Publicly-Traded versus Privately-Held: Implications for Bank Profitability, Growth, Risk, and Accounting Conservatism

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Abstract

Publicly-traded and privately-held banks differ along dimensions of control structure and capital market access. We develop and test predictions about the effects that these differences have on banks' profitability, growth, risk, and financial reporting. Our empirical results are consistent with our predictions. We predict and find that public banks have lower profitability but faster growth in assets and contributed equity capital than private banks, after controlling for the choice to be public or private, size, and differences in banks' assets and liabilities. Relaxing the control for size, we find larger banks are more profitable than smaller banks, consistent with economies of scale in banking. Contrary to our predictions, we find that public and private banks do not differ on measures of risk related to earnings volatility. Public and private banks do differ with regard to balance sheet-based measures of risk, with private banks having more leverage and public banks maintaining higher regulatory capital ratios. These results suggest public banks earn lower returns per unit of risk than private banks, but achieve faster growth in assets and consequently become more profitable through economies of scale. We predict and find results that suggest that stakeholders in public banks demand greater degrees of accounting conservatism relative to private banks. For example, we find that public banks recognize more timely earnings declines but less timely earnings increases than private banks. We also find that public banks exhibit more conservative accounting for loan losses. Loan loss provisions are larger and more timely, relative to exogenous indicators of probable credit losses, for public banks than for private banks. Our results provide insights for accounting and finance academics, as well as bank managers, auditors, and regulators, about the effects of ownership structure on bank profitability, growth, risk, and accounting conservatism. The results highlight the implications of public and private banks' tradeoffs of potential agency costs associated with greater separation of ownership and control against the benefits of capital market access.

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1. Introduction

How does the firm's equity ownership structure – whether common equity shares are publiclytraded or privately-held – affect the firm's economic performance and financial reporting? This question is important because it addresses the fundamental relation between organizational form, organizational performance, and financial reporting. We consider this question interesting because, to date, research provides little insight into the effects of ownership structure on performance and financial reporting, in part because of the scarcity of readily-available accounting data on privately-held firms. This question is difficult to answer definitively because prior research provides little guidance on the antecedents of the public/private choice. Because those antecedents are likely correlated with firm performance, researchers face a challenge in drawing unambiguous inferences regarding the effect of ownership structure on performance and financial reporting.

To address the question, this study provides empirical evidence on the relation between equity ownership structure, firm performance and financial reporting using accounting data for a sample of publicly-traded and privately-held U.S. commercial banks and bank holding companies (hereafter public and private banks).¹ We examine and control for the degree of endogeneity in this setting by estimating a first-stage selection model to explain cross-sectional variation in the choice to be a public or private bank within our sample. We then develop and test predictions about the effects of equity ownership structure on differences in public versus private banks' profitability, growth, risk, and accounting conservatism, while controlling (at least partially) for endogeneity, size, and differences in banks' assets and liabilities.²

¹ Financial statement data are readily available for private banks through regulatory filings. Two prior studies exploit these data to examine earnings management across public and private banks. Beatty and Harris (1998) examine public and private banks' realizations of securities gains and losses to manage reported earnings in response to tax, agency cost, and information asymmetry pressures. Beatty, Ke and Petroni (2002) compare public and private banks' propensities to avoid earnings declines by managing realizations of securities gains and losses and the discretionary component of loan loss provisions.

² In his AAA Presidential Lecture, *Endogenous Expectations*, Demski (2003) calls for more research to examine the nature of endogenously determined variables, such as organizational structure and accounting information.

The choice to be a public bank rather than a private bank triggers organizational differences along two important dimensions, *control structure* and *capital market access*, which have potentially countervailing implications for performance and financial reporting. Control structure differences arise because greater separation exists between principal and agent (ownership and control) in a typical public bank than a typical private bank. Greater separation begets the potential for greater degrees of information asymmetry between owners and managers of public banks than private banks, which can exacerbate the potential for moral hazard and adverse selection problems. Rational principals and agents in public banks will therefore establish more extensive and explicit contracting and monitoring mechanisms to align principals' and agents' incentives and enforce greater mutual accountability in order to reduce exposure to agency problems. These contracting and monitoring mechanisms are costly. And despite their intentions, such contracting and monitoring are likely incomplete. Therefore, considering in isolation the effects of control structure differences on agency costs, we predict public banks likely generate lower profitability per unit of risk than private banks, holding all else constant (e.g., the choice to be public or private, size, and investment opportunities).

Control structure differences cannot be considered simply in isolation due to the inherent potential endogeneity that results from banks trading off the incremental costs associated with increased agency problems against the benefits from capital market access. In particular, capital market access causes two of the costs associated with equity capital to be lower for public banks than for private banks, all else equal. First, holding equity capital is a more liquid investment for shareholders in a public bank than in a private bank, so rational investors demand a liquidity premium to hold equity in a private bank, increasing the private bank's cost of equity capital (i.e., expected rate of return on equity). Second, a public bank can obtain additional equity capital more efficiently than a private bank because the public bank can raise new equity capital directly through capital market transactions (e.g., seasoned equity offerings and stock-based acquisitions) without altering the public ownership status of the firm. A private bank also has these equity capital-raising options, but they entail a fundamental change in ownership structure to become public, which is costly. Thus, capital market access enables public banks to face lower costs of equity capital and to raise new equity capital more efficiently, which likely enables them to generate faster rates of growth in assets and equity.

Growth in assets and equity, and low costs of equity capital, are critically important to banks because banking is essentially a low margin, high volume, high leverage business with significant fixed operating costs. Consequently, economies of scale are important elements of strategy and competition in the banking industry. We predict that capital market access enables public banks to generate faster growth in assets and equity at lower costs of capital, and therefore ultimately become larger, achieve greater economies of scale, and generate greater profit per unit of risk than private banks, holding all else equal (e.g., the choice to be public or private, size, and investment opportunities).

The public-private ownership choice is also likely to endogenously determine stakeholders' demands for conservative accounting. Christensen and Demski (2003) argue that external verifiability is the comparative advantage of accounting as a source of information relative to other information sources. As separation of ownership and control increases, so does the demand for external verifiability of managers' financial reports. Therefore, the demand for verifiable accounting information will likely differ across firms based on the degree of separation between ownership and control of resources. The demand for verifiability also depends on the nature of the accounting information. Conservatism can be viewed as a lower verifiability threshold for bad news than for good news (Basu 1997). Watts (2004) argues that accounting conservatism survives in equilibrium because it constrains managers' optimism. The need to constrain management optimism in financial reporting is likely increasing in the potential for information asymmetry to create agency problems, so the demand for accounting conservatism is likely greater among public firms than private firms. We therefore make two predictions with respect to differences in accounting conservatism across public and private banks. First, extending Ball and Shivakumar (2005), we predict public banks recognize *more* timely earnings decreases and *less* timely earnings increases than private banks, all else equal. Second, we predict that public banks exhibit more conservatism in accounting for loan losses than private banks, all else equal. We predict that public banks recognize larger

and more timely loan loss provisions (relative to changes in non-performing loans, which are nondiscretionary indicators of changing credit quality) in earnings than private banks.

Our empirical tests investigate differences in profitability, growth, risk, and accounting conservatism across public and private banks in order to infer the effects of the tradeoffs between control structure and capital market access. All of our empirical tests control for the probability the bank is public or private given our first-stage selection model, as well as other potentially confounding factors such as size and difference in types of assets, loans outstanding, and liabilities. We examine accounting-based measures of profit, growth, risk, and conservatism because of the absence of market-based measures for private banks. Our sample consists of 1,652 private banks (10,283 bank-years) and 608 public banks (4,058 bank-years) during 1992 to 2002, including all banks for which we can obtain data with total assets that fall within the range between the smallest public bank and the largest private bank.

In the first-stage of our empirical analysis, we find significant differences across public and private banks and across bank-size in types of investments and financing. Using these results, we develop and estimate a probit selection model to estimate the likelihood a given bank is public or private, conditional on the bank's proportions and types of assets (different types of loans outstanding, cash and investment securities, and intangibles); the proportions and types of financing (e.g., deposits, long term debt, and preferred stock); as well as characteristics such as size, profitability, and growth. Our selection model explains 50 percent of the cross-sectional variation in the choice to be a public or private bank within our sample. Following Ball and Shivakumar (2005), we then implement the Heckman (1979) two-stage approach, using the parameters from the first-stage selection model to compute inverse Mills ratios and allow its coefficient to vary between public and private banks as a (partial) control for the likelihood each bank will choose to be public or private.

Consistent with our prediction for the effects of control structure, our results indicate that public banks are less profitable per unit risk than private banks, after controlling for the public-private choice, size, and banks' assets and liabilities. We find that public banks generate lower profit margins, lower returns on assets, and lower returns on common equity than private banks of equivalent size and with a similar mix of assets and liabilities. Consistent with our prediction for the effects of capital market access, we find that public banks generate faster rates of growth in assets and equity from contributed capital than private banks. However, we also find that private banks generate faster rates of growth in internally generated equity capital, by earning higher rates of return on common equity and maintaining higher earnings reinvestment rates (i.e., lower dividend payout ratios). We also find strong evidence of economies of scale in banking – controlling for public versus private ownership, larger banks generate greater profitability and faster growth in earnings than smaller banks.

With respect to risk, and contrary to our predictions, we find no significant differences in timeseries volatility in return on assets and return on common equity across public and private banks, after controlling for the public-private choice, size, and differences in banks' assets and liabilities. Also contrary to our expectations, we find that public and private banks do have different balance-sheet-based measures of risk, with private banks having greater degrees of leverage and public banks maintaining lower regulatory capital ratios. From the results on profitability, growth, and risk, we conclude that, consistent with our predictions, public banks generate less profitability per unit of risk than private banks of equivalent size. However, relaxing the control for size, public banks enjoy faster growth, become larger, achieve greater economies of scale, and therefore generate greater profitability than private banks. These results imply that the costs associated with agency problems dominate the benefits of capital market access for public banks relative to private banks of equal size, but capital market access enables public banks to become larger and capture greater profitability from economies of scale. These implications may be partial explanations for why we observe (a) the majority of banks that seemingly meet U.S. stock exchange listing requirements choose to remain privately-held, but (b) the largest and most profitable banks in the U.S. are publicly-traded.

With respect to implications of ownership structure for financial reporting, two related sets of tests provide evidence consistent with our predictions that ownership structure differences trigger greater demand for accounting conservatism among public banks than private banks, after controlling for the

public-private choice, size, and types of loans outstanding. First, we extend the approach in Ball and Shivakumar (2005) to predict and find that public banks recognize more timely decreases in earnings and less timely increases in earnings than private banks. Second, we predict and find greater conservatism in loan loss accounting among public banks than private banks. We predict and find that public banks recognize larger and more timely loan loss provisions with respect to changes in nonperforming loans than private banks.

This paper contributes new evidence on the tradeoffs between costs associated with agency problems and benefits associated with capital market access by predicting and finding fundamental differences in profitability, growth, risk, and accounting conservatism across public and private banks. Our findings should be of interest to scholars in accounting, finance, and banking concerned with the endogenous interactions between ownership structure, performance, and financial reporting. Our results should also be useful for bank managers, auditors, and regulators.

We organize the remainder of the paper as follows. In the next section, we describe the implications of public versus private ownership for bank performance, growth, risk, and financial reporting, and we address regulatory, tax, and endogeneity issues. In the third section, we describe the sample selection procedures and our sample data. In section four, we present our tests and results. We conclude in section five.

2. Implications of public versus private ownership

Like other firms, banks that meet the listing requirements established by a U.S. stock exchange³ can choose to have their equity shares listed publicly on the exchange and traded among investors, or they can choose to forego public listing and retain private ownership of equity claims. We presume that a bank's shareholders are rational and therefore their election for the bank's shares to be publicly-traded or privately-held is optimal, in light of their objective functions and risk-return preferences. In this paper we

³ For example, the most stringent listing requirements are those of the NYSE, which requires firms to have a minimum size of \$60 million in market value, and 500 investors in order to list. Firms must maintain at least \$15 million in market capitalization to remain listed on NYSE.

do not address the full array of costs and benefits in this choice. Instead, our objective is to predict and test some (but not all) of the observable implications of the decision to be a public versus a private bank.

In this section, we first describe differences between public and private banks along two critical dimensions, *control structure* and *capital market access*, which have potentially important implications for profitability, growth, and risk. We then describe the implications of public versus private ownership for banks' financial reporting, first focusing on differences in accounting conservatism in earnings in general, and then focusing on accounting conservatism in loan loss provisions in particular. In the final subsection, we address regulatory, tax, and endogeneity issues in this research setting.

2.1 Control structure implications

Greater separation between principals and agents exists for a public bank than a similar private bank, implying differences in the banks' control structures. Private banks are more likely to be closelyheld among smaller numbers of shareholders, with owner-managers more likely to be majority equity stakeholders. Public banks are likely to have more dispersed equity ownership among greater numbers of shareholders, with owner-managers more likely to be minority equity stakeholders. Thus, more separation between shareholders and managers is likely to exist within a public bank than a private bank.

Greater separation between principal and agent creates greater potential for information asymmetry, which implies greater potential for moral hazard and adverse selection problems (Jensen and Meckling, 1976). With relatively little separation (or in some cases no separation) between owners and managers of private banks, principals can more easily monitor the actions of the managers, more easily obtain managers' private information, and are more likely to have incentives that closely align with (or are identical to) those of the managers. If private bank managers are likely to be proportionally larger shareholders in their banks than are public bank managers, then private bank managers will be less likely to exploit information asymmetry to shirk, consume excessive perquisites and compensation, and take excessive risk, because they bear a greater proportion of the costs of these actions than public bank managers. The potential for moral hazard and adverse selection problems is more acute among public banks insofar as greater separation between ownership and control creates greater degrees of information asymmetry and greater divergence in incentives.

The potential for information asymmetry, and its concomitant potential for moral hazard and adverse selection, arises within banks because banks intermediate many types of risk in the market for capital - credit risk, interest rate risk, pre-payment risk, exchange rate risk, liquidity risk, and others. All of these risks depend to some degree on systematic movements in market prices (e.g., interest rates and exchange rates); however, a bank's exposure to these risks is not easily observable to external stakeholders. In particular, exposure to credit risk is least easily observable by outsiders, and it has the most idiosyncratic nature of all of those risk-types. Therefore, credit risk creates the greatest potential for information asymmetry and related agency problems. A bank's loan pricing and credit-risk-management activities depend on the bank's collection and evaluation of private information about borrowers' credit quality across large portfolios of loans. In the case of public banks, managers are likely to have substantial private information about loan portfolio credit quality and credit risk that external shareholders do not have. This can enable public bank managers to pursue private gains (e.g., through aggressive loan portfolio growth, opportunistic underwriting, or strategic timing of trades of the bank's stock on private account) without shareholders being fully informed (particularly if contracting and monitoring between shareholders and managers is incomplete).⁴ Among private banks, with less separation between owners and managers and therefore less information asymmetry, managers likely have less potential and less incentive to exploit their private information about loan portfolio credit quality in order to create private gains. These potential agency problems, if realized, will result in lower profitability per unit of risk among public banks than private banks.

Rational principals and agents understand that the costs of potential moral hazard and adverse selection problems can be substantial, particularly with respect to credit risk. Principals and agents therefore demand increased mutual accountability through more extensive (and costly) contracting and

⁴ The thrift crisis of the 1980s and episodic bank failures (e.g., Barings Bank in the early 1990s) serve as painful reminders of the costly nature of these types of moral hazard and adverse selection problems.

monitoring mechanisms designed to mitigate such agency problems. For example, public banks may rely more heavily on explicit pre-commitment between shareholders and managers to mutually acceptable credit risk-taking and loan portfolio growth strategies, more layers of credit risk approval and review, more risk averse credit risk-pricing, along with appropriate compensation schemes, reporting, and corporate governance arrangements designed to align shareholder and manager preferences for profitability, growth, and risk. Insofar as contracting and monitoring mechanisms create additional costs, they could result in lower profitability per unit risk among public banks than otherwise equivalent private banks. Further, even a well-designed monitoring and control structure will be incomplete, and the public bank will still be exposed to some degree of agency costs. Thus, the choice to be a public or private bank involves a choice about the preferred level of exposure to potential agency problems, and the contracting costs associated with mitigating such potential problems. We predict that, after controlling for bank size and the likelihood a given bank is public or private, agency costs likely result in lower profitability per unit of risk for public banks than private banks, ceteris paribus. We next consider the relative benefits to public banks with access to public capital markets.

2.2 Capital market access implications

Choosing to be a public or private bank is endogenously determined with the choices regarding future access to the equity capital market, which in turn imply differences in the cost of equity capital (e.g., the required rate of return to equity shareholders) as well as the transactions costs involved in future equity capital placements. With regard to the cost of equity capital, we assume that holding equity capital in a public bank is a more liquid investment for shareholders than is holding equity capital in a private bank, because equity shares of public banks can be traded with relatively low transactions costs in the capital market.⁵ We therefore assume investors demand a liquidity premium to hold private bank equity. Thus, holding all else constant – most notably, holding constant all other risks and the agency problems of the previous section – public banks will enjoy a lower cost of equity capital than private banks.

⁵ If a private bank elects S-corp status for tax purposes, it can make the equity shares even less liquid due to tax law constraints.

Capital market access also permits public banks to raise additional equity capital through seasoned equity offerings and stock issues in acquisitions without a fundamental change in the ownership structure of the firm. These equity capital-raising options are also available to private banks, but they require the private bank to go public, which is costly. Further, the owner-managers of a private bank have presumably structured their investments in the bank (and the rest of the wealth in their personal portfolios) to match their desired risk-return preferences. Becoming a publicly-traded bank can alter existing owner-managers' exposures to bank-specific risks, either by requiring them to make additional capital investments in the bank (increasing their risk exposures above a level they perceive to be optimal) or by obtaining additional capital from new equity claimants (diluting existing owner-managers' claims and control over the bank's risks and returns to a level below what they perceive to be optimal).

Lower costs of equity capital and more efficient access to additional sources of equity capital at lower transactions costs should enable public banks greater ability to fund asset growth and make acquisitions. Banking is a low-margin, high-volume, high leverage business, with significant fixed operating costs (e.g., branch locations, back-office infrastructure, information and transaction processing systems), creating potential economies of scale in the banking industry. Capital market access should enable public banks to raise equity capital to grow assets more quickly and efficiently, realize greater economies of scale, and therefore enjoy greater profitability per unit of risk than private banks.

Capital market access also suggests public banks have additional degrees of freedom to issue equity capital when necessary to meet regulatory capital requirements following an unexpected equity capital shortfall.⁶ This should enable public banks to operate in equilibrium with lower relative levels of equity capital, and invest in projects that are more risky (e.g., more volatile with respect to future earnings and equity capital), than comparable private banks. The benefits of capital market access appear to be numerous and substantial, enabling public banks to grow more quickly, be more active in acquisitions,

⁶ Federal bank regulators require that banks meet certain minimum capital adequacy ratios. We describe these requirements and their implications for this study in a following section of the paper.

generate more significant economies of scale, use greater degrees of leverage, absorb greater earnings volatility, and yet face lower costs of equity capital than private banks.

On the one hand, we predict that, in isolation, the control structure implications identified in the prior section are likely to make a public bank less profitable per unit risk than an identical private bank. On the other hand, in this section we predict that capital market access should enable a public bank to raise equity capital with lower associated costs, finance more rapid growth, and ultimately realize greater benefits from economies of scale. Ultimately, we seek to shed empirical light on the tradeoffs between control structure implications and capital market access implications across public and private banks. Our empirical tests compare dimensions of profitability, growth, and risk across public and private banks, while controlling for the public-private bank choice, size, and differences in assets and liabilities. In the next section, we describe our predictions for the implications of public versus private ownership on banks' financial reporting.

2.3 Implications for financial reporting

2.3.1 Conservatism in reported earnings

Christensen and Demski (2003, p.338) argue that external verifiability is the comparative advantage of accounting as a source of information relative to other information sources. Verifiability constrains managers' financial reporting in that it limits what information can enter the accounting system, helping to ensure that the information in the accounting system is reliable. Generally accepted accounting principles (GAAP) provide structure for verifiability constraints and thresholds for specific accounting issues. Indeed, many of the current controversies about accounting principles involve verifiability (e.g., estimating fair values for stock option grants and financial instruments, and testing intangible assets for impairments).

When a firm implements GAAP, verifiability is partly the result of implementation of GAAP guidance and partly the result of negotiated policy between agents (firm managers), principals (equity shareholders and creditors), and intermediaries (such as auditors and regulators). Therefore, the demand for verifiability within GAAP will vary across firms and is endogenously determined with the degree of

separation between ownership and control of resources (e.g., between public and private ownership). As separation of ownership and control increases, so does the demand for external verifiability of managers' financial reporting.

The demand for verifiability in financial reporting also depends on the nature of the information. Conservatism imposes a lower verifiability threshold for bad news and a higher threshold for good news (Basu 1997). Watts (2004) conjectures that accounting conservatism survives in equilibrium because it acts as a counterweight to balance managers' optimism bias, particularly in the context of uncertainty and information asymmetry from the separation of ownership and control. Thus, the need to constrain managers' optimism bias in financial reporting is likely also increasing in the potential for information asymmetry to create agency problems, so the demand for accounting conservatism is likely greater among public firms than private firms, and is likely greater for good news than bad news.

The demand for verifiability and conservatism is particularly acute among banks because, as discussed earlier, banks involve a potentially high degree of information asymmetry regarding risk exposures (credit risk, interest rate risk, etc.) Thus, we predict that public banks will exhibit a greater degree of conservatism in financial reporting than private banks. Specifically, we predict that recognition of *bad news* in earnings (e.g., earnings declines) will be *more timely*, and recognition of *good news* in earnings (e.g., earnings increases) will be *less timely* for public banks than for private banks. In making these predictions, we assume that the information sets available to managers, and the timeliness of the arrival of new information to managers, are comparable across public and private banks. We do *not* argue that public and private banks are identical except for form of ownership; instead, we argue that they are reliably comparable insofar as they engage similar production functions, invest in similar assets, take similar risks, compete with similar business models, and are affected by common economic events. Thus, we control for the likelihood a given bank will choose to be public or private, and for differences in observable characteristics (e.g., size, types of loans outstanding, etc.), and isolate whether ownership

differences manifest in more timely reporting of earnings decreases and less timely reporting of earnings increases among public banks than private banks.⁷

2.3.2 Conservatism in loan loss recognition

Accounting for the consequences of a bank's exposure to loan portfolio credit risk requires judgment and estimation. Loan loss provisions are bank managers' accruals for changes in their expectations of future uncollectible loans. Loan loss provisions reflect managers' judgment and estimation of changes in the expected future losses attributable to credit risk in the loan portfolio. The loan loss provision is an expense that reduces reported net income, and reduces the net asset account for the loan portfolio (by increasing the contra-asset loan loss allowance account) on the bank's balance sheet. Because of the high degree of information asymmetry inherent in banks' exposures to credit risk and the discretionary nature of loan loss provisions, the SEC requires banks to disclose various pieces of credit-risk-related information, including the amount of non-performing loans. Banks typically classify a loan as nonperforming when it is at least 90 days overdue on interest and/or principal payments. Thus, the nonperforming loans amount is a relatively nondiscretionary leading indicator of loan quality.⁸ A bank will recognize a loan chargeoff when it deems a portion or all of a loan uncollectible. Chargeoffs require accounting discretion to estimate the amount and timing of the uncollectible portion of a loan. Various

⁷ Ball and Shivakumar (2005) examine accounting quality differences across samples of public and private (nonfinancial) firms in the U.K. They portray *timely recognition of losses* as one important (but not the only) characteristic of accounting quality. They predict and find that public firms recognize more timely losses in earnings than private firms. We make the same prediction, but further predict that public firms recognize less timely good news in earnings. We also refine the analysis by examining specific timing of loan loss recognition across public and private banks.

⁸ Although nonperforming loans are relatively nondiscretionary, bank managers do have at least two forms of discretion over disclosed levels of nonperforming loans. First, they can choose to make new loans to distressed borrowers to enable them to keep their existing loans 'performing' (reportedly a common practice among U.S. banks to delay recognition of nonperforming loans to developing countries from the 1970s until 1987). Second, they can elect to chargeoff loans that are nonperforming, thereby removing the loan balances from the loan portfolio asset account on the balance sheet and from the disclosed level of nonperforming loans. Obviously, both of these steps can be costly to banks, so we deem nonperforming loans to be relatively nondiscretionary.

factors trigger chargeoffs, including loan-specific judgments, bank policy (e.g., all loans that exceed some threshold of delinquency), and external events (e.g., a borrower's declaration of bankruptcy).⁹

From the perspective of timeliness of recognition, bank managers disclose loans as nonperforming once the loans exceed 90 days of delinquency. Bank managers record loan loss provisions to recognize their expectations for future loan losses in income and on the balance sheet. Bank managers then recognize loan chargeoffs upon realizations of loan losses. Thus, loan loss provisions determine the timeliness with which banks recognize loan loss expectations in income and on the balance sheet. Banks with more conservative loan loss accounting will recognize provisions that are larger and further in advance or concurrent with when loans deteriorate to non-performing status. Banks with less conservative loan loss accounting will recognize smaller and less timely loan loss provisions, subsequent to loans reaching non-performing status. Refining our prior arguments about conservatism with respect to earnings, we predict that public banks will recognize *larger and more timely* loan loss provisions relative to changes in nonperforming loans than private banks.¹⁰

2.4 Regulatory, tax, and endogeneity issues

Federal and state bank regulators monitor and impose restrictions on banks in order to enhance the safety and soundness of the banking system for depositors and to reduce the risk and cost borne by the Federal Deposit Insurance Corporation (FDIC). Bank regulators examine (i.e., audit) each bank roughly once a year. Bank examinations can lead regulators to require banks to recognize larger or more timely loan loss provisions, and/or chargeoffs for certain loans the regulators deem uncollectible. In addition, under the risk-based capital adequacy requirements adopted in 1990, each bank must meet certain

⁹ Banks recognize loan chargeoffs by writing down the outstanding balance in loans receivable and the loan loss allowance by the uncollectible amount of the loan. Thus, a loan chargeoff has no net effect on total assets or shareholders' equity. Banks disclose loan chargeoffs in footnotes to the financial statements.

¹⁰ Ideally, we would also like to predict that public banks with more conservative loan loss accounting will recognize more timely loan loss provisions further in advance of related loan chargeoffs. As noted above, however, the timing and amounts of loan chargeoffs are also somewhat discretionary. Public banks may exhibit greater accounting conservatism by recognizing more timely provisions and chargeoffs than private banks, confounding our ability to isolate public versus private differences in the timeliness of provisions relative to chargeoffs. Therefore, we make no predictions about differences in timeliness of provisions relative to chargeoffs.

minimum capital adequacy ratios.¹¹ These requirements impose limits on bank leverage, and thereby constrain bank growth and risk-taking. Banks that fail to meet these capital requirements can be subject to significant regulatory constraints (such as limits on dividends or acquisition activity), and banks deemed severely under-capitalized can be subject to regulatory closure. Through examinations and capital requirements, regulators provide bank owners (and depositors) with monitoring mechanisms that reduce agency costs and provide external verifiability of accounting information. Regulators impose the same examination and capital requirements on public and private banks alike for the protection of depositors and the FDIC, so regulatory capital requirements are not likely to bias our analysis in favor of finding differences between public and private banks. To the contrary, bank regulatory pressures that lead to conservative loss recognition by public and private banks will reduce the power of our tests to detect differences in accounting conservatism.¹²

Banks with less than \$500 million in total assets have tax incentives to recognize conservative loan loss provisions because they receive a tax deduction for the loan loss provision, whereas banks with more than \$500 million in assets must deduct their loan losses on a cash basis (loan chargeoffs). In our empirical analyses, we control for size-differences across banks, which should mitigate the effects of tax incentives on our results.¹³ We also examine profitability before and after tax effects, to verify that our results are not being driven by differences in income taxation.

As noted at the outset, the choice to be a public or private bank is likely to be endogenously determined to some degree with the bank's profitability, growth, risk and accounting conservatism

¹¹ Federal bank regulators require that each bank maintain a Tier 1 Capital Ratio of 10% (6%) or better to be considered well-capitalized (adequately-capitalized). The Tier 1 capital ratio is roughly equal to common shareholders' equity over total assets. In addition, each bank must have a Risk-Based Capital Ratio of 6% (4%) or better to be considered well-capitalized (adequately-capitalized). The risk-based capital ratio is roughly equal to common shareholders' equity over risk adjusted assets, in which low risk assets such as cash receive very low weight, and risky assets such as loans receive full weight.

¹² The existence of Federal subsidized deposit insurance for banks creates a potential moral hazard problem between regulators (as principals representing depositors) and bank owners and managers (as agents entrusted with depositors' capital). Both public and private banks have incentives to avoid or delay recognizing losses to remain adequately capitalized and maintain access to subsidized Federal deposit insurance. These incentives could bias our tests against finding conservatism, but they should not bias our tests of differences in accounting conservatism across public and private banks.

¹³ Cloyd, Pratt, and Stock (1996) conduct a survey-based experiment and find that private bank managers are more likely than public bank managers to manage earnings down in order to reduce taxable income.

characteristics. Endogeneity arises because it is likely that a bank's expected investment opportunities and constraints and ambitions for future growth and profitability likely influence its choice to be public or private, which in turn are determinants that influence the bank's ability to generate growth and profitability. In designing this research, we choose to estimate and control (to the best of our ability) for the likelihood a given bank will be public or private, as a predetermined choice. Given this control (and it is of course impossible to control perfectly for all of the implications associated with fundamental characteristics such as ownership structure), we then seek to isolate the subsequent consequences of being public or private on banks' profitability, growth, risk, and financial reporting, based on our predictions about differences in control structure and capital market access. Thus, we take a directional tack with the potentially endogenously determined variables in this setting.

The directional effects of endogeneity in this setting could be opposite to our predictions and confound our tests. For example, if banks with unusually high profitability per unit of risk are most likely to become public, and if this effect dominates the agency costs embedded in being a public bank, then this is contrary to our predictions that agency problems within public banks reduce bank profitability per unit of risk. Likewise, capital market access is advantageous to a public bank primarily if the capital markets assign a fair price to the bank's shares. Does the need to meet earnings expectations in the capital markets, or managers' opportunism to enhance personal wealth, drive public banks to more aggressive (less timely) recognition of earnings and less conservative recognition of loan loss provisions? This is also contrary to our predictions. Ultimately, our empirical evidence should shed some light on whether these possible directional effects of endogeneity dominate our predictions. We turn next to the sample selection and data, and then to our tests and results.

3. Sample selection and descriptive statistics

3.1 Sample selection

We obtain bank holding company and commercial bank data from release 5.0 of the "SNL Regulatory Datasource" (SNL) database supplied by *SNL Financial*. The database provides regulatory data on public and private banks from 1990 to 2003. We rely on SNL's public ownership classification to identify bank ownership structure. SNL classifies banks as private or public based on whether the company files financial statements with the Securities Exchange Commission. Our use of SNL data creates several issues related to our sample of banks. First, when a bank converts from one type to another (private to public, for example), SNL reclassifies the bank's entire past regulatory data in subsequent versions of SNL under the latest ownership structure. Thus, a private bank that goes public in 1999 will appear to be public in the years prior to 1999. SNL does not track changes in bank ownership structure so we assume that a bank's current ownership structure represents the entire sample period. Classification errors create noise that bias against our tests of differences across public and private banks.

Second, SNL tracks banks that have merged, been acquired, or failed, in a separate database of acquired/defunct banks. When a bank acquires or merges with another bank, SNL assigns the acquiring banks' corporate information to all prior regulatory data of the acquired bank. We cannot determine whether the data in the acquired/defunct database relate to a public or private bank, or to a subsidiary of another bank. Thus, our sample only consists of active banks that have not been acquired in prior years.

As a partial control for size, we create a censored sample of private and public banks each year within a common size range by eliminating public banks with total assets larger than the largest private bank and eliminating private banks with total assets smaller than the smallest public bank. This eliminates 15,311 firm-year observations. Further, we include size as a prediction variable in our first-stage probit selection model and as a control variable in each of our test regressions. In addition, as a partial control for outliers, we study a truncated sample that excludes the observations in the top and bottom percentile of each annual cross-section of earnings changes (similar to Ball and Shivakumar 2005) and loan loss provisions. After these sample restrictions and exclusions, and after requiring firms to have necessary data for our analyses, the sample consists of 1,652 (608) private (public) banks, with 10,283 (4,058) bank-years covering 1992 to 2002.

For these banks, SNL provides only limited data on their equity ownership structures. SNL only has shareholder data for 332 of the public banks in our sample for 2002, the final year of our study. In that

year, this subsample of public banks had an average of 2,026 shareholders and a minimum of 90 shareholders. The SNL database contains no shareholder data for private banks, preventing a direct comparison with public banks. However, the SNL database does provide taxpayer status data for private banks. Among the 1,371 private banks in our sample with available taxpayer status data in 2002, 36.1 percent elected S corporation status, which allows a maximum of only 75 shareholders. These data support our assertions that private banks are more likely to be closely-held among smaller numbers of shareholders, and public banks are likely to have more dispersed equity ownership among greater numbers of shareholders. Thus, greater separation between shareholders and managers likely exists within a public bank than a private bank.

3.2 Descriptive statistics

Table 1 presents descriptive statistics for public and private banks, two-sample Wilcoxon ranksum tests, and t-statistics for differences across these two groups. Table 2 presents correlation statistics for the variables in our regression analyses.

The descriptive statistics in Table 1 suggest our sample banks span a wide cross-sectional distribution of total assets. The statistics in Table 1 also describe some of the differences between sample public and private banks. Despite censoring our sample to a common size range, within our sample total assets for the average public bank are almost four times larger than for the average private bank. The average public bank grows faster, is less leveraged, generates greater returns on equity and assets, and has larger proportions of assets in family loans, commercial real estate loans, and commercial loans, and larger investments in goodwill and intangibles. Private banks tend to have larger proportions of assets invested in cash, securities and agricultural loans. On average, public banks also maintain lower levels of tier-one capital and total risk-based capital, a possible result of having the ability to access low-cost options to boost equity capital when necessary to meet regulatory capital requirements.

Table 2 details univariate correlations among the variables in this study that relate to bank ownership structure, profitability, risk, growth, and accounting conservatism. In Panel A, the correlations between Dpub (an indicator variable we set equal to one for publicly-traded banks and zero for privatelyheld banks) and our measures of profitability, growth, and risk provide similar pictures as the tests of mean differences in Table 1. Panel B provides correlations for the variables we use to analyze earnings changes. The correlations in Panel B suggest public banks experience larger earnings changes in the current and prior periods and less negative earnings changes in prior periods. Panel C provides correlations for variables we use in our analysis of loan loss provisions. Loan loss provisions correlate strongly with changes in non-performing loans, and these correlations appear to differ between public and private banks.

3.3 Selection model for public versus private ownership

As discussed earlier, banks likely select public or private ownership status based on expected (or desired) future changes in profitability and growth, and so ownership status and profitability, growth, risk, and conservatism may be endogenously determined to some degree.¹⁴ To control for potential bias resulting from endogeneity in ownership status and our profitability, growth, risk, and conservatism measures, we follow Ball and Shivakumar (2005) by using the Heckman (1979) two-stage approach. In the first stage, we model the selection of public versus private ownership status by estimating a probit selection model, using predictor variables that capture various observable characteristics related to ownership status selection. We then use the parameters from the probit selection model to compute an inverse Mills ratio for each sample bank. In the second stage, we estimate all of our regressions to test the effects of ownership status on profitability, growth, risk, and conservatism by including the inverse Mills ratio as a control for the likelihood a bank is public or private, and we allow its coefficient to vary between public and private banks.

The univariate descriptive statistics in Table 1 reveal that public and private banks have significantly different investment opportunities and financial capital strategies. We rely on differences across public and private banks' investments and financing to identify predictor variables that explain

¹⁴ In theory, one could argue that the choice to be public or private is a continuous choice (i.e., banks always have the option to change ownership status at any point in time) and therefore ownership status and profitability, growth, risk, and conservatism are simultaneously determined. We believe, and the data suggest, that banks do not change ownership status frequently, so we treat ownership status as a predetermined correlated variable that influences banks' subsequent profitability, growth, risk, and conservatism, rather than as a simultaneously determined variable.

banks' selection of public or private ownership. To identify these differences, and to attribute such differences to ownership status and not bank size, we estimate a series of regressions in which we regress common-size balance sheet components on Dpub while controlling for size, measured as the centile rank of the bank's total assets within our cross-sectional sample at the end of each year. Each regression takes the following general form:

Dependent Variable_t =
$$\phi_0 + \phi_1 Dpub + \phi_2 Size_t + \varepsilon_t$$
 (1)

We present the results of these regressions in Table 3. Consistent with the univariate descriptive statistics in Table 1, these regressions reveal that a number of common-size balance sheet components reflect differences in investments and financing that are significantly related to public-private status, after controlling for bank size, and are therefore potentially useful predictor variables.

From the regressions in Table 3, we choose the set of first-stage predictor variables from the set of investment and financing variables that are significantly related to Dpub, after controlling for size. We augment that set of predictor variables with several additional variables that *ex ante* seem likely related to ownership status: size, profitability (measured as return on average common equity, ROACE), earnings growth (denoted Δ NI), and credit risk (measured as loan loss provisions as a percent of total assets, LLP). Our selection model, which we estimate over the pooled cross-sectional sample, takes the form:

$$Dpub_{t} = \delta_{0} + \delta_{1}Cash_{t} + \delta_{2}Securities_{t} + \delta_{3}FamilyLns_{t} + \delta_{4}ConsumerLns_{t} + \delta_{5}ComRELns_{t} + \delta_{6}ComLns_{t} + \delta_{7}AgLns_{t} + \delta_{8}OthLns_{t} + \delta_{9}Reserves_{t} + \delta_{10}GWOI_{t} + \delta_{11}Deposits_{t} + \delta_{12}OthDebt_{t} + \delta_{13}PrefEquity_{t} + \delta_{14}ContCap_{t} + \delta_{15}RetEarn_{t} + \delta_{16}OCI_{t} + \delta_{17}Size_{t}$$
(2)
+ $\delta_{18}ROACE_{t} + \delta_{19}\Delta NI_{t} + \delta_{20}LLP_{t} + \varepsilon_{t}$

We present the results of estimating the probit selection model in Table 4. The Pseudo R-square statistic indicates the model explains roughly 50 percent of the cross-sectional variation in the selection of public-private ownership status within our sample. Not surprisingly, size is an extremely strong positive predictor of ownership status. We use the parameter estimates reported in Table 4 to compute an inverse Mills ratio for each sample bank (which we denote Lambda). Lambda reflects the conditional likelihood a given bank is public or private. In the second stage, we test the effects of ownership status on

profitability, growth, risk, and conservatism, and in each test we include Lambda as a partial control for endogeneity and we permit the coefficient to vary between public and private banks by interacting Lambda with Dpub.

4. Empirical tests and results

In the following sections, we first describe our analysis of the implications of public versus private ownership for bank profitability, growth, and risk. We then describe our analysis of the implications of public versus private ownership for financial reporting, particularly timeliness of recognition of earnings increases and decreases, and recognition of loan losses.

4.1 Tests and results – The effects of ownership structure on profitability, growth, and risk

We test the economic performance implications of ownership structure by comparing our two samples of public and private banks using accounting-based profitability, growth, and risk metrics, while controlling for the likelihood of public or private ownership, size, and differences in assets and liabilities. To examine profitability differences, we test standard performance metrics such as return on average assets (ROAA), return on average common equity (ROACE), and their components (profit margin, efficiency, and leverage). To examine growth differences, we test growth rates in assets, equity, and earnings. To examine risk differences, we test general measures of risk such as earnings volatility, as well as banking-industry-specific metrics such as regulatory capital adequacy ratios. We also focus on measures of loan portfolio credit risk using ratios based on types of loans outstanding, loan loss allowances, loan chargeoffs, and non-performing loans.

We base our tests on the following general model using each of our profitability, growth, and risk metrics as dependent variables (firm subscripts suppressed):

Dependent Variable_t =
$$\phi_0 + \phi_1 Dpub + \phi_2 Size_t + \phi_3 Cash_{t-1} + \phi_4 Securities_{t-1}$$

+ $\phi_5 FamilyLns_{t-1} + \phi_6 ConsumerLns_{t-1} + \phi_7 ComRELns_{t-1} + \phi_8 ComLns_{t-1}$
+ $\phi_9 AgLns_{t-1} + \phi_{10} OtherLns_{t-1} + \phi_{11} Re serves_{t-1} + \phi_{12} GWOI_{t-1} + \phi_{13} Deposits_{t-1}$
+ $\phi_{14} OthDebt_{t-1} + \phi_{15} Lambda_t + \phi_{16} Dpub * Lambda_t + \varepsilon_t$ (3)

As noted earlier, Dpub denotes an indicator variable that equals 1 (0) for public (private) firms, and Sizet denotes the firm's centile rank (scaled to range from 0 to 1) based on total assets at the end of year t. We include the control for size because it has important effects on profitability, growth, and risk for banks because of economies of scale, and the statistics in Table 2 reveal that size correlates with profitability, growth, and risk. As noted earlier, we also include Lambda (the inverse Mills ratio indicating the likelihood each bank is public or private based on our probit selection model results in Table 4) as a control for endogeneity, and we interact Lambda with Dpub. In the general regression model above, we also include a number of variables to control for differences in investments and financing across banks. We include variables to capture the effects of different types of assets (cash, securities, goodwill and other intangibles), loans (family, consumer, commercial real estate, commercial, agricultural, and other), loan loss reserves, and financing (deposits and other liabilities), each scaled by total assets.

4.1.1 Profitability results

Table 5 Panels A and B contain the results from estimating model (3) to test the effects of ownership structure on bank profitability. The results in Panel A indicate that, after controlling for the public-private choice and for differences in size and asset/liability mix, public banks have significantly *lower* profit margins, *lower* asset turnovers, and *lower* ROAA than private banks.¹⁵ The results in Panel A also indicate that size is associated with higher profit margins and greater ROAA, but size is not significantly associated with asset turnover. The results also indicate that endogeneity concerns arise in these regressions because the coefficients on the inverse Mills ratio variables are significant. These results demonstrate three key points. First, as expected, public banks are less profitable than private banks per dollar of assets when one controls for size and differences in the asset-liability mix, and the choice to be public or private. Second, also as expected, size has an important positive influence on the profitability of banks (i.e., ignoring the effects of size can confound simple comparisons of public and private banks). Third, ownership status and profitability are endogenously determined.

¹⁵ We obtain similar results for profit margins when we examine profit margins before tax and before amortization of intangibles, so the results in Table 5 Panel A are not attributable to differences across public and private banks in tax status or intangible assets (as an indicator of differences in merger and acquisition activities).

Panel B reports results for leverage and return on average common equity. Contrary to expectations, we find that public banks are significantly less levered than private banks, controlling for size, the asset-liability mix, and the ownership structure choice. Consistent with lower ROAA and lower leverage, public banks experience significantly lower ROACE than private banks.¹⁶ The coefficient estimate suggests that, controlling for all else, the average public bank generates an ROACE that is 1.17 percentage points lower than the average private bank. The results on the control variables in Panel B also suggest that ROACE increases with size, and confirms our expectations that ROACE and ownership structure are endogenously determined. Collectively, the results from Panels A and B confirm our predictions, suggesting public banks are less profitable than private banks, after controls, and that bank profitability is strongly positively associated with size, reflecting the importance of economies of scale in banking. These results are also consistent with our conjecture that public banks face lower costs of equity capital than private banks.

4.1.2 Growth results

Table 5 Panels C and D report the results from estimating model (3) to test differences in various dimensions of growth in assets, equity, and earnings across public and private banks. The results in Panel C are consistent with our predictions about the benefits to public banks from access to the capital markets. We find that public banks generate significantly greater asset growth and growth in contributed equity capital (which excludes retained earnings) than private banks. In contrast, we find that growth in total equity (which includes retained earnings) is marginally lower for public banks, in part because dividend payout ratios are significantly greater for public banks.¹⁷ From these results and the results from our tests of ROACE in Table Panel B, we conclude that private banks rely more heavily on internal growth in equity capital through greater ROACE and greater earnings reinvestment (lower dividend payout ratios),

¹⁶ The univariate results in Table 1 provide conflicting inferences, indicating that public banks maintain greater leverage and generate higher ROACE than private banks. The difference in results between Tables 1 and 5 point to the importance of controlling for size in this analysis.

¹⁷ We conjecture, but do not formally test, that public banks may have higher dividend payout ratios to mitigate the potential for agency problems, consistent with our earlier discussion that potential agency problems in public banks may also lead to a greater degree of accounting conservatism.

whereas public banks rely more heavily on issuing capital to fuel growth in common equity and assets. The results in Panel D suggest that public and private banks do not differ in growth in earnings scaled by lagged total assets, but private banks generate more rapid growth in earnings scaled by lagged equity.

In Panels A and B we document that size significantly enhances bank profitability. Consistent with this, we report in Panel C that asset and equity growth rates increase with bank size, whereas contributed capital growth rates and dividend payout ratios decrease with bank size. In Panel D, we report that earnings growth rates increase with bank size, consistent with economies of scale in banking. The controls for endogeneity in Panels C and D indicate that the potential bias from endogeneity arises most notably in the tests of equity growth, contributed capital growth, and growth in earnings scaled by equity.

Overall, the results in Panels C and D suggest that public banks grow assets more quickly than private banks by raising contributed capital through access to the capital markets, despite maintaining higher dividend payout ratios. Private banks, however, generate greater growth in equity capital overall by generating higher ROACE and reinvesting greater proportions of earnings. The results also indicate that the benefits associated with size include faster growth in assets and faster growth in equity, which is driven by faster growth in earnings and lower dividend payout ratios. These results are consistent with capital market access representing an important advantage of public ownership that allows public banks to achieve the benefits associated with size more efficiently than private banks.

4.1.3 Risk results – Earnings volatility and regulatory capital

While public banks are less profitable, are they also less risky? Table 6 reports the results of analyzing various accounting-based risk measures.¹⁸ In Panel A, we modify slightly the general regression model (3) by estimating the model using firm-specific time-series variances of ROAA and ROACE as the dependent variables,¹⁹ and firm-specific average values for each of the independent variables across all years the firm is in the sample. The results, reported in Table 6, Panel A, suggest that no significant differences exist in volatility of ROAA or ROACE between public and private banks after controlling for

¹⁸ As noted earlier, we focus on accounting-based risk measures because market-based risk measures are not available for private banks.

¹⁹ We require a minimum of six observations to compute firm-specific variances.

size, the asset-liability mix, and the choice to be public or private. The results also indicate that size is negatively related to volatility in ROAA and volatility in ROACE, indicating larger banks experience less volatile earnings. The controls for endogeneity indicate that endogeneity is not an issue in the Panel A regressions, so these controls turn out to be unnecessary for these tests.

Table 6 Panel B reports the results from using general model (3) to analyze bank regulatory risk metrics, including the Tier 1 Capital Ratio and the Risk-Based Capital Ratio. The results in Panel B indicate that the average public bank maintains higher capital adequacy ratios than the average private bank, contrary to our expectation that public banks would take more risk and maintain lower regulatory capital ratios because capital market access would enable them to raise new equity capital in the event of an unexpected capital shortfall. The results also suggest that capital adequacy measures are decreasing in firm size. This is consistent with smaller banks needing a greater cushion in their capital adequacy ratios to absorb the greater volatility in ROACE relative to larger banks. The controls for endogeneity indicate that potential bias arises in the tests of regulatory capital ratios, implying that a degree of endogeneity exists in the choice to be a public or private bank and the preferred level of regulatory capital.

The collection of results in Tables 5 and 6 suggest that public banks experience lower profitability than private banks. While private banks have higher leverage and public banks maintain greater regulatory capital ratios, no significant differences exist between public and private banks along risk dimensions such as volatility in profitability. Thus, public banks generate a lower return per unit of risk, per dollar of assets, and per dollar of equity capital relative to private banks. On the other hand, size is associated with superior profitability and faster growth, yet lower volatility in ROAA and ROACE: larger banks generate higher profitability per unit of risk than smaller banks. These results suggest that banks trade off agency costs against the performance and risk benefits associated with size in selecting the optimal ownership structure.

4.1.4 Risk results – Loan portfolio quality and credit risk

We now examine risk differences across public and private banks' loan portfolios. An important element in the success of any bank is its ability to take and price credit risk in its loan portfolio. Loan

portfolio quality reflects the bank's credit risk management and loan portfolio composition. In Table 7 we report results from using model (3) to analyze standard measures of loan portfolio quality and credit risk, including loan loss allowances, nonperforming loans, and loan chargeoffs. We find that ratios of loan loss allowances to total loans (LLA/Loans) are higher among public banks than private banks. While public banks have relatively larger loan loss allowances compared to private banks, other indicators of credit quality are not statistically different across public and private banks. We find that public and private banks have statistically indistinguishable proportions of loan portfolios in nonperforming status (NPL/Loans), and experience no significant differences in net charge-offs as a percentage of average loans (NCO/Avg Loans). This finding is consistent with our prediction that public banks exercise more conservative accounting for loan losses than private banks, but we withhold this conclusion until we estimate our model for loan loss provisions, which more carefully specifies the magnitude and timing of loan loss recognition relative to changes in nonperforming loans.²⁰

Collectively, the evidence in Tables 5, 6, and 7 from our profitability, growth, and risk tests suggest that, for public banks relative to private banks of equivalent size, agency costs associated with control structure differences dominate the benefits of capital market access, resulting in public banks generating lower levels of profitability despite equivalent levels of firm risk and riskier loan portfolios. However, relaxing the control for size, we find that capital market access allows public banks to grow assets and equity capital faster than private banks, ultimately leading to greater profit per unit of risk.

4.2 Tests and Results – The effects of ownership structure on financial reporting

4.2.1 Tests and results - Earnings changes

For our first test of the effects of ownership structure on financial reporting across public and private banks, we adopt and extend Ball and Shivakumar (2005), a study that examines timely loss recognition by analyzing the differential persistence of earnings decreases across (non-financial) public and private firms in the U.K. The Ball and Shivakumar (2005) approach is appropriate within the banking

²⁰ Another possible explanation is that the higher LLA/Loans is the result of public banks recognizing excessive reserves to build reporting slack for the future in order to meet earnings thresholds the capital markets perceive as important, such as analysts' forecasts, prior period earnings, and positive earnings.

industry because the timely recognition of losses is a key dimension of financial reporting among banks, because of (a) the importance of exposure to losses from various types of risk intermediation in banking, and (b) capital adequacy regulations, which relate to the ability of a bank to absorb losses and remain solvent for depositors. We extend their approach by examining earnings increases and decreases.

We estimate the following Ball and Shivakumar (2005) piece-wise linear model of autoregression in earnings changes using our sample of public and private banks:

$$\Delta NI_{t} = \alpha_{0} + \alpha_{1}D\Delta NI_{t-1} + \alpha_{2}\Delta NI_{t-1} + \alpha_{3}\Delta NI_{t-1} * D\Delta NI_{t-1} + \alpha_{4}Dpub + \alpha_{5}Dpub * D\Delta NI_{t-1} + \alpha_{6}Dpub * \Delta NI_{t-1} + \alpha_{7}Dpub * \Delta NI_{t-1} * D\Delta NI_{t-1} + \alpha_{8}Size_{t} + \alpha_{9}Size * D\Delta NI_{t-1} + \alpha_{10}Size_{t} * \Delta NI_{t-1} + \alpha_{11}Size_{t} * \Delta NI_{t-1} * D\Delta NI_{t-1} + \alpha_{12}Lambda_{t} + \alpha_{13}Dpub * Lambda_{t} + \varepsilon_{t}$$

$$(4)$$

where ΔNI_t denotes the change in net income from year t-1 to t, scaled by total assets at the end of t-1; and $D\Delta NI_{t-1}$ denotes an indicator variable that equals 1 if ΔNI_{t-1} is negative and 0 otherwise. Throughout our analyses, Dpub indicates ownership status; Size denotes the size control variable; and Lambda denotes the inverse Mills ratio as a control for potential endogeneity bias. In essence, model (4) is an autoregression of earnings changes (i.e., a regression of the current period change in earnings (ΔNI_t) on the prior period change (ΔNI_{t-1})), augmented with dummy variables for public/private ownership (Dpub) and the sign of the prior period earnings change ($D\Delta NI_{t-1}$), control variables for size and endogeneity, and interactions among these variables.

Under U.S. GAAP, we expect some degree of conservatism in financial reporting and income measurement for all sample banks, public or private. Under conservatism, we expect asymmetric timeliness of recognition of economic gains and losses in accounting earnings. We expect economic gains must meet a higher threshold of verification to be recognized in accounting income, so earnings increases are likely to be less timely and more persistent, even for private banks, implying α_2 should be positive. We expect a lower threshold of verification and therefore more timely recognition of economic losses in income, so earnings declines are more likely to be transitory (e.g., bad news is more timely and mean-reverts more quickly than good news). Consequently, we predict that α_3 , the coefficient on the interaction

of ΔNI_{t-1} and $D\Delta NI_{t-1}$ for private banks, will be negative. Comparing conservatism across public and private banks, our main predictions are that, relative to private banks, public banks exhibit more conservatism and therefore *less* timely recognition of earnings increases but *more* timely recognition of earnings declines. Thus, we predict that public banks will experience *more* persistence when earnings increase and *less* persistence when earnings decline than private banks. Specifically, we predict the coefficient (α_6) on Dpub* ΔNI_{t-1} will be positive and that the coefficient (α_7) on Dpub* ΔNI_{t-1} *D ΔNI_{t-1} will be negative.

We report the results in Table 8. For private banks, we find that earnings increases are persistent $(\alpha_2>0)$ and earnings decreases are strongly associated with earnings reversals in the following period $(\alpha_3<0)$. This asymmetric persistence in good news and bad news is consistent with some degree of conservatism for our sample of private banks. Comparing public banks to private banks, we find public banks have significantly more persistent earnings increases ($\alpha_6>0$) and larger earnings reversals following earnings declines ($\alpha_7<0$). Consistent with our predictions, this evidence reveals a greater degree of conservatism for public banks than for private banks. Consistent with Ball and Shivakumar (2005), tests of the control variables indicate that endogeneity bias is not a serious concern in this regression.

4.2.1 Tests and results - Loan loss provisions

We extend our analysis of the effects of ownership structure on conservatism in financial reporting by comparing the timeliness of loan loss provisions across public versus private banks. Loan loss provisions are an important component of banks' financial reporting because they reflect managers' estimates of credit losses during the period. We predict public banks exhibit more conservative loan loss accounting than private banks, and therefore recognize larger and more timely loan loss provisions than private banks, ceteris paribus. As discussed earlier, changes in nonperforming loans are exogenous, relatively nondiscretionary indicators of possible future credit losses. Therefore, we assess differences in the timeliness of public and private banks' loan loss recognition by comparing the associations between loan loss provisions and lagged, contemporaneous, and future changes in nonperforming loans. In

conducting this test, we also control for potentially confounding differences across banks in size, potential endogeneity bias, types of loans outstanding, the loan loss allowance, and net chargeoffs.

To test this prediction on our sample of public and private banks, we estimate the following model of loan loss provisions:

$$LLP_{t} = \beta_{0} + \beta_{1}\Delta NPL_{t-1} + \beta_{2}\Delta NPL_{t} + \beta_{3}\Delta NPL_{t+1} + \beta_{4}NCO_{t} + \beta_{5}NCO_{t+1} + \beta_{6}Dpub + \beta_{7}Dpub * \Delta NPL_{t-1} + \beta_{8}Dpub * \Delta NPL_{t} + \beta_{9}Dpub * \Delta NPL_{t+1} + \beta_{10}Dpub * NCO_{t} + \beta_{11}Dpub * NCO_{t+1} + \beta_{12}LLA_{t-1} + \beta_{13}FamilyLns_{t-1} + \beta_{14}ConLns_{t-1} + \beta_{15}ComRELns_{t-1} + \beta_{16}ComLns_{t-1} + \beta_{17}AgLns_{t-1} + \beta_{18}OthLns_{t-1} + \beta_{19}Size_{t} + \beta_{20}Size_{t} * \Delta NPL_{t-1} + \beta_{21}Size_{t} * \Delta NPL_{t} + \beta_{22}Size_{t} * \Delta NPL_{t+1} + \beta_{23}Size_{t} * NCO_{t} + \beta_{24}Size_{t} * NCO_{t+1} + \beta_{25}Lambda + \beta_{26}Dpub * Lambda + \varepsilon_{t}$$
(5)

where LLP_t denotes the loan loss provision for year t; Δ NPL_t denotes change in nonperforming loans from year t-1 to year t; NCO_t denotes net loan charge-offs for year t; LLA_{t-1} denotes the loan loss allowance at the beginning of year t; and we include controls for different types of loans across banks (family, consumer, commercial real estate, commercial, agricultural, and other loans, respectively). To control for heteroskedasticity, we scale each variable by total assets as of the end of the prior year. As used throughout our analyses, Dpub identifies ownership status, Size denotes the size control variable, and Lambda (the inverse Mills ratio) controls for potential endogeneity bias.

This loan loss provisions model includes five variables that reflect the timing of loan loss recognition during the life of a loan. Loan loss provisions in year t reflect managers' expectations of loan losses based on information about loans that became delinquent during the previous year (ΔNPL_{t-1}) or the current year (ΔNPL_t), or that are expected to become delinquent next year (ΔNPL_{t+1}). As expectations, loan loss provisions relate to loan chargeoffs (i.e., loss realizations) during the current year (NCO_t) and future years (NCO_{t+1}). We therefore expect the coefficients on these five variables to all be positive. Because these variables do not include the public bank dummy variable, these coefficients capture the associations between loan loss provisions and these variables for private banks.

To compare loan loss recognition across public and private banks, we interact those five variables with Dpub. Our primary predictions for this analysis are that the coefficients β_7 , β_8 , and β_9 on

Dpub* Δ NPL_{t-1}, Dpub* Δ NPL_t and Dpub* Δ NPL_{t+1}, respectively, will be positive, indicating that public banks recognize larger and/or more timely loan loss provisions relative to changes in nonperforming loans than private banks, controlling for size, endogeneity, and types of loans in the loan portfolio.²¹ We make no prediction, however, about the signs of the coefficients on Dpub*NCO_t and Dpub*NCO_{t+1} (i.e., β_{10} and β_{11}) because, as noted earlier, public banks are likely to be more conservative than private banks with respect to recognition of both loan loss provisions and charge-offs, with ambiguous effects on the association between the two. We include the beginning of year loan loss allowance (LLA_{t-1}) to control for prior period recognition of loan loss provisions, and expect the coefficient on LLA_{t-1} to be negative. We include controls for differences in loan loss recognition for different amounts and types of loans outstanding. We expect positive coefficients on these variables, as provisions likely increase in the relative magnitudes of each type of loan portfolio.

We report the results in Table 9. We find that coefficients β_1 , β_2 , and β_3 on ΔNPL_{t-1} , ΔNPL_t and ΔNPL_{t+1} are all positive indicating that private banks recognize timely loan loss provisions relative to changes in nonperforming loans, exhibiting some degree of accounting conservatism. Consistent with our primary predictions for this analysis, we find that the coefficients β_7 , β_8 , and β_9 on Dpub* ΔNPL_{t-1} , Dpub* ΔNPL_t and Dpub* ΔNPL_{t+1} are all positive, indicating that public banks are more conservative than private banks, recognizing larger and/or more timely loan loss provisions relative to changes in nonperforming loans than private banks. These positive associations between loan loss provisions and lagged, current and future changes in nonperforming loans for public banks are consistent with public banks recognizing *larger* and *more timely* loan loss provisions than private banks. The coefficients on the control variables for endogeneity indicate that these controls are necessary because of potential endogeneity bias.

²¹ We predict that β_1 (the coefficient on ΔNPL_{t-1} for private banks) and β_7 (the coefficient on Dpub* ΔNPL_{t-1} for public banks) will be positive. A positive relation between LLP_t and ΔNPL_{t-1} may suggest that banks' loan loss provisions recognize loan losses with some degree of delay (e.g., untimely loss recognition, which is inconsistent with conservatism). However, we believe it is more likely that such a relation reflects that banks revise their loan loss expectations in year t when new information arrives in year t about the likelihood of loss for loans that became delinquent during year t-1.

We find inconclusive results on the relation between loan loss provisions and contemporaneous and future net loan chargeoffs for public banks versus private banks. As noted earlier, however, the proper interpretation of this relation is in question because public banks could be more conservative than private banks with respect to recognition of both loan loss provisions and net loan charge-offs, with ambiguous effects on the association between the two. Overall, the results reported in Table 9 suggest that public and private banks are conservative, but the loan loss provisions of public banks are more strongly related to past, current, and future changes in nonperforming loans, consistent with greater and more timely recognition of loan losses for public banks than for private banks.

5. Concluding remarks

In this study, we examine how the firm's equity ownership structure – whether common equity shares are publicly-traded or privately-held – affects the firm's economic performance and financial reporting. The choice to be a public or private firm creates fundamental differences in control structure and access to capital markets. To date, research provides limited insight into how these differences affect firm profitability, growth, risk, and accounting conservatism, in part because of the scarcity of readily-available accounting data on privately-held firms. We gather accounting data for a sample of private and public banks to examine these differences. We examine performance differences by comparing standard accounting-based profitability and growth measures. We compare general and banking-industry-specific accounting-based risk measures to examine risk differences. We adopt the Ball and Shivakumar (2005) regression approach to compare the timeliness with which public and private banks recognize earnings declines and earnings increases, and we develop and test a model of the timeliness of public and private banks' loan loss provisions. Throughout our analysis, we include controls for differences across banks in size and types of assets and liabilities. We also include control variables for potential endogeneity bias throughout our tests, based on our estimation of a first-stage probit selection model that predicts the likelihood a given bank will be public or private.

The results are generally consistent with our predictions. We find that public banks are less profitable than private banks, all else equal. With respect to growth, we find that public banks generate faster rates of growth in assets and contributed capital than private banks, whereas private banks generate faster growth through internally generated capital from earning higher returns on common equity and maintaining higher earnings reinvestment rates (lower dividend payout ratios). We also find strong evidence of economies of scale in banking; controlling for public versus private ownership, larger banks generate greater profitability and faster growth in profitability than smaller banks. Contrary to our predictions, we find that public and private banks do not differ on measures of earnings-based measures of risk that capture volatility in returns on assets and equity. Also contrary to our predictions with regard to balance sheet-based measures of risk, we find that private banks have more leverage and public banks maintain higher regulatory capital ratios. Taken together, these results suggest public banks earn lower returns per unit of risk than private banks, but achieve faster growth in assets and consequently become more profitable through economies of scale.

With respect to financial reporting, we find that public banks exhibit greater accounting conservatism than private banks. Public banks recognize more timely decreases in earnings as well as less timely earnings increases. We also find that public banks recognize larger and more timely loan loss provisions with respect to changes in nonperforming loans than private banks. These results suggest public banks exercise a greater degree of accounting conservatism than private banks.

This paper provides several insights into the fundamental interactions among ownership structure, performance, and financial reporting. First, the paper details how ownership structure may interact with performance through agency problems and capital market access. Second, the results imply that the agency costs associated with public ownership outweigh the benefits associated with increased access to capital markets for banks of equivalent size. Third, the paper increases our understanding of the difference in the role of accounting across public and private banks. Specifically, it appears that stakeholders in public banks demand higher levels of conservatism in financial reporting.

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	Bank	~ 1	Std.				Rank-	t-
Variable ^b	Туре	Mean	Dev.	Q1	Median	Q3	Sum Z	statistic
Assets	Public	797.897	1161.160	246.921	408.218	832.654	61.32***	44.53***
135015	Private	212.558	411.195	38.037	106.222	252.938		
PM	Public	15.991	6.296	12.821	16.089	19.296	4.94***	2.36**
	<u>Private</u>	15.667	7.800	11.596	15.372	19.613	1 40*	0.27
ATO	Public Drivate	7.299	0.896	6.807	7.319	7.81	1.42*	-0.27
	<u> </u>	1 1 58	0.456	0.757	1 161	1 30/	4 75***	2 13**
ROAA	Private	1.136	0.430	0.939	1 1 1 2 1	1 420	4.75	2.15
	Public	11.466	3.098	9.616	11.111	12.919	15.10***	3.81***
LEV	Private	10.641	13.650	8.227	10.340	12.639		
RUVCE	Public	12.699	5.047	10.450	12.771	15.092	16.18***	5.79***
KOACE	Private	11.703	10.497	8.168	11.225	14.671		
AAssets	Public	0.126	0.159	0.043	0.090	0.161	20.10***	18.88***
	Private	0.081	0.117	0.019	0.061	0.116		
ΔEquity	Public	0.138	0.209	0.061	0.103	0.153	12.18***	12.28***
	<u>Private</u>	0.096	0.170	0.046	0.087	0.135	10.00.4444	
Δ Capital	Public	0.058	0.185	0.000	0.003	0.068	18.20***	16.37***
	<u>Private</u>	0.018	0.102	0.000	0.000	0.000	12 20 ***	1.1.6
DivPayout	Public Drivate	0.303	3.283	0.183	0.298	0.399	13.28***	1.10
	Privale	0.019	1.292	0.034	0.217	0.427	10 53 ***	6 37 ***
ΔNI	F UDIIC Private	0.002	0.003	0.000	0.001	0.003	10.55	0.52
	Public	0.001	0.004	0.001	0.001	0.003	12 16***	3 60***
ΔNIEQ	Private	0.012	0.044	-0.004	0.019	0.029	12.10	5.07
TT: 1 C : 1	Public	14 685	6 896	10 980	13 045	16 230	-22.88***	-17 65***
Tierl Capital	Private	18.423	12.777	11.760	15.570	21.650	22.00	17.00
DDCD	Public	15.994	6.893	12.260	14.320	17.470	-21.84***	-17.17***
KBCK	Private	19.627	12.769	12.940	16.800	22.820		
	Public	0.003	0.003	0.001	0.002	0.003	9.26***	0.90
	Private	0.003	0.003	0.001	0.002	0.003		
NPL	Public	0.006	0.007	0.002	0.004	0.007	-1.12	-6.88***
	Private	0.007	0.011	0.001	0.004	0.009		
ΔNPL	Public	0.000	0.005	-0.001	0.000	0.002	0.71	-0.65
	<u>Private</u>	0.001	0.008	-0.001	0.000	0.002	4.0.1. skalask	2 00 4 4 4 4
NCO	Public	0.002	0.002	0.000	0.001	0.002	4.31***	-3.09***
	<u>Private</u>	0.002	0.003	0.000	0.001	0.003	12 / 2***	0 72 ***
LLA	Public	0.010	0.004	0.008	0.010	0.012	15.42	0.25
	Public	0.009	0.005	0.007	0.009	0.011	_20 30***	_25 02***
Cash	Private	0.071	0.040	0.040	0.084	0.000	20.37	23.72
0	Public	0.263	0.116	0.185	0.250	0.326	-11 20***	-12 48***
Securities	Private	0.295	0.147	0.189	0.278	0.387	11.20	12.10
EamilyI no	Public	0.214	0.112	0.137	0.207	0.277	26.32***	24.43***
FamilyLits	Private	0.163	0.110	0.079	0.145	0.225		
ConsumerI ns	Public	0.078	0.066	0.031	0.061	0.109	-7.58***	-5.47***
	Private	0.085	0.072	0.041	0.069	0.107		
ComRELns	Public	0.175	0.094	0.110	0.162	0.222	20.47***	16.15***
	Private	0.145	0.101	0.073	0.126	0.193		
ComLns	Public	0.104	0.069	0.058	0.089	0.135	10.76***	8.69***
	<u>Private</u>	0.093	0.068	0.046	0.078	0.122	0.4.75 statute	0.1.40 shoksh
AgLns	Public	0.011	0.023	0.000	0.001	0.010	-34.75***	-31.42***
	<u>Private</u>	0.053	0.083	0.001	0.015	0.067	26 77 ***	16 67 ***
OtherLns	PUDIIC Privata	0.049	0.030	0.018	0.033	0.003	20.77	10.03
	Dublic	0.034	0.049	0.003	0.020	0.043	71 // ***	21 82***
Total Loans	Private	0.030	0.113	0.508	0.044	0.707	21.74	21.05
	Public	-0.000	0.003	_ 010	-0.000	-0.007	-9 12***	-3 08 ***
Keserves	Private	-0.009	0.003	010	-0.009	-0.006	2.14	5.00
CWOI	Public	0.004	0.006	0.000	0.001	0.005	32.45***	19.46***
GWUI	Private	0.002	0.005	0.000	0.000	0.001		

Table 1 Descriptive Statistics by Bank Type^a

Other Assets	Public	0.041	0.023	0.031	0.038	0.047	13.54***	9.04 ***
	Private	0.038	0.019	0.026	0.035	0.046		
Deposits	Public	0.820	0.084	0.784	0.841	0.878	-23.12***	-25.45***
Deposits	Private	0.853	0.062	0.828	0.866	0.892		
Long-term Borrow	ings Public	0.046	0.063	0.002	0.020	0.065	34.59***	29.87***
Long-term Donow	Private	0.020	0.038	0.000	0.000	0.023		
OthDebt	Public	0.037	0.048	0.009	0.023	0.048	30.23***	20.84***
OuiDebt	Private	0.021	0.040	0.006	0.010	0.022		
Total Liabilities	Public	0.903	0.027	0.894	0.907	0.919	13.86***	15.28***
Total Liaonnies	Private	0.893	0.036	0.877	0.901	0.918		
PrefEquity	Public	0.001	0.003	0.000	0.000	0.000	1.39*	-1.24
Trendquity	Private	0.001	0.004	0.000	0.000	0.000		
ContCan	Public	0.043	0.028	0.022	0.038	0.058	17.49***	10.23***
Contcap	Private	0.037	0.034	0.014	0.029	0.051		
RetForm	Public	0.053	0.035	0.029	0.050	0.073	-22.89***	-20.09***
RetLam	Private	0.069	0.044	0.041	0.068	0.092		
	Public	0.001	0.005	0.000	0.000	0.001	4.43***	4.98***
	Private	0.000	0.004	0.000	0.000	0.001		
**:	*significant at <).01 **	significant a	ut < 0.05	* signific	ant at < 0	.10	

Table 1 notes.

^a The sample consists of U.S. commercial banks, of which 1,652 are privately-owned and 608 are publicly-traded during 1992-2002. The sample contains 10,283 private bank-year observations and 4,058 public bank-year observations, for a total of 14,341 bank-year observations. We collected these data from the SNL Regulatory Datasource. To construct the public and private bank samples, we eliminated public banks with total assets larger than the largest private bank and we eliminated private banks with total assets less than the smallest public bank. In addition, as a partial control for outliers, we study a truncated sample that excludes the observations in the top and bottom percentile of each annual cross-sectional distribution of earnings changes and loan loss provisions.

^bVariable definitions:

 PM = net income divided by total interest income. ATO = total interest income divided by the average of beginning and ending total assets. ROAA = net income divided by lagged total assets. LEV = the average of beginning and ending total assets divided by average common equity. 	
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ROAA = net income divided by lagged total assets. LEV = the average of beginning and ending total assets divided by average common equity.	
LEV = the average of beginning and ending total assets divided by average common equity.	
KUAUE = net income divided by average common equity.	
Δ Assets = total assets less prior year total assets divided by beginning of the year total assets.	
Δ Equity = total common equity less prior year common equity divided by beginning of the year common equity.	
Δ Capital = change in contributed capital from t-1 to t divided by total assets at t-1.	
DivPayout = common dividends declared in year t divided by net income for year t.	
$\Delta NI =$ net income less prior year net income divided by beginning of the year total assets.	
$\Delta NIEQ$ = net income less prior year net income divided by beginning of the year common equity.	
Tier1 Capital = core capital (Tier 1) divided by risk-adjusted assets.	
RBCR = total capital (Tier 1 core capital + Tier 2 supplemental capital) divided by risk-adjusted assets.	
LLP = loan loss provision divided by beginning of year total assets.	
NPL = non-performing loans divided by beginning of year total assets.	
$\Delta NPL =$ change in non-performing loans divided by beginning of year total assets.	
NCO = net charge-offs divided by beginning of year total assets.	
LLA = loan loss allowance divided by beginning of the year total assets.	
Cash = cash divided by total assets.	
Securities = securities divided by total assets.	
FamilyLns = family loans divided by total assets.	
ConsumerLns = consumer loans divided by total assets.	
ComRELns = commercial real estate loans divided by total assets.	
ComLns = commercial loans divided by total assets.	
AgLns = agricultural loans divided by total assets.	
OtherLns = other loans divided by total assets.	
Total Loans = total loans divided by total assets.	
Reserves = total reserves divided by total assets.	
GWOI = goodwill and other intangible assets divided by total assets.	
Other Assets = other assets divided by total assets.	
Deposits = total deposits divided by total assets.	
Long-term Borrowings = total liabilities minus deposits, divided by total assets.	
OthDebt = total liabilities less total deposits less long-term borrowings.	
Total Liabilities = total liabilities divided by total assets.	
PrefEquity = preferred stock and additional paid-in capital on preferred stock, divided by total assets.	
ContCap = total contributed common equity capital divided by total assets.	
RetEarn = retained earnings divided by total assets.	
OCI = other comprehensive income divided by total assets.	

Correlation matrices for the variables in each set of empirical tests^a

Panel A: Variables in profitability, growth, and risk tests. (Bold if significant at less than .05)

Variables ^b 2	3 4	- 5	6	7	8	9	10 11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
1 Dpub .35	.02 .00	.02	.03	.05 .1	16.	.10 .	.14 .01	.05	.03	15	14	21	10	.21	04	.14	.08	26	.14	.07	.16	21	.17	.78	.81	.01	06	03
2 Assets	.0908	.06	.06	.11 .1	15.	.11 .	. 06 .00	.06	.04	15	15	18	07	.05	03	.11	.10	15	.22	.07	.29	30	.31	.04	.10	.05	04	.02
3 PM	12	.94	07	.45(02.	.10	. 06 01	.36	.18	.22	.22	08	.18	05	05	02	09	04	.00	11	01	16	.04	.00	.00	35	20	33
4 ATO		.18	.01	.11 .1	16.	.12 .	. 07 01	.10	.06	18	18	09	35	.12	.33	.11	.07	.02	.04	.33	07	.10	10	01	01	.32	.12	.26
5 ROAA			07	.48 .0	02.	.14	.05 01	.39	.19	.16	.16	11	.08	02	.04	.01	07	04	.02	02	03	13	.01	.00	.00	27	17	27
6 LEV			-	.37 .0	07.	.20	.02 01	.03	.13	16	15	03	08	.03	.00	.06	.06	05	.06	.00	.04	.03	.05	01	.02	.04	01	.01
7 ROACE				.1	10.	.04	.0102	.29	.21	14	14	08	07	.03	.03	.09	.04	09	.08	03	.03	.01	.06	.00	.02	14	12	17
8 ΔAssets						.42 .	.3802	.19	.12	19	19	03	17	.05	01	.17	.17	12	.17	.18	.18	08	.11	.03	.09	.10	03	03
9 ΔEquity							.6004	.23	17	09	09	04	08	.01	.00	.08	.09	08	.11	.09	.13	03	.05	.01	.05	.00	06	05
10 ∆Capital							01	.11	.09	03	03	.00	08	.01	01	.07	.07	06	.07	.11	.13	03	.02	.05	.06	.07	.01	.03
11 DivPayout								07	04	.02	.02	.00	.01	.02	.01	02	01	.00	02	02	.01	.00	01	.01	.00	.01	01	.01
12 ΔNI									.59	08	08	04	06	.01	.00	.08	.06	08	.07	.08	.03	01	.03	.00	.03	16	04	16
13 $\Delta NIEQ$										06	06	02	05	.01	01	.06	.04	05	.05	.06	.02	.00	.02	.00	.02	07	.01	07
14 Tier1											1.0	.13	.53	16	08	30	28	.08	22	13	19	16	10	01	08	16	05	10
15 RBCR												.13	.53	16	08	30	28	.08	22	11	18	16	09	01	08	15	04	10
16 Cash													13	25	.05	10	.01	.06	05	.01	15	.19	06	.00	07	.04	.06	.08
17 Securities														31	15	44	34	.05	32	32	10	06	01	.00	08	28	13	19
18 FamilyLns															.02	06	22	37	03	05	.01	07	02	.01	.10	05	06	07
19 ConsumerLns																31	08	09	21	.07	.01	.12	08	.00	03	.25	06	.27
20 ComRELns																	.09	18	.22	.20	.07	.00	.03	.00	.11	.06	.13	.00
21 ComLns																		12	.19	.17	.09	.04	.08	.00	.07	.21	.09	.15
22 AgLns																			22	.17	05	.03	09	.00	19	.03	.11	.06
23 OtherLns																				.11	.08	15	.18	.00	.10	.10	.04	.02
24 LLA																					.02	.00	01	.01	.02	.38	.34	.24
25 GWOI																						13	.10	.00	.05	.03	04	.03
26 Deposits																							66	.00	04	.02	.04	.04
27 OthDebt																								01	.06	02	05	04
28 Lambda																									.87	.00	02	01
29 Dpub*Lambda																										.01	03	02
30 LLP																											.29	.82
31 NPL																												.31
32 NCO																												

Table 2 notes follow Panel C.

Variables ^b	2	3	4	5	6	7	8	9	10	11	12	13	14
$1\Delta NI_t$.06	07	18	.05	.03	.03	08	.09	.06	02	15	.00	.03
$2D\Delta NI_{t-1}$		60	58	13	.38	28	23	18	.80	54	48	04	08
$3\Delta NI_{t-1}$.67	.05	21	.46	.27	.06	45	.81	.54	.02	.04
$4\Delta NI_{t-1}*D\Delta NI_{t-1}$.09	19	.28	.40	.15	41	.55	.79	.04	.06
5Dpub					.39	.35	23	.52	.03	.14	01	.78	.81
6 Dpub*D Δ NI _{t-1}						33	59	.16	.57	27	32	.33	.36
$7 \text{Dpub*}\Delta \text{NI}_{t-1}$.48	.18	29	.60	.35	.27	.28
8 Dpub* Δ NI _{t-1} *D Δ NI _{t-1}								09	33	.35	.60	19	21
9Size _t									.18	.23	08	.00	.25
$10\text{Size}_{t}*D\Delta \text{NI}_{t-1}$										52	58	05	.01
$11 \text{Size}_t * \Delta \text{NI}_{t-1}$.62	.02	.07
$12Size_t^*\Delta NI_{t-1}^*D\Delta NI_{t-1}$.05	.01
13Lambda													.87
14Dpub*Lambda													

Panel B: Variables in tests of current period earnings changes. (Bold if significant at less than .05)

Table 2 notes follow Panel C.

Variables ^b	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
1 LLP _t	.11	.12	.00	.82	.50	.01	.08	.07	01	.31	.23	.25	05	.25	.06	.21	.03	.10	.00	.08	.12	01	.64	.44	.00	.01
$2 \Delta NPL_{t-1}$		12	03	.11	.11	.01	.33	04	03	.06	.03	.03	.01	01	.03	.04	01	.05	.00	.86	05	.00	.10	.07	.00	.01
$3 \Delta NPL_t$			12	.02	.13	01	04	.36	05	.00	.05	04	.00	01	.02	.05	.01	.05	.00	04	.83	05	.02	.11	.00	.00
4 ΔNPL_{t+1}				04	01	.01	03	04	.35	02	.02	06	.01	.01	.01	.04	01	.04	.04	.00	05	.83	03	.05	.00	.01
5 NCO _t					.45	03	.08	.01	04	.35	.19	.30	07	.27	.00	.15	.06	.02	06	.08	.02	05	.75	.38	01	02
6 NCO _{t+1}						03	.04	.06	.01	.16	.31	.20	05	.24	01	.14	.06	.01	05	.06	.11	.03	.34	.75	01	02
7 Dpub							.08	.08	.06	.55	.53	.07	.21	04	.14	.08	26	.14	.52	.02	.01	.01	.18	.16	.78	.81
8 Dpub* ΔNPL_{t-1}								11	09	.20	.13	.04	.01	02	.04	.04	02	.05	.03	.37	04	04	.12	.06	.07	.08
9 Dpub* ΔNPL_t									12	.06	.19	02	.01	01	.04	.03	02	.05	.03	03	.49	05	.02	.10	.08	.08
10 Dpub*∆NPL _{t+1}										03	.07	02	.01	.00	.01	.04	01	.03	.04	03	05	.46	03	.04	.05	.05
11 Dpub*NCO _t											.69	.14	.06	.08	.08	.14	14	.11	.29	.07	.01	02	.59	.36	.43	.45
12 Dpub*NCO _{t+1}												.11	.06	.07	.08	.14	13	.11	.28	.04	.08	.03	.38	.58	.41	.43
13 LLA _{t-1}													04	.07	.19	.16	.15	.10	01	.04	03	04	.23	.17	.01	.02
14 FamilyLns t-1														.02	06	22	37	03	.16	.01	.00	.00	.00	.00	.01	.10
15 ConLns _{t-1}															31	08	.09	21	10	01	02	.01	.15	.14	.00	03
16 ComRELns t-1																.09	.18	.22	.26	.02	.04	.01	.11	.09	.00	.11
17 ComLns _{t-1}																	.12	.19	.19	.05	.05	.04	.21	.22	.00	.07
18 AgLns _{t-1}																		22	35	01	01	01	10	08	.00	19
19 OthLns _{t-1}																			.29	.03	.08	.05	.16	.15	.00	.10
20 Size _t																				.03	.04	.05	.34	.31	.00	.25
21 Size _t *ΔNPL _{t-1}																					02	.01	.11	.08	01	.01
22 Size _t * ΔNPL_t																						03	.04	.15	01	.01
23 Size _t * ΔNPL_{t+1}																							03	.07	01	.01
24 Size _t *NCO _t																								.57	.00	.08
25 Size _t *NCO _{t+1}																									01	.07
26 Lambda																										.87
27 Dpub*Lambda																										

Panel C: Variables in tests of loan loss provisions. (Bold if significant at less than .05)

Table 2 notes on next page.

Table 2 notes.

^a The sample consists of U.S. commercial banks, of which 1,652 are privately-owned and 608 are publicly-traded during 1992-2002. The sample contains 10,415 private bank-year observations and 4,156 public bank-year observations, for a total of 14,571 bank-year observations. We collected these data from the SNL Regulatory Datasource. To construct the public and private bank samples, we eliminated public banks with total assets larger than the largest private bank and we eliminated private banks with total assets less than the smallest public bank. In addition, as a partial control for outliers, we study a truncated sample that excludes the observations in the top and bottom percentile of each annual cross-sectional distribution of earnings changes and loan loss provisions.

^bVariable Definitions

Dpub=1 if the firm is Public; 0 otherwise.

Assets=total assets.

PM=net income divided by total interest income.

- ATO=total interest income divided by the average of beginning and ending total assets.
- ROAA=net income divided by lagged total assets.
- LEV=the average of beginning and ending total assets divided by average common equity.

ROACE=net income divided by average common equity.

- Δ Assets=total assets less prior year total assets divided by beginning of the year total assets.
- Δ Equity=total common equity less prior year total common equity divided by of the year common equity.

 Δ Capital=change in contributed capital from t-1 to t divided by total assets at t-1. DivPayout=common dividends declared in year t divided by net income for year t.

- ΔNI_t =net income less prior year net income divided by beginning of the year total assets.
- ΔNIEQ_t =net income less prior year net income divided by beginning of the year common equity.

TIER1=core Capital (Tier 1) divided by Risk-Adjusted Assets.

RBCR=total Capital (Tier 1 Core Capital + Tier 2 Supplemental Capital). divided by Risk Adjusted Assets.

Cash=cash divided by total assets. Securities=securities divided by total assets. FamilyLns=family loans divided by total assets. ConsumerLns=consumer loans divided by total assets. ComRELns=commercial real estate loans divided by total assets. ComLns=commercial loans divided by total assets. AgLns=agricultural loans divided by total assets. OtherLns=other loans divided by total assets. LLA=loan loss allowance divided by beginning of the year total assets. GWOI=goodwill and other intangible assets divided by total assets. Deposits=total deposits divided by total assets. OthDebt=total liabilities minus deposits, divided by total assets. Lambda=the inverse Mills' ratio estimated from the first-stage probit. results reported in Table 4 LLP=loan loss provision divided by beginning of year total assets. NPL=non-performing loans divided by beginning of year total assets. Δ NPL=change in non-performing loans divided by beginning of year total assets. NCO=net charge-offs divided by beginning of year total assets. $D\Delta NI_{t-1}=1$ if ΔNI_{t-1} is negative; 0 otherwise. Size.=The centile rank of the firm based on total assets at the end of year t. the interval (0,1).

Table 3. Analysis of common-size balance sheets for public and private banks.^a

Dependent Variable_t = $\phi_0 + \phi_1 Dpub + \phi_2 Size_t + \varepsilon_t$

Dependent Variable	Percent of Total Assets	Intercent	Dnub	Size	Adjusted R-square
Cash	9.23%	12.99	-0.67	-6.71	11.83
Cush	2.2370	(126.60)***	(-5.29)***	(-34.61)***	11.00
Securities	28.56%	31.72	-1.49	-5.14	1.92
		(130.57)***	(-4.98)***	(-11.19)***	
Family Loans	17.77%	15.29	4.2	2.41	4.27
		(78.89)***	(17.57)***	(6.59)***	
Consumer Loans	8.30%	9.81	0.29	-3.00	1.34
		(79.73)***	(1.94)**	(-12.91)***	
Commercial RE Loans	15.32%	10.75	0.10	8.54	6.40
		(63.33)***	(0.46)	(26.63)***	
Commercial Loans	9.64%	7.34	-0.43	4.54	3.33
		(62.51)***	(-2.98)***	(20.45)***	
Agricultural Loans	4.10%	8.67	-1.65	-7.69	13.07
C		(70.46)***	(-10.88)***	(-33.10)***	
Other Loans	3.84%	1.18	-0.19	5.09	8.55
		(14.19)***	(-1.90)**	(32.35)***	
Total Loans	58.96%	53.04	2.31	9.88	6.30
		(220.70)***	(7.81)***	(21.76)***	
Reserves	-0.89%	-0.94	-0.07	0.14	0.84
		(-132.82)***	(-8.13)***	(10.64)***	
Goodwill and Intangibles	0.25%	-0.10	-0.03	0.68	12.12
C		(-10.83)***	(-2.79)***	(39.50)***	
Other Assets	3.89%	3.29	-0.05	1.15	2.63
		(94.72)***	(-1.18)	(17.49)***	
Total Deposits	84.33%	87.54	-1.51	-5.22	7.77
-		(734.30)***	(-10.28)***	(-23.18)***	
Long-term Borrowings	2.70%	-0.09	1.00	4.71	11.92
		(-1.14)	(10.26)***	(31.46)***	
Other Liabilities	2.57%	0.12	0.11	4.53	9.99
		(1.73)**	(1.27)	(33.54)***	
Total Liabilities	89.61%	87.58	-0.40	4.02	10.47
		(1551.18)***	(-5.70)***	(37.72)***	
Preferred Stock	0.06%	0.04	-0.03	0.07	0.20
		(5.11)***	(-3.83)***	(5.36)***	
Common Stock	3.87%	5.34	1.87	-3.74	9.29
		(99.28)***	(28.15)***	(-36.83)***	
Retained Earnings	6.42%	7.14	-1.33	-0.64	2.87
		(98.00)***	(-14.83)***	(-4.67)***	
Other Comprehensive Income	0.04%	-0.01	0.00	0.10	0.58
		(-1.58)*	(0.28)	(7.75)***	

Table 3 notes.

* denotes p < .10; ** denotes p < .05; *** denotes p < .01; all two-tailed.

^a The sample consists of 1,652 privately-owned and 608 publicly-traded U.S. commercial banks during 1992-2002. The sample contains 10,283 private bank-year observations and 4,058 public bank-year observations, for a total of 14,341 bank-year observations. We collected these data from the SNL Regulatory Datasource. To construct the public and private bank samples, we eliminated public banks with total assets larger than the largest private bank and we eliminated private banks with total assets smaller than the smallest public bank. In addition, as a partial control for outliers, we study a truncated sample that excludes the observations in the top and bottom percentile of each annual cross-sectional distribution of earnings changes and loan loss provisions.

Table 4. Results from estimation of the first-stage probit selection model.^a

$$\begin{split} Dpub_{t} &= \delta_{0} + \delta_{1}Cash_{t} + \delta_{2}Securities_{t} + \delta_{3}FamilyLns_{t} + \delta_{4}ConsumerLns_{t} + \delta_{5}ComRELns_{t} \\ &+ \delta_{6}ComLns_{t} + \delta_{7}AgLns_{t} + \delta_{8}OthLns_{t} + \delta_{9}Reserves_{t} + \delta_{10}GWOI_{t} + \delta_{11}Deposits_{t} \\ &+ \delta_{12}OthDebt_{t} + \delta_{13}PrefEquity_{t} + \delta_{14}ContCap_{t} + \delta_{15}RetEarn_{t} + \delta_{16}OCI_{t} + \delta_{17}Size_{t} \\ &+ \delta_{18}ROACE_{t} + \delta_{19}\Delta NI_{t} + \delta_{20}LLP_{t} + \varepsilon_{t} \end{split}$$

Variable: ^b	Coefficient	t-statistic
Intercept	-3.649	-24.67 ***
Cash	-0.005	-0.41
Securities	0.006	0.84
FamilyLns	2.426	11.60 ***
ConsumerLns	1.255	2.90 ***
ComRELns	1.037	2.07 ***
ComLns	0.993	1.84 **
AgLns	-6.874	-62.34 ***
OthLns	-0.215	-0.07
Reserves	-0.204	-22.05 ***
GWOI	-0.082	-10.40 ***
Deposits	-0.003	-1.23
OthDebt	0.013	9.59 ***
PrefEquity	-0.183	-20.56 ***
ContCap	0.098	191.44 ***
RetEarn	-0.004	-0.54
OCI	0.008	0.05
Size	3.540	2177.21 ***
ROACE	-0.016	-35.72 ***
ΔΝΙ	7.664	3.01 ***
LLP	-17.601	-9.03 ***
Pseudo R-Square	50.08	

Table 4 notes:

* denotes p < .10; ** denotes p < .05; *** denotes p < .01; all two-tailed.

^a The sample consists of 1,652 privately-owned and 608 publicly-traded U.S. commercial banks during 1992-2002. The sample contains 10,283 private bank-year observations and 4,058 public bank-year observations, for a total of 14,341 bank-year observations. We collected these data from the SNL Regulatory Datasource. To construct the public and private bank samples, we eliminated public banks with total assets larger than the largest private bank and we eliminated private banks with total assets smaller than the smallest public bank. In addition, as a partial control for outliers, we study a truncated sample that excludes the observations in the top and bottom percentile of each annual cross-sectional distribution of earnings changes and loan loss provisions.

^bVariable Definitions:

Cash	= Cash divided by total assets.
Securities	= Securities divided by total assets.
FamilyLns	= Family loans divided by total assets.
ConsumerLns	= Consumer loans divided by total assets.
ComRELns	= Commercial real estate loans divided by total assets.
ComLns	= Commercial loans divided by total assets.
AgLns	= Agricultural loans divided by total assets.
OthLns	= Other loans divided by total assets.
Reserves	= Loan loss allowance divided by total assets.
GWOI	= Goodwill and other intangible assets divided by total assets.
Deposits	= Total deposits divided by total assets.
OthDebt	= Total liabilities minus deposits, divided by total assets.
PrefEquity	= Preferred stock and additional paid-in capital on preferred stock, divided by total assets.
ContCap	= Total contributed common equity capital divided by total assets.
RetEarn	= Retained earnings divided by total assets.
OCI	= Other comprehensive income divided by total assets.
Size	= The bank's centile rank based on total assets at the end of year t, scaled to the interval $(0,1)$.
ROACE	= Net income divided by average common equity divided average total assets.
ΔΝΙ	= Change in net income from year t-1 to year t divided by total assets at the end of year t-1.
LLP	= Loan loss provision for year t scaled by total assets as of the end of year t-1.

Table 5. Analysis of performance: Profitability and growth^a

Dependent Variable_t = $\phi_0 + \phi_1 Dpub + \phi_2 Size_t + \phi_3 Cash_{t-1} + \phi_4 Securities_{t-1}$ + $\phi_5 FamilyLns_{t-1} + \phi_6 ConsumerLns_{t-1} + \phi_7 ComRELns_{t-1} + \phi_8 ComLns_{t-1}$ + $\phi_9 AgLns_{t-1} + \phi_{10} OtherLns_{t-1} + \phi_{11} Re serves_{t-1} + \phi_{12} GWOI_{t-1} + \phi_{13} Deposits_{t-1}$ + $\phi_{14} OthDebt_{t-1} + \phi_{15} Lambda_t + \phi_{16} Dpub * Lambda_t + \varepsilon_t$

Panel A. Profit margin, asset turnover, and return on average assets^b

			Dependen	t Variable is:		
	Profit N	largin	Asset Tu	urnover	RC	DAA
	Coefficient	t-statistic	Coefficient	t-statistic	Coefficient	t-statistic
Intercept	0.121	3.45***	2.528	6.63***	-0.136	-0.52
Dpub	-0.090	-19.43***	-0.172	-3.50***	-0.669	-19.40***
Size	0.128	27.68***	-0.032	-0.65	0.909	26.49***
Cash	0.002	6.53***	0.014	3.45***	0.022	8.14***
Securities	0.003	9.44***	0.023	6.40***	0.029	11.74***
FamilyLns	0.003	8.03***	0.044	11.77***	0.029	11.48***
ConsumerLns	0.003	7.10***	0.082	21.35***	0.034	12.79***
ComRELns	0.003	7.81***	0.048	12.61***	0.030	11.63***
ComLns	0.002	5.05***	0.043	11.02***	0.022	8.42***
AgLns	0.002	5.18***	0.045	11.52***	0.023	8.74***
OtherLns	0.003	6.69***	0.048	11.53***	0.030	10.48***
Reserves	-0.002	-0.99	-0.388	-20.13***	-0.064	-4.71***
GWOI	-0.007	-4.85***	-0.103	-6.93***	-0.066	-6.42***
Deposits	-0.003	-21.60***	0.009	6.39***	-0.020	-19.38***
OthDebt	-0.004	-17.56***	0.004	1.88**	-0.026	-16.57***
Lambda	0.076	21.57***	0.133	3.30***	0.568	21.80***
Dpub*Lambda	-0.040	-13.27***	-0.094	-2.31***	-0.309	-14.02***
Adj. R-Square	14.60		27.63		12.50	

Table 5. (Continued)Panel B. Leverage and return on average common equity

		Dependent	Variable is:	
	Leve	rage	RO	ACE
	Coefficient	t-statistic	Coefficient	t-statistic
Intercept	4.879	0.94	-0.224	-4.93 ***
Dpub	-3.224	-4.80***	-0.117	-19.43 ***
Size	5.724	8.61***	0.173	28.98 ***
Cash	-0.175	-3.29***	0.002	3.88 ***
Securities	-0.191	-3.82***	0.002	3.99 ***
FamilyLns	-0.162	-3.17***	0.002	4.96 ***
ConsumerLns	-0.149	-2.82***	0.003	5.63 ***
ComRELns	-0.155	-2.99***	0.002	5.05 ***
ComLns	-0.125	-2.36***	0.002	3.76 ***
AgLns	-0.169	-3.18***	0.001	2.60 ***
OtherLns	-0.116	-2.05***	0.002	4.89 ***
Reserves	0.480	1.82***	-0.000	-0.05
GWOI	-0.300	-1.47***	-0.010	-5.43 ***
Deposits	0.231	11.81***	0.001	6.87 ***
OthDebt	0.331	10.76***	0.001	5.15 ***
Lambda	1.978	3.58***	0.100	22.00 ***
Dpub*Lambda	-0.504	-0.91	-0.055	-14.40 ***
Adj. R-Square	3.22		10.51	

Table 5. (Continued)Panel C. Growth in assets and equity

		Dependent Variable is:										
	Asset G	rowth	Equity	Growth								
	Coefficient	t-statistic	Coefficient	t-statistic								
Intercept	0.289	5.09***	0.139	4.05***								
Dpub	0.032	4.37***	-0.010	-2.19**								
Size	0.043	5.92***	0.020	4.52***								
Cash	-0.003	-4.52***	-0.002	-6.04***								
Securities	-0.003	-4.60***	-0.002	-6.65***								
FamilyLns	-0.002	-2.80***	-0.002	-6.58***								
ConsumerLns	-0.001	-1.07	-0.002	-6.66***								
ComRELns	0.000	-0.53	-0.002	-6.02***								
ComLns	0.000	0.75	-0.002	-6.10***								
AgLns	-0.001	-2.50***	-0.003	-7.79***								
OtherLns	0.000	0.49	-0.002	-5.47***								
Reserves	0.024	8.33***	-0.015	-8.82***								
GWOI	-0.012	-5.24***	-0.003	-2.49***								
Deposits	-0.001	-3.53***	0.001	6.16***								
OthDebt	-0.001	-2.42***	0.001	3.89***								
Lambda	-0.004	-0.66	0.010	2.77***								
Dpub*Lambda	-0.012	-2.04**	-0.007	-1.98***								
Adj. R-Square	10.19		1.77									

_	Dependent Variable is:			
	Contril	outed		
	Capital (Growth	Dividend Pa	yout Ratio
_	Coefficient	t-statistic	Coefficient	t-statistic
Intercept	-0.041	-0.66	0.316	0.34
Dpub	0.177	22.02 ***	0.238	1.98 **
Size	-0.106	-13.26 ***	-0.295	-2.49 ***
Cash	0.000	0.25	0.005	0.50
Securities	-0.001	-1.16	0.009	0.95
FamilyLns	-0.001	-1.87 **	0.011	1.20
ConsumerLns	0.000	-0.54	0.010	1.01
ComRELns	0.000	0.11	0.007	0.74
ComLns	0.000	0.44	0.009	0.94
AgLns	0.000	-0.03	0.010	1.01
OtherLns	0.001	1.08	0.004	0.38
Reserves	0.013	4.25 ***	0.112	2.38 ***
GWOI	0.002	0.76	0.118	3.23 ***
Deposits	0.001	6.13 ***	-0.007	-1.98 **
OthDebt	0.001	1.33 *	-0.010	-1.90 **
Lambda	-0.093	-14.60 ***	-0.037	-0.37
Dpub*Lambda	0.002	0.36	-0.093	-0.94
Adj. R-Square	5.33		0.19	

Table 5. (Continued)Panel D. Growth in earnings

	Dependent Variable is:				
	Scaled by Lagged Assets		Scaled by La	gged Equity	
_	Coefficient	t-statistic	Coefficient	t-statistic	
Intercept	0.008	4.45 ***	-0.187	-3.22 ***	
Dpub	0.000	1.16	-0.102	-13.43 **	
Size	0.001	2.57 ***	0.171	22.78 ***	
Cash	0.000	-5.84 ***	0.002	2.57 ***	
Securities	0.000	-6.82 ***	0.002	3.39 ***	
FamilyLns	0.000	-7.06 ***	0.002	4.11 ***	
ConsumerLns	0.000	-6.53 ***	0.003	5.30 ***	
ComRELns	0.000	-6.14 ***	0.003	4.40 ***	
ComLns	0.000	-6.12 ***	0.002	3.28 ***	
AgLns	0.000	-8.62 ***	0.002	3.08 ***	
OtherLns	0.000	-5.11 ***	0.003	5.22 ***	
Reserves	-0.001	-10.92 ***	0.004	1.32	
GWOI	0.000	-1.74 **	-0.007	-3.00 ***	
Deposits	0.000	5.91 ***	0.001	2.69 ***	
OthDebt	0.000	3.31 ***	0.001	3.38 ***	
Lambda	0.000	-0.25	0.073	11.95 ***	
Dpub*Lambda	0.000	-0.93	-0.028	-4.83 ***	
Adj. R-Square	2.80		6.85		

Table 5 notes.

* denotes p < .10; ** denotes p < .05; *** denotes p < .01.

^a The sample consists of 1,652 privately-owned and 608 publicly-traded U.S. commercial banks during 1992-2002. The sample contains 10,283 private bank-year observations and 4,058 public bank-year observations, for a total of 14,341 bank-year observations. We collected these data from the SNL Regulatory Datasource. To construct the public and private bank samples, we eliminated public banks with total assets larger than the largest private bank and we eliminated private banks with total assets smaller than the smallest public bank. In addition, as a partial control for outliers, we study a truncated sample that excludes the observations in the top and bottom percentile of each annual cross-sectional distribution of earnings changes and loan loss provisions.

^b Variable Definitions:	
Profit Margin	= Net income divided by total interest income.
Asset Turnover	= Total interest income divided by average total assets.
ROAA	= Profit margin times asset turnover.
Leverage	= Average total assets divided by average common equity.
ROACE	= ROAA times leverage.
Asset Growth	= Change in total assets from t-1 to t divided by total assets at t-1.
Equity Growth	= Change in common equity from t-1 to t divided by common equity at t-1.
Contributed Capital Growth Contributed Capital	 = Change in contributed capital from t-1 to t divided by common equity at t-1. = Common equity capital minus retained earnings and accumulated other comprehensive income items.
Dividend Payout Ratio	= Common dividends declared in year t divided by net income for year t.
Earnings Growth	= Change in net income from year t-1 to year t.
Dpub	= 1 if the firm is public; 0 otherwise.
Size	= The centile rank based on total assets at the end of year t, scaled to the interval $(0,1)$.
Cash	= Cash divided by total assets.
Securities	= Securities divided by total assets.
FamilyLns	= Family loans divided by total assets.
ConsumerLns	= Consumer loans divided by total assets.
ComRELns	= Commercial real estate loans divided by total assets.
ComLns	= Commercial loans divided by total assets.
AgLns	= Agricultural loans divided by total assets.
OthLns	= Other loans divided by total assets.
Reserves	= Loan loss allowance divided by total assets.
GWOI	= Goodwill and other intangible assets divided by total assets.
Deposits	= Total deposits divided by total assets.
OthDebt	= Total liabilities minus deposits, divided by total assets.
Lambda	= The inverse Mills ratio estimated from the first-stage probit results reported in Table 4.

Table 6. Analysis of risk: Earnings volatility and capital adequacy^a

Dependent Variable_t = $\phi_0 + \phi_1 Dpub + \phi_2 Size_t + \phi_3 Cash_{t-1} + \phi_4 Securities_{t-1}$ + $\phi_5 FamilyLns_{t-1} + \phi_6 ConsumerLns_{t-1} + \phi_7 ComRELns_{t-1} + \phi_8 ComLns_{t-1}$ + $\phi_9 AgLns_{t-1} + \phi_{10} OtherLns_{t-1} + \phi_{11} Re serves_{t-1} + \phi_{12} GWOI_{t-1} + \phi_{13} Deposits_{t-1}$ + $\phi_{14} OthDebt_{t-1} + \phi_{15} Lambda_t + \phi_{16} Dpub * Lambda_t + \varepsilon_t$

Panel A. Firm-specific earnings volatility^b

		Dependent Variable is:				
-	var(RO	AA)	var(R	OACE)		
	Coefficient	t-statistic	Coefficient	t-statistic		
Intercept	2.274	7.02 ***	10.339	0.71		
Mean of: ^b						
Dpub	0.032	0.85	0.648	0.39		
Size	-0.266	-7.14 ***	-3.831	-2.30 **		
Cash	-0.016	-4.73 ***	-0.128	-0.86		
Securities	-0.021	-6.85 ***	-0.235	-1.70 **		
FamilyLns	-0.022	-7.05 ***	-0.270	-1.91 **		
ConsumerLns	-0.021	-6.36 ***	-0.256	-1.76 **		
ComRELns	-0.019	-6.00 ***	-0.189	-1.32		
ComLns	-0.018	-5.41 ***	-0.202	-1.38		
AgLns	-0.024	-7.44 ***	-0.324	-2.23 **		
OtherLns	-0.022	-6.10 ***	-0.267	-1.68 *		
Reserves	-0.101	-6.47 ***	-1.300	-1.86 **		
GWOI	0.026	1.90 **	0.112	0.18		
Deposits	0.000	0.04	0.177	3.66 ***		
OthDebt	0.004	2.22 **	0.331	3.77 ***		
Lambda	-0.039	-1.22	-1.271	-0.89		
Dpub*Lambda	-0.013	-0.44	0.462	0.34		
Adj. R-Square	20.40		3.17			

Panel B. Regulatory capital adequacy

		Depende	ent Variable is:	
	Tier 1	Capital	Risk-Based	l Capital Ratio
	Coefficient	t-statistic	Coefficient	t-statistic
Intercept	54.172	13.58 ***	55.543	13.93 ***
Dpub	3.775	7.31 ***	3.856	7.46 ***
Size	-10.583	-20.67 ***	-10.466	-20.44 ***
Cash	0.359	8.81 ***	0.360	8.83 ***
Securities	0.495	12.97 ***	0.495	12.95 ***
FamilyLns	0.177	4.54 ***	0.176	4.49 ***
ConsumerLns	0.084	2.09 **	0.080	1.98 **
ComRELns	0.104	2.63 ***	0.101	2.54 ***
ComLns	0.019	0.46	0.018	0.45
AgLns	0.099	2.45 ***	0.098	2.42 **
OtherLns	0.099	2.28 **	0.101	2.33 **
Reserves	-1.076	-5.30 ***	-1.352	-6.66 ***
GWOI	-0.822	-5.26 ***	-0.750	-4.80 ***
Deposits	-0.660	-43.83 ***	-0.663	-44.10 ***
OthDebt	-0.758	-32.17 ***	-0.756	-32.07 ***
Lambda	-4.428	-10.63 ***	-4.389	-10.53 ***
Dpub*Lambda	3.410	8.40 ***	3.297	8.12 ***
	44.69		44.52	

Table 6 notes.

* denotes p < .10; ** denotes p < .05; *** denotes p < .01.

^a The sample consists of 1,652 privately-owned and 608 publicly-traded U.S. commercial banks during 1992-2002. The sample contains 10,283 private bank-year observations and 4,058 public bank-year observations, for a total of 14,341 bank-year observations. We collected these data from the SNL Regulatory Datasource. To construct the public and private bank samples, we eliminated public banks with total assets larger than the largest private bank and we eliminated private banks with total assets smaller than the smallest public bank. In addition, as a partial control for outliers, we study a truncated sample that excludes the observations in the top and bottom percentile of each annual cross-sectional distribution of earnings changes and loan loss provisions.

^b Panel A reports results of regressing earnings volatility metrics on average firm characteristics. Earnings volatility and average firm characteristics are measured over the sample period. Firms without at least five observations for computing volatility and averages are excluded from the analysis, resulting in 1,396 bank-specific observations.

^c Variable Definitions:	
var(ROAA)	= Firm-specific variance of ROAA.
var(ROACE)	= Firm-specific variance of ROACE.
AvgSize	= Firm-specific average of size.
Tier 1 Capital	= Core capital divided by risk-adjusted assets.
Risk-Based Capital Ratio	= Total capital divided by risk-adjusted assets.
Leverage Ratio	= Tier 1 capital divided by adjusted average assets.
Dpub	= 1 if the firm is public; 0 otherwise.
Size	= The centile rank based on total assets at the end of year t, scaled to the interval $(0,1)$.
Cash	= Cash divided by total assets.
Securities	= Securities divided by total assets.
FamilyLns	= Family loans divided by total assets.
ConsumerLns	= Consumer loans divided by total assets.
ComRELns	= Commercial real estate loans divided by total assets.
ComLns	= Commercial loans divided by total assets.
AgLns	= Agricultural loans divided by total assets.
OthLns	= Other loans divided by total assets.
Reserves	= Loan loss allowance divided by total assets.
GWOI	= Goodwill and other intangible assets divided by total assets.
Deposits	= Total deposits divided by total assets.
OthDebt	= Total liabilities minus deposits, divided by total assets.
Lambda	= The inverse Mills ratio estimated from the first-stage probit results reported in Table 4.

Table 7. Analysis of credit risk metrics

Dependent Variable_t = $\phi_0 + \phi_1 Dpub + \phi_2 Size_t + \phi_3 Cash_{t-1} + \phi_4 Securities_{t-1}$ + $\phi_5 FamilyLns_{t-1} + \phi_6 ConsumerLns_{t-1} + \phi_7 ComRELns_{t-1} + \phi_8 ComLns_{t-1}$ + $\phi_9 AgLns_{t-1} + \phi_{10} OtherLns_{t-1} + \phi_{11} Reserves_{t-1} + \phi_{12} GWOI_{t-1} + \phi_{13} Deposits_{t-1}$ + $\phi_{14} OthDebt_{t-1} + \phi_{15} Lambda_t + \phi_{16} Dpub * Lambda_t + \varepsilon_t$

	Dependent Variable is:						
	LLA/Loans N		NPL/I	Loans	NCO/A	NCO/Avg Loans	
	Coefficient	t-statistic	Coefficient	t-statistic	Coefficient	t-statistic	
Intercept	0.0144	6.33 ***	0.0827	11.85 ***	0.0161	7.59 ***	
Dpub	0.0011	3.86 ***	0.0011	1.21	0.0001	0.31	
Size	-0.0020	-6.92 ***	-0.0085	-9.54 ***	-0.0013	-4.78 ***	
Cash	0.0001	2.34 ***	-0.0008	-10.55 ***	-0.0001	-5.47 ***	
Securities	0.0001	3.66 ***	-0.0008	-11.28 ***	-0.0002	-7.81 ***	
FamilyLns	-0.0002	-9.73 ***	-0.0010	-14.17 ***	-0.0002	-9.97 ***	
ConsumerLns	-0.0002	-10.22 ***	-0.0011	-15.64 ***	0.0000	-1.78 **	
ComRELns	-0.0002	-9.67 ***	-0.0009	-12.52 ***	-0.0002	-9.03 ***	
ComLns	-0.0002	-8.62 ***	-0.0009	-12.18 ***	-0.0001	-5.57 ***	
AgLns	-0.0002	-8.58 ***	-0.0009	-12.60 ***	-0.0002	-7.96 ***	
OtherLns	-0.0002	-7.14 ***	-0.0009	-12.19 ***	-0.0002	-7.38 ***	
Reserves	-0.0165	-143.76 ***	-0.0130	-36.89 ***	-0.0028	-26.14 ***	
GWOI	0.0001	0.66	-0.0012	-4.28 ***	0.0001	1.61*	
Deposits	0.0000	-4.05 ***	0.0001	1.96 **	0.0000	0.17	
OthDebt	0.0000	-0.45	0.0001	2.58 ***	0.0001	4.19***	
Lambda	-0.0007	-2.91 **	-0.0019	-2.57 ***	-0.0002	-1.08	
Dpub*Lambda	0.0000	0.19	0.0013	1.75 **	0.0002	0.76	
Adj. R-Square	66.18		13.86		12.45		

Table 7 notes:

* denotes p < .10; ** denotes p < .05; *** denotes p < .01.

^a The sample consists of 1,652 privately-owned and 608 publicly-traded U.S. commercial banks during 1992-2002. The sample contains 10,283 private bank-year observations and 4,058 public bank-year observations, for a total of 14,341 bank-year observations. We collected these data from the SNL Regulatory Datasource. To construct the public and private bank samples, we eliminated public banks with total assets larger than the largest private bank and we eliminated private banks with total assets smaller than the smallest public bank. In addition, as a partial control for outliers, we study a truncated sample that excludes the observations in the top and bottom percentile of each annual cross-sectional distribution of earnings changes and loan loss provisions.

^bVariable Definitions:

ConLoan/Loans	= Total consumer loans at year end scaled by total loans at year end.
LLA/Loans	= Loan loss allowance at year end scaled by total loans at year end.
NPL/Loans	= Non-performing loans at year end scaled by total loans at year end.
NCO/AvgLoans	= Net loan chargeoffs for the year scaled by average loans outstanding for the year.
AvConLoan _t	= Average consumer loans scaled by average total assets.
AvComLoan _t	= Average commercial loans scaled by average total assets.
Dpub	= 1 if the firm is public; 0 otherwise.
Size	= The centile rank based on total assets at the end of year t, scaled to the interval $(0,1)$.
Cash	= Cash divided by total assets.
Securities	= Securities divided by total assets.
FamilyLns	= Family loans divided by total assets.
ConsumerLns	= Consumer loans divided by total assets.
ComRELns	= Commercial real estate loans divided by total assets.
ComLns	= Commercial loans divided by total assets.
AgLns	= Agricultural loans divided by total assets.
OthLns	= Other loans divided by total assets.
Reserves	= Loan loss allowance divided by total assets.
GWOI	= Goodwill and other intangible assets divided by total assets.
Deposits	= Total deposits divided by total assets.
OthDebt	= Total liabilities minus deposits, divided by total assets.
Lambda	= The inverse Mills ratio estimated from the first-stage probit results reported in Table 4.

Table 8. Analysis of Current Earnings Changes^a

$$\Delta NI_{t} = \alpha_{0} + \alpha_{1}D\Delta NI_{t-1} + \alpha_{2}\Delta NI_{t-1} + \alpha_{3}\Delta NI_{t-1} * D\Delta NI_{t-1} + \alpha_{4}Dpub + \alpha_{5}Dpub * D\Delta NI_{t-1} + \alpha_{6}Dpub * \Delta NI_{t-1} + \alpha_{7}Dpub * \Delta NI_{t-1} * D\Delta NI_{t-1} + \alpha_{8}Size_{t} + \alpha_{9}Size * D\Delta NI_{t-1} + \alpha_{10}Size_{t} * \Delta NI_{t-1} + \alpha_{11}Size_{t} * \Delta NI_{t-1} * D\Delta NI_{t-1} + \alpha_{12}Lambda_{t} + \alpha_{13}Dpub * Lambda_{t} + \varepsilon_{t}$$

	Predicted		
Variable:	Sign	Coefficient	t-statistic
Intercept	?	0.0000	0.29
$D\Delta NI_{t-1}$?	-0.0003	-1.58 *
ΔNI_{t-1}	+	0.0663	3.36 ***
$\Delta NI_{t-1}*D\Delta NI_{t-1}$	-	-0.5670	-14.62 ***
Dpub	?	0.0000	-0.12
$Dpub*D\Delta NI_{t-1}$?	-0.0003	-1.06
$Dpub^*\Delta NI_{t-1}$	+	0.1417	5.14 ***
$Dpub*\Delta NI_{t-1}*D\Delta NI_{t-1}$	-	-0.2537	-4.06 ***
Size _t	?	0.0013	5.32 ***
$Size_t * D\Delta NI_{t-1}$?	0.0004	1.10
$Size_t^*\Delta NI_{t-1}$?	-0.0306	-0.74
$Size_t^*\Delta NI_{t-1}^*D\Delta NI_{t-1}$?	0.2837	3.27 ***
Lambda	?	-0.0002	-1.42 *
Dpub*Lambda	?	0.0002	1.15
Adj. R-Square		5.24	

Table 8 notes:

* denotes p < .10; ** denotes p < .05; *** denotes p < .01.

^a The sample consists of 1,652 privately-owned and 608 publicly-traded U.S. commercial banks during 1992-2002. The sample contains 10,283 private bank-year observations and 4,058 public bank-year observations, for a total of 14,341 bank-year observations. We collected these data from the SNL Regulatory Datasource. To construct the public and private bank samples, we eliminated public banks with total assets larger than the largest private bank and we eliminated private banks with total assets smaller than the smallest public bank. In addition, as a partial control for outliers, we study a truncated sample that excludes the observations in the top and bottom percentile of each annual cross-sectional distribution of earnings changes and loan loss provisions.

^b Variable Definition	s:
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ΔNI_t	= Change in net income from year t-1 to year t, scaled by total assets at the end of t-1.
$D\Delta NI_{t-1}$	= 1 if ΔNI_{t-1} is negative; 0 otherwise.
Dpub	= 1 if the firm is public; 0 otherwise.
Size _t	= The centile rank of the firm based on total assets at the end of year t, scaled to the interval $(0,1)$.
Lambda _t	= The inverse Mills ratio estimated from the first-stage probit results reported in Table 4.

 Table 9.

 Analysis of current loan loss provisions^a

$$\begin{split} LLP_t &= \beta_0 + \beta_1 \Delta NPL_{t-1} + \beta_2 \Delta NPL_t + \beta_3 \Delta NPL_{t+1} + \beta_4 NCO_t + \beta_5 NCO_{t+1} + \beta_6 Dpub \\ &+ \beta_7 Dpub * \Delta NPL_{t-1} + \beta_8 Dpub * \Delta NPL_t + \beta_9 Dpub * \Delta NPL_{t+1} + \beta_{10} Dpub * NCO_t \\ &+ \beta_{11} Dpub * NCO_{t+1} + \beta_{12} LLA_{t-1} + \beta_{13} Family Lns_{t-1} + \beta_{14} ConLns_{t-1} \\ &+ \beta_{15} ComRELns_{t-1} + \beta_{16} ComLns_{t-1} + \beta_{17} AgLns_{t-1} + \beta_{18} OthLns_{t-1} \\ &+ \beta_{19} Size_t + \beta_{20} Size_t * \Delta NPL_{t-1} + \beta_{21} Size_t * \Delta NPL_t + \beta_{22} Size_t * \Delta NPL_{t+1} \\ &+ \beta_{23} Size_t * NCO_t + \beta_{24} Size_t * NCO_{t+1} + \beta_{25} Lambda + \beta_{26} Dpub * Lambda + \varepsilon_t \end{split}$$

	Predicted		
Variable: ^b	Sign	Coefficient	t-statistic
Intercept	?	-0.0002	-3.50 ***
ΔNPL_{t-1}	+	0.0139	3.95 ***
ΔNPL_t	+	0.0409	10.76 ***
ΔNPL_{t+1}	+	0.0273	7.65 ***
NCOt	+	0.7694	82.74 ***
NCO _{t+1}	+	0.0807	10.64 ***
Dpub	?	0.0003	3.51 ***
$Dpub*\Delta NPL_{t-1}$	+	0.0192	3.41 ***
$Dpub*\Delta NPL_t$	+	0.0269	4.24 ***
$Dpub*\Delta NPL_{t+1}$	+	0.0133	2.06 **
Dpub*NCO _t	?	-0.0113	-0.68
Dpub*NCO _{t+1}	?	-0.0066	-0.42
LLA _{t-1}	-	-0.0317	-9.18 ***
FamilyLns _{t-1}	?	0.0012	8.14 ***
ConLns t-1	?	0.0034	15.08 ***
ComRELns t-1	?	0.0026	16.60 ***
ComLns t-1	?	0.0035	15.83 ***
AgLns _{t-1}	?	0.0025	10.60 ***
OthLns t-1	?	0.0051	16.79 ***
Size _t	?	-0.0004	-4.28 ***
$Size_t * \Delta NPL_{t-1}$?	-0.0146	-2.54 ***
Size _t * Δ NPL _t	?	-0.0120	-1.51*
$Size_t * \Delta NPL_{t+1}$?	-0.0370	-4.91 ***
Size _t *NCO _t	?	0.0065	0.30
Size _t *NCO _{t+1}	?	0.0931	4.70**
Lambda	?	-0.0002	-2.98 ***
Dpub*Lambda	?	0.0001	1.53*

Adj. R-Square

71.70

Table 9 notes.

* denotes p < .10; ** denotes p < .05; *** denotes p < .01.

^a The sample consists of 1,652 privately-owned and 608 publicly-traded U.S. commercial banks during 1992-2002. The sample contains 10,283 private bank-year observations and 4,058 public bank-year observations, for a total of 14,341 bank-year observations. We collected these data from the SNL Regulatory Datasource. To construct the public and private bank samples, we eliminated public banks with total assets larger than the largest private bank and we eliminated private banks with total assets smaller than the smallest public bank. In addition, as a partial control for outliers, we study a truncated sample that excludes the observations in the top and bottom percentile of each annual cross-sectional distribution of earnings changes and loan loss provisions.

^bVariable Definitions:

LLPt	= Loan loss provision for year t scaled by total assets as of the end of year t-1.
ΔNPL_t	= Change in nonperforming loans from year t-1 to year t, scaled by total assets as of the end of year t-1.
NCOt	= Net loan charge-offs for year t scaled by total assets as of the end of year t-1.
LLA _t	= Loan loss allowance for year t scaled by total assets as of the end of year t-1.
FamilyLns _t	= Family loans divided by total assets.
ConLns _t	= Consumer loans divided by total assets.
ComRELns _t	= Commercial real estate loans divided by total assets.
ComLns _t	= Commercial loans divided by total assets.
AgLns _t	= Agricultural loans divided by total assets.
OthLns _t	= Other loans divided by total assets.
Dpub	= 1 if the firm is public; 0 otherwise.
Size _t	= The centile rank of the firm based on total assets at the end of year t, scaled to the interval $(0,1)$.
Lambda _t	= The inverse Mills ratio estimated from the first-stage probit results reported in Table 4.