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Publicly traded versus privately held: implications for conditional conservatism in bank accounting

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Abstract Compared with privately held banks, publicly traded banks face greater agency costs because of greater separation of ownership and control but enjoy greater benefits from access to the equity capital market. Differences in control and capital market access influence public versus private banks' accounting. We predict and find that public banks exhibit greater degrees of conditional conservatism (asymmetric timeliness of the recognition of losses versus gains in accounting income) than private banks. We predict and find that public banks recognize more timely earnings declines, less timely earnings increases, and larger and more timely loan losses. Although public ownership gives managers greater ability and incentive to exercise income-increasing accounting, our findings show that the demand for conservatism dominates within public banks and that the demand for conservatism is greater among public banks than private banks. Our results provide insights for accounting and finance academics, bank managers, auditors, and regulators concerning the effects of ownership structure on conditional conservatism in banks' financial reporting.

Keywords Conservatism · Private and public banks · Agency costs · Control · Asymmetric timeliness

JEL Classification G1 · G21 · G32 · M41

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1 Introduction

How does the firm's equity ownership structure—whether common equity shares are publicly traded or privately held—affect its accounting? To date, research provides little insight into this question, in part because of the scarcity of readily-available accounting data on privately held firms. This study provides empirical evidence on the relation between equity ownership structure and financial reporting using financial statement data from regulatory filings for a sample of publicly traded and privately held U.S. commercial banks and bank holding companies (hereafter public and private banks).[1]

The choice to be public rather than private triggers differences along two important organizational dimensions, *control* and *capital market access*, which have potentially important implications for financial reporting. Control differences arise because greater separation exists between principals and agents (owners and managers) in a typical public bank than a typical private bank. Greater separation yields the potential for greater information asymmetry between owners and managers of public banks than private banks, which exacerbates the potential for moral hazard and adverse selection problems. Therefore, we expect public banks to establish more extensive and explicit contracting and monitoring mechanisms to align principals' and agents' incentives and enforce greater accountability.

The choice to be public or private affects two costs associated with access to the equity capital markets. First, public banks' equity capital is more liquid than private banks' equity, so investors demand a liquidity premium to hold private banks' equity, increasing the cost of private equity capital. Second, public banks can raise new equity capital through transactions in the public markets (for example, seasoned equity offerings). For private banks to engage in public equity capital-raising transactions, they must undergo a fundamental and costly change in ownership structure to become public. Thus, capital market access enables public banks to face lower costs of equity capital and to raise new equity capital more efficiently than private banks.

The effects of the public-private ownership choice on control and capital market access create countervailing influences on banks' financial reporting.[2] As information asymmetry between owners and managers increases and as the firm's appetite for equity capital from external investors grows (and with it the need to meet

[1] Several notable studies examine private firms. Using data on small private companies, Ang et al. (2000) find that agency costs increase as managerial ownership percentages decline. However, they do not examine the tradeoffs of the public/private decision nor do they examine conservatism. Kwan (2004) provides univariate descriptive statistics on risks and returns across public and private banks but does not test the tradeoffs in the public/private decision or conservatism. Two studies 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 et al. (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 on the nature of endogenously determined variables such as organizational structure and accounting information.

earnings expectations), managers face an expanding ability and incentive to exercise income-increasing (anti-conservative) accounting. However, these factors also amplify stakeholders' demands for external verifiability of managers' financial reports. Christensen and Demski (2003) argue that external verifiability is the comparative advantage of accounting information relative to other information sources. Therefore, the demand for verifiable accounting information likely differs across public and private firms.

The demand for verifiability also depends on the nature of the accounting information. Although conservatism and verifiability are distinct qualitative characteristics of accounting information, they are linked insofar as one type of conservatism involves requiring a higher verifiability threshold to recognize good news as gains than to recognize bad news as losses (Basu 1997). Beaver and Ryan (2005) denote the asymmetric timeliness of gain and loss recognition in accounting as *conditional conservatism*.[3] Watts (2003) argues that conservatism survives in equilibrium because it constrains managerial opportunism and thereby enables efficient contracting between the firm and its various stakeholders in the presence of asymmetric information and payoffs. The need to constrain managerial opportunism and the demand for verifiable accounting information are increasing in information asymmetry, so the demand for conditional conservatism is likely greater among public firms than private firms.

We develop and test two sets of predictions about how public versus private equity ownership drives differences in conditional conservatism in bank accounting.[4] In our first set of tests, we predict and find that public banks recognize *more* timely earnings decreases and *less* timely earnings increases than private banks, after controlling for size and potential endogeneity in the public-private choice. We also find that earnings decreases are less persistent and earnings increases are more persistent for public banks than for private banks, extending Ball and Shivakumar (2005). Given that public and private banks are relatively homogeneous, we assume that they experience similar distributions of economic gains and losses. Therefore differences in the asymmetric timeliness of gain and loss recognition in accounting income imply differences in conditional conservatism across banks. Our results support our prediction that public banks exhibit greater demand for conditional conservatism than private banks.

Because earnings changes are highly aggregated, those results do not provide insight into how conditional conservatism arises. We therefore refine our predictions and analyses to investigate conditional conservatism within various dimensions of banks' loan loss accounting. We examine loan loss accounting because it reflects

[3] Beaver and Ryan (2005) adopt the term 'conditional conservatism' to distinguish the asymmetric timeliness of gain/loss recognition from unconditional conservatism, the predetermined understatement of the book value of net assets (for example, immediate expensing of the costs of internally developed intangible assets or accelerated depreciation or amortization lives that are shorter than expected economic lives of assets). In this paper we also adopt the term conditional conservatism and for expediency often refer to it simply as 'conservatism.'

[4] Testing these predictions empirically is difficult, however, because prior research provides little guidance on the determinants of the public/private choice, and those determinants likely are determined endogenously with factors that affect accounting. We therefore implement the Heckman (1979) two-stage approach to control for endogeneity bias in our empirical tests.

banks' credit risk management activities, which are central to their profitability and risk, and can create substantial information asymmetry between owners and managers. In addition, loan loss accounting has a material effect on banks' earnings and balance sheet amounts and requires a substantial degree of estimation and judgment. Thus, loan loss accounting should be the best place to observe bank managers' preferences for conservative (or anti-conservative) accounting.

We predict and find that public banks exhibit greater conditional conservatism in loan loss accounting than private banks by recording larger and timelier loan loss provisions relative to changes in nonperforming loans (non-discretionary indicators of changes in loan portfolio quality). We also predict and find that public banks' balance sheets include larger loan loss allowances as a percentage of total loans than private banks. Our tests also reveal that public banks recognize larger and timelier loan chargeoffs and smaller and less timely loan loss recoveries than private banks. Our empirical analyses demonstrate the implications of conservative financial reporting throughout the accounting life of a loan loss: from the initial provision, through the allowance on the balance sheet, to the ultimate chargeoff and potential recovery.

This paper contributes new evidence on the tradeoffs between agency costs and capital market benefits by predicting and finding differences in conditional conservatism in earnings changes and in loan loss recognition across public and private banks. Our results reveal how equity ownership structure can drive differences in conditional conservatism between public and private banks. Despite public bank managers having greater ability and motive to exercise income-increasing (anti-conservative) accounting, our evidence shows that the demand for conditional conservatism in accounting dominates within public banks. Furthermore, our results show that the demand for conditional conservatism accounting by public banks exceeds the demand for conditional conservatism by private banks. Our findings should inform bank managers, auditors, regulators, and scholars in accounting, finance, and banking concerned with the interactions between ownership structure and financial reporting.

We organize the remainder of the paper as follows. In the next section, we describe the implications of public versus private ownership for control and capital market access and develop predictions about their effects on conditional conservatism within bank financial reporting. We also address regulatory, tax, and endogeneity issues. In Sect. 3, we describe our sample selection procedures and sample data. In Sect. 4, we present our tests and results. We conclude in Sect. 5.

2 Implications of public versus private ownership

Like other firms, banks that meet the listing requirements established by a U.S. stock exchange[5] can choose to have their equity shares listed on the exchange or can

[5] 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.

retain private ownership. We presume that a bank's shareholders' decision for the its to be publicly traded or privately held is rational, given their objective functions and risk-return preferences. The objective of this paper is not to test the determinants of this choice; rather, it is to make and test predictions about the observable accounting implications of being public or private.

In this section, we describe differences between public and private banks along two critical dimensions, *control* and *capital market access*, which have important implications for accounting. We predict differences in public versus private banks' conditional conservatism in earnings. We also predict differences in their conditional conservatism as manifest in specific dimensions of loan loss accounting. In the final subsection, we address regulatory, tax, and endogeneity issues in this research setting.

2.1 Control implications

The need for corporate control is acute within banks because of the high potential for information asymmetry, which arises because banks intermediate many types of risk—credit risk, interest rate risk, prepayment risk, exchange rate risk, liquidity risk, and others. To varying degrees, these risks arise from observable movements in market prices (for example, interest rates and exchange rates); however, a bank's exposures to these risks are not easily observable to external stakeholders. Exposure to credit risk is even less observable by outsiders, and it has the most idiosyncratic (least systematic) nature of all of these risks.

Greater separation between owners and managers exists for public banks than private banks, ceteris paribus. Private banks are more likely to be closely held among fewer shareholders, with managers likely to be major shareholders. Public banks typically have more dispersed equity ownership, with managers more likely to be minority shareholders. Equity investors in public banks cannot monitor managers' actions as closely, cannot obtain managers' private information as easily and may not have incentives that align with those of the managers. Because public bank managers are likely to be proportionally smaller shareholders in their own banks, they are more likely to exploit information asymmetry to shirk, consume excessive perquisites and compensation, and take excessive risk, because they bear a smaller proportion of the costs of these actions than private bank managers. Greater separation between principals and agents creates greater information asymmetry, which implies greater potential for moral hazard and adverse selection problems (Jensen and Meckling 1976). The potential for moral hazard and adverse selection problems is therefore more acute among public banks.[6] Given the heightened potential for agency problems, rational owners and managers in public banks will engage in more extensive contracting and monitoring mechanisms to align principals' and agents' incentives and enforce greater accountability.

[6] The thrift crisis of the 1980s and episodic bank failures (for example, Barings Bank in the early 1990s) illustrate the costly nature of these types of moral hazard and adverse selection problems.

2.2 Capital market access implications

Choosing to be a public or private bank is endogenously determined with the need to access the equity capital market, which in turn implies differences in the cost of equity capital (for example, the required rate of return to equity shareholders) as well as the transaction costs involved in raising equity capital. Public bank equity is a more liquid investment than private bank equity because equity shares of public banks can be traded with relatively low transaction costs in the capital market.[7] We therefore assume investors demand a liquidity premium to hold private bank equity. Thus, holding all else equal—most notably, all other risks and the agency problems of the previous section—public banks enjoy a lower cost of equity capital than private banks.

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

2.3 Implications for accounting

2.3.1 Conditional conservatism in reported earnings

The public-private ownership choice creates countervailing influences on banks' accounting. As information asymmetry widens, bank managers experience increasing latitude (within GAAP) to manipulate reported earnings and balance sheet amounts. In addition, as reliance on the equity capital markets increases, bank managers experience mounting incentives and pressures to report earnings and balance sheet amounts that capital markets participants will perceive favorably (that is, meet or beat expectations). However, as information asymmetry widens and the divergence in incentives grows, rational managers and external stakeholders will increase their demand for external verifiability of managers' financial reports. Therefore, the demand for verifiable accounting information will increase in the degree of separation between owners and managers across banks.

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 because it limits what information can enter the accounting system, increasing the reliability

[7] If a private bank elects S-corporation status for tax purposes, its equity shares can become even less liquid due to tax law constraints.

of the accounting information. GAAP provides structure for verifiability constraints and thresholds for specific accounting issues.[8] As a practical matter, verifiability is partly the result of implementation of GAAP guidance and partly the result of negotiated policy between agents (managers), principals (shareholders and creditors), and intermediaries (auditors and regulators). Therefore, the demand for verifiability within GAAP varies across firms and is endogenously determined with the degree of separation between owners and managers. As separation of ownership and control grows, the demand for external verifiability of managers' financial reports also increases.

The demand for verifiability in financial reporting also depends on whether the information is considered good or bad news, thereby linking the verifiability and conservatism characteristics of accounting information. Basu (1997) characterizes conservatism as a higher verifiability threshold for recognition of good news as gains in accounting income and a lower threshold for recognition of bad news as losses.[9] Beaver and Ryan (2005) refer to the asymmetric timeliness of gain and loss recognition in accounting as *conditional conservatism*.[10] Watts (2003) argues that conservatism constrains managerial opportunism in financial reporting by counterbalancing managers' optimism bias, which facilitates efficient contracting between the firm and its stakeholders given asymmetric information and payoffs. The need to constrain managers' opportunism and optimistic bias in financial reporting, and therefore the demand for verifiable accounting information, are increasing in information asymmetry. Thus, the demand for conditional conservatism is likely greater among public firms.

We therefore predict that public banks exhibit greater conditional conservatism than private ones. Specifically, we predict that recognition of *bad news* in earnings (for example, earnings declines) will be *timelier* and recognition of *good news* in earnings (for example, earnings increases) will be *less timely* for public banks than for private banks. To gauge timeliness, we compare persistence in earnings increases and decreases. We predict earnings increases are more persistent (less timely) and earnings decreases are less persistent (more timely) for public banks than private banks. In making these predictions, we assume that banks are relatively homogeneous, so managers' information sets and the timeliness of new information about economic gains and losses are comparable across public and private banks. We also assume that economic gains and losses are equally transitory: after considering risk, economic value should follow a random walk. However, we predict the recognition of economic gains and losses in accounting income and the persistence of these gains and losses in the financial reports will differ across public

[8] Indeed, many of the current controversies about accounting principles involve verifiability (for example, estimating fair values for stock option grants and financial instruments and testing intangible assets for impairments).

[9] Watts (2003, p. 207) states, "Conservatism is defined as the differential verifiability required for recognition of profits versus losses. Its extreme form is the traditional conservatism adage: 'anticipate no profit, but anticipate all losses.'" Similarly, Guay and Verrecchia (2006) define conservatism as "More timely recognition of losses than gains resulting from asymmetric costs and benefits of reporting verifiable information by managers and/or firms with incentives to distort firm performance."

[10] Watts (2003) captures a similar distinction with news-dependent conservatism.

and private banks because of conditional conservatism. Thus, we control for the likelihood a given bank will choose to be public or private and for differences in observable characteristics (for example, size, types of loans outstanding, asset/liability mix) and isolate whether ownership differences manifest themselves in more timely reporting of earnings decreases and less timely reporting of earnings increases among public banks than private banks.

Our analysis extends Ball and Shivakumar (2005), who examine accounting quality differences across public and private (nonfinancial) firms in the United Kingdom, and focus on *timely recognition of losses* as an important manifestation 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 also predict that public firms recognize less timely good news in earnings.

Earnings changes are highly aggregated across all of the line items on the income statement, so tests of differential persistence in earnings changes cannot reveal how conditional conservatism arises. In addition, tests of asymmetric timeliness of income recognition do not reveal the effects of conditional conservatism on firms' balance sheets. We therefore refine our predictions and tests to investigate conditional conservatism within specific dimensions of loan loss accounting that impact reported line items of income and the loan portfolios on banks' balance sheets.

2.3.2 Conservatism in loan loss recognition

A bank's loan loss accounting should reflect its credit risk management, including the evaluation and pricing of credit risk and the management of the bank's loan portfolio. These activities are key determinants of bank profitability and risk but are very difficult for outsiders to observe. Even auditors and regulators cannot perfectly monitor a bank's credit-risk taking, or observe bank managers' private information about the credit quality of the loan portfolio. This is important because loan loss accounting has a material effect on banks' earnings and balance sheet amounts and requires a substantial degree of estimation and judgment and therefore reflects managers' preferences for conservative (or anti-conservative) accounting.

We expect bank owners and managers to demand accountability through more extensive (and costly) contracting and monitoring mechanisms designed to mitigate agency problems with respect to credit risk. For example, public banks are more likely to rely on explicit credit extension guidelines, loan portfolio growth strategies, layers of credit risk approval and review, more risk averse credit risk-pricing, along with compensation, reporting, and corporate governance arrangements designed to align owner and manager preferences for loan portfolio growth and credit risk. Thus, the choice to be a public or private bank also involves choices about the preferred level of exposure to agency problems, credit risk, growth opportunities, and potential profitability. In the same vein, the choice to be a public or private bank likely also influences the demand for verifiability of bank financial reports, which drives differences in the demand for conditional conservatism in bank loan loss accounting.

Loan loss provisions are accrued expenses that reflect managers' judgment and estimation of changes in expected future losses from credit risk in the loan portfolio. Loan loss provisions reduce reported net income and the net loans outstanding (by increasing the loan loss allowance) on the balance sheet. The loan loss allowance account should reflect the total amount of expected future loan losses in the loan portfolio. 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 supplemental information about credit quality, including the amount of nonperforming loans. Banks must classify a loan as nonperforming when it is at least 90 days overdue on interest or principal payments. Thus, changes in nonperforming loans are relatively nondiscretionary indicators of changes in the quality if the loan portfolio.[11] Banks record loan chargeoffs when they deem a portion or all of a loan uncollectible.[12] Various factors trigger chargeoffs, including loan-specific judgments, bank policy (for example, all loans that exceed some threshold of delinquency), and external events (for example, a borrower's bankruptcy). In certain cases, banks anticipate recovering a portion or all of a previously charged-off loan (for example, through an expected bankruptcy settlement). In those cases, banks reverse a portion or all of the previous loan chargeoffs by increasing loans outstanding and loan loss allowances.

Loan loss provisions determine the timeliness with which banks recognize loan loss expectations in income. Banks with more conservative loan loss accounting recognize loan loss provisions that are larger and more timely. Consistent with the prior literature (for example, Liu and Ryan 1995), we measure loan loss provision timeliness relative to changes in nonperforming loans. Refining our prior arguments about conditional conservatism with respect to earnings changes, we predict that public banks recognize *larger and timelier* loan loss provisions relative to changes in nonperforming loans than private banks. Extending our line of reasoning to the balance sheet, we also predict that public banks will recognize more conservative (larger) loan loss allowances (relative to total loans) than private banks. When loan losses are realized, we predict public banks will exercise more conservative accounting by recognizing larger and timelier loan chargeoffs than private banks. And finally, when portions of previously charged-off loans become recoverable, we predict public banks will exercise more conservative accounting by recognizing smaller and less timely recoveries than private banks. Thus, our empirical analyses test our predictions for the implications of conservative financial reporting throughout the accounting life of potential loan loss: from the initial provision,

[11] Although nonperforming loans are relatively nondiscretionary, bank managers can exercise two forms of discretion over them. First, they can make new loans to distressed borrowers to enable them to make payments on their existing loans and keep them 'performing' (reportedly a common practice among U.S. banks with loans to developing countries from the 1970s until 1987). Second, they can elect to charge off nonperforming loans. Both of these steps can be costly to banks, so we expect nonperforming loans to be relatively nondiscretionary.

[12] 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 effect on net income, total assets, or shareholders' equity. Banks disclose loan chargeoffs in footnotes to the financial statements.

through the allowance on the balance sheet, to the ultimate chargeoff and potential recovery.

To isolate the effects of differential conditional conservatism in loan loss accounting between public and private banks, our empirical tests control for differences in profitability, credit risk, types of loans outstanding, growth, and correlated factors arising from regulation and taxes. In the next section, we discuss the potential confounding factors present in our research setting.

2.4 Regulatory, tax, and endogeneity issues

The potential for conflicts of interest and agency problems between fixed claimants (for example, depositors) and residual claimants (for example, equity holders) is severe within banks, which in part explains why banks are heavily regulated. Federal and state bank regulators monitor and restrict banks to enhance the safety and soundness of the banking system for depositors and the Federal Deposit Insurance Corporation (FDIC). Bank regulators examine each bank roughly once a year. Bank examinations can lead regulators to require banks to recognize larger and timelier loan loss provisions, and regulators can require chargeoffs for loans that they deem uncollectible. In addition, under the risk-based capital adequacy requirements adopted in 1990, each bank must meet certain minimum capital adequacy ratios.[13] 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 acquisitions), and banks deemed severely under-capitalized can be subject to regulatory closure. Through examinations and capital requirements, regulators help protect depositors, reduce agency costs, and increase external verifiability of accounting information.

Regulators impose the same examination and capital requirements on public and private banks, so regulatory requirements should not bias our analysis in favor of finding differences between public and private banks. To the contrary, bank regulatory pressures that trigger conservative loss recognition by public and private banks should reduce observable differences in accounting conservatism.[14]

Banks with less than $500 million in total assets have tax incentives to recognize conservative loan loss provisions because provisions are tax deductible, whereas banks with more than $500 million in assets can only deduct loan losses when they

[13] Federal regulators require that banks maintain a Tier 1 Capital Ratio of at least 10% (6%) to be deemed well-capitalized (adequately-capitalized). The Tier 1 Capital Ratio computation is roughly equal to common equity over total assets. In addition, banks must have a Risk-Based Capital Ratio of at least 6% (4%) to be deemed well-capitalized (adequately-capitalized). The Risk-Based Capital Ratio computation is roughly equal to common 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.

[14] The existence of federally subsidized deposit insurance for banks creates a potential moral hazard problem between regulators (agents representing depositors) and bank managers (agents entrusted with depositors' capital). Public and private banks alike have incentives to avoid or delay recognizing losses to remain adequately capitalized and maintain access to federal deposit insurance. These incentives could reduce conservatism, but they should not bias our tests of differences in conservatism across public and private banks.

record chargeoffs. In our empirical analyses, we include bank size as an explanatory variable to control for differential tax incentives.[15]

As noted at the outset, endogeneity arises when a bank's expected investment opportunities and ambitions for future growth and profitability influence its choice to be public or private, which in turn influence its ability to generate growth and profitability, as well as its accounting. We use proxies for the determinants of the public/private choice to estimate and control for the likelihood a given bank will be public or private. Given this control, we then seek to isolate the consequences of being public or private on conservatism in bank accounting.

The implications of the public/private choice could also be opposite to our predictions and confound our tests for conservatism. For example, if more profitable banks are more likely to become public, then public banks will report larger and more persistent increases in earnings and smaller loan loss provisions (and nonperforming loans) than private banks, which could obscure differences in conservatism between public and private banks. In addition, the need to meet the capital markets' earnings expectations can drive public banks managers to more aggressive (less timely) recognition of earnings and less conservative loan loss accounting, contrary to our predictions. Ultimately, our empirical evidence should reveal whether these effects dominate our predictions. We turn next to the sample selection and data.

3 Sample selection and descriptive statistics

3.1 Sample selection

We obtain data for bank holding companies and independent commercial banks from release 5.0 of the SNL Regulatory Datasource (SNL) supplied by SNL Financial. This 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 SEC. 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 before 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

[15] 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 downwards to reduce taxable income.

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 banks within a common size-range each year 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 bank-year observations. To mitigate outliers, we exclude 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 requiring firms to have necessary data for our analyses, our sample consists of 1,652 (608) private (public) banks, with 10,283 (4,058) bank-years covering 1992 to 2002.

SNL provides only limited data on banks' equity ownership structures. SNL has shareholder data for only 332 of the public banks in 2002, the final year in our sample. 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 direct comparison with public banks. However, it does provide taxpayer status data for private banks. Of the 1,371 private banks in our sample with available taxpayer status data in 2002, 36.1% elected S-corporation status, which allows a maximum of only 75 shareholders. These data support our assertions that private banks are more closely held than public banks. Thus, greater separation between shareholders and managers exists within public banks than private banks.

3.2 Descriptive statistics

Table 1 presents descriptive statistics for our public and private bank subsamples, two-sample Wilcoxon rank-sum tests, and t-statistics for differences across these subsamples. These statistics suggest our two subsamples differ. Despite censoring our sample to a common size-range, total assets for the average public bank are almost four times larger than for the average private bank. The average public bank has larger proportions of assets in family loans, commercial real estate loans, and commercial loans, and larger investments in goodwill and other 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 1 capital.

Table 2 presents univariate correlations among the variables we use to test relations between ownership structure and conditional conservatism. Panel A contains correlations between Dpub (an indicator variable equal to one for publicly traded banks and zero for privately held banks) and the variables we use to analyze earnings changes. The correlations in Panel A suggest public banks experience larger (more positive or less negative) earnings changes in the current and prior periods. Panel B provides correlations for variables we use to analyze conservatism in loan loss provisions. Loan loss provisions correlate positively with current and lagged changes in nonperforming loans and these correlations are more significantly

Table 1 Descriptive statistics by bank type

Variable[a]	Bank type	Mean	Std. Dev.	Q1	Median	Q3	Rank-sum Z	*t*-Statistic
Assets	Public	695.648	832.890	244.350	397.506	789.151	61.14**	51.26***
	Private	200.035	328.991	36.572	101.056	250.325		
ΔNI	Public	0.002	0.003	0.000	0.001	0.003	10.55***	6.23***
	Private	0.001	0.004	−0.001	0.001	0.003		
LLP	Public	0.004	0.004	0.002	0.003	0.005	3.71***	−4.56***
	Private	0.005	0.006	0.001	0.003	0.006		
ΔNPL	Public	0.000	0.008	−0.002	0.000	0.002	−0.90	−0.85
	Private	0.000	0.014	−0.003	0.000	0.003		
NCO	Public	0.003	0.004	0.001	0.002	0.004	−1.17	−7.61***
	Private	0.004	0.006	0.001	0.002	0.005		
LLA	Public	0.015	0.006	0.011	0.013	0.016	−5.20***	−10.51***
	Private	0.016	0.010	0.011	0.014	0.019		
Cash	Public	0.071	0.046	0.041	0.060	0.088	−29.22***	−25.94***
	Private	0.101	0.067	0.056	0.085	0.126		
Securities	Public	0.262	0.115	0.184	0.250	0.326	−11.33***	−12.54***
	Private	0.295	0.148	0.189	0.278	0.387		
FamilyLns	Public	0.215	0.111	0.138	0.208	0.277	27.24***	25.31***
	Private	0.163	0.110	0.078	0.144	0.225		
ConsumerLns	Public	0.078	0.068	0.031	0.061	0.109	−7.77***	−5.73***
	Private	0.086	0.076	0.041	0.069	0.107		
ComRELns	Public	0.175	0.094	0.110	0.162	0.223	21.21***	16.87***
	Private	0.144	0.101	0.073	0.125	0.192		
ComLns	Public	0.103	0.068	0.058	0.088	0.135	10.79***	8.53***
	Private	0.093	0.067	0.046	0.077	0.122		
AgLns	Public	0.011	0.023	0.000	0.001	0.010	−34.93***	−31.60***
	Private	0.054	0.085	0.001	0.015	0.070		
OtherLns	Public	0.048	0.049	0.018	0.034	0.062	26.94***	16.49***
	Private	0.033	0.049	0.005	0.019	0.045		
Total loans	Public	0.631	0.115	0.569	0.644	0.707	21.83***	22.13***
	Private	0.573	0.148	0.482	0.590	0.680		
Reserves	Public	0.009	0.003	0.007	0.009	0.010	8.11***	1.66*
	Private	0.009	0.004	0.006	0.008	0.010		
GWOI	Public	0.004	0.006	0.000	0.001	0.005	31.92***	18.38***
	Private	0.002	0.005	0.000	0.000	0.001		
Other assets	Public	0.041	0.023	0.031	0.038	0.047	13.14***	8.28***
	Private	0.038	0.019	0.026	0.035	0.046		
Deposits	Public	0.821	0.083	0.786	0.842	0.879	−22.51***	−24.57***
	Private	0.853	0.062	0.829	0.866	0.892		
Long-term borrowings	Public	0.045	0.063	0.002	0.020	0.064	34.41***	29.09***
	Private	0.020	0.039	0.000	0.000	0.023		
Other debt	Public	0.036	0.047	0.009	0.022	0.047	29.70***	20.25***
	Private	0.021	0.039	0.006	0.010	0.022		
Total liabilities	Public	0.903	0.027	0.894	0.907	0.919	13.76***	15.31***
	Private	0.893	0.036	0.877	0.901	0.918		

Table 1 continued

Variable[a]	Bank type	Mean	Std. Dev.	Q1	Median	Q3	Rank-sum Z	*t*-Statistic
PrefEquity	Public	0.001	0.003	0.000	0.000	0.000	0.84	−1.95
	Private	0.001	0.004	0.000	0.000	0.000		
ContCap	Public	0.043	0.028	0.022	0.038	0.058	16.72***	9.83***
	Private	0.037	0.033	0.014	0.029	0.051		
RetEarn	Public	0.053	0.035	0.030	0.051	0.073	−22.16***	−19.37***
	Private	0.068	0.044	0.041	0.067	0.092		
OCI	Public	0.001	0.005	0.000	0.000	0.001	4.20***	4.87***
	Private	0.000	0.004	0.000	0.000	0.001		
IRgrow	Public	1.086	0.169	0.992	1.061	1.144	14.18***	15.44***
	Private	1.044	0.138	0.966	1.036	1.102		
HOMP	Public	0.467	0.188	0.346	0.476	0.599	9.63***	7.88***
	Private	0.438	0.203	0.285	0.427	0.582		
Caprat	Public	14.724	6.901	11.020	13.080	16.270	−22.48***	−18.30***
	Private	18.410	11.970	11.760	15.600	21.700		
LNGRO	Public	1.134	0.175	1.044	1.100	1.181	11.99***	12.51***
	Private	1.098	0.144	1.022	1.083	1.151		
LCO	Public	0.004	0.004	0.001	0.003	0.005	−7.91***	−13.21***
	Private	0.005	0.007	0.001	0.003	0.007		
Rec	Public	0.001	0.001	0.000	0.001	0.001	−13.97***	−15.81***
	Private	0.002	0.003	0.000	0.001	0.002		

The sample consists of U.S. commercial banks, of which 1,671 are privately owned and 602 are publicly traded during 1992 to 2002. The sample contains 10,463 private bank-year observations and 3,979 public bank-year observations, for a total of 14,442 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 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

*** Significant at <0.01; ** significant at <0.05; * significant at <0.10

[a] Variable definitions: Assets, total assets; ΔNI, net income less prior year net income divided by beginning of the year total assets; LLP, loan loss provision divided by beginning of year total loans; ΔNPL, change in non-performing loans divided by beginning of year total assets; NCO, net charge-offs divided by beginning of year total loans; LLA, loan loss allowance divided by end of the year total loans; 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; Other Debt, 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; IRgrow, interest revenue in year t divided by interest revenue in year $t-1$; HOMP, homogeneous loans (family loans plus consumer loans) as a percentage of total loans; Caprat, Tier 1 risk based capital ratio; LNGRO, total loans for year t divided by total loans for year $t-1$; LCO, loan chargeoffs in year t divided by total loans; REC, recoveries in year t divided by total loans as of the end of year $t-1$

Table 2 Correlation matrices for the variables in each set of empirical tests

Variables[a]	2	3	4	5	6	7	8	9	10	11	12	13	14
Panel A: Variables in tests of current period earnings changes (bold if significant at less than 0.05)													
1. ΔNI_t	**.06**	**−.06**	**−.17**	**.05**	**.03**	**.04**	**−.07**	**.08**	**.06**	**−.01**	**−.14**	−.01	**.02**
2. $D\Delta NI_{t-1}$		**−.60**	**−.58**	**−.13**	**.37**	**−.27**	**−.22**	**−.18**	**.80**	**−.54**	**−.49**	**−.03**	**−.08**
3. ΔNI_{t-1}			**.67**	**.05**	**−.20**	**.44**	**.26**	**.06**	**−.45**	**.81**	**.54**	.00	**.03**
4. ΔNI_{t-1} * $D\Delta NI_{t-1}$				**.09**	**−.18**	**.27**	**.39**	**.16**	**−.40**	**.54**	**.78**	**.02**	**.06**
5. Dpub					**.39**	**.35**	**−.23**	**.51**	**.03**	**.14**	.00	**.78**	**.81**
6. Dpub * $D\Delta NI_{t-1}$						**−.32**	**−.59**	**.16**	**.56**	**−.26**	**−.32**	**.34**	**.37**
7. Dpub * ΔNI_{t-1}							**.47**	**.18**	**−.28**	**.59**	**.34**	**.26**	**.26**
8. Dpub * ΔNI_{t-1} * $D\Delta NI_{t-1}$								**−.08**	**−.31**	**.33**	**.58**	**−.21**	**−.23**
9. $Size_t$									**.17**	**.23**	**−.08**	.00	**.25**
10. $Size_t$ * $D\Delta NI_{t-1}$										**−.52**	**−.58**	**−.04**	.01
11. $Size_t$ * ΔNI_{t-1}											**.61**	.00	**.06**
12. $Size_t$ * ΔNI_{t-1} * $D\Delta NI_{t-1}$												**.03**	.00
13. Lambda													**.87**
14. Dpub * Lambda													

Variables[a]	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Panel B: Variables in tests of loan loss provisions (bold if significant at less than 0.05)																							
1. LLPt	**.09**	**.11**	−.01	**.82**	**.48**	**−.04**	**.05**	**.05**	−.01	**.21**	**.14**	**.05**	**−.02**	**−.05**	.01	−.06	**.06**	**.09**	−.01	**.60**	**.38**	**−.02**	**−.02**
2. ΔNPL_{t-1}		**−.13**	**−.05**	**.10**	**.08**	.00	**.31**	**−.02**	**−.03**	**.04**	**.02**	**−.03**	.00	−.01	**−.06**	.00	**.84**	**−.07**	**−.05**	**.09**	**.06**	.00	.013
3. ΔNPL_t			**−.15**	**.03**	**.11**	−.01	**−.03**	**.32**	**−.03**	.00	**.04**	**−.11**	.00	**−.02**	**−.04**	.00	**−.05**	**.82**	**−.08**	**.02**	**.10**	.00	.00
4. ΔNPL_{t+1}				**−.03**	.00	.02	**−.04**	**−.03**	**.31**	−.01	**.02**	**−.13**	**.02**	**−.04**	**.05**	**.05**	**−.04**	**−.08**	**.81**	−.01	**.05**	.00	.01
5. NCO_t					**.44**	**−.06**	**.06**	.01	**−.03**	**.25**	**.11**	**.16**	.01	−.01	**−.12**	**−.10**	**.07**	**.02**	**−.03**	**.73**	**.34**	**−.02**	**−.04**
6. NCO_{t+1}						**−.05**	**.03**	**.06**	.02	**.11**	**.25**	**.08**	**.02**	**−.03**	**−.05**	**−.09**	**.04**	**.09**	**.03**	**.32**	**.74**	−.02	**−.04**

Table 2 continued

Variables[a]	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
7. Dpub							**−.03**	**−.03**	**−.04**	**.55**	**.52**	**−.09**	**.07**	**−.15**	**.10**	**.51**	−.01	**−.02**	−.01	**.13**	**.12**	**.78**	**.81**
8. Dpub * ΔNPL_{t-1}								**−.08**	**−.11**	**.13**	**.07**	.00	−.01	.00	**−.05**	**−.03**	**.36**	**−.02**	**−.05**	**.08**	**.04**	−.01	.00
9. Dpub * ΔNPL_t									**−.09**	.00	**.13**	**−.05**	.00	.00	**−.02**	**−.03**	**−.02**	**.46**	**−.03**	.00	**.09**	−.01	.00
10. Dpub * ΔNPL_{t+1}										**−.09**	**.02**	**−.05**	.01	−.01	.01	**−.02**	**−.04**	**−.03**	**.46**	**−.04**	**.03**	**−.03**	**−.03**
11. Dpub * NCOt											**.65**	.01	**.01**	**−.10**	**.03**	**.28**	**.05**	−.01	**−.03**	**.50**	**.29**	**.44**	**.47**
12. Dpub * NCO_{t+1}												**−.02**	.01	**−.10**	**.03**	**.27**	**.02**	**.06**	**.02**	**.30**	**.52**	**.42**	**.44**
13. LLA_{t-1}													**−.15**	**.41**	**−.08**	**−.22**	.00	**−.07**	**−.09**	**.07**	.01	.00	**−.07**
14. $HOMP_{t-1}$														**.08**	**−.08**	**−.03**	.00	−.01	.01	**−.02**	**−.02**	.01	**.03**
15. CAPRAT															**−.17**	**−.31**	.00	−.01	**−.03**	**−.13**	**−.13**	.00	**−.09**
16. LNGRO																**.16**	**−.06**	**−.03**	**.03**	**−.04**	.00	−.01	**.04**
17. Sizet																	−.01	−.02	.01	**.30**	**.28**	.00	**.25**
18. Sizet * ΔNPL_{t-1}																		**−.05**	**−.05**	**.08**	**.05**	.00	.00
19. Sizet * ΔNPL_t																			**−.06**	.01	**.12**	−.01	−.01
20. Sizet * ΔNPL_{t+1}																				**−.04**	**.05**	−.01	−.01
21. Sizet * NCO_t																					**.53**	**−.02**	**.06**
22. Sizet * NCO_{t+1}																						−.01	**.05**
23. Lambda																							**.87**
24. Dpub * Lambda																							

Variables[a]	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Panel C: Variables in tests of loan loss allowances, loan charge-offs, and future recoveries (bold if significant at less than 0.05)																
1. LLA_t	**−.09**	**−.22**	**−.14**	**.42**	**−.19**	.00	**−.07**	**.31**	−.01	.01	**−.03**	−.01	**.44**	**.03**	**.36**	**.04**
2. Dpub		**51**	**.07**	**−.15**	**.10**	**.78**	**.81**	**−.11**	.00	**−.03**	−.01	**−.03**	**−.13**	**.60**	**−.10**	**.61**
3. $Size_t$			**−.05**	**−.31**	**.16**	.00	**.25**	**−.17**	.00	**−.03**	.00	**−.03**	**−.20**	**.30**	**−.16**	**.32**
4. $HOMP_t$				**.09**	**−.08**	.00	**.02**	.01	.00	−.01	−.01	−.01	.00	.01	.01	.01

Table 2 continued

Variables[a]	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
5. $CAPRAT_{t-.1}$					**−17**	.00	**−.09**	**.08**	−.01	.00	−.02	.00	**.23**	**−.10**	**.09**	**−.10**
6. $LNGRO_t$						−.01	**.04**	**−.14**	**−.06**	**−.05**	**−.04**	**−.02**	**−.15**	**−.02**	**−.12**	.01
7. Lambda							**.87**	**−.03**	.00	−.01	.00	−.01	**−.03**	**.49**	**−.03**	**.49**
8. Dpub * Lambda								**−.08**	.01	.00	.00	.00	**−.10**	**.51**	**−.08**	**.51**
9. LCO_t									**.07**	**.05**	.00	.00	**.52**	**.19**	**.63**	**.10**
10. ΔNPL_{t-1}										**.31**	**−.13**	**−.02**	.00	**.04**	.00	.01
11. Dpub * ΔNPL_{t-1}											**−.03**	**−.08**	.00	**.13**	**.02**	**.03**
12. ΔNPL_t												**.32**	.00	.00	**−.06**	**−.03**
13. Dpub * ΔNPL_t													.01	.00	**−.03**	**−.10**
14. REC_{t+1}														.02	**.50**	**.02**
15. Dpub * LCO_t															**.11**	**.78**
16. LCO_{t-1}																**.21**
17. Dpub * LCO_{t-1}																

The sample consists of U.S. commercial banks, of which 1,671 are privately owned and 602 are publicly traded during 1992 to 2002. The sample contains 10,463 private bank-year observations and 3,979 public bank-year observations, for a total of 14,442 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 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

[a] Variable definitions: Dpub, 1 if the firm is public; 0 otherwise; ΔNI_t, net income less prior year net income divided by beginning of the 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); 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; ΔNPL, change in nonperforming 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; HOMP, homogeneous loans (family loans plus consumer loans) as a percentage of total loans; CAPRAT, Tier 1 risk based capital ratio; LNGRO, total loans for year t divided by total loans for year $t - 1$; LCO, loan chargeoffs in year t divided by total loans as of the end of year $t - 1$; REC, recoveries in year t divided by total loans as of the end of year $t - 1$

positive for public than private banks. The correlations presented in Panel C reveal negative correlations between Dpub and loan loss allowances, chargeoffs, and recoveries.

3.3 Selection model for public versus private ownership

We control for the *determinants* of the choice to be a public or private bank to isolate and test our predictions of the *implications* of ownership structure on accounting conservatism. Banks likely select public or private ownership status based on expected (or desired) future changes in profitability and growth. Consequently, ownership status, profitability, growth, risk, and conservatism may be endogenously determined to some degree.[16] If so, OLS regressions yield biased and inconsistent estimates of the effect of Dpub on the dependent variable; in essence, Dpub will be correlated with the error term in the OLS regressions (Greene 2000, p. 934). To control for endogeneity, we follow Ball and Shivakumar (2005) by using the Heckman (1979) two-stage approach. This approach is appropriate in our setting because it corrects for biased estimates that result from a nonrandom treatment effect. In the first stage, we model the selection of public versus private ownership status by estimating a probit selection model using variables that reflect observable characteristics related to ownership status. We then use the parameters from the first stage selection model to compute an inverse Mills ratio for each sample bank. In the second stage, we include the inverse Mills ratio in all of our regressions testing the implications of ownership status for conservatism.[17]

The descriptive statistics in Table 1 reveal that public and private banks have significantly different investment opportunities and financial capital strategies. We therefore use differences in banks' investments and financing as determinant variables that explain banks' selection of public or private ownership.[18] To attribute these differences to ownership status and not size, we scale them by total assets and regress them on Dpub while controlling for size, measured as the centile rank of the bank's total assets within our cross-sectional sample each year. Each regression takes the following general form:

[16] In theory, the choice to be public or private is an ongoing one (that is, banks can change ownership status at any point), and therefore ownership status and profitability, growth, risk, and conservatism are simultaneously determined. The data suggest that banks do not change ownership status frequently, so we treat ownership status as a predetermined correlated variable rather than as a simultaneously determined variable.

[17] Viewing the choice to be public or private as the first stage model and our regressions as the second stage model, the correlation between first stage and second stage error terms produces biased and inconsistent estimates of the marginal effect of Dpub on the second stage dependent variables. This occurs because Dpub, which is a function of the first stage error term, is correlated with the second stage error term (Greene 2000). The inverse Mills ratio correlates with the expected value of the first stage error term, given the bank's observable characteristics and ownership status. Thus, including the inverse Mills ratio in second stage regressions controls for the correlation between Dpub and the second stage error terms and produces consistent second stage Dpub coefficient estimates.

[18] Ideally, our determinant variables would consist of the expected future costs and benefits that banks consider when evaluating public versus private ownership status. Given that these factors are unobservable, we rely on ex post realizations as proxies for ex ante expectations.

$$\text{Dependent Variable}_t = \phi_0 + \phi_1 \text{Dpub} + \phi_2 \text{Size}_t + \varepsilon_t \quad (1)$$

We present the results of these regressions in Table 3. Consistent with the univariate descriptive statistics in Table 1, these regressions reveal a number of significant differences in investments and financing related to public-private status, after controlling for bank size. We augment these determinant variables with several additional variables that we expect to relate to ownership status: size, size squared (to capture nonlinear effects of size), and interest revenue growth (denoted IRgrow). We estimate the following probit selection model over the pooled cross-sectional sample:

$$\begin{aligned}\text{Dpub}_t = {} & \delta_0 + \delta_1 \text{Cash}_t + \delta_2 \text{Securities}_t + \delta_3 \text{FamilyLns}_t + \delta_4 \text{ConsumerLns}_t \\ & + \delta_5 \text{ComRELns}_t + \delta_6 \text{ComLns}_t + \delta_7 \text{AgLns}_t + \delta_8 \text{OtherLns}_t \\ & + \delta_9 \text{Reserves}_t + \delta_{10} \text{GWOI}_t + \delta_{11} \text{Deposits}_t + \delta_{12} \text{OtherDebt}_t \\ & + \delta_{13} \text{PrefEquity}_t + \delta_{14} \text{ContCap}_t + \delta_{15} \text{RetEarn}_t + \delta_{16} \text{OCI}_t \\ & + \delta_{17} \text{IRgrow}_t + \delta_{18} \text{Size}_t + \delta_{19} \text{Size}_t^2 + \varepsilon_t \end{aligned} \quad (2)$$

We present the results of the probit selection model estimation in Table 4. The Pseudo *R*-square statistic indicates the model explains almost 50% of the cross-sectional variation in the selection of public-private ownership status within our sample. Not surprisingly, contributed capital and size are strong positive predictors of ownership status. We use the parameter estimates in Table 4 to compute an inverse Mills ratio (which we denote Lambda) for each sample bank.[19]

As noted earlier, the absence of a control for endogeneity in this setting would lead to biased and inconsistent estimates in our tests of the marginal effect of Dpub on conservatism because Dpub would be correlated with the second stage errors (Greene 2000). Lambda reflects the conditional expectation of the selection model error term, given the bank's observable characteristics and public or private ownership status. Thus, including Lambda in the second stage regressions controls for the correlation between Dpub and the second stage errors and permits consistent estimates of the coefficient on Dpub in the second stage tests. In addition, 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 the timely recognition of earnings increases and decreases. We then describe our analysis of the implications of public versus private ownership for conditional conservatism in the recognition of loan losses.

[19] We examined several variations of the first-stage selection model (Eq. 2), altering several determinant variables. In general, the results reported in this paper for the first stage estimation and the second stage tests are robust to the different specifications we examined.

Table 3 Analysis of common-size balance sheets for public and private banks
Dependent Variable$_t = \phi_0 + \phi_1$Dpub + ϕ_2Size$_t + \varepsilon_t$

Dependent variable	Percent of total assets (%)	Intercept	Dpub	Size	Adjusted *R*-square
Cash	9.31	13.23 (126.88)***	−0.64 (−4.98)***	−7.00 (−35.73)***	12.20
Securities	28.56	31.70 (129.97)***	−1.56 (−5.17)***	−5.06 (−11.04)***	1.89
Family loans	17.73	14.95 (77.17)***	4.19 (17.53)***	3.04 (8.35)***	4.69
Consumer loans	8.39	10.07 (78.22)***	0.33 (2.05)**	−3.32 (−13.70)***	1.49
Commercial RE loans	15.23	10.52 (62.10)***	0.18 (0.85)	8.73 (27.40)***	6.77
Commercial loans	9.57	7.25 (61.97)***	−0.46 (−3.20)***	4.57 (20.79)***	3.38
Agricultural loans	4.21	8.93 (71.79)***	−1.65 (−10.77)***	−7.98 (−34.13)***	13.44
Other loans	3.76	1.11 (13.40)***	−0.21 (−2.02)**	5.07 (32.65)***	8.59
Total loans	58.89	52.83 (218.58)***	2.37 (7.96)***	10.11 (22.25)***	6.48
Reserves	0.89	0.97 (132.21)***	0.07 (8.00)***	−0.18 (−12.82)***	1.13
Goodwill and intangibles	0.25	−0.09 (−10.43)***	−0.04 (−3.16)***	0.66 (38.60)***	11.41
Other assets	3.88	3.30 (94.78)***	−0.07 (−1.59)	1.12 (17.16)***	2.45
Total deposits	84.42	87.56 (738.85)***	−1.41 (−9.66)***	−5.16 (−23.15)***	7.43
Long-term borrowings	2.67	−0.11 (−1.33)	0.95 (9.72)***	4.71 (31.51)***	11.60
Other liabilities	2.52	0.13 (1.92)*	0.08 (0.89)	4.42 (33.57)***	9.79
Total liabilities	89.61	87.59 (1569.79)***	−0.38 (−5.55)***	3.97 (37.80)***	10.45
Preferred stock	0.06	0.04 (5.63)***	−0.04 (−4.14)***	0.06 (4.82)***	0.17
Common stock	3.88	5.39 (101.93)***	1.85 (28.28)***	−3.77 (−37.95)***	9.66
Retained earnings	6.42	7.07 (96.45)***	−1.33 (−14.68)***	−0.53 (−3.85)***	2.62
Other comprehensive income	0.04	−0.01 (−1.86)*	0.00 (0.06)	0.11 (8.09)***	0.60

The sample consists of 1,671 privately owned and 602 publicly traded U.S. commercial banks during 1992 to 2002. The sample contains 10,463 private bank-year observations and 3,979 public bank-year observations, for a total of 14,442 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 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

* Denotes $p < 0.10$; ** denotes $p < 0.05$; *** denotes $p < 0.01$; all two-tailed

4.1 Tests and results—the effects of ownership structure on financial reporting

4.1.1 Tests and results—earnings changes

For our first test of the effects of ownership structure on accounting, we adopt and extend Ball and Shivakumar (2005), a study that examines timely loss recognition

Table 4 Probit results from estimation of first-stage selection model

$$\begin{aligned}\text{Dpub}_t = {} & \delta_0 + \delta_1\text{Cash}_t + \delta_2\text{Securities}_t + \delta_3\text{FamilyLns}_t + \delta_4\text{ConsumerLns}_t + \delta_5\text{ComRELns}_t \\ & + \delta_6\text{ComLns}_t + \delta_7\text{AgLns}_t + \delta_8\text{OtherLns}_t + \delta_9\text{Reserves}_t + \delta_{10}\text{GWOI}_t + \delta_{11}\text{Deposits}_t \\ & + \delta_{12}\text{OtherDebt}_t + \delta_{13}\text{PrefEquity}_t + \delta_{14}\text{ContCap}_t + \delta_{15}\text{RetEarn}_t + \delta_{16}\text{OCI}_t + \delta_{17}\text{IRgrow}_t \\ & + \delta_{18}\text{Size}_t + \delta_{19}\text{Size}_t^2 + \varepsilon_t\end{aligned}$$

Variable[a]	Coefficient estimate	Chi-square statistic
Intercept	−3.969	28.37
Cash_t	−0.697	0.83
Securities_t	0.545	0.59
FamilyLns_t	2.321	10.47
ConsumerLns_t	0.746	1.02
ComRELns_t	0.904	1.55
ComLns_t	0.786	1.13
AgLns_t	−6.953	63.45
OtherLns_t	−0.664	0.70
Reserves_t	17.124	17.99
GWOI_t	−9.311	13.14
Deposits_t	−0.257	0.74
OtherDebt_t	1.164	7.26
PrefEquity_t	−17.696	17.73
ContCap_t	11.362	268.76
RetEarn_t	0.592	1.01
OCI_t	1.070	0.10
IRgrow_t	0.260	7.93
Size_t	0.029	77.99
Size_t^2	0.000	4.59
Pseudo *R*-square	49.81	

The sample consists of 1,671 privately owned and 602 publicly traded U.S. commercial banks during 1992 to 2002. The sample contains 10,463 private bank-year observations and 3,979 public bank-year observations, for a total of 14,442 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 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

[a] Variable 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; OtherLns, 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; OtherDebt, 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*; IRgrow, Interest revenue in year *t* divided by interest revenue in year $t - 1$

by analyzing the differential persistence of earnings decreases across (nonfinancial) public and private firms in the United Kingdom. Their approach is appropriate for our setting because the timely recognition of losses is a key dimension of financial reporting within the banking industry 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:

$$\begin{aligned}\triangle \mathrm{NI}_t = {} & \alpha_0 + \alpha_1 \mathrm{D}\triangle \mathrm{NI}_{t-1} + \alpha_2 \triangle \mathrm{NI}_{t-1} + \alpha_3 \triangle \mathrm{NI}_{t-1} * \mathrm{D}\triangle \mathrm{NI}_{t-1} + \alpha_4 \mathrm{Dpub} \\ & + \alpha_5 \mathrm{Dpub} * \mathrm{D}\triangle \mathrm{NI}_{t-1} + \alpha_6 \mathrm{Dpub} * \triangle \mathrm{NI}_{t-1} + \alpha_7 \mathrm{Dpub} * \triangle \mathrm{NI}_{t-1} * \mathrm{D}\triangle \mathrm{NI}_{t-1} \\ & + \alpha_8 \mathrm{Size}_t + \alpha_9 \mathrm{Size} * \mathrm{D}\triangle \mathrm{NI}_{t-1} + \alpha_{10} \mathrm{Size}_t * \triangle \mathrm{NI}_{t-1} + \alpha_{11} \mathrm{Size}_t * \triangle \mathrm{NI}_{t-1} \\ & * \mathrm{D}\triangle \mathrm{NI}_{t-1} + \alpha_{12} \mathrm{Lambda}_t + \alpha_{13} \mathrm{Dpub} * \mathrm{Lambda}_t + \varepsilon_t \end{aligned} \quad (3)$$

where $\Delta \mathrm{NI}_t$ denotes the change in net income from year $t-1$ to t, scaled by total assets at the end of $t-1$; and $\mathrm{D}\Delta \mathrm{NI}_{t-1}$ denotes an indicator variable that equals 1 if $\Delta \mathrm{NI}_{t-1}$ is negative and 0 otherwise. In essence, model (3) is an autoregression of earnings changes (that is, a regression of the current period change in earnings ($\Delta \mathrm{NI}_t$) on the prior period change ($\Delta \mathrm{NI}_{t-1}$)), augmented with dummy variables for public/private ownership (Dpub) and the sign of the prior period earnings change ($\mathrm{D}\Delta \mathrm{NI}_{t-1}$), control variables for size and endogeneity, and interactions among these variables.

Under U.S. GAAP, we expect some degree of conservatism in income measurement for all sample banks, public or private. Under conditional conservatism, we expect asymmetric timeliness of recognition of economic gains and losses in accounting earnings. 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 (for example, bad news is timelier and mean-reverts more quickly than good news). Consequently, we predict a negative coefficient (α_3) on the interaction of $\Delta \mathrm{NI}_{t-1}$ and $\mathrm{D}\Delta \mathrm{NI}_{t-1}$ for private banks. Comparing conditional conservatism across public and private banks, our main predictions are that, relative to private banks, public banks exhibit *less* timely recognition of earnings increases but *more* timely recognition of earnings declines. Thus, we predict that public banks exhibit *more* persistence when earnings increase and *less* persistence when earnings decline than private banks. Specifically, we predict the coefficient (α_6) on Dpub * $\Delta \mathrm{NI}_{t-1}$ will be positive and the coefficient (α_7) on Dpub * $\Delta \mathrm{NI}_{t-1}$ * $\mathrm{D}\Delta \mathrm{NI}_{t-1}$ will be negative.

We report the results in Table 5. 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 conditional conservatism for our sample of private banks. Comparing public banks to private banks, we find

Table 5 Analysis of current earnings changes

$$\Delta NI_t = \alpha_0 + \alpha_1 D\Delta NI_{t-1} = \alpha_2 \Delta NI_{t-1} + \alpha_3 \Delta NI_{t-1} * D\Delta NI_{t-1} + \alpha_4 Dpub + \alpha_5 Dpub * D\Delta NI_{t-1} + \alpha_6 Dpub * \Delta NI_{t-1} + \alpha_7 Dpub * \Delta NI_{t-1} * D\Delta NI_{t-1} + \alpha_8 Size_t + \alpha_9 Size * D\Delta NI_{t-1} + \alpha_{10} Size_t * D\Delta NI_{t-1} + \alpha_{11} Size_t * \Delta NI_{t-1} D\Delta NI_{t-1} + \alpha_{12} Lambda_t + \alpha_{13} Dpub * Lambda_t + \varepsilon_t$$

Variable[a]	Coefficient	Predicted sign	Coefficient estimate	*t*-Statistic*
INTERCEPT	α_0	?	0.000	0.18
$D\Delta NI_{t-1}$	α_1	?	0.000	−0.63
ΔNI_{t-1}	α_2	+	0.092	4.58***
ΔNI_{t-1} * $D\Delta NI_{t-1}$	α_3	−	−0.558	−14.27***
$DPub_t$	α_4	?	0.001	2.96***
$DPub_t$ * $D\Delta NI_{t-1}$	α_5	?	0.000	−0.92
$DPub_t$ * ΔNI_{t-1}	α_6	+	0.144	5.17***
$DPub_t$ * ΔNI_{t-1} * $D\Delta NI_{t-1}$	α_7	−	−0.233	−3.68***
$SIZE_t$	α_8	?	0.001	3.52***
$SIZE_t$ * $D\Delta NI_{t-1}$	α_9	?	0.000	0.48
$SIZE_t$ * ΔNI_{t-1}	α_{10}	?	−0.072	−1.73*
$SIZE_t$ * $D\Delta NI_{t-1}$ * ΔNI_{t-1}	α_{11}	?	0.281	3.19***
$LAMBDA_t$	α_{12}	?	−0.001	−5.14***
$Dpub_t$ * $LAMBDA_t$	α_{13}	?	0.000	2.53**
Adjusted *R*-square			5.080	

The sample consists of 1,671 privately owned and 602 publicly traded U.S. commercial banks during 1992 to 2002. The sample contains 10,463 private bank-year observations and 3,979 public bank-year observations, for a total of 14,442 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 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

* Denotes $p < 0.10$; ** denotes $p < 0.05$; *** denotes $p < 0.01$

[a] Variable definitions: 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

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 conditional conservatism for public banks than for private banks. As in Ball and Shivakumar (2005), the control variables for endogeneity bias are significant in this regression.

4.1.2 Tests and results—changes in loan loss provisions and other earnings components

In the previous section, we demonstrated that the differential persistence of good and bad earnings news is greater for public banks than for private banks. The

income statement aggregates many line items in arriving at net income as a measure of firm performance. In this section we trace differences in the asymmetric timeliness of news reflected in earnings changes for public and private banks to conservatism in earnings components. Specifically, we decompose the change in net income into two parts: (1) the change in earnings before loan loss provisions and (2) the change in loan loss provisions. Our primary focus in this analysis is on the persistence of the change in loan loss provisions. Conservatism operates through accruals, and loan loss provisions are large, relatively discretionary accruals for banks. If public banks employ more conditional conservatism in accounting for credit losses than private banks, good (bad) news about credit losses should have higher (lower) persistence for public banks than for private banks.

To test this prediction, we estimate the following piece-wise linear regression:

$$\begin{aligned}\Delta \mathrm{NI}_t = {} & \alpha_0 + \alpha_1 \mathrm{D}\Delta \mathrm{NI}_{t-1} + \alpha_2 \Delta \mathrm{PRE}_{t-1} + \alpha_3 \Delta \mathrm{LLP}_{t-1} + \alpha_4 \Delta \mathrm{PRE}_{t-1} * \mathrm{D}\Delta \mathrm{PRE}_{t-1} \\ & + \alpha_5 \Delta \mathrm{LLP}_{t-1} * \mathrm{D}\Delta \mathrm{LLP}_{t-1} + \alpha_6 \mathrm{DPub} + \alpha_7 \mathrm{DPub} * \mathrm{D}\Delta \mathrm{NI}_{t-1} + \alpha_8 \mathrm{DPub} \\ & * \Delta \mathrm{PRE}_{t-1} + \alpha_9 \mathrm{DPub} * \Delta \mathrm{LLP}_{t-1} + \alpha_{10} \mathrm{DPub} * \Delta \mathrm{PRE}_{t-1} * \mathrm{D}\Delta \mathrm{PRE}_{t-1} \\ & + \alpha_{11} \mathrm{DPub} * \Delta \mathrm{LLP}_{t-1} * \mathrm{D}\Delta \mathrm{LLP}_{t-1} + \alpha_{12} \mathrm{SIZE}_t + \alpha_{13} \mathrm{SIZE}_t * \mathrm{D}\Delta \mathrm{NI}_{t-1} \\ & + \alpha_{14} \mathrm{SIZE}_t * \Delta \mathrm{PRE}_{t-1} + \alpha_{15} \mathrm{SIZE}_t * \Delta \mathrm{LLP}_{t-1} + \alpha_{16} \mathrm{SIZE}_t * \Delta \mathrm{PRE}_{t-1} \\ & * \mathrm{D}\Delta \mathrm{PRE}_{t-1} + \alpha_{17} \mathrm{SIZE}_t * \Delta \mathrm{LLP}_{t-1} * \mathrm{D}\Delta \mathrm{LLP}_{t-1} + \alpha_{18} \mathrm{LAMBDA}_t \\ & + \alpha_{19} \mathrm{DPub} * \mathrm{LAMBDA}_t + \varepsilon_t \end{aligned} \tag{4}$$

where we define all variables as in Eq. 3, but we introduce $\Delta \mathrm{PRE}_t$ to denote the change in earnings before the loan loss provision, divided by total assets at the end of year $t - 1$ and $\Delta \mathrm{LLP}_t$ to denote the change in loan loss provision divided by total assets at the end of year $t - 1$. In this analysis, we define LLP as a negative amount. Therefore, an increase (decrease) in LLP from period $t - 1$ to period t reflects good (bad) news about credit losses for the loan portfolio in the current year. We adopt this convention to promote comparability between the results for ΔLLP and those for ΔPRE and ΔNI. For all three of these variables, a positive (negative) change denotes an increase (decrease) in earnings. Positive changes should be more persistent than negative changes under conditional conservatism for all of these variables. We therefore expect α_2 and α_3 to be positive, and α_4 and α_5 to be negative, reflecting conditional conservatism of private banks. We also predict that public banks should exhibit more conditional conservatism than private banks. We therefore predict that positive earnings changes will be incrementally persistent for public banks so α_8 and α_9 will be positive and negative earnings changes will mean revert quickly and be less persistent so α_{10} and α_{11} will be negative.

We report results in Table 6. For private banks, we find that increases in earnings before loan loss provisions are not persistent while increases in loan loss provisions are persistent ($\alpha_2 = 0$, $\alpha_3 > 0$). Decreases in both of these earnings components are strongly associated with earnings reversals in the following period ($\alpha_4 < 0$, $\alpha_5 < 0$). This asymmetric persistence in good news and bad news is consistent with some degree of conditional conservatism for our sample of private banks. Comparing public and private banks, we find public banks have more persistent increases in earnings before loan loss provisions ($\alpha_8 > 0$) but no differences in reversals

Table 6 Analysis of current earnings changes and lagged earnings components

$$\Delta NI_t = \alpha_0 + \alpha_1 D\Delta NI_{t-1} + \alpha_2 \Delta PRE_{t-1} + \alpha_3 \Delta LLP_{t-1} + \alpha_4 \Delta PRE_{t-1} * D\Delta PRE_{t-1} + \alpha_5 \Delta LLP_{t-1} * D\Delta LLP_{t-1} + \alpha_6 DPub + \alpha_7 DPub * D\Delta NI_{t-1} + \alpha_8 DPub * \Delta PRE_{t-1} + \alpha_9 DPub * \Delta LLP_{t-1} + \alpha_{10} DPub * \Delta PRE_{t-1} * D\Delta PRE_{t-1} + \alpha_{11} DPub * \Delta LLP_{t-1} * D\Delta LLP_{t-1} + \alpha_{12} SIZE_t + \alpha_{13} SIZE_t * D\Delta NI_{t-1} + \alpha_{14} SIZE_t * \Delta PRE_{t-1} + \alpha_{15} SIZE_t * \Delta LLP_{t-1} + \alpha_{16} SIZE_t * \Delta PRE_{t-1} * D\Delta PRE_{t-1} + \alpha_{17} SIZE_t * \Delta LLP_{t-1} * D\Delta LLP_{t-1} + \alpha_{18} LAMBDA_t + \alpha_{19} DPub * LAMBDA_t + \varepsilon_t$$

Variable[a]	Coefficient	Predicted sign	Coefficient estimate	*t*-Statistic*
INTERCEPT	α_0	?	0.000	−0.16
$D\Delta NI_{t-1}$	α_1	?	0.000	0.73
ΔPRE_{t-1}	α_2	+	0.015	0.66
ΔLLP_{t-1}	α_3	+	0.100	2.29**
$\Delta PRE_{t-1} * D\Delta PRE_{t-1}$	α_4	–	−0.163	−4.19***
$\Delta LLP_{t-1} * D\Delta LLP_{t-1}$	α_5	–	−0.323	−4.79***
$DPub_t$	α_6	?	0.001	2.74***
$DPub_t * D\Delta NI_{t-1}$	α_7	?	0.000	−0.50
$DPub_t * \Delta PRE_{t-1}$	α_8	+	0.118	3.85***
$DPub_t * \Delta LLP_{t-1}$	α_9	+	0.016	0.23
$DPub_t * \Delta PRE_{t-1} * D\Delta PRE_{t-1}$	α_{10}	–	−0.063	−1.06
$DPub_t * \Delta LLP_{t-1} * D\Delta LLP_{t-1}$	α_{11}	–	−0.265	−2.58***
$SIZE_t$	α_{12}	?	0.001	3.92***
$SIZE_t * D\Delta NI_{t-1}$	α_{13}	?	0.000	−0.08
$SIZE_t * \Delta PRE_{t-1}$	α_{14}	?	0.008	0.17
$SIZE_t * \Delta PRE_{t-1} * \Delta PRE_{t-1}$	α_{15}	?	−0.017	−0.21
$SIZE_t * \Delta LLP_{t-1}$	α_{16}	?	−0.232	−2.45**
$SIZE_t * \Delta LLP_{t-1} * D\Delta LLP_{t-1}$	α_{17}	?	0.550	3.84***
$LAMBDA_t$	α_{18}	?	−0.001	−5.46***
$Dpub_t * LAMBDA_t$	α_{19}	?	0.001	2.63***
Adjusted *R*-square			5.340	

The sample consists of 1,671 privately owned and 602 publicly traded U.S. commercial banks during 1992 to 2002. The sample contains 10,463 private bank-year observations and 3,979 public bank-year observations, for a total of 14,442 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 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

* Denotes $p < 0.10$; ** denotes $p < 0.05$; *** denotes $p < 0.01$

[a] Variable definitions: 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 if ΔNI_{t-1} is negative; 0 otherwise; $\Delta PREI_{t-1}$, Change in net income before LLP from year $t-2$ to year $t-1$, scaled by total assets at the end of $t-2$; ΔLLP_{t-1}, Change in loan loss provision year $t-2$ to year $t-1$, scaled by total assets at the end of $t-2$; $D\Delta PRE_{t-1}$, 1 if ΔPRE_{t-1} is negative; 0 otherwise; $D\Delta LLP_{t-1}$, 1 if ΔLLP_{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

following declines in pre-LLP earnings ($\alpha_{10} = 0$). In contrast, we find that public banks do not have more persistent increases in loan loss provisions ($\alpha_9 = 0$), but they do have larger earnings reversals following declines in loan loss provisions ($\alpha_{11} < 0$).

Overall, we find greater conditional conservatism for public than private banks. Public banks have more persistent earnings increases and more transitory earnings decreases. However, decomposing earnings changes into components reveals that this differential persistence stems from different sources. The greater persistence in earnings increases for public banks compared with private banks stems from greater persistence in pre-LLP earnings increases, not from greater persistence in increases in loan loss provisions. On the other hand, the lower persistence of earnings declines for public banks arises from the transitory nature of decreases in loan loss provisions, not from differences in the persistence of declines in pre-LLP earnings. Previously, we argued that information asymmetry between managers and owners regarding credit losses is acute and more pronounced for public banks than private banks. These results highlight the importance of loan loss provisions in incorporating conservatism in public banks' accounting as a response to agency costs.

4.1.3 Tests and results—loan loss provisions

In the previous section, we modeled the innovation in loan losses as the year-over-year change in loan loss provisions. In this section, we refine the analysis by examining the relation between loan loss provisions and changes in nonperforming loans. As discussed earlier, changes in nonperforming loans represent exogenous and 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 lagged loan loss allowance, and net chargeoffs.[20]

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

$$\begin{aligned}\mathrm{LLP}_t = {} & \beta_0 + \beta_1 \Delta\mathrm{NPL}_{t-1} + \beta_2 \Delta\mathrm{NPL}_t + \beta_3 \Delta\mathrm{NPL}_{t+1} + \beta_4 \mathrm{NCO}_t + \beta_5 \mathrm{NCO}_{t+1} \\ & + \beta_6 \mathrm{Dpub} + \beta_7 \mathrm{Dpub} * \Delta\mathrm{NPL}_{t-1} + \beta_8 \mathrm{Dpub} * \Delta\mathrm{NPL}_t + \beta_9 \mathrm{Dpub} * \Delta\mathrm{NPL}_{t+1} \\ & + \beta_{10} \mathrm{Dpub} * \mathrm{NCO}_t + \beta_{11} \mathrm{Dpub} * \mathrm{NCO}_{t+1} + \beta_{12} \mathrm{LLA}_{t-1} + \beta_{13} \mathrm{HOMP}_{t-1} \\ & + \beta_{14} \mathrm{CAPRAT}_t + \beta_{15} \mathrm{LNGRO}_t + \beta_{16} \mathrm{Size}_t + \beta_{17} \mathrm{Size}_t * \Delta\mathrm{NPL}_{t-1} \\ & + \beta_{18} \mathrm{Size}_t * \Delta\mathrm{NPL}_t + \beta_{19} \mathrm{Size}_t * \Delta\mathrm{NPL}_{t+1} + \beta_{20} \mathrm{Size}_t * \mathrm{NCO}_t \\ & + \beta_{21} \mathrm{Size}_t * \mathrm{NCO}_{t+1} + \beta_{22} \mathrm{Lambda} + \beta_{23} \mathrm{Dpub} * \mathrm{Lambda} + \varepsilon_t \end{aligned} \quad (5)$$

[20] In untabulated results, we find that public and private banks have statistically indistinguishable proportions of loan portfolios in nonperforming status after controlling for size, loan portfolio composition, and endogeneity in the public/private decision. This suggests public banks do not take more loan portfolio risk than private banks, all else equal. Consequently, differences in credit risk are unlikely to explain our results.

where LLP_t denotes the loan loss provision for year t divided by loans for year $t-1$; ΔNPL_t denotes nonperforming loans to total loans for year t minus nonperforming loans to total loans for year $t-1$; NCO_t denotes net loan charge-offs for year t divided by loans for year $t-1$; LLA_{t-1} denotes the loan loss allowance at the end of year $t-1$ divided by loans at the end of year $t-1$; $HOMP_{t-1}$ denotes homogeneous loans (family loans plus consumer loans) as a percentage of the total loan portfolio at the end of year $t-1$; $CAPRAT_t$ denotes Tier 1 risk-based capital ratio for year t, and $LNGRO_t$ denotes total loans in year t divided by total loans in year $t-1$.

This loan loss provision 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 in the future (ΔNPL_{t+1}). Loan loss provisions also relate to loan chargeoffs (that is, loss realizations) during the current year (NCO_t) and future years (NCO_{t+1}). We therefore expect positive coefficients on these five variables. Because these variables do not include the public bank dummy variable, their 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 * ΔNPL_{t-1}, Dpub * ΔNPL_t and Dpub * ΔNPL_{t+1}, respectively, will be positive, indicating that public banks recognize larger 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} (that is, 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 LLA_{t-1}, $HOMP_{t-1}$, $CAPRAT_t$, and $LNGRO_t$ to control for differences in expected loan loss provisions across banks. We expect banks with high LLA_{t-1} to have lower loan loss provisions in the current period if banks that are over-reserved recognize lower provisions in the next period (Ryan 2007; Liu and Ryan 2006). We expect banks with higher $HOMP_{t-1}$ to have lower provisions in the current period because banks recognize provisions for these types of loans in the year of inception using statistical methods to estimate future loan losses, resulting in lower provisions later in the lives of these loans (Liu and Ryan 2006). We expect a positive relation between loan loss provisions and $CAPRAT_t$ if banks that take greater credit risk in the loan portfolio maintain higher capitalization levels to

[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 (for example, untimely loss recognition, which is inconsistent with conservatism). 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 $t-1$.

Table 7 Analysis of current loan loss provisions

$$\begin{aligned}LLP_t = {} & \beta_0 + \beta_1 \Delta NPL_{t-1} + \beta_2 \Delta NPL_t + \beta_3 \Delta NPL_{t+1} + \beta_4 NCO_t + \beta_5 NCO_{t+1} + \beta_6 Dpub \\ & + \beta_7 Dpub * \Delta NPL_{t-1} + \beta_8 Dpub * \Delta NPL_t + \beta_9 Dpub * \Delta NPL_{t+1} + \beta_{10} Dpub * NCO_t \\ & + \beta_{11} Dpub * NCO_{t+1} + \beta_{12} LLA_{t-1} + \beta_{13} HOMP_{t-1} + \beta_{14} CAPRAT_t + \beta_{15} LNGRO_t \\ & + \beta_{16} Size_t + \beta_{17} Size_t * \Delta NPL_{t-1} + \beta_{18} Size_t * \Delta NPL_t + \beta_{19} Size_t * \Delta NPL_{t+1} \\ & + \beta_{20} Size_t * NCO_t + \beta_{21} Size_t * NCO_{t+1} + \beta_{22} Lambda + \beta_{23} Dpub * Lambda + \varepsilon_t\end{aligned}$$

Variable[a]	Coefficient	Predicted sign	Coefficient estimate	*t*-Statistic*
INTERCEPT	β_0	?	−0.002	−6.55***
ΔNPL_{t-1}	β_1	+	0.012	3.27***
ΔNPL_t	β_2	+	0.045	11.29***
ΔNPL_{t+1}	β_3	+	0.022	5.88***
NCO_t	β_4	+	0.836	95.92***
NCO_{t+1}	β_5	+	0.098	12.57***
$DPub_t$	β_6	?	0.001	4.03***
$DPub_t$ * ΔNPL_{t-1}	β_7	+	0.008	1.23
$DPub_t$ * ΔNPL_t	β_8	+	0.027	3.56***
$DPub_t$ * ΔNPL_{t+1}	β_9	+	0.007	0.86
$DPub_t$ * NCO_t	β_{10}	+	−0.018	−0.93
$DPub_t$ * NCO_{t+1}	β_{11}	+	0.012	0.63
LLA_{t-1}	β_{12}	–	−0.054	−15.94***
$HOMP_{t-1}$	β_{13}	–	−0.001	−9.64***
$CAPRAT_t$	β_{14}	+	0.000	4.33***
$LNGRO_t$	β_{15}	+	0.004	22.22***
$SIZE_t$	β_{16}	?	−0.001	−4.31***
$SIZE_t$ * ΔNPL_{t-1}	β_{17}	?	−0.013	−2.05**
$SIZE_t$ * ΔNPL_t	β_{18}	?	−0.031	−3.66***
$SIZE_t$ * ΔNPL_{t+1}	β_{19}	?	−0.034	−4.13***
$SIZE_t$ * NCO_t	β_{20}	?	−0.047	−2.07**
$SIZE_t$ * NCO_{t+1}	β_{21}	?	0.079	3.67***
$LAMBDA_t$	β_{22}	?	−0.001	−4.88***
$Dpub_t$ * $LAMBDA_t$	β_{23}	?	0.001	3.18***
Adjusted *R*-square			71.310	

The sample consists of 1,671 privately owned and 602 publicly traded U.S. commercial banks during 1992 to 2002. The sample contains 10,463 private bank-year observations and 3,979 public bank-year observations, for a total of 14,442 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 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

* Denotes $p < 0.10$; ** denotes $p < 0.05$; *** denotes $p < 0.01$

[a] Variable definitions: LLP_t, Loan loss provision for year t scaled by total loans as of the end of year $t - 1$; ΔNPL_t, Nonperforming loans to total loans for year t minus nonperforming loans to total loans for year $t - 1$; NCO_t, Net loan charge-offs for year t scaled by total loans as of the end of year $t - 1$; LLA_{t-1}, Loan loss allowance for year $t - 1$ scaled by total loans as of the end of year $t - 1$; $HOMP_{t-1}$, Homogeneous loans (family loans plus consumer loans) as a percentage of total loans for year $t - 1$; $CAPRAT_t$, Tier 1 risk based capital ratio for period t; $LNGRO_t$, Total loans for year t divided by total loans for year $t - 1$; 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

absorb potential loan losses.[22] Finally, the coefficient on LNGRO_t will be positive because loan loss provisions are likely increasing with growth in the loan portfolio (Kanagaretnam et al. 2003).

We report the results in Table 7. We find that coefficients β_1, β_2, and β_3 on ΔNPL_{t-1}, ΔNPL_t and ΔNPL_{t+1}, respectively, are all positive. These results indicate 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, coefficient β_8 on Dpub * ΔNPL_t is positive. The positive association between loan loss provisions and current changes in nonperforming loans for public banks indicates they recognize *larger* and *timelier* loan loss provisions than private banks. These results demonstrate that public banks exhibit more conservative loan loss accounting than private banks. The coefficients on the controls for endogeneity indicate that these controls are necessary.

The relations between loan loss provisions and contemporaneous and future net loan chargeoffs for public banks versus private banks are not significant. The proper interpretation of this relation is in question because public banks could be more conservative than private banks with respect to recognition of loan loss provisions and chargeoffs, with ambiguous effects on the association between the two. We examine direct tests of conservatism in loan chargeoffs in subsequent tests. Overall, the results reported in Table 7 suggest that public and private banks are conservative, but the loan loss provisions of public banks are more strongly related to contemporaneous changes in nonperforming loans, consistent with greater and timelier recognition of loan losses for public banks than for private banks.[23]

4.1.4 Tests and results—loan loss allowances

In the last section, our results show that public banks exhibit more conditional conservatism in recognizing loan loss provisions than private banks. We now turn to the balance sheet and predict that public banks will recognize more conservative (larger) loan loss allowances (as a percentage of the total loan portfolio) than private banks. We test this prediction by estimating the following model of loan loss allowances:

$$\begin{aligned}\text{LLA}_t = {} & \beta_0 + \beta_1 \text{DPub}_t + \beta_2 \text{SIZE}_t + \beta_3 \text{HOMP}_t + \beta_4 \text{CAPRAT}_t + \beta_5 \text{LNGRO}_t \\ & + \beta_6 \text{NPL}_t + \beta_7 \text{LAMBDA}_t + \beta_8 \text{DPub}_t * \text{LAMBDA}_t + \varepsilon_t \end{aligned} \quad (6)$$

where LLA_t denotes the loan loss allowance for year t divided by loans for year t and we define the other variables as in Eq. 5.

[22] Also, loan loss provisions increase loan loss allowances, which increase Tier 2 regulatory capital ratios (Collins et al. 1995; Beatty et al. 1995; Ahmed et al. 1999; Kanagaretnam et al. 2003).

[23] In untabulated tests, we allow the coefficient on the change in nonperforming loans to vary with the sign of the change. Compared with private banks, we find that loan loss provisions for public banks more strongly relate to changes in nonperforming loans only for bad news about credit losses (that is, increases in nonperforming loans), consistent with greater conditional conservatism.

Table 8 Analysis of loan loss allowances

$$LLA_t = \beta_0 + \beta_1 DPub_t + \beta_2 SIZE_t + \beta_3 HOMP_t + \beta_4 CAPRAT_t + \beta_5 LNGRO_t + \beta_6 NPL_t + \beta_7 LAMBDA_t + \beta_8 DPub_t * LAMBDA_t + \varepsilon_t$$

Variable[a]	Coefficient	Predicted sign	Coefficient estimate	*t*-Statistic*
INTERCEPT	β_0	?	0.020	36.23***
$DPub_t$	β_1	+	0.006	15.66***
$SIZE_t$	β_2	?	−0.006	−15.35***
$HOMP_t$	β_3	?	−0.008	−23.55***
$CAPRAT_t$	β_4	+	0.000	51.74***
$LNGRO_t$	β_5	?	−0.005	−12.97***
NPL_t	β_6	+	0.140	36.89***
$LAMBDA_t$	β_7	?	−0.003	−9.95***
$DPub_t$ * $LAMBDA_t$	B_8	?	0.000	−1.29
Adjusted *R*-square			31.26	

The sample consists of 1,671 privately owned and 602 publicly traded U.S. commercial banks during 1992 to 2002. The sample contains 10,463 private bank-year observations and 3,979 public bank-year observations, for a total of 14,442 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 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

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

[a] Variable definitions: LLA_t, Loan loss allowance for year t scaled by total loans as of the end of year t; $HOMP_t$, Homogeneous loans (family loans plus consumer loans) as a percentage of total loans for year t; $CAPRAT_t$, Tier 1 risk based capital ratio for period t; $LNGRO_t$, Total loans for year t divided by total loans for year $t - 1$; NPL_t, Nonperforming loans at the end of year t divided by total loans at the end of year t; 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

We predict that public banks will recognize relatively larger loan loss allowances than private banks, so we expect a positive coefficient on DPub. As in Eq. 5, we include $HOMP_t$, $CAPRAT_t$, $LNGRO_t$ and NPL_t to control for the effects of differences in types of loans, regulatory capital, loan growth, and credit risk on expected loan loss allowances across banks.

We report the results in Table 8. We find the coefficient on DPub is positive and significant. This indicates that public banks recognize proportionately larger loan loss allowances (scaled by total loans) than private banks, after controlling for types of loans, credit risk, loan growth, and the determinants of ownership structure choice. This suggests that the incremental conditional conservatism that public banks exhibit in reported earnings flows through to the balance sheet.[24]

[24] Ryan (2007, p. 118) notes that overstated loan loss allowances should not be argued to be acceptable or beneficial applications of conservatism because they yield misleading financial reporting and provide banks with considerable ability to smooth or manage upward future reported income.

4.1.5 Tests and results—loan chargeoffs and recoveries

In this section we examine the relation between equity ownership structure and loan chargeoffs and recoveries. We predict that public banks exhibit more conditional conservatism in writing off bad loans than private banks. In addition, public bank managers may be more concerned with the size of the loan loss allowance (preferring to avoid appearing over-reserved and receiving negative scrutiny from regulators and analysts; Liu and Ryan 2006), so we expect public banks charge off loans more quickly than private banks to avoid the appearance of an overly large loan loss allowance. Thus, in addition to recognizing expected loan losses more conservatively, we also predict that public banks exercise more conservative accounting by recognizing larger and timelier loan chargeoffs when they realize loan losses than private banks.

We test this prediction by estimating the following model of loan chargeoffs:

$$\begin{aligned} \mathrm{LCO}_t = {} & \beta_0 + \beta_1 \mathrm{DPub}_t + \beta_2 \mathrm{SIZE}_t + \beta_3 \mathrm{HOMP}_t + \beta_4 \mathrm{CAPRAT}_t \\ & + \beta_5 \mathrm{LNGRO}_t + \beta_6 \Delta\mathrm{NPL}_{t-1} + \beta_7 \mathrm{DPub}_t * \Delta\mathrm{NPL}_{t-1} + \beta_8 \Delta\mathrm{NPL}_t \\ & + \beta_9 \mathrm{DPub}_t * \Delta\mathrm{NPL}_t + \beta_{10} \mathrm{LAMBDA}_t + \beta_{11} \mathrm{DPub}_t * \mathrm{LAMBDA}_t + \varepsilon_t \end{aligned} \tag{7}$$

where LCO_t denotes the loan chargeoffs for year t divided by total loans as of the end of year $t-1$, and we define the other variables as in Eq. 5.

This model includes two variables that reflect the timing of realized loan losses during the life of a loan. Loan chargeoffs in year t likely reflect realizations of managers' expectations of loan losses that became delinquent during the previous year ($\Delta\mathrm{NPL}_{t-1}$) or the current year ($\Delta\mathrm{NPL}_t$). We expect a positive coefficient on $\Delta\mathrm{NPL}_{t-1}$ because changes in nonperforming loans disclose changes in loan portfolio credit quality and serve as leading indicators of loan chargeoffs. We do not have a directional prediction for the relation between LCO_t and $\Delta\mathrm{NPL}_t$, however. This relation is ambiguous because, even though $\Delta\mathrm{NPL}_t$ serves as a leading indicator that should be positively related to future LCOs, the contemporaneous association between $\Delta\mathrm{NPL}_t$ and LCO_t should be negative (when a bank charges off an uncollectible loan it also removes it from nonperforming status, so current period LCOs trigger negative ΔNPLs). Because we do not interact these variables with Dpub, their coefficients capture the associations between loan chargeoffs and these variables for private banks.

To compare LCO timeliness across public and private banks, we interact $\Delta\mathrm{NPL}_{t-1}$ and $\Delta\mathrm{NPL}_t$ with Dpub. Our primary prediction for this analysis is that the coefficient β_7 on Dpub * $\Delta\mathrm{NPL}_{t-1}$ will be positive, indicating that public banks recognize larger and more timely loan chargeoffs relative to changes in nonperforming loans than private banks, controlling for size, types of loans in the loan portfolio, regulatory capital, loan growth, and potential endogeneity. We do not have a directional prediction for the coefficient β_9 on Dpub * $\Delta\mathrm{NPL}_t$ because of the potential ambiguity in this relation as described above.

We report the results in Table 9, Panel A. As predicted, we find a positive coefficient on $\Delta\mathrm{NPL}_{t-1}$ indicating that private banks recognize loan chargeoffs relative to changes in prior period nonperforming loans, exhibiting some degree of

Table 9 Analysis of loan chargeoffs and recoveries

Variable[a]	Coefficient	Predicted sign	Coefficient estimate	*t*-Statistic*
Panel A. Loan chargeoffs				
$LCO_t = \beta_0 + \beta_1 DPub_t + \beta_2 SIZE_t + \beta_3 HOMP_t + \beta_4 CAPRAT_t + \beta_5 LNGRO_t + \beta_6 \Delta NPL_{t-1} + \beta_7 DPub_t * \Delta NPL_{t-1} + \beta_8 \Delta NPL_t + \beta_9 DPub_t * \Delta NPL_t + \beta_{10} LAMBDA_t + \beta_{11} DPub_t * LAMBDA_t + \varepsilon_t$				
INTERCEPT	β_0	?	0.012	26.17***
$DPub_t$	β_1	+	0.001	2.01**
$SIZE_t$	β_2	?	−0.004	−10.39***
$HOMP_t$	β_3	?	0.000	−1.05
$CAPRAT_t$	β_4	?	0.000	1.48
$LNGRO_t$	β_5	?	−0.005	−12.87***
ΔNPL_{t-1}	β_6	+	0.027	6.64***
$DPub * \Delta NPL_{t-1}$	β_7	+	0.042	3.21***
ΔNPL_t	β_8	?	0.004	0.81
$DPub_t * \Delta NPL_t$	β_9	?	−0.002	−0.11
$LAMBDA_t$	β_{10}	?	0.000	−0.59
$DPub_t * LAMBDA_t$	β_{11}	?	−0.001	−3.03***
Adjusted *R*-square			4.830	
Panel B. Recoveries				
$REC_{t+1} = \beta_0 + \beta_1 DPub_t + \beta_2 SIZE_t + \beta_3 HOMP_t + \beta_4 CAPRAT_t + \beta_5 LNGRO_t + \beta_6 LCO_t + \beta_7 DPub_t * LCO_t + \beta_8 LCO_{t-1} + \beta_9 DPub_t * LCO_{t-1} + \beta_{10} LAMBDA_t + \beta_{11} DPub_t * LAMBDA_t + \varepsilon_t$				
INTERCEPT	β_0	?	0.0001	4.70***
$DPub_t$	β_1	+	0.000	2.88***
$SIZE_t$	β_2	?	0.000	−3.18***
$HOMP_t$	β_3	?	0.000	−4.60***
$CAPRAT_t$	β_4	?	0.000	22.91***
$LNGRO_t$	β_5	?	−0.0001	−5.79***
LCO_t	β_6	+	0.132	36.32***
$DPub_t * LCO_t$	β_7	−	−0.040	−3.50***
LCO_{t-1}	β_8	+	0.110	31.21***
$DPub * LCO_{t-1}$	β_9	−	−0.028	−2.72***
$LAMBDA_t$	β_{10}	?	0.000	0.95
$DPub_t * LAMBDA_t$	β_{11}	?	0.000	−3.35***
Adjusted *R*-square			36.220	

The sample consists of 1,671 privately-owned and 602 publicly traded U.S. commercial banks during 1992 to 2002. The sample contains 10,463 private bank-year observations and 3,979 public bank-year observations, for a total of 14,442 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 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

* Denotes $p < 0.10$; ** denotes $p < 0.05$; *** denotes $p < 0.01$

[a] Variable definitions: LCO_t, Loan chargeoffs in year t divided by total loans as of the end of year $t - 1$; REC_t, Recoveries in year t divided by total loans as of the end of year $t - 1$; ΔNPL_t, Nonperforming loans to total loans for year t minus nonperforming loans to total loans for year $t - 1$; $HOMP_t$, Homogeneous loans (family loans plus consumer loans) as a percentage of total loans for year t; $CAPRAT_t$, Tier 1 risk based capital ratio for period t; $LNGRO_t$, Total loans for year t divided by total loans for year $t - 1$; 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

accounting conservatism. The coefficient on ΔNPL_t is not significantly different from zero. Consistent with our primary prediction, we find that the coefficient β_7 on Dpub * ΔNPL_{t-1} is positive. This positive association between loan chargeoffs and prior changes in nonperforming loans for public banks is consistent with public banks recognizing *larger* and *timelier* loan chargeoffs than private banks. Again, the coefficient on Dpub * ΔNPL_t is not different from zero. The coefficients on the controls for endogeneity indicate that these controls are necessary.

Finally, when portions of previously charged-off loans become recoverable, we predict public banks will continue to exercise more conservative accounting by recognizing *smaller* and *less timely* recoveries than private banks. We test this prediction by estimating the following model of recoveries:

$$\begin{aligned} REC_{t+1} = {} & \beta_0 + \beta_1 DPub_t + \beta_2 SIZE_t + \beta_3 HOMP_t + \beta_4 CAPRAT_t + \beta_5 LNGRO_t \\ & + \beta_6 LCO_t + \beta_7 DPub_t * LCO_t + \beta_8 LCO_{t-1} + \beta_9 DPub_t * LCO_{t-1} \\ & + \beta_{10} LAMBDA_t + \beta_{11} DPub_t * LAMBDA_t + \varepsilon_t \end{aligned} \quad (8)$$

where REC_{t+1} denotes the recoveries for year $t + 1$ divided by total loans as of the end of year t, and we define the other variables as in Eq. 5.

This model includes two variables that reflect the timing of recoveries of a loan previously charged off. Loan recoveries in year $t + 1$ likely relate to loan chargeoffs during the current year (LCO_t) or the prior year (LCO_{t-1}). We expect positive coefficients on LCO_t and LCO_{t-1} because larger loan chargeoffs likely lead to larger recoveries. Because we do not interact these variables with Dpub, their coefficients capture the associations between loan chargeoffs and these variables for private banks.

To compare the timeliness of loan recoveries across public and private banks, we interact LCO_t and LCO_{t-1} with Dpub. We predict that the coefficients β_7 on Dpub * LCO_t and β_9 on Dpub * LCO_{t-1} will be *negative*, indicating that public banks recognize smaller and less timely recoveries relative to total loans than private banks, controlling for size, types of loans in the loan portfolio, regulatory capital, loan growth, and potential endogeneity.[25]

We report the results in Table 9, Panel B. We find positive coefficients on LCO_t and LCO_{t-1} indicating that loan recoveries are increasing in current and prior loan chargeoffs. Consistent with our predictions, we find the coefficients β_7 on Dpub * LCO_t and β_9 on Dpub * LCO_{t-1} are negative. The negative associations between recoveries and current and prior loan chargeoffs for public banks are consistent with public banks recognizing *smaller* and *lesstimely* loan recoveries than private banks.[26] The coefficients on the controls for endogeneity indicate that these controls are necessary.

[25] Loan recoveries can reflect bank managers' changing expectations about collectability (for example, favorable information), in which case public bank managers may recognize less timely recoveries (relative to LCOs) because of conditional conservatism (delayed recognition of 'good news'). Loan recoveries can also reflect unexpected cash realizations (for example, favorable realizations of collateral values), in which case public banks may recognize less timely recoveries (relative to LCOs) because the accounting for the LCOs was conservative (the LCOs were timelier).

[26] The significant positive coefficient on Dpub suggests that recoveries of charged-off loans from periods before $t - 1$ are greater (less timely) for public banks than for private banks, indicating more conservative accounting for recoveries.

5 Concluding remarks

The choice to be a public or private firm creates fundamental differences in control structure and access to the equity capital markets. To date, research provides limited insight into how these differences affect 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. 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 selection model that predicts the likelihood a given bank will be public or private.

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. We predict and find that public banks exhibit greater demand for conditional conservatism in accounting (the asymmetric timeliness of gain and loss recognition) than private banks. Public banks recognize more timely decreases in earnings and less timely earnings increases. We extend this analysis by tracing conservatism to earnings components, showing public banks have more persistent increases in earnings before loan loss provisions but less persistent decreases in earnings from credit losses.

We also develop and test models of conservatism in public and private banks' loan loss accounting. We predict and test the implications of conservative financial reporting throughout the accounting life of a loan loss: from the initial provision, through the allowance on the balance sheet, to the ultimate chargeoff and potential recovery. We predict and find that public banks record larger and timelier loan loss provisions with respect to changes in nonperforming loans than private banks. We find public banks' balance sheets include proportionally larger loan loss allowances. We also find that public banks recognize larger and more timely loan chargeoffs but smaller and less timely loan loss recoveries. Our results show how equity ownership structure can drive differences in conditional conservatism between public and private banks.

This paper provides insights into the fundamental interactions among ownership structure and accounting. First, it describes how ownership structure interacts with accounting through agency problems and capital market access. Second, it reveals specific differences in the role of accounting across public and private banks. Although public ownership gives bank managers greater ability and motive to exercise income-increasing accounting, the demand for conservative accounting dominates among public banks. Furthermore, stakeholders in public banks demand higher levels of accounting conservatism than stakeholders in private banks.

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