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# CAPITAL DISTRIBUTIONS IN THE BANKING INDUSTRY

Monica BANYI[1], Susan PORTER[2], Susan WILLIAMS[3]

[1,2] University of Virginia, McIntire School of Commerce. E-mail: sep4v@virginia.edu

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**ABSTRACT**

As the 2008 banking disaster loomed banks increased their dividends and stock repurchase distributions to common shareholders dramatically. This unique time period provides a natural experimental setting to examine financial institutions' capital management strategies during periods of macroeconomic change. As the crisis loomed, we find that U.S. banks did not conserve cash but returned capital to investors at the same pace that they earned capital from operations. We also find that U.S. firms that accepted funds from the Capital Purchase Program (CPP) relative to non-CPP firms, returned a higher proportion of their available capital to shareholders in the periods leading up to the financial crisis.

## 1. INTRODUCTION

The world economy is still recovering from the effects of the downfall of the financial industry. October 3rd, 2008 marked the beginning of the largest government bailout in history as President Bush signed the Emergency Economic Stabilization Act of 2008 (EESA) into law. The EESA created the Troubled Asset Relief Program (TARP) which provided the United States Department of the Treasury (Treasury) with broad authority to administer $700 billion of taxpayer funds to bolster the capital position of the struggling financial institutions, thus reducing the uncertainty in the troubled capital and credit markets. Ultimately, this controversial legislation resulted in a bailout of the banking system by the Treasury. The Capital Purchase Program (CPP), the largest program within TARP, authorized the Treasury to purchase up to $250 billion of senior preferred shares of qualifying U.S. controlled banks, savings associations, and certain saving and loan holding companies.

In light of the failures within the financial services industry, we examine banks' precipitating decisions and actions that expose some questionable capital management strategies. For example, many financial institutions (including those accepting CPP funds) continued returning cash to shareholders even after the banking industry began to feel repercussions from the deteriorating U.S. housing market in late 2006 and early 2007. As default rates on subprime and adjustable rate mortgages (ARM) accelerated, banks did not appear to protect their capital positions, electing instead to maintain or increase cash distributions through share repurchase and dividend activities. In fact, 84% of 102 of the largest publicly traded US financial institutions repurchased their own stock in 2007, collectively returning $65.4 billion to their selling shareholders, double the $31.8 billion they spent on repurchases in 2004. Simultaneously, common dividend payments grew from $42.1 billion in 2004 to $59.7 billion in 2007.

Between 2004 and 2007, the 61 sample firms which ultimately received $165.3 billion in CPP funds made dividend payments of $157.5 billion to common shareholders and spent an *additional* $164.2 billion for common share repurchases. While academics, regulators, and practitioners debate the optimal level and composition of bank capital, reducing common equity capital through share repurchases and dividend payments shifts risk from shareholders to deposit funds, governments and ultimately taxpayers, particularly in a time period of declining economic conditions. No research to our knowledge specifically examines the relationship between the structure, magnitude, and timing of the banking industry's cash payout policies and the inadequate level of capital during the financial crisis.[1] As the financial industry increased its risk-taking activities and the complexity of its financial transactions in the four years leading up to the fall of 2008, it simultaneously reduced common equity capital and increased leverage by returning significant funds to shareholders through accelerating dividend payments and share repurchases activities, with most banks maintaining core capital ratings at or above the regulators' "well-capitalized" levels.

We find that much of the prior academic research on the motivations for share repurchase programs specifically excludes financial firms (Dittmar, 2000; Skinner, 2008). Given this limited prior research and the accelerating volumes of repurchases over our sample period, we first explore the motivations of the repurchasing activities between 2004 and 2007 to see if previously studied theories (including free cash flows, signaling and undervaluation, capital structure, and employee stock options) describe the banking firms' repurchasing behaviors. We find that between 2004 and 2006, banks appear to exhibit behaviors consistent with these theories; however, in 2007, we document a significant shift in the motivations for repurchase activities. This payout activity in 2007 is *inconsistent* with economic motivations for share repurchases established in the academic literature and is particularly interesting since it occurs during the year preceding the height of the financial crisis but after the symptoms and warnings of the forthcoming problems were observable.

This finding motivates us to examine whether higher firm cash disbursements to shareholders over this period put the institutions at risk for financial crisis. We use our unique dataset to examine and compare the impact of various forms of shareholder payouts on two measures of a firm's capital position, Tier 1 capital, as reported to U.S. banking regulators, and a measure of equity capital we call the tangible common equity ratio (TCE ratio).

Research has shown that CPP participants reported stronger financial performance than non-CPP firms, yet still held lower levels of capital preceding the fall of 2008 (Ng, Vasvari, and Wittenberg-Moerman, 2010).

[1] Acharya et. al. (2011) examine the relationship between dividends and bank capital of the largest 25 U.S. banking institutions; however, these authors do not consider share repurchases as a part of their study of bank capital.

Although we recognize that a bank's capital position is a function of a variety of strategic operating decisions including lending, investing, risk management, and capital management decisions, we focus on whether a firm's decision to distribute cash through dividends and share repurchases increased the likelihood that it would participate in the CPP program. We provide evidence of declining levels of capital over the years leading up to the financial crisis and purport that the economically inefficient levels of shareholder payouts left banks with insufficient capital to withstand the risk of the 2008 financial crisis despite maintaining "well-capitalized" Tier1 core capital levels. Finally, in a regression analysis, we find that for every 1% of assets paid out in dividends or share repurchases, a firm's tangible common equity ratio decreased by an annualized rate of 0.32% or 0.44%, respectively.

This study is important for several reasons. First, we provide insight on the impact of shareholder payouts on banks' capital adequacy in periods of declining economic conditions. Second, in response to the increasing worldwide discussion of the composition and adequate levels of bank equity capital, we examine how well two current measures of capital adequacy, the Tier 1 and tangible common equity ratios, captured the increased payout activities of our sample firms. Although the liquidity crisis in 2008 was the result of both declining asset values and tightened credit markets, we provide evidence that firms returning higher proportions of tangible equity capital to their shareholders were more likely to accept infusions of capital from taxpayers. Following the financial crisis, capital returns to shareholders decreased significantly during 2009 and 2010, mostly due to the limitations imposed on CPP participants. However, in early 2011, several of the largest financial institutions, after receiving approval from the Federal Reserve, have once again increased capital payouts to shareholders. This paper provides important support for restrictions on all forms of capital payout activities.

The remainder of this paper is organized as follows. The second section examines motivations for stock repurchases and dividend payments in the financial industry. In the third section we discuss the sample, research methodology, and results, while the forth section provides summary and concluding remarks.

## 2. CAPITAL DISTRIBUTIONS THROUGH STOCK REPURCHASES AND DIVIDENDS

Researchers have long examined the determinants of and changes in corporate payout policies as well as the substitutability between dividends and share repurchases. Few of these studies, however, have included financial firms which not only must determine the most efficient means to return capital to shareholders but must also balance these payout policies against the capital requirements of their respective regulatory authorities.

**2.1 Motivations for Share Repurchases**

The economic motivation for repurchasing shares in light of financial decline is unclear. Theory suggests that firms repurchase stock for a number of reasons: agency costs of free cash flows (Jensen, 1986), signaling and undervaluation (Vermaelen, 1981; Ikenberry, Lakonishok and Vermaelen, 1995; Bhattacharya,1979; Vermaelen,1984; Miller and Rock,1985), capital structure (Dittmar, 2000; Bagwell and Shoven, 1988; Hovakimian, Opler and Titman, 2001), tax consideration, and employee stock options (Fenn and Liang, 2001; Kahle, 2002), earnings management (Bens, Nagar, Skinner, and Wong, 2003; Hribar, Jenkins, and Johnson, 2006. However, most of the prior research in repurchases excludes financial firms and there is limited research on the financial industry.

For financial firms, the return of excess capital to shareholders may reduce the temptation of management to move to higher risk lending and investing activities. In her sample of publicly-traded and privately held financial institutions, Hirtle (2004) finds evidence suggesting that deployment of excess cash is a consideration for larger banks traded on major stock returns. For banks, the relationship between share repurchases and leverage is relatively complex. Banking firms tend to have less equity to total assets than non-financial firms and thus, have more financial leverage which is heavily weighted in short-term borrowings and demand deposits. As a result, a share repurchase transaction has a very different impact on a bank relative to non-financial firm. Smaller capital reserves provide greater potential for profit; however, smaller levels also increase the risk of firm insolvency in periods of falling asset prices or other declining economic conditions. Bank manager share repurchase programs are also subject to capital adequacy requirements set by regulators to maintain the safety and soundness of the bank. Even so, much of the empirical and theoretical research of bank capital and optimal capital structure suggests that banks, like non-financial firms, act to optimize their capital structure such that capital regulations appear as a second order influence on this optimal capital structure.

Berger, DeYoung, Flannery, Lee, and Oztekin (2008) report evidence that banks do appear to manage capital ratios to firm-specific target levels with share repurchases which are used to offset both capital issuances and earnings retained in periods of strong financial performance. During their 1992-2006 sample period, share repurchases significantly offset new share issuance and increases in retained earnings. However, since their sample period reflected a profitable period, their study does not provide information on how banks manage capital ratios in times of losses.

**2.2 Motivations for Dividends**

In his 1976 seminal paper, "The Dividend Puzzle," Fischer Black questions why firms continue to pay dividends given the fact that dividend payments are value irrelevant and tax disadvantaged. However, research finds that investors view dividends, particularly dividend initiations and increases, as credible signals of the quality, reduced risk, and expectations of future earnings and cash flows (see Bhattacharya, 1979; Miller and Rock, 1985; Healy and Palepu, 1988; Nissam and Ziv, 2001). Further research suggests that investors like the monitoring and control function that dividends provide over managers, particularly for cash-rich, mature firms (Easterbrook, 1984; Jenson 1986).

Finally, the catering and clientele theories of dividends indicate that certain characteristics of investors themselves, such as investor demand and tax status (Baker and Wurgler 2004; Li and Lie (2006); Allen, Bernardo, and Welch, 2000), drive a preference for investment dividend paying firms.

Research has also examined the propensity to use share repurchases as a substitute for dividends. Grullon and Michaely (2002) document a decline in the growth of dividend payments while simultaneously finding that the volume of share repurchase activity has increased. In their sample, mature firms are more likely to use excess capital to repurchase shares than increase dividends. Again, however, the research on dividend payout policies often ignores the financial firms, and thus, our understanding of financial firm payout policies is limited.

Since the market reacts positively to dividend initiations and strongly and negatively to dividend omissions, dividend policy is viewed as "sticky" as managers resist cuts in dividends out of concern the reductions may signal poor performance (DeAngelo, DeAngelo and Skinner, 1992; Brav et. al., 2005). Perhaps because of this reluctance to cut dividends, Guay and Harford (2000) find that when increases in cash flows are viewed as temporary, managers are more likely to make share repurchases than increase dividends. For banks, Hirtle (1998) contends that the composition of shareholder payouts between dividends and repurchases is especially important as repurchases are easier to cut than dividend payments if earnings and cash are constrained and the bank needs to suddenly preserve capital to remain solvent.

In the recent financial crisis, some conjecture that the reluctance to reduce dividends quickly in response to declining economic conditions more than likely increased the insolvency pressures the banks faced during the fall of 2008. Acharya et al. (2011) find that their 2007 - 2009 sample of TARP participants paid dividends which amounted to 45% of the capital they eventually received from the TARP program.

## 3. RESEARCH DESIGN

In light of the financial crisis, the call for regulator focus on dividend and share repurchase activity is apparent. First, we examine the motivations for stock repurchases and dividend payments in the financial industry. To understand the capital equity behavior of banks we then explore banking firms' shareholder payouts in the years leading up to the financial crisis and capital levels. This analysis is especially important given the strong negative response by the financial services industry when more stringent capital and liquidity standards were announced. Empirical support for the additional information contained in the new regulations will help demonstrate the need to identify potential problems in the financial services industry before they reach a crisis level.

### 3.1. Sample

Our sample consists of large (market value of equity or total book assets in excess of $1.5 billion) publicly traded banks listed on Compustat in 2006 with SIC codes 6000-6300. We exclude investment advisory firms, investment banks that are pure brokerage houses, firms that are market exchanges, personal credit institutions, subsidiaries primarily owned by non-US banks, as well as any firm without lending activities.

Our final sample includes 113 firms which we list in Exhibit 1. For each firm, we collect accounting information from Compustat, banking information from Compustat Bank, and share repurchase program and monthly share repurchase information directly from the relevant 10-Q and 10-K filings beginning in 2004, the first year the data is available.

Table 1 provides summary statistics for our sample for the 2006 sample selection year. Consistent with our choice of large firms in excess of $1.5 billion of assets, the mean asset value for our sample is $120.6 billion while the mean market value is $16.5 billion. We note a discernible difference between the mean and median firms indicating that although our sample is constrained to the largest U.S. banking firms, a few of the largest banks dominate our sample means. Thus, we subdivide our sample to parse out the very largest firms. We define *Large Firms* as those reporting a market value of equity greater than or equal to the 85th percentile and *Other Firms* as those below the 85th percentile of the New York Stock Exchange (NYSE) traded firms. We find that the 28 *Large Firms* report larger assets ($p<0.01$) and market value of equity ($p<0.01$) than the 85 other firms.

Consistent with interest in capital adequacy measures, we report two measures of capital strength, the Tier 1 capital ratio, defined as core equity to risk weighted assets, and the tangible common equity ratio (TCE Ratio), defined as common equity less intangible assets to tangible assets. While both measures presumably capture a firm's ability to remain solvent in the face of declining asset values or deteriorating economic conditions, the former is a regulatory reporting ratio and includes common stock and some preferred equity and hybrid debt securities. Since the TCE Ratio excludes intangible assets, which hold little liquidity value in adverse economic conditions, some in the financial services industry claim that the TCE Ratio is an "acid" test of a bank's capital position and financial strength to weather a declining economy as it provides a more stringent liquidity measure. For banks with available date, the mean (median) Tier 1 ratio is 9.93% (9.77%), well above the 6% benchmark considered "well capitalized." We also note that our *Large Firms* report a lower capital buffer in both of our measures than the other firms ($p<0.01$) which is consistent with prior banking studies that find that the larger, more well-diversified institutions hold less capital.

Table 2 reports on the sample firms' shareholder payouts from 2004 and 2007 in gross terms as well as relative to shares outstanding, capital, and earnings. While total payouts increased over the time period, mean (median) share repurchases more than doubled (quadrupled) from $312.1 million ($12.8 million) in 2004 to $656.8 million ($63.2 million) in 2007. The pace of share repurchases accelerates considerably in 2007 as the median sample firm repurchased over 3.1% of the shares outstanding at an amount that comprised nearly 9% of the tangible common equity. The proportion of dividends paid out remained fairly consistent over the sample period. Through a combination of dividends and repurchases, the median firm increased its payout to shareholders from 59% of 2004 earnings to over 90% of 2007 earnings. The increase over 2006 levels is dramatic as median total payouts to income jumped from 57.9% to 90.1% and repurchases as a proportion of TCE increased from 1.9% to 7.4%.

Given the increasing volume of share repurchase activities and proportion of capital spent on common stock repurchases between 2004 and 2007, we first consider the motivations for financial firms to return capital through share repurchases. We follow a methodology similar to Dittmar's (2000) study of non-financial firms and include variables to proxy for firms' motivations for share repurchases including the agency costs of free cash flows, signaling and undervaluation, capital structure, and employee stock options in our model.

$$RP_t = \alpha_0 + \beta 1\ Adj\ Ret_{t-1} + \beta_2\ MB_{t-1} + \beta_3\ Cash_{t-1} + \beta_4\ FCF_t + \beta_5\ Div\ Payout_t + \beta_6\ TCE\ Ratio_{t-1} +$$

$$\beta_7\ Options_t + \beta_8\ Size_{t-1} + \varepsilon t$$

Given our hand collected data, we construct our dependent variable, *RP*, as the exact percentage of common shares repurchased to shares outstanding at the beginning of the year. We elect to use shares repurchased to shares outstanding rather than the market value of shares repurchased to market value of equity as the former is less affected by changes in the market value of a firm's stock and represents the volume of share repurchase activity conducted by the firm.

We include variables in our model to examine existing motivations for share repurchases discussed above. The undervaluation hypothesis suggests that when information asymmetry exists, managers, with their inside knowledge of the firm can signal this information to the market through share repurchase activities. Ofer and Thakor (1987) show that managers choose stock repurchases over dividends when the undervaluation is more significant. We include a measure of past stock price performance. *Adj Ret* is the CRSP value-weighted adjusted annual buy and hold return of each bank measured over the preceding fiscal year, and we expect a negative coefficient as firms are more likely to repurchase stock when it is viewed as undervalued. In addition, the findings of Lakonishok, Shleifer, and Vishny (1994) suggest that low market to book value may lead managers to engage in repurchase activity to mitigate potential undervaluation; thus, we expect a negative coefficient on *MB*.

To examine whether the decision to repurchase stock is positively related to excess cash, we include cash holdings at the beginning of the year (*Cash)* and cash flow generated during the year (*FCF)* in our model. After controlling for investment opportunities proxied by market to book value of equity (*MB*) and given that banks should use repurchases as a way to distribute excess capital to investors, we expect to find a positive and significant relation between share repurchases and our excess cash measures.

We also control for dividend payouts (*Div Payout*) since management may use either dividends or share repurchases to distribute excess cash flows. Dittmar's (2000) and Skinner's (2008) find that share repurchases are not dividend substitutes and instead suggest that firms use both dividends and share repurchases to return capital to investors.

As discussed above, financial firms manage their capital cushions in light of future expected economic opportunities, regulatory requirements, and management's subjective assessment of risk exposure and future need for outside funding. Banks should only repurchase stock when they find they have excess capital and limited alternative investment opportunities.

Thus, we include tangible common equity ratio, *TCE Ratio*, as a measure of a bank's capital and expect a positive relationship between the *TCE Ratio* and share repurchase transactions.

Finally, we consider the stock option compensation hypothesis which suggests that stock options may motivate managers to repurchase stock to meet the demands of stock compensation redemptions while mitigating the effect of stock dilution. We include a measure of options exercised during the current year to shares outstanding at the beginning of the year, *Options,* to test this hypothesis and expect a positive coefficient. Consistent with prior research, we also include *Size*, measured as the percentile of the firm's market value to the NYSE at the end of the prior year, as a control variable.

Table 3 presents descriptive statistics and the Pearson and Spearman correlations for our 2004-2007 sample firms for which regression data is available. We partition the data based on whether or not the firm repurchased shares. We find that repurchasers are significantly larger (median size 0.65 vs. 0.40) and have a higher dividend payout ratio (median 0.46 vs. 0.32) As predicted, repurchases are positively and significantly associated with cash and free cash flow as well as options, and negatively related to prior period returns and the market to book ratio; these results lend support for the free cash flow, undervaluation, and stock option hypotheses. Surprisingly, we find no significance between our measure of regulatory capital, *TCE Ratio*, and repurchases.

### 3.2. Empirical Results

Results from estimating the Tobit model for 403 firm year observations with available data are provided in Table 4, Panel A, models 1-3. In model 1-3, our findings are consistent with employee stock options hypothesis as the coefficient on *Options* is positive and significant ($p<0.01$) across all models. The coefficients on *Cash* and *TCE Ratio* are positive and significant ($p< 0.01$) which suggest that firms make share repurchases when they have the excess cash and capital available. Finally, *MB* and *Adj. Ret* are negative and but not always significant suggesting mixed support for the undervaluation hypothesis. As noted earlier, we observe an upward trend of repurchases over time, both in volume and in relation to capital and earnings, despite increased financial challenges within the banking industry, and we question whether there is a shift in the motivation for share repurchases around 2007 (See Table 2). For this reason, we test for a structural shift in the share repurchase behavior of our sample firms, both by the inclusion of an indicator variable for 2007 in Models 2 - 3 and a size interaction with 2007 in Model 3 , as our results also appear to indicate a change in behavior of the *Other Firms* around this time. We find that not only is the *2007* indicator variable positive and significant across models ($p<0.01$), but statistical comparisons indicate the coefficient is also larger than that of either the *2006* ($p<0.00$) and *2005* ($p<0.00$) indicator variables. This finding suggests that, even after controlling for the motivations for repurchasing activities, banks made higher volumes of share repurchases in 2007 than in the prior years. Further statistical comparisons of the combined size coefficient (*Size*2007* + *Size*) indicate that in 2007, unlike in the prior years, repurchasing firms were significantly smaller ($p<0.00$) sized banks.

Finally, in Model 4, we limit our sample to the 286 firm year observations with non-zero repurchases to examine how the firm characteristics influence the volume of shares repurchased. Results are similar to the full sample except we now find a negative and significant ($p<0.01$) relation between *Div Payout* and percent of repurchases indicating that firms with higher dividend payouts repurchase less shares. We also find positive and significant coefficients on the yearly indicators indicating a rising proportion of shares repurchased over time. Interestingly, cash levels are not related to the volume of shares repurchased.

Table 4, Panel B reports the results of running our model annually for the sample firms, similar to Dittmar (2000). Running the regressions separately allows us to examine whether the motivations for repurchasing activity remain consistent over the sample period or change across the years, although we acknowledge that the models will suffer reduced power given the smaller sample sizes. For each year 2004 – 2006, the positive and significant ($p<0.01$) coefficients on *Options* and *Size* remain, indicating that large firms and firms with high levels of option exercises are more likely to repurchase stock. The *TCE Ratio* is significant ($p< 0.04$) in every year other than 2006 while the *Adj. Ret.* and *Cash* are not statistically significant in any model.

We observe interesting differences for 2007. Overall, we note a remarkable decline in the 2007 model's overall predictive ability as the pseudo $R^2$, which ranged from 0.23 to 0.27 between 2004 and 2006, drops to 0.05 in 2007, suggesting that the model of traditional share repurchase motivations does not fit the banking firms in 2007 as well as it did in prior years. We also find no evidence that the volume of 2007 share repurchases are driven by size, prior period stock performance, cash, market to book, or employee stock compensation redemptions. This non-significance is particularly surprising for stock options as we find the coefficient on this variable is positive and significant in all previous models (Table 4, Panels A and B). We interpret the results in Table 4, Panel B, particularly the declining model fit, as behavior inconsistent with efficient capital management motivations for share repurchase activities of banks in 2007. This is particularly important given that indicators of financial problems such as the accelerating default rate on subprime mortgages were known during this time period and by August 2007 at the latest. The results in Panel B could suggest that financial institutions elected to payout excess cash to their shareholders in an effort to perhaps maintain a market for their own shares, rather than conserve capital in anticipation of future needs. If a macro-prudential approach to regulation is enacted, then regulators would have the structure in place to require additional capital is maintained when indicators warrant such action.

### 3.3 Tangible Equity Ratios, Firm Payout Policies and the Capital Purchase Program (CPP)

Given incidences of credit freezes in the market as early as August of 2006 when the first subprime mortgage companies failed, share repurchases made in 2007 could have had the dual effect of reducing capital below an optimal level and increasing firm risk, making it more difficult for a bank to make future capital issues in the public and private markets. In this section, we examine whether the financial institutions' payout policies prior to the crisis increased the probability the bank would participate in the CPP program.

While other studies have addressed the financial crisis and evaluated the success of the CPP program (Bayazitova and Shivdasani, 2009; Veronesi and Zingales, 2010), research has not yet examined the association between the banking firms' shareholder payouts in the years leading up to the financial crisis and capital levels.

At the inception of the CPP program in October of 2008, 87 of our initial 113 sample firms remained viable and eligible to apply for the government-supplied capital. Of these firms, 61 applied for and received CPP funds (CPP Firms). Four other banks, which applied for CPP funds, either withdrew their applications or were not strong enough to qualify and are included in the 26 non-CPP sample firms. We compare the common shareholder capital payouts between these two groups of firms to determine whether the CPP firms distributed capital to shareholders at higher levels in the years preceding the financial crisis.

Table 5 shows a comparison of the CPP and non-CPP firms in the 20 quarters preceding the financial crisis and the four quarters of 2008. The first column shows the mean and median total capital payout, including common stock dividends and share repurchases to prior quarter assets for the 24 quarter sample period. For both groups of firms, the median firm increased its total capital distribution in 2007 and, due to declining asset values and sustained capital payouts, hit a peak between the second and third quarters of 2007, well after the signs of deteriorating economic conditions in the financial industry became apparent. Both the median CPP and non- CPP firm returned a significant amount (18 -33%) of the quarters' beginning assets to shareholders. Median dividends to assets are significantly lower for non-CPP participants over all quarters through 2007. Tier 1 ratios are significantly lower for CPP participants in most quarters and remain above the "well-capitalized" level throughout the sample period. We also find significantly lower and declining levels of the TCE ratio for firms accepting CPP funds.

This median TCE ratio for CPP firms falls below 6% as early as Q1 2006 and remains below 6% through the end of 2008 as the CPP distributions from the U.S. government did not increase tangible common equity. This finding is consistent with Ng, et. al. (2010) who find that CPP participants, though appearing financially healthier than non CPP participants, faced greater liquidity needs. It is interesting to note that the difference in TCE ratio between the CPP and non-CPP firms is consistently more significant than the difference in Tier 1 capital. Banks appear to manage their regulatory ratios and consistently have a cushion or a target Tier 1 capital ratio in excess of regulatory requirements. However, the quality of the equity capital in terms of liquidity may be better measured by the TCE ratio which is different between the two groups of firms, particularly after 2005. This finding suggests there is different information available to regulators obtained by separately monitoring these two capital adequacy measures.

Overall, the results in Table 5 indicate that in the years leading up to 2008, both the CPP and non-CPP firms returned a high proportion of available capital to their investors. The CPP firms appear to weaken their tangible assets and their ability to absorb losses (as measured by the TCE ratio) more than the non-CPP firms, and much of this regulatory capital was later replenished by the government and taxpayers.

This finding and the move by regulators to more conservative capital adequacy measures along with the Basel III emphasis on tangible common equity leads us to test the impact of time, performance, and capital payout decisions on the TCE ratio. For these tests, we consider three separate samples: a full sample of banking firms with all available regression variables; a sample of CPP firms or firms that were eligible to apply for CPP funding in the fall of 2008; and a sample of "other firms" which excludes the largest, more well-diversified banks which tend to hold lower levels of capital. The descriptive statistics for each of these samples is reported in Table 6. Consistent with the results in Table 5, we observe a decrease in the TCE ratio over the 2004-2007 time periods in each of our samples although this decline appears smaller for the smaller banks. Correlations indicate that changes in quarterly TCE ratios are related to repurchases, loan growth, and operating performance.

We regress the change in TCE on measures of time, performance and capital payout decisions for all quarterly observations with available data over the 2004-2007 time period for each of our samples. We choose this model to be consistent with the capital structure literature which suggests that cash flows, growth, leverage, and risk are determinants of equity capital targets. We use the following model

$$\Delta TCE\ ratio_{q} = \alpha_0 + \beta_1\ TCE\ ratio_{q-1} + \beta 2\ \text{Size}_{q-1} + \beta_3\ \text{Div}_q + \beta_4\ \text{RP}_q + \beta_5\ \Delta\text{NPAT}_q + \beta_6\ Loan\ Growth_q + \beta_7\ \text{EBTP}_q + \beta_8\ \text{MB}_{q-1} + \varepsilon t$$

where

$\Delta TCE\ ratio_{q}$ is the percentage change in the TCE ratio from the beginning to the end of the quarter. $TCE\ ratio_{q-1}$ is the TCE ratio at the end of the prior quarter and is included to ensure that

$\Delta TCE\ ratio_{q}$ captures capital changes with regard to the prior capital position. *Size* is the French break point related to the NYSE market percentile measured at the end of the prior quarter. Dividends (*DIV*) and repurchases (*RP*) during the quarter are divided by total assets at the end of the prior quarter and ΔNPAT is the percentage change in non-performing assets over the quarter. *LoanGrow*th is the percentage change in the ratio of net loans to total assets from the beginning to the end of the quarter. *EBTP* is quarterly pretax earnings before the provision for loan losses divided by the average assets for the quarter. *MB* is the market to book ratio measured at the end of the prior quarter and measures the ability for a firm to raise capital in the market. We also include year fixed effects, quarterly indicator variables to capture any seasonality, and Newey and West standard errors (lag 5) to correct for serial correlation in our observations.

The results are reported in Table 7. The coefficients on dividends and repurchases are negative and significant ($p < 0.001$) after controlling for current operations and time which is consistent with the mechanical impact the capital payouts have on tangible common equity. Operational performance, *EBTP*, has a positive and significant impact on TCE ($p<0.001$) as mechanically a bank's earnings increase its equity position.

Statistical comparisons of the capital distribution variables (*Div* + *RP*) and the operational performance (*EBTP)* coefficients are insignificant which appear to indicate that over this time period firms returned capital to common shareholders at the same pace they earned it from operations, a result not surprising given the mean payout percentage of net income in excess of 90% reported in Table 2. We also compare the coefficients on *Div* and *RP* and find they are indistinguishable indicating the capital payouts in the form of dividends have a similar impact on TCE as share repurchases, a finding which supports regulators' recent policies to simultaneously consider the impact of share repurchases *and* dividends upon a banks internal capital planning.

Among our samples, it appears that the prior tangible common equity position had the most impact on the non-large banks. For these firms, larger declines in the TCE ratio are noted for firms with higher starting capital positions. Although the full and CPP samples also report negative coefficients on *TCE Ratio*, these coefficients are less negative and mildly significant. Additionally, the changes in tangible equity are more (negatively) affected by changes in the quality of the bank's assets as noted by the negative and significant ($p<0.03$) coefficient on ΔNPAT, a result which is not noted when the larger banks are included.

Finally, we note the change in the TCE ratio is positive and significant in the third quarter perhaps reflecting the cyclical nature of the lending markets. In addition, while we note an overall decline in the TCE ratio in our sample period, we find a positive and significant increase in 2006, the year before the symptoms of the mortgage crisis began to appear and a year of a high volume of mortgage activities. Interestingly, the positive and significant coefficient on 2006 is not noted when the large banks are excluded perhaps indicating a systemic impact in that year that only affected the largest banks.

## 4. CONCLUSION

This paper adds to the literature that examines the multiple factors that contributed to the financial crisis. We provide evidence that financial institutions share the excess cash, undervaluation, and stock compensation motivations for share repurchase programs as their non- financial counterparts. However, for 2007, we find that these common and economically efficient share repurchase motivations are only weakly descriptive of the share repurchase behaviors of our sample of banking firms. We note increasing dividend and share repurchase payments between 2004 and 2007, in relation to both reported earnings and equity capital, and particularly large volume increase in shares repurchased between 2006 and 2007. Given this increased share repurchase activity in a market of known economic deterioration and declining stock prices, we question whether the banking firms engaged in share repurchase activities in an attempt to bolster their falling stock prices. We also examine whether the level of shareholder payouts (both repurchases and dividends) during the years 2004-2007 increased the probability of a firm's eventual participation in the CPP. The 59 sample firms that participated in the CPP returned more capital to common shareholders between 2004 and 2007 than the capital infusions they eventually received under the CPP. In fact, we provide strong evidence that firms which paid out higher proportions of tangible equity capital between 2004 and 2007 in the form of share repurchases and dividend payments, were more likely to receive CPP capital infusions. While there is much academic and political discussion about the success

of the CPP program and TARP in general, one measure of success, increased confidence in the financial markets, is difficult to quantify. While we acknowledge that this study contributes to one small piece in the analysis of the causes and consequences of the financial crises, we believe that we have highlighted the need for financial regulators to consider all facets of a firm's capital payout program and the effect on the bank's capital position as the various regulators continue to draft new financial regulations. The impact of payout policies, including both share repurchases and dividends, for financial institutions need consideration as the legislation is implemented. Equally important will be the development of consistent definitions and appropriate measures of Tier 1 and TCE ratios.

**REFERENCES**


- Acharya, V., I. Gujral, N. Kulkarni, and H. Shin (2011), 'Dividends and Bank Capital in the Financial Crisis of 2007-2009', National Bureau of Economic Research Working Paper No. 16896.

- Allen, F., A. Bernardo, and I. Welch (2000, 'A Theory of Dividends Based on Tax Clienteles', The Journal of Finance, Vol. 55 (December), pp. 2499 – 2536.

- Bagwell, L., and J. Shoven (1988), 'Share Repurchases and Acquisitions: An Analysis of which Firms Participate' in Corporate Takeovers: Causes and Consequences, Edited by A.G. Auerbach, (Chicago, IL: University of Chicago Press).

- Baker, M., and Wurgler, J. (2004), 'A Catering Theory of Dividends', The Journal of Finance, Vol. 59 (June), pp. 1125-1165.

- Bayazitova, D, and A. Shivdasani (2009), 'Assessing TARP', Working Paper (University of North Carolina).

- Bens, D., V. Nagar, D. Skinner, and M. Wong (2003), 'The Real Investment Implications of ESO Exercises', Journal of Accounting Research, Vol. 40, pp. 359-393.

- Berger, A., R. DeYoung, M. Flannery, D. Lee and O. Oztekin (2008), 'How Do Large Banking Organizations Manage Capital Ratios?' The Federal Reserve Bank of Kansas City Economic Research Department, RWP 08-01.

- Bhattacharya, S. (1979), 'Imperfect Information, Dividend Policy, and 'the Bird in the Hand' Fallacy', Bell Journal of Economics, Vol. 10, pp. 259-270.

- Black, F. (1976), 'The Dividend Puzzle', Journal of Portfolio Management, Vol. 2, pp. 5-8.

- Brav, A., J. Graham, C. Harvey, and R. Michaely (2005), 'Payout Policy in the 21st Century', Journal of Financial Economics, Vol. 77, pp. 483-527.

- DeAngelo, H., L. DeAngelo, and D. Skinner (1992). 'Dividends and Losses', The Journal of Finance, Vol. 47, pp. 1837-1863.

- Dittmar, A.K., (2000), 'Why do Firms Repurchase Stocks?' The Journal of Business, Vol. 73, pp. 331–356.

- Easterbrook, F. (1984), 'Two Agency-Cost Explanations of Dividends', American Economic Review, Vol. 84, pp. 650-659.

- Fenn, G. and N. Liang (2001), 'Corporate Payout Policy and Managerial Stock Incentives', Journal of Financial Economics, Vol. 60, pp. 45-72.

- Grullon, G. and R. Michaely (2002), 'Dividends, Share Repurchases, and the Substitution Hypothesis', Journal of Finance, Vol. 57, pp. 1649-1684.

- Guay, W. and J. Harford (2000), 'The Cash-Flow Permanence and Information Content of Dividend Increases Versus Repurchases', Journal of Financial Economics, Vol. 57, pp. 385-415.

- Healy, P. and K. G. Palepu (1988), 'Earnings Information Conveyed by Dividend Initiations and Omissions', Journal of Financial Economics, Vol. 21, pp. 149-176.

- Hirtle, B. (1998), 'Bank Holding Company Capital Ratios and Shareholder Payouts', Current Issues in Economics and Finance (Federal Reserve Bank Of New York), Vol. 4 (September), pp. 1-6.

- Hirtle , B. (2004), 'Stock Repurchases and Bank Holding Company Performance', Journal of Financial Intermediation, Vol. 13, pp. 28-57.

- Hovakimian, A., T. Opler, and S. Titman (2001, 'The Debt-Equity Choice.', Journal of Financial and Quantitative Analysis, Vol. 36 (March), pp. 1-24.

- Hribar, S.,N. Jenkins, and W. Johnson (2006), 'Stock Repurchases as an Earnings Management Device', Journal of Accounting and Economics, Vol. 41, pp. 3-27.

- Ikenberry, D., J. Lakonishok, and T. Vermaelen (1995), 'Market Underreaction to Open Market Share Repurchases', Journal of Financial Economics, Vol. 39, pp. 181-208.

- Jensen, M. C. (1986), 'Agency Costs of Free Cash Flow, Corporate Finance, and Takeovers', American Economic Review, Vol. 76, pp. 323-329.

- Kahle, K.M. (2002, 'When a Buyback isn't a Buyback: Open Market Repurchases and Employee Options', Journal Of Financial Economics, Vol. 63, pp. 235-261.

- Lakonishok, J., A. Shleifer, and R. Vishny, R.W. (1994), 'Contrarian Investment, Extrapolation, and Risk.', Journal of Finance, Vol. 49, pp. 1541-1578.

- Li, W. and E. Lie (2006), 'Dividend Changes and Catering Incentives', Journal of Financial Economics, Vol. 80, pp. 293-308.

- Miller, M. And K. Rock (1985), 'Dividend Policy Under Asymmetric Information', Journal of Finance, Vol. 40 (September), pp. 1031-1051.

- Ng, J., F. Vasvari, and R. Wittenberg-Moerman, R. (2010), 'The Participants in the TARP Capital Purchase Program: Failing or Healthy Banks?' Chicago Booth Research Paper No. 20-10.

- Nissam, D. and A. Ziv (2001), 'Dividend Changes and Future Profitability', Journal of Finance, Vol. 56, pp. 2111-2133.

- Ofer, A. And A. Thakor (1987), 'A Theory of Stock Price Responses to Alternative Corporate Cash Disbursement Methods: Stock Repurchases and Dividends', Journal of Finance, Vol. 42 (June), pp. 365-394.

- Skinner, D. (2008), 'The Evolving Relation Between Earnings, Dividends, and Stock Repurchases.', Journal of Financial Economics, Vol. 87, pp. 582-609

- Vafeas, N. (1997), 'Determinants of The Choice Between Alternative Share Repurchase Methods', Journal of Accounting, Auditing and Finance, Vol. 12, pp. 101-124.

- Vermaelen, T. (1981), 'Common Stock Repurchases and Market Signaling: An Empirical Study', Journal of Financial Economics, Vol. 9, pp. 139-183.

- Vermaelen, T. (1984), 'Repurchase Tender Offers, Signaling and Managerial Incentives', Journal of Financial and Quantitative Analysis, Vol. 19, pp. 163-181.

- Vermaelen, T. (2005), 'Share Repurchases, Foundations and Trends', in Finance, Vol. 1, pp. 171-268 (Hanover, MA, Now Publishers).

- Veronesi P. and L. Zingales (2010), 'Paulson's Gift', Journal of Financial Economics, Vol. 97, pp. 339-368.

## Exhibit 1 – Sample Firms

| | | | |
|---|---|---|---|
| 1 | Accredited Home Lenders | 59 | **JP Morgan Chase & Co.** |
| 2 | Alabama National Bancorporation | 60 | **Keycorp** |
| 3 | Amcore Financial Inc. | 61 | **Lehman Brothers Holding** |
| 4 | Associated Banc-Corp | 62 | **M&T Bank Corp** |
| 5 | Astoria Financial Corp. | 63 | MAF Bancorp Inc. |
| 6 | Bancorpsouth Inc. | 64 | **Marshall & Ilsley Corp.** |
| 7 | **Bank of America Corp** | 65 | MB Financial Inc. |
| 8 | Bank of Hawaii Corp. | 66 | Mercantile Bankshares Corp. |
| 9 | **Bank of New York Mellon** | 67 | **Merrill Lynch & Co. Inc.** |
| 10 | Bankatlantic Bancorp | 68 | **Morgan Stanley** |
| 11 | Bankunited Financial Corp. | 69 | **National City Corp.** |
| 12 | **BB&T Corp.** | 70 | National Pen Bancshare |
| 13 | **Bear Stearns Companies** | 71 | NBT Bancorp Inc. |
| 14 | BFC Financial Corp. | 72 | New York Community Bancorp |
| 15 | BOK Financial | 73 | Newalliance Bancshares |
| 16 | Boston Private Financial Holdings | 74 | **Northern Trust Corp.** |
| 17 | Capitol Federal Financial | 75 | Northwest Bancorp Inc. |
| 18 | Cathay General Bancorp | 76 | Old National Bancorp |
| 19 | Central Pacific Financial Corp. | 77 | Pacific Capital Bancorp. |
| 20 | Chittenden Corp. | 78 | Pacwest Bancorp |
| 21 | **Citigroup Inc.** | 79 | Park National Corp. |
| 22 | Citizens Republic Bancorporation | 80 | **PNC Financial Services Group** |
| 23 | City National Corp | 81 | Popular Inc. |
| 24 | Colonial Bancgroup | 82 | Provident Bankshares Co. |
| 25 | **Comerica Inc.** | 83 | Provident Financial Services Inc. |
| 26 | Commerce Bancorp Inc. | 84 | **Regions Financial Corp.** |
| 27 | Compass Bancshares Inc. | 85 | Signature Bank (NY)\ |
| 28 | Corus Bankshares Inc. | 86 | SKY Financial Group Inc. |
| 29 | **Countrywide Financial Corp.** | 87 | South Financial Group Inc. |
| 30 | Cullen/Frost Bankers Inc. | 88 | Sovereign Bancorp Inc. |
| 31 | CVB Financial Corp. | 89 | Sterling Financial Corp. |
| 32 | Delta Financial Corp. | 90 | **Suntrust Banks Inc.** |
| 33 | Downey Financial Corp. | 91 | Susquehanna Bancshares |
| 34 | East West Bancorp Inc. | 92 | SVB Financial Group |
| 35 | **Fannie Mae** | 93 | **Synovus Financial Corp.** |
| 36 | First Citizens Bancshares | 94 | TCF Financial Corp. |
| 37 | First Commonwealth Financial Corp. | 95 | Trustmark Corp. |
| 38 | First Horizon National | 96 | **U.S. Bancorp** |
| 39 | First Midwest Bancorp. Inc. | 97 | UCBH Holdings Inc. |
| 40 | First Niagara Financial | 98 | UMB Financial corp. |
| 41 | Firstfed Financial Corp. | 99 | Umpqua Holdings Corp. |
| 42 | Firstmerit Corp | 100 | **UnionBanCal Corp.** |
| 43 | **Fifth Third Bancorp** | 101 | United Bankshares Inc. |
| 44 | Flagstar Bancorp Inc. | 102 | United Community Banks |
| 45 | FNB Corp. | 103 | Valley National Bancorp |
| 46 | Franklin Bank Corp. | 104 | **Wachovia Corp.** |
| 47 | Fremont General Corp. | 105 | Washington Federal Inc. |
| 48 | Fulton Financial Corp. | 106 | **Washington Mutual Inc.** |
| 49 | **Goldman Sachs Group Inc.** | 107 | Webster Financial Corp. |
| 50 | Greater Bay Bancorp | 108 | **Wells Fargo & Co.** |
| 51 | Hancock Holding Co. | 109 | Westamerica Bancorporation |
| 52 | Hudson City Bancorp Inc. | 110 | Whitney Holding Corp. |
| 53 | Huntington Bancshares | 111 | Wilmington Trust Corp |

54 Indymac Bancorp Inc.
55 International Bancshares Corp.
56 Investors Bancorp Inc.
57 Investors Financial Services
58 Irwin Financial Corp.
112 Wintrust Financial Corp.
113 Zions Bancorporation

*Large firms indicated in bold print.*

**Table 1 - Descriptive statistics of sample for selection year 2006**

| | | All Firms | | Large Firms | | | Other Firm | |
|---|---|---|---|---|---|---|---|---|
| | | N | | N | | | N | |
| Assets | Mean | 113 | 120,631 | 28 | 444,643 | *** | 85 | 13,898 |
| | Median | | 12,891 | | 191,074 | *** | | 9,828 |
| MVE | Mean | 113 | 16,461 | 28 | 59,112 | *** | 85 | 2,412 |
| | Medium | | 2,151 | | 28,532 | *** | | 1,709 |
| Tier 1 Ratio | Mean | 101 | 9.933 | 20 | 8.544 | *** | 81 | 10.276 |
| | Median | | 9.770 | | 8.515 | *** | | 9.900 |
| TCE Ratio | Mean | 113 | 6.340 | 28 | 4.974 | *** | 85 | 6.790 |
| | Median | | 6.311 | | 4.830 | *** | | 6.480 |
| Return on TCE | Mean | 113 | 0.196 | 28 | 0.248 | | 85 | 0.179 |
| | Median | | 0.196 | | 0.268 | *** | | 0.173 |
| Market to Book | Mean | 113 | 1.992 | 28 | 2.075 | | 85 | 1.965 |
| | Median | | 1.912 | | 2.004 | | | 1.855 |

*Assets* is the book value of assets measured as of the end of 2006 (millions); *MVE* is the market value of common stock outstanding, measured as of the end of the fiscal year 2006 (millions); *Tier 1 Ratio* is the tier 1 capital ratio calculated according to FDIC and OTC thrift rules and reported during the fourth quarter of fiscal 2006 (percent); *TCE Ratio* is calculated as tangible common equity divided by tangible assets as of the end of fiscal 2006 (percent); *Return on TCE* is fiscal 2006 net income divided by average common tangible equity; *Market to Book* is the ratio of the market value of common equity divided by the book value of common equity. *Large Firms* are defined as having a fiscal 2006 market value of equity of at least the 85th percentile of the NYSE while *Other Firms* have a fiscal 2006 market value of equity of less than then 85th percentile of the NYSE. *** and ** indicate a 0.01 and 0.05 difference respectively between the large firms and other firms using a two sample mean test and Wilcoxon sum rank tests of the medians.

**Table 2: Descriptive Statistics of firm payouts 2004 - 2007**

| Panel | A - All Firms | N | $ DIV | $ RP | % RP | RP / TCE | DIV / NI | PO / NI | % Change CSOS |
|---|---|---|---|---|---|---|---|---|---|
| 2004 | - Mean | 112 | 379.7 | 312.1 | 0.0172 | 0.0351 | 0.3952 | 0.6700 | 0.0643 |
| | - Median | | 52.0 | 12.8 | 0.0091 | 0.0273 | 0.4150 | 0.5859 | 0.0119 |
| 2005 | - Mean | 112 | 423.9 | 561.1 | 0.0220 | 0.0649 | 0.4284 | 1.0519 | 0.0181 |
| | - Median | | 54.3 | 23.9 | 0.0114 | 0.0328 | 0.4108 | 0.6481 | 0.0033 |
| 2006 | - Mean | 113 | 472.7 | 681.1 | 0.0242 | 0.0732 | 0.3960 | 0.7171 | 0.0450 |
| | - Median | | 56.0 | 28.0 | 0.0140 | 0.0387 | 0.4315 | 0.7080 | 0.0064 |
| 2007 | - Mean | 102 | 584.7 | 656.8 | 0.0360 | 0.0941 | 0.4477 | 1.0092 | 0.0125 |
| | - Median | | 75.5 | 63.2 | 0.0315 | 0.0848 | 0.4597 | 0.9004 | -0.0090 |

| Panel | B - Large Firms | N | $ DIV | $ RP | % RP | RP / TCE | DIV / NI | PO / NI | % Change CSOS |
|---|---|---|---|---|---|---|---|---|---|
| 2004 | - Mean | 31 | 1,258.2 *** | 1,062.9 *** | 0.0303 *** | 0.1022 ** | 0.4104 | 0.8234 * | 0.0853 |
| | - Median | | 565.0 *** | 530.8 *** | 0.0242 *** | 0.0794 ** | 0.4271 | 0.7786 *** | 0.0156 |
| 2005 | - Mean | 30 | 1,446.0 *** | 2,001.1 *** | 0.0405 *** | 0.1208 *** | 0.4136 | 0.9324 | -0.0017 ** |
| | - Median | | 609.0 *** | 537.5 *** | 0.0330 *** | 0.1092 *** | 0.4636 | 0.9412 *** | -0.0100 ** |
| 2006 | - Mean | 28 | 1,731.5 *** | 2,625.7 *** | 0.0453 *** | 0.1457 *** | 0.4094 | 0.9648 *** | 0.0260 |
| | - Median | | 879.8 *** | 968.2 *** | 0.0389 *** | 0.1238 *** | 0.4562 | 0.9374 *** | -0.0077 ** |
| 2007 | - Mean | 29 | 1,892.8 *** | 2,207.3 *** | 0.0453 * | 0.1245 | 0.4487 | 0.9453 | 0.0187 |
| | - Median | | 914.0 *** | 1,098.3 *** | 0.0414 ** | 0.1343 ** | 0.4663 | 0.8994 | -0.0028 |

| Panel | C – Other Firms | N | $ DIV | $ RP | % RP | RP / TCE | DIV / NI | PO / NI | % Change CSOS |
|---|---|---|---|---|---|---|---|---|---|
| 2004 | - Mean | 80 | 43.5 | 24.7 | 0.0121 | 0.0095 | 0.3894 | 0.6105 | 0.0561 |
| | - Median | | 34.8 | 4.6 | 0.0043 | 0.0065 | 0.4135 | 0.4879 | 0.0118 |
| 2005 | - Mean | 82 | 49.9 | 34.3 | 0.0153 | 0.0444 | 0.4338 | 1.0957 | 0.0253 |
| | - Median | | 39.2 | 9.1 | 0.0065 | 0.0193 | 0.4083 | 0.5355 | 0.0056 |
| 2006 | - Mean | 85 | 58.1 | 40.5 | 0.0171 | 0.0493 | 0.3916 | 0.6356 | 0.0513 |
| | - Median | | 41.5 | 12.4 | 0.0066 | 0.0189 | 0.4218 | 0.5791 | 0.0096 |
| 2007 | - Mean | 73 | 65.0 | 57.3 | 0.0324 | 0.0824 | 0.4473 | 1.0347 | 0.0100 |
| | - Median | | 47.4 | 40.0 | 0.0300 | 0.0746 | 0.4567 | 0.9013 | -0.0106 |

*$ DIV* is common dividends paid during the year (millions); *$RP* is the total value of share repurchases and shares accepted in lieu of employee stock exercise prices and other tax withholdings for employee stock compensation redemptions (millions); *% RP* is the number of shares repurchased during the year to common shares outstanding at the end of the prior year; *RP / TCE* is the dollar amount of shares repurchased to tangible common equity measured at the end of the prior fiscal year; *DIV / NI* is common dividends *t* divided by income available to common shareholders at *t-1*; *PO / NI* is total payouts to common shareholders (dividends plus share repurchases) divided by net income available to common shareholders at *t-1* ; is net income divided by average assets. *% Change CSOS* is the percentage reduction in common shares outstanding between *t-1* and *t.* A firm is considered a large firm if its market value of equity at the end of the prior year is at least in the 85 percentile of the NYSE. . ***, **, and * indicate a 0.01, 0.05, and 0.10 difference respectively between the large firms and other firms using a two sample means test and Wilcoxon sum rank tests of the medians.

**Table 3: Characteristics of Repurchasing Firms**

Panel A: Descriptive Statistics

| | Full Sample | | | Repurchasers | | | No Repurchases | |
|---|---|---|---|---|---|---|---|---|
| | N | Mean | Median | N | Mean | Median | N | Mean | Median |
| RP | 403 | 0.0233 | 0.0133 | 286 | 0.0329 *** | 0.0285 *** | 117 | 0.0000 | 0.0000 |
| Size | 403 | 0.5975 | 0.5500 | 286 | 0.6505 *** | 0.6500 *** | 117 | 0.4679 | 0.4000 |
| Adj. Ret | 403 | -0.1114 | -0.0910 | 286 | -0.1254 ** | -0.0972 ** | 117 | -0.0771 | -0.0757 |
| Cash | 403 | 0.0565 | 0.0318 | 286 | 0.0644 *** | 0.0327 *** | 117 | 0.0373 | 0.0280 |
| Options | 403 | 0.0125 | 0.0090 | 286 | 0.0125 | 0.0091 | 117 | 0.0126 | 0.0090 |
| Div. Payout | 403 | 0.4100 | 0.4267 | 286 | 0.4446 ** | 0.4590 *** | 117 | 0.3253 | 0.3204 |
| MB | 403 | 2.1874 | 2.0662 | 286 | 2.1914 | 2.0656 | 117 | 2.1776 | 2.0662 |
| TCE Ratio | 403 | 0.0639 | 0.0619 | 286 | 0.0653 * | 0.0627 | 117 | 0.0605 | 0.0602 |
| FCF | 403 | 0.0206 | 0.0177 | 286 | 0.0192 ** | 0.0173 | 117 | 0.0240 | 0.0179 |

Panel B: Pearson Correlation Coefficients

| | Size | Adj Ret | Cash | Options | Div Payout | MB | TCE Ratio | FCF |
|---|---|---|---|---|---|---|---|---|
| RP | 0.2608 | -0.1160 | 0.2843 | 0.2505 | -0.0532 | -0.1694 | 0.0145 | 0.0510 |
| | (0.000 | (0.020) | (0.000) | (0.000) | (0.286) | (0.001) | (0.772) | (0.307) |
| Size | | 0.1944 | 0.4227 | 0.2202 | 0.1374 | 0.0944 | -0.2283 | 0.1639 |
| | | (0.000) | (0.000) | (0.000) | (0.006) | (0.058) | (0.000) | (0.001) |
| Adj. Ret | | | 0.2546 | 0.2668 | -0.1541 | 0.0801 | 0.1008 | 0.2973 |
| | | | (0.000) | (0.000) | (0.002) | (0.109) | (0.043) | (0.001) |
| Cash | | | | | -0.1933 | -0.0460 | -0.1663 | 0.4105 |
| | | | | | (0.000) | (0.357) | (0.001) | (0.000) |
| Options | | | | | -0.2403 | -0.0416 | -0.3187 | 0.4436 |
| | | | | | (0.000) | (0.405) | (0.000) | (0.000) |
| Div. Payout | | | | | | -0.0677 | 0.1888 | -0.4170 |
| | | | | | | (0.175) | (0.000) | (0.000) |
| MB | | | | | | | 0.0005 | 0.0904 |
| | | | | | | | (0.992) | (0.070) |
| TCE Ratio | | | | | | | | -0.3453 |
| | | | | | | | | (0.000) |

*RP* equals the number of shares repurchased (non-employee redemptions) divided by common shares outstanding at the end of the prior year. *Size* is measured as the Ken French break point related to the NYSE market percentile measured at the end of the last month of the prior fiscal year; *Adj Ret* is the firm's annual return adjusted by the CRSP value weighted market return; *Cash* is the firm's cash and short term assets divided by total assets, measured at the end of the prior year; *Options* are the number of options exercised during the year divided by common shares outstanding at the end of the prior fiscal year; *Div Payout* is common dividends *t* divided by income available to common shareholders at *t-1*; are the number of options exercised during the current year deflated by the common shares outstanding measured at the end of the prior year; *MB* is the ratio of the market value of equity to the book value of equity, measured at the end of the prior year; *TCE Ratio* is tangible common equity divided by tangible assets, measured at the end of the prior year; *FCF* is equal to the current year operating income before depreciation less taxes paid, common dividends and preferred dividends paid divided by the book value of assets measured at the end of the prior year. All continuous variables are winsorized at the top and bottom 1%. P values reported in parenthesis. ***, **, and * indicate a 0.01, 0.05, and 0.10 difference respectively between the repurchasing and non-repurchasing firms using a two sample means test and Wilcoxon sum rank tests of the medians.

**Table 4 - Panel A**

Panel Tobit and Linear regressions of the motivations for repurchases by bank

| | | Tobit Models | | Regression | |
|---|---|---|---|---|---|
| | Predicted Sign | Model 1 | Model 2 | Model 3 | Model 4 |
| Intercept | ± | -0.0320 | -0.0494 | -0.0637 | -0.0079 |
| | | (0.004) | (0.000) | (0.000) | (0.478) |
| Adj Ret | - | -0.0443 | -0.0182 | -0.0183 | -0.0088 |
| | | (0.000) | (0.125) | (0.118) | (0.427) |
| MB | - | -0.0060 | -0.0040 | -0.0039 | -0.0064 |
| | | (0.014) | (0.106) | (0.108) | (0.002) |
| Cash | + | 0.1048 | 0.0785 | 0.0736 | -0.0082 |
| | | (0.000) | (0.009) | (0.010) | (0.31) |
| FCF | + | -0.2394 | -0.1845 | -0.1357 | 0.2074 |
| | | (0.156) | (0.269) | (0.432) | (0.273) |
| Div Payout | ± | -0.0086 | -0.0076 | -0.0057 | -0.0268 |
| | | (0.292) | (0.355) | (0.472) | (0.001) |
| TCE Ratio | + | 0.3361 | 0.3512 | 0.3553 | 0.2550 |
| | | (0.000) | (0.000) | (0.000) | (0.000) |
| Options | + | 0.5813 | 0.6526 | 0.6862 | 0.6678 |
| | | (0.000) | (0.000) | (0.000) | (0.000) |
| Size | + | 0.0495 | 0.0506 | 0.0685 | 0.0357 |
| | | (0.000) | (0.000) | (0.000) | (0.000) |
| 2005 | ± | | 0.0115 | 0.0120 | 0.0121 |
| | | | (0.007) | (0.004) | (0.000) |
| 2006 | ± | | 0.0151 | 0.0160 | 0.0130 |
| | | | (0.001) | (0.000) | (0.000) |
| 2007 | ± | | 0.0267 | 0.0715 | 0.0496 |
| Size * 2007 | ± | | (0.000) | (0.000) | (0.000) |
| | | | | -0.0699 | -0.0459 |
| | | | | (0.000) | (0.000) |
| N | | 403 | 403 | 403 | 286 |
| Pseudo (adj) $R^2$ | | 0.2449 | 0.2871 | 0.3416 | 0.3676 |

Models1 - 3 report the results estimating a Tobit model for all firm year observations with available information and Model 4 reports the results of the multivariate regression for firms with non-zero repurchases. The dependent variable is *RP* or the number of common shares repurchased (non-employee redemptions) during the year divided by common shares outstanding at the beginning of the year. *Adj Ret* is the firm's annual return adjusted by the CRSP value weighted market return; *MB* is the ratio of the market value of equity to the book value of equity, measured at the end of the prior year; *Cash* is the firm's cash and short term assets divided by total assets, measured at the end of the prior year; *FCF* is equal to the operating income before depreciation less taxes paid, common dividends and preferred dividends paid divided by the book value of assets measured at the end of the prior year; *Div Payout* is common dividends *t* divided by income available to common shareholders at *t-1*; *TCE Ratio* is tangible common equity divided by tangible assets, measured at the end of the prior year; *Options* are the number of stock options exercised during the year divided by common shares outstanding at the end of the prior fiscal year; *Size* is measured as the Ken French break point related to the NYSE market percentile measured at the end of the last month of the prior fiscal year; *2005, 2006,* and *2007* are indicator variable of 1 for firm observations in the respective year and 0 otherwise. All continuous variables are winsorized at the top and bottom 1%. White heterskedastic consistent *p* values are reported in parenthesis.

**Table 4 - Panel B**

Annual Tobit Regressions explaining the probability that a bank makes a share repurchase

| | Predicted Sign | 2004 | 2005 | 2006 | 2007 |
|---|---|---|---|---|---|
| Intercept | ± | -0.0419 | -0.0666 | -0.0410 | 0.0154 |
| | | (0.021) | (0.001) | (0.035) | (0.620) |
| Adj Ret | - | -0.0084 | 0.0002 | -0.0417 | -0.0189 |
| | | (0.636) | (0.994) | (0.147) | (0.373) |
| MB | - | -0.0032 | -0.0021 | -0.0032 | -0.0063 |
| | | (0.358) | (0.633) | (0.593) | (0.266) |
| Cash | + | 0.0504 | 0.0462 | 0.1167 | 0.0109 |
| | | (0.279) | (0.416) | (0.121) | (0.879) |
| FCF | + | -0.6486 | -0.4937 | -0.4447 | 0.3064 |
| | | (0.070) | (0.252) | (0.181) | (0.465) |
| Div Payout | ± | -0.0022 | 0.0054 | -0.0059 | -0.0284 |
| | | (0.868) | (0.673) | (0.698) | (0.095) |
| TCE Ratio | + | 0.2770 | 0.4657 | 0.2330 | 0.3655 |
| | | (0.021) | (0.008) | (0.115) | (0.037) |
| Options | + | 0.4801 | 1.3265 | 1.2244 | 0.3063 |
| | | (0.000) | (0.000) | (0.001) | (0.306) |
| Size | + | 0.0673 | 0.0731 | 0.0609 | 0.0091 |
| | | (0.000) | (0.000) | (0.000) | (0.572) |
| N | | 99 | 104 | 103 | 97 |
| $N_{repurchases}$ | | 63 | 69 | 71 | 83 |
| Pseudo $R^2$ | | 0.2678 | 0.2642 | 0.2311 | 0.0490 |

The dependent variable is *RP* or the number of common shares repurchased (non-employee redemptions) during the year divided by common shares outstanding at the beginning of the year. *Adj Ret* is the firm's annual return adjusted by the CRSP value weighted market return; *MB* is the ratio of the market value of equity to the book value of equity, measured at the end of the prior year; *Cash* is the firm's cash and short term assets divided by total assets, measured at the end of the prior year; *FCF* is equal to the operating income before depreciation less taxes paid, common dividends and preferred dividends paid divided by the book value of assets measured at the end of the prior year; *Div Payout* is common dividends *t* divided by income available to common shareholders at *t-1*; *TCE Ratio* is tangible common equity divided by tangible assets, measured at the end of the prior year; *Options* are the number of stock options exercised during the year divided by common shares outstanding at the end of the prior fiscal year; *Size* is measured as the Ken French break point related to the NYSE market percentile measured at the end of the last month of the prior fiscal year. All continuous variables are winsorized at the top and bottom 1%. White heterskedastic consistent p values are reported in parenthesis

**Table 5: Quarterly Comparisons of CPP and Non-CPP across Payout Activities and Capital Adequacy Ratios 2004 - 2008**

| | | Non- CPP firms | | | | | | CPP FIRMS | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | N | Payout | Div | RP | Tier 1 | TCE | N | Payout | Div | RP | Tier 1 | TCE |
| Q1 2004 | Mean | 24 | 0.2270 | 0.1091 | 0.1180 | 12.36 ** | 7.91 | 57 | 0.2355 | 0.1343 | 0.1012 | 10.20 | 6.83 |
| | Median | | 0.2038 | 0.1017 * | 0.0530 | 11.47 ** | 7.39 * | | 0.2040 | 0.1473 | 0.0167 | 9.80 | 6.56 |
| Q2 | Mean | 23 | 0.3121 | 0.1292 | 0.1830 * | 12.05 * | 7.65 * | 58 | 0.2210 | 0.1386 | 0.0825 | 10.35 | 6.31 |
| | Median | | 0.2498 | 0.1118 * | 0.0555 | 11.12 | 6.88 ** | | 0.1949 | 0.1453 | 0.0162 | 9.91 | 6.06 |
| Q3 | Mean | 24 | 0.2238 | 0.1073 * | 0.1165 | 11.76 * | 7.94 ** | 58 | 0.1839 | 0.1353 | 0.0487 | 10.14 | 6.52 |
| | Median | | 0.1608 | 0.1097 * | 0.0127 | 11.59 ** | 7.32 ** | | 0.1710 | 0.1439 | 0.0016 | 9.58 | 6.27 |
| Q4 | Mean | 25 | 0.1879 | 0.1021 ** | 0.0858 | 11.39 | 7.44 | 59 | 0.2217 | 0.1555 | 0.0662 | 10.41 | 6.55 |
| | Median | | 0.1228 | 0.1066 ** | 0.0095 | 11.60 ** | 7.31 * | | 0.1823 | 0.1436 | 0.0041 | 9.73 | 6.17 |
| Q1 2005 | Mean | 24 | 0.2930 | 0.1047 * | 0.1247 | 11.21 * | 7.57 ** | 57 | 0.2800 | 0.1362 | 0.1438 | 9.92 | 6.18 |
| | Median | | 0.1412 | 0.1108 * | 0.0238 | 10.70 * | 7.06 ** | | 0.2150 | 0.1455 | 0.0495 | 9.60 | 6.10 |
| Q2 | Mean | 25 | 0.1981 | 0.1113 | 0.0868 | 11.36 ** | 8.01 ** | 57 | 0.2463 | 0.1365 | 0.1097 | 9.79 | 6.32 |
| | Median | | 0.1646 | 0.1127 | 0.0021 | 10.47 ** | 7.23 ** | | 0.1995 | 0.1483 | 0.0342 | 9.60 | 6.17 |
| Q3 | Mean | 25 | 0.2260 | 0.1044 * | 0.1217 | 11.32 ** | 7.83 ** | 57 | 0.2068 | 0.1331 | 0.0736 | 9.77 | 6.25 |
| | Median | | 0.1531 | 0.1116 ** | 0.0147 | 10.42 *** | 7.10 ** | | 0.1901 | 0.1459 | 0.0222 | 9.49 | 6.17 |
| Q4 | Mean | 25 | 0.2397 | 0.1074 ** | 0.1323 | 11.19 * | 7.58 * | 59 | 0.2261 | 0.1504 | 0.0757 | 9.87 | 6.20 |
| | Median | | 0.1550 | 0.1114 ** | 0.0404 | 10.70 ** | 6.91 ** | | 0.2004 | 0.1441 | 0.0067 | 9.30 | 6.02 |
| Q1 2006 | Mean | 27 | 0.2140 | 0.1052 ** | 0.1088 | 10.96 * | 7.63 ** | 58 | 0.2681 | 0.1360 | 0.1321 | 9.66 | 6.03 |
| | Median | | 0.1540 | 0.1069 ** | 0.0341 | 10.65 ** | 7.15 *** | | 0.2192 | 0.1502 | 0.0687 | 9.09 | 5.97 |
| Q2 | Mean | 27 | 0.2246 | 0.1091 ** | 0.1155 | 10.61 ** | 7.93 *** | 58 | 0.2537 | 0.1425 | 0.1102 | 9.57 | 5.90 |
| | Median | | 0.1686 | 0.1151 ** | 0.0359 | 10.71 ** | 7.09 *** | | 0.2033 | 0.1502 | 0.0289 | 9.43 | 5.91 |
| Q3 | Mean | 27 | 0.1853 | 0.1025 * | 0.0828 | 10.64 ** | 8.10 *** | 58 | 0.2144 | 0.1310 | 0.0835 | 9.67 | 6.22 |
| | Median | | 0.1451 | 0.1118 ** | 0.0122 | 10.47 ** | 7.51 *** | | 0.1646 | 0.1470 | 0.0040 | 9.36 | 6.22 |
| Q4 | Mean | 27 | 0.1905 | 0.1060 *** | 0.0845 | 10.54 * | 7.97 *** | 59 | 0.2382 | 0.1605 | 0.0777 | 9.77 | 6.25 |
| | Median | | 0.1627 | 0.1087 ** | 0.0222 | 10.94 ** | 7.58 *** | | 0.1745 | 0.1496 | 0.0086 | 9.56 | 6.06 |
| Q1 2007 | Mean | 27 | 0.2164 * | 0.1067 ** | 0.1096 | 10.45 ** | 8.06 *** | 58 | 0.2835 | 0.1383 | 0.1453 | 9.63 | 6.15 |
| | Median | | 0.1847 | 0.1140 ** | 0.0935 | 10.41 ** | 7.82 *** | | 0.2548 | 0.1486 | 0.0977 | 9.52 | 6.01 |
| Q2 | Mean | 27 | 0.3253 | 0.1303 | 0.1950 | 10.29 * | 7.83 *** | 58 | 0.3335 | 0.1427 | 0.1908 | 9.52 | 5.93 |
| | Median | | 0.3332 | 0.1140 ** | 0.1089 | 10.18 ** | 7.27 *** | | 0.2525 | 0.1510 | 0.1325 | 9.51 | 5.85 |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Q3 | Mean | 27 | 0.3326 | 0.1064 ** | 0.2262 | 10.80 * | 7.68 *** | 58 | 0.2953 | 0.1444 | 0.1509 | 9.37 | 5.91 |
| | Median | | 0.3010 | 0.1104 ** | 0.1832 | 10.19 ** | 7.30 *** | | 0.2608 | 0.1463 | 0.1028 | 9.25 | 5.94 |
| Q4 | Mean | 27 | 0.2588 | 0.1062 ** | 0.1526 | 10.05 ** | 7.55 *** | 59 | 0.2484 | 0.1559 | 0.0925 | 9.06 | 5.89 |
| | Median | | 0.1856 | 0.1067 ** | 0.0215 | 10.20 ** | 7.11 *** | | 0.2128 | 0.1525 | 0.0150 | 9.15 | 5.93 |
| Q1 2008 | Mean | 26 | 0.1522 | 0.1021 * | 0.0501 | 9.85 ** | 7.52 *** | 58 | 0.1732 | 0.1325 | 0.0407 | 9.04 | 5.79 |
| | Median | | 0.1294 | 0.1059 * | 0.0047 | 9.94 ** | 7.54 *** | | 0.1608 | 0.1469 | 0.0005 | 9.07 | 6.02 |
| Q2 | Mean | 26 | 0.1226 | 0.0916 * | 0.0310 | 9.76 | 7.37 *** | 58 | 0.1455 | 0.1251 | 0.0205 | 9.27 | 5.61 |
| | Median | | 0.1122 | 0.0955 * | 0.0001 | 10.01 | 7.19 *** | | 0.1451 | 0.1360 | 0.0000 | 9.24 | 5.74 |
| Q3 | Mean | 26 | 0.1096 | 0.0920 | 0.0175 | 9.70 | 7.24 *** | 58 | 0.1215 | 0.1156 | 0.0059 | 9.37 | 5.54 |
| | Median | | 0.1123 | 0.0944 | 0.0000 | 10.00 | 6.97 *** | | 0.1096 | 0.1096 | 0.0000 | 9.21 | 5.75 |
| Q4 | Mean | 26 | 0.1024 | 0.0919 | 0.0105 | 9.64 *** | 6.57 ** | 59 | 0.1249 | 0.1223 | 0.0026 | 11.31 | 5.43 |
| | Median | | 0.0949 | 0.0809 | 0.0000 | 9.96 *** | 6.92 * | | 0.1039 | 0.1036 | 0.0000 | 11.20 | 5.75 |

Sample includes all firms which could have applied for CPP funds beginning in 3Q 2008 which have all available data for the quarter. The sample excludes Morgan Stanley and Goldman Sachs which were not organized as bank holding companies prior to 4Q 2008. CPP firms received capital infusions from the government in 2008 or 2009 while non-CPP firms did not. *Payout* is the sum of common dividends paid and all (program and employee compensation redemptions) share repurchases during the quarter divided by assets at the end of the prior quarter ($Assets_{q^{-}1}$). *DIV* is common dividends paid during the quarter divided by $Assets_{q-1}$. *RP* is the value of common shares repurchased divided by Assets at the end of the prior quarter. *Total Payout*, *DIV*, and *RP* are expressed as percents (i.e. * 100). $Tier1_q$ is the Tier 1 to risk-based assets as reported at the end of the quarter to banking regulatory authorities. $TCE_q$ is tangible common equity divided by tangible assets as of the end of the quarter expressed as a percent. ***, **, and * indicate a 0.01, 0.05, and 0.10 significance respectively of two sample test of means and the Wilcoxon sum rank tests of medians (two tail).

**Table 6: Quarterly Bank Descriptive Statistics**

Panel A: All Years 2004 - 2007

| | Full Sample | | | CPP Sample | | | "Other firms" Variable | | N |
|---|---|---|---|---|---|---|---|---|---|
| | Mean | Median | N | Mean | Median | N | Mean | Median | |
| ΔTCE Ratio | 1441 | -0.00879 | -0.00239 | 1212 | -0.00931 | -0.00200 | 1126 | -0.00652 | -0.00028 |
| $TCE\ Ratio_{q-1}$ | 1441 | 0.06800 | 0.06426 | 1212 | 0.06927 | 0.06471 | 1126 | 0.07090 | 0.06592 |
| Size | 1441 | 0.59455 | 0.55000 | 1212 | 0.58391 | 0.55000 | 1126 | 0.49702 | 0.50000 |
| Div | 1441 | 0.00128 | 0.00138 | 1212 | 0.00134 | 0.00141 | 1126 | 0.00119 | 0.00127 |
| RP | 1441 | 0.00111 | 0.00027 | 1212 | 0.00118 | 0.00038 | 1126 | 0.00100 | 0.00012 |
| ΔNPAT | 1441 | 0.00030 | 0.00002 | 1212 | 0.00027 | 0.00002 | 1126 | 0.00034 | 0.00003 |
| Loan Growth | 1441 | 0.01900 | 0.01400 | 1212 | 0.01841 | 0.01355 | 1126 | 0.01953 | 0.01387 |
| EBTP | 1441 | 0.00488 | 0.00494 | 1212 | 0.00494 | 0.00500 | 1126 | 0.00465 | 0.00477 |
| MB | 1441 | 2.13265 | 2.00927 | 1212 | 2.15700 | 2.03233 | 1126 | 2.12894 | 2.00394 |

Panel B: Pearson Correlation Table of Full Sample (p values in parenthesis)

| Variable | $TCE_{q-1}$ | Size | Div | RP | NPAT | Loan Growth | EBTP | MB |
|---|---|---|---|---|---|---|---|---|
| TCE Ratio | -0.1211 | -0.0072 | -0.0404 | -0.2441 | -0.0394 | -0.3798 | 0.0660 | 0.0216 |
| | (0.000) | (0.786) | (0.125) | (0.000) | (0.135) | (0.000) | (0.012) | (0.413) |
| $TCE\ Ratio_{q-1}$ | | -0.1841 | -0.0260 | 0.1693 | -0.0456 | 0.0976 | 0.0634 | -0.0840 |
| | | (0.000) | (0.324) | (0.000) | (0.083) | (0.000) | (0.016) | (0.001) |
| Size | | | 0.3517 | 0.1252 | -0.1260 | -0.0502 | 0.3482 | 0.1729 |
| | | | (0.000) | (0.000) | (0.000) | (0.057) | (0.000) | (0.000) |
| Div | | | | 0.1339 | -0.0648 | -0.0555 | 0.3845 | 0.1693 |
| | | | | (0.000) | (0.014) | (0.035) | (0.000) | (0.000) |
| RP | | | | | -0.0229 | -0.0674 | 0.1616 | 0.0664 |
| | | | | | (0.385) | (0.011) | (0.000) | (0.012) |
| NPAT | | | | | | -0.0180 | -0.1894 | -0.2108 |
| | | | | | | (0.496) | (0.000) | (0.000) |
| Loan Growth | | | | | | | 0.0350 | 0.0261 |
| | | | | | | | (0.184) | (0.321) |
| EBTP | | | | | | | | 0.4588 |
| | | | | | | | | (0.000) |

*Full Sample* includes all quarterly observations with all available information. *CPP Sample* includes all firms which were eligible to apply for CPP funds starting in October 2008 while *"Other Firms"* excludes the largest banks (*Size* ≥ 0.85). *TCE Ratio* is the percentage change in the tangible common equity ratio measured between the beginning and the end of the quarter, *q*. $TCE\ Ratio_{q-1}$ is tangible common equity ratio reported at the end of the prior quarter. *Size* is measured as the Ken French break point related to the NYSE market percentile measured at the end of the prior quarter. *Div* is measured as common dividends paid during the quarter divided by total assets at the end of the prior quarter ($Assets_{q-1}$). *RP* are share repurchases made during the quarter divided by $Assets_{q-1}$. $\Delta NPAT$ is the percentage change in non-performing assets from the beginning to the end of the quarter. *Loan Growth* is the percentage change in the ratio of net loans to total assets measured between the beginning to the end of the quarter. *EBTP* is quarterly pretax earnings before the provision for loan losses divided by average assets from the beginning to the end of the quarter. *MB* is the ratio of market value of equity to the book value of equity measured at the end of the prior quarter

**Table 7: Analysis of Firm Payouts on Change in Tangible Common Equity Ratio**

| | Predicted Sign | Full Sample | CPP Sample | "Other" Firms |
|---|---|---|---|---|
| Intercept | ± | 0.0114 | 0.0160 | 0.0240 |
| | | (0.405) | (0.346) | (0.185) |
| $TCE\ Ratio_{q-1}$ | - | -0.1777 | -0.1891 | -0.3196 |
| | | (0.082) | (0.085) | (0.011) |
| Size | - | -0.0081 | -0.0131 | 0.0026 |
| | | (0.383) | (0.222) | (0.847) |
| Div | - | -8.0567 | -8.1267 | -9.0986 |
| | | (0.002) | (0.002) | (0.001) |
| RP | - | -10.9541 | -9.5352 | -9.2125 |
| | | (0.000) | (0.000) | (0.000) |
| ΔNPAT | - | -2.3123 | -2.1677 | -2.9797 |
| | | (0.096) | (0.158) | (0.025) |
| Loan Growth | - | -0.9164 | -0.9526 | -0.9597 |
| | | (0.000) | (0.000) | (0.000) |
| EBTP | + | 6.4539 | 5.4533 | 6.0716 |
| | | (0.000) | (0.001) | (0.000) |
| MB | - | -0.0012 | -0.0015 | -0.0036 |
| | | (0.654) | (0.627) | (0.286) |
| Q1 | ± | -0.0026 | 0.0085 | 0.0055 |
| | | (0.406) | (0.104) | (0.312) |
| Q2 | ± | -0.0110 | -0.0081 | -0.0071 |
| | | (0.065) | (0.210) | (0.312) |
| Q3 | ± | 0.0290 | 0.0303 | 0.0310 |
| | | (0.000) | (0.000) | (0.000) |
| 2005 | ± | -0.0026 | -0.0117 | -0.0024 |
| | | (0.692) | (-0.15) | (0.778) |
| 2006 | ± | 0.0127 | 0.0147 | 0.0113 |
| | | (0.029) | (0.028) | (0.128) |
| 2007 | ± | 0.0019 | 0.0035 | 0.0018 |
| | | (0.762) | (0.633) | (0.819) |
| N | | 1441 | 1212 | 1126 |
| Adj. $R^2$ | | 0.2844 | 0.2801 | 0.2822 |

*Full Sample* includes all quarterly observations with all available information. *CPP Sample* includes all firms which were eligible to apply for CPP funds starting in October 2008 while "*Other Firms*" excludes the largest banks (*Size* ≥ 0.85). Δ*TCE Ratio* is percentage change in the tangible common equity ratio measured between the beginning and ending of quarter*, q. TCE Ratio*$_{q-1}$ is tangible common equity ratio reported at the end of the prior quarter. *Size* is measured as the Ken French break point related to the NYSE market percentile measured at the end of the prior quarter. *Div* is measured as common dividends paid during the quarter divided by total assets at the end of the prior quarter ($Assets_{q-1}$). *RP* are share repurchases made during the quarter divided by $Assets_{q-1}$. Δ*NPAT* is the percentage change in non-performing assets from the beginning to the end of the quarter. *Loan Growth* is the percentage change in the ratio of net loans to total assets measured between the beginning and the end of the quarter. *EBTP* is quarterly pretax earnings before the provision for loan losses divided by average assets from the beginning to the end of the quarter. *MB* is the ratio of market value of equity to book value of equity measured at the end of the prior quarter. Newey and West adjusted *p* values (to correct for serial correlation) reported in parentheses.