The Bright side of Common Ownership: Evidence from Bank Transparency

Abstract

Over 74% of US banks have owners who own shares in other banks (known as common owners). With such enormous growth in common ownership of banks, we test the effect of common ownership on bank transparency. Using a large sample of US banks, we find that banks with greater common ownership exhibit less discretionary loan loss provisions, improved readability, and comparability of their financial statements. As for channels, we prove that commonly owned banks involve low private information gathering, increased stock liquidity, and decreased managerial incentives. Finally, we note that commonly owned banks are exposed to low crash risk. Our main results remain robust to multiple proxies, and techniques to address endogeneity concerns using a quasi-natural experiment based on Blackrock–Barclays Global Investors merger in 2009, and instrumental variable approach based on the inclusion of banks in the Russell 2000 index. Overall, our findings demonstrate some beneficial effects of common ownerships of banks.

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Data availability: Unless noted otherwise, all data are available from the commercial sources identified in the text.

1. Introduction

Bank transparency is central to effective bank regulation and governance, maintaining bank stability, increasing market value and trust; and reducing bank panic, rollover risk and cost of financing (Barth, Caprio, and Levine 2004; Beatty and Liao 2014; Bushman 2016; Bushman and Williams 2015; Fungácová, Hasan, and Weill 2019; Granja 2018; Huizinga and Laeven 2012; Ratnovski 2013).[1] Bank transparency is also necessary for effective market discipline because greater transparency strengthens investors and regulators capability to assess banks' true financial conditions (Doty, Mahaffey, and Goldstein 1991; Flannery 1998; Nier and Boumann 2006). In the absence of transparency, investors might withdraw their deposits, sell their stocks, and refuse additional funding, potentially pushing banks to exit the business (Calomiris and Kahn 1991; Cordella and Yeyati 1998). Greater bank transparency also contributes to efficient allocation of capital and significant economic growth (Francis, Huang, Khurana, and Periera 2009; Jayaratne and Strahan 1996).

In this study, we test whether, how, and why the incentives of common ownership of banks –institutional shareholders holding significant shares in competing banks– affect bank transparency. Over the past few decades, the institutional shareholdings of US public firms including banks have grown substantially and become concentrated, resulting in a wide-spread common ownership (Antón, Ederer, Giné, and Schmalz 2021; He and Huang 2017).[2] Following the seminal paper by Azar, Schmaltz, and Tecu (2018), who document rises in airline ticket prices following increases in common ownership in the airline industry, a fast growing body of studies

[1] Bushman (2016, p. 129) defines "bank transparency" as the availability to outside stakeholders (depositors, investors, borrowers, regulators, counterparties, policymakers, and competitors) of relevant and reliable information about the periodic performance, financial position, business model, governance, and risks of banks.

[2] For instance, the common ownership of S&P 1500 firms has increased from below 16% in 1994 to about 90% 2019 (Antón et al. 2021). The average weight that an S&P 500 firm puts on the profits of another competing firm rose from about 0.2 in 1980 to about 0.75 by 2019 (Backus, Conlon, and Sinkinson 2021). Figure 1 shows a rapid growth in the percentage of commonly owned banks from around 20% in the 1990s to 75% in 2018.

evaluates and finds support to the anti-competitive effects of common ownership.[3] This literature along with the expanding dominance of common owners of banks (see Figure 1) implies that the anti-competitive effects of common ownership should also influence bank transparency. However, we are unaware of any previous investigation of the impact of common ownership on bank transparency.

The foundation of the anti-competitive behaviour of firms with common ownership is that firms maximize some combination of their own profits and their competitors' profit to maximize the value of their common owners' portfolios instead of maximizing only their own profits (Rotemberg 1984, Bresnahan and Salop 1986). Therefore, the common owners who hold significant shares in competing firms have incentives different to the owners that hold a single firm in an industry, which would result in different firm behaviour and market outcomes. Through the lens of anti-competitive effect of common ownership, we hypothesize that bank transparency increases with common ownership for four major reasons: reduced proprietary cost of information disclosure, increased benefits of internalizing the "externalities", enhanced relationship lending, and improved monitoring. First, with intense competition, firms incur proprietary costs (e.g., patent races, price under-cutting, advertising wars, high pay to executives) to remain competitive in the product market. In addition, competitors might use disclosed proprietary information to increase their market share and profits at the expense of the disclosing firm. The common ownership removes the fear from the disclosing firms including banks about the proprietary costs of disclosure and hence, encourages commonly owned banks to disclose more information (Park et al. 2019; Pawliczek et al. 2019; Ramalingegowda et al. 2021).

Second, transparency of a bank implicates positive externalities to other competing banks. Prior studies present that the opacity of a firm hurts other competing firms by distorting their investment decisions (Beatty,

[3] Accordingly, prior studies show greater common ownership is associated with decreased bank deposit rates and high loan rates (Azar, Raina, and Schmalz 2022), diminished managerial incentives with less performance-sensitive pay (Antón et al. 2021), and internalizing the externalities through technology spillovers, and innovations (He and Huang 2019; Lopez and Vives 2019), and improved disclosure quality (Cheng, Luo, and Zhang 2022; Jang, Kang, and Yezegel 2022; Park, Sani, Shroff, and White 2019; Pawliczek, Skinner, and Zechman 2019; Ramalingegowda, Utke, and Yu 2021).

Liao, and Yu 2013). For instance, Beatty et al. (2013) illustrate that accounting overstatements lead competing firms to increase their investments. Similarly, disclosing more information have a positive spillover effect on the competing firms in terms of their increased stock liquidity and reduced cost of capital (Admati and Pfleiderer 2000; Bushee and Leuz 2005). Therefore, commonly owned banks could benefit from enhanced transparency by internalizing positive externalities of transparency on competing banks (i.e., increased value of competing portfolio banks through high liquidity, low financing cost, and reduced inefficient investments).

Third, banks with common ownership exhibit enhanced relationship lending because of the economies of scale in building long-term relationship with their customers and they are less likely to shift to another bank on the face of bank concentration (Petersen and Rajan 1995; Cetorelli and Strahan 2006). This stronger long-term lending relationship reduces information asymmetry (Rajan 1992), and facilitates more efficient screening of borrowers leading to lower loan defaults (Chan, Greenbaum, and Thakor 1986), larger lending (Ojeda 2019), and improve loan performance through close monitoring of the borrowers (Allen and Gale 2004; von Thadden 1995). Therefore, we argue that the enhanced relationship lending with common ownership of banks improves their transparency.

Finally, common owners enjoy reduced information cost of monitoring their portfolio firms due to the economies of scale. Given the economic similarity among banks, information, and expertise advantages that common owners gain from monitoring one portfolio bank can assist them to improve their analysis and monitoring of other co-owned banks. The economies of scale effect can reduce common owners' information acquisition and processing costs and strengthen their competence in monitoring portfolio banks' disclosure quality. Overall, based on these four arguments, we have a strong *a priori* view that common ownership encourages co-owned banks to improve their transparency.

We test our conjectures using a large panel of 45,819 bank-quarter observations for 1,218 U.S. bank holding companies from 1986 to 2018. We measure common ownership in seven different ways (e.g., the numbers of commonly owned banks and structural weights on the profits of commonly owned banks) and

examine the relations between common institutional block shareholdings and bank transparency. We find strong evidence that bank transparency, as measured by discretionary loan loss provision (*dllp*), readability, and comparability of financial statements, improves with common ownerships. Focusing on homogenous firms, i.e., commercial banks, reduces biases in panel ordinary least square estimates from endogeneity concerns from reverse causality, selection bias, and omitted variable bias. Yet, we adapt two approaches to collectively address the potential endogeneity concerns: a difference-in-differences estimation in a quasi-natural experiment setting based on a merger between Blackrock and Barclays Global Investors in 2009, and a two-stage least squares estimation using an instrumental variable based on the Russel 2000 index inclusion. Our results remain robust to these alternative estimations.

We then investigate three observable channels to explain the positive relation between common ownership and bank transparency: private information gathering, stock liquidity, and managerial incentives. Regarding our first *channel*, we test whether private information gathering decreases with common ownership because improved monitoring with common ownerships effectively diminishes speculative trading by informed traders (Diamond 1985) and discourages investors from pursuing costly private information (Diamond 1985; Peng 2005; Verrecchia 2001). In addition, prior studies present a negative association between disclosure quality and information disparities between traders (Diamond and Verrecchia 1991; Verrecchia 2001). Indeed, our analysis show that private information gathering, as measured by *idiosyncratic volatility, volume-return coefficient* following Llorente, Michaely, Saar, and Wang (2002), and *probability of informed trade*, diminishes with common ownership. These results also rule out the alternative view that bank transparency might decrease with common ownerships due to their incentives for private rent extraction.

Regarding our second *channel*, we examine whether stock liquidity increases with common ownership because higher liquidity reduces cost of capital ensuing in increased portfolio value of common owners, enables better monitoring through facilitating ownerships block formation and making the owners' 'exit' threat more credible, and matches trading preferences of common owners (Maug 1998; Kahn and Winton 1998).

Consistent with our anticipation, our analysis of stock liquidity, as measured by the *turnover, dollar volume*, and *bid-ask spread*, prove that bank stock liquidity increases with our common ownerships.

Regarding our third *channel*, we analyse whether managerial incentives decrease with common ownership because managerial incentives such as high performance-sensitive pay is costly and imposes negative externalities on competitors through productivity enhancements and lower prices. Common owners can increase their portfolio values by avoiding the costly performance-sensitive managerial incentives (Antón et al 2021). Consistent with Antón et al (2021), our analysis of managerial incentives, as measured by CEO pay-performance sensitivity (*delta*), and pay-risk sensitivity (*vega*), register a strong negative association between managerial incentive and common ownership. Taken together, our results for three *channels* align with the anti-competitive effects of common ownership explaining our main finding.

As a corollary, we also study the impact of common ownership on bank stock price crash risk for two reasons. First, although increased bank transparency is typically perceived as beneficial for bank stability, it can also destabilize the banking system under certain conditions (Bouvard, Chaigneau, and Motta 2015; Goldstein and Sapra 2014). For example, Bouvard et al. (2015) contend that greater transparency enhances bank stability only during crises but diminishes it during normal times. Similarly, Goldstein and Sapra (2014) argue that more transparency could initiate bank runs because of possible coordination problems among unsecured depositors. Second, although hidden accumulated negative information temporarily inflates a firm's underlying value, it could eventually lead to a stock price crash when the information is finally revealed to the market (Hutton, Marcus, and Tehranian 2009; Jin and Myers 2006). Therefore, we predict and find that greater *ex ante* common ownership is associated with lower *ex post* crash risk. This finding also strengthens our claims of causal inference as we provide corroborating evidence that our results are indeed expressions of monitoring incentives and capabilities of common owners in predictable way.

This study makes several important contributions to the literature. First, we add to the growing body of literature on bank transparency (e.g., Bushman and Williams 2015; Jiang et al. 2016) by documenting common

ownership as an important determinant of bank transparency as measured by *dllp*, *readability* and *comparability*. Prior empirical studies on bank transparency narrowly focus only on disclosure quality as proxied by *dllp* and show that disclosure quality increases with non-depositors monitoring incentives (Danisewicz, McGowan, Onali, and Schaeck 2021), competition (Jiang et al. 2016; Burks, Cuny, Gerakos, and Granja 2021), independent directors (Cornett, McNutt, and Tehranian 2009), and decreases with uninsured deposits (Nguyen 2020) and geographic distance between banks and regulatory field offices (Lim, Hagendorff, and Armitage 2017). Common owners, as more motivated and capable monitors, is presented in this study to have incentives to meaningfully improve bank transparency. Second, we contribute to the growing literature on the effects of common ownerships on corporate policies (Antón et al. 2019; Azar et al. 2018; Jang et al. 2019; Park et al. 2019). The empirical evidence on the role of common ownerships in banks is yet limited except for Azar et al. (2022). We contribute by showing that common ownership curbs bank opacity by diminishing private information gathering, increasing stock liquidity, and constraining managerial incentives. Third, we contribute to the recent debate on whether greater bank transparency undermines bank stability by being the first to document that the effect of bank transparency on bank stability is conditional on common ownership. Particularly, we show that greater bank transparency with common ownership is associated with lower crash risk.

We structure the rest of the paper as follows. We describe the baseline methodology in Section 2, discuss the results of the main tests, and three channels along with crash risk results in Section 3 and in Section 4, respectively. We conclude the study in Section 5.

2. Baseline methodology

We use the following simple panel regression to empirically test our main conjectures that bank transparency increases with common ownerships:

$$y_{i,t} = \alpha_i + \beta common\_ownership_{i,t-1} + \zeta' X_{i,t-1} + \gamma_i + \delta_t + \varepsilon_{i,t} \quad (1)$$

where *i* indexes banks and *t* indexes time in quarter-years. The dependent variable is *transparency,* and we use three proxies of *transparency*: *dllp*, *bog_index*, and *comp_score*. We use seven different measures of our main test variables, *common_ownership*: *co_bank*, *co_inv*, *co_invbank*, *co_share*, *co_weight*, *co_ggl*, *co_dummy*. [4] $\boldsymbol{X}$ is a matrix of four time-varying covariates: *ln(assets)*, *charter value*, *non-interest income*, and *revenue growth*. γ_i is bank fixed effects, δ_t is year-quarter fixed effects, and $\varepsilon_{i,t}$ is a symmetric disturbance term with a mean of zero. Assuming that these control variables and fixed effects comprise a reasonably well-specified model, our estimates of β reveals the net *comom_ownership* impact on *transparency*.

We estimate equation (1) using quarterly dataset on publicly traded bank holding companies (BHCs) in the United States between 1986 and 2018. We assemble the required information on banks from three main databases: Center for Research in Security Prices (CRSP) for stock return data, the Federal Reserve Bank of Chicago (FRB Chicago) for accounting data, and Thomson Reuters Institutional Holdings (13F) database (formerly CDA/Spectrum) for institutional shareholdings data to construct our common ownership proxies. We obtain data on the composition of the Russell 2000 index on June 30, each year from FT Russell. We match the stock price data to the financial data for each bank using the PERMCO-RSSD links available from the Federal Reserve Bank of New York. Our sample includes banks for which commercial banking is the main business, and we identify these commercial banks by requiring that their deposit figures are reported (Berger and Bouwman 2013). With these filters, merging data across all three databases result in a final sample of 45,819 bank-quarter observations for 1,218 unique BHCs between 1986 and 2018.

[4] All the proxies are reduced form measures of common ownership except for *co_weight* and *co_ggl* which are structural equation-based measures.

Following previous literature on common ownership (e.g., He and Huang 2017; Koch et al. 2020), we use seven different bank-level measures of *common_ownership* using institutional shareholdings that comprise at least 5% of outstanding shares.[5] *co_bank* is the number of peer banks commonly owned by institutional blockholders. *co_inv* is the number of bank's institutional blockholders that also have blockholdings in peer banks. *co_invbank* is the average number of peer banks that are held by each of the common institutional blockholders. *co_share* is the total percentage shareholdings of common institutional blockholders. *co_weight* is the average structural weight that reflects the extent to which a bank cares about the profits of peer banks and thus managerial incentives to internalize externalities on them because of common institutional blockholdings. The structural weights (C_{jk}) are derived from the following objective function of a bank that act for shareholder profit maximization:

$$\max \sum_i \gamma_{ij}\pi^i = \sum_i \gamma_{ij}\left(\cdots + \beta_{ij}\pi_j + \beta_{ij}\pi_k + \cdots\right) \propto \pi_j + \sum_{k\neq j} C_{jk}\pi_k \,,$$

where π^i is the profit of shareholder i, π_j is the profit of firm j, and π_k is the profit of peer firm k. The terms, γ and β, are the control power and ownership shares, respectively. By simplifying the bank's profit maximization problem, the pairwise structural weights, C_{jk}, are defined as $\frac{\sum_i \gamma_{ij}\beta_{ik}}{\sum_i \gamma_{ij}\beta_{ij}}$, which can be thought as control power weighted ownership in peer banks held by shareholders. This common ownership measure is used in structural estimation on common ownership impact (e.g., Kennedy et al., 2017; Park and Seo, 2022), and constitutes a main part of the market-level common ownership measure, Modified Herfindahl-Hirschmann Index (MHHI) Delta, developed by Bresnahan and Salop (1986). As our regressions are at the bank-quarter

[5] As noted by Koch, Panayides, and Thomas (2020), the 5% ownership threshold guarantees incentives and means of institutional shareholders to influence corporate decisions. In this regard, common ownership by such blockholdings has currently drawn much of regulatory attention and targeted in the proposed regulations to mitigate its anticompetitive effects (e.g, Posner, Morton, and Weyl 2017; Rock and Rubinfeld 2018).

level, we take the average values of the structural weights over peer banks for each bank in a quarter. *co_ggl* is the average value of pairwise common ownership proxies developed by Gilje et al. (2020), i.e., $\sum_i \gamma_{ij}\, g(\beta_{ij})\gamma_{ik}$. We assume that institutional blockholders are informed traders and hence, pay full attention to managerial actions, which leads to $g(B_{ij}) = B_{ij}$. Again, we take the averages of the pairwise common ownership proxies over peer banks for a bank in a quarter. *co_dummy* is an indicator variable that equals one if there exist peer commonly owned banks and zero otherwise. In all, we quantify bank-level common ownership on a quarterly basis, and thus all the seven proxy proxies of common ownerships are at the bank-quarter level.

We measure bank transparency through three different proxies to capture the disclosure quality of banks. Our primary transparency proxy is *dllp*, which is estimated from the loan loss provision (*llp*) model as proposed by Basu, Vitanza, and Wang (2020), and Beatty and Liao (2014). To measure *dllp*, we begin with the following *llp* model of Beatty and Liao (2014):

$$\begin{aligned} llp_{i,t} = {} & \Phi_1 \Delta npl_{i,t} + \Phi_2 d\Delta npl_{i,t} \times \Delta npl_{i,t} + \Phi_3 d\Delta npl_{i,t} + \Phi_4 \Delta npl_{i,j,t-1} \\ & + \Phi_5 \Delta npl_{i,t-2} + \Phi_6 nco_{i,t} + + \Phi_7 lnassets_{i,t-1} + \Phi_8 \Delta loan_{i,t} + \gamma_i \\ & + \delta_t + \epsilon_{i,t} \end{aligned} \qquad (2)$$

where *npl* is non-performing loans relative to total loans, *nco* is net charge offs related to total assets, *lnasset* is the natural logarithm of total assets, *loan* is total loans, and the subscripts refer to bank *i*, and time *t* respectively. Following Basu et al. (2020), we also include bank fixed effects (FE) (γ_i) to absorb any confounding bank-specific characteristics unrelated to managerial discretion, such as bank culture, that could potentially affect *llp*. We also use year-quarter fixed effects to better control for macroeconomic conditions such as changes in unemployment rate, GDP rate and house price index. Standard errors are clustered at both bank and year-quarter. The dependent variable *llp* is the amount of loan loss provisions that the bank recognizes each quarter

to absorb potential loan defaults. *llp* is announced each quarter. Given that, loans are the primary investments for most commercial banks; this is among the most important information that banks release. However, banks have historically exercised substantial discretion regarding how this expense is determined and when it is reported and might have incentives to under-provision or smooth provisions for loan losses to reduce the impact of negative information. We use a two-step procedure to construct and then utilize the *dllp* measure. First, as shown in Appendix Table A.1, we estimate the parameters of equation (2) using 46,755 bank-quarter observations for 1,222 different commercial banks during our 1986-2018 sample period. Second, we calculate *dllp* as the absolute value of the regression residuals for each bank in each quarter. Larger values of *dllp* indicate greater information asymmetry regarding the quality of the bank's assets, i.e., less information disclosure.

Our second proxy of transparency is *bog_index*, which measures the readability of 10-K filings by capturing the plain English writing principles (e.g., active voice and fewer hidden verbs). This variable is directly matched from Bonsall, Leone, and Miller (2017) "Bog index". For ease of interpretation, we standardize the raw Bog index to have a mean of zero and a variance of one. Higher values indicate lower readability. Our third proxy, *comp_score* is the financial statement comparability. Comparability of financial statements of different banks lowers information acquisition costs because financial statements of one bank convey more information about another bank when they are more comparable (De Franco, Kothari, and Verdi 2011). The comparability score, developed by De Franco et al. (2011), is based on the economic premise that two firms have comparable accounting systems if they produce similar financial statements for a given set of economic events. Following the methods of De Franco et al. (2011) and restricting our sample to banks, we have manually computed comparability scores to compare only financial statements across banks. Tables 1 and 2 provide definitions and descriptive statistics, respectively for all the variables used in this study. All continuous variables are winsorized at the 1st and 99th percentiles to mitigate the potential effects of outliers.

Figure 1 plots the number of banks commonly owned versus non-commonly owned for our sample banks over the period 1986-2018. It shows that common ownership of banks grew from nearly zero in 1986 to over

70% in 2018. From Table 2, Panel A of summary statistics, consistent with Figure 1, we note that common ownership is highly pervasive in our sample. For instance, each bank-year has 22.48 banks commonly owned and has 0.624 common owners on average. In addition, the common owners hold an average 4.6% of the co-owned banks, and 34.4% of the bank-years in our sample are held by common owners. Table 2, Panel B of Pearson's pair-wise correlation matrix offer some preliminary evidence consistent with our expectations that proxies of common ownership are significantly negatively correlated with *dllp,* and positively correlated with *comparability score*. However, the positive correlation with *bog_index* could be due to confounding factors and hence, suggest a more rigorous analysis to reveal a more accurate association.

3. Main results

3.1. Baseline results

Table 3 presents the baseline results of equation (1). The models are estimated using ordinary least square techniques with high-dimensional fixed effects that capture unobservable bank and time fixed-effects. In Panel A where the dependent variable is *dllp* as a proxy of *transparency*, the *common ownership* coefficient is negative and statistically significant for all seven different proxies of *common ownership* in seven columns. The economic magnitude of the effect is enormous; a one-standard deviation increase in common ownership is associated with a decrease in discretionary loan loss provision (*dllp*) by a range between 5.20% and 9.62% depending upon common ownership proxies.[6] Therefore, we find strong support to our anticipation that bank *transparency* increases with common ownerships.

The estimates of the control variable vector ***X*** suggest that bank transparency decreases with bank size but increases with non-interest income and revenue growth. Although, the significant positive coefficient on

[6] As for an illustration of calculating economic magnitude, a one standard deviation increase in *ln(1+co_bank)* is associated with a 9.62% (=(-.00010 × 1.829)/0.0019) decrease in *dllp*.

ln(asset) is consistent with our expectation, the negative coefficient on *non-interest* income, and *revenue growth* is somewhat unexpected; all else equal, banks with greater non-interest income and revenue growth opportunities are generally thought to prefer opacity over transparency.

In Panel B and C of Table 3, we re-estimate equation (1) using two other proxies of *transparency*: *bog_index* (Panel B) and *comp_score* (Panel C).[7] In Panel B, the coefficient on common ownership proxies is all significantly negative except for *co_dummy* in the last column. The results suggest that the readability of financial statements improves for banks with greater common ownership. Similarly, in Panel C, the coefficient on common ownership is positive and statistically significant at 1% or better across all seven proxies. Thus, the findings illustrate that the financial statements are more comparable across banks for which they have common ownership. In sum, using three different measures of bank transparency and seven proxies of common ownership, our findings substantiate a strong and robust evidence that bank transparency increases with common ownership.[8]

3.2. Stronger identification techniques

Common ownership is unlikely to be exogenous to bank transparency due to reverse causality and omitted variable bias (e.g., Cornett et al. 2009; Huizinga and Laeven 2012; Jiang et al. 2016; Laeven and Levine 2009). Common owners could be attracted to banks with more transparency. There could also be unobservable time-varying factors that are omitted from the model; for instance, a CEO who has captured the board could determine transparency at the bank as well as influence the conditions to attract more common shareholders. We collectively address such endogeneity issues using two stronger empirical design strategies: difference-in-differences approach, and two-stage least squares instrumental variables.

[7] The number of banks and bank-year observations vary across the Panels in Table 3, according to whether the respective transparency constructs in bank *i* are available in year *t-1*.

[8] We also conduct sub-sample analysis based on banks size (small, medium, and large banks), and crisis period (pre-, during, and post-GFC). Our results as shown in Appendix Table A.2 provide some evidence that the positive association between common ownership and bank transparency is visible for large banks and pre-GFC period.

3.2.1. Difference-in-differences (DiD) approach

Using exogenous variations in common ownership generated by two non-bank institutions merger, we employ a multivariate fixed-effects DiD approach to compare transparency (*dllp, bog_index,* and *comp_score*) for treated banks with that of control banks. Specifically, we run the following regression:

$$transparency_{i,t} = \alpha_i + \beta_1(treatment_i) + \beta_2(post_t) + \beta_3(treatment_i \times post_t) + \zeta' X_{i,t-1} + \gamma_i + \delta_t + \varepsilon_{i,t} \quad (3)$$

where *i* indexes banks and *t* indexes time in quarter-years. The key coefficient of our interest is β_3, which shows changes in transparency of treated banks relative to that of control banks due to changes in common ownership in the post-merger period. As in Azar et al. (2018), we exploit shareholding changes following the BlackRock's acquisition of BGI, which was announced in June 2009 and completed in December 2009. This M&A decision by the two asset managers is likely to be independent of transparency of banks in their portfolios, thereby resulting in a plausibly exogenous shock to ownership linkages across banks.

To assign treatment, we first calculate counterfactual common ownership (in terms of *co_bank*) by treating shareholdings of the two merging institutions as if they were already held by a single entity in the quarter before the M&A announcement (i.e., 2009Q1). Then, we compute the implied changes in common ownership as the difference between the counterfactual and actual values. We define banks with a positive implied change in common ownership due to the merger as a treatment group and those without any change as a control group.

In addition, we adopt a propensity-score-matching method to control for differences in observable characteristics between the treatment and control banks prior to the merger. Like Lemmon and Roberts (2010)

and He and Huang (2017), we utilise a nearest-neighbour matching of propensity scores to assign three control banks for each treated bank with replacement. The propensity scores are estimated from a probit regression based on a wide selection of pre-merger bank characteristics, including the full set of control variables in our main regression as well as the level and trend of *dllp*, as our preferred bank transparency proxy. This matching method further mitigates self-selection bias arising, potential confounding effects and trends before the event.

Panel A of Table 4 reports the results of the DiD estimation of equation (3). As we can see in Columns (1) and (2), the coefficient on *treatment*×*post* is significantly negative for *dllp*, which confirms that an exogenous increase in common ownership causes an increase in bank transparency. The results are validated by supplementary tests on parallel trend assumption and post-merger common ownership of treated banks. Panel B of Table 4 verifies that the Blackrock-BGI merger significantly leads to an exogenous increase in common ownership for treated banks compared to control banks. Panel C proves that there is no significant difference in trends of *dllp* between treated and control banks during windows of different lengths up to 4 years before the event. We find similar results using two alternative measures of bank transparency – *bog_index* and *comp_score*. Particularly, the coefficients on the *treatment*×*post* in Columns (3)-(6) of Panel A is significant suggesting that treated banks with an exogenous increase in common ownership following the institutional merger have lower *bog_index* and higher *comp_score* relative to control banks in the post-merger period.

3.2.2. Two-stage least squares instrumental variables (2SLS-IV) approach

Following existing studies of institutional shareholdings, we use $Russell2000_{i,\ t-1}$ as an instrument for common ownership (e.g., Appel et al. 2016; Cremers et al. 2020; Harford et al. 2018; Nguyen et al. 2020; Laeven and Levine 2009). $Russell2000_{i,\ t-1}$ is an indicator variable which equals 1 if bank *i* is a constituent of the Russell 2000 index in the reconstitution year *t-1*. Index inclusion is shown to be directly related to both institutional shareholdings (Appel et al. 2016; Cremers et al. 2020; Harford et al. 2018), although we have no *a priori* expectation about the direction in which common ownership will vary with *Russell2000*.

Our 2SLS-IV estimation relies on the two assumptions that, after controlling for bank characteristics, the *Russell2000* is significantly associated with changes in common ownership proxies (relevance condition) but do not directly affect our transparency proxies except through their effect on common ownership (exclusion condition). We validate the relevance condition in our first-stage estimations as shown in Panel A of Table 5 that the coefficient on $Russell2000_{i,\,t-1}$ is statistically significant. In addition, the standard diagnostic tests give us confidence that the model is neither under-identified nor weakly-identified. Regarding satisfying the exclusion condition, the index inclusion would be independent of bank *transparency* after robustly controlling for factors that determine index inclusion, such as banks' end-of-May market capitalization (Harford et al. 2018; Nguyen et al. 2020). Like Harford et al. (2018) and Nguyen et al. (2020), we do not restrict our sample surrounding the *Russell 1000/2000* cut-off to increase our sample size; this means that there will be enough variation in our variables of interest as well as improvement in the external validity of our estimates.

Panel B of Table 5 reports the second-stage regression results of our three transparency proxies, *dllp*, *bog_index*, and *comp_score*. The significant coefficients on both $ln(1+\widehat{co\_bank})$ ($p < 0.01$) for all three bank transparency proxies reinforce our inferences from the baseline OLS results in Table 3, that bank transparency enhances with common ownership. Similarly, the interpretation of significant coefficients on other common ownership proxies are consistent with the results reported in Tables 3 except for *co_dummy*. As is often the case in 2SLS-IV estimation, the economic magnitudes of the marginal effects are substantially larger than in the single-stage panel estimations because the 2SLS-IV estimates are the local average treatment effects (LATE) as mapped by our instruments, whereas the OLS estimates are generally the average treatment effects (ATE) over the entire population (Wooldridge 2002, pp. 621–633).

4. Channels and crash risk analysis

In this section, we prove three observable channels that could potentially explain the positive association between common ownership and bank transparency: private information gathering, stock liquidity, and managerial incentives. We have also investigated stock price crash as an important repercussions of increased bank transparency with greater common ownership of banks.

4.1. Channel I – private information gathering in banks

We argue for less private information gathering with common ownership because improved monitoring with common ownership effectively reduces information disparities between traders (Diamond and Verrecchia 1991; Verrecchia 2001), diminishes speculative trading by informed traders (Diamond 1985), and discourages investors from pursuing costly private information (Diamond 1985; Peng 2005; Verrecchia 2001). Prior studies indicate that private information gathering decreases with improved monitoring such as by independent directors (Armstrong et al. 2014; Ferreira and Laux 2007). Further, the quality of public disclosure is negatively associated with private information search incentives (Brown and Hillegeist 2007; Diamond 1985; Verrechia 2001). Thus, if common owners improve transparency via public disclosure quality through better monitoring, we expect them to reduce private information gathering.

Although we argue and find evidence that common owners improve bank transparency, it is also possible that common owners may not reduce, and may even exacerbate, information asymmetry. Particularly, common owners likely possess superior private information over other investors for two reasons. Their large ownership of multiple peer firms provides common owners information advantage by facilitating information spillovers across co-owned peer firms. In addition, with concentration of ownership in a single industry, common owners have the necessary resources and time to spend to gain information advantages (Ajinkya, Bhojraj, and Sengupta 2005). Overall, given their capability to gain access to superior private information, and incentives to benefit from private rent extraction from informed trading, common owners may prefer less

transparency to protect their information advantage (e.g., Bushee et al. 2003; Dou, Hope, Thomas, and Zou 2018). Further, an intensification of product market concentration deters monitoring of managers that increase the agency problems (Shleifer and Vishny 1997). Previous studies convey that this weak governance facilitates the private rent extraction incentives of managers and therefore escalates their incentives to maintain opacity to conceal such actions (Darrough and Stoughton 1990; Leuz et al. 2003).

Given the above discussion, to shed light on this debate, we empirically examine whether and how common ownership associates with private information gathering. Following Armstrong, Core, and Guay (2014), Boone and White (2015), Ferreira and Laux (2007), and Llorente, Michaely, Saar, and Wang (2002) we consider three trading-based measures of private information gathering: *idio_vol, lmsw-c2* and *pin*. Our first measure, idiosyncratic volatility, *idio_vol,* is based on R^2 from the following bank-specific regression:

$$r_{i,t} = \alpha + \beta_1 r_{m,t} + \beta_2 r_{m,t-1} + \beta_3 ind_{i,t} + \beta_4 ind_{i,t-1} + \varepsilon_{i,t} \quad (4)$$

where $r_{i,t}$ is stock return of bank *i* on day *t*, $r_{m,t}$ is the value-weighted market return, and *ind* is the value-weighted financial industry return downloaded from the French Data Library. Since R^2 is bounded between zero and one, we define banks' relative *idio_vol* as the logarithm of one minus R^2 divided by R^2 (i.e., $\log[(1-R^2)/R^2]$). A higher value of this measure of *idio_vol* reflects relatively more bank-specific private information being incorporated into stock prices by informed trading than public information (Roll 1988).

Our second measure of private information gathering, volume-return coefficient (c2) following Llorente, Michaely, Saar, and Wang (2002) (termed as *lmsw-c2*) is based on the stock return autocorrelation conditional on trading volume and is obtained from estimation of the following regression for each bank year:

$$r_{i,t} = \alpha_i + c1 \times r_{i,t-1} + c2 \times (r_{i,t-1} \times vol_{i,t-1}) + e_{i,t} \quad (5)$$

where $r_{i,t}$ is the weekly stock return of bank *i* in week *t*, $vol_{i,t}$ is the logarithm of stock turnover (= weekly trading volume/total shares outstanding) of bank *i* in week *t*, de-trended by subtracting the 26-week moving average of logarithmic turnover. Higher values of *c2* indicate more information-based trading than liquidity-based trading. Our third measure, probability of informed trading, *pin*, is a firm-specific estimate of the probability that a trade originates from a privately informed investor. Thus, it directly captures the extent of information asymmetry among investors in the secondary market. The quarterly *pin* data are from Stephen Brown's website and are estimated using Brown and Hillegeist's (2007) extended version of the popular market microstructure model of Easley, Kiefer, and O'Hara (1997). Overall, we expect *idio_vol*, *lmsw-c2*, and *pin* to be negatively related to our common ownership proxies.

Table 6 presents the results of equation (1) relating common ownership to *idio_vol* (Panel A), *lmsw_c2* (Panel B), and *pin* (Panel C), our three proxies of private information gathering. In Panel A, where the dependent variable is *idio_vol*, the coefficient on common ownership is significantly negative across all seven different common ownership proxies. The economic magnitude is also large; a one standard deviation increase in common ownership is associated with a decrease in *idio_vol* by a range between 3.13% and 5.28% depending on common ownership proxies.[9] In Panel B, where the private information is proxied by *lmsw-c2*, the coefficient on common ownership remains significantly negative for four of our common ownership proxies (*ln(1+co_bank)*, *ln(1+co_invbank)*, *co_weight*, *co_ggl*). Similarly, in Panel C for *pin* as our third proxy of private information gathering, the coefficient on common ownership is significantly negative for five of our common ownership proxies (*ln(1+co_bank)*, *ln(1+co_invbank)*, *co_weight*, *co_ggl, co_dummy*). Overall, our results provide that private information gathering decreases with common ownership and hence, prove private information as

[9] As for an illustration of calculation of economic magnitude, a one standard deviation increase in *ln(1+co_bank)* is associated with a 4.93% (=(-.048 × 1.829)/1.779) decrease in *idio_vol*.

an important channel of bank transparency and also forfeit the view that commonly-owned banks have incentives to lessen transparency to benefit from private trading.

4.2. Channel II – stock liquidity

Next, we investigate the effect on bank stock liquidity as a second channel for bank transparency. We expect that stock liquidity increases with common ownerships for three reasons. First, common owners benefit from enhanced liquidity of their portfolio stocks as liquidity reduces cost of capital resulting in increased value of their portfolio firms (Kahn and Winton 1998; Maug 1998). Second, liquidity facilitates better monitoring of managers. For instance, prior studies show that liquidity enables block formation of ownership, which incentivizes intervention (Kahn and Winton 1998; Maug 1998). Similarly, stock liquidity makes investors' exit threats more credible and encourages greater shareholder engagement (Edmans and Manso 2011). Stock liquidity might also positively relate to common ownerships because of improved governance with common ownership is conducive to higher stock liquidity (Chung, Elder, and Kim 2010; Boone and White 2015). Finally, common owners also value liquidity due to their trading size and the frequency of trading. A subset of common shareholders if not all might trade to match their fund flows and generally their trade size is large and benefit from reduced trading cost with liquidity (Kahn and Winton 1998; Maug 1998). Previous studies note that disclosure quality increases with stock liquidity (Diamond and Verreecchia 1991).

Table 7 presents the results relating common ownership to logarithm of *turnover* (Panel A), logarithm of *dollar volume* (Panel B), and *bid-ask spread* (Panel C), our three bank stock liquidity proxies. In Panel A, where the dependent variable is *ln(1+turnover)*, the coefficient on common ownership is significantly positive across all common ownership proxies except for *co_dummy* in column (7). In terms of economic magnitude, a one standard deviation increases in common ownership is associated with an increase in *turnover* by a range between

3.15% and 5.51% depending on common ownership proxies.[10] In Panel B where the liquidity is proxied by *ln(dollar_volume)*, the estimated coefficient on common ownership is significantly positive for all seven common ownership proxies. Similarly, in Panel C for *bid-ask spread* as our third proxy of liquidity, the coefficient on common ownership is significantly negative for six of our common ownership proxies (*ln(1+co_bank)*, *ln(1+co_inv)*, *ln(1+co_invbank)*, *co_share*, *co_weight*, *co_ggl, co_dummy*). Altogether, our results are consistent with common owners favoring greater stock liquidity, which is compatible with enhanced bank transparency.

4.3. Channel III – managerial incentives

Antón et al. (2021) provide both theoretical and empirical evidence that performance-sensitive managerial incentives is an important mechanism of common ownership influencing firm product market outcomes. Particularly, they argue that performance-sensitive managerial pay encourages productivity-increasing managerial effort. However, with productivity enhancements cause firms to set lower prices reducing the profitability of competing firms. In other words, common owners prefer managerial slack and productivity inefficiency at their portfolio firms. Following this argument, we empirically test whether high performance-sensitive managerial incentives decrease with common ownership.

Table 8 reports the results relating common ownership to *delta* (Panel A), and *vega* (Panel B), our two proxies of managerial incentives. In Panel A, where the dependent variable is *delta*, the coefficient on common ownership is significantly negative across all common ownership proxies except for *co_ggl* in column (6). The economic magnitude is also nontrivial; a one standard deviation increase in common ownership is associated with a 10.77%–26.11% decrease in CEO pay-performance sensitivity (*delta*).[11] In Panel B where the managerial incentive is proxied by pay-risk sensitivity *(vega)*, the coefficient on common ownership is also significantly

[10] As for an illustration of calculating economic magnitude, a one standard deviation increase in *ln(1+co_bank)* is associated with a 5.49% (=(-0.00008 × 1.829)/0.003) increase in *turnover*.

[11] As for an illustration of calculating economic magnitude, a one standard deviation increase in *ln(1+co_bank)* is associated with a 5.51% (=(-11.80 × 1.829)/82.67) decrease in *delta*.

negative for all common ownership proxies except for *co_dummy* in column (7). The economic magnitude of the effect of common ownership on *vega* is also huge; a one standard deviation increase in common ownership is associated with a 11.05%–48.91% decrease in CEO pay-risk sensitivity (*vega)*. Taken together, for both measures of managerial incentive, our results confirm that managerial incentives decreases with common ownership and hence, conforms to Antón et al. (2021) view that commonly owned banks could save costs by providing low managerial incentives while maintaining their optimal productivity.

4.4. Crash risk

In this section, we empirically examine whether and how *common ownership* relates to bank stock price *crash risk*. Previous studies on crash risk provide that lack of transparency could lead to extreme outcomes such as stock price crash when the market finally learns the amassed concealed, firm-specific, bad news (Jin and Myers 2006). Therefore, if common owners enhance bank transparency, we anticipate them to reduce bank stock price crash risk.

Table 9 shows the panel regression estimates of equation (1) relating common ownership to *ncskew* (Panel A), and *duvol* (Panel B), our two proxies of bank crash risk.[12] Our results are consistent with the prediction that bank crash risk decreases with common ownership. Particularly, the significant negative coefficients on common ownership in all except two columns (columns 5 and 6) indicate that an increase in common ownership is associated with a decrease in *ncskew*. In terms of economic magnitude, a one standard deviation increase in common ownership is associated with a 5.31%-13.16% declines in crash risk. In Panel B, where the crash risk is proxied by *duvol*, the coefficient on common ownership remains significantly negative for five of our common ownership proxies (*ln(1+co_invbank)*, *ln(1+co_invbank), co_share, co_ggl*, *co_dummy*). Taken

[12] The number of banks and bank-year observations vary across the Panels in Table 11 due to matching of respective crash risk proxies in bank *i* are available in time *t-1*.

together, for both measures of crash risk, we evidence that bank crash risk diminishes with common ownership and hence, proving that common ownership is conducive to improve bank stability as it reduces bank opacity through improved financial reporting quality, reducing private information gathering, increased stock liquidity, and reduced managerial incentives.

5. Conclusions

Although bank transparency is critical to bank stability, market discipline, bank value, governance and economic growth, bank transparency remains a relatively unexplored topic, especially its relation to the roles of ownership structure. Common ownership of industry peers has grown tremendously over the past two decades and largely viewed as anti-competitive. Our study is the first to provide a comprehensive assessment of whether, how and to what extent common ownerships relate to bank transparency. We examine a large dataset of 45,819 bank-quarter observations on 1,218 U.S. commercial banking companies between 1986 and 2018, operationalize common ownership as seven different proxies and adopt OLS with bank and year FEs, DiD, and 2SLS-IV estimations to strengthen our causal inferences. Overall, our study adds to the literature by presenting that bank transparency, as proxied by discretionary loan loss provisions, readability, and comparability of financial reports, increases with common ownership.

Our study provides three observable channels to explain this positive impact on bank transparency. First, we document that private information gathering, as measured by *idiosyncratic volatility, volume-return coefficient*, and *probability of informed trading*, decreases with common ownerships. Second, we are the first to show that the liquidity of bank stocks increases with common ownerships. Finally, we also provide some fresh insights for managerial incentives of banks; for instance, banks with greater common ownership experience lower pay-performance and pay-risk sensitives, which is consistent with reduced proprietary costs with bank concentration. In sum, our study is the first to empirically validate that bank transparency is positively

associated with common institutional shareholdings, which potentially enhances the market's ability to monitor banks.

Our findings have several important policy implications. Most importantly, regulators, including the Securities and Exchange Commission (SEC), could consider formulating policies to encourage more common ownerships in banks that have potentially more skin in the game. Currently, common ownership is under scrutiny from regulators in the US, including the Securities and Exchange Commission, Federal Trade Commission, and the Department of Justice. While much of the ongoing debate on common ownership focuses on its potential anti-competitive effects, our findings highlight a "bright side" of common ownership of banks because it enhances bank information environment. Thus, this study contributes to this ongoing debate and assist in improving our understanding of the overall implications of common ownership at least for the banking sector. Our results also signify that bank regulators should emphasize that banks' estimates of loan loss provision be forward looking and reflect a broader range of available credit information. Similarly, accounting standard setters such as the Financial Accounting Standards Board and the International Accounting Standards Board could consider standards that enhance the readability and comparability of banks' financial reports.

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Figure 1: Common ownership of U.S. banks

This figure illustrates the number of publicly listed U.S. bank holding companies that are commonly owned by institutional blockholders that hold at least 5% of outstanding shares for the full sample of banks from 1986 to 2018. The institutional shareholding data is from the SEC's quarterly 13F filings.

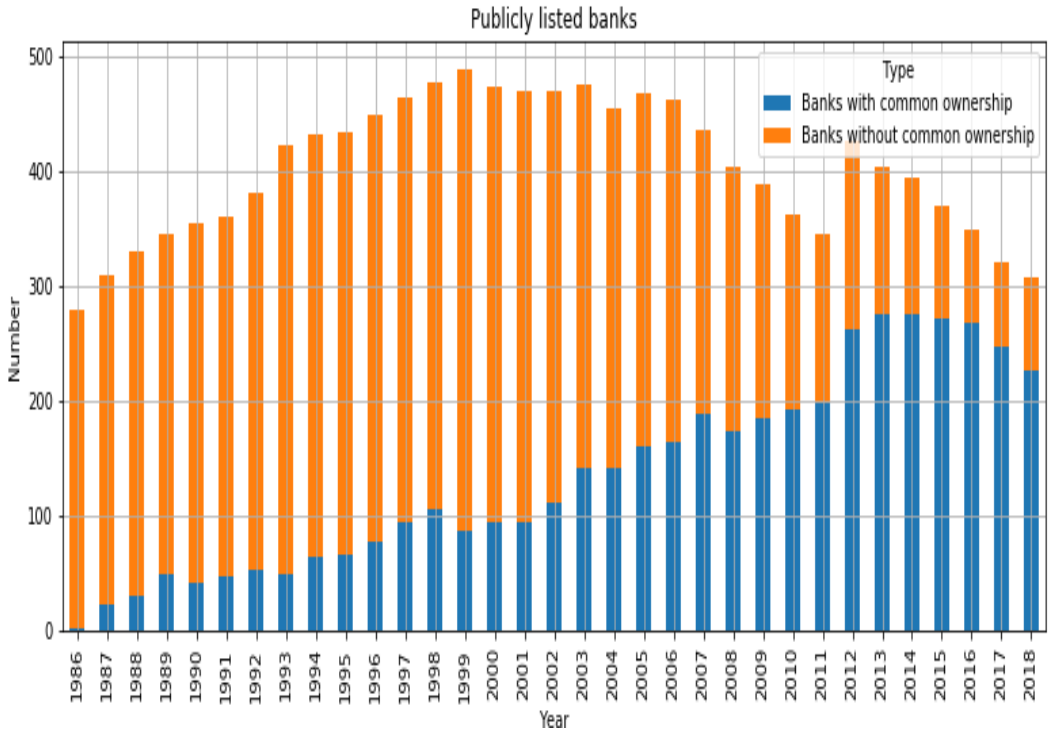

Table 1: Variable definitions

Label	Descriptions
Common ownership proxies	Source: Thomson Reuters Institutional Holdings (13F) Database (formerly CDA/Spectrum).
co_bank	The number of banks commonly owned by institutional blockholders (shareholders who hold at least 5% of issued shares).
co_inv	The number of common institutional blockholders.
co_invbank	The average number of banks held by each of the common institutional blockholders.
co_share	The sum of percentage shareholdings by the common institutional blockholders.
co_weight	The average value of the structural weights that a bank puts on the profits of other commonly owned banks relative to its own profits.
co_ggl	The average value of managerial incentives to internalize externalities suggested by Gilje et al. (2020).
co_dummy	A dummy variable that equals one if the bank has at least one common institutional blockholder with other banks, zero otherwise.
Transparency proxies	Source: FR Y-9C Reports from Bank Regulatory
dllp	Discretionary loan loss provision is calculated as the natural logarithmic of the absolute value of the regression residuals from equation (2) for each bank in each year.
bog_index	A measure of readability of 10-K filings created by Editor Software's plain English software, *StyleWriter*. The method is based on some plain English features such as sentence length, passive voice, weak verbs, complex words, and jargon. Higher values of the index denote lower readability. This index is freely provided by Brian Miller at his website at <https://kelley.iu.edu/bpm/activities/bogindex.html>, accessed September 18, 2019.
comp_score	The comparability score is the average of the four highest *CompAcct* values for bank *i* where *ComAcct* is the absolute value of the difference of the predicted value of regression of bank *i*'s earnings on bank *i*'s return using the estimated coefficients for bank *i* and *j*, respectively. It is calculated for each bank *i* - bank j pair, ($i \neq j$), j=1 to J banks. These indices are computed following DeFranco, Kothari, and Verdi (2011) procedure.
dllp determinants	Source: FR Y-9C Reports from Bank Regulatory
llp	Loan loss provisions ["BHCK4230"] in quarter *t* divided by quarter *t-1* total loans ["BHCK2122"].
Δnpl	Change in non-performing assets [BHCK5525+BHCK5526] over the quarter divided by beginning total loans ["BHCK2122"].
	$\Delta npl_t = (npl_t\text{-}npl_{t-1})/(total\ loans)_{t-1}$ | $\Delta npl_{t-1} = (npl_{t-1}\text{-}npl_{t-2})/(total\ loans)_{t-2}$ | $\Delta npl_{t-2} = (npl_{t-2}\text{-}npl_{t-3})/(total\ loans)_{t-3}$ *where npl* =BHCK5525+BHCK5526
$d\Delta npl$	A dummy variable that equals one if $\Delta npl < 0$, and zero otherwise.
nco	Net charge-off ["BHCK4635-BHCK4605"] divided by beginning total loans ["BHCK2122"].
ln(assets)	The natural log of total assets ["BHCK2170"] in million U$.
$\Delta loan$	Change in total loans ["BHCK2122"] over the quarter divided by beginning total loans ["BHCK2122"].
Private information gathering	Source: CRSP if not mentioned otherwise.
idio_vol	The idiosyncratic volatility is calculated as the logarithm of one minus R^2 divided by R^2 (i.e., log[(1-R^2/R^2] where R^2 is from the following bank-specific regression: $$r_{i,t} = \alpha + \beta_1 r_{m,t} + \beta_2 r_{m,t-1} + \beta_3 ind_{i,t} + \beta_4 ind_{i,t-1} + \varepsilon_{i,t}$$ where $r_{i,t}$ indexes stock returns of bank *i* in day *t*, $r_{m,t}$ is the value-weighted market return and *ind* is the value-weighted financial industry return downloaded from French Data Library.
lmsw-c2	It is obtained from estimation of the following regression for each bank year: $$r_{i,t} = \alpha_i + c1 \times r_{i,t-1} + c2 \times (r_{i,t-1} \times vol_{i,t-1}) + e_{i,t}$$ where $r_{i,t}$ indexes weekly stock returns of bank *i* in week *t*, *vol* is the logarithm of stock turnover (=weekly trading volume/total shares outstanding), de-trended by subtracting a 26-weeks moving average of logarithmic turnover.
pin	An estimate of the likelihood that a trade originates from a privately informed trader. The annual PIN data are from Stephen Brown's website at <http://scholar.rhsmith.umd.edu/sbrown/*PIN*-data?destination=node/998>, downloaded on September 9, 2016.
Stock liquidity proxies	Source: CRSP if not mentioned otherwise.
turnover	The daily trading volume divided by the outstanding shares averaged over the quarter.

dollar_vol (mil. $)	The daily trading volume multiplied by the closing price averaged over the quarter.
bid-ask spread	The daily closing ask price less the closing bid price, divided by the midpoint of the closing ask and bid prices averaged over the year.
Mgr incentives proxies	Source: ExecuComp
delta	A change in a CEO's total pay for a percentage change in the stock price (following Coles et al. 2006)
vega	A change in a CEO's total pay for a percentage change in the annualized standard deviation of stock returns (following Coles et al. 2006)
Crash risk proxies	[Source: CRSP]
ncskew	The ratio of the negative of the third moment for bank *i*'s weekly stock returns to the standard deviation of bank *i*'s weekly returns raised to the power of three.
duvol	The natural logarithmic of the ratio of the standard deviations of the "down" and "up" weeks. A down (up) week for a bank *i* is the week with bank *i's* weekly stock returns lower (greater) than quarterly mean.
Controls and other variables	Sources: Bank Regulatory Database (FRB of Chicago) and ISS (formerly RiskMetrics)
ln(assets)	The natural logarithm of book value of total assets.
charter value	Keeley's (1990) Q calculated as the market value of equity plus the book value of liabilities divided by the book value of total assets.
non-interest income	The ratio of non-interest income to net income.
revenue growth	The percentage growth in total revenue from the beginning of the year to the beginning of the next year.
Russell2000	A dummy variable that equals one if a bank is in the Russell 2000 index at the end of June in each year, zero otherwise. [FTSE-Russell Investments]

Table 2: Summary statistics and correlation matrix

Panel A reports the summary statistics for the full sample of banks from 1986 to 2018. Panel B reports the Pearson's pairwise correlation matrix for our main dependant, independent, and control variables. All variables are defined in Table 1. All continuous variables are winsorized at the 1st and 99th percentiles

Panel A: summary statistics

	Obs.	Mean	Std dev	25th Percent	Median	75th Percent
Common ownership proxies						
co_bank	46,755	22.477	49.891	0.000	0.000	11.000
ln(1+co_bank)	46,755	1.167	1.829	0	0.000	2.485
co_inv	46,755	0.624	1.033	0.000	0.000	1.000
ln(1+co_inv)	46,755	0.337	0.502	0.000	0.000	0.693
co_invbank	46,755	14.870	31.953	0.000	0.000	8.750
ln(1+co_invbank)	46,755	1.086	1.679	0.000	0.000	2.2778
co_share	46,755	0.046	0.079	0.000	0.000	0.069
co_weight	46,755	0.033	0.081	0.000	0.000	0.014
co_ggl	46,755	0.0004	0.001	0.000	0.000	0.00013
co_dummy	46,755	0.344	0.475	0.000	0.000	1.000
dllp determinants						
Δnpl	46,755	0.0002	0.007	-0.001	0.000	0.001
Δloan	46,755	0.026	0.062	-0.003	0.018	0.041
nco	46,755	0.003	0.005	0.0004	0.001	0.003
Tranparency proxies						
dllp	46,755	0.002	0.004	0.001	0.001	0.002
bog_index	33,604	79.120	6.720	75.000	79.000	83.000
comp_score	22,564	-0.213	0.567	-0.120	-0.50	-0.030
Private information proxies						
idio_vol	46,532	1.779	1.373	0.716	1.908	2.775
lmsw-c2	46,438	0.0146	0.292	-0.152	0.0174	0.184
pin	28,176	0.325	0.193	0.175	0.297	0.441
Liquidity proxies						
turnover	46,755	0.003	0.007	0.0003	0.001	0.003
dollar_vol	46,755	12.812	2.565	10.810	12.498	14.516
bid-ask spread	45,096	0.024	0.036	0.004	0.014	0.031
Mgr incentives						
delta	7,276	82.676	195.592	4.5	18.985	63.396
vega	7,276	9.888	39.0875	0	0	0.305
Crash risk proxies						
ncskew	26,400	-0.448	1.182	-3.093	-1.313	-0.493
duvol	26,347	-0.154	0.564	-1.654	-0.515	-0.141
Controls						
ln(assets)	46,755	14.555	1.628	13.357	14.227	15.457
loan loss provision	46,755	0.004	0.006	0.001	0.002	0.004
charter value	46,755	0.999	0.005	0.972	1.000	1.000
non-interest income	46,755	0.626	0.287	0.386	0.661	0.898
revenue growth	46,755	0.263	0.967	-0.588	0.403	0.767

Panel B: Pearson pairwise correlation matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)
(1) ln(1+co_bank)	1																						
(2) ln(1+co_inv)	0.926	1																					
(3) ln(1+co_invbank)	0.991	0.894	1																				
(4) co_share	0.864	0.956	0.812	1																			
(5) co_weight	0.792	0.624	0.793	0.577	1																		
(6) co_ggl	0.781	0.692	0.75	0.736	0.836	1																	
(7) co_dummy	0.882	0.928	0.893	0.814	0.57	0.54	1																
(8) dllp	-0.036	-0.025	-0.035	-0.029	-0.051	-0.06	-0.011	1															
(9) bog_index	0.377	0.336	0.368	0.328	0.357	0.363	0.296	0.096	1														
(10) com_score	0.037	0.028	0.039	0.014	0.062	0.049	0.026	-0.359	-0.142	1													
(11) idio_vol	-0.363	-0.316	-0.357	-0.301	-0.367	-0.37	-0.276	0.008	-0.382	-0.092	1												
(12) lmsw_c2	0.001	0.003	0.001	0.001	-0.011	-0.02	0.004	-0.02	-0.005	0.02	-0.004	1											
(13) pin	-0.106	-0.097	-0.1	-0.079	-0.117	-0.126	-0.09	-0.046	-0.227	-0.011	0.474	-0.027	1										
(14) ln(1+turnover)	0.156	0.151	0.152	0.145	0.129	0.141	0.133	0.071	0.177	-0.07	-0.244	-0.011	-0.189	1									
(15) ln(dollar_vol)	0.342	0.315	0.334	0.299	0.337	0.362	0.278	0.015	0.385	0.089	-0.699	-0.013	-0.667	0.338	1								
(16) bid-ask spread	-0.271	-0.249	-0.268	-0.231	-0.226	-0.225	-0.234	0.086	-0.28	-0.185	0.409	0.01	0.41	-0.152	-0.564	1							
(17) delta	-0.044	-0.028	-0.038	-0.046	-0.022	-0.042	-0.01	0.033	0.071	0.07	-0.107	0.032	-0.174	0.055	0.262	-0.045	1						
(18) vega	0.041	0.041	0.052	-0.002	0.011	-0.059	0.086	0.061	0.166	0.037	-0.201	-0.005	-0.248	0.17	0.309	-0.078	0.355	1					
(19) ncskew	-0.004	-0.006	-0.002	-0.007	0.004	-0.003	-0.005	0.033	0.028	0.008	-0.075	0.002	0.002	0.001	0.009	-0.016	-0.034	0.024	1				
(20) duvol	0.01	0.005	0.008	0.004	0.02	0.012	0	-0.003	0.023	0.041	-0.059	0.006	0.014	-0.02	0.033	-0.033	-0.02	-0.037	0.765	1			
(21) ln(asset)	0.258	0.23	0.252	0.22	0.278	0.298	0.197	0.073	0.382	-0.001	-0.64	-0.024	-0.6	0.253	0.907	-0.46	0.236	0.269	0.022	0.041	1		
(22) charter value	0.061	0.053	0.058	0.052	0.068	0.071	0.047	0.019	0.024	-0.056	0.03	-0.004	0.011	-0.002	-0.032	0.074	-0.07	0.026	0.024	-0.013	-0.015	1	
(23) non-interest income	0.201	0.162	0.196	0.157	0.228	0.245	0.135	0.06	0.296	0.053	-0.553	-0.018	-0.536	0.177	0.743	-0.444	0.113	0.101	0.013	0.035	0.796	-0.018	1
(24) revenue growth	0.011	0.008	0.008	0.01	0.004	0.009	0.004	0.007	-0.02	0.014	0.008	0.005	0.017	-0.017	-0.003	-0.019	0.007	-0.01	-0.02	-0.004	-0.006	-0.003	0.121

Table 3: *Common ownership* and bank transparency

This table presents the results of equation (1) estimated using panel fixed-effects technique. The dependent variable (y_{it}) is *transparency,* measured as *discretionary loan loss provisions* (*dllp)* from equation (2) in Panel A, *bog_index* of readability in Panel B, and *comp_score* of financial statements comparability in Panel C. *common_ownership* is proxied by seven different reduced-form and structural-based measures: *ln(1+co_bank), ln(1+co_inv)*, *ln(1+co_invbank)*, *co_share*, *co_weight*, *co_ggl* and *co_dummy*. Each regression controls for four covariates (X_{it}): *ln(assets)*, *charter value, non-interest income*, and *revenue growth*. Regressions in Panels B and C include four covariates, bank-FEs, and year-quarter FEs. All variables are defined in Table 1. All continuous variables are winsorized at the 1st and 99th percentiles. *, **, *** represent statistical significance at the 10%, 5% and 1% level, respectively.

Panel A: disclosure quality = dllp

	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*
Dependent variable:	*dllp*	*dllp*	*dllp*	*dllp*	*dllp*	*dllp*	*dllp*
ln(1+co_bank)	-0.00010***						
	[0.00001]						
ln(1+co_inv)		-0.00024***					
		[0.00005]					
ln(1+co_invbank)			-0.00009***				
			[0.00002]				
co_share				-0.00127***			
				[0.00032]			
co_weight					-0.00194***		
					[0.00031]		
co_ggl						-0.14110***	
						[0.02800]	
co_dummy							-0.00012**
							[0.00005]
ln(assets)$_{t-1}$	0.00021***	0.00021***	0.00020***	0.00020***	0.00023***	0.00022***	0.00020***
	[0.00006]	[0.00006]	[0.00006]	[0.00006]	[0.00006]	[0.00006]	[0.00006]
charter value $_{t-1}$	-0.00471	-0.00491	-0.00479	-0.00497	-0.00513	-0.00502	-0.00522
	[0.00466]	[0.00466]	[0.00466]	[0.00466]	[0.00466]	[0.00466]	[0.00466]
non-interest income $_{t-1}$	-0.00056***	-0.00057***	-0.00056***	-0.00057***	-0.00059***	-0.00060***	-0.00057***
	[0.00017]	[0.00017]	[0.00017]	[0.00017]	[0.00017]	[0.00017]	[0.00017]
revenue growth $_{t-1}$	-0.00006***	-0.00006***	-0.00006***	-0.00006***	-0.00006***	-0.00006***	-0.00006***
	[0.00002]	[0.00002]	[0.00002]	[0.00002]	[0.00002]	[0.00002]	[0.00002]
constant	0.00412	0.00430	0.00422	0.00438	0.00420	0.00425	0.00465
	[0.00474]	[0.00474]	[0.00474]	[0.00474]	[0.00474]	[0.00474]	[0.00474]
bank FE?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
year-qtr FE?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
adj-R^2	0.257	0.257	0.257	0.257	0.257	0.257	0.257
# banks	1,197	1,197	1,197	1,197	1,197	1,197	1,197
observations	45,477	45,477	45,477	45,477	45,477	45,477	45,477
economic magnitude	*9.62%*	*6.34%*	*7.95%*	*5.20%*	*8.28%*	*7.64%*	*6.31%*

Panel B: disclosure quality = bog_index

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable:	*bog_index*	*bog_index*	*bog_index*	*bog_index*	*bog_index*	*bog_index*	*bog_index*
ln(1+co_bank)	-0.05018***						
	[0.01697]						
ln(1+co_inv)		-0.20894***					
		[0.06034]					
ln(1+co_invbank)			-0.03507**				
			[0.01774]				
co_share				-1.37148***			
				[0.38068]			
co_weight					-1.18605***		
					[0.35044]		
co_ggl						-63.91834**	
						[31.19713]	
co_dummy							-0.08705
							[0.05913]
covariates?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
bank FE?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
year-qtr FE?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
adj-R^2	0.751	0.751	0.751	0.751	0.751	0.751	0.751
# banks	1,025	1,025	1,025	1,025	1,025	1,025	1,025
observations	33,457	33,457	33,457	33,457	33,457	33,457	33,457
economic magnitude	*0.12%*	*0.13%*	*0.07%*	*0.013%*	*0.19%*	*0.08%*	*0.11%*

Panel C: disclosure quality = comp_score

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable:	*comp_score*	*comp_score*	*comp_score*	*comp_score*	*comp_score*	*comp_score*	*comp_score*
ln(1+co_bank)	0.04427***						
	[0.00252]						
ln(1+co_inv)		0.10816***					
		[0.00899]					
ln(1+co_invbank)			0.04429***				
			[0.00264]				
co_share				0.43953***			
				[0.05678]			
co_weight					0.87095***		
					[0.05007]		
co_ggl						48.86570***	
						[4.53991]	
co_dummy							0.08156***
							[0.00883]
covariates?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
bank FE?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
year-qtr FE?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
adj-R^2	0.468	0.464	0.467	0.461	0.467	0.463	0.462
# banks	552	552	552	552	552	552	552
observations	22,406	22,406	22,406	22,406	22,406	22,406	22,406
economic magnitude	*37.98%*	*25.49%*	*34.88%*	*16.04%*	*33.14%*	*23.61%*	*38.26%*

Table 4: Difference-indifferences (DiD) estimates

This table presents the DiD results of equation (3) using panel fixed-effects technique. In Panel A, the dependent variable is *discretionary loan loss provisions* (*dllp)* from equation (2) in Columns (1) and (2), *bog_index* in Columns (3) and (4), and *comp_score* in Columns (5) and (6). *Common ownership* is measured as the number of banks commonly owned by institutional blockholders *(co_bank)* as our main proxy. *treatment* is a dummy that equals one for treated banks and zero for control banks. *post* is a dummy that equals one for the post-merger period and zero for the pre-merger period. The treated banks are those that have an increase in common ownership after the merger between two asset managers: BlackRock and BGI in 2009, and the control banks are those with no change in common ownership. We use four-year window around the merger date. In Panel B, we report the diagnostic test to prove that common ownership increases following the merger. In Panel C, we report the results for parallel trend test as our second diagnostic test of DiD framework. Particularly, we tabulate the mean in *dllp* for banks in the treatment and control groups going back up to four years prior to the merger. The first row in the table reports statistics for *dllp* going back one year prior to the event year. The subsequent rows report statistics for *dllp* going back further in time. The table also reports the test statistics for differences in means between treated and control groups. Each regression controls for four covariates (X_{it}): *ln(assets)*, *charter value, non-interest income*, and *revenue growth,* and *revenue diversity*. All variables are defined in Table 1. All continuous variables are winsorized at the 1st and 99th percentiles. *, **, *** represent statistical significance at the 10%, 5% and 1% level, respectively.

Panel A: DiD estimates for bank transparency

	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
Dependent variables:	*dllp*	*dllp*	*bog_index*	*bog_index*	*comp_score*	*comp_score*
treatment×post	-0.001***	-0.001***	-0.480***	-0.559***	0.440***	0.382***
	(0.000)	(0.000)	(0.161)	(0.164)	(0.037)	(0.038)
post	0.002***	0.002***	5.739***	5.374***	-0.500***	-0.847***
	(0.000)	(0.000)	(0.264)	(0.290)	(0.063)	(0.068)
Covariates?	No	Yes	No	Yes	No	Yes
bank FE?	Yes	Yes	Yes	Yes	Yes	Yes
year-qtr FE?	Yes	Yes	Yes	Yes	Yes	Yes
adj-R^2	0.111	0.118	0.508	0.510	0.221	0.259
# banks	367	367	365	365	312	312
observations	3,850	3,850	3,749	3,749	3,038	3,038

Panel B: Diagnostic test#1: post-merger period common ownership

Variables:	*co_bank*	*co_bank*
treated×post	56.600***	54.620***
	(2.106)	(2.133)
post	73.865***	65.900***
	(3.440)	(3.750)
Covariates?	No	Yes
bank FE?	Yes	Yes
year-qtr FE?	Yes	Yes
adj-R^2	0.593	0.597
# banks	337	367
observations	3,850	3,850

Panel C: Diagnostic test#2: parallel trend in dllp between treatment and control firms

dllp	Treatment	Control	*t-test*
Year – 1	0.0022	0.0025	0.69
Year – 2 to year – 1	0.0016	0.0018	1.06
Year – 3 to year – 1	0.0014	0.0016	1.25
Year – 4 to year – 1	0.0014	0.0015	1.03

Table 5: Two-stage least squares with instrumental variables (2SLS-IV) estimates

This table presents partial results of two-stage least squares instrumental variables (2SLS-IV) estimation of equation (1) that relates bank transparency to institutional common ownerships. The first-stage dependent variable is *common_ownership* as proxied by seven different reduced-form and structural-based measures: *ln(1+co_bank), ln(1+co_inv)*, *ln(1+co_invbank)*, *co_share*, *co_weight*, *co_ggl* and *co_dummy;* we consider *Russell2000* as our main instrumental variable (IV), and the regression results are in Panel A. The second-stage dependent variable is *transparency* as measured by *dllp* from equation (2), *bog_index* of readability, and *comp_score* of financial statements comparability. Each regression controls for four covariates (X_{it}): ln*(assets)*, *charter value*, *non-interest income*, and *revenue growth*. All variables are defined in Table 1. All continuous variables are winsorized at the 1st and 99th percentiles. Robust standard errors in parentheses are clustered at the bank level. *, **, *** represent statistical significance at the 10%, 5% and 1% level, respectively.

Panel A: first-stage regression results

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
variables:	*co_bank*	*co_inv*	*co_invbank*	*co_share*	*co_weight*	*co_ggl*× 10^{-3}	*co_dummy*
$Russell2000_{i,\,t-1}$	-13.515***	-0.151***	-6.605***	-0.0084***	-0.0201***	-0.3101***	0.327***
	(0.608)	(0.0179)	(0.437)	(0.0013)	(0.0013)	(0.132)	(0.0097)
covariates?	Included	Included	Included	Included	Included	Included	Included
bank FE?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
year-qtr FE?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Model diagn. tests:							
F test for instrument	493.48***	70.89***	228.46***	39.93***	256.28***	553.32***	11.34***
SW *Chi-sq* test for under identification	494.93***	71.10***	229.14***	40.05***	257.03***	554.95***	11.38***
SW *F-test* for weak identification	493.48***	70.89***	228.46***	39.93***	256.28***	553.32***	11.34***
Obs./# banks	45,670/1214	45,670/1214	45,670/1214	33,933/1051	33,933/1051	22,581/556	22,581/556

Panel B: second-stage results for bank transparency proxies

	(1)	(2)	(3)
Dependent variable:	*dllp*	*bog_index*	*comp_score*
$ln\,(1+\widehat{co\_bank_t})\times 10^{-3}$	-15.041***	-13.230***	6.237***
	(1.881)	(7.006)	(0.958)
Hansen *J-stats* for endog.	63.952***	308.53***	32.552***
$ln\,(1+\widehat{co\_inv_t})$	-1.345***	-1.009*	0.511***
	(0.225)	(0.539)	(0.103)
Hansen *J-stats* for endog.	70.303***	83.452***	42.485***
$ln\,(1+\widehat{co\_invbank_t})$	-0.308***	-0.0292*	0.0141***
	(0.004)	(0.0156)	(0.002)
Hansen *J-stats* for endog.	67.132***	138.831***	2.904
$\widehat{co\_share_t}$	-24.238***	-18.932*	10.100***
	(4.794)	(10.232)	(2.546)
Hansen *J-stats* for endog.	70.898***	44.425***	46.292***
$\widehat{co\_weight_t}$	-10.097***	-8.218***	3.538***
	(1.331)	(4.365)	(0.558)
Hansen *J-stats* for endog.	66.764***	206.924***	33.061***
$\widehat{co\_ggl_t}$	-655.526***	-583.209*	270.627***
	(81.696)	(309.024)	(41.414)
Hansen *J-stats* for endog.	62.421***	351.957***	37.913***
$\widehat{co\_dummy_t}$	6.212***	6.664	-1.1919***
	(1.978)	(4.274)	(0.592)
Hansen *J-stats* for endog.	71.684***	7.774***	53.423***
Bank and Year-Qtr FEs?	Included	Included	Included
# banks	1,214	1,051	556
observations	45,670	33,933	22,581

Table 6: *Common ownership* and private information

This table presents the results of equation (1) estimated using panel fixed-effects technique. The dependent variable is private information gathering, measured as *idiosyncratic volatility* (*idio_vol)* from equation (4) in Panel A, *lmsw-c2* of volume-return coefficient from equation (5) in Panel B, and *pin* in Panel C. *common_ownership* is proxied by seven different reduced-form and structural-based measures: *ln(co_bank), ln(co_inv)*, *ln(co_invbank)*, *co_share*, *co_weight*, *co_ggl* and *co_dummy*. Each regression controls for four covariates (X_{it}): *ln(assets)*, *charter value*, *non-interest income*, and *revenue growth*. Regressions in Panels B and C include four covariates, bank-FE, and year-qtr FEs. All variables are defined in Table 1. All continuous variables are winsorized at the 1st and 99th percentiles. *, **, *** represent statistical significance at the 10%, 5% and 1% level, respectively.

Panel A: private information gathering = idio_vol

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable:	*idio_vol*	*idio_vol*	*idio_vol*	*idio_vol*	*idio_vol*	*idio_vol*	*idio_vol*
ln(1+co_bank)	-0.048***						
	[0.004]						
ln(1+co_inv)		-0.132***					
		[0.014]					
ln(1+co_invbank)			-0.048***				
			[0.004]				
co_share				-0.715***			
				[0.088]			
co_weight					-0.981***		
					[0.085]		
co_ggl						-74.507***	
						[7.577]	
co_dummy							-0.094***
							[0.013]
$ln(assets)_{t-1}$	-0.366***	-0.366***	-0.367***	-0.368***	-0.355***	-0.361***	-0.368***
	[0.015]	[0.015]	[0.015]	[0.015]	[0.015]	[0.015]	[0.015]
$charter\ value_{t-1}$	-5.815***	-5.888***	-5.850***	-5.921***	-6.027***	-5.960***	-6.012***
	[1.261]	[1.262]	[1.261]	[1.262]	[1.261]	[1.262]	[1.262]
$non\text{-}interest\ income_{t-1}$	-0.345***	-0.350***	-0.347***	-0.353***	-0.362***	-0.366***	-0.350***
	[0.045]	[0.045]	[0.045]	[0.045]	[0.045]	[0.045]	[0.045]
$revenue\ growth_{t-1}$	0.005	0.005	0.005	0.005	0.004	0.004	0.005
	[0.005]	[0.005]	[0.005]	[0.006]	[0.005]	[0.005]	[0.006]
constant	13.196***	13.255***	13.239***	13.300***	13.235***	13.248***	13.399***
	[1.282]	[1.283]	[1.282]	[1.283]	[1.282]	[1.283]	[1.283]
bank FE?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
year-qtr FE?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
adj-R^2	0.621	0.620	0.621	0.620	0.621	0.620	0.620
# banks	1,196	1,196	1,196	1,196	1,196	1,196	1,196
observations	45,431	45,431	45,431	45,431	45,431	45,431	45,431
economic magnitude	4.93%	3.73%	4.53%	3.13%	4.47%	4.31%	5.28%

Panel B: private information gathering= lmsw-c2

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable:	*lmsw-c2*	*lmsw-c2*	*lmsw-c2*	*lmsw-c2*	*lmsw-c2*	*lmsw-c2*	*lmsw-c2*
ln(1+co_bank)	-0.003**						
	[0.001]						
ln(1+co_inv)		0.008*					
		[0.004]					
ln(1+co_invbank)			-0.003**				
			[0.001]				
co_share				0.058**			
				[0.028]			
co_weight					-0.181***		
					[0.024]		
co_ggl						-17.810***	
						[1.977]	
co_dummy							-0.001
							[0.004]
covariates?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
bank FE?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
year-qtr FE?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
adj-R^2	0.115	0.115	0.115	0.115	0.115	0.115	0.115
#banks	1,196	1,196	1,196	1,196	1,196	1,196	1,196
observations	45,431	45,431	45,431	45,431	45,431	45,431	45,431

Panel C: private information gathering= pin

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable:	*pin*	*pin*	*pin*	*pin*	*pin*	*pin*	*pin*
ln(1+co_bank)	-0.005***						
	[0.001]						
ln(1+co_inv)		-0.002					
		[0.003]					
ln(1+co_invbank)			-0.005***				
			[0.001]				
co_share				0.015			
				[0.022]			
co_weight					-0.277***		
					[0.035]		
co_ggl						-36.574***	
						[4.639]	
co_dummy							-0.011***
							[0.003]
covariates?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
bank FE?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
year-qtr FE?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
adj-R^2	0.518	0.518	0.518	0.518	0.518	0.518	0.518
#banks	986	986	986	986	986	986	986
observations	28,176	28,176	28,176	28,176	28,176	28,176	28,176

Table 7: *Common ownership* and bank stock liquidity

This table presents the results of equation (1) estimated using panel fixed-effects technique. The dependent variable *liquidity,* measured as *ln(turnover)* in Panel A, *ln(dollar_vol)* in Panel B, and *bid-ask spread* in Panel C. *common_ownership* is proxied by seven different reduced-form and structural-based measures: *ln(1+co_bank), ln(1+co_inv)*, *ln(1+co_invbank)*, *co_share*, *co_weight*, *co_ggl* and *co_dummy*. Each regression controls for four covariates (X_{it}): *ln(assets)*, *charter value, non-interest income*, and *revenue growth*. Regressions in Panels B and C include four covariates, bank-FEs, and year-quarter FEs. All variables are defined in Table 1. All continuous variables are winsorized at the 1st and 99th percentiles. *, **, *** represent statistical significance at the 10%, 5% and 1% level, respectively.

Panel A: liquidity = ln(1+turnover)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable:	*ln(1+turnover)*	*ln(1+turnover)*	*ln(1+turnover)*	*ln(1+turnover)*	*ln(1+turnover)*	*ln(1+turnover)*	*ln(1+turnover)*
ln(1+co_bank)	0.00008***						
	[0.00003]						
ln(1+co_inv)		0.00026***					
		[0.00010]					
ln(1+co_invbank)			0.00005*				
			[0.00003]				
co_share				0.00189***			
				[0.00062]			
co_weight					0.00112*		
					[0.00060]		
co_ggl						0.13294**	
						[0.05348]	
co_dummy							0.00004
							[0.00009]
$ln(assets)_{t-1}$	0.00072***	0.00072***	0.00072***	0.00072***	0.00071***	0.00071***	0.00073***
	[0.00011]	[0.00011]	[0.00011]	[0.00011]	[0.00011]	[0.00011]	[0.00011]
$charter\ value_{t-1}$	0.00498	0.00499	0.00521	0.00489	0.00539	0.00517	0.00549
	[0.00891]	[0.00891]	[0.00891]	[0.00891]	[0.00891]	[0.00891]	[0.00891]
$non\text{-}interest\ income_{t-1}$	-0.00195***	-0.00194***	-0.00194***	-0.00194***	-0.00193***	-0.00191***	-0.00194***
	[0.00032]	[0.00032]	[0.00032]	[0.00032]	[0.00032]	[0.00032]	[0.00032]
$revenue\ growth_{t-1}$	-0.00006	-0.00006	-0.00006	-0.00006	-0.00006	-0.00006	-0.00006
	[0.00004]	[0.00004]	[0.00004]	[0.00004]	[0.00004]	[0.00004]	[0.00004]
constant	-0.01168	-0.01166	-0.01192	-0.01157	-0.01189	-0.01170	-0.01219
	[0.00905]	[0.00905]	[0.00905]	[0.00905]	[0.00905]	[0.00905]	[0.00905]
bank FE?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
year-qtr FE?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
adj-R^2	0.194	0.194	0.194	0.194	0.194	0.194	0.194
# banks	1,197	1,197	1,197	1,197	1,197	1,197	1,197
observations	45,463	45,463	45,463	45,463	45,463	45,463	45,463
economic magnitude	*5.49%*	*4.90%*	*3.15%*	*5.51%*	*3.41%*	*5.13%*	*1.50%*

Panel B: liquidity = ln(dollar_vol)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable:	*ln(dollar_vol)*	*ln(dollar_vol)*	*ln(dollar_vol)*	*ln(dollar_vol)*	*ln(dollar_vol)*	*ln(dollar_vol)*	*ln(dollar_vol)*
ln(1+co_bank)	0.04936***						
	[0.00319]						
ln(1+co_inv)		0.12234***					
		[0.01094]					
ln(1+co_invbank)			0.04843***				
			[0.00334]				
co_share				0.47197***			
				[0.07065]			
co_weight					0.93504***		
					[0.06816]		
co_ggl						31.357***	
						[6.10878]	
co_dummy							0.10751***
							[0.01042]
covariates?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
bank FE?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
year-qtr FE?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
adj-R^2	0.929	0.928	0.928	0.928	0.928	0.928	0.928
# banks	1,197	1,197	1,197	1,197	1,197	1,197	1,197
observations	45,477	45,477	45,477	45,477	45,477	45,477	45,477
economic magnitude	*0.71%*	*0.48%*	*0.64%*	*0.29%*	*0.59%*	*0.25%*	*0.84%*

Panel C: liquidity = bid-ask spread

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable:	*bid-ask spread*	*bid-ask spread*	*bid-ask spread*	*bid-ask spread*	*bid-ask spread*	*bid-ask spread*	*bid-ask spread*
ln(1+co_bank)	-0.00062***						
	[0.00010]						
ln(1+co_inv)		-0.00187***					
		[0.00036]					
ln(1+co_invbank)			-0.00062***				
			[0.00011]				
co_share				-0.00640***			
				[0.00230]			
co_weight					-0.00036		
					[0.00220]		
co_ggl						0.936***	
						[0.19695]	
co_dummy							-0.0021***
							[0.00034]
covariates?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
bank FE?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
year-qtr FE?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
adj-R^2	0.634	0.634	0.634	0.634	0.634	0.634	0.634
# banks	1,180	1,180	1,180	1,180	1,180	1,180	1,180
observations	43,995	43,995	43,995	43,995	43,995	43,995	43,995
economic magnitude	*4.67%*	*3.87%*	*4.28%*	*2.05%*	*0.12%*	*3.96%*	*8.64%*

Table 8: *Common ownership* and managerial incentives in banks

This table presents the results of equation (1) estimated using panel fixed-effects technique. The dependent variable *managerial incentives,* measured as *delta* in Panel A, and *vega* in Panel B. *common_ownership* is proxied by seven different reduced-form and structural-based measures: *ln(1+co_bank), ln(1+co_inv)*, *ln(1+co_invbank)*, *co_share*, *co_weight*, *co_ggl* and *co_dummy*. Each regression controls for four covariates (X_{it}): *ln(assets)*, *charter value, non-interest income*, and *revenue growth*. Regressions in Panels B and C include four covariates, bank-FEs, and year-quarter FEs. All variables are defined in Table 1. All continuous variables are winsorized at the 1st and 99th percentiles. *, **, *** represent statistical significance at the 10%, 5% and 1% level, respectively.

Panel A: managerial incentives = delta

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable:	*delta*	*delta*	*delta*	*delta*	*delta*	*delta*	*delta*
ln(1+co_bank)	-11.799***						
	[1.996]						
ln(1+co_inv)		-20.079***					
		[6.438]					
ln(1+co_invbank)			-11.603***				
			[2.082]				
co_share				-114.425***			
				[39.431]			
co_weight					-123.752***		
					[39.168]		
co_ggl × 10^3						-4.416	
						[3.711]	
co_dummy							-17.845***
							[6.399]
$ln(assets)_{t-1}$	-8.018	-6.302	-7.741	-6.266	-3.676	-4.752	-6.178
	[7.615]	[7.627]	[7.616]	[7.630]	[7.609]	[7.613]	[7.630]
$charter\ value_{t-1}$	-574.282	-661.866	-567.320	-661.560	-479.478	-574.226	-669.892
	[758.653]	[760.335]	[758.871]	[760.453]	[760.844]	[760.623]	[760.621]
$non\text{-}interest\ income_{t-1}$	115.161***	108.162***	114.797***	107.620***	106.224***	105.277***	108.943***
	[30.229]	[30.252]	[30.240]	[30.251]	[30.233]	[30.255]	[30.276]
$revenue\ growth_{t-1}$	5.027	5.213	5.040	5.125	5.372*	5.246*	5.228
	[3.173]	[3.178]	[3.173]	[3.179]	[3.178]	[3.180]	[3.178]
constant	704.371	758.272	691.076	755.818	531.709	640.697	761.842
	[760.882]	[762.961]	[761.074]	[763.110]	[763.136]	[762.711]	[763.323]
bank FE?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
year-qtr FE?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
adj-R^2	0.270	0.267	0.270	0.267	0.267	0.267	0.267
# banks	177	177	177	177	177	177	177
observations	7,275	7,275	7,275	7,275	7,275	7,275	7,275
economic magnitude	*16.11%*	*12.20%*	*23.57%*	*10.77%*	*12.14%*	*5.50%*	*21.58%*

Panel B: managerial incentives= vega

	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*
Dependent variable:	*vega*	*vega*	*vega*	*vega*	*vega*	*vega*	*vega*
ln(1+co_bank)	-2.644***						
	[0.358]						
ln(1+co_inv)		-5.614***					
		[1.156]					
ln(1+co_invbank)			-2.369***				
			[0.374]				
co_share				-43.416***			
				[7.071]			
co_weight					-13.462*		
					[7.042]		
co_ggl× 10^3						-2.362***	
						[6.664]	
co_dummy							-0.739
							[1.150]
covariates?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
bank FE?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
year-qtr FE?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
adj-R^2	0.411	0.409	0.410	0.410	0.407	0.408	0.407
# banks	177	177	177	177	177	177	177
observations	7,275	7,275	7,275	7,275	7,275	7,275	7,275
economic magnitude	*48.91%*	*28.53%*	*40.23%*	*34.16%*	*11.05%*	*24.61%*	*7.47%*

Table 9: *Common ownership* and bank crash risk

This table presents the results of equation (1) estimated using panel fixed-effects technique. The dependent variable *crash risk,* measured as *ncskew* in Panel A, and *ln(dollar_vol)* in Panel B. *common_ownership* is proxied by seven different reduced-form and structural-based measures: *ln(1+co_bank), ln(1+co_inv)*, *ln(1+co_invbank)*, *co_share*, *co_weight*, *co_ggl* and *co_dummy*. Each regression controls for four covariates (X_{it}): *ln(assets)*, *charter value, non-interest income*, and *revenue growth*. Regressions in Panels B include four covariates, bank-FEs, and year FEs. Selected results are reported in Panel B. All variables are defined in Table 1. All continuous variables are winsorized at the 1st and 99th percentiles. *, **, *** represent statistical significance at the 10%, 5% and 1% level, respectively.

Panel A: crash risk = ncskew

	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*
Dependent variable:	*ncskew*	*ncskew*	*ncskew*	*ncskew*	*ncskew*	*ncskew*	*ncskew*
ln(1+co_bank)	-0.013**						
	[0.006]						
ln(1+co_inv)		-0.051**					
		[0.022]					
ln(1+co_invbank)			-0.015**				
			[0.007]				
co_share				-0.325**			
				[0.142]			
co_weight					0.106		
					[0.124]		
co_ggl						-3.237	
						[11.055]	
co_dummy							-0.059***
							[0.022]
$ln(assets)_{t-1}$	0.11***	0.11***	0.11***	0.11***	0.107***	0.11***	0.11***
	[0.024]	[0.024]	[0.024]	[0.024]	[0.024]	[0.024]	[0.024]
$charter\ value_{t-1}$	-2.859	-2.86	-2.858	-2.862	-2.967	-2.946	-2.861
	[2.2]	[2.2]	[2.2]	[2.2]	[2.2]	[2.2]	[2.2]
$non\text{-}interest\ income_{t-1}$	-0.188***	-0.19***	-0.188***	-0.19***	-0.193***	-0.193***	-0.188***
	[0.061]	[0.061]	[0.061]	[0.061]	[0.061]	[0.061]	[0.061]
$revenue\ growth_{t-1}$	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
	[0.008]	[0.008]	[0.008]	[0.008]	[0.008]	[0.008]	[0.008]
constant	0.923	0.922	0.925	0.927	1.05	0.998	0.935
	[2.234]	[2.234]	[2.234]	[2.234]	[2.234]	[2.234]	[2.234]
bank FE?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
year FE?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
adj-R^2	0.086	0.086	0.086	0.086	0.086	0.086	0.086
# banks	451	451	451	451	451	451	451
observations	26,390	26,390	26,390	26,390	26,390	26,390	26,390
economic magnitude	*5.31%*	*5.72%*	*5.64%*	*5.46%*	*1.92%*	*0.74%*	*13.16%*

Panel B: crash risk = duvol

Dependent variable:	*(1)* *duvol*	*(2)* *duvol*	*(3)* *duvol*	*(4)* *duvol*	*(5)* *duvol*	*(6)* *duvol*	*(7)* *duvol*
ln(1+co_bank)	-0.005						
	[0.003]						
ln(1+co_inv)		-0.023**					
		[0.011]					
ln(1+co_invbank)			-0.005*				
			[0.003]				
co_share				-0.163**			
				[0.07]			
co_weight					0.014		
					[0.061]		
co_ggl						-10.212*	
						[5.412]	
co_dummy							-0.027**
							[0.011]
covariates?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
bank FE?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
year FE?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
adj-R^2	0.039	0.039	0.039	0.039	0.039	0.039	0.039
# banks	451	451	451	451	451	451	451
observations	26,338	26,338	26,338	26,338	26,338	26,338	26,338
economic magnitude	*0.12%*	*0.13%*	*0.07%*	*0.013%*	*0.19%*	*0.08%*	*0.11%*

Table A.1: Estimating *discretionary loan loss provision–llp* Model

This table presents OLS estimation results of the *llp* model as represented by equation (2) to measure *discretionary loan loss provisi*on (*dllp*). All variables are defined in Table 1. All continuous variables are winsorized at the 1st and 99th percentiles. The sample consists of bank-quarter observations from the first quarter of 1986 through fourth quarter of 2018. Robust standard errors in parentheses are clustered at the bank level. *, **, *** represent statistical significance at the 10%, 5% and 1% level, respectively.

Dependent variable:	*llp*
Δnpl_t	0.0975***
	(0.007)
$d\Delta npl_t \times \Delta npl_t$	-0.0592***
	(0.0121)
$d\Delta npl_t$	-.0000947***
	(0.000032)
Δnpl_{t-1}	0.05501***
	(0.00531)
Δnpl_{t-2}	0.03831***
	(0.0045)
nco_t	0.89231***
	(0.01324)
$lnassets_{t-1}$	0.0005156***
	(0.0000918)
$\Delta loan_t$	0.0000516
	(0.0002894)
constant	-0.0025648*
	(0.0012368)
year-qtr FE?	Included
bank FE?	Included
Adjusted-R^2	0.7724
observations (quarterly)	46,755
# banks	1,222

Table A.2: *Subsample estimation – size and GFC*

This table presents the results of panel fixed-effects estimation of equation (1) partitioning the sample by bank size in Panel A and by pre, during GFC, and post GFC in Panel B. In Panel A, we classify subsamples the data for small banks, medium banks, and large banks as first, second, and third tercile respectively ranked as per bank size in each year-quarter. In Panel B, we define the pre-GFC period as Quarter 1, 1986 to Quarter 2, 2007, the GFC period as Quarter 3, 2007 to Quarter 2, 2009, and post-GFC period as Quarter 3, 2009 to Quarter 4, 2018. The dependent variable is *transparency*, measured as *discretionary loan loss provisions* (*dllp)* from equation (2), *bog_index*, and *comp_score*. *common_ownership* is proxied by *co_bank*. Each regression controls for four covariates (X_{it}): *ln(assets)*, *charter value, non-interest income*, and *revenue growth*. *, **, *** represent statistical significance at the 10%, 5% and 1% level, respectively.

Panel A: size results

	dllp			*bog_index*			*comp_score*		
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*	*(9)*
Dependent variables	*Small*	*Medium*	*Large*	*Small*	*Medium*	*Large*	*Small*	*Medium*	*Large*
co_bank × 10^{-3}	-1.137***	0.303	-0.998***	-1.857	-0.693	-6.59***	-0.095	1.634***	0.737***
	(0.000)	(0.000)	(0.000)	(0.002)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)
constant	-0.167	7.614***	-11.88***	96.272***	83.279***	46.307***	-4.375**	0.104	1.026
	(2.860)	(2.871)	(2.446)	(11.000)	(8.170)	(9.155)	(2.107)	(1.549)	(1.212)
covariates?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
bank FE?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
year-qtr FE?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2 (adj)	0.300	0.187	0.190	0.341	0.554	0.546	0.279	0.338	0.239
#banks	780	687	416	595	545	350	258	288	226
observations	14,814	15,417	15,439	10,588	11,412	11,993	5,326	6,943	10,312

Panel B: GFC results

	dllp			*bog_index*			*comp_score*		
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*	*(9)*
Dependent variables	*Pre-GFC*	*GFC*	*Post-GFC*	*Pre-GFC*	*GFC*	*Post-GFC*	*Pre-GFC*	*GFC*	*Post-GFC*
co_bank × 10^{-3}	-3.067***	-0.712	-0.742***	-11.242**	-1.906	1.675***	1.651***	1.225	0.507***
	(0.001)	(0.002)	(0.000)	(0.004)	(0003)	(0.000)	(0.000)	(0.001)	(0..000)
constant	-2.672	1.380	-22.984***	82.187***	-31.266	92.391***	1.352**	2.752	-2.305
	(1.629)	(28.146)	(7.031)	(7.535)	(43.475)	(11.952)	(0.545)	(27.390)	(3.937)
covariates?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
bank FE?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
year-Qtr FE?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2 (adj)	0.103	0.149	0.165	0.233	0.391	0.081	0.172	0.282	0.184
# banks	1,006	393	547	844	374	537	433	301	368
observations	31,276	2,829	11,565	20,115	2,678	11,200	12,426	2,064	8,091