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Real Regulatory Capital Management and Dividend Payout: Evidence from Available-for-Sale Securities[*]

Michele Fabrizi[†], *Elisabetta Ipino*[‡] *Michel Magnan*[§], *Antonio Parbonetti*[**]

Abstract

The 2007–2009 financial crisis has re-ignited a long-running debate about the relative merits of historical cost accounting (HCA) or fair value accounting as foundations for prudential oversight, including the calculation of regulatory capital. Available-for-sale securities provide a good setting to further explore this issue. Using a sample of 5,333 firm-year observations representing 721 unique U.S. banks and bank holding companies between 1998 and 2013, we present evidence that regulatory capital based on HCA induces banks to engage in gains trading activities to improve their capital position and pay dividends. We also document that banks experiencing a decrease in regulatory capital and banks with a higher percentage of institutional investors are more prone to engage in gains trading to pay dividends. Finally, our findings reveal that to counterbalance the increased risk, banks change their lending behavior and decrease the riskiness of their trading portfolios. Overall, our results reveal the potential side effects linked to the use of HCA as a foundation to compute regulatory capital and suggest that HCA is not a panacea.

Keywords: Banks, Regulatory capital, Available-for-sale securities, Realized gains, Realized losses, Dividend payout

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Gestion du capital réglementaire et politique de dividende : Le cas des valeurs mobilières disponibles à la vente

Résumé

La crise financière de 2007-2009 a relancé le débat quant aux avantages et inconvénients comparés de la comptabilité au coût historique (ou amorti) et de la comptabilité à la juste valeur à des fins de réglementation, notamment en ce qui a trait au calcul du capital. Compte tenu de leur comptabilité particulière, les valeurs mobilières disponibles à la vente offrent un contexte intéressant pour l'étude de cette question. À partir des données financières d'un échantillon de 721 banques américaines au cours de la période 1998-2013, nous constatons que le calcul du capital réglementaire basé sur le coût historique amène les banques à effectuer des opérations de cessions de titres disponibles à la vente en vue de réaliser des gains constatés aux résultats, ce qui leur permet d'améliorer leur ratio de capital réglementaire et d'augmenter leurs dividendes. Nous constatons également que les banques souffrant de pressions à la baisse quant à leur ratio de capitalisation et ayant une plus grande proportion d'investisseurs institutionnels dans leur actionnariat ont une plus grande propension à effectuer de telles opérations. Par contre, nous constatons également qu'afin de contrer l'accroissement du risque financier qui en résulte, les banques modifient leur stratégie de prêt et réduisent le niveau de risque de leur portefeuille de négociation. Dans l'ensemble, nos résultats tendent à montrer les effets secondaires découlant de l'utilisation du coût historique en tant que fondement du calcul du capital réglementaire.

Mot clés : banques, capital réglementaire, titres disponibles à la vente, gains réalisés, pertes constatées, politique de dividende

1. Introduction

There is a spirited debate in the literature about whether historical cost accounting (HCA) or fair value accounting (FVA) should be used as a basis for regulatory capital (Laux and Leuz, 2009; Laux, 2012; Beatty and Liao, 2014). The theoretical literature (Allen and Carletti, 2008; Plantin et al., 2008; Sapra, 2008) shows that full FVA is procyclical (i.e. it exacerbates swings in the financial system). In a recent contribution, Bowen and Khan (2014) investigate investor and creditor reactions to policy maker deliberations and decisions about FVA (and impairment rules) and show that investors acted as if the potential negative effects of FVA out-weighed any benefits associated with having more timely and transparent mark-to-market data for decision making. Plantin et al. (2008) explain how FVA generates excessive volatility in prices, by degrading their information content and leading to sub-optimal decisions by financial institutions (i.e., forced selling of assets). Allen and Carletti (2008) argue that in such an environment, HCA can help avoid fire sales. However, as Laux and Leuz (2009) note, HCA has a set of problems as well, and it is possible that they are as severe as the problems with FVA. For example, Plantin et al. (2008) argue that HCA creates incentives for banks to engage in "gains trading"—that is, selectively selling assets with realized gains and keeping those with losses. As prior research shows (e.g. Beatty et al., 2002; Lifschultz, 2002; Barth et al., 2015), banks engage in gains trading activities to smooth earnings and regulatory capital.

In this paper, we provide evidence of an additional undesirable outcome when HCA is used as a basis to compute regulatory capital. Specifically, we show that banks pay dividends out of realized gains when assets are reported at the HCA for regulatory capital purposes.

This practice of engaging in gains trading activities requires particular scrutiny when it is ultimately used to pay dividends to shareholders. Indeed, by paying dividends, bank managers convey a credible signal to external constituencies, including creditors and general customers, that they are confident about their firm's underlying profitability and financial

strength (Miller and Rock, 1985; Baker and Wurgler, 2012; Floyd et al., 2015). However, the payment of dividends out of realized gains leaves risky assets on banks' balance sheet and depletes safe capital assets, thus increasing solvency risk and decreasing the overall financial solidity of the banks. Moreover, dividends transfer wealth from a bank to its owners, thus representing an asset substitution (Jensen and Meckling, 1979) that favors equity holders at the expense of creditors and other stakeholders, such as regulators (Lv et al., 2012).

In this study, we provide evidence that when the regulatory capital is determined using HCA, banks have the incentive and opportunity to engage in gains trading to free up resources to pay dividends to shareholders. Available-for-sale (AfS) securities offer an ideal research setting to investigate our research question because of their peculiar accounting treatment: for financial reporting purposes, they are carried at FVA, with unrealized gains and losses being captured in other comprehensive income, and for regulatory capital requirements, they are carried at HCA.[1] Although gains trading can be undertaken using any assets that enter the regulatory capital at HCA (the most significant being outstanding loans), unrealized gains and losses on AfS securities are reported in other comprehensive income. Thus, this setting allows us to track whether managers have some discretion as to when the gains or losses ultimately appear in earnings and regulatory capital. For this reason, we use AfS securities as a research setting to answer the broader research question whether the use of HCA as a foundation to compute regulatory capital allows banks to pay dividends out of realized gains.

Overall, this paper addresses the potential side effects of using HCA as a basis for capital regulation, a topic on which knowledge is limited, even though it is a critical issue for standard setters, capital market participants and bank regulators (Laux and Leuz, 2009; Laux, 2012). Because regulatory capital protects creditors by acting as a buffer against losses,

[1] Under Basel III regulations, regulatory capital now reflects unrealized gains and losses on AfS securities. However, several other bank assets are still reported at historical or amortized cost, the most significant being outstanding loans. Thus, the issue of whether regulatory capital should be grounded in HCA or FVA is still outstanding.

understanding whether and how the integration of (or lack thereof) HCA into regulatory equity capital contributes to that role is of critical importance.

We base our inferences on a large sample of bank holding companies from 1998 to 2013. We find robust evidence that banks pay dividends out of realized gains on AfS securities. Moreover, banks experiencing a decrease in regulatory capital, and banks with a higher percentage of institutional investors also face more pressure to pay dividends and therefore are more prone to engage in gains trading. Our findings also reveal that to counterbalance the increased risk, banks change their lending behavior and decrease the riskiness of their trading assets portfolios. Additional analyses show that depositors exert "market discipline" on banks by responding to banks' gains trading behavior by withdrawing their deposits.

Our paper contributes to several streams of literature. First, from a regulatory perspective, it is critical to understand when and how accounting standards lead to undesirable incentives, in addition to the incentives set by the regulatory capital framework (Bank for International Settlements, 2015). Our evidence suggests that using historical cost to determine regulatory capital permits banks to engage in gains trading, thus allowing the selective sale of assets with the goal to pay dividends. Therefore, using historical cost to determine regulatory capital is not a panacea. In this context, we add to the debate about whether regulatory capital should be based on historical cost or fair value (e.g., Laux and Leuz, 2009; Pozen, 2009; Huizinga and Laeven, 2012; Kothari and Lester, 2012). Specifically, we do not contribute to the debate on the desirability of FVA versus HCA by comparing the two accounting regimes; rather, we provide evidence on potential HCA side effects in computing regulatory capital. From a broader perspective, we contribute to research on the desirability of certain models to compute regulatory capital (e.g. Chernykh and Cole, 2015) and on the importance of capital requirements to assure bank stability and efficiency (Pessarossi and Weill 2015; Stolz and

Wedow, 2015; de Souza, 2016). Second, the paper contributes to the literature on dividend payouts in the banking industry (Lv et al., 2012; Abreu and Gulamhussen, 2013; Kanas, 2013; Onali, 2014) and to the debate on the desirability of regulating bank dividends (Guntay et al., 2015; Ashraf et al., 2016). In particular, we show that the use of HCA to compute regulatory capital leads banks to boost dividends, thus modifying banks' risk profile and shifting risk from creditors to shareholders. Banks counterbalance that shift by realigning their assets. Third, the paper adds to emerging evidence of the real effects of a financial institution's governance model and delineates how such effects potentially differ from regulators' aims. We also contribute to extant research that shows that the incentive to engage in capital management could also stem from banks' ownership structure (Farinha and Lopez-de-Foronda, 2009. More specifically, banks in which institutional investors exert more influence seem to have a greater propensity to engage in dividend-enhancing gains trading. Such behavior is consistent with prior evidence that shareholder-oriented governance leads to greater risk taking by banks' managers and, ultimately, resulted in under-performance during the recent financial crisis (Fahlenbrach and Stulz, 2011; Beltratti and Stulz, 2012). Finally, we contribute to the stream of research investigating earnings and capital management activities in banks (Beccalli et al., 2013; Curcio and Hasan, 2015). We do so, by focusing on gain trading activities and by documenting their potential effects on banks' dividends.

Our paper should also be of interest to regulators as they must consider whether to require the disclosure of fair value and unrealized gains and losses of assets reported under HCA (i.e., loans) to track banks' behavior. Indeed, adding to the current requirements the disclosure on unrealized gains and losses for all assets reported at HCA would allow investors and regulators to track gains trading behaviors and may support regulators restrictions of dividends payment only when banks engage in gains trading.

The remainder of the paper proceeds as follows: Section 2 reviews the literature and develops the hypothesis. Section 3 describes the research design, the methodology, and the data set. Section 4 reports the main results. Section 5 provides concluding remarks.

2. Theoretical Background and Research Hypothesis

This study combines three streams of research: (1) the debate on the use of FVA versus HCA to compute regulatory capital, (2) the use of gains trading activities to smooth earnings and capital ratios, and (3) dividend payout policies in the financial industry. In the following, we review and combine these three streams of research to develop the research hypothesis investigated herein.

2.1. FVA versus HCA

Whether capital adequacy should be based on fair value or historical cost is controversial. The key to the debate is whether fair value leads to excess endogenous volatility that is solely due to accounting norms being unrelated to the underlying fundamentals. In that context, real decisions are then distorted because of the measurement regime.

Extant literature has identified three different sources of endogenous volatility generated by fair value. First, Penman (2007) suggests that the mismatch due to the combination of historical costs and fair value in measuring assets and liabilities injects volatility into earnings, thus impairing their usefulness as a basis to estimate future earnings and equity value. Second, Allen and Carletti (2008) purport that as liquidity dries up in a market, the fair value of securities trading on such a market is driven by the residual amount of liquidity, not the fundamental value of assets. They analytically show that fair value–based regulatory capital can lead to contagion. The basic idea is that banks may (have to) sell assets at a price below the fundamental value and that the price from these (forced) sales becomes

relevant to other institutions that FVA requires to mark their assets to market (Allen and Carletti, 2008; Plantin et al., 2008). Third, Plantin et al. (2008) further emphasize the role of liquidity in generating artificial volatility. As liquidity deteriorates and prices fall, banks have an incentive to sell assets in anticipation of further price declines, thus amplifying the changes in asset prices relative to their fundamental values (Morris and Shin, 2008).

The alternative to FVA is HCA, which requires firms to record their assets and liabilities at their original prices, with no adjustments for subsequent changes in the market values of those items. As a consequence, valuing assets at historical costs essentially insulates banks from market prices and, thus, also from prices established by the trading activities of other banks and from potential downward spillover effects.[2] Allen and Carletti (2008) and Morris and Shin (2008) suggest that under the historical cost measurement regime, the decline in liquidity and price would not have a domino effect further deteriorating prices and liquidity, thus leading to contagion.

Despite some potential advantages as a foundation of regulatory capital, HCA does have some limitations. For example, Dewatripont and Tirole (1994) suggest that even if fair value creates noise that misallocates decision rights, the use of historical cost provides incentives to shift risks. Plantin et al. (2008) argue that HCA may create incentives for banks to engage in selective and potentially inefficient asset sales to realize earnings early. HCA likely provides incentives to engage in gains trading, in which a bank selectively sells financial instruments with unrealized gains while keeping those with unrealized losses (Wyatt, 1991). In this vein, Bleck and Liu (2007, p. 232) criticize HCA because it "not only transfers volatility across time but also increases assets price volatility overall." The underlying intuition is that HCA generates stability in the short run that masks fundamental

[2] This outcome assumes that these prices are not also relevant for (other than temporary) impairment testing. If they are, the same effects occur under HCA with impairments. However, the distinction between temporary and other-than-temporary impairments generally makes HCA less sensitive in practice to short-term market movements.

volatility that builds up underneath and potentially erupts through a major write-down in the long run. Consistent with this view, Ellul et al. (2012) show that during financial crises, financial institutions tend to engage in gains trading, with the use of HCA potentially underlying such transactions. Following Ellul et al., we argue that HCA provides banks with the incentive to engage in gains trading behavior by selling assets and realizing gains while keeping risky assets on the balance sheet. When a bank sells an asset with a fair value higher than its historical cost, it increases both earnings and regulatory capital. This provides banks with the incentive to cherry-pick assets to realize gains and withhold risky ones.

2.2 Gains Trading Activities in the Financial Industry

Research on gains trading activities in the financial industry is extensive[3]. When managers engage in gains trading, they selectively sell assets with realized gains and keep those with losses. Most prior research has focused on the use of realized securities gains and losses as a gains trading tool to smooth earnings or to circumvent capital adequacy requirements. Barth et al. (1990) find that realized gains and losses, on average, have a negative effect on stock returns, as if investors perceive that reported gains and losses in banks' investment securities are timed by bank management to offset losses and gains in other earnings. Warfield and Linsmeier (1992) re-examine this findings using quarterly earnings announcement returns and find evidence consistent with Barth et al.'s (1990), but only for banks' fourth quarter. Beatty and Harris (1998) note that smoothing is well documented, and they compare the association between pre-discretion earnings and securities gain and losses for publicly traded and privately held banks using a sample from 1991 to 1992. While they find a negative association for both groups, the association is stronger for the publicly traded banks, consistent with earnings management occurring from greater information asymmetry in public

[3] A related stream of research investigates alternatives earnings management tools (such as loan-loss provisions) used by managers to engage in capital management activities (Curcio and Hasan, 2015).

firms. The authors conclude that earnings management may convey management's private information to external stakeholders and may not necessarily reduce the quality of earnings. Beatty et al. (2002) further compare securities gains and losses in publicly traded and privately hold banks and find that public banks use more discretion in gain and loss recognition to achieve earnings targets than private banks. Finally, using a sample of 88 bank holding companies from 1997 to 2000, Lifschultz (2002) shows that banks use realized gains and losses from AfS to smooth earnings.

A related stream of research focuses on banks' incentives to manage regulatory capital and shows that banks recognize abnormal realized gains on securities portfolios (Moyer, 1990; Scholes et al., 1990; Beatty et al., 1995; Collins et al., 1995). Scholes et al. (1990) find that commercial banks exploit the realization of securities gains (or the postponement of securities losses) to increase book regulatory capital. Moyers (1990) finds evidence that banks with regulatory capital below the minimum use realized securities gains and losses to increase regulatory capital. Barth et al. (2015) find robust evidence that banks realize gains and losses on AfS to smooth earnings and regulatory capital. In particular, their findings show that the higher the amount of unrealized gain and losses, the more banks engage in income and regulatory capital smoothing. Surprisingly, research has put less emphasis on another incentive that might induce banks to take advantage of the use of HCA in computing regulatory capital—namely, paying dividends to shareholders.

2.3. Dividend Payout in the Banking Industry

Since Lintner's (1956) study, extensive empirical research has shown that managers are reluctant to cut dividends. Such reluctance is one of the strongest empirical regularities in corporate finance (Lintner, 1956; Brav et al., 2005; DeAngelo et al., 2008). In a survey of CFOs, Brav et al. (2005) report that managers are willing to sell assets, lay off employees,

raise external funds, and even bypass positive NPV projects before cutting dividends. Daniel et al. (2008) show that firms actively manage earnings to maintain dividends. This is consistent with Miller and Modigliani (1961), who suggest that managers could use dividends to convey information on future earnings, and with DeAngelo and DeAngelo's (2006a) contention that dividends are of first-order importance to investors. The reluctance to cut dividends is also consistent with the strong negative stock price reactions observed around the announcement of dividend reductions.

The banking sector is among the industries with the highest payout ratios.[4] Dickens et al. (2002) show that 92% of U.S. banks paid dividends in 2000, compared with only 49% of non-financial firms. Floyd et al. (2015) show that most banks consistently paid dividends from 1990 to 2008, with the majority of banks increasing the dividend per share each year.

In addition, banks exhibit peculiarities that make their dividend policy an even more critical signal. Banks are highly leveraged and inherently opaque, and their assets and liabilities are naturally linked even if their maturity is typically mismatched. For banks to function smoothly, their constituencies must be confident about their survival. Problems arise if this is not the case, exposing banks to runs and potential government interventions (Floyd et al., 2015). By paying dividends, bank managers convey a credible signal to external constituencies, including creditors and general customers, that they are confident about their banks' solvency. This is critical because if any of the bank's external constituencies begin to doubt the bank's solvency, its funding model and ultimately its ability to continue as a going concern will be at risk (Floyd et al., 2015).[5] Thus, dividends help banks mitigate investor and depositor concerns about their fragility. Kauko (2012) provides an analytical model in which

[4] Banks also repurchase their shares on the open market, but repurchases rarely represent more than one-third of banks' payout and never exceeds dividends.

[5] Anecdotal evidence consistently shows a reluctance to cut dividends or even reduce their amount. See "Dividends Cut Fastest Since 1950s as Citigroup Conserves Cash" (Bloomberg, November 26, 2009), "JPMorgan Cuts Dividend 87 Percent to 5 Cents a Share" (Bloomberg, February 23, 2009), "Fed Urges Banks to Put Bailout Funds into Loans, Not Dividends" (Bloomberg, February 24, 2009), and "Wells Fargo Cuts Its Dividend 85%" (*The Wall Street Journal*, March 7, 2009).

dividends are an important source of information for depositors because they signal both profitability and liquidity (i.e. liquid and profitable banks can pay larger dividends than illiquid and unprofitable banks). The idea that dividends signal banks' financial strength is consistent with the findings of Acharya et al. (2012) and Hirtle (2014), which show that during the recent financial crisis, banks continued to pay dividends even if their financial stability seemingly worsened. Acharya et al. (2012) observe that the fear of "runs" leads banks to continue paying dividends to keep depositors calm even when it would be prudent to cut dividends. Abreu and Gulamhussen (2013) also conclude that banks' dividend policies during the 2008 financial crisis were consistent with agency costs and signaling arguments.

Given banks' incentives to pay dividends to shareholders and the opportunity offered by regulatory capital at the HCA to engage in gains trading, we argue that banks exploit HCA to engage in real regulatory capital management to pay dividends to shareholders. Indeed, when an asset enters the computation of the regulatory capital at the historical cost, bank managers might have an incentive to selectively sell assets with realized gains and keep those with unrealized losses. The gains from the sale free up regulatory capital and can be used to pay dividends to shareholders. Therefore, we posit the following research hypothesis, which we test in the context of AfS securities:

H1: The use of HCA in computing regulatory capital allows banks to engage in gains trading and pay dividends to shareholders.

3. Methodology

3.1 Research Setting: Regulatory Treatment of AfS Securities

To test our hypothesis, we use a specific research setting that allows us to track whether managers engage in selective asset sales geared to the early realization of earnings—

namely, AfS debt securities. Indeed, this setting allows us to have both the fair value of the assets from the balance sheet and the historical cost in the regulatory capital, with changes in value reported in the accumulated other comprehensive income. Although executives can use any asset reported at historical cost for regulatory capital purposes to engage in gains trading to free up resources to be distributed to shareholders, the particular accounting treatment of AfS securities enables us to investigate this phenomenon empirically.

The accounting treatment for investment securities in the United States is specified in FASB Accounting Standard Codification (ASC) Topic 320 (formerly Statement of Financial Accounting Standards No. 115; FASB 1993). Topic 320 requires all entities, including banks, to classify securities into one of the three following categories: (1) trading securities, (2) held-to-maturity, and (3) AfS securities. Trading securities, typically a small fraction of a bank's assets (Barth, 1994), are debt securities that a bank's management intends to trade actively. They are measured at fair value, with changes in fair value recognized in earnings. Debt securities, which a bank's management has the positive intent and ability to hold to maturity, are classified as held-to-maturity securities and reported at historical (amortized) cost. Because of the stringent classification criteria under Topic 320,[6] banks do not usually classify much of their financial assets in this category. Securities not classified as either held-to-maturity securities or trading securities are considered AfS securities. Topic 320 created AfS securities and specified a new accounting treatment for them. Before Topic 320, investment securities, which represented most bank securities, were measured at amortized cost. Topic 320 specifies that AfS securities are measured at fair value in the balance sheet, with changes in fair value (i.e., unrealized gains and losses) recognized in other comprehensive income.

[6] Topic 320 introduced the "tainting rule." It stipulates that the sale of "more than an insignificant amount" of held-to-maturity assets before maturity potentially would call into question (or "taint") the classification of the remaining held-to-maturity securities. After the sale, the entire held-to-maturity portfolio of debt securities must be reclassified and subsequently measured at fair value.

Although financial reporting is the basis on which to determine regulatory capital, there is not a direct link between the two. To preserve the prudential role of regulatory capital, regulators deviate from financial reporting to determine regulatory capital ratios by applying so-called prudential filters. One of these filters excludes from Tier 1 capital the fair value derived from unrealized gains and losses on AfS debt securities.[7] These gains and losses are only recognized in earnings and in the regulatory capital when the security is sold or when an impairment is deemed other than temporary. The original motivation behind this prudential treatment was to exclude (presumably temporary) unrealized fair value changes on AfS securities that were irrelevant for regulatory purposes if banks held the securities until maturity (Laux, 2012).

However, this particular accounting treatment for AfS securities provides us with the opportunity to observe both the fair value of the assets in the financial statement and the historical cost in the regulatory capital, with changes in fair value reported in the other comprehensive income.

Figure 1 reports an example of how accounting for AfS securities can be used to free regulatory capital. Consider a bank (upper part of Figure 1) with two securities classified as AfS and funded with equity. Both securities have a historical cost of $100. Security A has a fair value of $80, while security B has a fair value of $110. Without any transactions, the net difference between fair value and historical cost (minus $10) is included in the other comprehensive income, thereby decreasing the total comprehensive income ($40). When the regulatory capital is computed (core Tier 1), the effects of the net unrealized gains and losses are washed out (Regulatory Capital: $200) from the prudential filter on AfS required by

[7] Unrealized losses on AfS equity securities are deducted from Tier 1 capital, while fair value gains on AfS equity securities can be included in Tier 2 capital using a haircut to account for market illiquidity and future tax charge. The more restrictive regulatory treatment of equity securities might explain the low proportion of these securities classified as AfS. Nonetheless, typically the percentage of equity AfS securities the banks hold is small, and the statistics that Barth et al. (2014) report suggest that they are less than 1% of all AfS securities at the 75th percentile. Therefore, we follow previous literature (Barth et al., 2014) and proceed as if AfS securities are debt securities. The existence of equity AfS securities weakens the ability to realize gains and losses on such securities to pay dividends, thereby inhibiting us from finding support for our hypothesis.

regulatory requirements. Suppose now (bottom part of Figure 1) that because of market or capital pressure, the bank decides to opportunistically sell the security with unrealized gains (security B) while keeping the security with unrealized losses (security A).[8] In doing so, the bank realizes gains of $10 that increase net income, while reporting unrealized losses of $20 in other comprehensive income. The prudential filters applied by the regulators allow the bank to increase earnings (to $60) and regulatory capital (to $210) by selling AfS securities with large unrealized gains.[9]

Such a transaction frees up resources and regulatory capital that can be used to pay dividends to shareholders. Importantly, these transactions can be undertaken with any asset that enters the regulatory capital at the historical cost: if the bank sells the asset (e.g. a loan) when its fair value is higher than the historical cost, it realizes gains that increase regulatory capital and can use the proceeds to pay dividend. Nonetheless, we use AfS securities as our research setting because its particular accounting treatment allows us to identify banks that sell assets with unrealized gains while keeping securities with unrealized losses.

<< Insert Figure 1 here >>

3.2 Research Design

Our main prediction is that banks pay dividends by engaging in gains trading. To test this prediction, we estimate the following model:

$$DIVIDEND_{it} = \beta_0 + \beta_1 GAINS\ TRADING + \sum_{i=2}^{13} \beta_i CONTROLS_{it} + Year\ Dummies + Bank\ Dummies + \varepsilon_{it}, \quad \text{Eq (1)}$$

[8] In this scenario, we assume that the bank uses the cash proceeds from selling security B to buy other securities with similar characteristics to the one sold.

[9] In contrast, during times of depressed market values, the risk of regulatory intervention is reduced, providing banks with incentives to hold risky illiquid assets that might be more costly than selling them early (Diamond and Rajan, 2011).

where *DIVIDEND* is computed as common share dividends scaled by net income (*dividend payout*) and *GAINS TRADING* is the sum of net realized gains (RGLs) and the absolute value of unrealized losses (ULs) on AfS securities.[10] This variable is designed to capture banks' transactions geared to realizing gains by selling securities with unrealized gains while keeping securities with unrealized losses (see Figure 1).

We include in equation (1) bank-specific characteristics that previous studies have shown to be related to the dividend payout (Abreu and Gulamhussen, 2013) and net realized gains on AfS securities (Barth et al., 2014). Large banks are more difficult to monitor and more prone to raise capital in equity markets; therefore, we expect a positive relationship between size and dividend payout. We measure bank size (SIZE) with the natural log of total assets. We control for bank's profitability using the net-income-to-total-assets ratio (PROFITABILITY). Previous studies capture the effect of regulatory pressure by deploying the ratio of equity to total assets. However, because regulators closely follow the regulatory definition of capital, we measure regulatory pressure (CAPITALIZATION) as the Tier 1 leverage ratio (Tier 1 capital to assets). Lower leverage (i.e., higher values for capitalization) signals stronger financial health and thus should be associated with higher dividend payouts. Therefore, we expect a positive relationship between capitalization and dividend payout.

The signaling hypothesis states that banks with positive future growth opportunities (EXPECTED GROWTH) should pay out higher dividends to signal their prospects and increase their potential to attract debt and equity financing when required; therefore, we expect a positive relationship between expected growth and dividend payout. Conversely, as with historical growth, banks with positive future growth opportunities (expected growth) will plow back their earnings to avoid costly debt and equity financing; therefore, we expect a negative relationship between expected growth and dividend payout. Thus, the relationship

[10] Realized gains and losses (RGLs) on AfS are reported in line 6b of Schedule HI (RI) Income Statement for bank holding companies (commercial banks).

between expected growth and dividend payout can be positive or negative. We measure expected growth through the ratio of market-to-book value of equity. We also control for the annualized rate of growth of total assets (HISTORICAL GROWTH) because we expect that banks with higher growth plow back their earnings to avoid costly equity and debt financing.

In addition, we include a dummy variable for regulatory pressure based on the capital categories of the Federal Deposit Insurance Corporation Improvement Act. Section 131 of the act establishes a system of prompt corrective actions derived from a classification system that divides banks into five categories: "well capitalized," "adequately capitalized," "undercapitalized," "substantially undercapitalized," and "critically undercapitalized." Banks are classified according to thresholds based on risk-based capital and leverage ratios. The majority of the banks in our sample were classified as "well capitalized." We consider that regulators increase their pressure when banks are approaching the minimum levels of capital and not only when those levels are breached. Therefore, the banks subject to increased regulatory pressure are those not classified as "well capitalized" and those currently classified as "well capitalized" but which may be downgraded (i.e., banks that present leverage or risk-weighted capital ratios close to the limits of adequate capitalization). For the purpose of this variable, we consider the following thresholds: 8% instead of 6% for the Tier 1 risk-weighted capital ratio and 7% instead of 5% for the Tier 1 leverage ratio. To capture this effect, we included a dummy variable (PCA) in the model that takes the value of 1 if a bank does not meet at least one of these thresholds.

To control for the underlying banks' business model, we include the amount of bank loan (LOANS), the total amount of securities held by a bank (*SECURITIES*), and the net interest income (*INTEREST INCOME*). To control for liquidity constraints in paying dividends, the model includes the total amount of liquid assets (*LIQUID*). *LOANS, SECURITIES, INTEREST INCOME, and LIQUID* are scaled by beginning-of-the-year total

assets.

We follow Barth et al. (2014) and control for accumulated unrealized gains and losses on AfS securities—*UGL* is the difference between the total fair value and amortized cost for these securities as reported in Schedule HC-B (RC-B) Securities for bank holding companies (other commercial banks) scaled by beginning-of-the-year total assets. Accumulated unrealized gains and losses are reported separately for 21 categories of securities. We use the totals across categories to construct *UGL*, and we use the by-category information to construct *UG* (*UL*), accumulated unrealized gains (losses) on AfS securities. Specifically, if the difference between the fair value and amortized cost for a particular category of securities is positive (negative), we include that difference in *UG* (*UL*). This control is important because the more accumulated unrealized gains and losses a bank has at the beginning of the period, the more likely it will realize them during the period. Finally, to control for ownership structure, we include the percentage of institutional ownership (INST OWN).

We winsorize all variables at the 1st and 99th percentile. Moreover, we estimate all models presented with year and firm fixed effects. The variable of interest is *GAINS TRADING*, and our hypothesis predicts that β_1 is positive in equation (1). All the variables are defined in Appendix A.

3.3 Sample

To compute the variables used in this study, we merge data from COMPUSTAT with data from the FR-9YC reports from the Federal Reserve and retain all bank-year observations with non-missing data over the period 1998–2013. Moreover, to obtain meaningful results, we delete bank-year observations with negative net income. The final sample consists of 5,333 firm-year observations generated by 721 unique bank holding companies. Untabulated results

show that our conclusions remain unchanged if we exclude the financial crisis from our sample.

Table 1 describes the distribution of observations over the sample period. In 2006, there is an overall drop in the number of observations, due to the Federal Reserve System's revision in the asset-size threshold (from $150 million to $500 million) for filing Consolidated Financial Statements (FR-9YC).

<< Insert Table 1 here >>

Table 2, Panel A, presents distributional statistics for the variables we use in our first analysis.[11] The table reveals that, on average, banks realize gains on AfS securities (mean = 0.026, median = 0.007) and pay dividends to shareholders (mean = 0.370, median = 0.343). On average, banks are well capitalized, and the mean (median) Tier 1 leverage ratio (CAPITALIZATION) is 8.9% (8.6%). Net income to total assets (PROFITABILITY) is also positive (mean = 0.009; median = 0.010). Panel A also reveals that, on average, banks have positive accumulated unrealized gains and losses on AfS securities (mean = 0.032; median = 0.024) and shows that there is substantial variation between banks in the percentage of institutional ownership (mean INST OWN = 0.243; median INST OWN = 0.171).[12]

<< Insert Table 2 here >>

4. Results

4.1 Hypothesis Testing

[11] To ease exposition, in Table 2 we multiply the variables GAINS TRADING, RGL, and UGL by 100.

[12] Our sample comprises both commercial banks and bank holding companies. Commercial banks represents 4% of the sample. Untabulated results show that if we remove commercial banks from the analyses, the inferences remain the same.

In Table 3, we show the results from our investigation of whether banks, to pay dividends, cherry-pick securities with unrealized gains and withhold those with unrealized losses. This behavior would lead to a risk shift from shareholders to creditors by rewarding shareholders through dividends while increasing the risk of the bank's securities portfolio. Consistent with our hypothesis, we find a strong positive relationship between GAINS TRADING and DIVIDEND. Specifically, the positive and statistically significant coefficient on GAINS TRADING in column (1) of Table 3 (coefficient: 9.710; $p < .00$) suggests that banks pay dividends out of realized gains. This is consistent with banks selling securities that have performed well to realize gains and pay dividends while keeping under-performing securities with unrealized losses in the portfolio. As we discussed previously, this behavior can be undertaken using any asset that enters the regulatory capital at historical cost and has a fair value larger than its historical cost.

The effect documented in column (1) of Table 3 is particularly relevant when it concerns an increase in banks' overall risk. This occurs when banks sell securities with unrealized gains, keep securities with unrealized losses, and use proceeds from the sale to pay dividends and/or buy back similar assets. In contrast, the case of a bank selling AfS securities with unrealized gains and keeping the cash generated is evidence of neither a risk increase nor risk-shifting behavior from shareholders to creditors. Therefore, in the next analysis, we restrict the sample to banks with risk-weighted assets equal to or higher than the previous year. In doing so, we restrict the analysis to a research setting in which risk shifting is more likely to occur. This requirement reduces the sample to 3,064 bank-year observations generated from 664 unique banks. Panel B of Table 2 presents the descriptive statistics for this reduced sample of banks.

In column (2) of Table 3, we reestimate equation (1) using observations from banks with an increase in their risk-weighted assets. The positive and statistically significant

coefficient on GAINS TRADING (coefficient: 9.187; $p < .01$) is consistent with using gains and losses to pay dividends to shareholders and provides support for H1

<< Insert Table 3 here >>

4.2 Additional Analysis: Effect of Incentives

To shed further light on our hypothesis and verify whether banks opportunistically use gains-trading activities to pay dividends, we investigate whether banks rely more on GAINS TRADING to pay dividends to shareholders in the presence of incentives that make this strategy more or less attractive. Banks may opportunistically exploit accounting discretion to prop up reported earnings and pay dividends in response to capital market or regulatory pressures (Beatty and Liao, 2104). We consider whether institutional ownership and/or capital inadequacy concerns induce banks to use the discretion afforded by the use o HCA as base to compute the regulatory capital. We focus on capital regulatory concerns because banks facing a decrease in capital ratios tend to benefit the most from gains-trading activities. By imposing capital requirements, regulators attempt to reduce banks' risk-taking incentives. If our hypothesis holds true, we expect to find a significantly higher use of gains trading to pay dividends in banks that experience a decline in regulatory capital ratios than in banks with no regulatory capital concerns. To do so, we split the sample in two subgroups*: Low (High) Regulatory Capital* if the current year Tier 1 ratio pre-net realized gains is lower (higher) than the previous year Tier 1 ratio post-net realized gains. If our argument holds true, we expect that banks rely more on realized gains to pay dividends when the current Tier 1 capital ratio pre-realized gains is lower than the previous year Tier 1 ratio post-net realized gains. Columns (1) and (2) of Table 4 report the results from this analysis. Overall, our findings show that banks rely on GAINS TRADING from AfS securities to pay dividends only when

there is a decrease in the regulatory capital. Indeed, the coefficient on GAINS TRADING is statistically significant and positively related to dividend payout only with Low Regulatory Capital (coefficient: 17.249; $p < .01$). Test of differences in coefficients (reported in the table) supports this conclusion.

<< Insert Table 4 here >>

The incentive to engage in capital management could also stem from banks' ownership structure (Farinha and Lopez-de-Foronda, 2009). We expect banks with a higher percentage of institutional investors to face more pressure to pay dividends and therefore to be more prone to engage in gains trading. Previous research discusses theoretical and empirical implications of taxation, agency costs, and signaling considerations on the relationship between dividends and institutional shareholders. Short (2002) empirically shows a strong positive association between dividend payout policies and institutional ownership. This relationship is also due to institutional shareholders' need for liquidity on an ongoing basis, to fund their activities (e.g., pension payments to retirees, insurance payments policies). Therefore, regardless of the tax bias against dividends, institutions cannot simply rely on capital gains to fund their liabilities but also require dividend payments (Short, 2002). In addition, Zeckhauser and Pound (1990) suggest that, rather than monitoring the firms in which they invest, institutions enjoin them to increase their dividends, which subsequently forces them to enter the external capital market for future funds.

We measure institutional ownership as the percentage of shares held by institutional money managers (e.g., mutual funds, pension plans, bank trusts) using Thomson Reuters database. We split the sample in two groups based on the median sample of institutional ownership: "Low Institutional Ownership" and "High Institutional Ownership."

Columns (3) and (4) of Table 4 report the results. Specifically, we find that the relationship between GAINS TRADING and DIVIDEND is significantly greater in banks with High Institutional Ownership than in banks with Low Institutional Ownership. Overall, the results in Table 4 are consistent with the notion that banks rely on gains trading to pay dividends to a larger extent when incentives to use gains-trading activities are higher. In an untabulated test, we also measure institutional ownership as the percentage of "closely held" shares in the hands of shareholders who hold more than 5% of shares using Datastream/Worldscope. The results remain unchanged.

4.3 Additional Analysis: Risk Shifting

Next, we investigate some potential real effects of gains-trading activities to pay dividends. When a bank selectively sells securities with unrealized gains and keeps those with unrealized losses to pay dividends, it depletes safe capital assets and increases the riskiness of its assets. Therefore, in the next analysis, we investigate whether banks to some extent counterbalance the increase in risk linked to gains-trading activities.

In Table 5, column (1), we begin by investigating banks' lending behavior. Business loans are the quintessential commercial bank credit products: borrower heterogeneity allows banks to exercise their underwriting expertise. Borrower opacity provides banks with informational advantages that lead to switching costs and pricing power, and the on-balance-sheet financing of these (usually) non-tradable assets generate primarily interest income (DeYoung et al., 2013).

As a broad loan category, however, commercial loans tend to expose banks to higher levels of credit risk than other bank loans. For example, DeYoung et al. (2013) report that in each year of their 1995–2006 sample, U.S. bank holding companies experienced higher average rates of delinquency and default in the "commercial and industrial loans" category

than in other lending categories. Therefore, we test whether banks that engage in gains trading experience a decrease in this type of lending (COMMERCIAL LOANS, defined as the percentage of the bank's commercial loans over the total loan portfolio). In column (1) of Table 5, the coefficient on GAINS TRADING is negative and significantly related to COMMERCIAL LOANS (–0.983, $p < .05$). This suggests that banks change their lending behavior to counterbalance the increased risk from higher leverage.

In column (2) of Table 5, we transpose our focus on the composition of the bank's trading asset portfolio. Trading assets represent another potential form of risky investments, and we gather information on the riskiness of such assets from Schedule HC-I (RC-I) risk-based capital for bank holding companies (other commercial banks). Specifically, we compute the average risk-weighted factor on trading assets (WEIGHTED RISK)[13] and regress it on bank's GAINS TRADING. The negative and significant coefficient on WEIGHTED RISK (–5.119, $p < .05$) indicates that banks engaging to a larger extent in gains trading are more likely to decrease the riskiness of their trading assets portfolio. Overall, results presented in Table 5 indicate that the use of gains-trading activities to pay dividends to shareholders exerts real effects on banks' behavior, since banks decrease the riskiness of other types of risky investments, such as commercial loans and trading assets.

<< Insert Table 5 here >>

Our analysis documents three findings. First, the use of HCA as a foundation to compute regulatory capital allows banks to engage in gains trading and pay dividends to shareholders. Second, banks engage in gains trading to a larger extent when they face

[13] Specifically, we compute WEIGHTED RISK as [(0*TA_0 + 0.2*TA_20 + 0.5*TA_50 + 1*TA_100/(TA_0+TA_20+TA_50 +TA_100)], where TA_0, TA_20,TA_50, and TA_100 are the amount of trading assets with risk-weighted assets for regulatory purposes of 0%, 20%, 50%, and 100%, respectively.

decreasing capital ratios and higher pressure to pay dividends from institutional investors. Third, to counterbalance the increase in risk due to selling securities with unrealized gains while keeping the unrealized losses, banks change their investment behaviors.

Next, we investigate whether "market discipline" occurs—that is, whether depositors respond to banks' gains-trading behavior by withdrawing their deposits. We estimate a regression model in which the left-hand-side variables ΔDEPOSITS and DEPOSITS NEXT YEAR represent the first difference of the deposits held by the bank and next-year deposits, respectively. Table 6 reports the results. The coefficients on GAINS TRADING are negative and significantly related to the ΔDEPOSITS and DEPOSITS NEXT YEAR (–4.514, $p < .05$; –3.715, $p < .10$), suggesting that an increase in gains-trading activities is associated with a decrease in deposits in the following year. This result is consistent with depositors exerting market discipline on banks by responding to their gains-trading behavior.

<< Insert Table 6 here >>

5. Conclusion

This paper investigates how capital regulation based on HCA provides banks with incentives to engage in selective assets sales geared to the early realization of gains so that they can pay dividends. Using AfS securities as a research setting, we show that banks pay dividends out of realized gains. Moreover, banks experiencing a decrease in regulatory capital and banks with a higher percentage of institutional investors exhibit a greater propensity to engage in gains trading. Finally, our findings suggest that banks that engage to a larger extent in gains trading aim to counterbalance the increased risk in their portfolio by changing their lending behavior and decreasing the riskiness of their trading assets portfolio.

The paper is subject to two limitations. First, as indicated previously, the computation of regulatory capital has now changed and reflects unrealized gains and losses on AfS securities. However, from our perspective, the debate on the relative merits of HCA and FVA for regulatory oversight purposes is still current, as banks have several other assets and liabilities that are accounted for at the historical cost, for either financial- or regulatory-reporting aims. A second limitation is the lack of insight into the potential role of banks' boards in determining dividend policy. In this regard, we deem our analysis of institutional ownership's underlying role in gains trading an adequate alternative route because institutional investors are likely to drive a board's agenda. Future research may further consider the impact of such gains trading on debt and equity markets and on financial analysts' information environment.

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Appendix A

Variable	*Description*
DIVIDEND	Common dividend scaled by beginning-of-the-year total assets
RGL	Realized gains and losses on AfS securities scaled by beginning-of-the-year total assets
GAINS TRADING	Sum of realized gain and losses and absolute value of unrealized losses scaled by beginning-of-the-year total assets
SIZE	Logarithm of total assets
PROFITABILITY	Net income scaled by total assets
CAPITALIZATION	Tier 1 scaled by total assets
EXPECTED GROWTH	Market-to-book value of equity
HISTORICAL GROWTH	Annualized rate of growth of total assets
PCA	Dummy that takes the value of 1 if the bank is not well capitalized, considering thresholds of 8% for the Tier 1 risk-weighted capital ratio (Tier 1 capital/risk-weighted assets) and 7% for the Tier 1 leverage ratio (Tier 1 capital/total assets), 0 otherwise
LOANS	Bank loans scaled by the beginning-of-the-year total assets
SECURITIES	The total amount of securities scale by beginning-of-the-year total assets
INTEREST INCOME	Interest income scaled by the beginning-of-the-year total assets
LIQUID	Total amount of liquid assets scaled by the beginning-of-the-year total assets
UGL	Accumulated unrealized gain and losses on AfS securities scaled by the beginning-of-the-year total assets
INST OWN	Percentage of institutional ownership

Figure 1

Financial Reporting ($000,000)
Pre-Transaction - FV Accounting

Assets	**190**
AfS Securities	*FV*
A (Historical Cost: 100)	80
B (Historical Cost: 100)	110
Liabilities and Equity	**190**
Common Stock	150
Total Comprehensive Income	40

Net Income	**50**
Other Comprehensive Income	**(10)**
Unrealized Gain	10
Unrealized Loss	(20)
Total Comprehensive Income	**40**

Regulatory Reporting ($000,000)
Pre-Transaction

Shareholders' Equity	**190**
Adjustment for unrealized gain	(10)
Adjustment for unrealized loss	20
Regulatory Capital (Core Tier 1)	**200**

Financial Reporting ($000,000)
Post-Transaction - FV Accounting

Assets	**190**
AfS Securities	*FV*
A (Historical Cost: 100)	80
B (Historical Cost: 110)	110
Liabilities and Equity	**190**
Common Stock	150
Total Comprehensive Income	40

Net Income	**60**
Other Comprehensive Income	**(20)**
Unrealized Loss	(20)
Total Comprehensive Income	**40**

Regulatory Reporting ($000,000)
Post-Transaction

Shareholders' Equity	**190**
Adjustment for unrealized loss	20
Regulatory Capital (Core Tier 1)	**210**

Table 1. Sample Distribution

Year	*Frequency*	*%*	*Cumulative %*
1998	356	6.68%	6.68%
1999	379	7.11%	13.78%
2000	395	7.41%	21.19%
2001	380	7.13%	28.31%
2002	394	7.39%	35.70%
2003	411	7.71%	43.41%
2004	398	7.46%	50.87%
2005	415	7.78%	58.65%
2006	354	6.64%	65.29%
2007	313	5.87%	71.16%
2008	247	4.63%	75.79%
2009	215	4.03%	79.82%
2010	265	4.97%	84.79%
2011	266	4.99%	89.78%
2012	267	5.01%	94.79%
2013	278	5.21%	100.00%
Total	***5,333***	***100***	

Table 1 reports the distribution of observations over the sample period.

Table 2. Descriptive Statistics

Panel A	**N**	**Mean**	**SD**	**p25**	**p50**	**p75**
DIVIDEND	5,333	0.370	0.349	0.159	0.343	0.480
GAINS TRADING	5,333	0.115	0.197	0.005	0.052	0.156
RGL	5,333	0.026	0.112	0.000	0.007	0.050
SIZE	5,333	14.503	1.557	13.411	14.149	15.261
PROFITABILITY	5,333	0.009	0.008	0.006	0.010	0.012
CAPITALIZATION	5,333	0.089	0.020	0.076	0.086	0.098
EXPECTED GROWTH	5,333	1.628	0.791	1.077	1.532	2.072
HISTORICAL GROWTH	5,333	0.121	0.174	0.023	0.081	0.166
PCA	5,333	0.155	0.362	0.000	0.000	0.000
LOANS	5,333	0.657	0.134	0.599	0.675	0.742
SECURITIES	5,333	0.248	0.129	0.155	0.228	0.315
INTEREST INCOME	5,333	0.062	0.018	0.049	0.061	0.074
LIQUID	5,333	0.047	0.036	0.026	0.037	0.055
UGL	5,333	0.032	0.301	-0.097	0.024	0.173
INST OWN	5,333	0.243	0.230	0.047	0.171	0.394

Panel B	**N**	**Mean**	**SD**	**p25**	**p50**	**p75**
DIVIDEND	3,064	0.374	0.328	0.185	0.353	0.476
GAINS TRADING	3,064	0.111	0.197	0.005	0.048	0.149
RGL	3,064	0.021	0.108	0.000	0.005	0.042
SIZE	3,064	14.447	1.519	13.366	14.117	15.203
PROFITABILITY	3,064	0.010	0.006	0.007	0.010	0.013
CAPITALIZATION	3,064	0.089	0.020	0.076	0.086	0.098
EXPECTED GROWTH	3,064	1.715	0.761	1.168	1.625	2.130
HISTORICAL GROWTH	3,064	0.106	0.156	0.018	0.073	0.148
PCA	3,064	0.143	0.350	0.000	0.000	0.000
LOANS	3,064	0.671	0.131	0.615	0.689	0.755
SECURITIES	3,064	0.236	0.122	0.150	0.219	0.300
INTEREST INCOME	3,064	0.063	0.017	0.052	0.062	0.075
LIQUID	3,064	0.042	0.029	0.025	0.035	0.049
UGL	3,064	-0.006	0.291	-0.133	0.004	0.132
INST OWN	3,064	0.238	0.228	0.043	0.166	0.383

Table 2 reports the descriptive statistics for the main variables used in the analysis. Variables are defined in Appendix A. All variables are winsorized at the 1st and 99th percentile. To ease exposition, in Table 2 the variables GAINS TRADING, RGL, and UGL have been multiplied by 100.

Table 3
Relationship between RGLs on Securities' Sales and Dividends

	DIVIDEND (1)	DIVIDEND (2)
GAINS TRADING	9.710***	9.187***
	[2.666]	[3.263]
SIZE	0.130***	0.106***
	[0.018]	[0.021]
PROFITABILITY	-3.337***	-10.218***
	[0.762]	[1.230]
CAPITALIZATION	1.307***	1.152**
	[0.368]	[0.472]
EXPECTED GROWTH	-0.015	-0.007
	[0.010]	[0.012]
HISTORICAL GROWTH	0.058	0.074
	[0.050]	[0.070]
PCA	-0.019	0.004
	[0.016]	[0.020]
LOANS	-0.065	-0.088
	[0.151]	[0.198]
SECURITIES	0.066	0.033
	[0.128]	[0.171]
INTEREST INCOME	1.290	1.454
	[0.877]	[1.198]
LIQUID	-0.219	0.094
	[0.207]	[0.314]
UGL	4.216*	5.031*
	[2.177]	[2.761]
INST OWN	0.008	0.021
	[0.044]	[0.053]
Constant	-1.651***	-1.233***
	[0.300]	[0.366]
Observations	5,333	3,064
Adjusted R-squared	0.108	0.127
Firm fixed effects	YES	YES
Year fixed effects	YES	YES
F-test model	19.72***	12.28***

Table 3 shows results from estimating Equation (1). Variables are defined in Appendix A. We include firm and year fixed effects in the regressions but do not report the coefficient. T-statistics are reported in brackets and are based on heteroskedasticity-consistent standard errors clustered at the firm level. ***, **, and * indicate statistical significance at 1%, 5%, and 10% levels (two-tailed).

Table 4

	Regulatory Capital		*Institutional Ownership*	
	Low	***High***	***Low***	***High***
	DIVIDEND	DIVIDEND	DIVIDEND	DIVIDEND
	(1)	(2)	(3)	(4)
GAINS TRADING	17.249***	4.395	8.237*	23.958***
	[4.860]	[5.167]	[4.699]	[4.951]
SIZE	0.053*	0.081**	0.100***	0.123***
	[0.030]	[0.039]	[0.035]	[0.031]
PROFITABILITY	-14.774***	-13.000***	-4.581***	-33.869***
	[1.868]	[2.073]	[1.536]	[2.503]
CAPITALIZATION			0.962	0.137
			[0.666]	[0.739]
EXPECTED GROWTH	-0.043***	0.003	0.024	0.002
	[0.017]	[0.022]	[0.019]	[0.018]
HISTORICAL GROWTH	0.058	0.026	0.149	-0.215**
	[0.103]	[0.116]	[0.104]	[0.102]
PCA	-0.020	0.023	-0.025	0.046*
	[0.019]	[0.281]	[0.030]	[0.027]
LOANS	-0.056	0.173	-0.159	-0.058
	[0.296]	[0.334]	[0.283]	[0.303]
SECURITIES	-0.025	-0.000	-0.281	0.145
	[0.243]	[0.299]	[0.249]	[0.259]
INTEREST INCOME	2.702	2.270	-1.589	5.357***
	[1.741]	[1.938]	[1.704]	[1.806]
LIQUID	0.696	-0.353	0.036	0.119
	[0.464]	[0.511]	[0.436]	[0.492]

(to be continued on the next page)

	Regulatory Capital		***Institutional Ownership***	
	Low	***High***	***Low***	***High***
	DIVIDEND	DIVIDEND	DIVIDEND	DIVIDEND
	(1)	(2)	(3)	(4)
UGL	7.131*	4.392	8.436**	-1.667
	[3.950]	[4.433]	[3.739]	[4.214]
INST OWN	0.224***	-0.121		
	[0.078]	[0.090]		
Constant	-0.896	-0.465	-1.461**	-0.797
	[0.652]	[0.542]	[0.585]	[0.551]
Test of differences for the variable GAINS TRADING *(p-value)*	*0.090*		*0.020*	
Observations	1,534	1,530	1,534	1,530
Adjusted R-squared	0.181	0.162	0.123	0.267
Firm fixed effects	YES	YES	YES	YES
Year fixed effects	YES	YES	YES	YES
F-test model	8.467***	7.316***	5.496***	14.77***

Table 4 shows results from additional analyses on the effect of incentives. Variables are defined in Appendix A. We include firm and year fixed effects in the regressions but do not report the coefficient. T-statistics are reported in brackets and are based on heteroskedasticity-consistent standard errors clustered at the firm level. ***, **, and * indicate statistical significance at 1%, 5%, and 10% levels (two-tailed).

Table 5

	COMMERCIAL LOANS (1)	WEIGHTED RISK (2)
GAIN TRADING	-0.983**	-5.119**
	[0.400]	[2.460]
SIZE	-0.000	0.018
	[0.003]	[0.016]
PROFITABILITY	0.174	1.278
	[0.151]	[0.930]
CAPITALIZATION	0.090	-1.063***
	[0.058]	[0.356]
EXPECTED GROWTH	-0.005***	0.005
	[0.001]	[0.009]
HISTORICAL GROWTH	0.016*	0.020
	[0.009]	[0.053]
PCA	-0.005**	-0.046***
	[0.002]	[0.015]
LOANS	0.178***	-0.037
	[0.024]	[0.151]
SECURITIES	-0.002	-0.081
	[0.021]	[0.131]
INTEREST INCOME	-0.153	-0.697
	[0.147]	[0.911]
LIQUID	0.035	0.290
	[0.038]	[0.240]
UGL	-0.852**	-0.919
	[0.338]	[2.085]
INST OWN	-0.017***	0.058
	[0.006]	[0.040]
Constant	0.019	-0.009
	[0.045]	[0.280]
Observations	3,064	3,024
Adjusted R-squared	0.149	0.055
Firm fixed effects	YES	YES
Year fixed effects	YES	YES
F-test model	14.80***	4.862***

Table 5 shows results from additional analyses on risk shifting. Variables are defined in Appendix A. COMMERCIAL LOANS is the percentage of the bank's commercial loans over the total loan portfolio. WEIGHTED RISK is the average risk-weighted factor on trading assets. We include firm and year fixed effects in the regressions but do not report the coefficient. T-statistics are reported in brackets and are based on heteroskedasticity-consistent standard errors clustered at the firm level. ***, **, and * indicate statistical significance at 1%, 5%, and 10% levels (two-tailed).

Table 6

	Δ DEPOSITS (1)	DEPOSITS NEXT YEAR (2)
GAINS TRADING	-4.514**	-3.715*
	[1.969]	[1.966]
SIZE	-0.162***	-0.225***
	[0.013]	[0.013]
PROFITABILITY	1.824**	0.841
	[0.755]	[0.754]
CAPITALIZATION	0.726***	0.444
	[0.277]	[0.277]
EXPECTED GROWTH	0.014**	0.021***
	[0.007]	[0.007]
HISTORICAL GROWTH	-0.654***	0.067*
	[0.040]	[0.040]
PCA	-0.011	-0.019*
	[0.011]	[0.011]
LOANS	0.138	0.213*
	[0.114]	[0.114]
SECURITIES	-0.001	-0.061
	[0.098]	[0.098]
INTEREST INCOME	-1.009	-0.135
	[0.679]	[0.678]
LIQUID	-0.391**	-0.192
	[0.191]	[0.190]
UGL	2.288	2.191
	[1.565]	[1.563]
INST OWN	0.009	-0.002
	[0.032]	[0.032]
Constant	2.242***	3.814***
	[0.216]	[0.215]
Observations	2,674	2,674
Adjusted R-squared	0.468	0.252
Firm fixed effects	YES	YES
Year fixed effects	YES	YES
F-test model	66.78***	25.64***

Table 6 shows results from additional analyses on market discipline. Variables are defined in Appendix A. Δ DEPOSITS and DEPOSITS NEXT YEAR represent the first difference of the deposits held by the bank and next-year deposits scaled by the beginning of the year total assets, respectively. We include firm and year fixed effects in the regressions but do not report the coefficient. T-statistics are reported in brackets and are based on heteroskedasticity-consistent standard errors clustered at the firm level. ***, **, and * indicate statistical significance at 1%, 5%, and 10% levels (two-tailed).

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