *Strategy*.
Fluck, Z. (1999). The dynamics of the management-shareholder conflict. *Review of Financial Studies*, *12*(2), 379-404.
Fuentelsaz, L., Gomez, J., & Polo, Y. (2002). Followers' entry timing: Evidence from the Spanish banking sector after deregulation. *Strategic Management Journal*, *23*, 245-264.
Giroud, X., & Mueller, H. M. (2010). Does corporate governance matter in competitive industries? *Journal of Financial Economics*, *95*, 312-331.
——— (2011). Corporate Governance, Product Market Competition, and Equity Prices. *Journal of Finance*, Forthcoming.
Goergen, M., Da Silva, L., & Renneboog, L. (2005). When do German firms change their dividends? *Journal of Corporate Finance*, *11*, 375-399.
Gomes, A. (2000). Going public without governance: Managerial reputation effects. *Journal of Finance*, *55*, 615-646.
Grifell-Tatje, E., & Lovell, C. A. K. (1997). The sources of productivity change in Spanish banking. *European Journal of Operational Research*, *98*, 364-380.
Hansmann, H. (1996). *The ownership of enterprise*. Harvard University Press.
Helwege, J., & Packer, F. (2009). Private matters. *Journal of Financial Intermediation*, *18*, 362-383.
Hsiao, C. (2003). *Analysis of Panel Data*. Cambridge: Cambridge University Press.
Hubbard, G. R., Kuttner, K. N., & Palia, D. N. (1999). Are there "bank effects" in borrower's cost of funds? Evidence from a matched sample of borrowers and banks. *Mimeo, Columbia University*.
Hughes, J. P., Mester, L. J., & Moon, C. G. (2001). Are scale economies in banking elusive or illusive? Evidence obtained by incorporating capital structure and risk-taking into models of bank production. *Journal of Banking and Finance*, *25*, 2169-2208.
Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, *3*, 305-360.

John, K., & Knyazeva, A. (2006). Payout policy, agency conflicts, and corporate governance. *Working paper*.

Kalay, A., & Lemmon, M. L. (2008). Payout policy. In B. E. Eckbo (Ed.), *Handbook of Empirical Corporate Finance*. North-Holland.

Karceski, J., Ongena, S., & Smith, D. C. (2005). The impact of bank consolidation on commercial borrower welfare. *Journal of Finance, 60*, 2043-2082.

Khan, T. (2006). Company dividends and ownership structure: Evidence from UK panel data. *The Economic Journal, 116*, 172-189.

Kim, W., & Weisbach, M. (2008). Motivations for public equity offers: An international perspective. *Journal of Financial Economics, 87*, 281-307.

Krahnen, J. P., & Schmidt, R. H. (Eds.). (2004). *The German financial system*. Oxford University Press.

La Porta, R., Lopez-de-Silanes, F., & Shleifer, A. (1999). Corporate Ownership around the World. *Journal of Finance, 54*, 471-518.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. W. (1997). Legal determinants of external finance. *Journal of Finance, 52*, 1131-1150.

——— (2000). Agency problems and dividend policies around the world. *Journal of Finance, 55*, 1-33.

Lee, I., Lochhead, S., Ritter, J. R., & Zhao, Q. (1996). The cost of raising capital. *Journal of Financial Research, 19*, 59-75.

Leland, H. E., & Pyle, D. H. (1977). Informational assymetries, financial structure and financial intermediation. *Journal of Finance, 32*, 371-387.

Leone, A. J., Rock, S., & Willenborg, M. (2007). Disclosure of intended use of proceeds and underpricing in initial public offerings. *Journal of Accounting Research, 45*, 111-153.

Lintner, J. (1956). Distribution of incomes of corporations among dividends, retained earnings, and taxes. *American Economic Review, 46*, 97-113.

Macey, R. M., & O'Hara, M. (2003). The corporate governance of banks. *Economic Policy Review, 9*, 91-107.

Machlup, L. J. (1967). Theories of the firm: Marginalist, behavioral, managerial. *American Economic Review, 57*, 1-33.

Maudos, J. (1998). Market structure and performance in Spanish banking using a direct measure of efficiency. *Applied Financial Economics, 8*, 191-200.

Maudos, J., & Pastor, J. M. (2003). Cost and profit efficiency in the Spanish banking sector (1985-1996): a non-parametric approach. *Applied Financial Economics, 13*, 1-12.

Maug, E. (1996). Corporate control and the market for managerial labour: On the decision to go public. *European Economic Review, 40*, 1049-1056.

Mello, A., & Parsons, J. (1998). Going public and the ownership structure of the firm. *Journal of Financial Economics*, *49*, 79-109.

Merton, R. C. (1987). A simple model of capital market equilibrium with incomplete information. *Journal of Finance*, *42*, 483-510.

Mester, L. J. (1989). Testing for expense preference behavior: Mutual versus stock savings and loans. *Rand Journal of Economics*, *20*, 483-498.

——— (1991). Agency costs among savings and loans. *Journal of Financial Intermediation*, *1*, 257-278.

Modigliani, F., & Miller, M. M. (1963). Corporate income taxes and the cost of capital: A correction. *American Economic Review*, *53*, 433-443.

Moe, T. G., Solheim, J. A., & Vale, B. (2004). The Norwegian banking crisis. *Norges Bank Occasional Papers*, *33*.

Moh'd, M. A., Perry, L. G., & Rimbey, J. N. (1995). An Investigation of the Dynamic Relationship between Agency Theory and Dividend Policy. *The Financial Review*, *30*, 367-385.

Myers, S. C. (2000). Outside equity. *Journal of Finance*, *55*, 1005-1037.

Myers, S. C., & Majluf, N. S. (1984). Corporate financing and investment decisions when firms have information that investors does not have. *Journal of Financial Economics*, *13*, 187-221.

Ongena, S., Smith, D. C., & Michalsen, D. (2003). Firms and their distressed banks: Lessons from the Norwegian banking crisis. *Journal of Financial Economics*, *67*, 81-112.

Ostergaard, C., Schindele, I.., & Vale, B. (2009). Social capital and the viability of stakeholder-oriented firms: Evidence from Norwegian savings banks. *Working paper*.

Pagano, M., Panetta, F., & Zingales, L. (1998). Why do companies go public? An empirical analysis. *Journal of Finance*, *53*, 27-64.

Palmer, J. (1973). The profit-performance effects of the separation of ownership from control in large U.S. industrial corporations. *Bell Journal of Economics and Management Science*, *4*, 293-303.

Pastor, L., Taylor, L. A., & Veronesi, P. (2009). Entrepreneurial learning, the IPO decision, and the post-IPO drop in firm profitability. *Review of Financial Studies*, *22*, 3005-3046.

Peek, J., & Rosengren, E. S. (1996). Financial system design: The case for universal banking. In A. Saunders & I. Walters (Eds.). Homewood IL: Irwin Publishing.

Prior, D. (2003). Long- and short-run non-parametric cost frontier efficiency: An application to Spanish savings banks. *Journal of Banking & Finance*, *27*, 655-671.

Rajan, R. G. (1992). Insiders and outsiders: the choice between informed and arm's-length debt. *Journal of Finance*, *47*, 1367-1400.

Renneboog, L., & Trojanowski, G. (2007). Control structures and payout policy. *Managerial Finance, 33*, 43-64.

Ritter, J. R., & Welch, I. (2002). A review of IPO activity, pricing, and allocations. *The Journal of Finance*, *57*, 1795-1828.

Rozeff, M. S. (1982). Growth, beta and agency costs as determinants of dividend payout ratios. *Journal of Financial Research*, *5*, 249–259.

Salas, V., & Saurina, J. (2002). Credit risk in two institutional regimes: Spanish commercial and savings banks. *Journal of Financial Services Research*, *22*, 203-224.

Schmidt, K. M. (1997). Managerial incentives and product market competition. *Review of Economic Studies*, *64*, 191-213.

Scott, J. H. (1976). A theory of optimal capital structure. *Bell Journal of Economics*, *7*, 33.

Shleifer, A., & Vishny, R. W. (1997). A survey of corporate governance. *Journal of Finance*, *52*, 737.

Shumway, T. (2001). Forecasting bankruptcy more efficiently: A simple hazard model. *Journal of Business*, *74*, 101-124.

Slovin, M. B., Sushka, M. E., & Polonchek, J. A. (1993). The value of bank durability: Borrowers as bank stakeholders. *Journal of Finance*, *48*, 289-302.

Stein, J. S. (2002). Information production and capital allocation: Decentralized versus hierarchical firms. *Journal of Finance*, *57*, 1891-1921.

Subrahmanyam, A., & Titman, S. (1999). The going-public decision and the development of financial markets. *Journal of Finance*, *54*, 1045-1082.

Szilagyi, P. G., & Renneboog, L. (2007). How Relevant is Dividend Policy Under Low Shareholder Protection? *Working paper*.

von Thadden, E. L. (1995). Long-term contracts, short-term investment and monitoring. *Review of Economic Studies*, *62*, 557-575.

Tortosa-Ausina, E. (2002a). Financial costs, operating costs, and specialization of Spanish banking firms as distribution dynamics. *Applied Economics*, *34*, 2165-2176.

——— (2002b). Exploring efficiency differences over time in the Spanish banking industry. *European Journal of Operational Research*, *139*, 643-664.

Villalonga, B., & Amit, R. H. (2006). How do family ownership, control, and management affect firm value? *Journal of Financial Economics*, *80*, 385-417.

Yosha, O. (1995). Information disclosure costs and the choice of financing source. *Journal of Financial Intermediation*, *4*, 3-24.

Zingales, L. (1995). Insider ownership and the decision to go public. *Review of Economic Studies*, *62*, 425-448.