INSTITUTIONAL INVESTORS AND BANK RISK EXPOSURE: THE ROLE OF OWNERSHIP CONCENTRATON ON CAMELS AND INVERTED Z-SCORE

Violeta Diaz, Greehey School of Business, St. Mary's University, San Antonio, TX 78228, USA. Email: vdiaz8@stmarytx.edu
Mohammad Jafarinejad, Department of Finance and Business Law, University of Wisconsin-Whitewater, Whitewater, WI 53190, USA. Email: jafarinm@uww.edu
Thanh Ngo, Department of Finance, East Carolina University, Greenville, NC 27858, USA. Email: ngot@ecu.edu

ABSTRACT

We study how bank risk exposure – measured by CAMELS indicators and inverted Z-score – is shaped by various types of institutional investors: active vs. passive, quasi-indexer and dedicated vs. transient, and long-term vs. short-term. We find lower risk exposure for banks with larger institutional ownership but more importantly, concentrated ownership among active, quasi-indexer and dedicated, and long-term institutions. In contrast, we find higher risk exposure for banks with concentrated ownership among passive, transient and short-term institutions. We also provide further evidence about the statistically and economically significant impact of various types of institutions on all thirteen CAMELS indicators.

Keywords: Bank Governance; Bank Risk; CAMELS; Institutional Investors; Inverted Z-score;

1. INTRODUCTION

In light of the financial crisis of 2007-2009, excessive risk-taking of the banking sector was identified as a major contributing factor and the effectiveness of various governance measures was questioned. Banks are mainly funded by a large number of small deposits, protected by deposit insurance, which considerably reduces depositors' power and incentives to monitor banks (Demirgüç-Kunt and Detragiache, 2002; Demirgüç-Kunt and Huizinga, 2004; Laeven, 2013). The presence of deposit insurance inadvertently distorts depositors' and bankers' incentives, discouraging the former from monitoring banks while encouraging the latter to take excessive risks (Merton, 1977). As depositors become less sensitive to banks' risk-taking, they do not demand adequate compensation for bearing higher risk, making deposits a cheaper source of funds for banks (Mehran et al., 2011). Banks are also subject to slew of regulations; given their central role in the economy, banks failure can create negative externalities, inducing systemic risks that are costly for the economy at large. Regulations coupled with government safety nets (i.e.,

deposit insurance coverage and implicit too-big-to-fail policies) created government-subsidized monitoring, disincentivizing debtholder monitoring and diminishing shareholder monitoring (Demsetz and Lehn, 1985; Elyasiani and Jia, 2008).

In response, regulatory reforms attempted to curb excessive risk-taking by leveraging shareholders' monitoring power and incentives. The argument was that if excessive risk leads to bank failure, shareholders have more at stake as debtholders are either covered by deposit insurance or have priority to be paid off. [1] Large shareholders may alleviate governance problems with their oversight (Agrawal and Mandelker, 1990; Attig et al., 2008). In recent decades, institutional investors (e.g., banks, insurance companies, mutual funds, hedge funds, pension funds) have replaced retail investors as the primary shareholders of public companies mainly by managing their shares through vehicles such as mutual and pension funds.[2] Due to this trend, the governing power of institutional investors has gained attention as they are more likely to have resources to purchase a sizable portion of their investee shares to effectively mitigate risk.[3]

In this paper, we empirically examine how institutional investors shape the risk exposure of their investee bank by examining 705 U.S. banks from 2003 to 2015. We examine an overlooked aspect of governance, the comparative power of shareholders within the corporate structure. Hence, instead of solely relying on

[1] However, these efforts proved to be counterproductive; banks have a convex payoff structure (i.e., limited downside with potentially unlimited upside), which creates moral hazard for shareholders, incentivizing them to demand bank executives to take excessive risk for short-term gains at the expense of other stakeholders (Galai and Masulis 1976; Jensen and Meckling 1976; Boyd et al., 1998; Bair 2011). This issue is exacerbated for larger banks, which their systemic importance provides greater incentives for excessive risk as shareholders do not internalize the negative externalities (Flannery, 1998; Laeven, 2013).

[2] Institutional ownership has increased from 35% in the 1980s and 60% in the 2000s to 65% by the end of 2010 while retail ownership has dropped to less than 35% in the same period (Clay, 2002; Blume & Keim, 2012; Borochin and Yang, 2017).

[3] Institutional investors are well informed and those with larger shareholdings are more likely to influence their investee and improve governance with their voting rights (Aggarwal et. al, 2015), access to senior executives and board members (Carleton et al., 1998), and support for increasing the proportion of independent directors (Gallagher et al., 2009). They also pay particular attention to their investees' risk-taking behavior (Wright, et al., 1996), resist counterproductive activities (Mikkelson and Ruback, 1991; Bethel and Liebeskind, 1993), support beneficial shareholder-driven strategies by lobbying and improving management (Holderness and Sheehan, 1985; Bethel and Liebeskind, 1993), enhance value and reduce idiosyncratic risk among diversified investees (Jafarinejad et al., 2015), and when need be, exert substantial pressure on management to sway risk-taking decisions in their favor (Shleifer and Vishny, 1986).

institutional ownership proportion (*OWN*), we measure institutional ownership concentration (*CON*) to study the balance of power among institutions. Different types of investors may have different objectives and investment horizons (Del Guercio, 1996; Woidtke, 2002), which could influence their monitoring power and incentives.[4] We account for this by comparing three different institutional classifications: active vs. passive, quasi-indexer and dedicated vs. transient, and long-term vs. short-term institutions. We measure bank risk exposure as total risk, which is constructed based on the six aspects of CAMELS (i.e., Capital adequacy, Asset qualities, Management costs, Earnings and profitability, Liquidity, and Sensitivity to market risk), and insolvency risk based on the inverted Z-score (Wang and Sun, 2019).

We show that from 2003 to 2015, institutional investors increased their stake in our sample banks by three-fold or 30 percentage points and have become three-times more concentrated. Active, quasi-indexer and dedicated, and long-term institutions are the main drivers of these outcomes: active, and quasi-indexer and dedicated institutions have become larger and more concentrated than their passive and transient counterparts, increasing the gap especially after the financial crisis of 2007-2009. Long-term institutions have closed the proportion and concentration gap and in 2013, for the first time in our sample, they have become more concentrated than their short-term counterparts. We find evidence that bank risk exposure declines as institutions increase their stake and more importantly, as active, quasi-indexer and dedicated, and long-term institutions become more concentrated. In contrast, risk exposure is increased as passive, transient and short-term institutions become more concentrated. We employ fixed-effect, Driscoll-Kraay, Heckman two-stage, 3SLS regressions to address potential omitted variable bias, self-selection bias, cross-sectional dependence among banks, and reverse causality, respectively.

We further investigate the impact of various types of institutional ownership on the six aspects of CAMELS with its thirteen indicators and provide evidence that: 1) Capital adequacy, measured by total

[4] Institutions with a longer investment horizon tend to be more involved in monitoring and exerting pressure on management (Kyle, 1985; Easley & O'hara, 1987; Clay, 2002; Chen et al., 2007) while institutions with a shorter investment horizon tend to frequently trade for short-term profit (Yan and Zhang, 2007).

equity and capital ratios, improves as institutions increase their ownership level but more importantly as active, as well as quasi-indexer and dedicated institutions – regardless of their investment horizon – become more concentrated. Capital adequacy declines with a higher ownership concentration of passive and transient institutions. 2) Asset quality, measured by loan loss provisions and impaired loans ratios, improves for banks with higher ownership concentration among all institutions except passive ones. In contrast, loan loss provisions ratio increases for banks with greater active, transient, and short-term institutional ownership concentration, diminishing asset quality. 3) Management costs, measured by total cost to income ratio, decline as institutions increase their ownership level but more importantly as active, quasi-indexer and dedicated, and long-term institutions become more concentrated. In contrast, total cost to income ratio increases with a greater ownership concentration among passive and transient institutions. Overhead costs to asset ratio also goes up with a larger ownership among transient and short-term institutions. 4) Earnings and profitability, measured by return on asset and equity, benefit as institutional investors increase their ownership level, and active, quasi-indexer and dedicated, and long-term institutions become more concentrated. Earnings and profitability suffer with a greater ownership concentration among passive, transient, and short-term institutions. 5) Liquidity, measured by liquid assets and loans to deposits ratios, declines for banks as active, quasi-indexer and dedicated, and short-term institutions increase their ownership level but improves as quasi-indexer and dedicated, and long-term institutions – whether active or passive – become more concentrated. 6) Sensitivity of banks to market risk, more specifically interest rate risk, measured by total interest expense to deposits and government securities to assets ratios, is reduced for banks as active and short-term institutions – whether quasi-indexer and dedicated or transient – increase their ownership level. This sensitivity increases for banks as passive and transient institutions become more concentrated.

We complement Pathan et al. (2020) and contribute to the literature in several ways: First, we consider an overlooked aspect of institutional investors' impact on bank risk exposure; we go beyond the ownership

level and measure the ownership concentration to proxy for the balance of power among institutions. Second, we account for all three major institutional classifications (i.e., active vs. passive, quasi-indexer and dedicated vs. transient, and long-term vs. short-term) to capture governance strategy and horizon of institutional investors from different angles. Third, we show the impact of institutional investors on widely used risk exposure measures in the literature as well as the industry, the thirteen CAMELS indicators as well as the Z-score.

The remainder of this chapter is organized as follows. Section 2 presents the sample and develops the hypotheses. Section 3 explains the methodology and discusses the results. Section 4 concludes.

2. DATA & HYPOTHESIS DEVELLOPMENT

2.1. THE SAMPLE

We obtain the sample of U.S. banks and their accounting data from SNL Financial database. Institutional ownership data are obtained from their quarterly Form 13F reports. We report the sample distribution in Table 1. The final sample spans from 2003 to 2015, covering 19,373 bank-quarter observations and 705 unique banks. We also report the bank-quarter distribution by the state of incorporation.

2.2. BANK RISK EXPOSURE MASURES

Our first measure of bank risk exposure is total risk (*TOTALRISK*) developed based on the CAMELS indicators widely adopted in banking research (Bassett, Lee, and Spiller, 2015; Wang and Sun, 2018), including 13 indicators categorized into 6 aspects - capital adequacy, asset qualities, management costs, earnings and profitability, liquidity, and sensitivity to market risk. These 13 variables are: total equity to total assets ratio (*EAR*), total capital ratio (*TCR*), loan loss provision to total loans ratio (*LLR*), impaired loan to total loan ratio (*ILR*), total cost to total income ratio (*CIR*), overhead cost to total asset ratio (*OCA*), return on asset (*ROA*), return on equity (*ROE*), liquid assets to total assets ratio (*LAA*), liquid assets to

short-term funds ratio (*LASFR*), total loans to total deposits ratio (*TLD*), total interest expenses to total deposits (*TIETD*), government securities to total assets ratio (*GSTA*).

We should note that all CAMELS indicators are not direct measures of bank risk exposure. While Asset quality, Management costs and Sensitivity to market are positively related, Capital adequacy and Earnings and profitability are negatively related to bank risk. For example, loan loss provisions and impaired loans ratios indicate lower asset quality due to a weaker loan portfolio. Higher cost to income and overhead costs ratios also point out to greater management costs. The higher the indicators in these groups, the higher the bank risk. On the other hand, higher equity and capital ratios indicate lower leverage and greater cushion. Higher ROA and ROE show greater profitability and lower chance of financial distress. Higher liquid assets to total assets or short-term funds indicate that the bank has set aside liquid funds for rainy days. The higher the indicators in these groups, the lower the bank risk. Following Wang and Sun (2019), using one-factor model, we measure an overall indicator based on the thirteen CAMELS indicators to reflect the total risk of a bank (*TOTALRISK*).

Our second measure of bank risk-taking is insolvency risk or the inverted Z-score (*INVERTEDZ*), calculated as the standard deviation of return on assets (*ROA*) over the full sample period divided by the sum of current *ROA* and current total equity to total assets ratio (*EAR*). By inverting the Z-score, which measures bank's distance from insolvency (Roy, 1952), Wang and Sun (2018) directly measure the insolvency risk in way that is consistent with total risk and easier to interpret (i.e., banks with a higher insolvency risk have a higher inverted Z-score).

In Panel A of Table 2, we report the summary statistics of bank characteristics including size, CAMELS ratings, and aggregate risk-taking measures (i.e., *TOTALRISK* and *INVERTEDZ*). The average size of our sample banks measured by total assets is $21.9 billion. For capital adequacy, total equity to asset ratio (*EAR*) and total capital ratio (*TCR*) are, on average, 9.55% and 14.22%, respectively. For asset quality, loan loss ratio (*LLR*) and impaired loans ratio (*ILR*) are, on average, 0.2% and 18.6%, respectively. For

management costs, cost to income ratio (*CIR*) and overhead costs to assets ratio (*ILR*) are, on average, 67.8% and 1.63%, respectively. For earnings and profitability, *ROA* and *ROE* are, on average, 0.65% and 6.3%, respectively. For liquidity, liquid assets ratio (*LAA*) liquid assets to short-term funds (*LASFR*), and total loans to deposits ratio (*TLD*) are, on average, 15.26%, 43.2% and 88.2%, respectively. For sensitivity to market risk, interest expenses to deposits ratio (*TIETD*) liquid assets to short-term funds (*LASFR*) and government securities ratio (*GSTA*) are, on average, 0.5% and 36.3%, respectively.

For the aggregate risk-taking measures, total risk (*TOTALRISK*) and insolvency risk (*INVERTEDZ*) are 0.056 and 9.3%, respectively. The latter suggests that the probability of insolvency and bankruptcy for our sample banks is low.

2.3. Institutional Ownership Measures and Classifications

We use two measures to study the impact of institutional ownership: institutional ownership percentage (*OWN*) and institutional ownership concentration *(CON).* For each bank, we calculate the institutional ownership percentage as the aggregate proportion of all institutional holdings in a particular bank per quarter.

$$OWN_{i,t} = \sum_{j=1}^{J_i} PROP_{i,t}^{j} \quad (1)$$

where $PROP_{i,t}^{j}$ is the proportion of bank i held by institution j at quarter t, and J_i is the number of institutional investors in bank i.

Aside from the ownership percentage, the structure of ownership among institutions could influence their power to govern the investee. For the ownership structure, we measure the concentration of ownership among institutions. The majority of banks are owned by several institutions. For example, one bank may be owned by institutions that have a relatively similar ownership percentage while another one may be owned by several institutions that have a relatively different ownership percentage, some very large and

some very small. Therefore, the latter has a more concentrated ownership by a few institutions. For each bank, we calculate institutional ownership concentration (*CON*) as the sum of the squared ownership proportion of institutions in each bank per quarter. A high level of *CON* indicates a higher concentration of ownership in a small number of institutional owners and thus a relatively lower balance of power among institutional owners.

$$CON_{i,t} = \sum_{j=1}^{J_i} PROP^2{}_{i,t}^{\,j} \quad (2)$$

As the proportion of institutional ownership increases, the marginal benefits of monitoring should surpass the marginal costs, helping banks mitigate risk. Aside from the proportion ownership, the distribution of ownership among institutions could also influence their power to govern the investee. The effective power of investors over management diminishes as their ownership becomes dispersed (Berle and Means, 1932). Hence, we hypothesize that aside from larger ownership proportion, greater ownership concentration among institutions boosts their effective monitoring power, which in turn reduces bank risk exposure:

H1: Risk exposure declines among banks with larger institutional ownership.

H2: Risk exposure declines among banks with concentrated ownership among institutions.

Nonetheless, not all institutional investors have the same agenda or investment horizon for their investee. While some are motivated to monitor their investee and to ensure their long-term safety, others are interested in short-term trading and quick profits. These differences are based on the costs and benefits associated with monitoring and trading, which in turn determine how institutions monitor their portfolio firms. Prior studies highlight these differences. In contrast to passive institutions, active institutions have lower monitoring costs as they have fewer business ties to their investee (Ferreira and Matos, 2008) and do not have to fear losing their investees' business (Chen et al., 2007). The percentage and the number of institutional investors enhance the operating cash flows when there are no business ties between the

institution and the investee (Cornett et al., 2007). There are also benefits associated with monitoring such as the ability to influence management, the likelihood of having access to proprietary information and the potential gains from using both. Active institutions with large shareholdings use their information and power to sway management decision and thus, increase their monitoring benefits.

In term of investment horizon, long-term institutions value monitoring and lasting benefits. Their support for long-term profitable project alleviates managerial myopia (Bushee, 1998, 2001; Cherkes et al., 2008; Edmans, 2008). For example, pension funds tend to invest for the long-term and are more actively monitoring the portfolio firms in comparison to other types of institution investors (Brickley et al., 1988; Bushee, 2001). Firms owned by more pension funds are also associated with lower stock crash risk (Callen and Fang, 2013). In contrast, short-term institutions prefer frequent trading and quick profits instead of incurring monitoring costs for its long-term benefits. For short-term institutions, not only is the cost of monitoring greater than the combined costs of selling the shares and investing in another firm but also the benefits of short-term gains exceed those of long-term monitoring (Callen and Fang, 2013). Consequently, short-term institutions are less likely to monitor and alleviate the risks associated with their investee (Hartzell and Starks, 2003; Gallagher et al., 2009) and are more likely to focus on short-term profits. Firms owned mostly by short-term institutions experience higher subsequent stock return volatility (Bushee and Noe, 2000) and lower long-run value (Bushee 2001).

We classify institutional investors based on three alternative categorization methods. First, following Brickley et al. (1988), Chen et al. (2007), Cornett et al. (2007), and Almazan et al. (2008), we classify bank and insurance companies as passive, and mutual & pension funds, financial companies, private equity firms, and venture capitals as active institutions. We calculate the ownership percentages held by active vs. passive institutional owners (*OWN_ACTIVE* and *OWN_PASSIVE*) and the concentration of each group of owners (*CON_ACTIVE* and *CON_PASSIVE*).

H3: Risk exposure decreases (increases) among banks with active (passive) institutional ownership.

H4: Risk exposure decreases (increases) among banks with concentrated ownership among active (passive) institutions.

Secondly, we break down institutional ownership percentages in each bank in each quarter into the percentage of shares held by transient institutional investors, and quasi-index investors and dedicated investors.[5] Transient institutional investors are characterized by high portfolio turnover and highly diversified portfolio holdings (and thus short-term horizon) (Bushee, 2001). Having a well-diversified portfolio reduces institutions' incentives to actively monitor every investee. Quasi-indexers and dedicated institutional investors, on the other hand, are characterized by low portfolio turnover though quasi-indexers tend to hold more diversified portfolio than dedicated institutional investors. Since quasi-indexers and dedicated institutional investors both have low portfolio turnover (and thus long-term horizon), we combine quasi-indexers and dedicated institutional investor ownership into one single measure, *OWN_QIX_DED*. We refer to ownership by transient institutional investors as *OWN_TRA*. We also calculate the concentration of ownership among quasi-indexers and dedicated, and transient institutions in each bank in each quarter as *CON_QIX_DED* and *CON_TRA*.[6]

H5: Risk exposure decreases (increases) among banks with quasi-indexer and dedicated (transient) institutional ownership.

H6: Risk exposure decreases (increases) among banks with concentrated ownership among quasi-indexer and dedicated (transient) institutions.

[5] We obtain the data for institutional investor classification from http://acct.wharton.upenn.edu/faculty/bushee/IIclass.html as provided by Bushee (2001).

[6] Bushee (2001) assigns no classification to a fund if it has a small portfolio (i.e., fewer than four stocks) or has no data listed in spectrum for two years. As such, not all institutions are classified. Thus, the sum of quasi-indexers and dedicated institutional investor ownership (*OWN_QIX_DED*) and transient institutional investors (*OWN_TRA*) is not exactly equal to total institutional ownership (*OWN*).

Lastly, Barber and Odean (2000), Hotchkiss and Strickland (2003), Gaspar et al. (2005) and Derrien et al. (2013) directly measure the investment horizons of institutional owners and classify them into long-term vs. short-term institutional investors. We specifically follow Derrien et al. (2013) to construct investor horizon. We measure the proportion of bank *i* held by institution *j* at quarter *t-12* (i.e., 5 years ago) that is sold at quarter *t*. We assign a zero turnover for bank *i*, if institution *j* is a net investor of bank *i* between quarter *t-12* and *t*. After weighting this turnover against the weight of bank *i* in investor *j*'s portfolio at quarter *t-12*, we add them over all banks held in the institution's portfolio at *t-12*. Lastly, to reduce the impact of turnover outliers in each quarter, we calculate the mean of institutions turnover over a year from quarter *t-3* to *t*, measuring a portion of investor's turnover over the last 5 years. We distinguish long-term vs. short term institutions based on this turnover measure; institutions with a portfolio turnover of 35% or less are classified as long-term and all other institutions as short-term. We then measure the percentage ownership of stock *i* held by all long-term vs. short-term investors in quarter *t* (*OWN_LONG* and *OWN_SHORT*) and the concentration of ownership among long-term vs. short-term investors (*CON_LONG* and *CON_SHORT*).

H7: Risk exposure decreases (increases) among banks with long-term (short-term) institutional ownership.

H8: Risk exposure decreases (increases) among banks with concentrated ownership among long-term (short-term) institutions.

In Panel B of Table 2, we report the summary statistics of the institutional ownership proportion and concentration measures. Institutional investors have an average stake of about 28% in our sample banks. For 75% of the sample, the average ownership is 47.8%. When we breakdown the sample by institution types, our sample banks have on average more active (19.7% vs. 7.3% passive), quasi-index and dedicated (21.4% vs. 4.9% transient), and short-term (17.3% vs. 10.8% long-term) institutional investors. The

average ownership concentration is about 1.43% and for 75% of the sample, the concentration remains below 1.95%. When we categorize by institution types, active (1.014%), quasi-index and dedicated (1.157%), and short-term (0.793%) institutions have a more concentrated ownership in our sample banks compared to passive (0.364), transient (0.179), and long-term (0.668) institutional investors. Quasi-index and dedicated versus transient classification produce the highest and lowest ownership concentration in our sample.

In Table 3, we report the summary statistics for the percentage and concentration of ownership among all institutions over the years. We exhibit ownership percentage in Figure 1 and ownership concentration in Figure 2. From 2003 to 2015, institutional investors increased their stake in our sample banks by three-fold or 30 percentage points (from 17.78% to 47.67%). Active institutions grew their ownership at a faster rate of about 26 percentage points (from 10.26% to 36.54%) while the ownership of passive institutions remained steady (between 6% to 9%). Quasi-index and dedicated institutions also increased their stake by about 18.5 percentage points (from 13.5% to 32%) compared to transient institutions (from 3.85% to 11.6%). Long-term institutional ownership quadrupled which was about 17 percentage points (from 5.78% to 22.85%) while short-term institutional ownership doubled (from 12% to 24.86%).

During the same period, institutional investors have become three-times more concentrated (from 0.78% to 2.12%): active (from 0.39% to 1.725%), transient (from 0.1% to 0.49%), and long-term (from 0.3% to 1.145%) institutions quadrupled their concentration followed by Quasi-index and dedicated (from 0.68% to 1.48%) and short-term (from 0.51% to 0.97%) institutions. On the other hand, passive institutions become less concentrated (from 0.4% to 0.27%).

Overall, active, quasi-index and dedicated, and long-term institutions are mainly driving the total changes in the ownership proportion and concentration of institutions in our sample banks. Active, and quasi-indexer and dedicated institutions have become larger and more concentrated than their passive and transient counterparts, increasing the gap especially after the financial crisis of 2007-2009. Long-term

institutions have closed the proportion and concentration gap and in 2013, for the first time in our sample, become more concentrated than their short-term counterparts.

3. METHODOLOGY & RESULTS

3.1. METHODLOGY

To empirically test the impact of institutional concentration on bank risk exposure, we set up the following regression models:

$$RISK_{i,t} = \alpha_0 + \beta_1 OWN_{i,t-1} + \beta_2 CON_{i,t-1} + \beta_3 SIZE_{i,t} + \beta_4 RISK_{i,t-1} + \beta_5 BANK_i + \beta_6 QUARTER_t + \beta_7 YEAR_t + \varepsilon_{i,t} \quad (3)$$

where $RISK_{i,t}$ is the total risk ($TOTALRISK_{i,t}$) and inverted Z-score ($INVERTEDZ_{i,t}$) of bank *i* in quarter *t*. $OWN_{i,t-1}$ and $CON_{i,t-1}$ capture the impact of total institutional ownership concentration and proportion in the last quarter, respectively. Risk is unlikely to be influenced immediately by the change in institutional ownership, hence including lagged values allows us to accurately capture the non-contemporaneous relationship between ownership and risk. We further measure the institutional ownership concentration and proportion of each type of institutional ownership including (1) active institutional investors (*OWN_ACTIVE* and *CON_ACTIVE*) and (2) passive institutional investors (*OWN_PASSIVE* and *CON_PASSIVE*), (3) transient institutional owners (*OWN_TRA* and *TRA_CON*) and (4) quasi-indexer and dedicated institutional investors (*OWN_QIX_DED* and *QIX_DED_CON*), (5) long-term institutional owners (*OWN_LONG* and *CON_LONG*) and (6) short-term institutional investors (*OWN_SHORT* and *CON_SHORT*).

Following Aebi, Sabato and Schmid (2012) and Wang and Sun (2018), we control for the lagged bank risk exposure measures ($TOTALRISK_{i,t-1}$ and $INVERTEDZ_{i,t-1}$), and bank size as the natural logarithm of bank assets ($SIZE_{i,t}$). We do not control for other bank characteristics as the construct of the total risk

measure is based upon 13 bank characteristics. In addition, we control for bank ($BANK_i$), quarter ($QUARTER_t$) and year ($YEAR_t$) fixed-effects. We estimate the regression equations (3) and (4) and report the significance levels of the coefficients using bank-clustered standard errors.

3.2. INSTITUTIONAL INVESTOR CLASSFICATION & BANK RISK EXPOSURE

In Table 4, we report the panel data fixed-effect regressions on the impacts of institutional investors on bank risk exposure, *TOTALRISK* (Panel A) and *INVERTEDZ* (Panel B), based on three different institutional classifications: active vs. passive, quasi-indexer and dedicated vs. transient, and long-term vs. short-term. Our analysis involves only banks with institutional ownership (*OWN*) as the concentration variable (*CON*) is calculated for these banks. Our results show total risk is significantly reduced for banks with large and concentrated institutional ownership (Model 1), but insolvency risk is significantly lower only for banks with large institutional ownership (Model 5). For active vs. passive institutions, total risk significantly declines with both active and passive institutional shareholdings. However, total risk responds differently to ownership concentration of active and passive institutions; total risk is lower with the concentration of active institutions (*CON_ACTIVE*), but higher with the concentration of passive institutions (*CON_PASSIVE*) (Model 2). On the other hand, insolvency risk is significantly lower for banks as active institutions increase their ownership proportion and concentration (Model 6).

For quasi-indexer and dedicated vs. transient institutions, risk exposure significantly drops as both types of institutions increase their ownership proportion. Their ownership concentration, however, have differential impacts on risk exposure; while concentration of quasi-indexer and dedicated institutions (*CON_QIX_DED*) significantly lowers risk exposure, concentration of transient institutions (*CON_TRA*) significantly increases risk exposure (Model 3 and 7). For long-term vs. short-term institutions, risk exposure significantly declines with the ownership proportion for both institutions and the concentration of long-term institutions (*CON_LONG*) (Model 4 and 8). These statistically and economically significant results support our second hypothesis, as concentration of active, quasi-indexer and dedicated institutions

and long-term institutional ownership increases, bank risk decreases, and these results are consistent across risk measures. This is an important finding that suggests that institutions have different incentives in monitoring their investees. As ownership becomes more concentrated in these types of institutions their power increases and their effect on bank risk becomes evident. Even though these are different institutions, they have similar objectives and all benefit from more bank stability and a reduction in total bank risk.

[Table 4 about here]

Banks are exposed to the same market risk factors (e.g., economic growth, interest rate fluctuations, etc.). To address the potential cross-sectional dependence among banks, we estimate the regressions with Driscoll-Kraay standard errors (Driscoll & Kraay, 1998) to account for cross-sectional dependence between banks, heteroskedasticity and autocorrelation. In Table 5, we report the results. Consistent with the results shown in Table 4, bank risk exposure declines as all types of institutions increase their ownership proportion and active, quasi-indexer and dedicated, and long-term institutions become concentrated. Conversely, bank risk exposure increases with ownership concentration of passive and transient institutions. These results are both statistically and economically significant.

[Table 5 about here]

3.3. ADDRESSING ENDOGENEITY ISSUES

In this section, we address potential endogeneity issues that may exist due to omitted variables and/or reverse causality. We address the omitted variable bias by controlling for bank ($BANK_i$), quarter ($QUARTER_t$) and year ($YEAR_t$) fixed-effects. According to Chung and Zhang (2011), institutional investors gravitate towards better governed banks. We address reverse causality concerns - when dependent variables (i.e., *TOTALRISK* and *INVERTEDZ*) and independent variables of interest (e.g., *OWN* and *CON*) are determined simultaneously, making it hard to determine whether institutional investors force banks to reduce risk-taking or invest in safer banks - by employing two robustness tests as follows.

First, we employ the Heckman self-selection two-stage approach by estimating a logistic regression of whether a bank is in the highest quartile of institutional ownership level (*HIGH_OWN*) and institutional ownership concentration (*HIGH_CON*). In the first stage, we extract the predicted probabilities of *HIGH_OWN* and *HIGH_CON* to calculate the inverse Mills ratios (*MILLS1* and *MILLS2*) using industry-level instruments: the median institutional ownership level and concentration of all banks in the same size quartile as a sample bank, excluding the sample bank, as the instruments ($SIZE\_MATCH\_OWN_{i,t}$ and $SIZE\_MATCH\_CON_{i,t}$). These instruments represent alternative investment opportunities for institutional investors in similar-size banks. Larger median shareholding and concentration in one bank reduces investment opportunities in similar banks. Hence, we expect a negative relation between institutional ownership and concertation in one bank and median institutional ownership and concentration in similar banks (Lin, Ma, Malatesta and Xuan, 2011; Yang and Zhao, 2014; Tran and Turkiela, 2020). In the second stage, we include the calculated inverse Mills ratios from the first stage in our main model to check the robustness of our initial results.

$$RISK_{i,t+1} = \alpha_0 + \beta_1 OWN_{i,t} + \beta_2 CON_{i,t} + \beta_3 MILLS_{i,t} + \beta_4 SIZE_{i,t} + \beta_5 RISK_{i,t-1} + \beta_6 BANK_i + \beta_7 QUARTER_t + \beta_8 YEAR_t + \varepsilon_{i,t} \quad (4)$$

$$HIGH\_OWN_{i,t+1} = \alpha_0 + \beta_1 SIZE\_MATCH\_OWN_{i,t} + \beta_2 SIZE\_MATCH\_CON_{i,t} + \beta_3 LN(SHARES)_{i,t} + \beta_4 BANK_i + \beta_5 QUARTER_t + \beta_6 YEAR_t + \varepsilon_{i,t} \quad (5)$$

$$HIGH\_CON_{i,t+1} = \alpha_0 + \beta_1 SIZE\_MATCH\_OWN_{i,t} + \beta_2 SIZE\_MATCH\_CON_{i,t} + \beta_3 LN(SHARES)_{i,t} + \beta_4 BANK_i + \beta_5 QUARTER_t + \beta_6 YEAR_t + \varepsilon_{i,t} \quad (6)$$

In Table 6, we report the Heckman two-stage second-stage regressions. Our results remain robust. Risk-taking declines as institutional investors – regardless of their type – increase their ownership level, and active, quasi-indexer and dedicated, and long-term institutions increase their ownership concentration. Conversely, risk-taking increases as passive and transient institutions become concentrated.

[Table 6 about here]

Second, we employ the three-stage least squares (3SLS) estimation method to endogenize both institutional concentration and ownership in a system of simultaneous equations:

$$TOTALRISK_{i,t+1} = \alpha_0 + \beta_1 OWN_{i,t} + \beta_2 CON_{i,t} + \beta_3 SIZE_{i,t} + \beta_4 BANK_i + \beta_5 QUARTER_t + \beta_6 YEAR_t + \varepsilon_{i,t} \quad (7)$$

$$OWN_{i,t+1} = \alpha_0 + \beta_1 SIZE\_MATCH\_OWN_{i,t} + \beta_2 SIZE\_MATCH\_CON_{i,t} + \beta_3 LN(SHARES)_{i,t} + \beta_4 BANK_i + \beta_5 QUARTER_t + \beta_6 YEAR_t + \varepsilon_{i,t} \quad (8)$$

$$CON_{i,t+1} = \alpha_0 + \beta_1 SIZE\_MATCH\_OWN_{i,t} + \beta_2 SIZE\_MATCH\_CON_{i,t} + \beta_3 LN(SHARES)_{i,t} + \beta_4 BANK_i + \beta_5 QUARTER_t + \beta_6 YEAR_t + \varepsilon_{i,t} \quad (9)$$

In Table 7, we present the results of our 3SLS regressions for all institutions (Panel A), active vs. passive (Panel B), quasi-indexer and dedicated vs. transient (Panel C), and long-term vs. short-term (Panel D) institutions. In Panel A, the negative and significant coefficients of *OWN* and *CON* suggest that total risk in the next quarter is significantly reduced in response to the current level and concentration of institutional ownership. In addition, median institutional ownership level and concentration at our sample banks in the next quarter positively respond to the current institutional ownership level and concentration in similar-size banks.

In Panels B, C and D, results show significant but mixed signs for the coefficients of ownership concentration, suggesting a differential impact on total risk and a similar pattern of what we discovered in Tables 4 and 5; while active and long-term ownership concentration reduce total risk, passive, transient and short-term ownership concentration increase total risk. Overall, our Heckman results indicate that our findings in Table 5 are not driven by omitted variable bias or reverse causation.

[Table 7 about here]

3.4. INSTITUTIONAL INVESTORS CLASSFICATION & CAMELS RATINGS

Following Wang and Sun (2019), we estimate the impact of institutional ownership on each of the six aspects of bank risk exposure based on the CAMELS indicators (i.e., Capital adequacy, Asset qualities, Management costs, Earnings and profitability, Liquidity, and Sensitivity to market risk. We report the results in Tables 8 through 13.

In Table 8, we report the results for capital adequacy measured by equity to assets ratio (*EAR* in Panel A) and total capital ratio (*TCR* in Panel B). Both measures provide banks with the capacity to absorb current or anticipated losses. In Panel A, *EAR* is positively associated with *OWN* and *CON*, suggesting that both institutional ownership level and concentration improve *EAR*, supporting our first hypothesis. On the other hand, ownership concentration is not positive for all institutions; among passive and transient institutions it has a negative and significant impact on *EAR*. In Panel B, *TCR* is positively associated with *CON*, suggesting that institutional ownership concentration improves *TCR* and lowers bank risk also supporting our first hypothesis. For institutional ownership concentration, a higher level in active, quasi-indexer and dedicated, and both long and short-term institutions have a positive impact on TCR. These results are statistically and economically significant.

[Table 8 about here]

In Table 9, we report the results from the regressions of bank asset quality, measured by loan loss provision ratio (*LLR* in Panel A) and impaired loans ratio (*ILR* in Panel B). To improve asset quality, banks are

expected to reduce loan loss provision and impaired loans ratios. In Panel A, loan loss provision ratio is negatively associated with ownership proportion and concentration of institutional investors (Model 1). This association is mainly driven by the ownership concentration of active (Model 2), transient (Model 3), and long-term institutions (Model 4). In Panel B, institutional ownership proportion and concentration have an opposite impact on impaired loans ratio; while institutional concentration level reduces the impaired loans ratio, ownership among institutions increases this ratio (Model 5). These results are mainly driven by the ownership of active, transient, and short-term institutions as well as the ownership concentration among all institutions except passive ones (Models 6, 7 and 8). This result suggests that higher concentration of institutions with monitoring incentives prevents banks from taking additional and unnecessary risks. Overall, our results in Tables 8 and 9 are consistent with Shehzad et al., (2010)'s findings, where concentrated ownership boosts capital adequacy ratio and reduces non-performing loans ratio, conditional on supervisory control and shareholders protection rights.

[Table 9 about here]

In Table 10, we report the results from the regressions of bank management cost, measured by total cost to income ratio (*CIR* in Panel A) and overhead cost ratio (*OCA* in Panel B). To reduce management costs, banks are expected to lower cost to income and overhead cost ratios. In Panel A, the proportion and concentration of institutional investors is significantly associated with a lower cost to income ratio (Model 1). Consistent with our previous finding, this association is driven by the ownership concentration of monitoring institutions: active, quasi-indexer and dedicated, and long-term institutions. In contrast, the ownership concentration of passive and transient institutions is associated with a higher cost to income ratio (Models 2, 3 and 4). These results are statistically and economically significant.

[Table 10 about here]

In Table 11, we report the results from the regressions of bank earnings and profitability, measured by return on assets (*ROA* in Panel A) and return on equity (*ROE* in Panel B). Higher earnings and profitability

indicate more stability and resilience when experiencing higher risk exposure. Institutional concentration is statistically and economically significant when profitability is measured by ROE, but not statistically significant if measured by ROA. Institutional ownership, on the other hand, is significantly associated with a higher *ROA* and *ROE*. When we breakdown institutional concentration by institution type, however, concentration of long-term institutions has a positive impact and concentration of passive, transient and short-term institutions have a negative impact on *ROA* (Models 2, 3 and 4). In Panel B, the positive association between ROE and institutional concentration is driven by active, quasi-indexer and dedicated, and long-term institutions. In contrast, the ownership concentration of passive, transient, and short-term institutions are associated with a lower *ROE* (Models 2, 3 and 4). These findings are consistent with Diaz et al. (2020) and support our second hypothesis.

[Table 11 about here]

In Table 12, we report the results from the regressions of bank liquidity, measured by liquid assets to total assets ratio (*LAA* in Panel A), liquid assets to short-term funds ratio (*LASFR* in Panel B), and total loans to deposits ratio (*TLD* in Panel C). To improve liquidity, banks are expected to increase the *LAA* and *LAFSR* ratios and to reduce the *TLD* ratio. In Panel A, ownership proportion and concentration of institutional investors have an opposite impact on liquid assets ratio; liquid assets ratio is lower among banks with higher institutional ownership but higher among banks with greater institutional ownership concentration. These results are driven by the shareholdings of active, quasi-indexer and dedicated, and short-term institutions as well as the concentration of ownership among both active and passive, and quasi-indexer and dedicated institutions (Models 2, 3 and 4). In Panel B, only the ownership concentration of passive institutions lowers the ratio of liquid assets to short-term funds (Model 6).

In Panel C, ownership proportion and concentration of institutional investors have an opposite impact on loans to deposits ratio; this ratio is higher among banks with higher institutional ownership and lower among banks with higher institutional ownership concentration (Model 9). These results are driven by the

ownership of active, quasi-indexer and dedicated, and short-term institutions as well as the ownership concentration of both active and passive, quasi-indexer and dedicated, and long-term institutions (Models 10, 11 and 12).

[Table 12 about here]

In Table 13, we report the results from the regressions of bank sensitivity to market risk, measured by total interest expense to total deposits ratio (*TIETD* in Panel A) and government securities to total assets ratio (*GSTA* in Panel B). Banks with a higher *TIETD* and *GSTA* are more sensitive to market risk, more specifically interest rate risk. In Panel A, interest expense to deposits ratio is reduced by the ownership proportion and is increased by the ownership concentration of transient institutions (Model 3). In Panel B, institutional ownership level has a negative impact on the ratio of governments securities as a portion of assets (Model 5), driven by the ownership of active, quasi-indexer and dedicated, and short-term institutions. Ownership concentration of passive institutions has a positive impact on this ratio (Models 6, 7 and 8). These results are economically significant as well.

[Table 13 about here]

We summarize the impact of various types of institutional ownership on the six aspects of CAMELS with its thirteen indicators as follows: 1) Capital adequacy, measured by total equity and capital ratios, improves as active, as well as quasi-indexer and dedicated institutions – regardless of their investment horizon – become concentrated and declines with ownership concentration of passive and transient institutions. 2) Asset quality, measured by loan loss provisions and impaired loans ratios, improves for banks with the concentration of ownership among all institutions except passive ones. In contrast, loan loss provisions ratio increases for banks with the concentration of ownership among active, transient, and short-term institutions, diminishing asset quality. 3) Management costs, measured by total cost to income ratio, decline as institutions increase their ownership level but more importantly as active, quasi-indexer and dedicated, and long-term institutions become concentrated. In contrast, total cost to income ratio

increases with the concentration of ownership among passive and transient institutions. Overhead costs to asset ratio also increases with larger ownership among transient and short-term institutions. 4) Earnings and profitability, measured by return on asset and equity, benefit as institutional investors increase their ownership level, and active, quasi-indexer and dedicated, and long-term institutions become concentrated. Earnings and profitability suffer with the concentration of ownership among passive, transient, and short-term institutions. 5) Liquidity, measured by liquid assets and loans to deposits ratios, declines for banks with active, quasi-indexer and dedicated, and short-term institutional ownership but improves as quasi-indexer and dedicated, and long-term institutions – whether active or passive – become concentrated. 6) Sensitivity of banks to market risk, more specifically interest rate risk, measured by total interest expense to deposits and government securities to assets ratios, is reduced for banks as active and short-term institutions – whether quasi-indexer and dedicated or transient – increase their ownership level. This sensitivity increases for banks as passive and transient institutions become concentrated. These results are economically significant as well.

4. CONCLUSIONS

We study an overlooked aspect of governance, how the balance of power among institutional investors shape the risk exposure of their investee bank. Instead of solely relying on the ownership percentage, we include the ownership concentration among various types of institutions such as active vs. passive, quasi-indexer and dedicated vs. transient, and long-term vs. short-term. We capture the risk exposure of our sample banks using total risk, which is constructed based on the six aspects of CAMELS indicators (i.e., Capital adequacy, Asset qualities, Management costs, Earnings and profitability, Liquidity, and Sensitivity to market risk), and insolvency risk based on the inverted Z-score.

We show that from 2003 to 2015, institutional investors increased their stake in our 705 sample banks by three-fold or 30 percentage points and have become three-times more concentrated, mainly driven by active, quasi-indexer and dedicated, and long-term institutions: active, and quasi-indexer and dedicated

institutions have become larger and more concentrated than their passive and transient counterparts, increasing the gap especially after the financial crisis of 2007-2009. Long-term institutions have closed the proportion and concentration gap and in 2013, for the first time in our sample, become more concentrated than their short-term counterparts. We then find lower risk exposure for banks with larger institutional ownership but more importantly, concentrated ownership among active, quasi-indexer and dedicated, and long-term institutions. In contrast, we find higher risk exposure for banks with concentrated ownership among passive, transient and short-term institutions.

We further investigate the impact of various types of institutional ownership on the six aspects of CAMELS with its thirteen indicators and provide evidence that aside from the ownership percentage, the ownership concentration among various institutions can have a statistically and economically significant impact on CAMELS ratios. Our results indicate that regulators, investors, and executives should pay closer attention to banks as passive, transient and short-term institutions concentrate their investment.

REFERENCES

Aebi, V., Sabato, G., & Schmid, M. (2012). Risk management, corporate governance, and bank performance in the financial crisis. *Journal of Banking & Finance*, *36*(12), 3213-3226.

Agrawal, A., & Mandelker, G. N. (1990). Large shareholders and the monitoring of managers: The case of antitakeover charter amendments. *Journal of Financial and Quantitative analysis*, *25*(02), 143-161.

Aggarwal, R., Saffi, P. A., & Sturgess, J. (2015). The role of institutional investors in voting: Evidence from the securities lending market. *The Journal of Finance*, *70*(5), 2309-2346.

Almazan, A., Hartzell, J. C., & Starks, L. T. (2005). Active institutional shareholders and costs of monitoring: Evidence from executive compensation. *Financial Management*, 34(4), 5-34.

Attig, N., Guedhami, O., & Mishra, D. (2008). Multiple large shareholders, control contests, and implied cost of equity. *Journal of Corporate Finance*, *14*(5), 721-737.

Bair, S. C. (2011). Testimony on Oversight of Dodd-Frank Implementation: Monitoring Systemic Risk and Promoting Financial Stability. *Before the Committee on Banking, Housing and Urban Affairs, US Senate, Washington, DC*.

Barber, B. M., & Odean, T. (2000). Trading is hazardous to your wealth: The common stock investment performance of individual investors. *The Journal of Finance*, *55*(2), 773-806.

Bassett, W. F., Lee, S. J., & Spiller, T. P. (2015). Estimating changes in supervisory standards and their economic effects. *Journal of Banking & Finance*, *60*, 21-43.

Berle, A. and Means, C. (1932). The modern corporation and private property. *Macmillan, New York.*

Bethel, J. E., & Liebeskind, J. (1993). The effects of ownership structure on corporate restructuring. *Strategic Management Journal*, *14*(S1), 15-31.

Blume, M. E., & Keim, D. B. (2012). Institutional investors and stock market liquidity: trends and relationships. *Jacobs Levy Equity Management Center for Quantitative Financial Research Paper*.

Borochin, P., & Yang, J. (2017). The effects of institutional investor objectives on firm valuation and governance. *Journal of Financial Economics*, *126*(1), 171-199.

Boyd, J. H., Chang, C., & Smith, B. D. (1998). Moral hazard under commercial and universal banking. *Journal of Money, Credit and Banking*, 426-468.

Brickley, J. A., Lease, R. C., & Smith, C. W. (1988). Ownership structure and voting on antitakeover amendments. *Journal of Financial Economics*, *20*, 267-291.

Bushee, B. J. (1998). The influence of institutional investors on myopic R&D investment behavior. *Accounting review*, 305-333.

Bushee, B. J. (2001). Do institutional investors prefer near-term earnings over long-run value?. *Contemporary Accounting Research*, *18*(2), 207-246.

Bushee, B. J., & Noe, C. F. (2000). Corporate disclosure practices, institutional investors, and stock return volatility. *Journal of Accounting Research*, 171-202.

Callen, J. and Fang, X. (2013). Institutional investor stability and crash risk: Monitoring versus short-termism? *Journal of Banking & Finance* 37, 3047–3063.

Carleton, W. T., Nelson, J. M., & Weisbach, M. S. (1998). The influence of institutions on corporate governance through private negotiations: Evidence from TIAA-CREF. *The Journal of Finance*, *53*(4), 1335-1362.

Chen, X., Harford, J., & Li, K. (2007). Monitoring: Which institutions matter? *Journal of Financial Economics*, *86*(2), 279-305.

Cherkes, M., Sagi, J., & Stanton, R. (2008). A liquidity-based theory of closed-end funds. *The Review of Financial Studies*, *22*(1), 257-297.

Chung, K. H., & Zhang, H. (2011). Corporate governance and institutional ownership. *Journal of Financial and Quantitative Analysis*, *46*(01), 247-273.

Clay, D. (2002). Institutional ownership and firm value.

Cornett, M. M., Marcus, A. J., Saunders, A., & Tehranian, H. (2007). The impact of institutional ownership on corporate operating performance. *Journal of Banking & Finance*, *31*(6), 1771-1794.

Del Guercio, D. (1996). The distorting effect of the prudent-man laws on institutional equity investments. *Journal of Financial Economics*, *40*(1), 31-62.

Demirgüç-Kunt, A., & Detragiache, E. (2002). Does deposit insurance increase banking system stability? An empirical investigation. *Journal of Monetary Economics*, *49*(7), 1373-1406.

Demirgüç-Kunt, A., & Huizinga, H. (2004). Market discipline and deposit insurance. *Journal of Monetary Economics*, *51*(2), 375-399.

Demsetz, H., & Lehn, K. (1985). The structure of corporate ownership: Causes and consequences. *The Journal of Political Economy*, 1155-1177.

Derrien, F., Kecskes, A. and Thesmar, D. (2013). Investor horizons and corporate policies. *Journal of Financial and Quantitative Analysis* 48(6), 1755–1780

Driscoll, J. C., & Kraay, A. C. (1998). Consistent covariance matrix estimation with spatially dependent panel data. *Review of economics and statistics*, *80*(4), 549-560.

Easley, D., & O'hara, M. (1987). Price, trade size, and information in securities markets. *Journal of Financial Economics*, *19*(1), 69-90.

Edmans, A. (2008). *Blockholders, Market Efficiency and Managerial Myopia*. Wharton School, University of Pennsylvania.

Elyasiani, E., & Jia, J. J. (2008). Institutional ownership stability and BHC performance. *Journal of Banking & Finance*, *32*(9), 1767-1781.

Flannery, M. J. (1998). Using market information in prudential bank supervision: A review of the US empirical evidence. *Journal of Money, Credit and Banking*, 273-305.

Ferreira, M. A., & Matos, P. (2008). The colors of investors' money: The role of institutional investors around the world. *Journal of Financial Economics*, *88*(3), 499-533.

Galai, D., & Masulis, R. W. (1976). The option pricing model and the risk factor of stock. *Journal of Financial Economics*, *3*(1-2), 53-81.

Gallagher, D. R., Gardner, P., & Swan, P. L. (2009). The threat of exit with optimal contracting: Institutional churning trades and subsequent firm performance. *Available at SSRN 1429910*.

Gaspar, J., Massa, M., Matos, P. (2005). Shareholder investment horizons and the market for corporate control. *Journal of Financial Economics* 76, 135–165.

Holderness, C. G., & Sheehan, D. P. (1985). Raiders or saviors? The evidence on six controversial investors. *Journal of Financial Economics*, *14*(4), 555.

Hotchkiss, E. S., & Strickland, D. (2003). Does shareholder composition matter? Evidence from the market reaction to corporate earnings announcements. *The Journal of Finance*, *58*(4), 1469-1498.

Jafarinejad, M., Jory, S. R., & Ngo, T. N. (2015). The effects of institutional ownership on the value and risk of diversified firms. *International Review of Financial Analysis*, *40*, 207-219.

Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, *3*(4), 305-360.

Kyle, A. S. (1985). Continuous auctions and insider trading. *Econometrica: Journal of the Econometric Society*, 1315-1335.

Laeven, L. (2013). Corporate governance: what's special about banks? *Annu. Rev. Financ. Econ.*, *5*(1), 63-92.

Lin, C., Ma, Y., Malatesta, P., & Xuan, Y. (2011). Ownership structure and the cost of corporate borrowing. *Journal of Financial Economics*, *100*(1), 1-23.

Mehran, H., Morrison, A. D., & Shapiro, J. D. (2011). Corporate governance and banks: What have we learned from the financial crisis? *FRB of New York Staff Report*, (502).

Merton, R. C. (1977). An analytic derivation of the cost of deposit insurance and loan guarantees an application of modern option pricing theory. *Journal of Banking & Finance*, *1*(1), 3-11.

Mikkelson, W. H., & Ruback, R. S. (1991). Targeted repurchases and common stock returns. *The RAND Journal of Economics*, 544-561.

Pathan, S., Haq, M., Faff, R., & Seymour, T. (2021). Institutional investor horizon and bank risk-taking. *Journal of Corporate Finance*, *66*, 101794.

Shehzad, C. T., de Haan, J., & Scholtens, B. (2010). The impact of bank ownership concentration on impaired loans and capital adequacy. *Journal of Banking & Finance*, *34*(2), 399-408.

Shleifer, A., & Vishny, R. W. (1986). Large shareholders and corporate control. *Journal of Political Economy*, *94*(3, Part 1), 461-488.

Tran, H., & Turkiela, J. (2020). The powers that be: Concentration of authority within the board of directors and variability in firm performance☆. *Journal of Corporate Finance*, *60*, 101537.

Wintoki, M. B., Linck, J. S., & Netter, J. M. (2012). Endogeneity and the dynamics of internal corporate governance. *Journal of Financial Economics*, *105*(3), 581-606.

Woidtke, T. (2002). Agents watching agents? evidence from pension fund ownership and firm value. *Journal of Financial Economics*, *63*(1), 99-131.

Wang, M., & Sun, X. (2019). Identity of large owner, regulation and bank risk in developing countries. *Journal of International Financial Markets, Institutions and Money*, *59*, 106-133.

Yan, X., & Zhang, Z. (2007). Institutional investors and equity returns: Are short-term institutions better informed? *The Review of Financial Studies*, *22*(2), 893-924.

Yang, T., & Zhao, S. (2014). CEO duality and firm performance: Evidence from an exogenous shock to the competitive environment. *Journal of Banking & Finance*, *49*, 534-552.

Table 1 - Sample Distribution

We report the sample distribution by year and by state of incorporation. Since the data are in quarterly frequency, the number of observations by year indicates the number of bank-quarter observations in that year.

Year	*N*	*Percent*	*State*	*N*	*Percent*	*State*	*N*	*Percent*	*State*	*N*	*Percent*
2003	1,694	8.74	AK	52	0.27	KS	88	0.45	NY	1,140	5.88
2004	1,698	8.76	AL	297	1.53	KY	371	1.92	OH	1,015	5
2005	1,713	8.84	AR	91	0.47	LA	209	1.08	OK	160	0.83
2006	1,513	7.81	AZ	43	0.22	MA	553	2.85	OR	239	1.23
2007	1,434	7.4	CA	1,910	9.86	MD	355	1.83	PA	1,932	9.97
2008	1,430	7.38	CO	104	0.54	ME	213	1.1	PR	227	1.17
2009	1,435	7.41	CT	282	1.46	MI	649	3.35	RI	93	0.48
2010	1,417	7.31	DC	21	0.11	MN	128	0.66	SC	418	2.16
2011	1,359	7.01	DE	58	0.3	MO	297	1.53	SD	18	0.09
2012	1,494	7.71	FL	411	2.12	MS	341	1.76	TN	282	1.46
2013	1,491	7.7	GA	710	3.66	MT	85	0.44	TX	574	2.96
2014	1,483	7.65	GU	17	0.09	NC	858	4.43	UT	3	0.02
2015	1,212	6.26	HI	110	0.57	ND	71	0.37	VA	1,075	5.55
Total	19,373	100	IA	183	0.94	NH	25	0.13	VT	102	0.53
			ID	29	0.15	NJ	782	4.04	WA	517	2.67
			IL	806	4.16	NM	13	0.07	WI	288	1.49
			IN	795	4.1	NV	48	0.25	WV	285	1.47

Table 2 - Summary Statistics

In Panel A, we report the summary statistics of bank characteristics. *ASSET* is the bank total assets ($000). *SIZE* is the natural logarithm of bank assets. *EAR* is the ratio of total equity to total assets. *TCR* is the total capital ratio. *LLR* is the ratio of loan loss provision to total loans. *ILR* is the ratio of impaired loan to total loan. *CIR* is the ratio of total cost to total income. *OCA* is the overhead cost to total asset ratio. *ROA* is the return on asset. *ROE* is the return on equity. *LAA* is the ratio of liquid assets to total assets. *LASFR* is the ratio of liquid assets to short-term funds. *TLD* is the ratio of total loans to total deposits. *TIETD* is the ratio of total interest expenses to total deposits. *GSTA* is the ratio of government securities to total assets. *TOTALRISK* is a self-constructed variable from the 13 *CAMELS* variables (*EAR, TCR, LLR, ILR, CIR, OCA, ROA, ROE, LAA, LASFR, TLD, TIETD, GSTA*) described above. *INVERTEDZ* is the standard deviation of return on asset *ROA* over the full sample period of investigation divided by the sum of current *ROA* and current total equity to total assets ratio (*EAR*). In Panel B, we report the summary statistics of institutional ownership in the banks. *OWN* is the percentage of bank shares held by all institutional owners. *OWN_ACTIVE* and *OWN_PASSIVE* are the percentages of bank shares by active and passive institutional owners, respectively. *OWN_LONG* and *OWN_SHORT* are the percentages of bank shares by long-term and short-term institutional owners, respectively. *CON* is the sum of the squared ownership proportion of institutions in each bank per quarter. *CON_ACTIVE* and *CON_PASSIVE* are the sums of the squared ownership proportions of active vs. passive institutions in each bank per quarter, respectively. *CON_LONG* and *CON_SHORT* are the sums of the squared ownership proportions of long-term vs. short-term institutions in each bank per quarter, respectively. All these variables are stated in percentages.

Panel A – Bank characteristics

Variables	25th percentile	Mean	Median	75th percentile	Standard deviation
ASSET ($ thousand)	779,729	21,900,000	1,498,969	4,286,690	153,000,000
SIZE	13.567	14.602	14.220	15.271	1.501
Capital Adequacy					
EAR	7.930	9.551	9.350	10.960	2.493
TCR	12.060	14.224	13.620	15.600	3.192
Asset quality					
LLR	0.000	0.002	0.001	0.002	0.003
ILR	0.000	0.186	0.030	0.160	0.450
Management cost					
CIR	58.650	67.797	65.730	74.040	15.163
OCA	1.330	1.628	1.560	1.830	0.533
Earnings and profitability					
ROA	0.510	0.646	0.880	1.170	1.187
ROE	5.210	6.301	9.070	12.740	15.933
Liquidity					
LAA	8.520	15.263	13.080	19.590	9.532
LASFR	-1.057	0.432	0.566	1.744	8.223
TLD	77.760	88.197	88.980	98.740	16.994
Sensitivity to market risk					
TIETD	0.002	0.005	0.004	0.007	0.004
GSTA	0.000	0.363	0.000	0.114	1.194
Aggregate risk measures					
TOTALRISK	-0.47	0.06	-0.14	0.27	1.03
INVERTEDZ	0.026	0.093	0.052	0.116	0.114

Panel B - Institutional Ownership

Variables	25th percentile	Mean	Median	75th percentile	Standard deviation
OWN	1.280%	28.041%	20.829%	47.800%	27.183%
OWN_ACTIVE	0.416%	19.683%	13.070%	33.285%	20.298%
OWN_PASSIVE	0.006%	7.298%	4.232%	12.189%	8.496%
OWN_TRA	0.000%	4.922%	2.007%	7.556%	6.654%
OWN_QIX_DED	0.910%	21.421%	16.161%	36.510%	20.753%
OWN_LONG	0.000%	10.784%	6.839%	18.201%	11.981%
OWN_SHORT	0.567%	17.313%	12.074%	29.033%	17.786%
CON	0.353%	1.432%	1.025%	1.946%	5.091%
CON_ACTIVE	0.190%	1.014%	0.619%	1.426%	4.934%
CON_PASSIVE	0.020%	0.364%	0.135%	0.412%	1.123%
CON_TRA	0.006%	0.179%	0.045%	0.213%	0.340%
CON_QIX_DED	0.268%	1.157%	0.830%	1.564%	4.947%
CON_LONG	0.078%	0.668%	0.323%	0.809%	4.933%
CON_SHORT	0.149%	0.793%	0.523%	1.106%	1.524%
CON (orthogonalized)	-1.161%	0.000%	0.201%	1.043%	5.071%
CON_ACTIVE (orthogonalized)	-1.044%	0.000%	0.239%	1.009%	4.936%
CON_PASSIVE (orthogonalized)	-0.293%	0.000%	0.020%	0.248%	0.940%
CON_TRA (orthogonalized)	-0.086%	0.000%	0.023%	0.093%	0.231%
CON_QIX_DED (orthogonalized)	-1.074%	0.000%	0.219%	1.102%	4.961%
CON_LONG (orthogonalized)	-1.342%	0.000%	0.045%	1.148%	4.926%
CON_SHORT (orthogonalized)	-0.565%	0.000%	0.196%	0.621%	1.478%

Table 3 - Summary Statistics of Institutional Ownership Percentage and Concentration by Year

We report the average ownership percentages (in Panel A) and ownership concentration (in Panel B) by each sample year. *OWN* is the percentage of bank shares held by all institutional owners. *OWN_ACTIVE* and *OWN_PASSIVE* are the percentages of bank shares by active and passive institutional owners, respectively. *OWN_TRA* and *OWN_QIX_DED* are the percentages of bank shares by transient and quasi-indexer and dedicated institutional owners, respectively. *OWN_LONG* and *OWN_SHORT* are the percentages of bank shares by long-term and short-term institutional owners, respectively. *CON* is the sum of the squared ownership proportion of institutions in each bank per quarter. *CON_ACTIVE* and *CON_PASSIVE* are the sums of the squared ownership proportions of active vs. passive institutions in each bank per quarter, respectively. *CON_LONG* and *CON_SHORT* are the sums of the squared ownership proportions of long-term vs. short-term institutions in each bank per quarter, respectively. All these variables are in percentages.

Panel A – Institutional ownership

Year	*OWN*	*OWN_ACTIVE*	*OWN_PASSIVE*	*OWN_TRA*	*OWN_QIX_DED*	*OWN_LONG*	*OWN_SHORT*
2003	17.781%	10.257%	7.212%	3.853%	13.488%	5.780%	12.022%
2004	18.571%	11.208%	7.213%	2.232%	15.486%	5.318%	13.292%
2005	19.976%	12.638%	7.179%	2.282%	17.159%	5.803%	14.207%
2006	23.695%	15.329%	8.200%	3.185%	19.788%	6.146%	17.593%
2007	25.636%	16.778%	8.813%	3.917%	21.022%	8.280%	17.431%
2008	26.146%	17.229%	8.965%	3.712%	21.294%	9.366%	16.887%
2009	26.186%	17.614%	8.427%	7.079%	18.410%	11.347%	14.905%
2010	26.878%	20.085%	6.671%	7.066%	19.345%	11.618%	15.311%
2011	31.142%	23.851%	6.346%	7.810%	21.544%	12.259%	18.961%
2012	32.772%	25.330%	6.424%	4.759%	26.407%	12.523%	20.311%
2013	36.663%	28.291%	6.913%	4.371%	29.851%	15.026%	21.709%
2014	39.098%	27.592%	5.159%	4.658%	26.981%	18.467%	20.683%
2015	47.672%	36.539%	7.455%	11.604%	32.044%	22.848%	24.861%

Panel B – Institutional ownership concentration

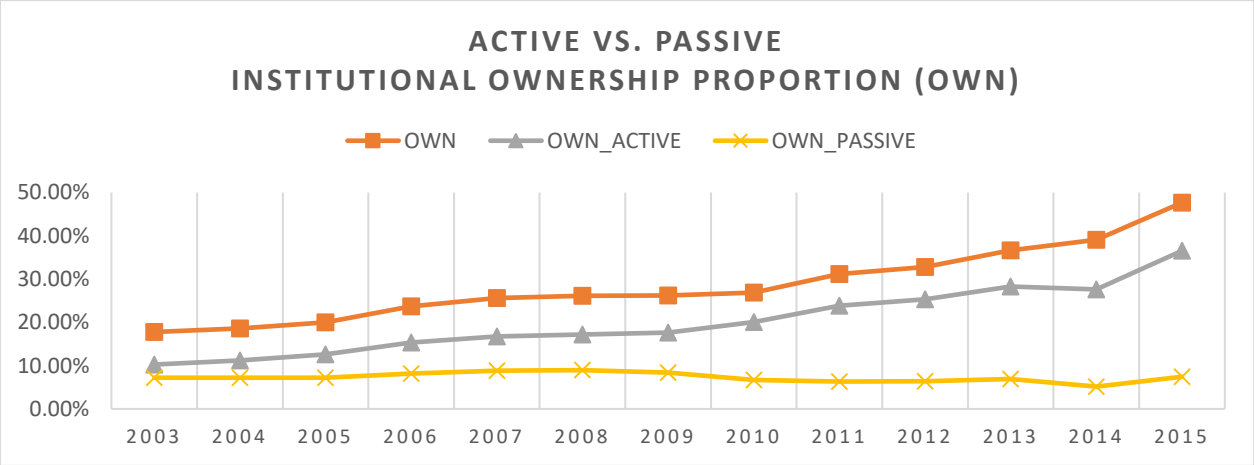
Year	*CON*	*CON_ACTIVE*	*CON_PASSIVE*	*CON_TRA*	*CON_QIX_DED*	*CON_LONG*	*CON_SHORT*
2003	0.782%	0.387%	0.401%	0.103%	0.678%	0.301%	0.513%
2004	0.900%	0.491%	0.401%	0.060%	0.778%	0.313%	0.621%
2005	0.969%	0.524%	0.381%	0.075%	0.810%	0.383%	0.613%
2006	1.031%	0.624%	0.413%	0.088%	0.930%	0.321%	0.731%
2007	1.166%	0.721%	0.453%	0.101%	1.051%	0.468%	0.714%
2008	1.194%	0.719%	0.478%	0.093%	1.076%	0.526%	0.692%
2009	1.221%	0.776%	0.445%	0.252%	0.956%	0.647%	0.605%
2010	1.305%	0.972%	0.329%	0.323%	0.974%	0.604%	0.715%
2011	1.762%	1.375%	0.325%	0.425%	1.202%	0.710%	1.068%
2012	1.791%	1.451%	0.292%	0.135%	1.562%	0.714%	1.086%
2013	2.527%	2.160%	0.292%	0.118%	2.179%	1.437%	1.106%
2014	1.988%	1.365%	0.239%	0.120%	1.443%	1.070%	0.927%
2015	2.116%	1.725%	0.267%	0.486%	1.477%	1.145%	0.973%

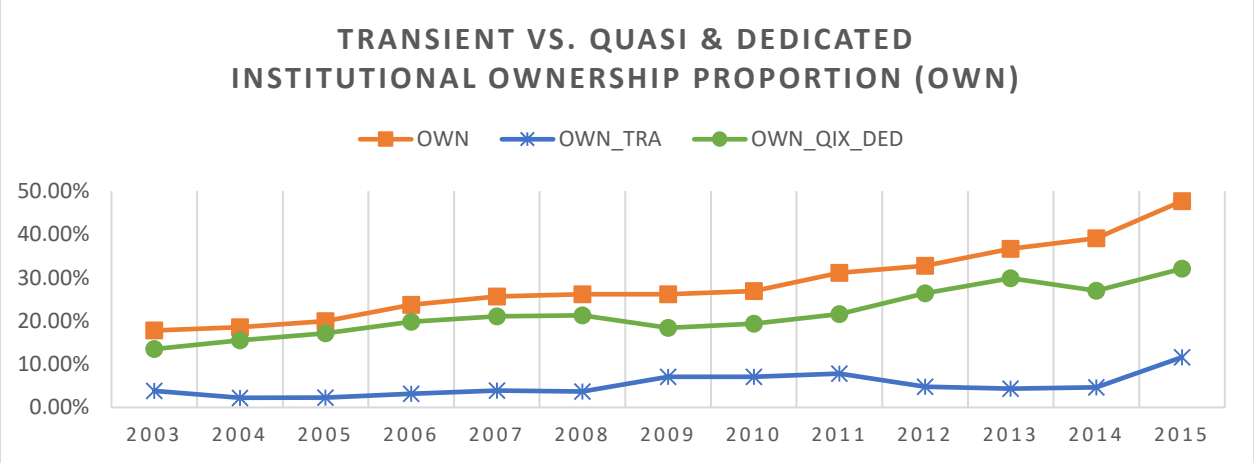
Panel C –Orthogonalized institutional ownership concentration

Year	*CON (orthogonalized)*	*CON_ACTIVE (orthogonalized)*	*CON_PASSIVE (orthogonalized)*	*CON_TRA (orthogonalized)*	*CON_QIX_DED (orthogonalized)*	*CON_LONG (orthogonalized)*	*CON_SHORT (orthogonalized)*
2003	-0.346%	-0.297%	-0.075%	-0.025%	-0.300%	-0.406%	-0.175%
2004	-0.239%	-0.178%	-0.043%	-0.018%	-0.188%	-0.319%	-0.112%
2005	-0.117%	-0.114%	-0.016%	-0.009%	-0.078%	-0.150%	-0.057%
2006	-0.173%	-0.182%	-0.023%	-0.003%	-0.155%	-0.207%	-0.088%
2007	-0.146%	-0.141%	-0.004%	0.007%	-0.105%	-0.113%	-0.053%
2008	-0.081%	-0.042%	0.013%	0.012%	-0.043%	-0.069%	-0.012%
2009	0.012%	0.056%	0.029%	0.018%	0.050%	0.006%	0.041%
2010	0.049%	0.067%	0.029%	0.010%	0.070%	0.089%	0.045%
2011	0.203%	0.182%	0.022%	0.009%	0.173%	0.164%	0.093%
2012	0.231%	0.207%	0.028%	0.008%	0.213%	0.247%	0.100%
2013	0.316%	0.267%	0.030%	0.006%	0.217%	0.301%	0.145%
2014	0.310%	0.248%	0.027%	0.009%	0.226%	0.357%	0.119%
2015	0.032%	-0.048%	-0.002%	-0.023%	-0.039%	0.068%	-0.020%

Figure 1 - Institutional Ownership Proportion by Year

OWN is the percentage of bank shares held by all institutional owners. *OWN_ACTIVE* and *OWN_PASSIVE* are the percentages of bank shares by active vs. passive institutional owners, respectively. *OWN_QIX_DED* and *OWN_TRA* are the percentages of bank shares by quasi-indexer/dedicated and transient institutional owners, respectively. *OWN_LONG* and *OWN_SHORT* are the percentages of bank shares by long-term and short-term institutional owners, respectively. *OWN_LONG* and *OWN_SHORT* are the percentages of bank shares by long-term and short-term institutional owners, respectively.





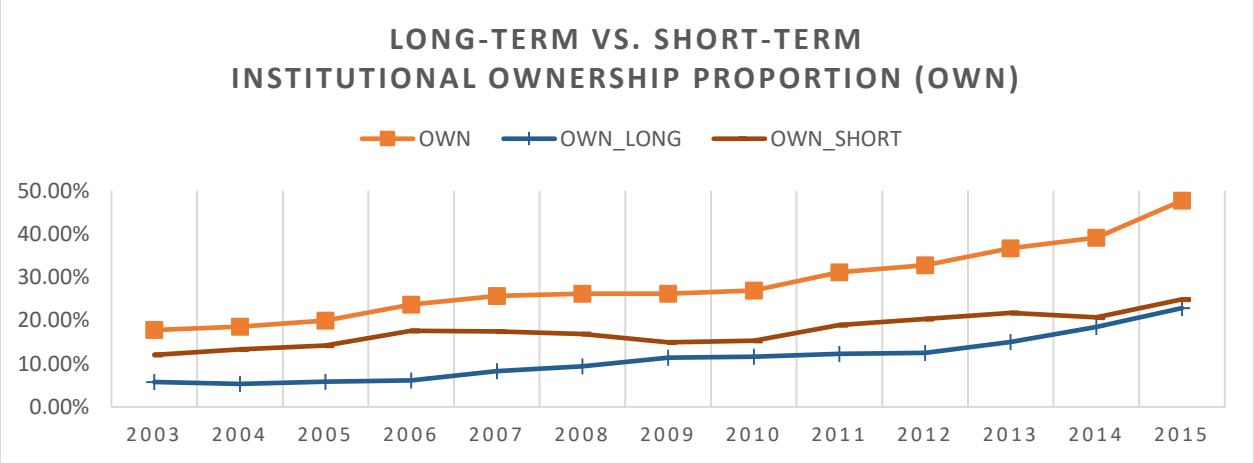
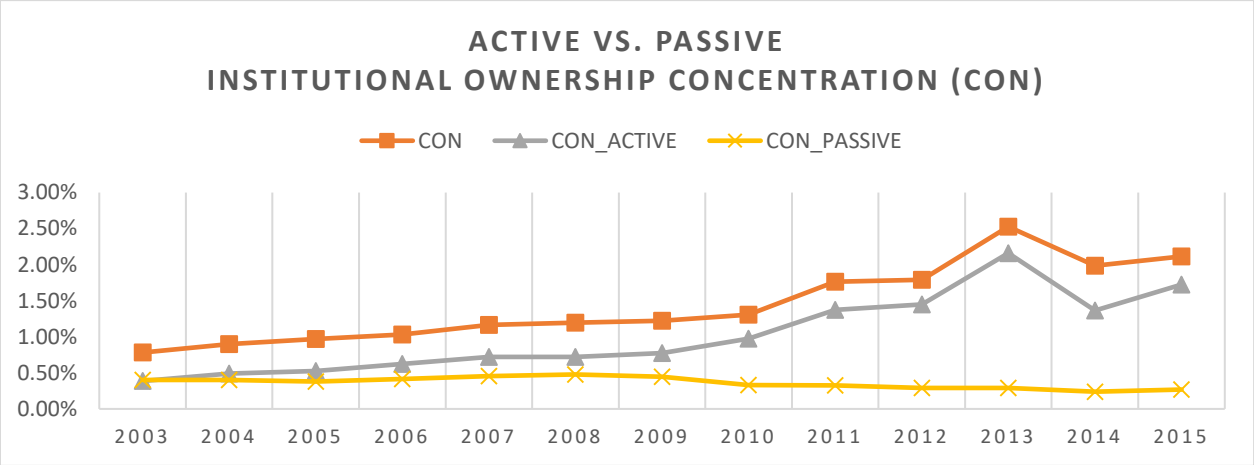
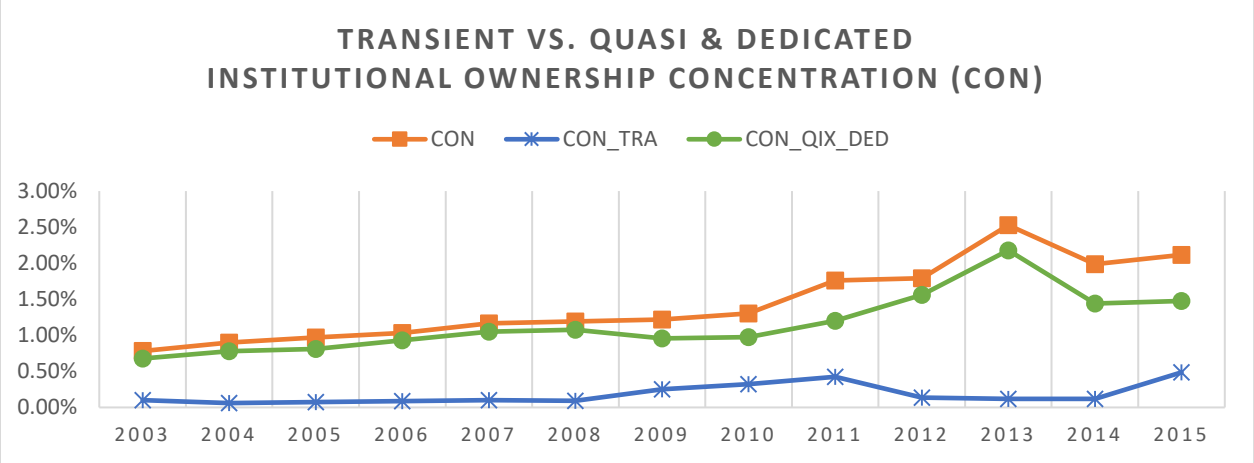


Figure 2 - Institutional Ownership Concentration by Year

CON is the sum of the squared ownership proportion of institutions in each bank per quarter. *CON_ACTIVE* and *CON_PASSIVE* are the sums of the squared ownership proportions of active vs. passive institutions in each bank per quarter, respectively. *CON_QIX_DED* and *CON_TRA* are the sums of the squared ownership proportions of quasi-indexer/dedicated and transient institutions in each bank per quarter, respectively. *CON_LONG* and *CON_SHORT* are the sums of the squared ownership proportions of long-term vs. short-term institutions in each bank per quarter, respectively.





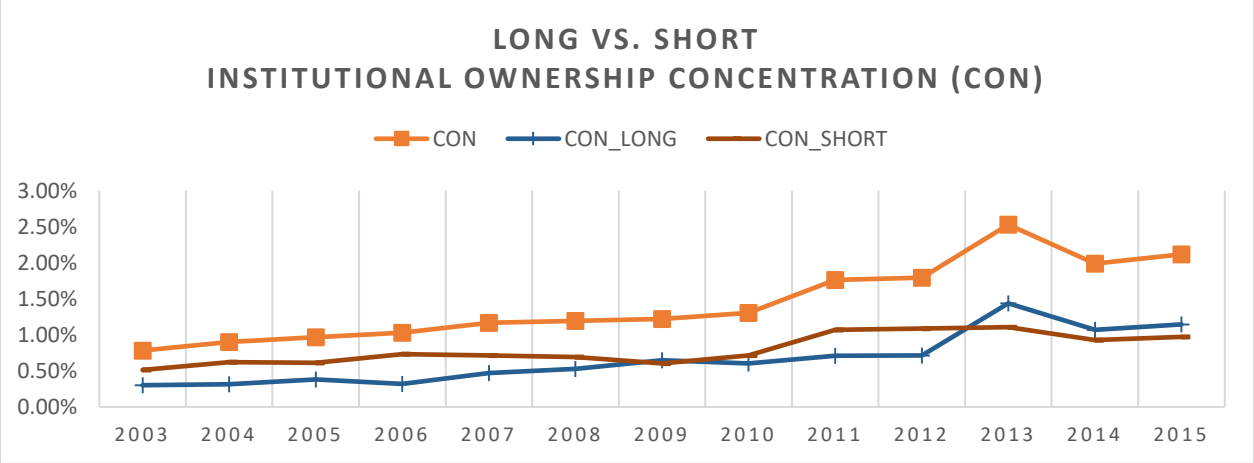


Table 4 – Panel Data Regressions of Bank Risk on Types of Institutional Ownership

We report the results from the panel data regressions of bank risk on institutional ownership and institutional ownership concentration separated by types. The dependent variables are TOTALRISK in panel A and INVERTEDZ in panel B. TOTALRISK is a self-constructed variable from the 13 CAMELS variables (EAR, TCR, LLR, ILR, CIR, OCA, ROA, ROE, LAA, LASFR, TLD, TIETD, GSTA) described above. EAR is the ratio of total equity to total assets. TCR is the total capital ratio. LLR is the ratio of loan loss provision to total loans. ILR is the ratio of impaired loan to total loan. CIR is the ratio of total cost to total income. OCA is the overhead cost to total asset ratio. ROA is the return on asset. ROE is the return on equity. LAA is the ratio of liquid assets to total assets. LASFR is the ratio of liquid assets to short-term funds. TLD is the ratio of total loans to total deposits. TIETD is the ratio of total interest expenses to total deposits. GSTA is the ratio of government securities to total assets. INVERTEDZ is the standard deviation of return on asset ROA over the full sample period of investigation divided by the sum of current ROA and current total equity to total assets ratio (EAR). *OWN_ACTIVE* and *OWN_PASSIVE* are the percentages of bank shares by active and passive institutional owners, respectively. *OWN_TRA* and *OWN_QIX_DED* are the percentages of bank shares by transient and quasi-indexer and dedicated institutional owners, respectively. *OWN_LONG* and *OWN_SHORT* are the percentages of bank shares by long-term and short-term institutional owners, respectively. *CON* is the sum of the squared ownership proportion of institutions in each bank per quarter. *CON_ACTIVE* and *CON_PASSIVE* are the sums of the squared ownership proportions of active vs. passive institutions in each bank per quarter, respectively. *CON_LONG* and *CON_SHORT* are the sums of the squared ownership proportions of long-term vs. short-term institutions in each bank per quarter, respectively. SIZE is the natural logarithm of bank assets. *,** and*** indicate the significance levels of 10%, 5% and 1%, respectively.

	Panel A – TOTALRISK				***Panel B - INVERTEDZ***			
Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
L.OWN	-0.183				-0.161			
	(-6.215***)				(-5.037***)			
L.CON	-0.025				-0.011			
	(-1.942*)				(-1.600)			
L.OWN_ACTIVE		-0.128				-0.120		
		(-4.728***)				(-4.018***)		
L.OWN_PASSIVE		-0.056				-0.026		
		(-2.760***)				(-1.387)		
L.CON_ACTIVE		-0.028				-0.011		
		(-2.631***)				(-1.932*)		
L.CON_PASSIVE		0.057				0.029		
		(2.862***)				(1.609)		
L.OWN_TRA			-0.088				-0.052	
			(-6.289***)				(-2.757***)	
L.OWN_QIX_DED			-0.109				-0.101	
			(-4.123***)				(-4.367***)	
L.CON_TRA			0.036				0.025	
			(4.005***)				(3.540***)	
L.CON_QIX_DED			-0.028				-0.009	
			(-2.752***)				(-1.749*)	
L.OWN_LONG				-0.094				-0.055
				(-5.145***)				(-3.074***)
L.OWN_SHORT				-0.125				-0.110
				(-6.593***)				(-4.710***)
L.CON_LONG				-0.033				-0.016
				(-8.892***)				(-7.071***)
L.CON_SHORT				0.017				0.010
				(1.602)				(1.609)
L.TOTALRISK	0.442	0.444	0.434	0.434				
	(19.421***)	(19.420***)	(18.076***)	(18.516***)				
L.INVERTEDZ					0.108	0.092	0.086	0.083
					(3.386***)	(2.849***)	(2.652***)	(2.562**)
SIZE	0.166	0.139	0.135	0.167	0.109	0.105	0.099	0.118
	(2.175**)	(1.794*)	(1.692*)	(2.116**)	(1.530)	(1.412)	(1.325)	(1.544)
F-statistics	42.42	40.64***	40.75***	38.96***	5.197	5.21***	4.69***	13.10***
Adj. R-squared	0.520	0.527	0.526	0.519	0.246	0.203	0.206	0.180
Year-Quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clustered std err by banks	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of unique banks	590	579	576	577	590	579	576	577
Observations	14,086	13,701	13,294	13,495	14,086	13,701	13,294	13,495

Table 5 - Driscoll-Kraay Regressions of Bank Risk on Institutional Ownership

We report the results from the Driscoll-Kraay regressions of bank risk change on institutional ownership. The dependent variables $TOTALRISK_{i,t}$ and $INVERTEDZ_{i,t}$, alternatively. TOTALRISK is a self-constructed variable from the 13 CAMELS variables (EAR, TCR, LLR, ILR, CIR, OCA, ROA, ROE, LAA, LASFR, TLD, TIETD, GSTA) described above. EAR is the ratio of total equity to total assets. TCR is the total capital ratio. LLR is the ratio of loan loss provision to total loans. ILR is the ratio of impaired loan to total loan. CIR is the ratio of total cost to total income. OCA is the overhead cost to total asset ratio. ROA is the return on asset. ROE is the return on equity. LAA is the ratio of liquid assets to total assets. LASFR is the ratio of liquid assets to short-term funds. TLD is the ratio of total loans to total deposits. TIETD is the ratio of total interest expenses to total deposits. GSTA is the ratio of government securities to total assets. INVERTEDZ is the standard deviation of return on asset ROA over the full sample period of investigation divided by the sum of current ROA and current total equity to total assets ratio (EAR). *OWN* is the percentage of bank shares held by all institutional owners. *CON* is the sum of the squared ownership proportion of institutions in each bank per quarter. *OWN_ACTIVE* and *OWN_PASSIVE* are the percentages of bank shares by active and passive institutional owners, respectively. *OWN_TRA* and *OWN_QIX_DED* are the percentages of bank shares by transient and quasi-indexer and dedicated institutional owners, respectively. *OWN_LONG* and *OWN_SHORT* are the percentages of bank shares by long-term and short-term institutional owners, respectively. *CON* is the sum of the squared ownership proportion of institutions in each bank per quarter. *CON_ACTIVE* and *CON_PASSIVE* are the sums of the squared ownership proportions of active vs. passive institutions in each bank per quarter, respectively. *CON_LONG* and *CON_SHORT* are the sums of the squared ownership proportions of long-term vs. short-term institutions in each bank per quarter, respectively. SIZE is the natural logarithm of bank assets. *,** and*** indicate the significance levels of 10%, 5% and 1%, respectively.

	Panel A – TOTALRISK				***Panel B - INVERTEDZ***			
Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
L.OWN	-0.183				-0.161			
	(-7.779***)				(-6.386***)			
L.CON	-0.025				-0.011			
	(-1.989**)				(-1.340)			
L.OWN_ACTIVE		-0.128				-0.120		
		(-6.065***)				(-6.218***)		
L.OWN_PASSIVE		-0.056				-0.026		
		(-2.753***)				(-1.928*)		
L.CON_ACTIVE		-0.028				-0.011		
		(-2.563**)				(-1.414)		
L.CON_PASSIVE		0.057				0.029		
		(4.808***)				(3.351***)		
L.OWN_TRA			-0.088				-0.052	
			(-8.378***)				(-4.882***)	
L.OWN_QIX_DED			-0.109				-0.101	
			(-5.860***)				(-4.603***)	
L.CON_TRA			0.036				0.025	
			(3.939***)				(5.034***)	
L.CON_QIX_DED			-0.028				-0.009	
			(-2.589**)				(-1.319)	
L.OWN_LONG				-0.094				-0.055
				(-7.862***)				(-3.619***)
L.OWN_SHORT				-0.125				-0.110
				(-9.497***)				(-6.771***)
L.CON_LONG				-0.033				-0.016
				(-6.214***)				(-2.506**)
L.CON_SHORT				0.017				0.010
				(1.480)				(1.750*)
L.TOTALRISK	0.442	0.444	0.434	0.434				
	(21.337***)	(22.355***)	(22.218***)	(21.436***)				
L.INVERTEDZ					0.108	0.092	0.086	0.083
					(3.709***)	(3.055***)	(2.867***)	(2.750***)
SIZE	0.166	0.139	0.135	0.167	0.109	0.105	0.099	0.118
	(3.918***)	(3.305***)	(3.116***)	(4.275***)	(2.622**)	(2.411**)	(2.142**)	(2.739***)
F-statistics	1378.00***	2614.00***	1777.00***	3131.00***	16763.00***	140.50***	23567.00***	20138.00***
Adj. R-squared	0.391	0.392	0.397	0.388	0.0494	0.0446	0.0458	0.0445
Year-Quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clustered std err by banks	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of unique banks	590	579	576	577	590	579	576	577
Observations	14,086	13,701	13,294	13,495	14,086	13,701	13,294	13,495

Table 6 - Heckman Self-Selection 2-Stage Regressions

In Panel A, the dependent variables are $HIGH\_OWN_{i,t}$ and $HIGH\_CON_{i,t}$, alternatively. $HIGH\_OWN_{i,t}$ is a dummy variable equal to 1 for banks with the highest quartile of institutional ownership percentage in each quarter and 0 otherwise. $HIGH\_CON_{i,t}$ is a dummy variable equal to 1 for banks with the highest quartile of institutional ownership concentration in each quarter and 0 otherwise. $SIZE\_MATCH\_OWN_{i,t}$ and $SIZE\_MATCH\_CON_{i,t}$ are the medians of the institutional ownership level and the institutional ownership concentration of all other banks in the same size quartile as bank *i*. $LN(SHARES)_{i,t}$ is the natural logarithm of the number of shares outstanding of bank *i* in quarter *t*. In Panel B, the dependent variables are $TOTALRISK_{i,t}$ and $INVERTEDZ_{i,t}$, alternatively. TOTALRISK is a self-constructed variable from the 13 CAMELS variables (EAR, TCR, LLR, ILR, CIR, OCA, ROA, ROE, LAA, LASFR, TLD, TIETD, GSTA) described above. EAR is the ratio of total equity to total assets. TCR is the total capital ratio. LLR is the ratio of loan loss provision to total loans. ILR is the ratio of impaired loan to total loan. CIR is the ratio of total cost to total income. OCA is the overhead cost to total asset ratio. ROA is the return on asset. ROE is the return on equity. LAA is the ratio of liquid assets to total assets. LASFR is the ratio of liquid assets to short-term funds. TLD is the ratio of total loans to total deposits. TIETD is the ratio of total interest expenses to total deposits. GSTA is the ratio of government securities to total assets. INVERTEDZ is the standard deviation of return on asset ROA over the full sample period of investigation divided by the sum of current ROA and current total equity to total assets ratio (EAR). *OWN_ACTIVE* and *OWN_PASSIVE* are the percentages of bank shares by active and passive institutional owners, respectively. *OWN_TRA* and *OWN_QIX_DED* are the percentages of bank shares by transient and quasi-indexer and dedicated institutional owners, respectively. *OWN_LONG* and *OWN_SHORT* are the percentages of bank shares by long-term and short-term institutional owners, respectively. *CON* is the sum of the squared ownership proportion of institutions in each bank per quarter. *CON_ACTIVE* and *CON_PASSIVE* are the sums of the squared ownership proportions of active vs. passive institutions in each bank per quarter, respectively. *CON_LONG* and *CON_SHORT* are the sums of the squared ownership proportions of long-term vs. short-term institutions in each bank per quarter, respectively. *MILLS1* and *MILLS2* are the inverse Mills ratios calculated from Model 1 and Model 2 in Panel A, respectively. SIZE is the natural logarithm of bank assets.*,** and*** indicate the significance levels of 10%, 5% and 1%, respectively.

Panel A - Stage 1 - Logistic Regressions of HIGH_OWN or HIGH_CON

Variables	Model 1 Dep. Var. = HIGH_OWN	Model 2 Dep. Var. = HIGH_CON
LN(SHARES)	2.379	-0.668
	(24.684***)	(-6.412***)
SIZE_MATCH_OWN	2.527	
	(26.805***)	
SIZE_MATCH _CON		2.904
		(26.573***)
Constant	-5.477	-2.7889
	(-25.687***)	(-11.937***)
Observations	19,373	19,373
Pseudo R-squared	0.423	0.203
Chi Squared	8572	4133
Year-Quarter fixed effects	Yes	Yes
Bank fixed effects	Yes	Yes
Clustered std err by banks	Yes	Yes

Panel B - Stage 2 - Regressions of Bank Risk

	Dep. Var. = TOTALRISK				Dep. Var. = INVERTEDZ			
Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
L.OWN	-0.161				-0.151			
	(-5.548***)				(-4.787***)			
L.CON	-0.026				-0.011			
	(-2.003**)				(-1.645)			
L.OWN_ACTIVE		-0.109				-0.111		
		(-4.080***)				(-3.758***)		

L.OWN_PASSIVE		-0.056				-0.026		
		(-2.778***)				(-1.357)		
L.CON_ACTIVE		-0.029				-0.012		
		(-2.686***)				(-1.976**)		
L.CON_PASSIVE		0.051				0.028		
		(2.517**)				(1.492)		
L.OWN_TRA			-0.080				-0.047	
			(-5.852***)				(-2.501**)	
L.OWN_QIX_DED			-0.095				-0.095	
			(-3.630***)				(-4.142***)	
L.CON_TRA			0.036				0.025	
			(4.019***)				(3.491***)	
L.CON_QIX_DED			-0.028				-0.009	
			(-2.806***)				(-1.769*)	
L.OWN_LONG				-0.082				-0.047
				(-4.606***)				(-2.712***)
L.OWN_SHORT				-0.111				-0.103
				(-5.826***)				(-4.478***)
L.CON_LONG				-0.034				-0.017
				(-9.922***)				(-7.678***)
L.CON_SHORT				0.017				0.010
				(1.604)				(1.587)
L.TOTALRISK	0.441	0.442	0.433	0.433				
	(19.271***)	(19.266***)	(17.941***)	(18.364***)				
MILLS1	0.095	0.093	0.097	0.095				
	(3.486***)	(3.368***)	(3.575***)	(3.368***)				
L.INVERTEDZ					0.108	0.091	0.086	0.082
					(3.379***)	(2.834***)	(2.633***)	(2.548**)
MILLS2					-0.040	-0.048	-0.054	-0.052
					(-2.208**)	(-2.492**)	(-2.858***)	(-2.759***)
SIZE	0.245	0.219	0.220	0.247	0.150	0.155	0.157	0.169
	(2.944***)	(2.594***)	(2.514**)	(2.864***)	(2.082**)	(2.080**)	(2.101**)	(2.223**)
Constant	-2.682	-2.437	-2.489	-2.713	-0.027	-0.027	-0.023	-0.035
	(-3.250***)	(-2.922***)	(-2.870***)	(-3.158***)	(-0.405)	(-0.402)	(-0.333)	(-0.504)
F-statistics	42.75***	41.18***	41.33***	39.49***	5.06***	5.05***	4.59***	14.73***
Adj. R-squared	0.515	0.525	0.522	0.515	0.231	0.184	0.183	0.159
Observations	14,086	13,701	13,294	13,495	14,086	13,701	13,294	13,495
Number of unique firms	590	579	576	577	590	579	576	577
Year-Quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clustered std err by banks	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 7 – Three Stage Least Squared Regressions

In this table, we report the results from the 3 stage least squared regressions. The dependent variable are $TOTALRISK_{i,t+1}$, $OWN_{i,t+1}$, $OWN\_ACTIVE_{i,t+1}$, $OWN\_PASSIVE_{i,t+1}$, $OWN\_TRA_{i,t+1}$, $OWN\_QIX\_DED_{i,t+1}$, $OWN\_LONG_{i,t+1}$, $OWN\_SHORT_{i,t+1}$, $CON_{i,t+1}$, $CON\_ACTIVE_{i,t+1}$, $CON\_PASSIVE_{i,t+1}$, $CON\_TRA_{i,t+1}$, $CON\_QIX\_DED_{i,t+1}$, $CON\_LONG_{i,t+1}$, $CON\_SHORT_{i,t+1}$, alternatively. TOTALRISK is a self-constructed variable from the 13 CAMELS variables (EAR, TCR, LLR, ILR, CIR, OCA, ROA, ROE, LAA, LASFR, TLD, TIETD, GSTA) described above. EAR is the ratio of total equity to total assets. TCR is the total capital ratio. LLR is the ratio of loan loss provision to total loans. ILR is the ratio of impaired loan to total loan. CIR is the ratio of total cost to total income. OCA is the overhead cost to total asset ratio. ROA is the return on asset. ROE is the return on equity. LAA is the ratio of liquid assets to total assets. LASFR is the ratio of liquid assets to short-term funds. TLD is the ratio of total loans to total deposits. TIETD is the ratio of total interest expenses to total deposits. GSTA is the ratio of government securities to total assets. *OWN* and *CON* are the percentage of total institutional ownership and ownership concentration. *OWN_ACTIVE* and *OWN_PASSIVE* are the percentages of bank shares by active and passive institutional owners, respectively. *OWN_TRA* and *OWN_QIX_DED* are the percentages of bank shares by transient and quasi-indexer and dedicated institutional owners, respectively. *OWN_LONG* and *OWN_SHORT* are the percentages of bank shares by long-term and short-term institutional owners, respectively. *CON* is the sum of the squared ownership proportion of institutions in each bank per quarter. *CON_ACTIVE* and *CON_PASSIVE* are the sums of the squared ownership proportions of active vs. passive institutions in each bank per quarter, respectively. *CON_LONG* and *CON_SHORT* are the sums of the squared ownership proportions of long-term vs. short-term institutions in each bank per quarter, respectively. $SIZE\_MATCH\_OWN_{i,t}$ and $SIZE\_MATCH\_CON_{i,t}$ are the medians of the institutional ownership level and the institutional ownership concentration of all other banks in the same size quartile as bank *i*. $LN(SHARES)_{i,t}$ is the natural logarithm of the number of shares outstanding of bank *i* in quarter *t*. *SIZE* is the natural logarithm of bank assets. *,** and*** indicate the significance levels of 10%, 5% and 1%, respectively.

Panel A - Total institutional ownership

Variables	Dependent variables = $TOTALRISK_{i,t+1}$	$OWN_{i,t+1}$	$CON_{i,t+1}$
$OWN_{i,t}$	-1.453		
	(-20.58***)		
$CON_{i,t}$	-0.233		
	(-1.95*)		
$SIZE_{i,t}$	0.250		
	(7.87***)		
$SIZE\_MATCH\_OWN_{i,t}$		0.751	0.007
		(63.17***)	(1.97**)
$SIZE\_MATCH\_CON_{i,t}$		2.916	0.563
		(13.58***)	(8.56***)
$LN(SHARES_{i,t})$		0.045	-0.005
		(28.05***)	(-9.83***)
Constant	-4.042	0.022	0.012
	(-6.97***)	(4.65***)	(7.86***)
Observations	14,150	14,150	14,150
R-squared	0.545	0.600	0.058
Year and quarter and firm fixed effects	Yes	Yes	Yes

Panel B - Active vs. passive institutional ownership

Variables	Dependent variables = $TOTALRISK_{i,t+1}$	$OWN\_ACTIVE_{i,t+1}$	$OWN\_PASSIVE_{i,t+1}$	$CON\_ACTIVE_{i,t+1}$	$CON\_PASSIVE_{i,t+1}$
$OWN\_ACTIVE_{i,t}$	-1.275				
	(-15.07***)				
$OWN\_PASSIVE_{i,t}$	-1.012				
	(-6.05***)				
$CON\_ACTIVE_{i,t}$	-0.208				
	(-1.72*)				
$CON\_PASSIVE_{i,t}$	9.871				
	(5.36***)				
$SIZE_{i,t}$	0.186				
	(5.60***)				
$SIZE\_MATCH\_OWN\_ACTIVE_{i,t}$		0.818	-0.083	0.009	0.004
		(57.72***)	(-14.03***)	(1.80*)	(4.73***)
$SIZE\_MATCH\_OWN\_PASSIVE_{i,t}$		0.192	0.336	0.027	-0.005
		(2.43**)	(10.15***)	(0.97)	(-1.04)
$SIZE\_MATCH\_CON\_ACTIVE_{i,t}$		3.005	-0.299	0.274	0.068
		(8.44***)	(-2.00**)	(2.20**)	(3.00***)
$SIZE\_MATCH\_CON\_PASSIVE_{i,t}$		6.389	-9.766	1.848	0.199
		(3.37***)	(-12.29***)	(2.78***)	(1.64)
$LN(SHARES_{i,t})$		0.030	0.011	-0.004	-0.001
		(20.19***)	(18.09***)	(-7.06***)	(-13.36***)
Constant	-3.409	0.009	0.051	0.007	0.003
	(-5.69***)	(1.54)	(20.21***)	(3.47***)	(8.45***)
Observations	13,588	13,588	13,588	13,588	13,588
R-squared	0.539	0.470	0.516	0.044	0.091
Year and quarter and firm fixed effects	Yes	Yes	Yes	Yes	Yes

Panel C – Transient vs. quasi-indexer and dedicated institutional ownership

Variables	Dependent variables = *TOTALRISK* $_{i,t+1}$	*OWN_TRA* $_{i,t+1}$	*OWN_QIX_DED* $_{i,t+1}$	*CON_TRA* $_{i,t+1}$	*CON_QIX_DED* $_{i,t+1}$
OWN_TRA $_{i,t}$	-2.248				
	(-15.06***)				
OWN_QIX_DED $_{i,t}$	-1.065				
	(-12.51***)				
CON_TRA $_{i,t}$	22.722				
	(7.22***)				
CON_QIX_DED $_{i,t}$	-0.198				
	(-1.64)				
SIZE $_{i,t}$	0.212				
	(6.47***)				
SIZE_MATCH_OWN_TRA $_{i,t}$		0.754	-0.006	0.004	0.022
		(44.17***)	(-0.16)	(5.58***)	(1.44)
SIZE_MATCH_OWN_QIX_DED $_{i,t}$		0.034	0.675	0.000	0.012
		(4.61***)	(38.60***)	(0.62)	(1.73*)
SIZE_MATCH_CON_TRA $_{i,t}$		-3.800	7.182	0.663	1.161
		(-3.35***)	(2.69***)	(15.80***)	(1.14)
SIZE_MATCH_CON_QIX_DED $_{i,t}$		0.972	1.024	0.010	0.572
		(9.50***)	(4.26***)	(2.74***)	(6.21***)
LN(SHARES $_{i,t}$*)*		0.005	0.035	-0.000	-0.005
		(8.75***)	(25.76***)	(-13.78***)	(-9.41***)
Constant	-2.978	0.015	0.036	0.001	0.010
	(-4.92***)	(7.46***)	(7.50***)	(8.78***)	(5.66***)
Observations	13,053	13,053	13,053	13,053	13,053
R-squared	0.548	0.347	0.520	0.191	0.056
Year and quarter and firm fixed effects	Yes	Yes	Yes	Yes	Yes

Panel D – Long vs. short institutional ownership

Variables	Dependent variables = *TOTALRISK* $_{i,t+1}$	*OWN_LONG* $_{i,t+1}$	*OWN_SHORT* $_{i,t+1}$	*CON_LONG* $_{i,t+1}$	*CON_SHORT* $_{i,t+1}$
OWN_LONG $_{i,t}$	-1.274				
	(-11.77***)				
OWN_SHORT $_{i,t}$	-1.370				
	(-17.00***)				
CON_LONG $_{i,t}$	-0.343				
	(-2.81***)				
CON_SHORT $_{i,t}$	2.620				
	(4.43***)				
SIZE $_{i,t}$	0.226				
	(6.97***)				
SIZE_MATCH_OWN_LONG $_{i,t}$		0.810	-0.021	-0.018	0.010
		(57.48***)	(-0.88)	(-2.01**)	(4.95***)
SIZE_MATCH_OWN_SHORT $_{i,t}$		0.138	0.601	0.015	0.001
		(8.56***)	(21.96***)	(1.48)	(0.27)
SIZE_MATCH_CON_LONG $_{i,t}$		0.251	-0.223	0.485	0.116
		(2.11**)	(-1.10)	(6.35***)	(6.73***)
SIZE_MATCH_CON_SHORT $_{i,t}$		4.443	1.824	0.407	0.381
		(12.52***)	(3.02***)	(1.79*)	(7.41***)
LN(SHARES $_{i,t}$*)*		0.015	0.030	-0.003	-0.002
		(19.67***)	(22.55***)	(-6.81***)	(-21.67***)
Constant	-3.638	-0.012	0.045	0.008	0.005
	(-6.16***)	(-4.45***)	(9.51***)	(4.69***)	(12.98***)
Observations	13,616	13,616	13,616	13,616	13,616
R-squared	0.551	0.589	0.421	0.071	0.265
Year and quarter and firm fixed effects	Yes	Yes	Yes	Yes	Yes

Table 8 - Regressions of Capital Adequacy

We report the results from the panel data regressions of bank capital adequacy on institutional ownership. The dependent variables are *EAR* in Panel A and *TCR* in Panel B. *EAR* is the ratio of total equity to total assets. *TCR* is the total capital ratio. *OWN* is the percentage of bank shares held by all institutional owners. *CON* is the sum of the squared ownership proportion of institutions in each bank per quarter. *LONG_OWN* and *SHORT_OWN* are the percentages of bank shares by long-term and short-term institutional owners, respectively. *LONG_CON* and *SHORT_CON* are the sums of the squared ownership proportions of long-term vs. short-term institutions in each bank per quarter, respectively. *LONG_OWN* and *SHORT_OWN* are the percentages of bank shares by long-term and short-term institutional owners, respectively. *LONG_CON* and *SHORT_CON* are the sums of the squared ownership proportions of long-term vs. short-term institutions in each bank per quarter, respectively. *SIZE* is the natural logarithm of bank assets. *,** and*** indicate the significance levels of 10%, 5% and 1%, respectively.

	Panel A – WEAR				***Panel B - WTCR***			
Variables	***Model 1***	***Model 2***	***Model 3***	***Model 4***	***Model 5***	***Model 6***	***Model 7***	***Model 8***
L.OWN	0.027				0.018			
	(2.184**)				(1.320)			
L.CON	0.014				0.018			
	(5.871***)				(10.641***)			
L.OWN_ACTIVE		0.017				0.016		
		(1.944*)				(1.484)		
L.OWN_PASSIVE		0.020				0.026		
		(3.110***)				(2.982***)		
L.CON_ACTIVE		0.015				0.019		
		(10.195***)				(13.992***)		
L.CON_PASSIVE		-0.016				-0.006		
		(-2.142**)				(-0.751)		
L.OWN_TRA			0.013				0.014	
			(2.632***)				(2.160**)	
L.OWN_QIX_DED			0.023				0.021	
			(2.710***)				(1.930*)	
L.CON_TRA			-0.005				-0.002	
			(-1.750*)				(-0.410)	
L.CON_QIX_DED			0.015				0.020	
			(10.525***)				(13.311***)	
L.OWN_LONG				0.015				0.022
				(2.171**)				(2.593***)
L.OWN_SHORT				0.017				0.015
				(2.326**)				(1.741*)
L.CON_LONG				0.013				0.017
				(6.337***)				(8.774***)
L.CON_SHORT				0.009				0.015
				(1.410)				(4.716***)
L.WEAR	0.872	0.875	0.875	0.876				
	(120.853***)	(119.008***)	(121.808***)	(122.624***)				
L.WTCR					0.829	0.836	0.837	0.836
					(57.460***)	(57.971***)	(56.734***)	(57.271***)
SIZE	-0.090	-0.091	-0.087	-0.082	-0.234	-0.225	-0.223	-0.218
	(-2.497**)	(-2.551**)	(-2.346**)	(-2.223**)	(-6.151***)	(-6.295***)	(-5.959***)	(-5.865***)
Constant	3.090	3.060	2.978	2.898	9.140	8.704	8.725	8.667
	(3.734***)	(3.689***)	(3.462***)	(3.348***)	(7.818***)	(7.866***)	(7.524***)	(7.444***)
F-statistics	617.70***	560.60***	531.50***	551.20***	253.90***	262.30***	247.40***	248.60***
Adj. R-squared	0.920	0.923	0.923	0.923	0.842	0.858	0.854	0.854
Year-Quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clustered std err by banks	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	14,086	13,701	13,294	13,495	14,086	13,701	13,294	13,495
Number of unique firms	590	579	576	577	590	579	576	577

Table 9 - Regressions of Asset Quality

We report the results from the panel data regressions of bank asset quality on institutional ownership. The dependent variables are *LLR* in Panel A and *ILR* in Panel B. *LLR* is the ratio of loan loss provision to total loans. *ILR* is the ratio of impaired loan to total loan. *OWN* is the percentage of bank shares held by all institutional owners. *CON* is the sum of the squared ownership proportion of institutions in each bank per quarter. *LONG_OWN* and *SHORT_OWN* are the percentages of bank shares by long-term and short-term institutional owners, respectively. *LONG_CON* and *SHORT_CON* are the sums of the squared ownership proportions of long-term vs. short-term institutions in each bank per quarter, respectively. *LONG_OWN* and *SHORT_OWN* are the percentages of bank shares by long-term and short-term institutional owners, respectively. *LONG_CON* and *SHORT_CON* are the sums of the squared ownership proportions of long-term vs. short-term institutions in each bank per quarter, respectively. *SIZE* is the natural logarithm of bank assets. *,** and*** indicate the significance levels of 10%, 5% and 1%, respectively.

	Panel A – WLLR				***Panel B - WILR***			
Variables	***Model 1***	***Model 2***	***Model 3***	***Model 4***	***Model 5***	***Model 6***	***Model 7***	***Model 8***
L.OWN	-0.095				0.036			
	(-3.648***)				(2.544**)			
L.CON	-0.007				-0.006			
	(-2.447**)				(-2.977***)			
L.OWN_ACTIVE		-0.073				0.051		
		(-3.299***)				(3.284***)		
L.OWN_PASSIVE		-0.020				-0.017		
		(-0.893)				(-1.677*)		
L.CON_ACTIVE		-0.007				-0.007		
		(-3.186***)				(-3.550***)		
L.CON_PASSIVE		0.021				-0.023		
		(1.059)				(-1.311)		
L.OWN_TRA			-0.048				0.033	
			(-3.063***)				(3.245***)	
L.OWN_QIX_DED			-0.074				0.005	
			(-3.360***)				(0.370)	
L.CON_TRA			0.002				-0.011	
			(0.223)				(-2.076**)	
L.CON_QIX_DED			-0.006				-0.005	
			(-2.743***)				(-3.582***)	
L.OWN_LONG				-0.042				-0.006
				(-2.322**)				(-0.690)
L.OWN_SHORT				-0.076				0.037
				(-4.012***)				(3.211***)
L.CON_LONG				-0.009				-0.003
				(-5.401***)				(-2.772***)
L.CON_SHORT				0.013				-0.013
				(1.462)				(-3.624***)
L.WLLR	0.355	0.356	0.356	0.349				
	(15.510***)	(15.340***)	(14.737***)	(14.763***)				
L.WILR					0.831	0.830	0.836	0.837
					(41.222***)	(42.385***)	(43.051***)	(43.554***)
SIZE	0.372	0.343	0.354	0.369	0.099	0.100	0.110	0.094
	(4.918***)	(4.537***)	(4.624***)	(4.707***)	(2.466**)	(2.467**)	(2.749***)	(2.377**)
Constant	-0.009	-0.008	-0.008	-0.009	-0.433	-0.431	-0.482	-0.412
	(-4.465***)	(-4.110***)	(-4.182***)	(-4.260***)	(-2.499**)	(-2.432**)	(-2.723***)	(-2.367**)
F-statistics	45.60	43.66	44.76	44.55	85.52	82.49	91.47	98.25
Adj. R-squared	0.382	0.392	0.398	0.384	0.847	0.848	0.851	0.853
Year-Quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clustered std err by banks	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	14,086	13,701	13,294	13,495	14,086	13,701	13,294	13,495
Number of unique firms	590	579	576	577	590	579	576	577

Table 10 - Regressions of Management Costs

We report the results from the panel data regressions of bank management costs on institutional ownership. The dependent variables are *CIR* in Panel A and *OCA* in Panel B. *CIR* is the ratio of total cost to total income. *OCA* is the overhead cost to total asset ratio. *OWN* is the percentage of bank shares held by all institutional owners. *CON* is the sum of the squared ownership proportion of institutions in each bank per quarter. *LONG_OWN* and *SHORT_OWN* are the percentages of bank shares by long-term and short-term institutional owners, respectively. *LONG_CON* and *SHORT_CON* are the sums of the squared ownership proportions of long-term vs. short-term institutions in each bank per quarter, respectively. *LONG_OWN* and *SHORT_OWN* are the percentages of bank shares by long-term and short-term institutional owners, respectively. *LONG_CON* and *SHORT_CON* are the sums of the squared ownership proportions of long-term vs. short-term institutions in each bank per quarter, respectively. *SIZE* is the natural logarithm of bank assets. *,** and*** indicate the significance levels of 10%, 5% and 1%, respectively.

	Panel A – WCIR				***Panel B - WOCA***			
Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
L.OWN	-0.111				0.014			
	(-3.898***)				(1.010)			
L.CON	-0.041				-0.003			
	(-3.103***)				(-0.633)			
L.OWN_ACTIVE		-0.066				0.019		
		(-2.401**)				(1.324)		
L.OWN_PASSIVE		-0.046				0.006		
		(-2.289**)				(0.655)		
L.CON_ACTIVE		-0.043				-0.004		
		(-4.070***)				(-0.734)		
L.CON_PASSIVE		0.066				-0.006		
		(4.454***)				(-0.485)		
L.OWN_TRA			-0.051				0.010	
			(-4.339***)				(1.981**)	
L.OWN_QIX_DED			-0.056				0.013	
			(-2.134**)				(0.953)	
L.CON_TRA			0.037				0.001	
			(5.067***)				(0.379)	
L.CON_QIX_DED			-0.045				-0.004	
			(-4.571***)				(-0.739)	
L.OWN_LONG				-0.073				0.009
				(-4.032***)				(1.370)
L.OWN_SHORT				-0.068				0.018
				(-3.708***)				(1.873*)
L.CON_LONG				-0.046				0.000
				(-9.381***)				(0.538)
L.CON_SHORT				0.010				-0.001
				(1.281)				(-0.318)
L.WCIR	0.450	0.448	0.440	0.444				
	(20.131***)	(20.261***)	(19.406***)	(19.953***)				
L.WOCA					0.718	0.719	0.719	0.727
					(23.531***)	(23.200***)	(22.638***)	(24.175***)
SIZE	-0.393	-0.402	-0.434	-0.400	-0.309	-0.314	-0.307	-0.319
	(-4.825***)	(-4.791***)	(-5.083***)	(-4.897***)	(-5.300***)	(-5.355***)	(-5.200***)	(-5.454***)
Constant	88.355	89.402	94.418	90.211	1.957	1.982	1.959	1.979
	(7.787***)	(7.674***)	(7.973***)	(7.895***)	(6.356***)	(6.339***)	(6.192***)	(6.431***)
F-statistics	23.76	24.19	22.65	25.67	57.39	54.00	55.51	57.36
Adj. R-squared	0.436	0.421	0.408	0.421	0.773	0.774	0.777	0.771
Year-Quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clustered std err by banks	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	14,086	13,701	13,294	13,495	14,086	13,701	13,294	13,495
Number of unique firms	590	579	576	577	590	579	576	577

Table 11 - Regressions of Earnings and Profitability

We report the results from the panel data regressions of bank earnings and profitability on institutional ownership. The dependent variables are *ROA* in Panel A and *ROE* in Panel B. *ROA* is the return on asset. *ROE* is the return on equity. *OWN* is the percentage of bank shares held by all institutional owners. *CON* is the sum of the squared ownership proportion of institutions in each bank per quarter. *LONG_OWN* and *SHORT_OWN* are the percentages of bank shares by long-term and short-term institutional owners, respectively. *LONG_CON* and *SHORT_CON* are the sums of the squared ownership proportions of long-term vs. short-term institutions in each bank per quarter, respectively. *LONG_OWN* and *SHORT_OWN* are the percentages of bank shares by long-term and short-term institutional owners, respectively. *LONG_CON* and *SHORT_CON* are the sums of the squared ownership proportions of long-term vs. short-term institutions in each bank per quarter, respectively. *SIZE* is the natural logarithm of bank assets. *,** and*** indicate the significance levels of 10%, 5% and 1%, respectively.

	Panel A – ROA				***Panel B - ROE***			
Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
L.OWN	0.151				0.161			
	(3.888***)				(3.954***)			
L.CON	0.014				0.031			
	(0.821)				(2.034**)			
L.OWN_ACTIVE		0.084				0.083		
		(2.362**)				(2.459**)		
L.OWN_PASSIVE		0.053				0.075		
		(2.132**)				(2.980***)		
L.CON_ACTIVE		0.017				0.035		
		(1.165)				(2.646***)		
L.CON_PASSIVE		-0.072				-0.072		
		(-2.752***)				(-2.560**)		
L.OWN_TRA			0.084				0.085	
			(4.791***)				(5.118***)	
L.OWN_QIX_DED			0.064				0.079	
			(1.888*)				(2.293**)	
L.CON_TRA			-0.054				-0.047	
			(-3.407***)				(-4.129***)	
L.CON_QIX_DED			0.017				0.033	
			(1.162)				(2.559**)	
L.OWN_LONG				0.075				0.087
				(3.290***)				(3.888***)
L.OWN_SHORT				0.098				0.099
				(4.023***)				(3.853***)
L.CON_LONG				0.026				0.042
				(8.728***)				(12.355***)
L.CON_SHORT				-0.030				-0.025
				(-2.057**)				(-1.945*)
L.ROA	0.282	0.280	0.270	0.273				
	(13.000***)	(12.660***)	(11.787***)	(12.084***)				
L.ROE					0.330	0.328	0.315	0.320
					(11.367***)	(10.897***)	(9.987***)	(10.396***)
SIZE	-0.142	-0.109	-0.113	-0.148	-0.130	-0.105	-0.104	-0.139
	(-1.726*)	(-1.317)	(-1.327)	(-1.788*)	(-1.660*)	(-1.326)	(-1.290)	(-1.740*)
Constant	2.153	1.847	1.921	2.256	24.828	21.374	21.911	26.321
	(2.542**)	(2.143**)	(2.179**)	(2.605***)	(2.330**)	(1.994**)	(1.997**)	(2.414**)
F-statistics	17.57	16.68	17.10	18.16	15.13	15.84	16.24	20.26
Adj. R-squared	0.323	0.330	0.327	0.322	0.351	0.358	0.348	0.348
Year-Quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clustered std err by banks	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	14,086	13,701	13,294	13,495	14,086	13,701	13,294	13,495
Number of unique firms	590	579	576	577	590	579	576	577

Table 12 - Regressions of Liquidity

We report the results from the panel data regressions of bank liquidity. The dependent variables are *LAA* in Panel A, *LASFR* in Panel B and *TLD* in Panel C. *LAA* is the ratio of liquid assets to total assets. *LASFR* is the ratio of liquid assets to short-term funds. *TLD* is the ratio of total loans to total deposits. *OWN* is the percentage of bank shares held by all institutional owners. *CON* is the sum of the squared ownership proportion of institutions in each bank per quarter. *LONG_OWN* and *SHORT_OWN* are the percentages of bank shares by long-term and short-term institutional owners, respectively. *LONG_CON* and *SHORT_CON* are the sums of the squared ownership proportions of long-term vs. short-term institutions in each bank per quarter, respectively. *LONG_OWN* and *SHORT_OWN* are the percentages of bank shares by long-term and short-term institutional owners, respectively. *LONG_CON* and *SHORT_CON* are the sums of the squared ownership proportions of long-term vs. short-term institutions in each bank per quarter, respectively. *SIZE* is the natural logarithm of bank assets. *,** and*** indicate the significance levels of 10%, 5% and 1%, respectively.

	Panel A – WLAA				***Panel B – WLASFR***				***Panel C - WTLD***			
Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12
L.OWN	-0.027				-0.032				0.018			
	(-2.874***)				(-0.970)				(2.225**)			
L.CON	0.002				-0.002				-0.002			
	(2.286**)				(-0.545)				(-2.539**)			
L.OWN_ACTIVE		-0.024				-0.007				0.017		
		(-2.776***)				(-0.241)				(2.250**)		
L.OWN_PASSIVE		-0.000				-0.013				0.001		
		(-0.032)				(-0.473)				(0.151)		
L.CON_ACTIVE		0.002				-0.001				-0.002		
		(2.802***)				(-0.526)				(-2.839***)		
L.CON_PASSIVE		0.015				-0.062				-0.012		
		(2.518**)				(-2.978***)				(-2.674***)		
L.OWN_TRA			-0.004				-0.015				0.005	
			(-0.788)				(-0.982)				(1.326)	
L.OWN_QIX_DED			-0.025				0.004				0.020	
			(-2.916***)				(0.114)				(2.954***)	
L.CON_TRA			0.003				-0.014				-0.001	
			(1.250)				(-0.947)				(-0.518)	
L.CON_QIX_DED			0.003				-0.001				-0.003	
			(3.767***)				(-0.356)				(-3.665***)	
L.OWN_LONG				-0.002				-0.023				0.008
				(-0.258)				(-0.993)				(1.573)
L.OWN_SHORT				-0.027				-0.011				0.015
				(-3.848***)				(-0.449)				(2.334**)
L.CON_LONG				0.001				0.000				-0.002
				(1.459)				(0.024)				(-2.906***)
L.CON_SHORT				0.003				-0.011				0.002
				(0.766)				(-1.129)				(0.631)
L.WLAA	0.828	0.830	0.830	0.830								
	(71.325***)	(71.379***)	(69.280***)	(69.446***)								
L.WLASFR					0.056	0.062	0.059	0.054				
					(2.905***)	(3.204***)	(3.033***)	(2.780***)				
L.WTLD									0.859	0.857	0.859	0.860
									(81.922***)	(81.577***)	(80.027***)	(80.466***)
SIZE	0.082	0.082	0.089	0.084	0.005	-0.002	0.005	0.010	-0.019	-0.019	-0.025	-0.023
	(2.125**)	(2.112**)	(2.274**)	(2.158**)	(0.062)	(-0.024)	(0.050)	(0.104)	(-0.615)	(-0.596)	(-0.782)	(-0.710)
Constant	-3.615	-3.771	-4.315	-3.974	0.862	1.232	0.764	0.578	15.212	15.496	16.026	15.782
	(-1.043)	(-1.078)	(-1.223)	(-1.120)	(0.129)	(0.182)	(0.112)	(0.083)	(3.036***)	(3.020***)	(3.077***)	(3.012***)
F-statistics	244.5	240.3	227.8	232.8	1.404	1.481	1.462	1.484	481.0	455.3	458.4	457.8
Year-Quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R-squared	0.918	0.918	0.918	0.919	0.0157	0.0105	0.0182	0.0159	0.949	0.949	0.949	0.950
Bank fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clustered std err by banks	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	14,086	13,701	13,294	13,495	14,086	13,701	13,294	13,495	14,086	13,701	13,294	13,495
Number of unique firms	590	579	576	577	590	579	576	577	590	579	576	577

Table 13 - Regressions of Sensitivity to Market Risk

We report the results from the panel data regressions of bank sensitivity to market risk. The dependent variables are *TIETD* in Panel A and *GSTA* in Panel B. *TIETD* is the ratio of total interest expenses to total deposits. *GSTA* is the ratio of government securities to total assets. *TLD* is the ratio of total loans to total deposits. *OWN* is the percentage of bank shares held by all institutional owners. *CON* is the sum of the squared ownership proportion of institutions in each bank per quarter. *LONG_OWN* and *SHORT_OWN* are the percentages of bank shares by long-term and short-term institutional owners, respectively. *LONG_CON* and *SHORT_CON* are the sums of the squared ownership proportions of long-term vs. short-term institutions in each bank per quarter, respectively. *LONG_OWN* and *SHORT_OWN* are the percentages of bank shares by long-term and short-term institutional owners, respectively. *LONG_CON* and *SHORT_CON* are the sums of the squared ownership proportions of long-term vs. short-term institutions in each bank per quarter, respectively. *SIZE* is the natural logarithm of bank assets. *,** and*** indicate the significance levels of 10%, 5% and 1%, respectively.

	Panel A – WTIETD				***Panel B - WGSTA***			
Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
L.OWN	-0.006				-0.034			
	(-1.227)				(-2.779***)			
L.CON	-0.000				0.002			
	(-0.613)				(1.417)			
L.OWN_ACTIVE		-0.005				-0.037		
		(-1.124)				(-3.054***)		
L.OWN_PASSIVE		-0.002				-0.011		
		(-0.581)				(-1.371)		
L.CON_ACTIVE		-0.001				0.002		
		(-0.707)				(1.589)		
L.CON_PASSIVE		0.001				0.025		
		(0.471)				(2.848***)		
L.OWN_TRA			-0.005				-0.002	
			(-1.998**)				(-0.263)	
L.OWN_QIX_DED			-0.000				-0.041	
			(-0.072)				(-3.503***)	
L.CON_TRA			0.003				0.005	
			(1.733*)				(1.324)	
L.CON_QIX_DED			-0.001				0.003	
			(-0.919)				(1.523)	
L.OWN_LONG				-0.003				-0.013
				(-1.063)				(-1.647)
L.OWN_SHORT				-0.002				-0.025
				(-0.601)				(-2.511**)
L.CON_LONG				0.000				0.001
				(0.661)				(1.362)
L.CON_SHORT				-0.000				0.006
				(-0.117)				(1.209)
L.WTIETD	0.864	0.864	0.862	0.867				
	(65.894***)	(64.430***)	(61.775***)	(63.252***)				
L.WGSTA					0.847	0.846	0.848	0.847
					(29.000***)	(28.603***)	(29.814***)	(29.628***)
SIZE	0.066	0.065	0.059	0.061	0.089	0.091	0.097	0.092
	(3.698***)	(3.623***)	(3.235***)	(3.345***)	(1.721*)	(1.756*)	(1.933*)	(1.813*)
Constant	-0.002	-0.002	-0.001	-0.002	-0.853	-0.878	-0.963	-0.902
	(-3.057***)	(-2.978***)	(-2.588***)	(-2.740***)	(-1.458)	(-1.487)	(-1.679*)	(-1.565)
F-statistics	5539	5579	5338	5506	102.3	115.3	125.3	108.2
Adj. R-squared	0.978	0.979	0.979	0.979	0.854	0.854	0.857	0.856
Year-Quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clustered std err by banks	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of unique firms	590	579	576	577	590	579	576	577
Observations	14,086	13,701	13,294	13,495	14,086	13,701	13,294	13,495