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**Stakeholder rights and economic performance:
The profitability of nonprofits**

by*

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Abstract

This paper explores whether ownership matters in a fundamental sense by comparing the performance of stockholder-owned firms with 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 community citizens. Accounting for differences in size and risk and comparing only firms in the same industry, we find that stockholder-owned firms do not outperform nonprofit firms. This result is consistent with the notion that the monitoring function of stockholders may be successfully replaced by other mechanisms. We find evidence that product market competition may play this role as a substitute monitoring mechanism.

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1. Introduction

The objective of the firm and the allocation of ownership rights among the firm's stakeholders are two related issues that attract considerable public attention. A common view in the United Kingdom and the United States is that firms should maximize profits, and that residual claimants should hold all the ownership rights (Macey and 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 et al., 2011).

Our paper addresses these issues empirically by exploring whether the allocation of ownership rights (i.e., control rights and residual cash flow rights) among the stakeholders matters for the firm's economic performance. We focus on nonprofits, which are firms where no stakeholder has both control (voting) rights and residual cash flow rights (Hansmann, 1996; Glaeser and Shleifer, 2001). Moreover, the diverse control structure of the nonprofits in our sample may make these firms operate under multiple objectives. This setting allows us to test the agency-inspired prediction that returns on capital invested in nonprofit firms will be lower than if the capital were invested in firms controlled by residual claimants (Jensen and Meckling, 1976). We find that this hypothesis is not supported by the data, we analyze the economic mechanisms that may be driving this result, and we conclude that a likely candidate is product market competition.

The empirical literature on stakeholder structure and economic performance is quite limited. Rather than comparing the performance of nonprofits with the performance of firms with residual claimants, existing research has analyzed extensively whether cross-sectional differences in ownership structure correlate with differences in performance (Becht et al., 2003). However, these studies compare only firms that have owners, that is, stakeholders who possess both components of the ownership right (Hansmann, 1996). Therefore, this literature leaves unanswered the more fundamental question of whether owners are critical in the first place. That question cannot be answered unless firms with owners are compared with firms that do not have owners.

By definition, a nonprofit has no owners. This is because by regulation, none of the firm's stakeholders can have both control rights and cash flow rights. Although called nonprofits, such firms can still earn a profit, but this profit cannot be distributed to stakeholders with control rights. Consequently, our empirical setting allows us to compare the economic performance of firms that have owners with the performance of firms that do not have owners.

Based on this difference in control structure, one would expect that profit-maximizing behavior is more likely among the owned firms than among the ownerless firms.¹

Understanding the governance qualities of nonprofits is also useful per se, because these firms play an important role in the economy. For instance, estimates from the United States 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; Malani et al., 2003). In fact, contracting theory argues that the firm may not always be most efficiently controlled by its capital providers, but rather by other stakeholders like suppliers, customers, and employees. Such alternative allocations of control rights, including the case where no stakeholder has residual cash flow rights, are more efficient the stronger the firm's market power over the stakeholder in question, the more firm-specific the stakeholder's human capital, and the less symmetric the information between the contracting parties (Hansmann, 1996). To ensure a sufficient focus of the paper, however, we do not analyze why the observed organizational forms actually exist. Nevertheless, we do ensure a homogenous contracting environment by taking all sample firms from the same industry. Moreover, we try to control for potential endogeneity between performance and organizational form in the statistical tests.

We use firm-level data from the population of Norwegian banks, which differ widely in terms of how cash flow rights and control rights are distributed among the stakeholders. One firm type is the standard stock company. These firms are commercial banks, where stockholders have all the cash flow rights, and where stockholders control the board by their voting rights. In contrast, ownerless (nonprofit) banks have no stakeholder with residual cash flow rights, and the control rights are shared by the employees, customers, and community citizens. That is, nobody can claim such a firm's assets or cash flow once the fixed claimants have been paid off, and there is no equity owner around to discipline management. Finally, the sample contains a third firm type that is a mixture of the two pure types. All banks in our sample have equal access to the same, unsegmented product market and operate under the same regulatory regime. Hence, any two firms may choose to use the same technology, the

¹ Empirical tests of stakeholders' role in corporate governance have not focused on firms' return on capital invested, but rather on firm behavior as reflected in productive efficiency, pricing strategy, risk taking, cost minimization, and transition between organizational forms (Malani et al., 2002). With few exceptions (Crespi et al., 2004; Ostergaard et al., 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 savings and loan associations (S&Ls), policyholders in insurance mutuals, and producers in cooperatives. Thus, all these firm types have owners.

same product mix, and to be faced with the same demand curves. Regardless of what they choose, they are exposed to identical regulatory constraints.

The power of our test is increased by this combination of high heterogeneity in stakeholder structure and low heterogeneity in contracting environment, market opportunities, and regulation. Suppose a necessary condition for economic success involves profit maximization as the behavioral norm and control by residual claimants as a governance mechanism. If such a relationship is true empirically, it should show up in the data as performance differences between firms that operate in the same environment, but that represent the largest possible difference regarding preferences and control rights among the stakeholders.

Specifically, the agency logic suggests that compared to firms controlled by stockholders, firms controlled by multiple stakeholders without residual claims may have a double handicap in terms of producing high returns on capital. Our basic hypothesis is that ownerless banks produce lower returns on capital than do commercial banks. This happens because the ownerless bank lacks residual claimants who monitor management, and because a possible concern for non-owner stakeholders may be costly. Correspondingly, we predict that the performance of the hybrid bank, which is partly owned and partly ownerless, is somewhere in between the two pure types. As will be clear shortly, however, this basic hypothesis ignores several other potential determinants of performance, such as the banking supervisor and product market competition. We will gradually modify the basic hypothesis to account for this wider set of performance determinants.

Our major finding is that owned banks do not outperform ownerless banks. Certainly, this result does not imply that stockholders produce no value beyond providing financing. However, our finding does suggest that the governance function of residual claimants may be successfully replaced by other mechanisms. That is, managers may be efficiently disciplined by substitutes for ownership. The three substitutes we consider are regulation, capital constraints, and product market competition. First, it may be argued that by overlooking all firms in our sample, the public banking supervisor has a monitoring function. However, the supervisor does not fill the governance role of stockholders. The supervisor's job is to limit the downside risk and to ensure bank survival rather than to encourage the highest possible risk-adjusted return.

Second, one may argue that because ownerless banks cannot raise equity, this implicit capital constraint makes ownerless banks less prone to agency-induced overinvestment. We do not find empirical support for this explanation. Neither do we find convincing support for the somewhat related idea that just like managers of ownerless banks, managers of owned banks

are not monitored properly because the owned banks' residual claimants have too weak incentives and too little power to control what the bank is doing. If this were the case, one would indeed expect owned banks and ownerless banks to have similar performance for governance reasons.

The third potential substitute for the owners' monitoring role is the need to perform in competitive environments. Purroy and Salas (2000) show theoretically that weak competition between profit maximizing and non-profit-maximizing firms may produce equilibria where the non-profit maximizer indeed earns the highest profit. Hence, lack of competition rather than differences in stakeholder structure may explain why ownerless banks are not outperformed by owned banks.

However, it has been argued repeatedly and also shown theoretically that only efficient firms survive when competition is strong (Machlup, 1967; Schmidt, 1997). Giroud and Mueller (2010, 2011) have recently given empirical support to this idea in a corporate governance context. They show in their sample of stockholder-owned firms that monitoring by stockholders and competition in the product market are substitute governance mechanisms. In particular, the authors find that governance quality matters for operating efficiency only in non-competitive markets.

In our setting, which is more general by also including firms without owners, the corresponding argument would be that competition disciplines a firm regardless of its stakeholder structure. Therefore, ownerless firms will persist in competitive markets only if they perform as well as owned firms do. By disciplining all firms, competition mitigates the governance handicap of ownerless firms by forcing them to let high returns to capital be the primary goal. We find support for this interpretation of our major result, using firm-level data on the relationship between returns on capital and local competitive pressure in the product market.

We conclude that the observed relationship between stakeholder structure and economic performance is better understood when the agency logic is supplemented by the effect of market-wide discipline on firm behavior. This interpretation supports earlier findings that there is a serious challenger to the classic organizational form of enterprise that assigns every control right and cash flow right to the capital providers. The reason is that competitive markets may play the disciplining role in the absence of residual claimants.

We think an interesting avenue of future research is to explore whether the relationship we have found between governance, competition, and performance is also valid in other countries than Norway and in other industries than banking. Such evidence may also reveal to

what extent the results we report in this paper depend on our use of backward-looking rather than forward-looking measures of performance and risk.

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 performance in Sections 4 and 5, while Section 6 summarizes and concludes.

2. Firm types and governance structures

There are three firm types in our sample. The ownerless firms are pure savings banks (*sparebank*). These firms have no residual claimants, and they are controlled by their depositors, employees, and the local government. Hence, nobody can sell the firm's assets and claim the proceeds, nobody can receive any dividend, the earnings are retained in full, and no new equity can be raised.² Notice that these ownerless firms are not cooperatives, because cooperatives do have stakeholders with both residual claims and control rights, such as the customers in consumer-owned cooperatives, the employees in employee-owned cooperatives, and the producers in producer-owned cooperatives. Therefore, the ownerless banks in our sample have a fundamentally different governance structure than do the classic savings and loan associations (S&Ls), which are mutually owned consumer cooperatives.

The commercial banks (*forretningsbank*) in our sample are listed companies owned by their stockholders. The third firm type, which we call a PCC bank (*grunnfondsbank*), has voluntarily transformed itself from a pure savings bank (hereafter non-PCC bank) into a savings bank of the hybrid form. This transformation is made by issuing Primary Capital Certificates (hence PCC). These securities are regular equity shares with voting rights and residual cash flow rights, offering returns in terms of dividends and capital gains. Like equity securities in commercial banks, PCC securities are held by the general public and are normally listed. Thus, a PCC bank is partly ownerless, partly owned.³

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

² The financial services act states that an ownerless bank which liquidates or merges must transfer its equity to an ownerless foundation. This capital can only be distributed locally as gifts for charitable purposes. Non-PCCs paid on average 4% of their earnings for social purposes during the sample period, while PCCs paid 1%. The corresponding figure for commercial banks is not available.

³ The PCC security is not a debt-like security like preferred stock. Unlike preferred stock, a PCC security has full voting rights, pays no contractual dividend, and does not promise cumulative dividends.

jointly hire and fire the CEO. Because no stakeholder has residual cash flow rights, the non-PCC banks are ownerless firms.

Commercial banks have stockholders who write the corporate charter and hold 73% of the votes for appointing directors.⁴ Stockholders have a 100% claim on the residual cash flow. Finally, the holders of PCC securities have 25% of the voting rights by law. These owners have a fractional claim on the residual cash flow that corresponds to their share of the book equity. This share varies between 5% and 92% across the sample.⁵ The remaining fraction of book equity is the ownerless equity. All three bank types have a two-tiered board structure, and decisions are made by simple majority in both tiers.

The first Norwegian ownerless savings bank was established in 1822, followed by the first stockholder-owned commercial bank in 1848. Regulation introduced in 1985 allowed for the first conversion by an ownerless savings bank (non-PCC) into a PCC bank in 1988. Currently, Germany (Krahen and Schmidt, 2004), Norway, and Spain (Crespi et al., 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, while German savings banks are owned by local governments. Unlike in Norway, the founders of Spanish ownerless banks are on the board. PCC banks exist only in Norway, although recent regulation has opened up for PCCs in Spain.

Norwegian banks went through a systemic crisis in 1988–1992 (Moe et al., 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 a full write-off of the existing equity, the three largest commercial banks came under full state ownership in 1992. The industry regained profitability in 1993, and the state quickly withdrew its involvement as an owner and emergency lender. The only exception is that of the largest commercial bank, where the state held a minority stake at the end of the sample period.

Although not an EU member, Norway has regulated its banks according to the Basel rules and the EU standards since the early 1990s (Moe et al., 2004). This means that the Norwegian banking industry has been exposed to standard regulation and typical levels of state

⁴ 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. Industry regulation reduces this fraction of employee directors to 27% in commercial banks. All commercial banks in our sample have more than 200 employees.

⁵ Bøhren et al. (2012) find that PCC banks use their dividend policy to mitigate potential conflicts of interest between the owners and the controlling non-owners.

ownership after the banking crisis ended. The only peculiarity is the system of three alternative organizational forms after 1985.

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 other's product markets or geographical regions. The three bank types are subject to the same capital coverage constraints and reporting requirements. They must comply with the same accounting standard, and they are monitored by the same public banking inspector according to the same set of monitoring principles. Thus, neither the nature of their business nor the regulator's monitoring effort suggests that the potential for consuming private benefits by non-owner stakeholders differs across the three bank types. However, the agency logic predicts that because only the ownerless firms lack residual claimants, these firms will create less value. This happens because the non-owner stakeholders in control consume more private benefits by, for instance, expending less effort and by being more reluctant to lay off employees or reduce compensation.

Our data set includes every Norwegian savings bank (i.e., non-PCC and PCC) and listed commercial bank from 1985 to 2002. There are 2,668 firm years, of which non-PCCs, PCCs, and commercial banks account for 2,288, 214, and 166 observations, respectively. Panel (a) of Table 2 shows the average number of banks during the full sample period (1985–2002), the crisis period (1988–1992), and the post-crisis period (1993–2002). The number of all banks, commercial banks, and non-PCC banks drops over time, while the number of PCC banks increases. The decreasing number of commercial banks is due to acquisitions by domestic and foreign banks. Because there are only two listed commercial banks in 2002, we end the sample period that year. The number of non-PCC banks drops because of mergers among non-PCCs and transformations from non-PCC to PCC.⁶

⁶ Our sample period covers two consolidation waves for commercial banks. The number of commercial banks dropped around 1990 and once more just before 2000. In the first sub-period, which covers the systemic banking crisis, struggling banks were taken over by solvent banks. For instance, DnC, which was Norway's largest bank at that time, merged with Bergen Bank, while Sunnmørsbanken and Sørlandsbanken were acquired by CBK, which was the country's second largest bank. In the second sub-period, some banks merged into multinational financial groups. For instance, CBK merged into Nordea, which is a pan-Nordic financial conglomerate. Fokus was acquired by the Danish bank Danske Bank, and Bergens Skillingsbank was acquired by the Swedish bank Handelsbanken. Other banks were involved in domestic consolidations. For instance, Finansbanken was acquired by Storebrand, which is a Norwegian insurance company moving into banking at that time. There are currently three listed commercial banks.

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, although non-PCCs gradually lose market share to PCCs. Aggregate PCC assets are just half the non-PCC assets in 1988, but almost three times bigger in 2002. This shift in relative size primarily happens because some large non-PCCs convert to PCCs. Descriptive statistics for size per bank are reported in panel (c). Every distribution reflects that each bank type includes a few unusually large banks. The median commercial bank is about five times larger than the median PCC bank, which is twelve times the size of the median non-PCC. This relationship suggests that controlling for differences in firm size is potentially important in empirical tests.

Panel (d) of 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 rate margin is higher in stakeholder-controlled banks, reflecting a less aggressive pricing policy.

Because non-PCC banks are not listed, we cannot use market prices to estimate risk measures like the stock return's beta or volatility. Instead, we use accounting figures for all three bank types. Following Esty (1997a; 1997b), who uses accounting data to estimate risk, our basic risk measures are estimated from the balance sheet. In particular, we use the composition of the assets and liabilities to proxy for asset risk and liability risk, respectively.

Panel (a) of Table 3 describes the asset structure across bank types. We divide the assets into seven categories and construct averages per category by value-weighting across banks per year and equally-weighting the annual averages across years. The riskiness of the assets is generally increasing from left to right in the table.⁷ Amortizable loans, which is the largest asset component in every bank type, are much more prevalent in savings banks than in 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%). Overall, these figures reflect that ownerless banks hold less risky assets than do other banks.

The savings bank industry consolidated more gradually and continued this process after the end of our sample period. There were 109 savings banks at the end of 2012, of which 27 were PCC banks. No new commercial bank has been listed on the Oslo Stock Exchange after 2002. However, the PCC bank SR-bank converted to a commercial bank and is now listed.

⁷ Amortizable loans include long-term financing for specific assets and are usually backed by collateral. Examples are mortgages and financing of machinery. Such loans are usually less risky than Overdraft facilities and Building loans, where the bank's exposure increases if the borrower faces financial distress. The category Other loans, which includes consumer loans like credit card financing, is the most risky asset class.

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. This means that in panel (b) of Table 3, liability risk increases from left to right.⁸ The table shows that ownerless banks have more equity than do other banks.⁹ 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 do commercial banks. PCC banks are roughly midway between the two.¹⁰

The relationship between stakeholder structure and bank behavior as documented in Tables 2 and 3 is generally consistent with the existing theory and empirics. For instance, Allen et al. (2011) show theoretically that if a firm starts internalizing its employees' private layoff costs under financial distress, the firm will take on less risk, reduce size, and price its products less aggressively. Esty (1997b) finds empirically that when depositor-owned S&Ls in the United States convert to stockholder-owned commercial banks, they start taking on more risk.

In summary, the ownerless non-PCC banks are generally smaller and carry less risk than do banks that stockholders own either fully (commercial banks) or partially (PCC banks). 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.

4. Stakeholders and performance

Because there are no observable market values for non-PCC banks, we choose book return on assets (ROA) as our basic performance measure. ROA is operationalized as net income divided by the book value of assets. We use net income in the numerator because net income is after funding costs, that is, interest paid on liabilities. These funding costs are typically 75% of a bank's total costs in our sample. Thus, using gross ROA (i.e., ROA based on income before

⁸ Deposits are insured by a fund collectively financed by the banks, and the government is a lender of last resort. Hence, 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.

⁹ Equity was about 7% for non-PCC banks and 3% for the other two types when the banking crisis ended. All bank types and particularly non-PCCs became permanently less leveraged afterwards. Regulation throughout the entire sample period stipulated that total liable capital must be at least 8% of the risk-weighted assets. This ratio may differ considerably from the one used in this paper, which must be based on unweighted assets.

¹⁰ 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 results, which are available upon request, support the impression from Table 3. For instance, over the period as a whole and also during the banking crisis, the probability that a randomly selected bank is a commercial bank rather than a non-PCC bank is significantly higher the more risky its liabilities as measured by our risk proxies.

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 fact means that gross ROA will move in tandem with the general level of interest rates, regardless of the bank's ability to create returns on capital invested.

Neither of these distortions applies to the (net) ROA measure we use, which is also a common performance measure in the banking literature (e.g., Esty, 1997a; 1997b; Berger et al., 2000; Crespi et al., 2004). Nevertheless, we will use alternative performance measures in the robustness tests. Notice that because our ROA is net income divided by total assets, it will produce lower return figures than gross ROA. For this reason, our performance measure cannot be meaningfully compared with standard benchmarks like the riskless rate or the return on the market portfolio.

Table 4 shows the average ROA across bank types and time periods. Ownerless banks have the highest performance over the period as a whole, being 0.88% in non-PCC banks, 0.41% in PCC banks, and 0.32% in commercial banks, respectively.¹¹ The statistical significance of these performance differences is much weaker after the banking crisis (1993–2002) than during the crisis (1988–1992). In particular, average performance does not differ systematically between the owned commercial banks and ownerless non-PCC banks outside the crisis, and commercial banks were most negatively hit by the crisis. The latter observation is not surprising, given our earlier finding that commercial banks pursue more risky strategies. This higher risk-taking makes their performance move more in tandem with overall market movements. Hence, commercial banks will perform worse than other banks when the overall banking market drops.

Thus, as expected, ownerless banks do better relative to other banks the weaker the general market conditions. The more surprising feature in Table 4 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. However, the bank types differ in many other respects than their organizational form, and some of these characteristics may matter for performance. In order to validly test our basic hypothesis, we must account for more determinants of relative performance than just bank type.

¹¹ Non-PCCs have higher ROA than do commercial banks in 15 of the 18 sample years, and PCCs are considerably closer to commercial banks than to non-PCCs (not shown in the table). A study of governance activity in Spanish banks during a similar period finds slightly higher average ROA in ownerless savings banks (1.28%) than in stockholder-owned commercial banks (1.13%) (Crespi et al., 2004, Table 2).

4.1 The base case

Because we have repeated observations for the same firm over time, we use a random-effects approach to account for unobserved firm effects on performance. Using firm fixed effects is infeasible, because we must include a dummy variable for bank type (Hsiao, 2003). We use year dummies to capture unobserved industry effects on the performance of the whole banking sector. The robustness tests 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 period (1988–1992), and for the post-crisis period (1993–2002).

The base-case model is estimated in Table 5. PCC and Com are the two key variables in the model. Both are dummy variables that equal 1 if the bank is of the said type and 0 otherwise. Thus, both dummy variables 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 follow the logic from Table 3 and proxy for asset risk by the ratio $1 - ((\text{cash} + \text{amortizable loans} + \text{fixed assets}) / \text{total assets})$. Correspondingly, we proxy for liability risk by the ratio $1 - (\text{due to customers} / \text{total assets})$. Although we must use accounting returns rather than market returns, we expect that risk and return are positively related also in an accounting sense. Thus, we predict positive coefficients for the two risk proxies.

Because of ambiguous evidence on the relationship between profitability and bank size (Berger and Humphrey, 1994; Hughes et al., 2001), we do not predict the sign for the size coefficient. Notice, however, that the size proxy may also account for the alternative explanation that although ownerless banks have a governance handicap, this drawback is mitigated by the benefit of being small in an industry where large firms are less profitable per unit invested. 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 sample period, the model explains 31% of the variation in ROA, and the model is highly significant. After having accounted for differences in risk and size, 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 units. The riskiness of the assets and the liabilities are both positively related to returns, and profitability decreases with firm size. All these findings are statistically significant at conventional levels.

The second column of results estimates the basic model over the crisis years. Every sign from the first column is maintained, and both the economic and the statistical significance increase except for asset risk. Thus, what holds for the full sample period is even more pronounced in the systemic crisis. This finding supports the notion that the lower risk of non-PCC banks makes these banks do better than other banks in market downturns.

The rightmost 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, their numerical values are much closer to zero. The commercial bank dummy is no longer significantly different from zero, and the PCC dummy is significant only at 9%. Thus, there is no obvious performance difference between bank types after the crisis.¹²

The control variable for size reflects that profitability decreases with bank size in the crisis period and increases afterwards. This pattern is as expected, given our finding that the ownerless banks, which tend to be small, are doing considerably better than are other bank types only during the crisis. Finally, performance relates positively to risk according to both risk proxies in every period, except for liability risk after the crisis.

The remarkable result in Table 5 is that owned banks do not outperform ownerless banks in normal times. This relationship may reflect that the governance of ownerless firms is not inferior to the governance of owned firms. We next analyze the robustness of the base-case result, while Section 5 explores potential substitutes for the governance role of residual claimants in ownerless firms. Because our primary interest is the relationship between organizational form and performance in normal times, we place most attention on the ten years of the post-crisis period.

4.2 Robustness

We analyze the robustness of the base-case results by using sized-matched samples, by measuring risk and performance in alternative ways, and by controlling for possible endogenous choice of organizational form.¹³

¹² Three pairs of independent variables are quite strongly correlated. This characteristic applies to firm size and liability risk (0.68), to firm size and the commercial bank dummy (0.48), and to liability risk and the commercial bank dummy (0.52). Nevertheless, Table 5 shows that the individual coefficients for these variables are almost always significantly different from zero.

¹³ We have also analyzed how the estimates depend on the econometric technique used to handle the panel structure. In particular, we first ignore unobservable performance effects at the firm level by considering only time-varying fixed effects for the banking industry. Next, we ignore both features. The estimates show that if we just run OLS on the pooled sample without any control for unobservable effects, the coefficients are biased, and the adjusted R^2 drops by almost 90 percent for the full period and by roughly 65 percent in the two sub-periods. The unobservable characteristic that matters for overall model fit is the industry effect rather than the firm effect. Nevertheless, only the base-case model in Table 5, which accounts for the joint influence of unobservable industry

The base-case results may be influenced by the fact that most non-PCCs are small compared to PCCs and commercial banks. For instance, Table 2 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 the typical size is so different across bank types may create a sample heterogeneity that is not properly handled by the simple, proportional size control in the base case. To handle size heterogeneity better, we construct a matching sample where size is more homogeneous across bank types. The matched sample contains only 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.

Table 6 re-estimates the base-case model using the size-matched sample. The estimates show that the main results persist, although several performance determinants have weaker statistical significance in these much smaller samples. Importantly, however, the relative performance of ownerless banks becomes even stronger than in the base case.

This robustness to how we account for size also suggests that the base-case result is not driven by possibly higher margins in the product markets chosen by smaller, ownerless banks. We may address this margin question more directly, however, which is also a way of controlling for a possible customer preference for local banking services. Specifically, we account for differences in market-driven profit opportunities by adding the bank's interest rate margin as a new independent variable in the base-case model. In unreported regressions, which are available upon request, we find that the interest rate margin is not positively related to the bank's performance. Importantly, however, accounting for the interest margin does nothing substantial to any other relationship, including the role of bank type. This finding is inconsistent with the notion that the performance effect of being small, which often involves being ownerless in our sample, is driven by higher margins in these small firms' primary product markets. Along the same lines, notice also that the base-case model in Table 5 shows that profitability increases with firm size in the post-crisis period. Nevertheless, once size is controlled for, there is no significant performance effect of being owned vs. ownerless in this period.

effects and firm effects, produces a non-significant performance difference between ownerless banks and commercial banks in the post-crisis (normal) period.

Measuring risk is particularly challenging in our study. Having non-listed banks in the sample precludes the use of market values, the book value of assets and liabilities may correlate poorly with fundamental risk characteristics, and we can use only annual observations made during rather short time periods. Nevertheless, one alternative is to measure risk by the volatility of ROA. Therefore, we have estimated risk in year t as the standard deviation of the bank's ROA from $(t-1)$ to $(t+1)$.¹⁴ Unreported results show that although the relationship between bank type and performance from Table 5 is generally upheld, the economic and statistical significance drops, non-PCCs differ less from PCCs, and the relationship between risk and return becomes negative.

We think this result may be due to a data problem that comes on top of those stemming from annual book values over short time periods. The structural relationship between ROA and ROA volatility is unstable over time in our sample. In particular, ROA volatility is very high and ROA is very low during the crisis. Thus, even if we had a longer time series, we might not have been able to improve the precision of the risk estimates by extending the estimation window beyond three years. For these reasons, we put more trust in the risk measures from the balance sheet as used in the base-case model.

More fundamentally, there is little reason to expect that any adjustment for risk would invalidate our major finding. Table 4 shows that non-PCCs do not have significantly lower average returns than do the two other bank types in any year. Moreover, the balance sheet characteristics in Table 3 suggest that regardless of how we measure risk based on assets and liabilities, non-PCCs would not be more risky than the other banks are. In fact, unreported regressions show that if we modify the base-case model in Table 5 by assuming that non-PCC banks are as risky as the other banks, the base-case result from Table 5 persists.

The next robustness test replaces ROA by alternatively measuring performance by the ROE (return on equity) and the ROS (return on sales or profit margin). Table 7 shows the findings, where the only difference from the base case is that commercial banks do better after the crisis than the two other types. As discussed earlier, however, we think the ROA used in the base-case is a more suitable performance measure for banks. Unlike the ROE, the ROA reflects the ability to manage the most important cost component, which is funding costs. Moreover, the ROA does not move in tandem with market interest rates.¹⁵ Finally, although the

¹⁴ Just as we found using risk measures from the balance sheet in Table 3, ROA volatility is highest in commercial banks and lowest in non-PCC banks. ROA volatility peaks around the banking crisis for all bank types.

¹⁵ The ROE is also technically problematic in our context because its denominator is periodically very low and even negative during the crisis years. This property produces very volatile and sometimes meaningless ROE

ROS may ideally be a proxy for market power (Lerner, 1934), this measure does not relate the profit to the assets invested to obtain the profit, but rather to the revenues produced by the assets.

So far, we have ignored any endogeneity caused by the possibility that poorly performing non-PCCs may have converted to PCCs to raise new equity. In fact, Ostergaard et al. (2009) find that high leverage 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 PCC. These two robustness tests, which are available upon request, produce no material changes to the base-case results from Table 5.

5. Alternative explanations

Our major finding so far is that performance is not higher in owned firms than in ownerless firms under normal market conditions. This is a puzzling result from an agency perspective. Certainly, controlling stakeholders in ownerless firms have incentives to ensure the firm's survival. This is because only a surviving firm can 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, stakeholders of ownerless firms lack the incentive to maximize risk-adjusted returns on capital invested. The reason is that these returns are higher the larger the residual cash flow, that is, the smaller the pecuniary benefits going to controlling stakeholders alone.

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

Second, any firm may be disciplined by other and even more powerful governance mechanisms than the owners' monitoring activity. In that case, control by residual claimants

figures. For instance, average ROE in commercial banks is -152% in 1991 and 18% in 1997, and one commercial bank had equity of NOK -11.5 billion in 1989.

may not be critical to ensure that the firm performs well. We will also analyze the role of such potential owner substitutes.

5.1 Restrictions on ownership

Are owners of commercial banks able to execute their control rights in a value-creating way? If not, commercial banks would be like ownerless banks in the sense that the residual claimants are not monitoring. Governance research has found that firms' 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 et al., 2003).

Applying this logic to our sample, Table 8 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 Norwegian non-banks is 18% during a similar period (Bøhren and Ødegaard, 2006). This high incidence of direct ownership in our sample firms 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 is given by panel (b), which shows that ownership concentration in banks is considerably below the typical ownership level in Norwegian industry, which is about 30% for the largest owner and 55% for the five largest owners as a group (Bøhren and Ødegaard, 2006). The low ownership concentration in banking is due to regulation, which mandates permission from the Ministry of Finance for any investor or coalition of investors to own more than 10% of a bank's stock.¹⁶ Because this cap is binding for the median commercial bank in our sample, the regulatory constraint on ownership concentration 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 was NOK 2.5 billion and NOK 0.2 billion, respectively. Thus, although regulation forces ownership concentration below the optimum level, the restriction does not destroy the potential for active monitoring by the owners of PCCs and commercial banks.

¹⁶ The mean ownership concentration exceeds this median because the state held very large stakes in a few banks around the banking crisis and also held 47.8% of the equity in the largest commercial bank at the end of the sample period.

5.2 Substitutes for the governance role of ownership

Pressure from owners on management may not be critical for firms' performance if other governance mechanisms function at comparable costs. We consider three such substitutes for the owners' monitoring function: (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 rules in every bank, regardless of the bank's stakeholder structure. Thus, it may be argued that high-quality banking supervision plays the governance role of residual claimants. If it does, the regulator may make owners redundant in owned firms and hence heal the governance handicap of ownerless firms. The problem with this argument is, however, that the banking supervisor's job is not to maximize the risk-adjusted return of bank assets. Rather, the primary job is to limit downside risk.¹⁷ Therefore, the existence of a public supervisor may explain why depositors are willing to leave their money with commercial banks and PCCs, whose owners may benefit from excessive risk-taking at the depositors' expense (Hansmann, 1996). In addition, the existence of banking supervisors may explain why most banks survive. But such supervision cannot explain why a given bank or bank type is more profitable than another type. This argument is supported by a study of 244 banks in 44 countries (Caprio et al., 2003). The authors find no clear relationship between a bank's value and the way the bank is controlled by the banking supervisor.

The second potential substitute for residual claimants 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 use only earnings. This implicit financial constraint may discipline managers of ownerless banks in similar ways that active owners discipline managers of owned banks. Were this to happen, it would force overinvesting ownerless banks to finance growth more heavily with debt than do other banks. Therefore, the agency logic predicts that ownerless banks will have higher leverage and be closer to the regulatory maximum. Moreover, this tendency would be particularly strong whenever the industry were growing fast. The start of our sample period coincides with the beginning of a deregulation regime that gave banks more flexibility, including the ability to compete on interest rates (Moe et al., 2004). We would therefore expect

¹⁷ The Norwegian Financial Services Authority states that its main purpose is "to ensure that financial enterprises and markets function securely and efficiently in the best interest of society and users of financial services..." (Kredittilsynet, 2002).

overinvesting non-PCC banks to be more equity constrained than other banks under such market conditions.

Table 9 does not support this conjecture. 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.¹⁸ Consequently, ownerless banks are further away from the minimum equity requirement than are owned banks. This finding suggests that the inability to raise new equity does not discipline ownerless banks in ways that substitute well for owner monitoring.¹⁹

Competition is our third candidate to substitute for ownership. The general idea is that greater competition reduces admissible inefficiency in any enterprise, regardless of its organizational form. This argument means that when competition is soft, actively monitoring owners are necessary to ensure high managerial effort. However, the firm may still survive if such owner qualities are missing, provided the firm has sufficient market power. 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 expend effort to protect their human capital jointly create the urge to perform. This logic makes performance independent of monitoring quality under strong competition, while performance and monitoring quality are related positively when competition is soft.

The very limited empirical literature supports this logic. Palmer (1973) was among the first to find that ownership structure and performance correlate more strongly the greater the firm's market power. Giroud and Mueller (2010) analyze what happens to firms when takeover threats become smaller after the passage of antitakeover laws at the state level in the United States. The authors find that in industries with strong product market competition, neither the firm's market value nor its operating performance changes systematically. In contrast, firms in non-competitive industries experience abnormally low stock returns and operating performance. Similarly, a related study finds that firms in non-competitive industries benefit

¹⁸ The legal minimum ratio is based on a weighting system across the asset classes. Because we cannot reconstruct this weighting exactly, we use unweighted assets, defining the capital coverage ratio as equity plus subordinated debt divided by assets. 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.

¹⁹ Notice also that although the free cash flow of a non-PCC bank is automatically reduced by the inability to raise equity, the opposite effect comes from the fact that all the bank's 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 disciplined neither by the cash drain from dividend payments nor by the scrutiny of the capital market in equity issues. Nevertheless, it seems that this lack of discipline does not induce overinvestment.

more from improved governance quality than do similar firms in competitive industries (Giroud and Mueller, 2011).

The potential sources of competitive pressure in our setting are the product market, the labor market, and the market for corporate control. Pressure from the market for corporate control cannot explain our findings, because ownerless firms cannot be traded. Labor market competition is probably rather weak in general, because overall unemployment is only 4.2% on average and never exceeds 6.0% in the sample period.²⁰ However, the demand for managerial talent may still be modest in smaller communities. Thus, savings bank employees 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.²¹ However, this is at best only indirect evidence. To fully test the competition hypothesis, one would need at least 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 competition logic, owned firms would outperform ownerless firms only in the non-competitive industry.

Our empirical setting does not allow for such an ideal test. Instead, we choose a related approach by analyzing whether a bank's local competitive environment influences its performance relative to the performance of other banks.²² We measure competition for a given bank in a given municipality in two alternative ways. One measure is called Branch competition, which is the number of bank branches owned by other banks than the bank in question. The second alternative is called Bank competition, which is the number of other unique banks. We compute these measures per 10,000 inhabitants and average them over the

²⁰ Source: Statistics Norway.

²¹ Data for the period 1990–2002 show that market concentration in Norwegian banking is at the medium level among 16 European countries and consistently lower than elsewhere in Scandinavia. Source: Central Bank of Norway.

²² Omitted variables like local barriers to entry may influence both the competitive environment and the bank's performance. We ignore this possible endogeneity by treating the bank's market share as exogenous. Hence, we limit ourselves to analyzing how the given local competition drives the relationship between bank type and performance. Our rationale is that although the decision to enter a local market may depend on barriers to entry, these barriers may not differ systematically from one municipality to another. The banking regulation is national and hence identical across municipalities. The resources needed to establish a bank of a given size do not differ markedly from one municipality to another. These characteristics suggest that the potential endogeneity is rather constant across municipalities. Hence, our approach may not be biased, because we estimate the link between differences in competition and differences in the relationship between bank type and performance.

municipalities in which the bank is operating.²³ Hence, the two competition measures reflect the competitive pressure the bank is faced with from all other banks in its environment.

Panel (a) of Table 10 shows distributional properties of the two competition measures across the three bank types. On average, non-PCC banks tend to face the strongest competition. For instance, non-PCC banks compete with 1.51 other banks per municipality per 10,000 inhabitants on average, while commercial banks compete with 1.04 other banks. The difference between the corresponding medians is considerably smaller, however, and non-PCC banks face much more heterogeneous competition than do the two other bank types. For instance, the standard deviation for Bank competition equals the mean for non-PCCs, but is only about half the mean for the two other bank types. Moreover, the number of competing banks has a maximum of 10.87 and a minimum of 0 for non-PCCs, while the corresponding figures for commercial banks are 2.61 and 0.55, respectively.

Panel (b) converts each continuous competition variable from panel (a) into three discrete levels of competitive intensity (low, medium, and high) and shows the percentage of banks of a given type at each level. Like in panel (a), the general impression is that non-PCCs tend to face stronger competition on average than the two other bank types. For instance, whereas 36% of the non-PCC banks face strong competition according to the Bank competition measure, 9% of the commercial banks do so. On the other hand, the percentage of them facing low competition is quite similar across the two bank types, being 35% and 38%, respectively. Therefore, like the average values of the continuous competition measures in panel (a), the discrete levels of competitive intensity blur the heterogeneity in the sample.

In order to account for the effect of product market competition on bank performance, we augment the base-case model from Table 5 by the two firm-specific competition proxies from Table 10, which we also interact with the bank type. The findings are reported in Table 11. For the sample period as a whole, three features emerge that are consistent with the competition logic. First, the bank type dummies are no longer significant determinants of performance differences across bank types. Thus, the type of stakeholder control is irrelevant for relative performance once competitive pressure from the product market is accounted for. This result supports the idea that competition is a stronger disciplining device than is the allocation of cash flow rights and control rights across the stakeholders. Second, the interaction term between competition and bank type is negative and significant for commercial banks.

²³ We are grateful to Charlotte Ostergaard, Ibolya Schindele, and Bent Vale, who generously made their hand-collected data set on bank industry competition available to us. Among the six competition measures used in their paper (Ostergaard et al., 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.

Hence, greater competition reduces the importance of the stakeholder structure as a determinant of relative performance. This result is consistent with the logic that stronger competitive pressure forces the firm to focus on profits regardless of the firm's stakeholder structure.

Third, the insignificant competition dummies suggest that competition per se does not materially affect the level of performance. Thus, our finding in Table 10 that non-PCC banks face stronger competition on average does not imply that performance will necessarily be higher or lower than in the other bank types. This result is consistent with the theoretical result that the net effect of competition on performance levels is ambiguous (Schmidt, 1997). The logic is that, certainly, greater competition produces stronger incentives for agents to work harder. This happens because greater competition reduces profits by pushing prices down, which increases liquidation risk and reduces the value of agents' firm-specific investments. However, lower product prices also erode the value of agents' cost-reduction efforts. These two opposing effects will not necessarily make it optimal for principals to induce more effort and higher efficiency from agents when competition becomes stronger. Correspondingly, weaker competition does not imply higher profits in our setting. Moreover, we cannot tell whether the leveling effect of competition on performance in our sample as documented by Table 11 works primarily through less market power or higher efficiency.

The relationship between competition and performance is stronger statistically and economically during the banking crisis 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 are consistent with the notion that product market competition matters for the relationship between performance and firms' stakeholder structure. This evidence is in line with recent findings from a setting that does not involve ownerless firms, but where the monitoring quality provided by stockholders varies cross-sectionally (Giroud and Mueller, 2010; 2011). Our results are also consistent with findings for ownerless Danish firms (Thomsen and Rose, 2004). Although the authors do not consider product market competition, they do find that ownerless foundations with majority stakes in listed Danish firms do not realize lower returns than other investors.

Overall, it seems that among the alternative reasons we have analyzed for why ownerless firms are not underperforming relative to owned firms, product market competition receives the strongest support from the data. Given this evidence, one may wonder what remains of the classic arguments for organizing banks as ownerless firms (Hansmann, 1996).

Although this question of optimal organizational form is outside the scope of this paper, our findings may still shed some light on the answer. Unlike in earlier periods, it does not seem true anymore that customers (i.e., borrowers and lenders) of ownerless banks would face excessive contracting costs as customers in commercial banks. In addition, they do not have particularly homogenous preferences as a group, they do not lack regulatory protection against moral hazard through excessive risk-taking by commercial bank owners, and the ownerless banks in our sample are not so small that agency problems are irrelevant. Nevertheless, our findings do not support 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, which 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.

6. Summary and conclusion

Financial economists tend to take for granted that closer monitoring by stockholders will improve firms' economic performance. Moreover, we seldom question the conventional wisdom that stockholders will lose if they internalize the welfare effects of their actions on other stakeholders, such as customers and employees. Our paper challenges these ideas by analyzing empirically whether the absence of controlling stakeholders with residual cash flow rights matter for firms' performance.

We compare the returns on capital invested of firms organized as nonprofits (i.e., ownerless firms, where no stakeholder has both control rights and residual cashflow rights) with the returns of firms owned by stockholders. Ownerless firms are fundamentally different in a governance sense from owned firms like cooperatives and mutuals, where customers, employees, or suppliers hold both the residual cash flow rights and the control rights. Our setting allows us to address the question of whether firms can be economically successful without owners rather than addressing the more limited question of whether ownership structure matters for firms already organized as owned enterprises.

Our major finding does not support the idea that economic performance is greater the stronger the capital providers' ownership rights. 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, however, that regardless of stakeholder structure, managers of firms with potential agency problems can be disciplined through other channels than monitoring by residual claimants. For the nonprofit firms in our sample, we find that product market competition may indeed play such a substitute role. This interpretation is supported by similar findings reported from settings that do not involve nonprofits, but where the monitoring quality provided by stockholders varies across firms. We conclude that once one accounts for the disciplining effect of product market competition on firm behavior, organizational form becomes a less important determinant of economic performance.

References

- Allen, F., E. Carletti and R. Marquez, 2011. Stakeholder capitalism, corporate governance and firm value. Working paper, Wharton School, University of Pennsylvania.
- Becht, M., P. Bolton and A. Roëll, 2003. Corporate governance and control. In G. Constantinides, M. Harris and R. Stulz (Eds.), *Handbook of the Economics of Finance*. Amsterdam: North-Holland.
- Berger, A.N., R. DeYoung, G.F. Udell and H. Genay, 2000. Globalization of Financial Institutions: Evidence from Cross-Border Banking Performance. *Brookings-Wharton Papers* 3.
- Berger, A.N. and D. Humphrey, 1994. Bank scale economies, mergers, concentration, and efficiency: The U.S. experience. CFI Working paper 94–25, Wharton School, University of Pennsylvania.
- Bøhren, Ø. and B.A. Ødegaard, 2006. Governance and performance revisited. In P.U. Ali and G. Gregouriu (Eds.), *International Corporate Governance after Sarbanes-Oxley*. Hoboken, NJ: Wiley.
- Bøhren, Ø., M.G. Josefsen and P.E. Steen, 2012. Stakeholder conflicts and dividend policy. *Journal of Banking and Finance* 36, 2852–2864.
- Caprio, G., L. Laeven and R. Levine, 2003. Governance and bank valuation. NBER Working paper 10158.
- Crespi, R., M.A. Garcia-Cestona and V. Salas, 2004. Governance mechanisms in Spanish banks. Does ownership matter? *Journal of Banking and Finance* 28, 2311–2330.
- Easterbrook, F., 1984. Two agency-cost explanations of dividends. *American Economic Review* 74, 650–659.
- Esty, B.C., 1997a. Organisational form and risk shifting in the savings and loans industry. *Journal of Financial Economics* 44, 25–55.
- Esty, B.C., 1997b. A case study of organizational form and risk shifting in the savings and loans industry. *Journal of Financial Economics* 44, 57–76.
- Giroud, X. and H.M. Mueller, 2010. Does corporate governance matter in competitive industries? *Journal of Financial Economics* 95, 312–331
- Giroud, X., 2011. Corporate governance, product market competition, and equity prices, *Journal of Finance* 66, 563–600.
- Glaeser, E.L. and A. Shleifer, 2001. Not-for-profit entrepreneurs. *Journal of Public Economics* 81, 99–115.
- Hansmann, H., 1996. *The Ownership of Enterprise*. Cambridge, MA: Harvard University Press.
- Hsiao, C., 2003. *Analysis of Panel Data*, Cambridge, MA: Cambridge University Press.
- Hughes, J.P., L.J. Mester and C-G Moon, 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. and W.H. Meckling, 1976. Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics* 3, 305–360.

- Krahnhen, J.P. and R.H. Schmidt, 2004. *The German Financial System*. Oxford: Oxford University Press.
- Kredittilsynet, 2002. Strategy. www.kredittilsynet.no.
- Lerner, A.P., 1934. The concept of monopoly and the measurement of monopoly power. *Review of Economic Studies* 1, 157–175.
- Macey, R.M. and M. O’Hara, 2003. The corporate governance of banks. *Economic Policy Review* 9, 91–107.
- Machlup, F., 1967. Theories of the firm: Marginalist, behavioral, managerial. *American Economic Review* 57, 1–33.
- Malani, A., T. Philipson and G. David, 2003. Theories of firm behavior in the nonprofit sector. A synthesis and empirical evaluation. In Glaeser, E.L. (Ed.), *Governance in Not-for-Profit Organizations*. Chicago, IL: University of Chicago Press.
- Moe, T.G., J.A. Solheim and B. Vale (Eds.), 2004. *The Norwegian banking crisis*. Norges Bank Occasional Papers 33.
- Ostergaard, C., I. Schindele and B. Vale, 2009. Social capital and the viability of stakeholder-oriented firms: Evidence from Norwegian savings banks. Working paper, Norwegian Business School (BI).
- Palmer, J., 1973. The profit-performance effects of the separation of ownership from control in large U.S. industrial corporations. *Bell Journal of Economics* 4, 293–303.
- Purroy, P. and V. Salas, 2000. Strategic competition in retail banking under expense preference behavior. *Journal of Banking and Finance* 24, 809–824.
- Schmidt, K.M., 1997. Managerial incentives and product market competition. *Review of Economic Studies* 64, 191–213.
- Thomsen, S. and C. Rose, 2004. Foundation ownership and financial performance: Do companies need owners? *European Journal of Law and Economics* 18, 343–364.

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

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

This table shows the distribution of control (voting) rights and residual cash flow rights across four stakeholders (Stockholders, Employees, Depositors, and Community) in non-PCC banks, PCC banks, and commercial banks during the sample period 1985–2002. Non-PCC banks are ownerless. PCC banks have issued equity securities to the general public in the form of Primary Capital Certificates (PCC). The remaining equity in PCC banks is ownerless. Commercial banks are regular stock companies owned by their stockholders.

Table 2: Industry characteristics**(a): Number of banks**

Time period	All banks	Commercial banks	Savings banks			
			All	Non-PCC	PCC	Listed PCC
1985–2002	152	9	142	131	14	11
1988–1992	155	12	143	137	7	3
1993–2002	137	6	131	113	18	16

(b): Aggregate size per bank type

Time period	All banks	Commercial banks	Savings banks		
			All	Non-PCC	PCC
1985–2002	931	524	406	186	265
1988–1992	891	555	336	187	149
1993–2002	991	527	464	141	323

(c): Size per bank

	All banks	Commercial banks	Savings 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

(d): Interest rates

Home mortgages		Ordinary deposits		Interest rate margin	
Savings banks	Commercial banks	Savings banks	Commercial banks	Savings banks	Commercial banks
10.42	10.04	4.78	4.81	5.64	5.23

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 value of total assets during the sample period for an individual bank, its standard deviation (Std), the median, minimum (Min), and maximum (Max). Panel (d) reports the average interest rate in percent from 1992 to 2002 on home mortgages and on ordinary deposits. The interest rate margin is the difference between the interest rates on home mortgages and ordinary deposits. Source: Central Bank of Norway.

The figures in panels (b) and (c) are in billions of NOK as of year 2002. The sample includes all non-PCC banks, PCC banks, and listed commercial banks. PCC banks have issued equity securities to the general public in the form of Primary Capital Certificates (PCC). The remaining equity in PCC banks is ownerless. Non-PCC banks are ownerless. Commercial banks are regular stock companies that are owned by their stockholders.

Table 3: Balance sheet structure

(a): Assets							
Bank type	Fixed assets	Amortizable loans	Short-term assets	Overdraft facilities	Building loans	Other loans	Losses
Non-PCC	2.3	73.1	17.6	5.8	2.8	0.3	-2.0
PCC	2.8	74.6	16.0	6.2	2.6	0.0	-2.2
Commercial	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	8.6	0.3	75.0	9.5	6.6
PCC	5.3	3.0	63.0	13.6	15.2
Commercial	5.0	3.2	47.0	18.9	25.8

This table shows aggregate balance sheet characteristics across the three bank types. Non-PCC banks are ownerless. PCC banks have issued equity securities to the general public in the form of Primary Capital Certificates (PCC). The remaining equity in PCC banks is ownerless. Commercial banks are regular stock companies that are owned by their stockholders. Fixed assets in panel (a) is buildings and investments in affiliated companies, and Amortizable loans is loans with 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 contracts. Losses is allowances for losses on all loans. Equity in panel (b) is total non-debt funds for savings banks (including the PCC capital for PCC banks) and total shareholder equity for commercial banks. Subordinated debt is debt that is considered capital for capital requirement purposes, Due to customers is regular deposits, Due to banks is interbank loans including loans from the central bank, and Other liabilities is securities issued. All figures are reported as a percentage of total assets and are value-weighted averages across banks and equally-weighted across years. The sample is all Norwegian non-PCC banks, PCC banks, and listed commercial banks during the period 1985–2002.

Table 4: Return on assets

Time period	<u>Mean ROA</u>			<u>Difference</u>		
	1: Non-PCC	2: PCC	3: Com	1 - 2	2 - 3	1 - 3
1985–2002	0.88	0.41	0.32	0.47*** (4.19)	0.09*** (3.07)	0.57*** (9.51)
1988–1992	0.89	-0.46	-0.84	1.36*** (5.49)	0.37 (0.65)	1.73*** (8.33)
1993–2002	1.00	0.85	0.91	0.15*** (5.26)	-0.06 (-1.72)	0.09 (0.98)

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, while the average ROA over multiple years at the bottom of the table is equally-weighted across years. Non-PCC banks are ownerless. PCC banks have issued equity securities to the general public in the form of Primary Capital Certificates (PCC). The remaining equity in PCC banks is ownerless. Commercial banks are regular stock companies that are owned by their stockholders. We report the mean ROA for each bank type, the pairwise difference in means, and its t-value in parentheses. Statistically significant differences at the 10%, 5%, and 1% levels are labeled *, **, and ***, respectively. The sample is all Norwegian non-PCC banks, PCC banks, and listed commercial banks.

Table 5: Base-case performance regressions

Independent variable	1985–2002	1988–1992	1993–2002
PCC	-0.181** (-2.27)	-1.510*** (-4.63)	-0.095* (-1.70)
Com	-0.765*** (-5.61)	-2.741*** (-6.84)	-0.119 (-0.96)
Asset risk	1.419*** (5.27)	1.352* (1.74)	1.321*** (5.89)
Liability risk	0.836*** (3.65)	4.385*** (6.33)	-0.482*** (-2.71)
Bank size	-0.063*** (-2.78)	-0.219*** (-3.18)	0.053*** (2.95)
Adjusted R ² , %	31.11	37.20	33.08
Wald chi ²	1,110.67	450.40	736.30
Probability of chi ² , %	0.00	0.00	0.00
n	2,660	738	1,362

This 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 0 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 the fraction of total assets which is not deposits. 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 their t-statistic (in parentheses). Statistically significant relationships at the 10%, 5%, and 1% levels are labeled *, **, and ***, respectively. The bottom section of the table shows the adjusted R², the Wald chi², the p-value of Wald chi², and the number of observations. The sample is all Norwegian non-PCC banks, PCC banks, and listed commercial banks. Non-PCC banks are ownerless. PCC banks have issued equity securities to the general public in the form of Primary Capital Certificates (PCC). The remaining equity in PCC banks is ownerless. Commercial banks are regular stock companies that are owned by their stockholders.

Table 6: Size matching

Independent variable	1985–2002	1988–1992	1993–2002
PCC	-0.220 (-1.18)	-0.289* (-1.84)	-0.145 (-0.84)
Com	-0.652** (-2.57)	-0.639*** (-3.75)	-0.570*** (-3.06)
Asset risk	1.578 (1.25)	2.135* (1.76)	-3.106*** (-2.89)
Liability risk	0.927* (1.80)	0.965 (2.66)	0.376 (0.97)
Bank size	-0.032 (-0.38)	-0.031 (-0.63)	0.045 (0.87)
Adj. R ² , %	28.27	16.79	30.27
Wald chi ²	162.34	24.27	101.60
Prob. of chi ² , %	0.00	0.39	0.00
n	473	145	229

This table re-estimates the base-case model from table 5 using size-matched samples. We include only non-PCC banks 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 0 otherwise. Asset risk is the fraction of assets that is not cash, claims on the central bank, amortizable loans, or fixed assets. Liability risk is the fraction of total assets that is not deposits. 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. All regressions account for time-varying industry effects and random firm effects. We report the estimated regression coefficients and their t-statistics (in parentheses). Statistically significant relationships at the 10%, 5%, and 1% levels are labeled *, **, and ***, respectively. The bottom section of the table shows the adjusted R², the Wald chi² statistic, the p-value of Wald chi², and the number of observations. The sample is all Norwegian non-PCC banks, PCC banks, and listed commercial banks. Non-PCC banks are ownerless. PCC banks have issued equity securities to the general public in the form of Primary Capital Certificates (PCC). The remaining equity in PCC banks is ownerless. Commercial banks are regular stock companies that are owned by their stockholders.

Table 7: Alternative performance measures

Independent variable	<u>1985–2002</u>		<u>1988–1992</u>		<u>1993–2002</u>	
	Return on equity	Return on sales	Return on equity	Return on sales	Return on equity	Return on sales
PCC	-11.516*** (-3.14)	-2.640*** (-3.96)	-1.510*** (-4.63)	-11.217*** (-4.83)	-0.974 (-1.57)	-1.546* (-1.95)
Com	-28.526*** (-5.39)	-5.915*** (-5.43)	-2.741*** (-6.84)	-18.471*** (-6.77)	1.713 (1.29)	-1.074 (-0.60)
Asset risk	-1.221 (-1.56)	15.441*** (6.82)	-0.219*** (-3.18)	13.249** (2.43)	1.793*** (9.50)	18.380*** (5.87)
Liability risk	29.160*** (2.83)	4.362** (2.29)	4.385*** (6.33)	29.663*** (6.14)	-7.134*** (-3.55)	-10.964*** (-4.33)
Size	15.109 (1.22)	-0.191 (-1.08)	1.352 (1.74)	-1.699*** (-3.72)	-3.013 (-1.19)	1.096*** (4.26)
Adjusted R ²	3.45	40.23	37.2	42.02	35.08	24.43
Wald chi ²	94	1,749	450	548	630	460
Prob. of chi ²	0.00	0.00	0.00	0.00	0.00	0.00
n	2,652	2,660	738	738	1,362	1,362

This table re-estimates the base-case model from table 5 under two alternative performance measures specified at the top of each column. Return on equity is net income divided by book equity, while Return on sales (Profit margin) is net income divided by revenues. Asset risk is measured as the fraction of assets that is not cash, claims on the central bank, amortizable loans, or fixed assets. Liability risk is the fraction of total assets that is not deposits. 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. The model is estimated with fixed time effects and random firm effects. We report the estimated regression coefficients and their t-statistics (in parentheses). Statistically significant relationships at the 10%, 5%, and 1% levels are labeled *, **, and ***, respectively. The bottom section of the table shows the adjusted R², the Wald chi², the p-value of Wald chi², and the number of observations. The sample is all Norwegian non-PCC banks, PCC banks, and listed commercial banks. Non-PCC banks are ownerless. PCC banks have issued equity securities to the general public in the form of Primary Capital Certificates (PCC). The remaining equity in PCC banks is ownerless. Commercial banks are regular stock companies that are owned by their stockholders.

Table 8: Ownership structure**(a): Owner types**

Year	<u>State</u>		<u>Personal</u>		<u>Financial</u>		<u>Industrial</u>		<u>Foreign</u>	
	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

	<u>Largest owner</u>				<u>Five largest owners</u>			
	<u>Mean</u>		<u>Median</u>		<u>Mean</u>		<u>Median</u>	
	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

This table shows ownership characteristics of the PCC banks and the commercial banks in the sample. PCC banks have issued equity securities to the general public in the form of Primary Capital Certificates (PCC). The remaining equity is ownerless. Commercial banks are regular stock companies owned by their stockholders. Panel (a) reports the mean ownership fraction per bank type across five owner types in PCC banks (PCC) and commercial banks (Com). 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 has 90% or more of the equity held by stockholders.

Table 9: The capitalization ratio across years and bank types

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

This table shows distributional characteristics of the capitalization ratio, which we measure as the book value of equity plus subordinated loans divided by the book value of assets. We report the t-values in parentheses, while statistically significant relationships at the 10%, 5%, and 1% levels are labeled *, **, and ***, respectively. The sample is all Norwegian non-PCC banks, PCC banks, and listed commercial banks. Non-PCC banks are ownerless. PCC banks have issued equity securities to the general public in the form of Primary Capital Certificates (PCC). The remaining equity in PCC banks is ownerless. Commercial banks are regular stock companies that are owned by their stockholders.

Table 10: Product market competition across bank types**(a) Distributional properties**

	All	Bank type			Difference		
		1: Non-PCC	2: PCC	3: Com	1 - 2	2 - 3	1 - 3
Branch competition							
Mean	0.53	0.55	0.38	0.35	0.17***	0.02	0.20***
Median	0.32	0.31	0.35	0.32	(3.48)	(0.57)	(2.75)
Std	0.68	0.72	0.36	0.28			
Min	0.00	0.00	0.02	0.02			
Max	5.43	5.43	2.92	1.19			
Bank competition							
Mean	1.48	1.51	1.30	1.04	0.21**	0.25***	0.47***
Median	1.29	1.37	1.17	1.15	(2.02)	(3.09)	(3.09)
Std	0.68	1.51	0.73	0.55			
Min	0.00	0.00	0.24	0.26			
Max	10.87	10.87	6.09	2.61			
n	2,209	1,897	211	101			

(b) Levels of competitive intensity

	All	Bank type		
		1: Non-PCC	2: PCC	3: Com
Branch competition				
Low	34 %	34 %	26 %	38 %
Medium	33 %	30 %	61 %	30 %
High	33 %	36 %	13 %	33 %
Bank competition				
Low	34 %	35 %	21 %	38 %
Medium	33 %	29 %	61 %	53 %
High	33 %	36 %	18 %	9 %
n	2,209	1,897	211	101

This table shows how the value of two alternatives measures of product market competition vary across the three bank types in our sample. Branch competition is the number of bank branches owned by other banks. Bank competition is the number of other unique banks. Both measures are computed per 10,000 inhabitants and averaged over the municipalities in which the bank is operating. We report the t-values of the difference in means in parentheses, while statistically significant differences at the 10%, 5%, and 1% levels are labeled *, **, and ***, respectively. The sample is all Norwegian non-PCC banks, PCC banks, and listed commercial banks. Non-PCC banks are ownerless. PCC banks have issued equity securities to the general public in the form of Primary Capital Certificates (PCC). The remaining equity in PCC banks is ownerless. Commercial banks are regular stock companies that are owned by their stockholders.

Table 11: Product market competition

Independent variable	1985–2002		1988–1992		1993–2002	
PCC	-0.039 (-0.32)	0.144 (0.87)	0.687 (1.08)	1.478** (2.09)	-0.105 (-1.56)	-0.117 (-1.31)
Com	-0.001 (0.00)	0.283 (0.83)	-0.640 (-1.40)	-0.262 (-0.46)	-0.205 (-1.23)	-0.161 (-0.76)
Asset risk	1.570*** (4.95)	1.570*** (4.91)	1.436** (2.07)	1.441** (2.01)	1.318*** (6.18)	1.296*** (6.04)
Liability risk	1.240*** (3.84)	1.305*** (4.05)	5.689*** (6.51)	6.081*** (6.89)	-0.291 (-1.49)	-0.290 (-1.48)
Bank size	-0.081** (-2.27)	-0.089** (-2.47)	-0.273*** (-4.31)	-0.269*** (-4.16)	0.043** (2.48)	0.040** (2.32)
Branch competition	0.009 (0.17)		-0.008 (-0.08)		0.017 (0.62)	
Branch competition * PCC	-0.208 (-1.14)		-6.107*** (-3.92)		0.019 (0.21)	
Branch competition * Com	-3.667*** (-7.01)		-6.035*** (-7.23)		0.097 (0.27)	
Bank competition		0.002 (0.09)		0.014 (0.29)		-0.003 (-0.20)
Bank competition * PCC		-0.180* (-1.91)		-2.498*** (-4.69)		0.016 (0.33)
Bank competition * Com		-1.490*** (-5.78)		-2.477*** (-5.82)		-0.003 (-0.02)
Adjusted R ² , %	32.49	32.59	44.79	43.96	34.70	34.55
Wald chi ²	1,098.14	1,078.09	600.55	579.32	777.74	777.58
Probability of chi ² , %	0.00	0.00	0.00	0.00	0.00	0.00
n	2,209	2,209	717	717	1,348	1,348

This 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 0 otherwise. Asset risk is the fraction of assets that is not cash, claims on the central bank, amortizable loans, or fixed assets. Liability risk is the fraction of total assets that is not deposits. 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. Branch competition is the number branches owned by other banks. Bank competition is the number of unique banks per inhabitant. Both measures are averaged over the municipalities in which the bank is operating, the weight being the fraction of the bank's total assets invested in that municipality. The model is estimated with fixed time effects and random firm effects. We report the estimated regression coefficients and their t-statistics (in parentheses). Statistically significant relationships at the 10%, 5%, and 1% levels are labeled *, **, and ***, respectively. The bottom section of the table shows the adjusted R², the Wald chi², the p-value of Wald chi², and the number of observations. The sample is all Norwegian non-PCC banks, PCC banks, and listed commercial banks. Non-PCC banks are ownerless. PCC banks have issued equity securities to the general public in the form of Primary Capital Certificates (PCC). The remaining equity in PCC banks is ownerless. Commercial banks are regular stock companies that are owned by their stockholders.