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Understanding Bank Payouts During the Crisis of 2007-2009

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Abstract

We study U.S. banks' payout policy in 2007-2008. We benchmark these payouts against payouts before the crisis, measure stock price reactions to announcements of dividend changes, and analyze changes in the relation between payout growth and future performance. Further, we examine cross-sectional variation in banks' payout policy to gauge the possible motives underlying banks' payout decisions in 2007-2008. We do not find that banks that have a higher willingness to take risk or that have higher incentives to undertake asset substitution use their payout policy to engage in more wealth transfer compared to other banks.

Keywords: dividends, total payout, financial crisis, insider trading

JEL Classifications: G21, G24, G28, G32, G35

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Understanding Bank Payouts During the Crisis of 2007-2009

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January 2022

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1. Introduction

Banks are known for paying high dividends (Kim (2011)) and their payout decisions in the financial crisis of 2007-2009 received considerable coverage in the press (Lobb (2008); Kim (2011); Sidel (2011)). While the crisis eroded the capital of many banks that then relied on government funding (Rosengren (2010); US Treasury (2010)), banks did not significantly reduce dividends until 2009 (see Acharya et al. (2012); Floyd, Li, and Skinner (2015); Hirtle (2016)). Payouts have come under scrutiny again due to the COVID-19 crisis, with the Federal Reserve Board prohibiting share repurchases and constraining the level of dividends.[1]

We investigate bank payouts for a large sample of more than 550 U.S. bank holding companies to shed light on the payout patterns and motives in the financial crisis, 2007-2008. The banks in our sample did not significantly reduce dividends until 2009, in contrast to repurchases, which they reduced significantly already in 2008. This general pattern resembles the findings of other studies on smaller samples (Acharya et al. (2012); Floyd, Li, and Skinner (2015); Hirtle (2016)). The percentage of dividend-increasing banks in our sample is 61% in 2007 and 46% in 2008. At the same time, the percentage of banks that reduce dividends increases from 5% in 2007 to 18% in 2008.[2]

Little is known about banks' payout motives underlying this pattern. There are two leading explanations for the reluctance of banks to delay dividend cuts or even increase dividends in 2007-2008 (see Acharya et al. (2012); Acharya, Le, and Shin (2017)). First, the wealth transfer (or risk shifting) motive: Banks may have used their dividend policy to transfer wealth from their creditors

[1] https://www.federalreserve.gov/newsevents/pressreleases/bcreg20200625c.htm, last accessed on January 10, 2022. In a similar vein, the European Central Bank recently asked banks to refrain from or limit dividends until September 2021, which constitutes an extension of a recommendation, which was first issued in March 2020: https://www.bankingsupervision.europa.eu/press/pr/date/2020/html/ssm.pr201215~4742ea7c8a.en.html, last accessed on January 10, 2022.

[2] It is unlikely that TARP constrained bank dividends already in 2008. Only 8 banks received TARP in 2008 and the FED increased pressure on BHCs that received TARP to cut dividends only in 2009.

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(or the government) to shareholders, possibly anticipating future losses in a crisis. Second, the fear of adverse market reaction (or signaling) motive: Banks may have been reluctant to cut dividends fearing that dividend reductions would have caused adverse market reactions when the market interprets dividend cuts as a negative signal, leading to uncertainty about their fundamentals and causing subsequent refinancing problems.

Banks' willingness to reduce repurchases in 2008 seems to be at odds with the wealth transfer hypothesis. (For most banks, regulatory constraints were not binding at that time and cannot explain the reduction in repurchases.) However, banks may have refrained from using repurchases to transfer wealth in 2008 as it would have attracted the scrutiny of regulators and the media. In contrast to repurchases, it might be easier to continue paying dividends to engage in wealth transfer because it is broadly accepted that they are sticky.[3] While the "fear of adverse market reaction" motive may serve to conceal the "wealth transfer" motive, information asymmetry did play a key role in 2007 (e.g., Gorton (2008)). Because of the opaque nature of their business, signaling through dividends might be particularly important for banks (Floyd, Li, and Skinner (2015) and Hirtle (2016)). Thus, it is not possible to dismiss the fear of adverse market reaction hypothesis as self-serving.

It is important to better understand banks' payout policy in the crisis: Were dividends or total payouts high relative to bank fundamentals, compared to previous years? How does the market interpret dividend changes and how are they related to future performance? Does this relation change in the crisis? Which banks reduce or increase dividends, which banks have abnormally high payouts? What role do regulatory capital requirements, the fragility of banks' funding structure, institutional shareholders, and managerial ownership play?

[3] Brav et al. (2005) show for non-financial firms that maintaining dividends has the same priority as investment, while repurchases are more flexible.

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We conduct a number of tests to address these questions. Conceptually, the paper consists of two parts. In the first part, we characterize the payout policy of U.S. bank holding companies, focusing on the crisis of 2007-2008. First, we benchmark banks' payout policy in 2007 and 2008 against banks' payout policy before the crisis. Having a benchmark is an important starting point to assess the level of payouts relative to bank fundamentals. However, bank fundamentals are often book values that move slowly and do not reflect market expectations. Second, as a direct test of investors' response to dividend changes, we investigate the stock market reaction to the announcement of dividend changes. Third, we investigate the association between dividend changes and future performance in the crisis relative to normal times.[4] We measures future performance using earnings (net income) normalized by total assets (ROA) and yearly stock return.

In the second part, we explore the cross-sectional variation of characteristics of banks with different dividend policies to shed light on the potential motives underlying banks' payout policy in 2007-2008. We focus on dividend changes in 2007-2008, abnormally high payouts in 2007-2008, and the association between dividend changes and future performance in 2007-2008. The objective is to identify variables that can affect managers' incentives to follow more or less aggressive payout policies in the crisis. For example, banks may have higher incentives to engage in asset substitution if they have higher leverage or if they are pressured by institutional investors to maintain high payouts. Moreover, banks that pursue a risker business model before the crisis may be more willing to engage in asset substitution in the crisis. At the same time, banks may face constraints in their payout policy and be forced to reduce their dividends due to regulatory capital

[4] The empirical strategy is related to empirical studies investigate the association between dividend changes and future performance to test the plausibility of signaling through dividends (e.g., Benartzi, Michaely, and Thaler (1997) and Grullon, Michaely, and Swaminathan (2002)). However, we note that the relation can be positive even absent information asymmetry. For example, banks may reduce dividends to preserve capital in anticipation of low future performance. We use future performance as a proxy of managers' information and relate it to banks' payout policy irrespective of any information asymmetry between management and investors. (While a signaling role of dividends does require information asymmetry, wealth transfer does not.)

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constraints. We explain the motivation and empirical strategy when discussing the variables that we use in Section 7.1.

For all our payout measures, we find that the average bank payouts in 2007 are higher than before 2007, controlling for bank fundamentals. In contrast, on average, dividends per share as well as total payout per share in 2008 are in line with levels before 2007.

Announcements of dividend increases before the crisis are associated with positive abnormal returns, consistent with dividend increases conveying positive news to the market. However, these announcement effects are weaker and insignificant in two of three specifications for 2007-2008. Announcements of dividend decreases attract no significant abnormal returns both before the crisis as well as in 2007-2008. A possible reason for the lack of a negative announcement effect is that banks wait with dividend decreases until they can no longer avoid them. At this point, the market already anticipates these dividend decreases and prices them in.

We find a significant association between dividend growth and future ROA in the pre-crisis period that does not change in 2007, but increases significantly in 2008. For total payout growth, we find no significant association between dividend growth and future ROA, but there is a significant negative relation in 2007 and a significant positive relation in 2008. We also find a positive relation between both dividend growth and total payout growth and future returns. There is no significant change in these relations in the crisis years in the specifications with controls.

Overall, we do not find evidence that banks that were willing to take higher risk before the crisis (as captured, e.g., by a higher business model risk) or that have higher incentives to engage in risk shifting engage in wealth transfer through paying high dividends in the crisis.

For example, despite higher incentives of banks with high leverage to engage in wealth transfer, we do not find that banks with higher leverage are more likely to hold dividends constant

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or increase them. Instead, banks are significantly more likely to decrease dividends if they have higher leverage. The association between leverage and the likelihood of dividend decreases remains weakly significantly positive when looking at the subsample of banks with medium regulatory capital and becomes insignificant when looking at the subsample of banks with low regulatory capital. The evidence on the subsamples does not suggest that the result for the full sample is driven by banks with high leverage being forced to reduce dividends due to regulatory capital constraints. Moreover, we do not find that bank that are willing take risk in their business model as, for example, captured by a higher approval rate in lending or lower distance to default, have high abnormal payouts per share right before the crisis in 2006 or in the crisis in 2007-2008. Where the relation is significant, the opposite holds.

In addition, when looking at cross-sectional variation in different institutional ownership variable, we do not find evidence for the narrative that institutional shareholders pushed banks to maintain high dividends in the early stages of the crisis to transfer wealth to shareholders.

Interestingly, banks with a higher share of short-term funding are significantly less likely to decrease dividends. This finding is consistent with the hypothesis that banks fear adverse market reactions when relying on short-term financing.

We contribute to two strands of the academic literature. First, the paper advances the literature on bank payouts in 2007-2008.[5] Floyd, Li, and Skinner (2015) and Hirtle (2016) find that banks cut repurchases much more and earlier than dividends in the crisis and conclude that their evidence is consistent with the view that dividends play an important signaling role. Floyd, Li, and Skinner (2015) compare the payout policy of banks and non-financial firms from 1980 to 2012. Hirtle (2016) investigates the role of repurchases before the crisis for banks' dividend policy

[5] There is a large literature on payout policy not focusing specifically on crisis periods or financial institutions. See, for example, the surveys by Allen and Michaely (2003) and Farre-Mensa, Michaely, and Schmalz (2014).

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in the crisis. She finds that repurchases play the role of a buffer for smaller banks, but much less so for larger banks, allowing banks with high levels of repurchases before the crisis, to reduce dividends later and by a lower amount. We contribute to this strand of literature by benchmarking bank payouts in the crisis to payouts predicted by a model calibrated in normal times and investigating how the association between payout growth and future performance changes in the crisis. Moreover, we investigate cross-sectional variation looking at several important bank characteristics to gauge the motives banks' payout policy to shed light on the potential role of fear of adverse market reactions and wealth transfer in banks' payout policy in 2007-2008.

Second, we contribute to the literature on whether payouts predict future firm performance. Benartzi, Michaely, and Thaler (1997) and Grullon, Michaely, and Swaminathan (2002)) study the relation between dividend growth and future performance. A positive relation is a prerequisite for the possibility that dividend changes convey information to the market. We extend this strand of literature by investigating how the association changes in the crisis and whether this change differs for different types of banks. We also contribute to the literature that directly investigates the stock market response to the announcement of dividend changes (see Ghosh and Woolridge (1988), Denis, Denis, and Sarin (1994), Michaely, Thaler, and Womack (1995), Grullon, Michaely, and Swaminathan (2002) for non-financials; Bessler and Nohel (1996, 2000) for banks,). These papers find significant positive (negative) abnormal announcement returns for dividend increases (decreases). We do not find significant negative announcement returns for dividend cuts, possibly because we investigate banks (instead of non-financial firms) and banks' funding structure has changed over time.

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2. Conceptual framework and data

2.1. Conceptual framework

Conceptually, the paper consists of two parts. In the first part, we characterize the payout policy of U.S. bank holding companies, focusing on the crisis 2007-2008. Several papers have described banks' payout policy in 2007-2008 (Acharya et al. (2012); Floyd, Li, and Skinner (2015); Hirtle (2016)). We complement this literature by investigating to what extent payouts were "abnormal" in 2007-2008 and whether the association between dividend changes and future performance is different in the crisis compared to the years before. Further, we investigate the announcement effect of dividend changes on the share price before and in the crisis.

Abnormal payouts. After a short characterization of banks' payout policy from 1995 to 2012 and the role of dividend changes over time, we benchmark banks' payout in 2007-2008 in Section 4. We estimate models of bank dividends and total payout for the period 1995-2006 and 2000-2006 respectively. We then use the coefficients from these models to predict banks' payout policies in 2007 and 2008 and compare them to their actual payout policies. Fama and Babiak (1968) and Brav et al. (2005) suggest that the level of dividend per share is the key metric for payout policy. We use both dividend per share and dividend yield to measure a bank's dividend policy. We also perform the same analysis replacing dividends by total payout.

We expect that dividends were abnormally high if banks were reluctant to cut dividends (or even increased them). The effect for total payout in 2008 is ambiguous given the high reduction in repurchases that Floyd, Li, and Skinner (2015) and Hirtle (2016) document. The fact that some bank fundamentals react slowly in a crisis, e.g., regulatory capital or ROA if impairments are delayed, implies that the effect on abnormal payouts is muted relative to expectations at the time.

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Announcement effect of dividend changes. We investigate stock market reaction to dividend changes in Section 5. Dividend changes are often interpreted as a signal about future performance (e.g., Bhattacharya (1979), Miller and Rock (1985), John and Williams (1985)). Banks (firms) that have positive information about future performance may use an increase in dividends to signal this positive information and separate themselves from the pool of average banks. In this case, the stock price reacts positively to the announcement of a dividend increase. However, banks that have negative information about future performance have no incentive to signal this information to the market by reducing dividends. Instead, banks that want to hide this negative information from the market have an incentive to delay a reduction of dividends as long as possible. In a semi-separating equilibrium, the dividend policy is not sufficient to separate all types of banks. Instead, only the strong banks may increase dividends, while weak banks pool with average banks. Eventually, the market will learn about the weakness of a bank irrespective of its dividend policy from other sources (e.g., the depletion of bank capital) and the announcement of a dividend decrease no longer contains negative information.

We expect that the announcement of dividend increases is associated with significant positive abnormal returns. In contrast, the announcement effect of dividend decreases is muted and the abnormal announcement effect can be zero if banks wait with dividend reductions until the market already learned about the weakness.[6] A motive behind the delay in reducing dividends is a fear of adverse market reactions for banks. Banks face the risk of a bank run when wholesale depositors withdraw funds or banks cannot roll over short-term debt.[7]

[6] Banks may also reduce dividends to finance growth, which can also be a reason why the stock price does not react to the announcement of dividend decreases. However, it is unlikely that it is a driving motive in 2007-2008.
[7] We investigate how a bank's funding structure relates to dividend changes when discussing cross-sectional variation in banks' payout policy.

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Dividend changes and future performance. To the extent that dividend changes are related to information about future performance, there should be a positive association between dividend changes and future performance (e.g., Benartzi, Michaely, and Thaler (1997) and Grullon, Michaely, and Swaminathan (2002)). The relation can be positive even absent information asymmetry. For example, banks may reduce dividends to preserve capital if the bank and the market anticipate low future performance.[8] In Section 6, we investigate the relation between dividend changes and future performance before the crisis and compare it to the relation in the crisis. We measure future performance using earnings (net income) normalized by total assets (ROA) and yearly stock return. Our first question is whether we find a significant association between dividend changes and future ROA, controlling for fundamentals, that can drive both. Our second question is whether the association becomes stronger or weaker in the crisis. An increase in the association is consistent with signaling as well as preservation of capital becoming more important: Healthy banks may benefit more from signaling their strength through a dividend increase; and weak banks reduce dividends to preserve their capital. If the association weakens, there are three possible reasons. First, in a crisis, the wealth transfer motive may overturn the signaling motive, reducing the association between dividend changes and future performance. If banks with the weakest future performance have the strongest incentive to engage in wealth transfer, the association could even turn negative. Second, the share of weak banks increases in a crisis. If these banks do not cut dividends because of a fear of adverse market reactions, the association is also muted. Third, in a crisis, it can be more difficult for management to predict future performance and realized performance can be (systematically) different from initial bank expectations. Management has important information about its bank, but anticipating the

[8] We use future performance as a proxy of managers' information and relate it to banks' payout policy irrespective of any information asymmetry between management and investors.

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implications for bank performance are more difficult in a crisis than in normal times (roll of overall market conditions and total exposure of the banking system).

Thus, while we expect a positive association between dividend changes and future performance in the years before the crisis, the association can increase or decrease in the crisis years 2007-2008.

Cross-sectional variation analysis. In the second part of the paper, we investigate potential motives underlying bank payouts by looking at cross-sectional variation in banks' payout policies. We focus on three measure of payout policy that we discuss in the first part of the paper. We discuss the variables and hypothesis in Section 7.

2.2. Data

Our data set includes listed bank holding companies (BHCs) in the U.S. between 1995 and 2012. We obtain data on bank balance sheets and other regulatory financial data from SNL Financial. Data on stock returns (adjusted for dividends and stock splits) are from CRSP. Table 1 Panel A shows the coverage of our data year by year. The coverage of share repurchases in SNL improves substantially by 1999. Therefore, we analyze repurchases and total payouts starting in 2000. Panel B shows descriptive statistics of the variables used in our regressions.

– Insert Table 1 here –

Section 3 provides a short overview of the dividend (total payout) policy of our sample banks from 1995 (2000) to 2012. The main objective in subsequent sections is to investigate the payout policy of dividend paying banks in 2007-2008. Thus, we exclude banks that never pay dividends and restrict our sample for the regression analysis to the period of 1995-2008 since expected changes to regulatory capital requirements and restrictions associated with TARP likely

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affected banks' dividend policy starting 2009. Our sample contains 4,372 bank-year observations with non-missing dividend data.[9]

The average (median) bank in our regression sample has $14,593 million ($669 million) in total assets, indicating that our sample banks are considerably smaller than the ones in other empirical studies of the crisis such as Fahlenbrach and Stulz (2011) or Cziraki (2018). The reason is that we have a larger sample that also includes smaller banks. The average return on assets (ROA), defined as net income divided by total assets, in our regression sample during 1995-2008 is 0.95% (1.05%), which is comparable to the value reported by the Federal Reserve Bank of St. Louis for the same period.[10]

In Appendix A, we define the variables that we use in the paper. Dividend per share is the cash dividend paid per common share and dividend yield is the dividend divided by the share price using the most recent dividend for each quarter. To calculate the yearly dividend yield, we take the average of quarterly values. Total payout is the sum of total dividends and total repurchases. We approximate repurchases by the change in treasury stocks over the period (year or quarter) to net out the effect of shares issued for employee stock option programs and to pay for acquisition. We divide total payout by the total number of common shares outstanding at the end of the period to obtain total payout per share. We divide total payout per share by the end-of-period stock price to obtain total payout yield. To mitigate the effect of outliers, we winsorize all continuous variables at the 1st and the 99th percentile for the regression analysis.

[9] For robustness, we also run regressions using quarterly data for which we show the results in the Internet Appendix. To be able to investigate quarterly dividend changes in 2007 and 2008, we further restrict the sample to banks that pay dividends on a quarterly basis for the quarterly regressions.
[10] http://research.stlouisfed.org/fred2/series/USROA, last accessed on November 21, 2018.

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3. Banks' payout policy from 1995 to 2012

More than 80% of our sample banks pay dividends until the share of dividend paying banks drops below 80% in 2010. Even in 2008, 83% of banks in our sample pay dividends. In Figure 1, we show the payout policy of a balanced panel of 240 banks from 2000 onwards.[11] We find that banks continuously increase the total amount of dividends until 2007 and slightly decrease them in 2008. However, banks reduce repurchases from more than $21.52bn in 2007 to $3.51bn in 2008. As pointed out by Floyd, Li, and Skinner (2015) and Hirtle (2016), the decrease in repurchases shows that banks started to react to the mounting problems in the financial crisis.

– Insert Figure 1 here –

In Figure 2, we plot dividend changes over time. The percentage of banks that increase dividends is 61% in 2007, which is slightly lower than the average of the preceding four years (64%). In 2008, still 46% of banks increase dividends. We only observe a significant drop to 21% in 2009. At the same time, the percentage of banks that reduce dividends increases from 5% in 2007 to 18% and 43% in 2008 and 2009, respectively. The percentage of banks that do not change their dividend (including banks that continue to pay no dividend) increases from 34% in 2007 to 36% in 2008, and 37% in 2009.

– Insert Figure 2 here –

Acharya et al. (2012) point out that several banks kept paying dividends despite making losses. Figure 3 plots the contemporaneous relation between performance and dividend changes for banks in the lowest 5%, 10%, 25%, 33%, and 50% of the performance distribution. We use two measures of performance: annual stock returns and ROA. Panels A and B of Figure 3 show

[11] To address the concern that the balanced panel only contains banks that did well, we create a list of banks that drop out of the sample during the crisis and cross-reference this list with the FDIC's list of failed banks (https://www.fdic.gov/bank/individual/failed/banklist.html, last accessed on December 28, 2020). The FDIC lists none of the banks that drop out of our sample during 2007-2008 as failed.

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that for both performance measures, worse performing banks generally have lower dividend growth over our sample period. Consistent with this pattern, banks with worse performance reduce dividends by more in 2008 than do banks with better performance.[12] On average, banks in the bottom 50% of the performance distribution cut dividends in 2008.[13]

– Insert Figure 3 here –

4. Benchmarking bank payouts in 2007-2008

To benchmark bank payouts in 2007 and 2008, we estimate models of bank dividends and total payout for the period 1995-2006 and 2000-2006 respectively. We rely on prior literature on corporate payout policy (see Farre-Mensa, Michaely, and Schmalz (2014) for a survey) to select the variables we use in the bank dividends and total payout models and add specific bank variables. We measure size as the natural logarithm of total assets. Following Ellul and Yerramilli (2013), we also include size squared in the regression to account for the concentration within the banking industry after orthogonalizing the variables to account for their high correlation.

We use two proxies for investment opportunities: the rate of growth of total assets and the market to book ratio (market capitalization over book value of equity). We approximate banks' (market) leverage ratio using the definition of Acharya, Le, and Shin (2017), as (book assets – book equity + market capitalization)/(market capitalization). The ratio of retained earnings to total equity measures the mix between earned and contributed capital (DeAngelo, DeAngelo, and Stulz

[12] In Figure A.1 of the Internet Appendix, we repeat this analysis using quarterly data and lagging performance by one quarter relative to dividends. We find that banks in the lowest quantiles of stock returns in 2008Q1 reduce dividends in the subsequent quarter (i.e. 2008Q2). Even banks with below-median stock returns in 2008Q1 reduce dividends in 2008Q2 on average. Banks with the worst ROA actually reduce dividends one quarter earlier. Banks with below-median ROA in 2007Q4 reduce their dividends in 2008Q1 on average.

[13] Critics of bank payout policies during the crisis maintained that banks ought to have scrapped or reduced payouts to preserve their equity capital. As Farre-Mensa, Michaely, and Schmalz (2020) show, it is not always the case that dividends are paid out of cash reserves: industrials often issue equity to make dividend payments. We show in Table A.2 of the Internet Appendix that only a very small fraction of banks issue equity until 2009.

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(2006)). Banks have to satisfy regulatory capital requirements. In our set of bank-specific variables, we capture the effect of regulation with the ratio of regulatory Tier 1 capital over risk-weighted assets. To capture time-invariant unobserved heterogeneity at the bank level, we estimate all regressions with bank fixed effects. We also add year fixed effects to capture market-wide events that affect all banks such as the Asian and Russian crisis of 1997-1998, or the recession of 2001-2002.

– Insert Table 2 here –

Table 2 reports the results for the pre-crisis period. The dependent variable is dividend per share in column 1, dividend yield in column 2, total payout per share in column 3, and total payout yield in column 4. Our regressions show that 1995-2006, dividend per share increases with bank size and profitability. The coefficient on size squared is positive and significant. Dividend per share also increases with profitability and asset growth. The associations between dividend yield and size as well as profitability are also positive. In addition, dividend yield also increases with leverage and risk-weighted capital.[14] We find similar patterns for total payouts. Total payouts are significantly positively correlated with size squared, profitability and risk-weighted capital ratio, suggesting that banks maintain high payouts when they can afford to do so without depleting their regulatory capital. Total payout yield is negatively correlated with asset growth.

In Table 3, we show the average residuals estimated out of sample and test whether these are significantly different from zero.[15] Our out-of-sample residuals are calculated by using the

[14] Because the distribution of dividends and total payouts is censored from below at 0, for robustness, we also estimate fixed-effects panel Tobit regressions with the same independent variables. These regressions use the estimator of Honoré (1992). The results are similar to the ones obtained from the linear fixed-effects panel regressions and are omitted.

[15] The average in-sample residual for the period 1995-2006 is zero, by definition.

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coefficients of the models presented in Table 2 to predict bank dividends in 2007 and 2008, including the bank fixed effects.

– Insert Table 3 here –

Based on this analysis, the average payout of banks in 2007 looks excessive, as the average residuals are significantly positive for all payout measures. This evidence suggests that the average bank's payout in 2007 was higher than in the time before 2007 compared to fundamentals. However, the average abnormal dividend is no longer excessive in 2008, suggesting that some banks reduced dividends to levels commensurate with normal times. The dividend yield and the total payout yield are both excessive compared to the time before 2007, as share prices dropped to historical lows by the end of 2008. The average residual for total payout per share in 2008 is not significantly different from zero. Thus, banks reduce total payouts to a level consistent with what our model predicts in 2008.[16]

Relating banks' payout policy at the beginning of the crisis to fundamentals is an important first step to identify unusual payout pattern. However, the conclusions that we can draw about the underlying motives are limited. A payout policy that looks normal "relative to fundamentals" does not imply that banks should not have reacted earlier. Accounting numbers adjust slowly and might have not reflected the problems of the crisis early enough. As Acharya et al. (2012, p.4) argue, *"the inertia in bank accounting makes even a distressed bank appear healthy."* While abnormally high payouts seem easier to interpret and consistent with wealth transfer, the beginning of the crisis is exactly the time when a reduction in dividends (or change in dividend policy) could trigger

[16] During the crisis, banks' fates shifted quickly. In the second half of 2007, markets already started to experience worsening conditions, but the sharpest drop occurred in the third quarter of 2008. To account for the quick change in market conditions during the crisis, which were affecting bank fundamentals, we repeat the estimation using quarterly data. Table A.3 in the Appendix shows the results from the panel regressions estimated using quarterly data. Table A.4 in the Internet Appendix shows abnormal payouts in 2007-2008. The abnormal dividend per share, dividend yield, and total payout yield are positive and significant in every quarter of 2007-2008. The average abnormal total payout per share is positive and significant until the first quarter of 2008 and not significantly different from zero afterwards.

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adverse reactions. The difference between the residuals for dividends and for total payouts in 2008 is at least consistent with the argument that banks were willing to reduce repurchases, but afraid to cut their dividends in 2008. In Section 7.2, we investigate cross-sectional variation in abnormal payouts to gauge which types of banks paid abnormally high dividends in the crisis.

5. Stock market reaction to dividend changes

In this section, we investigate the stock market response to the announcement of dividend changes. We retrieve dividend announcement dates from CRSP and drop announcements of dividend changes that are made jointly with earnings announcements.[17] We calculate the cumulative abnormal returns (CARs) around the announcement day using various event windows. To compute CARs, we use a Carhart (1997) four-factor model as the benchmark, estimating model parameters for the period starting 260 days and ending 20 days before the announcement date. We test whether the CARs are significantly different from zero using the test statistic of the standardized cross-sectional Z-test of Boehmer, Musumeci, and Poulsen (1991), which is robust to event-induced variance.

– Insert Table 4 here –

Table 4 summarizes our results from the event study for the full sample, the pre-crisis period, and 2007-2008. In Panel A, we calculate CARs from the day of the announcement to the 3rd day after the announcement for dividend increases and decreases in our sample. In Panel B, we

[17] CRSP does not report the announcement dates for dividend omissions (i.e., if banks reduce their dividend to zero). Our sample contains 164 banks that reduce dividends in 2007-2008 of which only 16 banks stop paying dividends. We lose an additional 59 banks because they announce the dividend reduction jointly with earnings or because we lack the announcement date from CRSP. For the pre-crisis period, our sample contains 338 banks that reduce dividends of which 24 banks reduce it to zero.

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extend the event window 3 days before the announcements, and in Panel C, we measure CARs over a period of 10 days around the announcement.

We find a significantly positive stock price reaction to the announcement of dividend increases as well as share repurchases in the pre-crisis period. Our findings for dividend increases and repurchases are consistent with the findings in the literature (see Farre-Mensa, Michaely, and Schmalz (2014) for a survey). In Panel A (CAR(0,3)), we also find a significant stock price reaction to dividend increase and repurchase announcements in the crisis period. However, for dividend increases, the abnormal returns for the crisis period are closer to zero and insignificant when we consider longer time windows around the announcement dates. This evidence does not suggest that signaling through dividend increases became more important in 2007-2008.

We do not find a significant market reaction to dividend decreases in the pre-crisis period or in 2007-2008. In contrast to our results, prior literature finds a significant negative stock price reaction to dividend reductions. Most of these studies investigate non-banks (Ghosh and Woolridge (1988); Denis, Denis, and Sarin (1994); Michaely, Thaler, and Womack (1995); Grullon, Michaely, and Swaminathan (2002)). The risk of a bank run is absent for firms that have long-term debt and syndicated lending. Bessel and Goshel (1996, 2000) find a significant negative announcement effect of dividend omissions and reductions for banks from 1974 until 1991. Most of the dividend reductions in their sample occur in 1990 and 1991 and as the authors point out, there were significant regulatory changes at that time that might have affected banks' decision to cut dividends. Moreover, the reliance of banks on short-term wholesale funding changed considerably since the 1990's. Thus, the banks in our sample may be more concerned about negative market reactions than non-financial firms (see also Acharya et al. (2012)) or banks in the 1980s and early 1990s. Our evidence is consistent with the hypothesis that banks in our sample

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delayed dividend cuts until they could no longer avoid them (and the market already expected them) exactly because of the negative effect that unexpected dividends cuts would have had. Further, if dividend reductions are at least partially involuntary, i.e., the result of regulatory pressure, the market reaction should be muted and can be insignificant.[18] Thus, an insignificant announcement effect does not imply that market participants do not consider dividend decreases to be important negative signal if they come unexpectedly.

6. Payout policy and future performance

In this section, we relate changes in bank payout policy to future performance. We use two measures of future performance: earnings (net income) normalized by total assets (ROA) and yearly stock return as a proxy for the expectations banks managers held in 2007 and 2008. Our main question is whether we find a significant association between payout changes and future ROA, controlling for fundamentals that can drive both. Moreover, if the market price does not completely incorporate all private and public information, we should also see a positive association between payout changes and future stock returns.[19]

We regress performance in year $t+1$ on payout changes in year t and lagged control variables. We employ a separate dummy variable for 2007 and 2008. The coefficient of the interaction term captures whether there is a significant difference in this relation in 2007 or 2008 compared to the pre-crisis period. In Table 5 Panel A, we show the results for dividend growth

[18] Relatedly, Cornett and Tehranian (1994) find that involuntary stock issuances to meet regulatory capital requirements are associated with a significantly lower negative stock price reaction than voluntary stock issuances. However, the negative effect of involuntary stock issuances on the share price is still significant.

[19] Such a positive association may also be observed if there is a positive relation between the change of a bank's dividend policy and its (bank-specific) systemic risk. For example, Grullon, Michaely, and Swaminathan (2002) provide evidence for a positive relation between dividend changes and firms' discount rate due to changes in systematic risk (firm maturity) for a sample of non-financials.

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(the percentage change in dividends).[20] Columns 1 and 3 display the relation without controls, while columns 2 and 4 include controls. We find a positive and significant relation between dividend growth and future performance (both returns and ROA) in the pre-crisis period. Examining the interaction terms, we find that the relation between dividend growth and future performance is weaker in 2007 than it is before the crisis, but the difference is not significant. In contrast, the relation between dividend growth and future performance is stronger in 2008 than before the crisis and significant for ROA even in the specification with controls.

– Insert Table 5 here –

Panel B shows similar regressions replacing dividend growth with total payout growth. In the yearly analysis, we continue to find that the correlation between total payout growth and future ROA is significantly higher in 2008, than before the crisis. In contrast, we find a significant negative interaction term between future ROA and total payout in 2007. We find almost no significant relation between total payout growth and future stock returns, whether in the pre-crisis period or for 2007 and 2008.

Table A.5 Panel A in the Internet Appendix repeats the analysis using performance in quarter $t+1$ and dividend growth in quarter t to account for the quick deterioration of banks' performance in the crisis, particularly, in 2008. We find that the correlation between dividend changes and future performance becomes stronger during the crisis. In Table A.5 Panel B, we find no consistent relation between quarterly changes in total payout and future performance. A

[20] In this section, we do not use the dividend yield, as we are interested in dividend changes that stem from managerial decisions, not stock price movements. For banks that stopped paying a dividend, we set the dividend change equal to zero in years where the bank does not pay a dividend in two consecutive years. Dividend data are available from 1995 and 1996 is the first year for which we can calculate dividend changes.

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possible reason is that most banks do not conduct repurchases in every quarter, so total payout growth is more volatile than dividend growth.[21]

7. Dividend changes and potential motives: cross-sectional variation

7.1. Empirical strategy and hypothesis

To shed light on the potential motives underlying banks' payout policy in 2007-2008, we explore the cross-sectional variation of characteristics of banks with different dividend policies. We focus on the measures of payout policy introduced in the previous sections. In Section 7.2, we run a multinomial logit regression relating the decision to increase, hold constant, or decrease dividends in 2007 and in 2008 to key bank variables. In Section 7.3, we investigate which bank characteristics are associated with abnormally high payouts in 2007 and in 2008 by regressing key bank variables on the abnormal payouts we derived in Section 4. In Section 7.4, we follow the analysis in Section 6 on changes in the association between dividend changes and future performance in 2007 and 2008 and study whether the change in association between dividend policy and future performance in the crisis years differs for different types of bank.

For the regressions in Sections 7.2. and 7.3., we use the same set variables, with the exception of variables that directly enter the abnormal payout through the prediction model (Table 2): size, market to book ratio, ROA, leverage, and risk-weighted capital ratio. The rationale

[21] In Table A.6 Panels A and B, we examine the relation between dividend growth and future performance for 2007 and for 2008 and investigate whether the relation differs for dividend increases and decreases. The relation between dividend changes in 2007 and performance in 2008 is insignificant in all specifications. The relation between dividend changes in 2008 and performance in 2009 is positive, and highly significant once we include controls. This correlation is driven mainly by banks that reduce dividends, which have significantly lower performance than banks that do not change their dividends. Panel B also shows that banks that increase dividends in 2008 have higher ROA in 2009 than banks that do not change their dividends, although the relation becomes insignificant once we include control variables. In Table A.6 Panels C and D, we repeat the analysis using total payout growth. We find a significant association for total payout growth and future performance only for ROA in 2008. Banks that reduce total payout in 2007 have a significantly lower future return.

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underlying the analysis is that bank characteristics that can affect levels of dividends in normal times and that enter the abnormal payout analysis through bank fixed effects can affect banks' payout policy in a crisis. Abnormal payouts relate dividends to banks' payout policy in normal times, and abnormally high dividends can stem from a decrease in fundamentals even if banks hold dividends constant. Thus, the analysis of dividend changes and abnormal dividends are related, but capture two different concepts. The subsample splits in Section 7.4 focus on variables that are directly related to possible constraints in payout policy and incentives (e.g., regulatory capital and leverage as well as ownership variables). The rationale for the analysis is that bank managers may react differently to expectations about future performance, depending on how much discretion the bank has in its payout policy (e.g., high or low regulatory capital) or incentives due to different ownership structures (e.g., high or low institutional or managerial ownership). We now introduce and motivate the variables we use for our cross-sectional analysis. Table A.1 shows the definition of these variables. Table 1, Panel A shows the coverage of our data year by year and Panel B shows descriptive statistics of the variables used in our regressions.

Leverage and regulatory capital. Adverse market reactions (signaling) are more critical for banks that have higher leverage and lower regulatory capital (controlling for funding fragility). At the same time, these banks also have higher incentives to engage in wealth transfer (risk shifting). Thus, if these banks engage in wealth transfer or fear adverse market reactions, we expect that these banks are less likely to cut dividends and more likely to increase dividends or hold them constant. If, instead, these banks are more likely to reduce dividends, the finding is consistent with banks taking precautionary measures.

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However, it is also possible that these banks have no choice than to cut dividends if regulatory capital constraints are very low.[22] Most banks are well capitalized at the beginning of 2007 and for most banks, the regulatory capital constraint is not binding in 2007 or 2008. However, banks' business model and rating targets may require banks to hold regulatory capital in excess of the regulatory minimum. Thus, regulatory capital ratios may constrain banks even if they hold capital in excess of the regulatory minimum. In contrast, banks with very high (regulatory) capital have lower incentives to engage in wealth transfer and less of a reason to fear adverse market reactions. To address concerns that the full sample may not fully capture incentives, we run all regressions on two subsamples in addition to the full sample. In the first subsample, we drop banks in the lowest and highest quartile of regulatory capital ("medium regulatory capital" subsample). Thereby, we drop banks that are potentially constrained. However, we also drop banks for which risk-shifting incentives and fear of adverse market reactions are particularly important if the regulatory capital does not constrain them. In a second subsample, we focus on banks with regulatory capital ratios below the median ("low regulatory capital" subsample). Except for Table 10, we show only the results for the full sample in the paper and show the subsample results in the Internet Appendix.

Funding fragility. Banks that have higher withdrawal and refinancing risk have higher risk of adverse market reactions following dividend cuts. We use the ratio of short-term to total liabilities (Short-term borrowings + repurchase agreements)/(total liabilities)) as proxy for funding fragility. To the extent that a fear of adverse market reactions plays an important role in banks' payout policy, banks with a higher share of short-term liabilities are less likely to cut dividends and have higher abnormal dividends.

[22] Figure A.2 shows a histogram and a kernel density estimate of the distribution of the risk-weighted capital ratio (Tier 1 capital ratio) of our sample of banks at the end of the 2006 fiscal year.

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Risk-attitude and business model. Ellul and Yerramilli (2013) show that a bank's risk culture can be an important factor in banks' response to crises and willingness to take risk. It is plausible that a bank's risk-attitude also affects its payouts policy in a crisis. We use various proxies to capture bank risk stemming from its business model and willingness to take risk prior to the crisis of 2007-2008. **Earnings volatility.** In order to capture the risk of banks' business model, we calculate earnings volatility, which is the standard deviation of quarterly ROA over the past 8 quarters (or past 4 quarters if data on the past 8 quarters is unavailable).

Distance to default. We follow Laeven and Levine (2009) and calculate the distance to default as the natural logarithm of mean(ROA + CAR)/volatility(ROA)) where CAR is the capital-to-asset ratio (see also Beltratti and Stulz (2012)). We measure CAR as the risk-weighted capital ratio (Tier 1 capital divided by risk-weighted assets), and the mean and volatility are both measured for the period 1996-2006. Since 2006 is the last year that enters the calculation, we label the variable as "distance to default 2006" in the tables. A higher distance to default implies that the bank's average risk of default over the period is lower, which we interpret as a lower willingness to accept default risk stemming from business activities as well as leverage. Thus, the distance to default variable complements the earnings volatility and leverage measures that we calculate for each point in time.

Approved to total mortgages. The share of approved mortgages to loan applications (from the HMDA database) is a measure of the diligence of a bank's effort to screen loan applicants (see e.g. Dell'Ariccia, Igan, and Laeven (2012)). We calculate this measure as the value of mortgages approved during 2004-2006 divided by the value of loan applications during the same period. We use the measure as a proxy for the "aggressiveness" of banks' business model pre-crisis.

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TARP participation. As an ex-post measure of risk-taking and banks' strength in the crisis, we distinguish between banks that received TARP and banks that did not. The government introduced TARP in the fourth quarter of 2008. Except for the largest banks, banks that applied for TARP received it in 2009. Banks tried to repay TARP as quickly as possible, suggesting that they only applied for TARP when they needed it. Weak banks have higher incentives to engage in risk shifting, in particular, when anticipating bailouts. At the same time, the sample of banks that do not cut dividends and later receive TARP can also include banks that did not cut dividends because of a fear of adverse market reactions *absent* a clear safety net such as TARP. Banks that received TARP are less likely to cut dividends and more likely to increase them in 2007-2008. Further, TARP banks have higher abnormal dividends than non-TARP banks.

If we find that banks that receive TARP are more likely to reduce dividends, there are two possible reasons. First, the banks did not want to engage in wealth transfer. Second, banks may have no choice because of regulatory capital constraints. Again, the subsample analysis on banks with intermediate and low regulatory capital is important in this case.

Abnormal dividends in 1998. Bank policies may show persistence in the longer run. Fahlenbrach, Prilmeier, and Stulz (2012) show that bank performance in the 1998 crisis predicts performance in the 2007-2009 financial crisis). Following this approach, we calculate abnormal dividends in 1998 and examine whether banks that had abnormally high dividends in 1998 had abnormally high payouts in 2007-2008.

Interest to noninterest income. To proxy for banks' business model, we use the ratio of interest to noninterest income. The ratio is high for banks that hold loans for the collections of interest and low if banks primarily securitized loans.

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Analyst coverage. If analysts cover banks, the market is quicker to learn about possible bank problems irrespective of the dividend policy. Thus, information asymmetry between the bank and investors is smaller and the bank can reduce dividends (earlier) at a lower risk of triggering adverse market reactions, and we expect that banks are more likely to cut dividends if analyst coverage is higher. We measure analyst coverage as the number of security analysts covering a bank in 2006. Information on analyst coverage comes from I/B/E/S.

Institutional ownership. Institutional ownership can play an important role in banks' dividend policy as large institutional owners can put pressure on management to choose a payout policy that is in their interest.[23] We measure institutional ownership as the percentage of the stock (total ownership stake) held by institutions using data from SNL Financial and Thomson Reuters.

If institutional owners pressure banks to engage in wealth transfer, banks with high institutional ownership are less likely to reduce dividends and more likely to keep dividends constant or increase them. Moreover, the association between institutional ownership and abnormal dividends is positive. If we do not find a significant association, the reason can be that institutional owners cannot put sufficient pressure on management or do not benefit from wealth transfer. We further explore the effect of different institutional owners using the Bushee (1998) classification of institutional investors, focusing on three groups: "Transient investors" with a short-term focus, "dedicated investors" who pursue long-term goals, and "quasi-indexers" who replicate an index. We obtain the ownership information from Brian Bushee's website. Last, to account for ownership concentration, we include the number of institutional blocks exceeding 5%.

[23] Grinstein and Michaely (2005) investigate how institutional owners affect the dividend policy of corporations and find that within dividend-paying stocks, institutions prefer lower dividends and higher repurchases. This study focuses on normal times. In contrast, we focus on the effect of institutional owners on banks' payout policy in the crisis.

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"Transient investors" benefit from cashing in on dividends before selling their shares, not caring about the long-term effect of increased payouts. However, it is not clear to what extent transient investors can put pressure on management. "Dedicated investors" are large investors who pursue long-term goals. They can put pressure on management and are interested in total shareholder value. They benefit from risk shifting through higher payouts as long as the wealth transfer exceeds the potential detrimental effect on the long-term shareholder value. "Quasi-indexers" follow a buy-and-hold strategy and benefit from increasing shareholder value, but it is not clear whether they play an active role, influencing managerial actions.

We run the baseline regression including only institutional ownership, and show the results of the coefficients for the alternative institutional ownership variables separately, replacing institutional ownership with each of the alternative ownership variables.

Managerial ownership. Managers try to protect their bank and job. Thus, they generally have low incentives to engage in wealth transfer, increasing their bank's risk, unless they benefit from it through their own shareholdings or face pressure from shareholders.[24] Banks with high managerial ownership are less likely to reduce dividends and more likely to keep dividends constant or increase them. Moreover, the association between managerial ownership and abnormal dividends is positive. Data on managerial ownership are from SNL Financial.

Insider trading. If insiders hold a negative view of the bank's future performance, it can affect their dividend policy. As insiders who hold a negative view on the bank's future performance are more likely to sell shares of the bank, we use insider trading as measure of insiders' view on banks' future performance. We measure insider net buying as the ratio of net purchases to total

[24] Managerial equity incentives are positively correlated with dividend policies in non-financial companies (e.g. Fenn and Liang (2001); Kahle (2002)), and several papers discuss the role of managerial incentives in the recent crisis (e.g. Bebchuk, Cohen, and Spamann, (2010); Fahlenbrach and Stulz (2011); Bhagat and Bolton (2014); Cheng, Hong, and Scheinkman (2015)).

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insider transactions of a bank, $NPR\ volume = \frac{number\ of\ shares\ purchased - number\ of\ shares\ sold}{number\ of\ shares\ purchased + number\ of\ shares\ sold}$, (Lakonishok and Lee (2001)). This measure increases with more insider buying and decrease with more insider selling; it equals 1 if all insider trades in a given year are purchases and -1 if all insider trades are sales. To control for bank-specific, time-invariant heterogeneity in the insider-trading behavior of bank managers, which may stem from differences in firm-level insider trading policies (Roulstone (2003)) or governance arrangements (Ravina and Sapienza (2010); Cziraki, De Goeij, and Renneboog (2014)), we de-mean *NPR volume*. We de-mean values by taking the average of the variable for each bank during the pre-crisis period 1995-2006 and subtract this average from each of the observations. Data on insider trading are from Thomson Reuters.

Information on managerial ownership and insider trading is often missing, and including these variables in the main regressions in Sections 7.2 and 7.3 would result in a large drop of the sample. Thus, we do not include the variables in the baseline regression but show the result separately in the tables with the alternative institutional ownership variables.

7.2. Cross-sectional variation in dividend changes in the crisis

Table 6 Panel A presents the marginal effects from the multinomial logit regression of the decision to increase, hold constant, or decrease dividends in 2007-2008 for the full sample. Dividend changes are measured yearly, using dividend per share. Bank characteristics are measured at the end of the fiscal year before the dividend changes. We find a strong association between ROA and dividend changes. Banks with lower ROA are significantly more likely to decrease dividends or hold dividends constant, while banks with higher ROA are significantly more likely to increase

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dividends.[25] The association between dividend changes and ROA is present in the subsamples of banks with low as well as with medium regulatory capital.

Banks with higher (lower) leverage are significantly more likely to decrease (increase) dividends. Despite higher incentives of banks with high leverage to engage in wealth transfer, we do not find that banks with higher leverage are more likely to hold dividends constant or increase them. The association between leverage and the likelihood of dividend decreases remains weakly significantly positive when looking at the subsample of banks with medium regulatory capital and becomes insignificant when looking at the subsample of banks with low regulatory capital. The evidence on the subsamples does not suggest that the result for the full sample is driven by banks with high leverage being forced to reduce dividends due to regulatory capital constraints.

Banks with a higher share of short-term funding are significantly less likely to decrease dividends. This finding is consistent with the importance of a fear of adverse market reactions and signaling. However, the coefficient for dividend decreases loses significance for the subsample of banks with medium and low regulatory capital.

Banks with higher earnings volatility are more likely to cut dividends. The significant association with earnings volatility also remains in the subsample of banks with low regulatory capital: banks with higher earnings volatility are less likely to increase dividends and more likely to decrease them. Banks with a higher distance to default are less likely to hold dividends constant. The coefficient remains significant for the subsample with medium regulatory capital. Further, banks with a higher distance to default are more likely to increase dividends. For the low regulatory capital subsample, this correlation is not statistically significant. Banks that receive TARP are

[25] Table A.7 in the Internet Appendix shows univariate comparisons of bank characteristics in the three groups, to help gauge the economic significance of the differences. Banks increasing dividends have over twice the ROA of banks decreasing dividends, and a 50% higher ROA relative to banks holding dividends constant. The leverage of banks increasing dividends is 86% lower compared to banks decreasing dividends.

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more likely to decrease dividends. This conclusion also applies to all the subsamples. Overall, the evidence does not suggest that bank (willingness to take) risk is associated with a propensity to increase dividends.

Banks with a higher share of lending to trading business, proxied by the ratio of interest to non-interest income, are more likely to keep dividends constant and less likely to increase them. However, the association is significant only in the full sample. Banks followed by a higher number of analysts are more likely to cut dividends. The coefficient remains highly significant for banks with low regulatory capital. Banks are significantly less likely to keep dividends constant if they have more analysts following them.

We do not find a statistically significant relation between dividend changes and banks' Tier 1 capital ratio or institutional ownership. However, looking at the subset of banks with medium regulatory capital, in Table A.8 in the Internet Appendix, we find that banks with higher institutional ownership are significantly less likely to hold dividends constant and significantly more likely to increase dividends. The relations are insignificant again when looking at the subsample of banks with low regulatory capital ratios – Table A.9 in the Internet Appendix.

Table 6 Panel B presents the results using different measures of institutional ownership. Banks with a higher share of dedicated ownership are less likely to decrease and more likely to increase dividends. Banks with a higher share of quasi-indexer ownership are less likely to increase dividends and more likely to leave them constant. The coefficient of transient ownership on dividend changes is only marginally significant: higher transient ownership is associated with a greater likelihood of keeping dividends constant. Managerial ownership and the number of large blockholders have no significant association with dividend changes. Last, banks with higher

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insider net buying (NPR count) are significantly more likely to decrease or leave constant dividends and significantly less likely to increase dividends.

7.3. Cross-sectional variation in abnormal payouts

We turn our attention to cross-sectional variation in abnormal payouts. In Table 7, we start with abnormal payouts in 2006 (Panel A) and compare the results to abnormal payouts in 2007 and 2008 (Panel B). We first focus on abnormal dividend and total payout per share (first and third columns) and then on dividend and total payout yields (second and fourth columns).

Banks with a higher approval rate and lower distance to default have lower abnormal payouts in 2006, both measured as dividend per share and total payout per share. (The coefficient for the approval rate is only weakly significant.) Thus, a higher propensity of these banks to take risk before the crisis as captured by these variables is associated with lower abnormal payouts, not higher abnormal payouts. The association between the approval rate and abnormal dividends per share remains weakly significant and negative in the crisis years 2007 and 2008 for the full sample as well as both regulatory capital subsamples. (See Tables A.10 and A.11 in the Internet Appendix for the subsample results.) However, the association between the approval rate and abnormal total payout per share becomes insignificant for the full sample as well as both subsamples.

– Insert Table 7 here –

The opposite is true for the distance of default, where the association with abnormal dividend per share becomes insignificant in the crisis years, but the association between distance to default and abnormal total payout per share remains weakly significantly positive for the whole sample as well as the subsample of banks with low regulatory capital. Overall, the evidence

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suggests that banks that are willing to take risk in their business model are not the banks that have high abnormal payouts per share right before the crisis or in the crisis.

For the crisis period, we find a negative association between earnings volatility and abnormal total payout in the full sample, but no significant association in the subsamples. The association with abnormal dividend per share is weakly significant for the full sample, but highly statistically significant in the subsample of banks with medium regulatory capital. Again, the evidence does not suggest that banks with higher risk have higher abnormal payouts per share. Where the relation is significant, the opposite holds.

In addition, for the subsample of banks with low regulatory capital, we find a significant negative association between short-term funding and abnormal total payout per share but an insignificant association with abnormal dividend per share. The finding is consistent with the hypothesis that banks that have low regulatory capital want to preserve capital when they are funded with a high share of short-term debt, but they are not willing to reduce dividends. For the same subsample, we find a negative association between interest to noninterest income and abnormal dividends per share, but the association is weak.

Looking at abnormal payout yields, banks with higher institutional ownership have lower abnormal payout yields in 2006, both measured as dividend yield and total payout yield (the latter is only weakly significant). Moreover, banks with a higher number of analysts following are associated with higher abnormal dividends in 2006.

Interestingly, even though the average bank has a significant abnormally high total payout yield in both 2007 and 2008 (Section 4), we do not find a significant association with total abnormal payout yield for any of the bank variables for the full sample or the subsample of banks with medium regulatory capital. For banks with low regulatory capital, we find a strongly

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significant negative association between short-term funding and abnormal total payout yield and significant positive association between institutional ownership and abnormal total payout yield.

In contrast to total payout yield, several bank characteristics are significantly related to abnormal dividend yield for the full sample in the crisis. First, institutional ownership and number of analysts remain significant in the crisis with the same sign as in 2006. However, the significance for number of analysts weakens and both variables are insignificant in the regulatory capital subsamples. A higher approval rate and higher earnings volatility are associated with a lower abnormal dividend yield. For both subsamples of banks, the association for the approval rate remains weakly significant, but the association with earnings volatility becomes insignificant. TARP recipients are strongly positively associated with higher dividend yields. Thus, TARP banks have higher abnormal dividend yields than non-TARP banks.

In Table 8 Panels A and B we include different institutional ownership measures to further examine abnormal payouts in 2007-2008. Table 8 Panel B shows a significant negative association between abnormal dividend yield and some of the ownership variables. All institutional ownership measures except for dedicated ownership are significantly negatively related to abnormal dividend yield. The results do not support a narrative where institutional shareholders pushed banks to maintain high dividends in the early stages of the crisis to transfer wealth to shareholders.

– Insert Table 8 here –

Bank policies may also show persistence in the longer run. Table 8 Panel C shows the results for the test whether banks that had abnormally high dividends in 1998 had abnormally high dividends in 2007-2008. We find no evidence that 1998 abnormal dividends are positively correlated with abnormal dividends in 2007-2008.

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7.4. Cross-sectional variation in the relation between dividend growth and future performance

In this section, we repeat the analysis in Section 6 for different subsamples of banks. We form subsamples by taking a key bank variable and then splitting the sample into banks for which this variable is above or below the median. We start with Tier 1 regulatory capital. We form subsamples of banks with Tier 1 regulatory capital below the median (low regulatory capital) and banks with Tier 1 regulatory capital above the median (high regulatory capital). Comparing the two subsamples allows us to investigate whether the change in the association between dividend growth and future performance in the crisis differs for banks with low and high regulatory capital.

– Insert Table 9 here –

Table 9 reports the results for banks with low and high regulatory capital. Panel A shows that the positive correlation between dividend changes and future ROA significantly increases in 2008 for banks with both high and low regulatory capital ratios. The change is not significant for 2007 or future returns. Interestingly, the association between dividend growth and future ROA is insignificant in normal times for banks with low regulatory capital, and the increase in this association in 2008 is higher for banks with low regulatory capital than for banks with high regulatory capital. However, the difference in the two coefficients (interaction terms) is insignificant. Panel B shows Chi-squared tests of the differences in the coefficients on the interaction terms in the crisis years for the two subsamples. All differences in coefficients are insignificant. Thus, we do not find a statistically significant difference in how the association between dividend growth and future performance changed in in 2007 and 2008 for banks with high and low regulatory capital.

In addition, to Tier 1 regulatory capital, we split banks based on leverage, short-term to total liabilities, different ownership variables and insider trading volume. These variables capture

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potential differences in constraints and incentives that bank managers face. As in previous sections, we do the splits for the whole sample as well as the subsamples of banks with medium and low regulatory capital constraints. In the latter case, we fist split the sample based on regulatory capital measures and then do the splits on leverage, short-term to total liabilities, different ownership variables and insider trading volume for the different regulatory capital subsamples.

Table 10 Panels A to H report the results of the splits for the whole sample and Table 11 Panels A to H report the results of the splits for banks with medium regulatory capital. To preserve space, we only show that coefficients for the interaction terms capturing the change in association between dividend growth and future performance in 2007 and 2008 as well as the results on the test of whether the differences in changes in the subgroups are significant. We display the result of the splits for banks with low regulatory capital in the Internet Appendix, Table A.12.

– Insert Table 10 here –

– Insert Table 11 here –

The only splits that show some stronger significance in differences for the whole sample are the institutional ownership splits. The association between dividend growth and future ROA exhibits a significantly higher increase in 2008 for banks that are in the subsample of high institutional ownership (Panel C), high dedicated institutional ownership (Panel D), and high transient institutional ownership (Panel E). In Table A.6 in the Internet Appendix, we show that the significant association between dividend changes and future performance is largely driven by banks that reduce dividends, suggesting that banks with high institutional ownership, high dedicated institutional ownership, and high transient institutional ownership decrease dividends more in response to negative future performance in 2008. In contrast to 2008, the association between dividend growth and future ROA decreases in 2007 for banks with high institutional

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ownership and banks with high dedicated institutional ownership. The decrease is statistically significant compared to normal times as well as compared to banks with low institutional ownership and banks with low dedicated institutional ownership respectively. However, in most cases, the statistical significance is weak. We also find a significant difference in the change in the association between dividend growth in 2008 and future stock returns for banks with low/high managerial ownership.

Looking at Table 11 for banks with medium regulatory capital, the only differences in coefficients for the different institutional ownership categories that remain significant are those for low/high dedicated and transient ownership. For banks with low regulatory capital, many of the differences for the ownership splits remain significant, suggesting that the incentives of banks with low regulatory capital are important.

As in the full sample, the 2008 change in the association between dividend growth and future return is different for banks with low/high managerial ownership. In contrast to the full sample, the change in association between dividend growth and future ROA is significantly different for banks with low/high managerial ownership for banks with medium regulatory capital. However, the significance is weak. Instead, the difference in the coefficients of the interaction terms for future return becomes significant for 2007 (weakly significant) and 2008 (significant at 10% level) when looking at banks with high/low short-term to total liabilities. Interestingly, the interaction terms are all insignificant for banks with high short-term to total liability, while the interaction terms are significantly negative in 2007 and significantly positive in 2008 for banks with low short-term to total liabilities.[26]

[26] The positive and significant difference in the association between dividend growth and future ROA between banks with high and low institutional ownership we find for 2008 in the full sample is also present in the subsample of banks with low regulatory capital. The same is true for transient ownership. In contrast to 2008, the association weakly

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8. Conclusion

We study the payout behavior of U.S. banks in 2007-2008. We start by characterizing their payout policy in 2007-2008. First, we benchmark banks' payouts in 2007 and 2008 against banks' payouts before the crisis. For all our measures, we find that average bank payouts in 2007 are higher than before 2007, controlling for fundamentals. In contrast, dividends per share as well as total payout per share in 2008 are in line with levels before 2007. Second, as a direct test of investors' response to dividend changes, we investigate the stock market reaction to the announcement of dividend changes. Announcements of dividend decreases attract no significant abnormal returns both before the crisis as well as in 2007-2008. The finding is consistent with the possibility that banks wait with dividend decreases until they can no longer avoid them because they fear adverse market reactions stemming from dividend cuts that come a surprise to market participants. Third, we investigate the association between dividend changes and future performance in the crisis relative to normal times. We find a significant association between dividend growth and future ROA in the pre-crisis period that does not significantly change in 2007, but increases significantly in 2008.

After characterizing payout policies for the average bank, we explore cross-sectional heterogeneity in bank characteristics to shed light on the potential motives underlying payout policies in 2007-2008. We focus on dividend changes in 2007-2008, abnormally high payouts in 2007-2008, and the association between dividend changes and future performance in 2007-2008. The objective is to identify variables that can affect managers' incentives to follow more vs less aggressive payout policies in the crisis.

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decreases in 2007 for banks with a higher share of institutional owners as well as for those with a higher ratio of dedicated and transient owners in the subsample of banks with low regulatory capital. The same conclusion holds when we split the subsample along the number of institutional blockholders. Finally, we find a difference between banks with high and low insider net buying in the subsample of low regulatory capital. The association between dividend changes and future stock returns becomes marginally significant.

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Overall, we do not find evidence that banks that were willing to take higher risk before the crisis (as captured, e.g., by a higher business model risk) or that have higher incentives to engage in risk shifting engage in wealth transfer through paying high dividends in the crisis. Further, we do not find that banks that are willing take risk in their business model as, for example, captured by a higher approval rate in lending or lower distance to default, have high abnormal payouts per share right before the crisis in 2006 or in the crisis in 2007-2008. In fact, where the relation is significant, the opposite holds.

Finally, we study heterogeneity in ownership and funding structure. When looking at variation in different institutional ownership variables, we find no evidence for the narrative that institutional shareholders pushed banks to maintain high dividends in the early stages of the crisis to transfer wealth to shareholders. Interestingly, banks with a higher share of short-term funding are significantly less likely to decrease dividends. This finding is consistent with the hypothesis that banks that that are more reliant on short-term financing fear adverse market reactions.

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Figure 1: The dynamics of bank payouts over time in a balanced panel

Data on bank dividends and repurchases are from SNL. The figures show a balanced panel of 240 banks with information on payout available through 2001-2012. Each year we sum the total amount of dividends and the total amount of repurchases of these banks. The dollar value of dividends and repurchases is measured in billions on the left vertical axis. The lines show how the book equity and market capitalization of these banks evolve over time. The dollar amount is measured in billions on the right vertical axis.

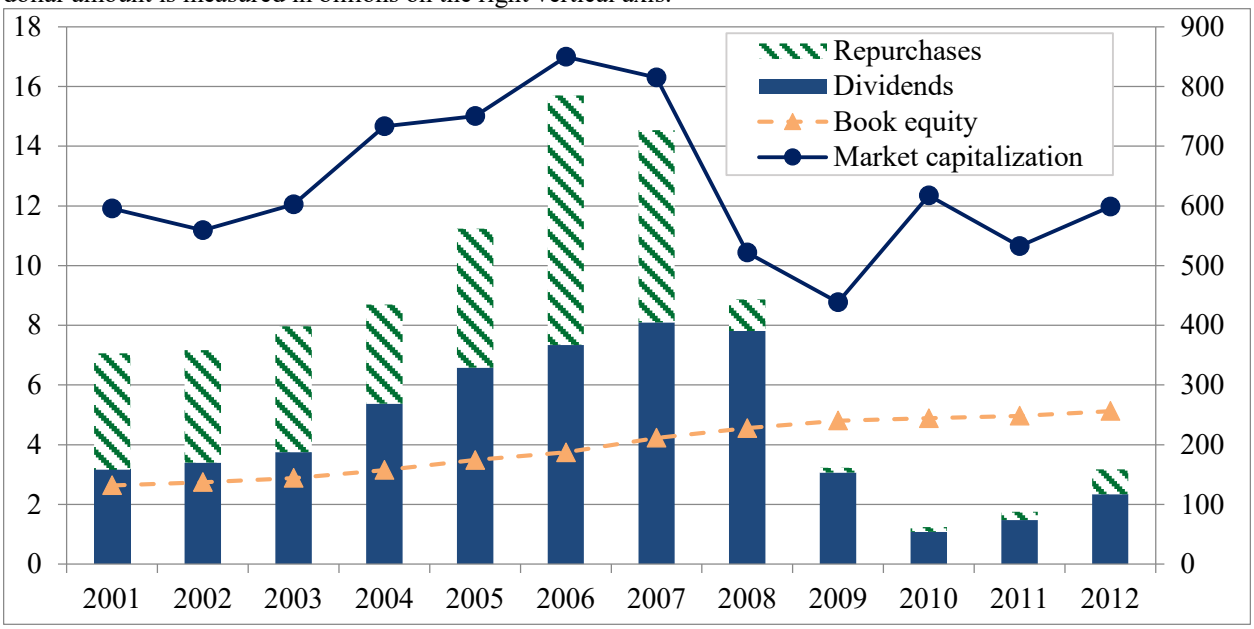

Figure 2: Changes in dividends over time

Data on bank dividends and repurchases are from SNL. The figure shows the percentage of banks that increase, decrease, and do not change their dividends each year. Dividend increases, decreases, and constant dividends are measured based on yearly dividends per share. A bank is classified as not having TARP funding if it does not hold TARP funds in a given year, i.e. has either not received any TARP funding, or has repaid it in full. Dividend data are available for 1995-2012, so 1996 is the first year in which we calculate dividend changes.

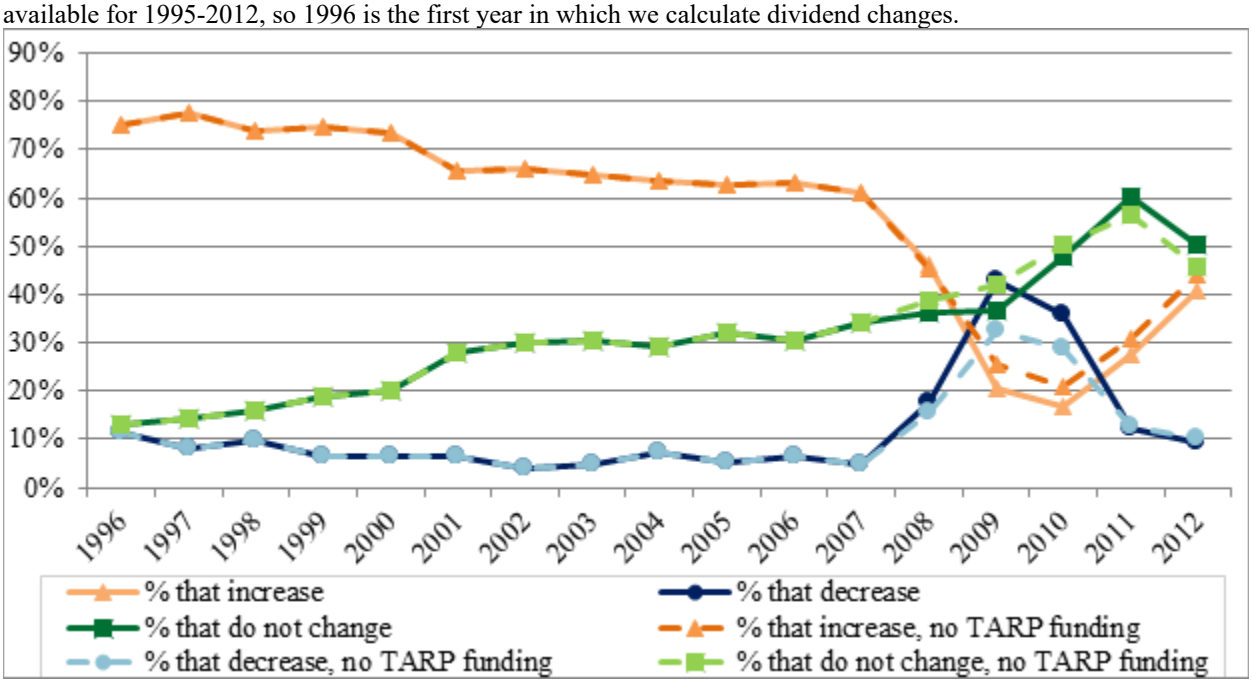

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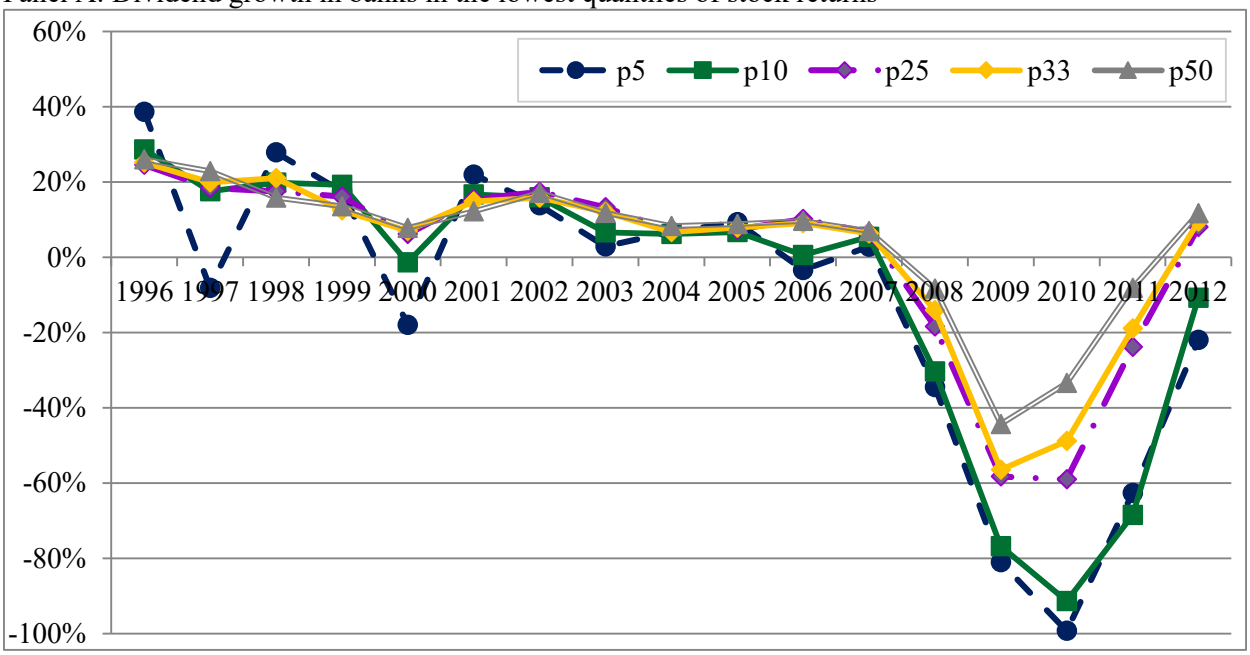
Figure 3: Dividend growth of poorly performing banks over time

The graphs show the year-on-year percentage growth in dividends per share of banks in the lowest 5%, 10%, 25%, 33%, and 50% of the performance distribution. In Panel A, bank performance is measured by stock returns. In Panel B, bank performance is measured by net income over total assets (ROA). Dividend data are available for 1995-2012, so 1996 is the first year in which we calculate dividend changes.

Panel A: Dividend growth in banks in the lowest quantiles of stock returns



Panel B: Dividend growth in banks in the lowest quantiles of net income over total assets (ROA)

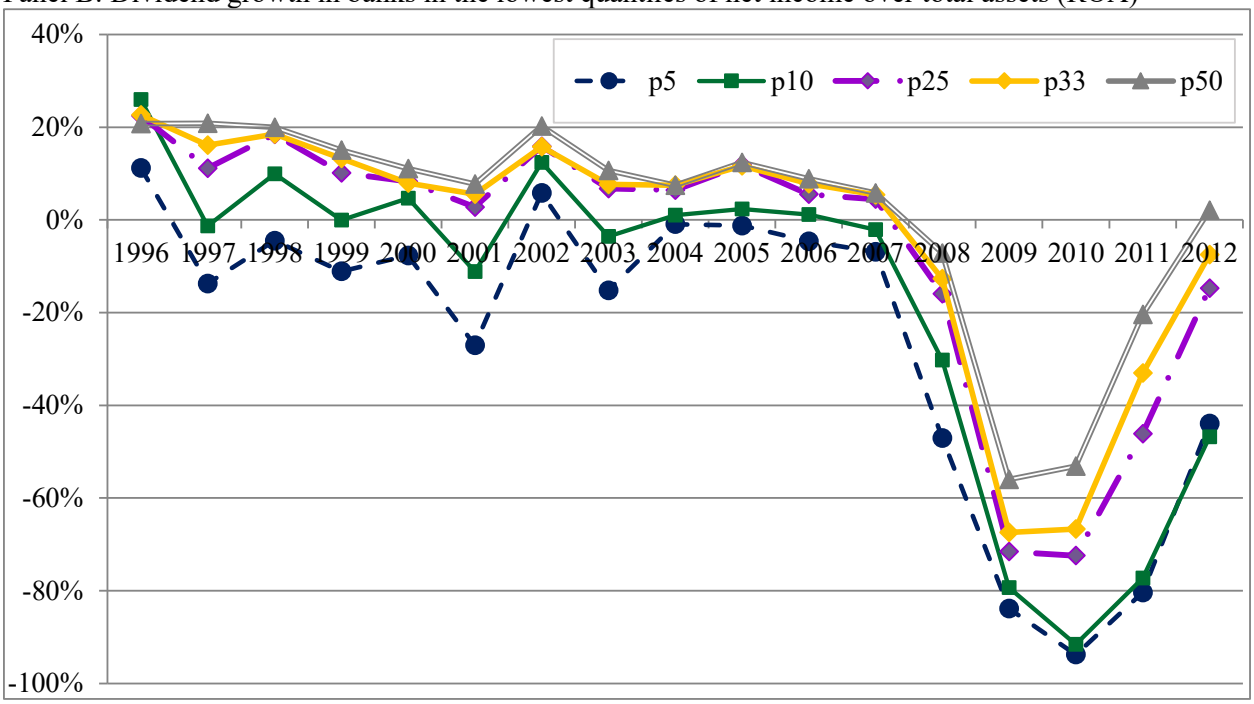


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Table 1: Sample descriptives

Summary statistics for the sample of banks used in the analysis. Information on bank dividends and fundamentals are from SNL Financial. Stock return data are from CRSP and are adjusted for dividends and stock splits. Panel A shows the number of banks with non-missing dividend and repurchase data for each year 1995-2012, which we use in Figures 2-4. Panel B shows descriptive statistics of the variables used in the regression analysis. The data spans 1995-2008 for dividends, 2000-2008 for total payout, and 1994-2009 for stock returns and ROA as some regressions use lagged control variables and forward-looking ROA and stock returns. All variables are defined in Table A.1.

Panel A: Yearly break-down of the number of observations with non-missing payout data

	Data on dividends	Data on repurchases
1995	236	2
1996	272	3
1997	312	4
1998	336	10
1999	364	60
2000	398	379
2001	469	407
2002	572	462
2003	613	489
2004	645	520
2005	656	527
2006	662	526
2007	662	532
2008	662	519
2009	662	521
2010	661	524
2011	658	520
2012	656	502

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Table 1 – continued

Panel B: Summary statistics of key variables used in the regressions

Variable	Mean	Median	Standard Deviation	Minimum	Maximum	N
Dividend per share	0.88	0.52	1.41	0.00	9.00	4,372
Dividend yield (%)	2.57	2.54	1.29	0.00	6.09	4,372
Dividends to book value (%)	4.50	4.36	2.40	0.00	11.39	4,325
Dividend growth	0.22	0.08	0.59	-0.75	3.48	4,372
Total payout per share	1.32	0.74	2.06	0.00	12.60	3,092
Total payout yield (%)	3.89	3.46	2.59	0.00	13	3,092
Total assets (in millions)	14,593	669	106,683	48	2,196,781	4,372
Market to book ratio	1.76	1.65	0.68	0.26	7.16	4,368
ROA (%)	0.95	1.05	0.65	-4.10	2.33	4,831
Leverage	8.33	7.04	5.86	2.45	177.89	4,361
Retained earnings to total equity	0.59	0.62	0.29	-0.86	2.72	4,328
Total asset growth (% year-on-year)	0.10	0.08	0.14	-0.42	3.37	4,372
Risk-weighted capital ratio (%)	12.91	12.05	3.61	7.43	26.78	4,338
Short-term to total liabilities	0.05	0.03	0.06	0.00	0.68	3,944
Earnings volatility	0.58	0.36	0.68	0.00	8.29	3,708
Approved to total mortgages	0.77	0.79	0.14	0.14	1.00	2,093
TARP recipient	0.39	0.00	0.49	0.00	1.00	4,372
Distance to default 2006	4.39	4.39	0.69	1.66	8.16	4,370
Interest to noninterest income	7.69	6.32	5.57	0.70	48.73	4,369
Institutional ownership	0.13	0.03	0.19	0.00	0.73	4,372
Number of analysts	2.57	0.00	5.40	0.00	36.00	4,372
Dedicated ownership	0.01	0.00	0.02	0.00	0.11	2,922
Quasi-indexer ownership	0.16	0.11	0.16	0.00	0.63	2,922
Transient ownership	0.03	0.01	0.04	0.00	0.18	2,922
Number of >5% institutional blocks	0.55	0.00	0.82	0.00	6.00	3,041
Managerial ownership	0.0015	0.0011	0.0013	0.0000	0.0061	1,673
Insider net buying	-0.013	0.035	0.533	-1.348	1.20	3,301

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Table 2: What determines the level of payouts?

Fixed-effects panel regressions of dividends and total payout on bank fundamentals. All variables are defined in Table A.1. The dependent variable is dividend per share in column 1, dividend yield in column 2, total payout (dividends + repurchases) per share in column 3, and total payout yield in column 4. Independent variables, with the exception of total asset growth, are lagged by one year. Underneath each coefficient we show t-statistics that are based on heteroskedasticity-robust standard errors, clustered at the bank level. *, **, and *** indicate that the coefficient is statistically significant at the 10%, 5%, and 1% level.

	Dividend per share	Dividend yield	Total payout per share	Total payout yield
Sample period	1995-2006	1995-2006	2000-2006	2000-2006
Size	0.30***	0.21*	0.45	0.15
	(2.76)	(1.68)	(1.59)	(0.38)
$Size^2$	0.05***	0.04***	0.14***	0.13*
	(3.46)	(3.31)	(3.28)	(1.96)
Market to book ratio	0.06		0.07	
	(1.55)		(0.78)	
ROA	0.17**	0.27***	0.23*	0.58***
	(2.10)	(2.61)	(1.69)	(2.79)
Leverage	-0.01	0.05***	-0.03	0.03
	(-0.95)	(3.51)	(-1.43)	(1.16)
Retained earnings to total equity	0.25	0.05	0.52	-1.20
	(1.34)	(0.23)	(1.07)	(-1.13)
Total asset growth (% year-on-year)	0.17**	0.09	-0.17	-1.84***
	(1.99)	(0.63)	(-0.67)	(-3.10)
Risk-weighted capital ratio	0.00	0.02*	0.03*	0.25***
	(0.62)	(1.77)	(1.87)	(4.69)
Observations	3,666	3,666	2,498	2,498
R^2	0.89	0.80	0.85	0.59
Bank FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes

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Table 3: Yearly analysis of abnormal payouts predicted out of sample for the crisis

The table shows the average out-of-sample residuals based on the regressions for yearly data shown in Table 2. We obtain out-of-sample estimates by comparing the actual payout of a bank during 2007 and 2008 to the out-of-sample prediction from the models in Table 2, based on the coefficients estimated for 1995-2006 for dividends and 2000-2006 for total payout. T-tests are shown below the point estimates in parentheses. *% of one standard deviation* is the average residual divided by the standard deviation of the corresponding variable (shown in Table 1, Panel B) multiplied by 100. *, **, and *** indicate that the estimate is significantly different from 0 at the 10%, 5%, and 1% level.

	Dividend per share		Dividend yield		Total payout per share		Total payout yield	
Year	2007	2008	2007	2008	2007	2008	2007	2008
Average residual	0.06*	0.02	0.38***	0.98***	0.32***	-0.09	1.86***	1.59***
T-test	(1.96)	(0.65)	(9.30)	(12.01)	(4.26)	(-1.62)	(12.26)	(10.64)
% of one std. dev.	0.12	0.13	0.27	0.65	0.22	0.04	0.58	0.46
Observations	466	458	466	458	382	370	382	370

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Table 4: The market reaction to announcements of dividend changes and repurchases

Cumulative abnormal returns (CARs) following announcements of dividend decreases and dividend increases. Panel A shows CARs measured from the day of the announcement (day 0) to the 3rd day after. Panel B shows CARs measured from 3 days before the announcement to 3 days after, and Panel C shows CARs measured from 5 days before the announcement to 5 days after. We discard dividend change and repurchase announcements that occur on the same day as earnings announcements. To compute CARs, we use a Carhart (1997) four-factor model, estimating model parameters for the period (-260,-20) relative to the announcement date. We test whether the CARs are significantly different from zero using the test statistic of the standardized cross-sectional Z-test of Boehmer, Musumeci, and Poulsen (1991). *, **, and *** indicate that the CAR is significantly different from zero at the 10%, 5%, and 1% level.

	Dividend decreases		Dividend increases		Repurchases	
Panel A: CAR(0,3)						
Year	CAR(0,3)	N	CAR(0,3)	N	CAR(0,3)	N
Full sample	-0.12	387	0.47***	2,610	1.31***	612
1995 – 2006	0.06	298	0.48***	2,255	1.43***	523
2007 – 2008	-0.73	89	0.39**	355	0.62*	89
Panel B: CAR(3,3)						
Year	CAR(3,3)	N	CAR(3,3)	N	CAR(3,3)	N
Full sample	0.10	387	0.41***	2,610	1.28***	612
1995 – 2006	0.31	298	0.47***	2,255	1.47***	523
2007 – 2008	-0.57	89	0.07	355	0.18	89
Panel C: CAR(5,5)						
Year	CAR(5,5)	N	CAR(5,5)	N	CAR(5,5)	N
Full sample	0.17	387	0.54***	2,610	1.31***	612
1995 – 2006	0.03	298	0.59***	2,255	1.37***	523
2007 – 2008	0.62	89	0.26	355	0.95	89

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Table 5: Payout growth and future performance

OLS regressions of future stock returns and future operating performance on dividend growth (Panels A) or total payout growth (Panel B) using yearly data. The dependent variable in columns 1 and 2 (columns 3 and 4) is the stock return (ROA) in period *t+1*. Independent variables include dividend growth in year *t*, period dummies, and the control variables from Table 2. Control variables are defined in Table A.1. Control variables are lagged one period with respect to dividend growth, i.e. are measured in year *t-1*. Models are estimated with a constant, which is not reported in the table. The regressions are estimated for the period 1996-2008 with respect to dividend changes, and for 2000-2008 with respect to total payouts. *Year 2007* and *Year 2008* are dummy variables indicating that the dividend growth is measured in 2007 and 2008, respectively. Underneath each coefficient, we show t-statistics that are based on heteroskedasticity-robust standard errors, clustered at the bank level. *, **, and *** indicate that the coefficient is statistically significant at the 10%, 5%, and 1% level.

Panel A: Dividend growth

	Future Returns		Future ROA	
	(1)	(2)	(3)	(4)
Dividend growth	0.06**	0.06***	0.22***	0.09***
	(2.51)	(3.27)	(6.32)	(3.31)
Dividend growth × Year2007	-0.08	-0.07	-0.11	-0.15
	(-1.57)	(-1.27)	(-0.76)	(-1.14)
Dividend growth × Year2008	0.12*	0.09	1.18***	0.97***
	(1.83)	(1.41)	(5.27)	(4.90)
Year2007	-0.30***	-0.28***	-0.65***	-0.60***
	(-20.68)	(-18.57)	(-16.01)	(-15.54)
Year2008	-0.23***	-0.25***	-0.97***	-0.83***
	(-11.24)	(-12.29)	(-20.21)	(-18.26)
Controls		Yes		Yes
Observations	3,964	3,964	3,962	3,962
Adjusted R^2	13%	20%	32%	48%

Panel B: Total payout growth

	Future Returns		Future ROA	
	(1)	(2)	(3)	(4)
Total payout growth	0.01	0.02*	0.06***	0.01
	(1.19)	(1.66)	(2.92)	(0.86)
Total payout growth × Year2007	-0.02	-0.02	-0.12	-0.14**
	(-0.89)	(-0.88)	(-1.58)	(-2.04)
Total payout growth × Year2008	-0.01	-0.04	0.30**	0.27***
	(-0.25)	(-1.18)	(2.57)	(2.60)
Year2007	-0.32***	-0.30***	-0.67***	-0.63***
	(-19.25)	(-17.97)	(-14.93)	(-14.87)
Year2008	-0.25***	-0.25***	-1.04***	-0.88***
	(-14.50)	(-14.48)	(-18.65)	(-16.96)
Controls		Yes		Yes
Observations	2,770	2,770	2,769	2,769
Adjusted R^2	17%	22%	30%	47%

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Table 6: Multinomial logit regression of dividend changes

This table shows marginal effects from a multinomial logit model of dividend changes. The three choices are dividend decrease, no change, and dividend increase. Dividend changes are measured yearly in each of 2007 and 2008, using dividends per share. The marginal effects are evaluated at the means of the independent variables, which are described in Table A.1. Bank characteristics are measured at the end of the fiscal year before the dividend change. Panel B adds measures of institutional ownership, managerial ownership, or insider trading to the regressions. The regressions of Panel B also include the independent variables from Panel A. The coefficients of these control variables are not reported for brevity. Standard errors are clustered by bank. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Panel A: Multinomial logit regressions of dividend changes, 2007-2008

	Multinomial Logit		
	Decrease	No change	Increase
	(1)	(2)	(3)
Size	-0.02	-0.00	0.02
	(-1.18)	(-0.12)	(0.65)
$Size^2$	0.00	0.00	-0.01
	(1.53)	(0.80)	(-1.47)
Market to book ratio	0.04*	-0.04	-0.00
	(1.66)	(-0.79)	(-0.06)
ROA	-0.14***	-0.09*	0.23***
	(-3.88)	(-1.79)	(3.52)
Leverage	0.02***	0.01	-0.02**
	(3.10)	(1.09)	(-2.32)
Risk-weighted capital ratio	0.00	0.00	-0.01
	(0.93)	(0.41)	(-0.86)
Short-term to total liabilities	-0.53**	0.32	0.21
	(-2.00)	(0.97)	(0.51)
Earnings volatility	0.05**	-0.02	-0.03
	(2.43)	(-0.55)	(-0.71)
Approved to total mortgages	0.04	-0.22	0.18
	(0.43)	(-1.53)	(1.06)
TARP recipient	0.07**	-0.03	-0.05
	(2.28)	(-0.65)	(-0.92)
Distance to default 2006	0.02	-0.05**	0.03
	(1.07)	(-2.00)	(1.16)
Interest to noninterest income	0.00	0.01***	-0.01**
	(0.85)	(2.62)	(-2.35)
Institutional ownership	-0.09	0.10	-0.01
	(-1.00)	(0.77)	(-0.10)
Number of analysts	0.01***	-0.01	0.00
	(2.81)	(-1.24)	(0.26)
Observations	774	774	774
Sample period		2007-2008	

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Table 6 – continued

Panel B: Ownership structure, insider trading, and dividend changes in 2007-2008

	Multinomial Logit								
	Decrease	No change	Increase	Decrease	No change	Increase	Decrease	No change	Increase
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Dedicated ownership	-0.93**	-0.49	1.42**						
	(-2.39)	(-1.14)	(2.40)						
Quasi-indexer ownership				0.09	0.98**	-1.06**			
				(0.32)	(2.33)	(-2.11)			
Transient ownership							0.57	-1.33*	0.76
							(1.43)	(-1.84)	(0.94)
Controls from Table 6 Panel A	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	535	535	535	535	535	535	535	535	535
Sample period					2007 - 2008				

	Multinomial Logit								
	Decrease	No change	Increase	Decrease	No change	Increase	Decrease	No change	Increase
	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
Number of >5% institutional blocks	0.01	-0.00	-0.01						
	(0.60)	(-0.06)	(-0.31)						
Managerial ownership				1.16	6.15	-7.31			
				(0.11)	(0.41)	(-0.40)			
Insider net buying							0.05***	0.07**	-0.12***
							(2.86)	(2.48)	(-3.66)
Controls from Table 6 Panel A	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	557	557	557	600	600	600	557	557	557
Sample period					2007 - 2008				

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Table 7: Cross-sectional variation in abnormal payout measures in 2006 and in 2007-2008

This table reports regressions of abnormal dividend measures on bank fundamentals. All variables are defined in Table A.1. The dependent variable is abnormal dividend per share in column 1, abnormal dividend yield in column 2, abnormal total payout (dividends + repurchases) per share in column 3, and abnormal total payout yield in column 4. Independent variables are lagged by one year. In Panel A, abnormal payout measures are calculated as the difference between the actual payout of a bank in 2006 and the out-of-sample prediction from the models in Table 2, based on the coefficients estimated for 1995-2005 for dividends and 2000-2005 for total payout. In Panel B, abnormal payout measures are calculated as the difference between the actual payout of a bank during 2007-2008 and the out-of-sample prediction from the models in Table 2, based on the coefficients estimated for 1995-2006 for dividends and 2000-2006 for total payout. Underneath each coefficient we show t-statistics that are based on heteroskedasticity-robust standard errors, clustered at the bank level. *, **, and *** indicate that the coefficient is statistically significant at the 10%, 5%, and 1% level.

Panel A: Cross-sectional variation in abnormal payouts 2006

	Dividend per share	Dividend yield	Total payout per share	Total payout yield
	(1)	(2)	(3)	(4)
Short-term to total liabilities	-1.81	-0.02	-2.68	-0.15
	(-1.25)	(-0.03)	(-1.54)	(-0.11)
Earnings volatility	-0.06	-0.04	-0.07	-0.04
	(-1.54)	(-0.47)	(-1.11)	(-0.16)
Approved to total mortgages	-0.39*	-0.19	-0.47*	-1.39
	(-1.86)	(-0.93)	(-1.70)	(-0.95)
TARP recipient	0.06	0.07	-0.03	-0.13
	(1.28)	(1.08)	(-0.38)	(-0.68)
Distance to default 2006	0.07**	0.01	0.13***	0.16
	(2.28)	(0.44)	(3.41)	(1.29)
Interest to noninterest income	0.00	0.00	-0.00	0.01
	(0.77)	(0.43)	(-0.92)	(0.63)
Institutional ownership	-0.06	-0.65***	-0.38	-1.23*
	(-0.37)	(-3.03)	(-1.54)	(-1.95)
Analyst coverage	0.00	0.02**	0.01	0.02
	(0.40)	(2.32)	(1.00)	(1.10)
Constant	0.07	0.13	0.03	0.47
	(0.41)	(0.57)	(0.09)	(0.48)
Observations	411	411	359	359
R-squared	0.07	0.02	0.08	0.03
Sample period		2006		

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Table 7 – continued

Panel B: Cross-sectional variation in abnormal payouts 2007-2008				
	Dividend per share	Dividend yield	Total payout per share	Total payout yield
	(1)	(2)	(3)	(4)
Short-term to total liabilities	-0.85	-0.13	-2.51	-1.34
	(-0.68)	(-0.12)	(-1.45)	(-0.63)
Earnings volatility	-0.16*	-0.20*	-0.29**	-0.30
	(-1.71)	(-1.80)	(-2.34)	(-1.36)
Approved to total mortgages	-0.38*	-1.66**	0.51	0.61
	(-1.67)	(-2.50)	(1.62)	(0.66)
TARP recipient	0.02	0.33***	-0.04	0.37
	(0.41)	(2.82)	(-0.42)	(0.93)
Distance to default 2006	0.05	0.05	0.15*	-0.05
	(1.13)	(0.68)	(1.67)	(-0.30)
Interest to noninterest income	-0.002	-0.01**	0.01	0.005
	(-1.04)	(-2.15)	(1.21)	(0.27)
Institutional ownership	-0.15	-0.78**	-0.16	0.55
	(-0.99)	(-2.52)	(-0.52)	(0.47)
Number of analysts	0.003	0.03*	0.01	-0.01
	(0.47)	(1.85)	(0.72)	(-0.26)
Constant	0.57**	1.97***	-0.40	2.96***
	(2.10)	(3.21)	(-0.78)	(2.81)
Observations	784	784	673	673
R-squared	0.05	0.07	0.07	0.01
Sample period		2007-2008		

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Table 8: Institutional ownership, bank-specific policies, and abnormal payouts

This table reports regressions of abnormal dividend measures on bank fundamentals. All variables are defined in Table A.1. The dependent variable is abnormal dividend per share in column 1, abnormal dividend yield in column 2, abnormal total payout (dividends + repurchases) per share in column 3, and abnormal total payout yield in column 4. Independent variables are lagged by one year. Panel A (B) shows regressions of abnormal dividend per share (dividend yield) on measures of institutional and managerial ownership and insider trading. Both Panels A and B include the independent variables from Table 7 Panel B. The coefficients of these control variables are not reported for brevity. Panel C repeats the analysis from Table 7 Panel B adding abnormal dividends in 1998 to the regressions. Underneath each coefficient we show t-statistics that are based on heteroskedasticity-robust standard errors, clustered at the bank level. *, **, and *** indicate that the coefficient is statistically significant at the 10%, 5%, and 1% level.

Panel A: Abnormal dividend per share, ownership, and insider trading

	Dividend per share					
	(1)	(2)	(3)	(4)	(5)	(6)
Dedicated ownership	0.17					
	(0.33)					
Quasi-indexer ownership		-0.11				
		(-0.59)				
Transient ownership			-0.72			
			(-0.98)			
Number of >5% institutional blocks				-0.02		
				(-0.56)		
Managerial ownership					-15.80	
					(-1.10)	
Insider net buying						0.02
						(0.70)
Controls from Table 7 Panel B	Yes	Yes	Yes	Yes	Yes	Yes
Observations	493	493	493	511	559	502
R-squared	0.03	0.03	0.03	0.05	0.04	0.05
Sample period			2007-2008			

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Table 8 – continued

Panel B: Abnormal dividend yield ownership, and insider trading						
	Dividend per share					
	(1)	(2)	(3)	(4)	(5)	(6)
Dedicated ownership	-1.67					
	(-1.25)					
Quasi-indexer ownership		-1.30***				
		(-2.98)				
Transient ownership			-3.72**			
			(-2.24)			
Number of >5% institutional blocks				-0.14**		
				(-2.40)		
Managerial ownership					-46.99	
					(-1.07)	
Insider net buying						0.10
						(1.18)
Controls from Table 7 Panel B	Yes	Yes	Yes	Yes	Yes	Yes
Observations	493	493	493	511	559	502
R-squared	0.06	0.07	0.06	0.07	0.05	0.05
Sample period			2007-2008			

Panel C: Abnormal dividends in 1998 and in 2007-2008				
	Dividend per share		Dividend yield	
	(1)	(2)	(3)	(4)
Abnormal dividends in 1998	-0.07	-0.31	-0.73***	-0.66***
	(-0.098)	(-0.669)	(-3.862)	(-3.077)
Controls from Table 7 Panel B		Yes		Yes
Observations	365	302	365	302
R-squared	0.00	0.29	0.10	0.22
Sample period		2007-2008		

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Table 9: Dividend growth and future performance for banks with high vs. low regulatory capital and other characteristics

This table presents OLS regressions of future stock returns and future operating performance on dividend growth. Panel A reports coefficient estimates. Underneath the coefficients, we show t-statistics that are based on heteroskedasticity-robust standard errors, clustered at the bank level. The dependent variable in columns 1, 2, 5, and 6 (columns 3, 4, 7, and 8) is the stock return (ROA) in period *t+1*. Columns 1-4 (5-8) report estimates for banks with below-median (above-median) regulatory capital as measured by the Tier 1 ratio. Independent variables include dividend growth in year (quarter) *t*, period dummies, and the control variables from Table 2. Control variables are defined in Table A.1. Control variables are lagged one period with respect to dividend growth, i.e. are measured in year *t-1*. Models are estimated with a constant, which is not reported in the table. The regressions are estimated for the period 1996-2008. *Year 2007* and *Year 2008* are dummy variables indicating that the dividend growth is measured in 2007 and 2008, respectively. Panel B reports Chi-squared tests whose null hypothesis is that the interaction term Dividend growth × Year2007 (or Dividend growth × Year2008, as indicated) is equal between the low and high regulatory capital subsample. The dependent variable and regression specification are indicated in the column heading. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level.

Panel A: Regressions of future performance on dividend growth separately for banks with high vs low regulatory capital

	Future Returns		Future ROA		Future Returns		Future ROA	
Regulatory capital	Low				High			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dividend growth	0.08*	0.08**	0.17***	0.05	0.04	0.05**	0.26***	0.13***
	(1.88)	(2.33)	(3.47)	(1.01)	(1.61)	(2.26)	(4.78)	(4.18)
Dividend growth × Year2007	-0.09	-0.06	-0.08	-0.26	-0.06	-0.07	-0.12	-0.08
	(-1.09)	(-0.51)	(-0.32)	(-1.28)	(-0.91)	(-1.16)	(-0.69)	(-0.49)
Dividend growth × Year2008	0.16	0.14	1.45***	1.21***	0.05	0.00	0.77**	0.60**
	(1.61)	(1.52)	(4.65)	(4.09)	(0.64)	(0.04)	(2.52)	(2.46)
Year2007	-0.36***	-0.34***	-0.75***	-0.74***	-0.25***	-0.22***	-0.54***	-0.43***
	(-15.59)	(-13.69)	(-12.53)	(-14.02)	(-12.15)	(-10.57)	(-9.51)	(-7.87)
Year2008	-0.26***	-0.29***	-1.17***	-1.05***	-0.19***	-0.19***	-0.75***	-0.55***
	(-7.67)	(-8.66)	(-16.40)	(-15.85)	(-8.84)	(-9.06)	(-12.18)	(-10.20)
Controls		Yes		Yes		Yes		Yes
Observations	2,087	2,087	2,086	2,086	1,877	1,877	1,876	1,876
Adjusted R-squared	0.15	0.21	0.37	0.50	0.11	0.19	0.26	0.48

Panel B: Chi-squared tests for differences in the regression coefficients

Dependent variable	Future returns	Future returns	Future ROA	Future ROA
Controls		Yes		Yes
2007	0.12	0.01	0.01	0.52
2008	0.61	1.29	2.36	2.50

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Table 10: Dividend growth and future performance for banks across various subsamples

This table presents OLS regressions of future stock returns and future operating performance on dividend growth across subsamples of a variety of bank characteristics. Underneath the coefficients, we show t-statistics that are based on heteroskedasticity-robust standard errors, clustered at the bank level. The dependent variable in columns 1 and 3 (columns 2 and 4) is the stock return (ROA) in period *t+1*. Independent variables include dividend growth in year (quarter) *t*, period dummies, and the control variables from Table 2. Control variables are defined in Table A.1. Control variables are lagged one period with respect to dividend growth, i.e. are measured in year *t-1*. Models are estimated with a constant, which is not reported in the table. We split banks into subsamples using the bank characteristic indicated in the panel title. Columns 1-2 (3-4) report estimates for banks with below-median (above-median) values of the bank characteristic. The regressions are estimated for the period 1996-2008. *Year 2007* and *Year 2008* are dummy variables indicating that the dividend growth is measured in 2007 and 2008, respectively. Columns 5 and 6 report Chi-squared tests whose null hypothesis is that the interaction term Dividend growth × Year2007 (or Dividend growth × Year2008, as indicated) is equal between the low and high bank characteristic subsample. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level.

Split group	Low		High		Chi-Squared	
	Return	ROA	Return	ROA	Return	ROA
Controls	Yes	Yes	Yes	Yes		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Short-term to total liabilities						
Dividend growth × Year2007	-0.11	0.04	-0.05	-0.38**	0.3	2.7
	(-1.62)	(0.25)	(-0.53)	(-2.00)		
Dividend growth × Year2008	0.15**	1.09***	-0.02	0.78**	2.01	0.51
	(2.05)	(5.20)	(-0.22)	(2.05)		
Panel B: Leverage						
Dividend growth × Year2007	-0.11	-0.08	-0.09	-0.15	0.03	0.06
	(-1.35)	(-0.41)	(-1.14)	(-0.86)		
Dividend growth × Year2008	-0.06	0.72***	0.15*	1.08***	3.6*	0.9
	(-0.80)	(2.69)	(1.81)	(3.83)		
Panel C: Institutional ownership						
Dividend growth × Year2007	-0.09	0.01	-0.03	-0.52*	0.18	3.1*
	(-1.45)	(0.08)	(-0.19)	(-1.92)		
Dividend growth × Year2008	-0.02	0.42**	0.22**	1.51***	3.57*	6.93***
	(-0.22)	(2.17)	(2.10)	(4.10)		
Panel D: Dedicated institutional ownership						
Dividend growth × Year2007	0.00	-0.06	-0.18	-0.95**	0.60	3.5*
	(0.01)	(-0.30)	(-0.94)	(-2.18)		
Dividend growth × Year2008	0.21*	0.66**	0.19	2.16***	0.01	5.43**
	(1.86)	(2.06)	(1.19)	(3.83)		

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Table 10 – continued

Panel E: Transient institutional ownership						
Dividend growth × Year2007	-0.01	-0.21	-0.15	-0.70	0.40	1
	(-0.10)	(-1.06)	(-0.86)	(-1.57)		
Dividend growth × Year2008	0.14	0.24	0.27	2.56***	0.39	13.83***
	(1.24)	(0.87)	(1.64)	(4.53)		
Panel F: Number of >5% institutional blocks						
Dividend growth × Year2007	-0.03	-0.24*	-0.22	-0.78	1.26	1.25
	(-0.28)	(-1.90)	(-1.64)	(-1.65)		
Dividend growth × Year2008	0.13	0.75**	0.16	1.70***	0.03	2.78*
	(1.48)	(2.34)	(1.21)	(3.53)		
Panel G: Managerial ownership						
Dividend growth × Year2007	0.10	-0.32	-0.07	-0.18	0.96	0.1
	(0.94)	(-0.96)	(-0.52)	(-0.52)		
Dividend growth × Year2008	0.57***	2.02***	-0.04	1.21**	10.68***	1.39
	(4.64)	(3.97)	(-0.25)	(2.57)		
Panel H: NPR count						
Dividend growth × Year2007	-0.14	-0.73	0.00	-0.47*	1.63	1.22
	(-0.66)	(-1.62)	(0.03)	(-1.77)		
Dividend growth × Year2008	0.14	1.22***	0.25	1.89***	0.08	0.21
	(1.13)	(3.32)	(1.48)	(3.41)		

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Table 11: Dividend growth and future performance for banks with medium regulatory capital split by selected characteristics

This table presents OLS regressions of future stock returns and future operating performance on dividend growth in the subsample of banks in the second and third quartile of regulatory capital as measured by the Tier 1 ratio. Underneath the coefficients, we show t-statistics that are based on heteroskedasticity-robust standard errors, clustered at the bank level. The dependent variable in columns 1 and 3 (columns 2 and 4) is the stock return (ROA) in period *t+1*. Independent variables include dividend growth in year (quarter) *t*, period dummies, and the control variables from Table 2. Control variables are defined in Table A.1. Control variables are lagged one period with respect to dividend growth, i.e. are measured in year *t-1*. Models are estimated with a constant, which is not reported in the table. We further split banks into subsamples using the bank characteristic indicated in the panel title. Columns 1-2 (3-4) report estimates for banks with below-median (above-median) values of the bank characteristic. The regressions are estimated for the period 1996-2008. *Year 2007* and *Year 2008* are dummy variables indicating that the dividend growth is measured in 2007 and 2008, respectively. Columns 5 and 6 report Chi-squared tests whose null hypothesis is that the interaction term Dividend growth × Year2007 (or Dividend growth × Year2008, as indicated) is equal between the low and high bank characteristic subsample. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level.

Split group	Low		High		Chi-Squared	
	Return	ROA	Return	ROA	Return	ROA
Controls	Yes	Yes	Yes	Yes		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Short-term to total liabilities						
Dividend growth × Year2007	-0.22**	0.01	0.00	-0.42*	2.74*	1.29
	(-2.48)	(0.05)	(0.01)	(-1.86)		
Dividend growth × Year2008	0.27**	1.01***	-0.09	0.82*	4.08**	0.12
	(2.37)	(3.23)	(-0.64)	(1.73)		
Panel B: Leverage						
Dividend growth × Year2007	-0.08	-0.07	-0.20**	-0.35	0.73	0.6
	(-0.72)	(-0.32)	(-2.12)	(-1.16)		
Dividend growth × Year2008	0.01	0.61*	0.06	1.11***	0.09	0.96
	(0.01)	(1.85)	(0.38)	(2.78)		
Panel C: Institutional ownership						
Dividend growth × Year2007	-0.16**	-0.21	0.06	-0.32	1.41	0.07
	(-2.22)	(-1.16)	(0.35)	(-0.83)		
Dividend growth × Year2008	0.02	0.50	0.18	1.32***	0.82	2.44
	(0.16)	(1.37)	(1.26)	(3.40)		
Panel D: Dedicated institutional ownership						
Dividend growth × Year2007	-0.09	0.14	0.04	-0.80	0.25	1.87
	(-0.84)	(0.42)	(0.18)	(-1.30)		
Dividend growth × Year2008	0.33**	0.70***	0.05	2.02***	1.00	2.95*
	(2.24)	(2.69)	(0.22)	(2.75)		

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Table 11 – continued

Panel E: Transient institutional ownership						
Dividend growth × Year2007	-0.02	-0.08	-0.02	-0.67	0.03	0.72
	(-0.09)	(-0.26)	(-0.09)	(-1.05)		
Dividend growth × Year2008	0.15	0.49*	0.22	2.24***	0.07	5.77**
	(0.86)	(1.76)	(0.97)	(3.28)		
Panel F: Number of >5% institutional blocks						
Dividend growth × Year2007	-0.03	-0.19*	-0.03	-0.63	0.01	0.21
	(-0.23)	(-1.66)	(-0.12)	(-0.65)		
Dividend growth × Year2008	0.11	0.86***	0.20	1.28**	0.14	0.52
	(0.71)	(2.75)	(1.20)	(2.54)		
Panel G: Managerial ownership						
Dividend growth × Year2007	0.04	0.14	-0.05	-0.39	0.09	0.74
	(0.17)	(0.32)	(-0.24)	(-0.85)		
Dividend growth × Year2008	0.76***	2.15***	-0.26	0.84	18.09***	3.09*
	(5.07)	(3.94)	(-1.34)	(1.56)		
Panel H: NPR count						
Dividend growth × Year2007	0.08	-0.35	-0.26**	-0.97***	1.63	1.22
	(0.33)	(-0.75)	(-2.15)	(-2.87)		
Dividend growth × Year2008	0.08	1.30***	0.16	1.62***	0.08	0.21
	(0.45)	(3.02)	(0.64)	(2.90)		

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Appendix

Table A.1: Variable definitions
This table defines the variables in our analyses and indicates their data source.

Variable	Definition	Source
Dividend per share	Cash dividends paid per common share	SNL Financial
Dividend yield	Dividend per share divided by the share price at the end of the period (year or quarter)	SNL Financial
Dividend growth	Percentage change of dividends from one period (year or quarter) to the next	SNL Financial
Total payout per share	Sum of dividends paid to common shares and repurchases divided by the number of common shares outstanding	SNL Financial
Total payout yield	Total payout per share divided by the share price at the end of the period (year or quarter)	SNL Financial
Total assets	Value of total assets	SNL Financial
Size	Natural logarithm of total assets	SNL Financial
Market to book ratio	Market capitalization of equity relative to book value of equity	SNL Financial
Return on assets (ROA)	Net income divided by total assets	SNL Financial
Earnings volatility	Standard deviation of quarterly ROA over the past 8 quarters (or past 4 quarters if data on the past 8 quarters is unavailable)	SNL Financial
Leverage	(Book assets – book equity + market capitalization) / (market capitalization)	SNL Financial
Total asset growth	Percentage change in the book value of total assets from one period (year or quarter) to the next	SNL Financial
Institutional ownership	Total ownership stake of all institutions	SNL Financial and Thomson Reuters
Dedicated ownership	Total ownership of dedicated institutional investors according to the Bushee (1998) classification	Brian Bushee's website and Thomson Reuters
Quasi-indexer ownership	Total ownership of quasi-indexer institutional investors according to the Bushee (1998) classification	Brian Bushee's website and Thomson Reuters
Transient ownership	Total ownership of transient institutional investors according to the Bushee (1998) classification	Brian Bushee's website and Thomson Reuters
Number of >5% institutional blocks	The number of institutional blockholders with an equity stake of over 5%	Thomson Reuters
Retained earnings to total equity	Retained earnings divided by total book value of equity	SNL Financial
Risk-weighted capital ratio	Regulatory Tier 1 capital divided by risk-weighted assets	SNL Financial

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Table A.1 – continued

Short-term to total liabilities	(Short-term borrowings + repurchase agreements)/(total liabilities)	SNL Financial
Interest to noninterest income	Ratio of interest income to noninterest income	SNL Financial
Stock return	Yearly return adjusted for dividends and stock splits	CRSP
Insider net buying (NPR count)	Net purchase ratio calculated based on the number of trades placed by insiders of the bank in a given year as (number of purchases - number of sales)/(number of purchases + number of sales), de-meaned using the average up to and including 2006,	Thomson Reuters
Approved to total mortgages	Total value of mortgages approved during 2004-2006 divided by the total value of loan applications during the same period.	HMDA Database
Number of analysts	The number of analysts covering the bank's stock	I/B/E/S
Managerial ownership	Number of shares owned by managers divided by the total number of shares outstanding	SNL Financial
Distance to default 2006	The natural logarithm of mean(ROA+ CAR)/volatility(ROA)) where CAR is the capital-to-asset ratio and ROA is the return on assets, and the mean and volatility are both measured for the period 1996-2006	SNL Financial
Crisis return 1998	The bank's stock return from August 3, 1998 (the first trading day in August 1998) until the day in 1998 on which the bank's stock attains its lowest price. If the lowest price occurs more than once, the return is calculated using the first date on which it occurs.	CRSP

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Internet Appendix to
"Understanding Bank Payouts During the Crisis of 2007-2009"

This Appendix provides additional analyses and results for our paper "Understanding Bank Payouts During the Crisis of 2007-2009". The discussion can be found in the paper; the tables and figures are referred to as A.#, where # is the table or figure number in the Internet Appendix.

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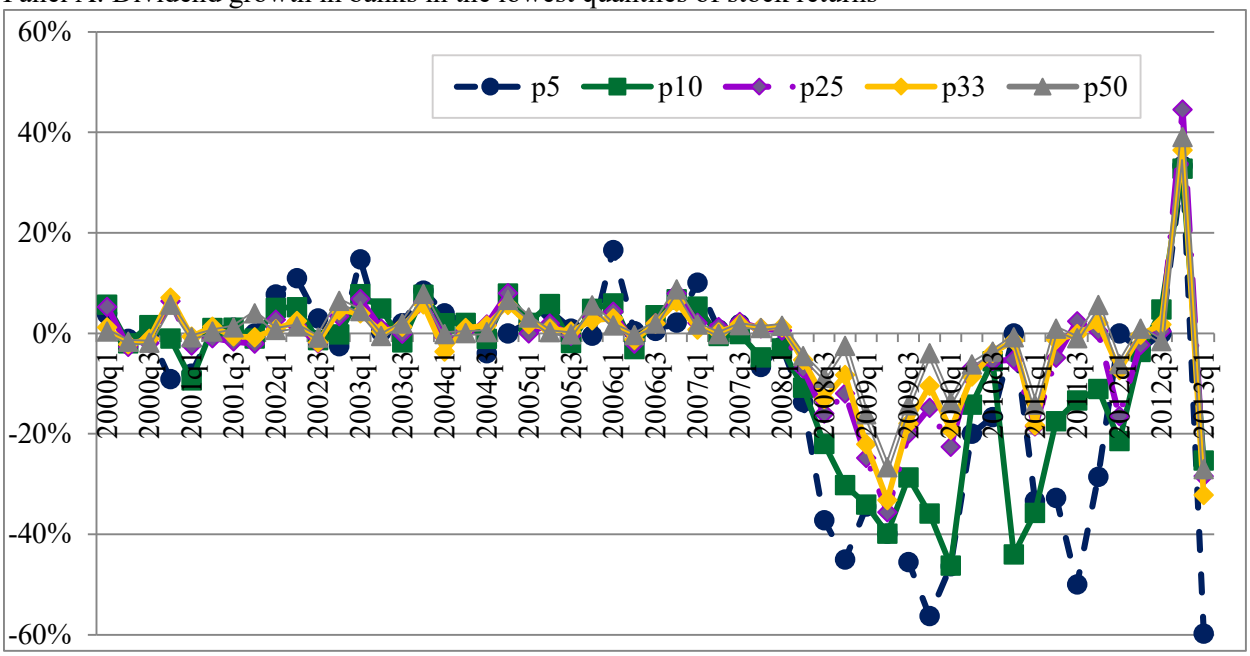
Figure A.1: Figure 3 of the paper using lagged returns and quarterly data

The graphs show the quarter-on-quarter percentage growth in dividends per share of banks in the lowest 5%, 10%, 25%, 33%, and 50% of the performance distribution. In Panel A, bank performance is measured by stock returns in the previous quarter. In Panel B, bank performance is measured by net income over total assets (ROA) in the previous quarter. The analysis spans 2000Q1 – 2013Q1.

Panel A: Dividend growth in banks in the lowest quantiles of stock returns



Panel B: Dividend growth in banks in the lowest quantiles of net income over total assets (ROA)

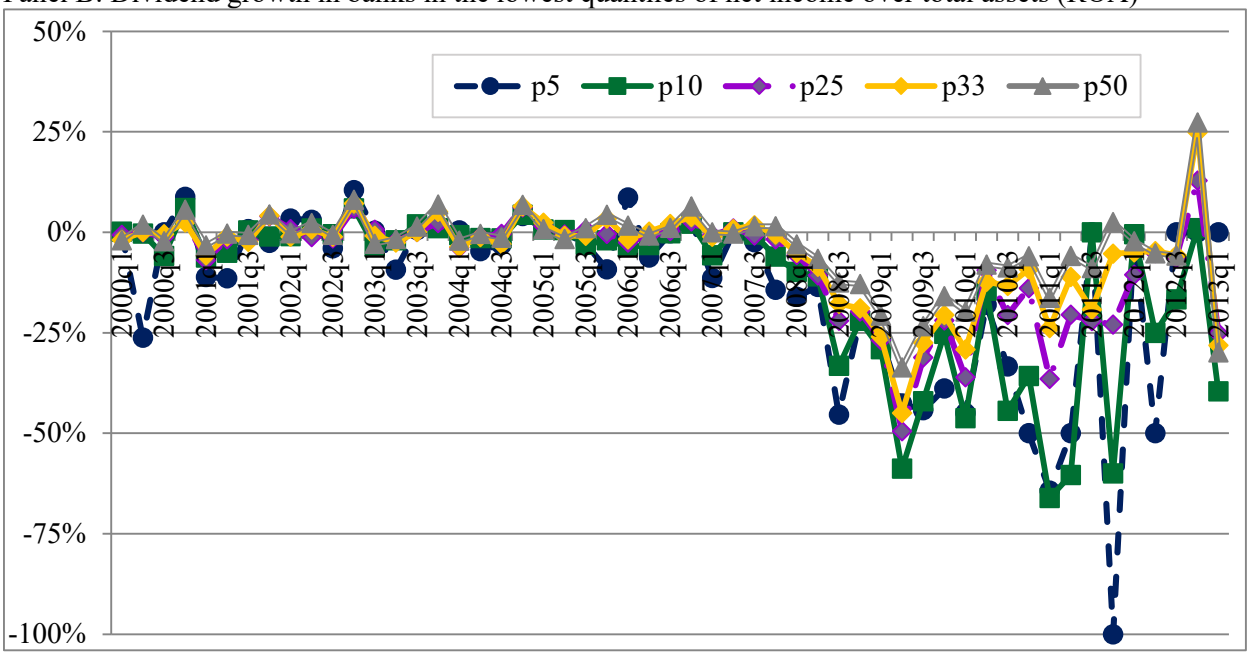


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Figure A.2: The distribution of bank capital ratios in 2006
This figure shows a histogram and a kernel density estimate of the distribution of Tier one capital ratio within our sample of banks at the end of the 2006 fiscal year. Information on Tier one capital ratio is from SNL Financial and is winsorized at the 1% level.

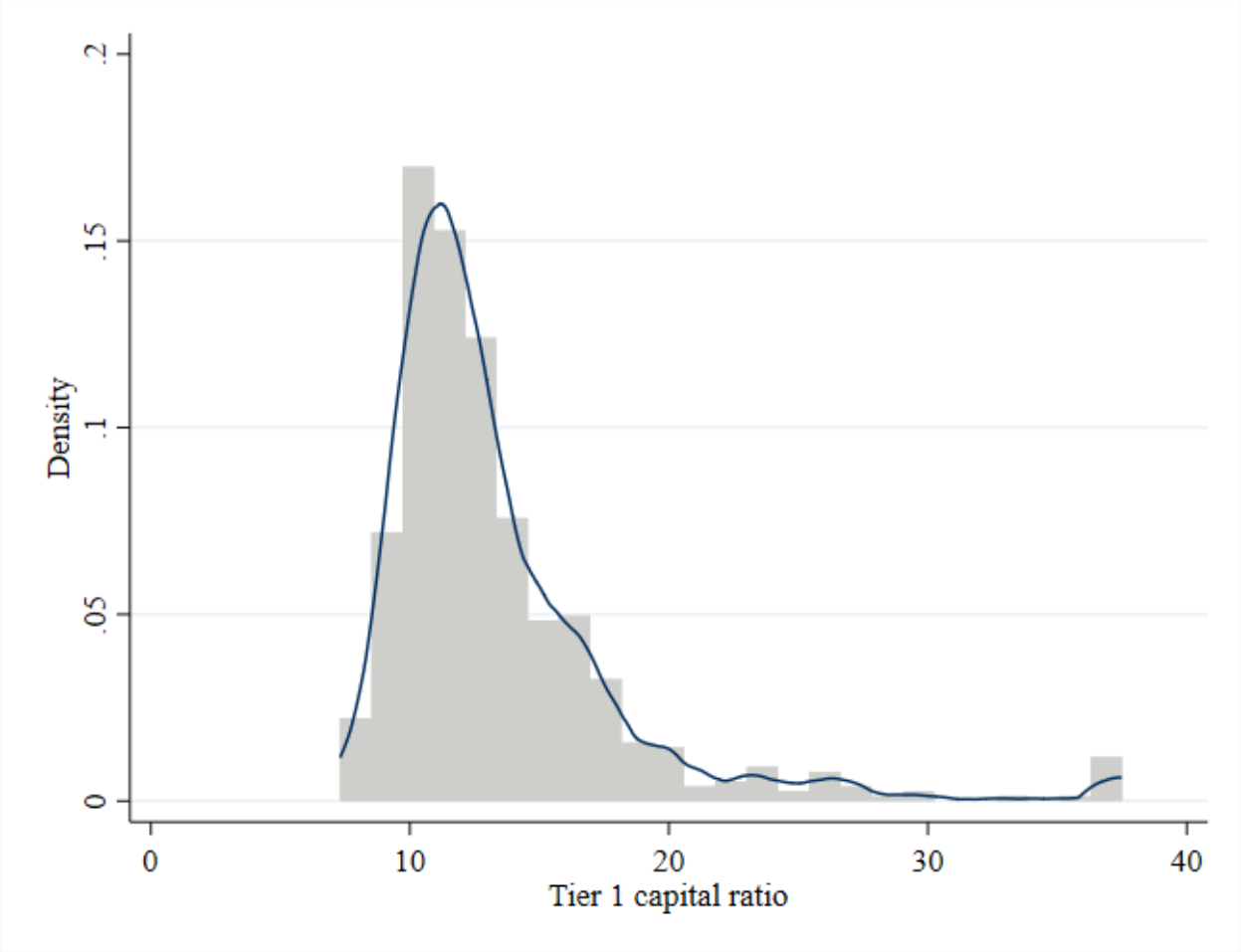

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Table A.2: Bank equity issuance

This table shows the share of banks that issue common stock and preferred stock in each year from 1999-2012. We classify preferred stock issuance as related or unrelated to TARP in the years 2008 and 2009.

Year	Common stock	Preferred, not TARP	Preferred, TARP
1999	0.01	0.00	
2000	0.04	0.01	
2001	0.04	0.00	
2002	0.06	0.01	
2003	0.05	0.01	
2004	0.05	0.00	
2005	0.06	0.00	
2006	0.05	0.01	
2007	0.03	0.01	
2008	0.05	0.04	0.26
2009	0.15	0.04	0.14
2010	0.15	0.04	
2011	0.09	0.03	
2012	0.07	0.09	

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Table A.3: What determines the level of payouts? Quarterly regressions

Quarterly fixed-effects panel regressions of dividends and total payout on firm fundamentals. The sample consists of listed bank holding companies that are quarterly dividend payers. Independent variables are defined in Table 1. All regressions contain calendar quarter dummies. The dependent variable is dividend per share in column 1, dividend yield in column 2, total payout (dividends + repurchases) per share in column 3, and total payout yield in column 4. Independent variables, with the exception of ROA and total asset growth, are lagged by one quarter. Underneath each coefficient, we show t-statistics that are based on heteroskedasticity-robust standard errors, clustered at the bank level. *, **, and *** indicate that the coefficient is statistically significant at the 10%, 5%, and 1% level.

	Dividend per share	Dividend yield	Total payout per share	Total payout yield
Sample period	1995-2006	1995-2006	2000-2006	2000-2006
Size	0.04*	-0.04	0.09	0.05
	(1.95)	(-0.42)	(1.23)	(0.27)
$Size^2$	0.01***	0.03*	0.04**	0.08**
	(3.04)	(1.86)	(2.17)	(2.36)
Market to book ratio	0.01**		0.01	
	(2.34)		(0.66)	
ROA	0.01	-0.01	0.01	-0.002
	(1.60)	(-0.15)	(0.96)	(-0.03)
Leverage	-0.001	0.10***	-0.01*	0.10***
	(-0.67)	(5.18)	(-1.75)	(3.80)
Retained earnings to total equity	0.02	0.01	0.11	0.61**
	(0.86)	(0.08)	(1.44)	(2.53)
Total asset growth (% quarter-on-quarter)	0.004	-0.10	-0.06	-0.04
	(0.35)	(-0.90)	(-1.27)	(-0.26)
Risk-weighted capital ratio	0.001	0.02**	0.01***	0.07***
	(1.20)	(2.24)	(2.65)	(4.70)
Observations	10,690	10,690	7,239	7,239
R^2	0.87	0.81	0.75	0.75
Bank FE	Yes	Yes	Yes	Yes
Quarter FE	Yes	Yes	Yes	Yes

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Table A.4: Quarterly analysis of abnormal payouts predicted out of sample for the crisis

The table repeats the analysis of abnormal dividends in Table 3 using quarterly data. The table reports the average out-of-sample residuals based on the regressions for quarterly data shown Table A.3 of the Internet Appendix. We obtain out-of-sample estimates by comparing the actual payout of a bank during 2007 and 2008 to the out-of-sample prediction from the models in Table A.3, based on the coefficients estimated for 1995-2006 for dividends and 2000-2006 for total payout. Panel A reports estimates for dividend per share, Panel B for dividend yield, Panel C for total payout per share, and Panel D for total payout yield. T-tests are shown below the point estimates in parentheses. *% of one standard deviation* is the average residual divided by the standard deviation of the corresponding variable multiplied by 100. *, **, and *** indicate that the estimate is significantly different from 0 at the 10%, 5%, and 1% level.

				Panel A: Dividend per share				
Period	2007q1	2007q2	2007q3	2007q4	2008q1	2008q2	2008q3	2008q4
Average Residual	0.02***	0.01***	0.02***	0.04***	0.03***	0.02***	0.01	0.01
T-test	(2.87)	(2.71)	(3.37)	(4.48)	(3.97)	(3.78)	(1.38)	(0.78)
% of one std. dev.	8.17%	6.25%	8.38%	14.80%	11.70%	9.33%	4.20%	2.87%
Observations	325	311	314	318	314	317	325	327

				Pabel B: Dividend yield				
Period	2007q1	2007q2	2007q3	2007q4	2008q1	2008q2	2008q3	2008q4
Average Residual	0.18***	0.28***	0.39***	0.74***	0.58***	1.12***	0.23**	0.68***
T-test	(4.39)	(6.04)	(6.92)	(13.47)	(9.42)	(14.08)	(2.47)	(6.08)
% of one std. dev.	10.70%	17.20%	23.70%	44.40%	34.80%	67.70%	13.70%	41.00%
Observations	325	311	314	318	314	317	325	327

				Panel C: Total payout per share				
Period	2007q1	2007q2	2007q3	2007q4	2008q1	2008q2	2008q3	2008q4
Average Residual	0.04**	0.12***	0.13***	0.11***	0.03*	-0.01	-0.02	-0.04***
T-test	(2.22)	(4.41)	(4.84)	(3.92)	(1.82)	(-0.59)	(-1.42)	(-2.62)
% of one std. dev.	8.71%	26.80%	28.00%	24.20%	5.63%	-1.82%	-4.15%	-9.70%
Observations	279	270	274	267	266	275	276	279

				Panel D: Total payout yield				
Period	2007q1	2007q2	2007q3	2007q4	2008q1	2008q2	2008q3	2008q4
Average Residual	0.38***	0.73***	0.87***	1.26***	0.92***	1.49***	0.35***	0.95***
T-test	(7.24)	(9.45)	(10.39)	(14.00)	(11.28)	(15.46)	(3.50)	(7.39)
% of one std. dev.	20.00%	38.40%	45.70%	66.60%	48.40%	78.90%	18.70%	50.20%
Observations	279	270	274	267	266	275	276	279

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Table A.5: Payout growth and future performance: quarterly analysis

OLS regressions of future stock returns and future operating performance on dividend growth or total payout growth using quarterly data. The dependent variable in columns 1 and 2 (columns 3 and 4) is the stock return (ROA) in period *t+1*. Independent variables include dividend growth in year (quarter) *t*, period dummies, and the control variables from Table 2. Control variables are defined in Table A.1. Control variables are lagged one period with respect to dividend growth, i.e. are measured in year (quarter) *t-1*. Models are estimated with a constant, which is not reported in the table. The regressions are estimated for the period 1996-2008 with respect to dividend changes, and for 2000-2008 with respect to total payouts. *Year 2007* and *Year 2008* are dummy variables indicating that the dividend growth is measured in 2007 and 2008, respectively. Underneath each coefficient, we show t-statistics that are based on heteroskedasticity-robust standard errors, clustered at the bank level. *, **, and *** indicate that the coefficient is statistically significant at the 10%, 5%, and 1% level.

Panel A: Dividend growth - quarterly data

	Future Returns		Future ROA	
	(1)	(2)	(3)	(4)
Dividend growth	0.01	0.01	0.07**	-0.00
	(1.54)	(1.46)	(2.30)	(-0.19)
Dividend growth × Year2007	-0.01	-0.02	0.07	0.0004
	(-1.13)	(-1.39)	(0.98)	(0.01)
Dividend growth × Year2008	0.13***	0.12***	1.46***	0.95***
	(3.76)	(3.41)	(4.74)	(3.68)
Year2007	-0.08***	-0.07***	-0.29***	-0.19***
	(-23.09)	(-21.77)	(-9.98)	(-8.41)
Year2008	-0.09***	-0.09***	-0.84***	-0.52***
	(-13.68)	(-14.80)	(-16.16)	(-13.66)
Controls		Yes		Yes
Observations	11,337	11,337	11,234	11,234
Adjusted R^2	6%	8%	17%	43%

Panel B: Total payout growth - quarterly data

	Future Returns		Future ROA	
	(1)	(2)	(3)	(4)
Total payout growth	-0.001	-0.001	0.004	0.005
	(-0.75)	(-0.76)	(1.05)	(1.63)
Total payout growth × Year2007	0.0003	0.0002	-0.02	-0.02**
	(0.09)	(0.08)	(-1.45)	(-1.97)
Total payout growth × Year2008	0.01	0.01	0.19**	0.09
	(1.01)	(0.82)	(2.30)	(1.50)
Year2007	-0.08***	-0.08***	-0.26***	-0.17***
	(-22.11)	(-21.09)	(-8.29)	(-7.22)
Year2008	-0.10***	-0.10***	-0.91***	-0.55***
	(-13.84)	(-14.28)	(-15.07)	(-13.26)
Controls		Yes		Yes
Observations	8,221	8,221	8,133	8,133
Adjusted R^2	7%	9%	16%	44%

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Table A.6: Payout growth and future performance – year-by-year analysis during the crisis

OLS regressions of future stock returns and future operating performance on payout growth. The dependent variable is indicated in the column heading. Panel A (Panel C) uses the percentage change in dividends (total payout) per share to measure dividend growth. Panel B (Panel D) includes two dummy variables, one for an increase and one for a decrease in dividends (total payout). Columns 1, 3, 5, and 7 examine the relation between dividend (total payout) growth in 2007 and returns (ROA) in 2008. Columns 2, 4, 6, and 8 examine the relation between dividend (total payout) growth in 2008 and returns (ROA) in 2009. We use the same control variables as in Table 2. These control variables are defined in Table 1 and are lagged one year with respect to dividend growth, i.e. are measured in year *t-1*. Models are estimated with a constant, which is not reported. Underneath each coefficient we show t-statistics based on heteroskedasticity-robust standard errors. *, **, and *** indicate that the coefficient is statistically significant at the 10%, 5% and 1% level.

	Future returns		Future ROA		Future Returns		Future ROA	
Payout growth measured in	2007	2008	2007	2008	2007	2008	2007	2008
Controls					Yes	Yes	Yes	Yes
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Continuous measure of dividend growth								
Dividend growth	-0.02	0.17***	0.22	1.63***	-0.01	0.15**	0.20	1.28***
	(-0.48)	(2.87)	(1.15)	(5.57)	(-0.19)	(2.27)	(1.05)	(4.48)
Observations	458	452	458	452	458	452	458	452
Panel B: Dividend increases vs. decreases								
Dividend decrease	0.02	-0.13*	0.02	-0.96***	-0.02	-0.10	-0.31	-0.85***
	(0.25)	(-1.75)	(0.05)	(-4.46)	(-0.41)	(-1.50)	(-1.12)	(-4.18)
Dividend increase	0.05	-0.02	0.20	0.22*	0.03	0.01	0.06	0.08
	(1.62)	(-0.32)	(1.27)	(1.67)	(0.93)	(0.20)	(0.40)	(0.60)
Observations	458	452	458	452	458	452	458	452
Panel C: Continuous measure of total payout growth								
Total payout growth	-0.01	0.01	-0.03	0.40***	-0.02	-0.02	-0.04	0.23*
	(-0.41)	(0.20)	(-0.26)	(2.79)	(-1.01)	(-0.52)	(-0.39)	(1.65)
Observations	388	389	388	389	388	389	388	389
Panel D: Total payout increases vs. decreases								
Total payout decrease	-0.10	0.005	0.002	-0.29	-0.13**	0.03	-0.23	-0.29
	(-1.57)	(0.07)	(0.01)	(-1.30)	(-2.05)	(0.42)	(-0.68)	(-1.19)
Total payout increase	-0.04	0.01	0.21	0.06	-0.10	0.02	-0.02	-0.09
	(-0.59)	(0.20)	(0.63)	(0.26)	(-1.55)	(0.28)	(-0.07)	(-0.37)
Observations	388	389	388	389	388	389	388	389

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Table A.7: Characteristics of banks with different dividend policies in 2008

This table shows average characteristics of banks with different dividend policies in 2008. The three choices are dividend decrease, no change, and dividend increase. Bank characteristics are measured at the end of the fiscal year before the dividend change. Variables ae defined in Table A.1.

	Decrease	No change	Increase
Total assets	8.16	4.72	6.62
Market to book ratio	1.15	1.26	1.72
ROA	0.50	0.76	1.14
Leverage	14.51	11.50	7.79
Earnings volatility	1.08	0.77	0.54
Interest to noninterest income	7.55	8.35	8.06
Managerial ownership	0.0013	0.0014	0.0014
Institutional ownership	0.16	0.15	0.13
Analyst coverage	2.69	2.11	2.51
Short-term to total liabilities	0.04	0.04	0.05
Mortgages to total loans	0.00	0.00	0.00
Approved to total mortgages	0.72	0.74	0.76
Fed funds and repos	0.03	0.03	0.03
TARP recipient	0.35	0.32	0.37
Core Tier 1 ratio	13.56	13.88	13.63
Distance to default	4.41	4.38	4.48
Crisis return 1998	-0.23	-0.24	-0.23

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Table A.8: Multinomial logit regression of dividend changes – medium regulatory capital

This table shows marginal effects from a multinomial logit model of dividend changes in the subsample of banks in the second and third quartile of regulatory capital as measured by the Tier 1 ratio. The three choices are dividend decrease, no change, and dividend increase. The marginal effects are evaluated at the means of the independent variables, which are described in Table A.1. The models are estimated for banks in the second and third quartile of Tier one ratio. Bank characteristics are measured at the end of the fiscal year before the dividend change. Standard errors are clustered by bank. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

	Multinomial Logit		
	Decrease	No change	Increase
	(1)	(2)	(3)
Size	-0.02	0.05	-0.03
	(-0.87)	(1.13)	(-0.60)
$Size^2$	0.00	0.01	-0.01
	(0.10)	(0.77)	(-0.66)
Market to book ratio	0.06	0.01	-0.06
	(1.47)	(0.09)	(-0.86)
ROA	-0.16***	-0.16*	0.32***
	(-2.94)	(-1.91)	(3.10)
Leverage	0.01	0.02	-0.02*
	(1.39)	(1.34)	(-1.82)
Risk-weighted capital ratio	-0.02	-0.00	0.02
	(-1.10)	(-0.10)	(0.67)
Short-term to total liabilities	-0.11	-0.22	0.33
	(-0.25)	(-0.32)	(0.36)
Earnings volatility	0.02	-0.03	0.01
	(0.56)	(-0.58)	(0.13)
Approved to total mortgages	-0.02	-0.24	0.26
	(-0.16)	(-1.17)	(1.13)
TARP recipient	0.07*	0.03	-0.10
	(1.74)	(0.45)	(-1.45)
Distance to default 2006	0.01	-0.10**	0.09**
	(0.35)	(-2.31)	(2.02)
Interest to noninterest income	0.00*	0.00	-0.00
	(1.86)	(0.06)	(-0.91)
Institutional ownership	-0.01	-0.47**	0.48**
	(-0.08)	(-2.20)	(2.01)
Number of analysts	0.01	0.01	-0.02
	(1.51)	(0.52)	(-1.08)
Observations	386	386	386
Sample period		2007-2008	

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Table A.9: Multinomial logit regression of dividend changes – low regulatory capital

This table shows marginal effects from a multinomial logit model of dividend changes in the subsample of banks in the first and second quartile of regulatory capital as measured by the Tier 1 ratio. The three choices are dividend decrease, no change, and dividend increase. The marginal effects are evaluated at the means of the independent variables, which are described in Table A.1. The models are estimated for banks with below median Tier one ratio. Bank characteristics are measured at the end of the fiscal year before the dividend change. Standard errors are clustered by bank. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

	Multinomial Logit		
	Decrease	No change	Increase
	(1)	(2)	(3)
Size	-0.05**	0.00	0.05
	(-2.22)	(0.06)	(1.24)
$Size^2$	0.01*	0.00	-0.01
	(1.87)	(0.08)	(-0.90)
Market to book ratio	0.02	-0.06	0.05
	(0.54)	(-1.00)	(0.65)
ROA	-0.20***	-0.15**	0.36***
	(-4.62)	(-2.06)	(3.73)
Leverage	0.01	-0.00	-0.01
	(1.53)	(-0.16)	(-0.44)
Risk-weighted capital ratio	-0.00	0.00	-0.00
	(-0.09)	(0.13)	(-0.07)
Short-term to total liabilities	-0.22	0.34	-0.11
	(-0.64)	(0.55)	(-0.14)
Earnings volatility	0.06**	0.06	-0.12**
	(2.44)	(1.34)	(-2.05)
Approved to total mortgages	-0.10	-0.30	0.40*
	(-0.87)	(-1.51)	(1.74)
TARP recipient	0.10**	-0.06	-0.04
	(2.52)	(-1.04)	(-0.60)
Distance to default 2006	-0.01	-0.03	0.04
	(-0.60)	(-0.99)	(1.31)
Interest to noninterest income	0.00	0.00	-0.00
	(1.02)	(0.55)	(-0.89)
Institutional ownership	-0.02	0.13	-0.12
	(-0.19)	(0.75)	(-0.59)
Number of analysts	0.01***	-0.02**	0.01
	(3.09)	(-2.06)	(0.81)
Observations	417	417	417
Sample period		2007-2008	

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Table A.10: Cross-sectional variation in abnormal payout measures – medium regulatory capital

This table reports regressions of abnormal dividend measures on bank fundamentals in the subsample of banks in the second and third quartile of regulatory capital as measured by the Tier 1 ratio. All variables are defined in Table A.1. The dependent variable is abnormal dividend per share in column 1, abnormal dividend yield in column 2, abnormal total payout (dividends + repurchases) per share in column 3, and abnormal total payout yield in column 4. Independent variables are lagged by one year. The models are estimated for banks in the second and third quartile of Tier one ratio. Abnormal payout measures are calculated as the difference between the actual payout of a bank during 2007-2008 and the out-of-sample prediction from the models in Table 2, based on the coefficients estimated for 1995-2006 for dividends and 2000-2006 for total payout. Underneath each coefficient we show t-statistics that are based on heteroskedasticity-robust standard errors, clustered at the bank level. *, **, and *** indicate that the coefficient is statistically significant at the 10%, 5%, and 1% level.

	Dividend per share	Dividend yield	Total payout per share	Total payout yield
	(1)	(2)	(3)	(4)
Short-term to total liabilities	-3.53	1.40	2.05	-0.01
	(-1.59)	(0.58)	(0.68)	(-0.00)
Earnings volatility	-0.45***	-0.14	-0.81	-0.16
	(-2.69)	(-0.67)	(-1.38)	(-0.32)
Approved to total mortgages	-0.80*	-0.99*	0.71	0.41
	(-1.80)	(-1.78)	(1.44)	(0.28)
TARP recipient	0.10	0.24	-0.05	0.73
	(1.32)	(1.57)	(-0.27)	(1.25)
Distance to default 2006	-0.01	0.14	-0.05	-0.08
	(-0.11)	(1.56)	(-0.33)	(-0.30)
Interest to noninterest income	0.00	-0.01	-0.01	-0.09
	(0.60)	(-0.41)	(-0.58)	(-1.58)
Institutional ownership	-0.28	-0.36	-0.94*	-1.92
	(-1.12)	(-0.73)	(-1.69)	(-1.55)
Number of analysts	0.02	0.00	0.07	0.06
	(1.49)	(0.09)	(1.40)	(0.74)
Constant	1.33**	0.85	0.64	3.33
	(2.03)	(1.24)	(0.87)	(1.53)
Observations	328	294	255	255
R-squared	0.19	0.05	0.11	0.03
Sample period		2007-2008		

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Table A.11: Cross-sectional variation in abnormal payout measures – low regulatory capital

This table reports regressions of abnormal dividend measures on bank fundamentals in the subsample of banks in the first and second quartile of regulatory capital as measured by the Tier 1 ratio. All variables are defined in Table A.1. The dependent variable is abnormal dividend per share in column 1, abnormal dividend yield in column 2, abnormal total payout (dividends + repurchases) per share in column 3, and abnormal total payout yield in column 4. Independent variables are lagged by one year. The models are estimated for banks with below median Tier one ratio. Abnormal payout measures are calculated as the difference between the actual payout of a bank during 2007-2008 and the out-of-sample prediction from the models in Table 2, based on the coefficients estimated for 1995-2006 for dividends and 2000-2006 for total payout. Underneath each coefficient we show t-statistics that are based on heteroskedasticity-robust standard errors, clustered at the bank level. *, **, and *** indicate that the coefficient is statistically significant at the 10%, 5%, and 1% level.

Panel A: Cross-sectional variation in abnormal payouts 2007-2008

	Dividend per share	Dividend yield	Total payout per share	Total payout yield
	(1)	(2)	(3)	(4)
Short-term to total liabilities	0.76	-1.83	-3.18**	-11.38***
	(0.74)	(-0.65)	(-2.13)	(-2.71)
Earnings volatility	-0.01	-0.04	-0.11	0.04
	(-0.18)	(-0.19)	(-1.01)	(0.10)
Approved to total mortgages	-0.52*	-2.73*	0.71	0.49
	(-1.91)	(-1.92)	(1.54)	(0.39)
TARP recipient	-0.08	0.34*	-0.18	0.24
	(-1.45)	(1.96)	(-1.10)	(0.70)
Distance to default 2006	0.05	0.23*	0.08*	0.16
	(1.44)	(1.91)	(1.88)	(0.96)
Interest to noninterest income	-0.01*	0.01	0.00	0.02
	(-1.66)	(0.66)	(0.56)	(0.74)
Institutional ownership	0.16	0.08	0.70	2.12**
	(0.85)	(0.22)	(1.38)	(2.07)
Number of analysts	-0.01	0.00	-0.00	-0.03
	(-1.20)	(0.07)	(-0.30)	(-0.68)
Constant	0.60**	1.55	0.02	2.10*
	(2.52)	(1.53)	(0.04)	(1.70)
Observations	381	354	315	315
R-squared	0.05	0.08	0.06	0.05
Sample period		2007-2008		

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Table A.12: Dividend growth and future performance for banks with low regulatory capital split by selected characteristics

This table presents OLS regressions of future stock returns and future operating performance on dividend growth in the subsample of banks in the first and second quartile of regulatory capital as measured by the Tier 1 ratio. Underneath the coefficients, we show t-statistics that are based on heteroskedasticity-robust standard errors, clustered at the bank level. The dependent variable in columns 1 and 3 (columns 2 and 4) is the stock return (ROA) in period *t+1*. Independent variables include dividend growth in year (quarter) *t*, period dummies, and the control variables from Table 2. Control variables are defined in Table A.1. Control variables are lagged one period with respect to dividend growth, i.e. are measured in year *t-1*. Models are estimated with a constant, which is not reported in the table. We further split banks into subsamples using the bank characteristic indicated in the panel title. Columns 1-2 (3-4) report estimates for banks with below-median (above-median) values of the bank characteristic. The regressions are estimated for the period 1996-2008. *Year 2007* and *Year 2008* are dummy variables indicating that the dividend growth is measured in 2007 and 2008, respectively. Columns 5 and 6 report Chi-squared tests whose null hypothesis is that the interaction term Dividend growth × Year2007 (or Dividend growth × Year2008, as indicated) is equal between the low and high bank characteristic subsample. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level.

Split group	Low		High		Chi-Squared	
	Return	ROA	Return	ROA	Return	ROA
Controls	Yes	Yes	Yes	Yes		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Short-term to total liabilities						
Dividend growth × Year2007	-0.10	-0.08	0.06	-0.55	0.51	0.87
	(-0.92)	(-0.44)	(0.30)	(-1.16)		
Dividend growth × Year2008	0.17	1.16***	0.06	1.34*	0.28	0.06
	(1.27)	(3.94)	(0.39)	(1.87)		
Panel B: Leverage						
Dividend growth × Year2007	-0.27*	-0.09	0.05	-0.23	2.63	0.11
	(-1.90)	(-0.28)	(0.37)	(-0.82)		
Dividend growth × Year2008	-0.03	0.87**	0.26**	1.34***	2.65	0.67
	(-0.25)	(1.98)	(2.06)	(3.59)		
Panel C: Institutional ownership						
Dividend growth × Year2007	-0.03	0.08	-0.04	-1.12**	0.02	4.99**
	(-0.27)	(0.50)	(-0.14)	(-2.17)		
Dividend growth × Year2008	0.07	0.58	0.26*	1.86***	0.88	3.74*
	(0.60)	(1.60)	(1.68)	(3.39)		
Panel D: Dedicated institutional ownership						
Dividend growth × Year2007	-0.17	-0.12	-0.10	-1.26**	0.04	3.58*
	(-1.08)	(-0.46)	(-0.31)	(-2.29)		
Dividend growth × Year2008	0.35*	0.91	0.19	1.70***	0.39	0.78
	(1.97)	(1.38)	(1.04)	(2.76)		

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Table A.12 – continued

Panel E: Transient institutional ownership						
Dividend growth × Year2007	-0.33**	-0.17	0.05	-1.35**	1.13	4.01**
	(-2.47)	(-0.70)	(0.16)	(-2.52)		
Dividend growth × Year2008	0.13	0.21	0.40**	2.25***	0.97	5.18**
	(0.63)	(0.37)	(2.10)	(3.23)		
Panel F: Number of >5% institutional blocks						
Dividend growth × Year2007	-0.23*	-0.03	-0.13	-1.39**	0.11	4.77**
	(-1.66)	(-0.12)	(-0.50)	(-2.42)		
Dividend growth × Year2008	0.33*	1.31**	0.18	1.58**	0.36	0.08
	(1.96)	(2.48)	(0.96)	(2.05)		
Panel G: Managerial ownership						
Dividend growth × Year2007	0.18	-0.50	-0.01	-0.76	0.51	0.12
	(1.06)	(-0.98)	(-0.03)	(-1.47)		
Dividend growth × Year2008	0.57***	1.72***	0.34*	1.69***	0.81	0.03
	(3.27)	(2.78)	(1.81)	(2.89)		
Panel H: NPR count						
Dividend growth × Year2007	-0.12	-0.90*	0.06	-0.53	0.34	0.35
	(-0.49)	(-1.78)	(0.31)	(-1.42)		
Dividend growth × Year2008	0.47***	1.95***	0.04	1.36**	3.38*	0.42
	(3.16)	(2.68)	(0.25)	(2.45)		

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