The Carrot and the Stick: Bank Bailouts and the Disciplining Role of Board Appointments

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Keywords: corporate governance, directors, bank bailouts

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This paper empirically examines the Capital Purchase program (CPP) under TARP that was used by the U.S. government to bail out distressed banks with equity infusions. We hypothesize that a feature of the CPP, namely the ability of the government to appoint directors on the assisted bank's board in case it missed six quarterly dividend payments, was a governance intrusion that banks would wish to avoid. Therefore, it would address both (i) the ex ante moral hazard that banks would take actions that increased the likelihood of a future government bailout as well as (ii) the ex post moral hazard that banks would undertake actions after receiving bailout funding that would increase the government's risk exposure. We find evidence consistent with this hypothesis: in the empirical distribution of missed payments there is a sharp discontinuity at five and the probability of a sixth missed payment after missing five payments is sharply lower than the other transition probabilities. The appointment of government directors improves the bank's profitability and reduces its risk. As a special case, the firing of Citicorp's CEO in the third quarter of 2012 after the appointment of new directors on its board, pursuant to government participation in its common equity, induced a sharp exodus of assisted banks from the CPP.

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1 Introduction

Despite the well-publicized negative effect of bailouts on ex ante incentives, it is often practically infeasible for governments to avoid bailing out failing banks, especially if many banks fail together, i.e. in the presence of systemic risk. This is the "too many to fail" phenomenon that has been noted in previous research (e.g. Acharya and Yorulmazer (2007), and Farhi and Tirole (2012)). We last witnessed this in spectacular fashion during the 2007-09 financial crisis, as governments all over the world scrambled to save scores of troubled institutions in order to prevent a catering of their economies. Once governments realized that this was an insolvency risk crisis triggered by sharp declines in bank equity, optimal course of action was deemed to be a rapid recapitalization of banks (e.g., Berger and Roman (2020), Thakor (2018a,b)). But the problem with recapitalization is that banks claim it is extremely difficult and expensive to raise equity in the midst of a crisis, a problem exacerbated by the opacity of bank balance sheets, excessively high asset price volatility and elevated counterparty risk. To deal with this challenge, the governments can provide the necessary capital by buying equity in troubled banks. However, as Philippon and Skreta (2012) and Tirole (2012) point out in their theories, this inevitably involves taxpayer subsidies for banks, so it has a direct cost. Moreover, there is also an indirect cost – such bailouts engender moral hazard, so a further restraint is imposed on the governments[1].

How should a government assist a distressed bank through a capital infusion, while also dealing with both the adverse ex ante effect on bank incentives[2] as well as the possible adverse ex post incentives after receiving the capital infusion[3]?

In this paper we investigate this issue by studying how the Federal Reserve and the U.S. Treasury addressed this question in designing the Capital Purchase Program (CPP) that was used to infuse equity capital into banks under the funding authorization provided by the Troubled Asset Relief Program (TARP). Under this program, started in October 2008, funding was provided to 707 banks using dividend-paying preferred shares and subordinated debt. A key feature of the program was the linking of dividend payments on preferred stock to the say the government had in the corporate governance of the bank. If the bank missed six dividend payments, then the Treasury could appoint up two (voting) directors to be on the board. It is clear that putting its own directors on the board allows the government to *potentially* exercise corporate governance influence to deal with ex post moral hazard. But whether the potential is realized

1. In particular, if banks anticipate that during times of distress they will receive subsidized equity from the government, then their incentives to be highly capitalized could potentially be weakened in the first place, which then makes it more likely that the government will have to step in and provide subsidized equity in the future.
2. Merton (1977) was the first to recognize that a *de jure* safety net like deposit insurance will generate both risk-shifting incentives in banks and also encourage banks to use too little capital. A bailout, if anticipated, is a *de facto* safety net.
3. This incentive may be to run the bank in a way that does not protect the interests of the government, i.e., not to make dividend payments on the preferred stock purchased by the government.

to make this an effective mechanism depends on whether these are ceremonial appointments or involve directors with sufficient knowledge and experience to flex their corporate governance muscles and actually affect decision-making and bank performance. Moreover, the *ex ante* incentive effects are unclear. For example, if banks welcome the subsidized funding during a future crisis and view the government directors as ceremonial appointments, they may choose to be very thinly capitalized in order to make such access to subsidies possible. On the other hand, if they view the accompanying corporate governance intrusion by the government as unwelcome, then they would take steps to avoid it, which makes the adverse ex ante effect on the bank's capitalization incentive a less serious concern.

This raises the following research questions that we examine empirically in this paper. First, do banks view the access to government bailout funding and the affiliated director appointments favorably or unfavorably? In particular, do banks try to avoid these appointments? This also addresses the related question of ex ante incentive effects and whether the government directors play a meaningful role in the governance of the bank or they are viewed as ceremonial appointments. Second, how does the appointment of government directors affect the performance of the bank? This addresses the related question of ex post incentive effects.

A hint is provided by what we call the "Vikram Pandit shock". In February 2009, Citigroup asked the Treasury, which had previously invested $20 billion in Citigroup from the TARP, to convert a portion of its preferred security to common equity to strengthen its capital structure. At the same time, Citigroup agreed to alter the Board of Directors so to have a majority of independent directors. Six directors were appointed, three of whom had previous experience in government or banking supervision. Another appointee was Michael O'Neill, a former bank CEO who would later be appointed chairman of the Citi board; two years earlier, he had been considered a top contender for the Citi CEO job that ultimately went to Vikram Pandit. On October 15, 2012, O'Neill told Pandit that the board had lost confidence in him and that he should resign as Citi CEO. Pandit announced his resignation on October 16, 2012[4]. This suggests that at least some of these directors played an active role in corporate governance, and that bank CEOs may be averse to having them on the board.

To address the research questions above, we develop a simple model in which the bank manager (CEO) enjoys a private benefit of control and stands to lose it with government directors on the board. The bank gets equity funding from the government and, as per the structure of the CPP, it must make dividend payments to the government, with the stipulation that if a certain number of dividend payments are missed the government will appoint directors on the board. It takes (privately observed) costly effort by the manager

4. Silver-Greenberg and Craig (2012) report: "The background of the story is that O'Neill had pretty much been planning Pandit's ouster since he got there. There had always been tension, in part since O'Neill himself had been a contender for the CEO job back in 2007. As Chairman, O'Neill had been slowly working over each board member, building the case to let Pandit go. A dispute with the Fed from last March – in which Citigroup was denied the ability to start paying a dividend – was a major point in O'Neill's favor, allowing him to argue that Citi's frosty relationship with regulators was a major impediment."

to generate the cash to make the dividend payment in any period. This model generates the prediction that the manager will work harder to generate the cash to make a dividend payment as the bank gets closer to the threshold number of missed payments that will trigger the appointment of government directors. Consequently, the probability of a missed dividend payment will decline most precipitously right below the threshold for government director appointment, and be higher on either side of the threshold.

We then take the prediction to the data. We find the following main results. First, in response to the first research question, we find that banks seem to strongly attempt to avoid triggering the appointment of government directors on their boards. In our dataset, there is a clear discontinuity in the empirical distribution of missed payments between five and six missed payments. While the number of bank-quarters with five missed dividend payments is 3.4% lower than the number of observations with four missed dividend payments, the empirical frequency drops by 24% when we move from bank-quarters with five missed payments to bank-quarters with six missed payments. We then analyze the relationship between the number of missed payments and its average change to the next quarter.

For banks that have missed one, two or three dividend payments, missed payments increase on average by 0.77–0.80. Banks that have missed four dividend payments, are more "disciplined" and the average change in the number of missed payments drops to 0.64. For banks that have missed five payments (these are the banks on the edge of the precipice), the number of missed dividend payments increases, on average, by only 0.42. Once the bank has crossed the Rubicon and missed six dividend payments, the average change in the number of missed dividend payments rises sharply, to 0.77. These findings are consistent with our theoretical framework and are validated by a more rigorous econometric analysis, where we examine their statistical robustness and control for potential confounding variables.

Moreover, we also examine the impact of the "Vikram Pandit shock". We examine for each quarter the number of banks that are in the CPP and that are eligible for a director appointment, which are the banks whose CEOs are arguably more under "threat" of being fired. We focus on a $(-2,+2)-$year window surrounding Q4-2012, the quarter of the "Pandit" shock. We find a sharp discontinuity in the number of "undisciplined" banks in the program, which starts dropping precisely after Pandit's firing. We further show that the rate of exit from the CPP due to redemption of the shares owned by the Treasury increases rapidly after this event, consistent with our hypothesis that the Pandit's firing made the consequences of unfriendly boards more *salient* to CEOs of banks funded by the Treasury. Conversely, we do not observe a similar pattern for banks that are not eligible for director appointments, whose exit rate, if anything, appears to decline over the same time window.

In response to the second research question, it appears that poor performance is correlated with the likelihood of missing dividend payments, and the appointment of government directors improves performance.

Banks that have missed at least one dividend payment (which comprise roughly one third of the institutions in our sample) are less profitable (based on ROA and ROE) and have lower capital ratios. The average bank has 2.42 missed dividend payments outstanding. We then examine the consequences of *actual* director appointments. Of the 162 banks that, at any given point in time, become eligible for a director appointment, 16 do receive at least one Treasury-appointed director. We match "treated" banks with institutions in the CPP that are similar in terms of a number of observable characteristics. After government directors come on board, ROA and ROE both improve, and the ratio of non-performing loans to total loans declines. We do not observe differences in the trends of these variables prior to the appointments, suggesting that our matching procedure does a good job addressing selection concerns. Moreover, there is some evidence of agency costs declining as well, since CEO compensation declines on average after the government directors join the board. Interestingly, this is not an *across-the-board* decline. Rather, compensation declines only for CEOs whose banks are performing poorly in terms of ROA and ROE; i.e., pay-for-performance sensitivity increases.

Our results have policy ramifications that deserve further study. They imply that there is a mechanism available to the government for bailing out banks through (possibly subsidized) capital infusions while still limiting both ex ante and ex post moral hazard. Thus, rather than focusing on how to avoid bailouts, there could be a focus on designing mechanisms to limit/eliminate moral hazard with bailouts.

Our paper is related to many strands of the literature. One strand is the literature specifically on TARP and the CPP. A good overview of these topics is provided by Bayazitova and Shivdasani (2012), who study applications to the CPP program and the dividend payment behavior of banks. They find that weak banks were more likely to enroll in the program, but this participation was not perceived by investors as a negative signal. Berger and Roman (2020) and Calomiris and Khan (2015) provide detailed descriptions of the institutional details of these programs. Wilson and Wu (2012) examine banks that exited the program early and argue that it was due to restrictions on CEO compensation and diminished ability to raise private funding. Duchin and Sosyura (2014) study the default probability of CPP participants and find that the CPP program reduced the default probability only in the short term. A significant difference between this literature and our paper is that we focus on how anticipation of the change in corporate governance due to government director appointments influenced bank behavior both prior to the appointments and after these appointments.

This paper is also related to the broader literature on bank bailouts. Casey (2015) provide a framework for how bailout regulation should be structured. Philippon and Skreta (2012) and Tirole (2012) study the cost-minimizing interventions to restore lending and investment when markets fail due to adverse selection. Philippon and Wang (2021) develop a model in which a tournament among banks that may face the prospect of future bailouts can be designed ex ante to reduce the moral hazard engendered by bailouts. Acharya and Thakor (2016) develop a model in which the government bails out some banks to prevent "contagious liquidations" caused by creditors of even healthy banks liquidating their banks because they draw adverse (and sometimes erroneous) inferences about the values of commonly-held assets based on the liquidations of some banks by their creditors. In sharp contrast to these theoretical papers that do not consider the (temporary) appointment of government directors as an incentive alignment tool, we argue that a potentially optimal mechanism for the government to bail out banks with capital is to require in exchange an active role in government governance along the lines of the CPP. We perform an empirical examination of capital infusion bailouts with affiliated governance changes performed by the US Treasury under the CPP and show that indeed it influences bank behavior.

The rest of the paper is organized as follows. In Section 2 we discuss the relevant institutional details related to TARP and the CPP, and also describe the data. Section 3 presents a simple model and descriptive evidence on banks' dividend repayment behavior. Section 4 presents the main empirical results of the paper. Section 5 concludes.

2 Institutional Context and Data

In this section we provide a description of the relevant institutional details and the data.

2.1 Institutional Context

After the financial crisis the United States Treasury set up the Troubled Asset Relief Program (TARP) to support and stabilize the U.S. economy. TARP included several programs focusing on different sectors of the economy. Among them were also investment programs targeted at banks, such as the Capital Purchase Program (CPP), which started in October 2008, and later in 2010 the Community Development Capital Initiative (CDCI). The CPP was by far the largest of the two, and had the objective of promoting the recapitalization of banks. 707 banks decided to participate to this program and get recapitalized between October 2008 and December 2009.

Under the CPP, the U.S. Treasury offered to buy two different types of securities from participating institutions – preferred shares and subordinated debt. The Treasury also acquired warrants for the underlying securities of the institutions. The maximum amount an institution could receive from the Treasury was the minimum between $25 billion and 3% of its total risk weighted assets.

Given their structure, the two types of security were senior to the participating institution's common stock in terms of dividend payments and cash flow rights. Furthermore, the preferred shares incorporated two different dividend payment types, namely cumulative and non-cumulative dividend payments.

The vast majority of CPP shares were preferred shares (93% of banks selected this option) involving cumulative dividend payments (87% of those banks that selected the preferred shares option). The dividend payment amount was fixed at an annual coupon rate of 5% for the first 5 years and 9% afterwards for fixed quarterly dividend payment dates[5].

In addition to the dividend payment restrictions, the U.S. Treasury included an additional covenant related to the appointment of board directors. Five missed quarterly dividend payments to preferred shareholders by the bank would give the Treasury the option (but not the right) to send an observer to board meetings. If the institution missed six quarterly dividend payments, the Treasury had the right to appoint up to two board directors. These directors would be paid by the bank and were supposed to act in the best interest of the bank and all its shareholders. Appointing board directors was prioritized for institutions with investments larger than $25 million.

For *cumulative* preferred shares, a bank that missed a dividend payment was not allowed to distribute dividends to common shareholders until all the missed preferred dividend payments were made. In a similar vein, the right of the Treasury to appoint board directors could be extinguished only after *all* missed dividend payments had been made. To the extent that banks disliked such corporate governance intrusion by the government, this provided banks with strong incentives to make up all the missed dividend payments after crossing the threshold of six missed payments.

For *non-cumulative* preferred shares, the restriction was weaker but still significant. The bank simply had to make the latest dividend on the preferred stock in order to be allowed to pay common stock dividends. However, the right of the Treasury to appoint board directors after missing six dividend payments was abrogated only if dividends on the preferred shares were paid for *four consecutive* periods.

2.2 Data

We now describe the data sources used in this study. We begin with the data on the dividend payments on CPP securities, which we obtain from the monthly Interest and Dividend Reports available on the Treasury website[6]. These reports list the dividend payments made by each participating institutions as well as the outstanding number of missed payments. Director appointments and board observer requests are stated in the footnotes.

Although the CPP program started in October 2008, the first report was made available for May 2009 and

5. See “Initial Report to the Congress” from the Office of the Special Inspector General for the Troubled Assets Relief Program, February 6, 2009.
6. Available at the following url:
`https://www.treasury.gov/initiatives/financial-stability/reports/Pages/Dividends-and-Interest-Reports.aspx`

missed dividends are only reported from July 2010 onward. To fill the missing observations on the "stock" of outstanding missed dividends before July 2010, we count all the missed payment events and backfilled it to match the number of missed dividends in July 2010, taking repayments into account. Furthermore, we cross-check the appointment dates of board directors using the Initial Report to the Congress of the Special Inspector General for the Troubled Assets Relief Program (SIGTARP), allowing us to retrieve from the quarterly reports the exact dates and names of the appointed directors. We complement this dataset with information available in the TARP Transaction Reports on program entry and exit of participating institutions. Out of the 707 participating institutions, 11 had already exited the program before or on May 2009, leaving 696 banks with dividend payment data in our dataset. We restrict the analysis to banks that, beyond being in the program, did not file for bankruptcy, to prevent our result to be driven by defaulting banks with no option to making any payment.

Annual and quarterly balance sheet and income data covering the time period 2005 till 2019 are obtained from SNL financials. We rely on the U.S. Regulated Depository dataset, due to its broader coverage. We match the institutions in the CPP by name, city and state with banks in the SNL data flagged as being in the TARP program. Out of 696 CPP institutions, we match 561 with financial data. 162 banks had, at some point, missed at least 6 payments, and 16 received at least one board appointment.

To analyze the implications of this rule on executives and their compensation, we use BoardEx and SNL data on director and executive positions and their compensation for the period 2007–2019. Although SNL has a broad coverage in terms of director and executive positions, one drawback is that they report the positions only with start and end dates, which are often missing. To fill missing values, we first match companies in BoardEx with our SNL companies using the ISIN as identifier and increase this subset by matching again via name, state and city. Moreover, to additionally identify the same person in the two datasets, we merge the information of the 249 matched companies in BoardEx with the SNL information per institution, year and person. Fuzzy matching is applied on standardized names to identify the same person in both datasets and matches are manually checked. Furthermore, merging the two databases results in compensation data for 377 institutions for our sample. For the analysis of board director appointments, we used only the SNL Financials compensation data due to differences in the reporting between BoardEx and SNL Financials and the broader coverage of the institutions in this analysis. To further fill gaps in the panel and extend our dataset on board composition, named executives and their compensation, we hand-collect data using FR Y-6 filings from the Federal Reserve and DEF 14A filings from the SEC or FDIC available from SNL financials.

The final dataset is an unbalanced panel for the period 2007–2019 incorporating financial data, information on CPP dividend payments, and board members and executives as well as their compensation, when available.

3 Descriptive Evidence

In this section we begin with a simple theoretical model which shows how the likelihood of government-appointed directors can influence the bank's dividend payment strategy. The purpose of the model is simply to sharpen the intuition for the results of the empirical analysis. Then we present the summary statistics and some graphical evidence.

3.1 A Simple Model

We model the bank's dividend repayment behavior to derive a relationship between the outstanding number of missed dividend payments and the likelihood of missing an extra payment

The time horizon is infinite and the periodic discount rate is β. In every period, the bank has sufficient funds to make the dividend payment with probability e. The manager of the bank can affect this probability by expending effort at a privately-observed cost $c(e) \equiv ke^2/2$. The effort cost $c(e)$ may be thought as the work the bank manager has to put into risk management and in preserving funds to overcoming potential liquidity shortfalls. The manager of a bank without a Treasury-appointed director enjoys a private benefit B. The idea is that government-appointed directors may deny the bank's CEO operating flexibility and perks that directors hand–picked by the CEO would not. To simplify the analysis, our theoretical framework differs from the real world setting in two respect. First, we assume that the bank cannot repay ex post previously missed dividend payments; hence, at any point in time, the only two options available to the manager are making or missing the dividend payment. Second, we assume that, once the number of missed payments reaches a cutoff N^*, the private benefit B is lost forever, which can be interpreted as a director chosen by the Treasury being appointed with probability 1. We make the parametric assumptions $k > 4\beta^2 B$ and $k > \beta B/(1-\beta)$, which ensure the existence of a real and unique solution.

Let n be the number of missed dividend payments. We prove in Appendix A.1 the following simple result.

Proposition 1. *The probability of missing an additional dividend payment is equal to 1 if the number of missed payments is $n \geq N^*$. It is decreasing in n if $n < N^*$.*

Proof. *See Appendix A.1.*

The first part of the proposition is straightforward: Once the cutoff N^* has been crossed, the manager has no incentive to make any payment, as a positive e will generate an effort cost without any benefit for the manager. In Appendix A.1, we show that the optimal effort e^*, and hence, the probability of making a payment for $n < N^*$, satisfies:

$$e^* = \frac{\beta(V_n^* - V_{n+1}^*)}{k} \tag{1}$$

where V_n^* is the value function, in equilibrium, of a bank that has missed n dividend payments. Intuitively, when deciding whether to exert an additional unit of effort, the manager trades off the benefit of an increase in the likelihood of remaining in office the next period with n, rather than $n+1$ missed payments, against the cost of exerting effort. We show that $V_n^* - V_{n+1}^* > 0$ and that this difference is increasing in n. Intuitively, missing a payment when a bank is approaching the cutoff N^* can be very costly, as it increases the likelihood of eventually losing the private benefit B. Hence, e^* is increasing in n and, as a result, the probability of missing an extra dividend payment $1-e^*$ is *decreasing* in n for $n \leq N^*$. *Figure 1* below plots the relationship between the number of outstanding missed payments and the average change in missed payments in an example with $N^* = 6$. As we will see in Sections 3.3 and 4, it captures well the qualitative patterns of the data.

Figure 1 goes here

3.2 Descriptive Statistics

Panels A and B of *Table 1* presents descriptive statistics for the main variables used in the paper. Our starting sample includes 561 banks and 6725 bank-quarter observation, whose statistics are presented in Panel A.

The number of missed payments is measured at the end of the quarter and indicates the total missed dividend payments a bank is facing at that point in time. Each quarter the bank has the choice to pay a dividend (leaving the number of missed dividends unchanged with respect to the previous quarter) and even repay all or a fraction of the previously missed dividends (reducing the number of missed dividend payments with respect to the previous quarter) or miss a dividend payment (increasing the number of missed dividends by one with respect to the previous quarter).

ΔMissed payments is the quarter-to-quarter change in missed dividend payments. Log(Revenues) represents the logarithm of the sum of net interest income, noninterest income, and gains on sales of securities. As performance measures, we report ROA and ROE. ROA represents net income over average total assets (i.e., beginning plus ending assets divided by two) in percentage points. ROE represents net income over average total equity, also in percentage points. NPLs/Loans is defined as non-accrual and restructured loans as a percent of total loans and leases. We also report three different capital ratios. The leverage ratio represents the tier 1 capital as a percent of adjusted average assets. The risk–based capital ratio represents total regulatory capital as a percent of risk-adjusted assets in percentage points. Tier 1 capital ratio represents core capital (tier 1) as a percent of risk-adjusted assets. Finally, listed is an indicator variable for the company being publicly listed.

The average number of missed payments is 2.42. The distribution is skewed, with a median of 0 and a 99$^{\text{th}}$ percentile equal to 24 missed dividend payments. The mean of ΔMissed payments is 0.25 (the median is equal to 0).

In Panel B we zoom on the banks with at least one missed payment (193 banks), and focus on the bank-quarter where at least one dividend payment is missed which represent about one third of the sample (2,075 observations). It is immediately apparent, from comparing Panels A and B, that banks with at least one missed payment are much less "disciplined," as for them the average of the ΔMissed payments is 0.74 (median equal to 1). However, the bottom percentile of the distribution is -5, suggesting that some banks are indeed successful in reducing the stock of outstanding missed payments.

Not surprisingly, banks with at least one missed payment are less profitable, with average ROA and ROE equal to -0.83% and -16.11%, respectively, relative to full sample means of -0.24% and -5.06%. They are also slightly less likely to be publicly listed (38%, relative to 46% in the full sample). Interestingly, however, banks with at least one missed payment have, on average, lower leverage and comparable risk-based and tier 1 capital ratios.

3.3 Graphical Evidence

In this section we provide some preliminary descriptive evidence regarding the distribution of missed payments for banks included in the CPP program. We start by showing the distribution of missed dividend payments for each bank-quarter. As discussed in the previous section, our full sample includes 6,725 bank-quarters observations, 69% of which have zero missed payments. For clarity, we exclude them from the figures presented in this section, but we include them in the econometric analysis that follows.

For each bank-quarter we count the number of missed payments. The histogram in *Figure 2* shows that, of the remaining 2,075 observations, 1,118 crossed the six-missed payments threshold (54%). The histogram also shows a clearly decreasing pattern, with the frequency of observations declining almost monotonically with the number of missed payments.

Figure 2 goes here

While the distribution is relatively smooth, *Figure 2* also displays a clear "jump" between the five- and six-missed payments bars, with the empirical mass dropping discontinuously. To give a sense of the magnitude of the jump, the number of observations drops by 3.4% between the four- and five-missed payments bars, and by 24% between the five- and six-missed payments bars (from 170 to 130 observations).

This graphical evidence is consistent with our hypothesis: If managers dislike board appointments by the Treasury, they try strenuously to avoid hitting the six-missed payments threshold. As a result, once they miss five payments, they try avoiding missing an extra payment and may make additional payments to move far away from that threshold the could trigger the appointment of a director.

An alternative way to examine the effect of managers' incentives, motivated by the theoretical analysis presented in Section 3.1, is to inspect the *change* in the number of missed dividend payments between two consecutive quarters. If the firm does not miss a payment at time $t+1$, this difference will, of course, be equal to 0. Conversely, the difference will be equal to 1 if the bank misses a dividend payment in quarter $t+1$. Finally, this difference can be negative if the number of missed payments drops. This will occur if the bank not only makes a payment at time $t+1$ but also reduces the stock of outstanding missed payments by making some overdue payments left from previous periods.

Figure 3 plots the difference between the number of missed payments between quarters $t+1$ and t conditional on the outstanding number of missed payments at time t. For clarity, we "bin" observations with more than 10 missed payments in a single column and, as before, exclude banks with no missed payments. The figure shows that missing dividend payments is not an occasional behavior. The average change in the number of missed payments is always positive, suggesting that, on average, the number of outstanding missed payments increases in the following period. The extent of the increase is, however, highly heterogeneous.

Figure 3 goes here

Starting from the left, we see that for banks that have missed one, two, or three payments, missed payments increase, on average, by 0.77–0.80. This suggests that for these banks the cost of missing an extra payment is low, as the six-missed payments threshold is still relatively far. The average change in missed payments drops quite sharply for banks having an outstanding backlog of four missed payments. For these banks, the average change is 0.64. Intuitively, the manager trades off the benefit of avoiding a cash outflow (the dividend payment) against the cost of getting closer to the six-missed payments threshold. The lowest average change is observed for banks that have already missed five payments: for these banks, the number of missed payments increases, on average, only by 0.42. An additional missed payment will trigger the possibility of the appointment of a director by the Treasury. Hence, managers of these banks have the strongest incentive to not increase, or to reduce, the outstanding number of missed payments.

Interestingly, the average change in the number of missed payments increases substantially once a bank has crossed the six-missed payments threshold. This is, again, consistent with our hypothesis and with the simple model of Section 3.1. Once the bank has missed at least six payments, the cost of missing an additional payment becomes small, as making the required payment in period $t+1$ would not suffice to fully prevent the risk of having the Treasury appointing a director.

4 Empirical Evidence

In this section we provide the results of our empirical analysis

4.1 Prospect of Government-appointed Directors and Bank Behavior

Following up on the descriptive evidence of Figure 3, we now more formally test whether the possibility of the appointment of a board director by the Treasury affects the dividend payment behavior of banks in the CPP program. Specifically, we estimate the following model:

$$\Delta Missed\,Payments_{i,t+1} = \sum_j \beta_j \times \mathbb{1}(Missed\,Payments_{i,t} = j) + \delta' X_{i,t} + \varepsilon_{i,t+1} \tag{2}$$

where i indexes banks, t indexes quarters, X is a vector of control variables, and ε is an error term. Δ is the first-difference operator, so that $\Delta Missed\,Payments_{i,t+1} \equiv Missed\,Payments_{i,t+1} - Missed\,Payments_{i,t}$. Our coefficients of interest are the β_js, which measure the expected change (relative to the omitted category) in the number of dividend payments between quarters $t+1$ and t conditional on having missed j dividend payments up to quarter t. As in Figure 3, we bin together all firms having missed more than ten dividend payments (i.e., $j > 10$). To avoid collinearity, one of the β coefficients need to be set equal to zero. We exclude the coefficient β_5, so that all the coefficients can be interpreted as measuring the expected change in the number of missed payments relative to banks that have missed five payments.

Figure 4 plots coefficients obtained after estimating (2), together with 95% confidence intervals, without any control variables. Standard errors are clustered at the bank level. First, we find that banks with zero outstanding quarterly payments are by far the most "disciplined" group of banks, with a very low likelihood of missing a payment in $t+1$ (just 3.7%). However, banks with at least one missed payment are substantially more likely to miss additional payments. Specifically, β_1, β_2, and β_3 are all positive and statistically significant. This means that we can reject the null hypothesis that banks with 1, 2, and 3 missed payments and banks with five missed payments have the same expected change in the number of missed payments. The coefficient drops in magnitude and becomes statistically insignificant for $j = 4$: as banks get closer to the six-missed payment threshold, they become more reluctant to increase the backlog of missed payments further. The coefficients β_js are again sizeable and positive, and are all statistically significant for $j = 6, ..., > 10$, except for β_9, which is more noisily estimated. Overall, this evidence suggests that the findings discussed in Section 3.3 are statistically robust.

Figure 4 goes here

The results of this analysis are reported in *Table 2*. Column 1 simply reports the value of the coefficients presented in the plot of *Figure 4*. Column 2 includes time fixed effects. In column 3 we further include controls for size and leverage ratio. Finally, in the "kitchen sink" regression of column 4 we also include profitability, measured as ROA, the NPL ratio, the risk based and tier 1 capital ratios, and a publicly-listed dummy. The coefficients on the control variables generally have the expected sign. Smaller and less profitable firms are more likely to miss dividend payments, as well as firms with a higher stock of non-performing loans. More importantly, the vector of coefficients β_js is hardly affected.

In the analysis thus far, we have adopted a fully non-parametric approach. As an alternative approach, we can also "fit" a distribution of the outstanding missed payments to estimate the size of the discontinuity in $\Delta Missed\,Payments$ at 6. We approximate the relationship between the number of missed payments at t and its change between t and $t+1$ by fitting a polynomial, and test whether there is a discontinuity at 6. Specifically, we estimate the following model:

$$\begin{aligned}\Delta Missed_{i,t+1} = \sum_{k=1}^{K} \alpha_k \times (Missed_{i,t} - 6)^k + \mathbb{1}(Missed_{i,t} \geq 6) \times \sum_{k=1}^{K} \beta_k \times (Missed_{i,t} - 6)^k \\ + \gamma \times \mathbb{1}(Missed_{i,t}) + \delta' X_{i,t} + \varepsilon_{i,t+1}\end{aligned} \quad (3)$$

Notice that, while we are following a standard regression discontinuity approach, we are not making the assumption that there is no manipulation of the distribution of missed payments around the cutoff (see Lee and Lemieux, 2010); rather, our approach aims at measuring the extent of this manipulation.

The evidence in *Table 2* shows that the relationship between the outstanding number of missed payments and its change to the next period varies depending on whether the bank has at least six missed payments (weakly decreasing for banks below the threshold and roughly flat afterwards). Hence, it is important to fit two different polynomials, the degree of which is given by K, depending on which side a bank is relative to the cutoff. The coefficient of interest is γ.

Table 2 goes here

In *Table 3* we restrict the attention to a $(-5, +5)$ window, and fit polynomials of degree 1 (in columns 1 and 3) or 2 (columns 2 and 4). *Figure 5* shows the fit of both the linear and the quadratic polynomial. While in columns 1 and 2 we do not include controls, in columns 3 and 4 we include the same control variables considered in column 4 of *Table 2*. We find that the coefficient of interest varies between 0.37 and 0.67, and is significant at the 1% level in all the specifications, suggesting, again, a strong effect of the 6-missed payment cutoff on banks' repayment behavior.

Table 3 and Figure 5 go here

4.2 Matching Analysis to examine the Impact of Government-appointed Directors on Bank Performance

In this section we analyze the effect of a director appointment on bank performance. An important caveat of the analysis that follows is that the appointment of a director, among potentially eligible firms, may not be random. Since we do not have a valid instrument correlated with the likelihood of the appointment of a director, we adopt a matching strategy, where each "treated" firm, that is, a firm subject to the appointment of a director from the Treasury, is matched to control firms based on several observables. If two directors are appointed, we consider the year of the first appointment. As potential control banks, we select all the banks in the CPP that are never subject to the appointment of a director.

We matched treated and control firms based on size (measured as the logarithm of total revenues), the leverage ratio, the ratio of loans to deposit, and a dummy equal to 1 if the bank is listed. These variables are measured at the beginning of the year of the director appointment. Given that the number of potential control banks is much larger than the number of treated banks, we match each treated bank with (a maximum of) four control banks. For each bank, we select four banks with the closest propensity score, obtained by running a logistic regression of the treated dummy on the matching variables. We impose a maximum difference between the propensity scores of 0.025.

Out of the 16 treated banks, 15 have all the variables used for the matching non-missing, and 12 have at least 1 matched control satisfying the restriction on the ceiling on the difference in the propensity scores. Appendix A.2 present names of the treated banks, appointment dates, and directors' names for all the events considered, including those eventually excluded from the sample. Our final sample includes 56 unique firms.

The results of our matching procedure are reported in *Table 4*. The first and the second column report the means of each of the four variables used for the matching procedure. The third reports their difference and the fourth has the $p-$value computed under the null hypothesis of no difference in the means. We find that for the four variables the differences are economically small and we can reject the null hypothesis at conventional significance levels[7].

Table 4 goes here

7. For the listed status dummy the matching is *exact*, meaning that each listed firm is matched with a set of listed control firms with probability 1, and vice versa. However, some treated firms are matched with less than four control firms (due to the ceiling on the difference in the propensity scores), resulting in a small difference in the means of the listed dummy between the two groups.

4.3 Board Appointments and Firm Performance

To assess the effect of Treasury-appointed directors on firm performance, we estimate the following difference-in-differences model:

$$Y_{i,t} = \alpha Post + \beta Post \times Treated + \delta_t + \gamma_i + \varepsilon_{i,t} \tag{4}$$

In this equation $Post$ is a dummy equal to 1 in the year of the appointment and in the following years. $Treated$ is a dummy equal to 1 for firms that are eventually subject to a director appointment. Our coefficient of interest is β, which measures the change in the outcome variable Y after the director appointment for treated banks relative to the matched control group. For each firm, we keep a symmetric nine-year window around the appointment year (i.e., we keep four years before and four years after the director appointment), resulting in a total of 460 observations. All the dependent variables are Winsorized at the 1% level. Standard errors are clustered at the bank level.

The results of this exercise are reported in *Table 5*. We start by focusing, in column 1, on the effect on the ratio of non-performing loans to total loans, a standard measure of the quality of outstanding loans. We find a marked improvement, with the β coefficient being equal to -3.22 and significant at the 1% level. This is also economically significant, corresponding to about three fourths of the sample standard deviation (equal to 4.25%).

Table 5 goes here

Improved bank performance could be due to an improvement in the bank's screening of borrowers, and possibly more effective monitoring of bank management by the new directors. It may also reflect a general reduction in the agency costs of equity in the bank. Alternatively, as *de facto* government representatives, the new directors may seek to change the bank's lending policy in the direction of greater prudence and enhanced protection of the safety net. These two possibilities make different predictions about the effect on the profitability of the bank. In the first case, bank profitability should improve (with no predicted impact on risk), whereas, in the second scenario, the bank's reduction in risk may be obtained at the expense of its profitability.

To distinguish between these two possibilities, we examine the effect of a Treasury-appointed director on bank profitability. We find, in column 2, that the return-on-assets increases by 1.05%, roughly half of the sample standard deviation (2.05%). Similarly, we find in column 3 that the return-on-equity also increases by 13.58%, which is, again, economically significant (sample standard deviation equal to 44.44%). In both cases, the coefficients are statistically significant at the 1% level.

Finally, we examine the effect of director appointments on bank risk, by looking at the effect on risk-based (column 4) and tier 1 (column 5) capital ratios. This is another indirect test of whether directors "respond" to the Treasury or to the shareholders. Intuitively, in the first case we would expect these measures of risk to improve. However, in both cases, we are unable to reject the null hypothesis of no effect.

To examine the *timing* of the effect of the appointment of a director, we estimate the following event-study regression:

$$Y_{i,t} = \sum_{k=-4}^{4} \alpha_k D_{i,t}^k + \sum_{k=-4}^{4} \beta_k D_{i,t}^k \times Treated_i + \gamma_i + \delta_t + \varepsilon_{i,t} \quad (5)$$

Here $D^k \equiv \mathbb{1}(t = t_i^* + k)$, where t_i^* is the director appointment year for firm i. The coefficients of interest in this design are the βs, which capture the evolution of the dependent variable for treated and control banks around the director's appointment. To avoid collinearity, we exclude the dummy corresponding to the year before the appointment. The coefficient βs are plotted in Panels A, B, and C of *Figure 6* for the ratio of non-performing loans to total loans, ROA, and ROE, respectively. The coefficients display the expected pattern. There is no evidence of any pre-trend, whereas an improvement in performance is apparent starting from $k = 1$. Notice also that there is no evidence of mean reversion, suggesting that Treasury-appointed directors can have persistent effects.

Figure 6 goes here

4.4 CEO Turnover and Compensation

A clear implication of our results of Section 4.2 is that managers prefer to avoid letting the Treasury appoint directors to the board. Still, as shown in the previous section, their appointment appears to improve bank performance. Thus, we hypothesize that Treasury-appointed directors might impact managers' payoff, or private benefits, as in the stylized framework presented in Section 3.1. Specifically, we adopt the same empirical framework of (4), but estimate the effect of directors' appointments on CEO turnover, compensation, and pay-for-performance sensitivity. For each bank in our sample, we identify the CEO (or, when missing, the top officer, as indicated in the FR Y-6 filing) and her total reported compensation from the SNL database, complemented with data hand-collected from corporate filings. This data collection results in 442 observations for the turnover regressions and 260 for the compensation regressions.

In column 1 of *Table 6*, we test whether a director appointment is associated with an increase in CEO turnover. The dependent variable is a dummy equal to 1 if the bank's CEO in year t is different from the CEO in year $t - 1$, and 0 otherwise. We estimate a small and insignificant coefficient; hence, we do not find any evidence that CEO's job security is threatened by Treasury-appointed directors.

Another reason why CEOs might dislike Treasury-appointed directors is that they could affect their compensation scheme. In column 2 we replace the dependent variable with the logarithm of total reported compensation. We estimate a large and negative coefficient, –0.25, significant at the 10% level. Hence, there is evidence of a reduction in total pay for CEOs whose banks have government appointed directors on the board.

It is also possible that Treasury-appointed directors could affect the CEO's utility by strengthening the link between total pay and performance. This can incentivize higher CEO effort. To examine this, we add four terms to the model estimated in (4): a measure of bank performance, the interaction terms Post × Performance and Treated × Performance, and the triple interaction term Post × Treated × Performance. As proxies for performance we use the two profitability proxies employed in Section 4.3, ROA and ROE, the strongest determinants of CEO compensation in the banking industry (Bennett et al., 2021). Before constructing the interaction terms, we subtract the yearly sample means, effectively controlling for year fixed effects. In addition, we standardize the performance measures for ease of interpretation. The coefficient of interest is the one on the triple interaction term: a positive coefficient would suggest that, after the director's appointment, the pay-for-performance sensitivity of compensation increases.

As columns 3 and 4 of *Table 6* show, both coefficients are positive and of similar magnitude, significant at the 10% and 5% level when ROA and ROE are used as performance measures, respectively. The coefficients are of the same order of magnitude as the standalone coefficient on the Post × Treated interaction term; thus, while CEOs of banks with performance a standard deviation above them mean see no reduction in compensation, CEOs of poorly performing banks are much more adversely affected.

Table 6 goes here

4.5 The Effect of the "Pandit Shock"

We now examine whether the firing of Vikram Pandit had any effect on the other banks that were in the CPP. The idea is that the CEOs of banks that participated in the program may not have fully realized the power or inclination of the government-appointed directors to dismiss them. This is consistent with our finding that for the entire sample period we have looked at, the appointment of these directors did not result in a significant increase in CEO turnover at the treated banks. Nonetheless, the Pandit shock, which occurred three years after the start of the program, may have jolted the CEOs of other banks into recognizing a possibility they may have *a priori* attached little probability weight to.

As mentioned in the introduction, the recapitalization of Citigroup in February 2009 was followed by a significant reshuffling of its board of directors. Notice that the formal right of a director's appointment would be established only later that year. However, the commitment of Citigroup to appoint new independent director was announced by the Treasury together with the recapitalization decision, so that investors perceived the two events as clearly linked[8].

The actual appointments, announced between March and July, strengthened this perception. Three out of six had previously held public offices, and none of them had any private sector connection with Pandit[9]. More importantly, Michael O'Nell was an experienced banker and, previously, a top contender for the Citi CEO job. He would become Chairman of the Board in March 2012, a role that enabled him to oust Pandit on October 2012.

We hypothesize that this event might have caused an increase in the exit rate from the program for banks eligible for a director's appointment. As explained in Section 2.1, it is quite costly for banks to prevent the Treasury from appointing a director once the 6-missed payment threshold has been crossed; thus, the optimal choice could be to exit the program altogether.

As in the previous sections, we start by displaying suggestive graphical evidence. In Panel A of *Figure 7* we display, for each quarter-end, the total number of banks in the program (in green), and distinguish between banks eligible and non eligible for a director appointment (in blue and red, respectively). We restrict the attention to the 16 quarters surrounding the Pandit's resignation, which occurred at the beginning of the last quarter of 2012. For this analysis we exclude from the sample institutions whose timing of exit from the program was partially determined by the Treasury, namely banks whose shares were auctioned and banks that transitioned to the "Small Business Lending Fund", a program launched in 2011 and designed to promote lending to small firms[10].

Panel A of *Figure 7* shows that the total number of banks in the program declines smoothly. The number of non eligible banks, which dominate the full sample, follows a similar pattern. When we focus on the eligible banks, however, a distinct inverse U-shape pattern emerges. In Panel B we zoom on these institutions and find that their total number grows, as more and more banks cross the six-missed payment threshold, and reaches its peak right before the Pandit's resignation, when it starts a rapid decline.

Figure 7 goes here

8. See "Treasury Announces Participation in Citigroup's Exchange Offering", U.S. Department of the Treasury, press release available at `https://www.treasury.gov/press-center/press-releases/Pages/tg41.aspx`.

9. Anthony Santomero was a former president of the Federal Reserve Bank of Philadelphia (he resigned in 2011); Diana Taylor was the New York State Superintendent of Banks; Robert Joss was deputy to the Assistant Secretary for Economic Policy at the U.S. Treasury Department. The only connection between either appointee and Pandit reported in the BoardEx "Network" dataset was between him and Diana Taylor, as they were both members of the board of the Columbia Business School.

10. In 2012, the Treasury started to launch auctions to wind down its CPP investments for the shares of 190 banks in the CPP, with deadlines in August and October 2012. As a result, several banks left the program, especially in the first half of 2012. We exclude these institutions because the Treasury clearly affected both the timing of the exit and the selection of the remaining institutions. As for the Small Business Lending Fund, all CPP institutions were allowed to transition to this program if they had missed at most one dividend payment (hence, could not be eligible for a director appointment) and did not have more than 10 billion in assets. Excluding banks that exit the program in these two ways does not qualitatively affect the evidence presented in Figure 7 (The main difference is that the decline in the non eligible banks over time appears much steeper.)

Motivated by this evidence, we test whether the Pandit's resignation could have cause a sharp increase in the exit rate of banks that were likely targets of government director appointments. Importantly, we focus only on cases where the bank's exit was the outcome of an *active choice* by the management. To this end, we hand-collect from the TARP reports information on the exit of each individual bank. We start by excluding exits due to mergers and bankruptcies. Moreover, we exclude exits due to the U.S. Treasury's conversion of preferred shares into common shares. In these cases, the Treasury loses the right to appoint directly a director after six missed dividend payments, but, being the holder of shares with voting power, acquires the right to vote on the board composition. As a result of these restrictions, we retain only exits due to the redemption of shares by the treated institutions.

After applying these filters, we are left with 174 exits due to share redemptions by the CPP institutions, 157 of whom occur over this 16-quarter period (140 for eligible banks and 17 for non eligible banks). We plot the number of exits for each quarter in *Figure 8*. Given that the number of non eligible institutions still in the program declines over time (see *Figure 7*), the number of exits follows a similar downward trend, as shown by the red line. Conversely, exits are less frequent for eligible institutions, but display a sharp increase in the last quarter of 2012, after Pandit's resignation, with just two exits occurring in the two years before, and fifteen afterwards.

In *Table 7* we provide a statistical validation of these results by using a simple difference-in-differences design. The number of exits per quarter rises from 0.25 to 1.875 for eligible institutions. By contrast, it drops instead from 10.625 to 6.875 for non eligible banks. Hence, we estimate a 5.375 net "difference-in-difference" effect, significant at the 5% level ($t-$statistic$= 2.23$).

Figure 8 and Table 7 go here

5 Conclusion

We have examined the CCP program under TARP, which allowed the U.S. government to bail out distressed banks by infusing equity capital in them. This addressed a major impediment to the recovery of these banks, namely elevated insolvency risk. However, it is well known that bailouts engender moral hazard. We hypothesize that the CPP dealt with this by having a provision that allowed the government to put directors on the bank's board in case the bank missed a certain number of dividend payments. We argued that weather this was effective in deterring bailout related moral hazard would depend on weather the government appointed directors were "ceremonial" appointments or were directors who would flex their governance muscles. If it was the former, bank CEOs would be undeterred by the governance intrusion and the prospect of having access to subsidized equity in a future distress state would worsen bailout related moral hazard. If it was the latter, moral hazard would be lessened as bank CEOs would be eager to avoid this corporate governance intrusion by the government and would work hard to avoid it, which in turn would enhance the likelihood of the bank being managed in a way that would enable it to be strong enough financially to make the dividend payments. We find evidence that is consistent with this latter possibility.

Another tool for the government to deter moral hazard is to use its directors to create the perception that the CEO would be fired in case the bank was not being managed "appropriately". We show that the firing of Vikram Pandit at Citicorp actually appeared to serve this purpose, as it induced a sharp exodus of banks from the CPP. This exit was enabled by banks buying out the government's equity stake, which meant that private equity was infused to replace the government's investment, Consequently, this ended up being an effective device to get banks to recapitalize and ensure that the government's investment was limited in duration.

We also document that the appointment of government directors led to an improvement in bank profitability and a lowering of risk. These findings suggest the need for theories that provide conditions under which the kind of bailout mechanism used by the CPP is indeed the optimal mechanism to deal with the ex ante and ex post moral hazard created by the bailout.

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6 Figures

Figure 1
A Numerical Example

Figure 1 shows values for $1 - e_n^*$, the probability of missing a dividend payment conditional on having missed n payments, as implied by the model presented in Section 3.1. Parameter values are the following: $k = 6$, $B = 5$, $\beta = 0.5$, $N^* = 6$.

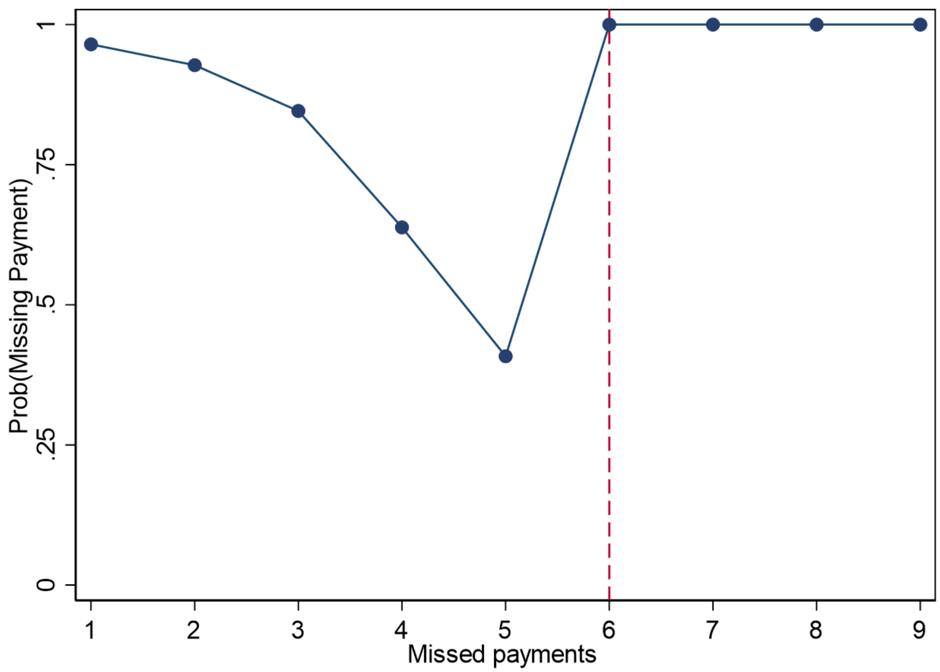


Figure 2
Distribution of Missed Dividend Payments

Figure 2 plots the distribution of missed dividend payments for bank-quarter observations. Observations of Banks having 0 missed payments are excluded, leaving 193 banks out of the 561 banks in the sample which missed at least one dividend payment. The time coverage is from May 2009 to October 2019.

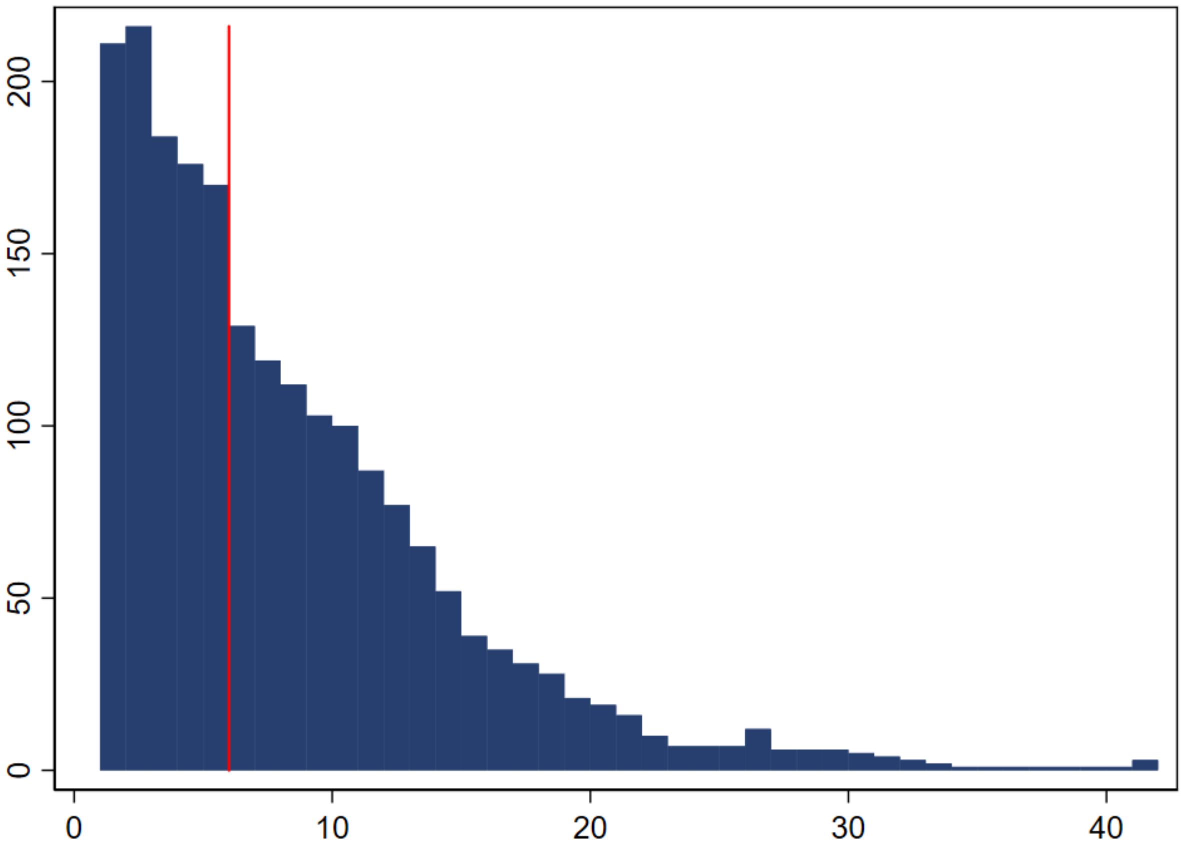


Figure 3
Conditional Distribution of Changes in Missed Dividend Payments

Figure 3 shows the average quarter-to-quarter change in the number of missed dividend payments for the 193 banks with 1, 2, ..., 10, and more than 10 missed dividend payments at the end of the previous quarter. Observations for Banks having 0 missed payments at the end of the previous quarter are excluded. The time coverage is from May 2009 to October 2019.

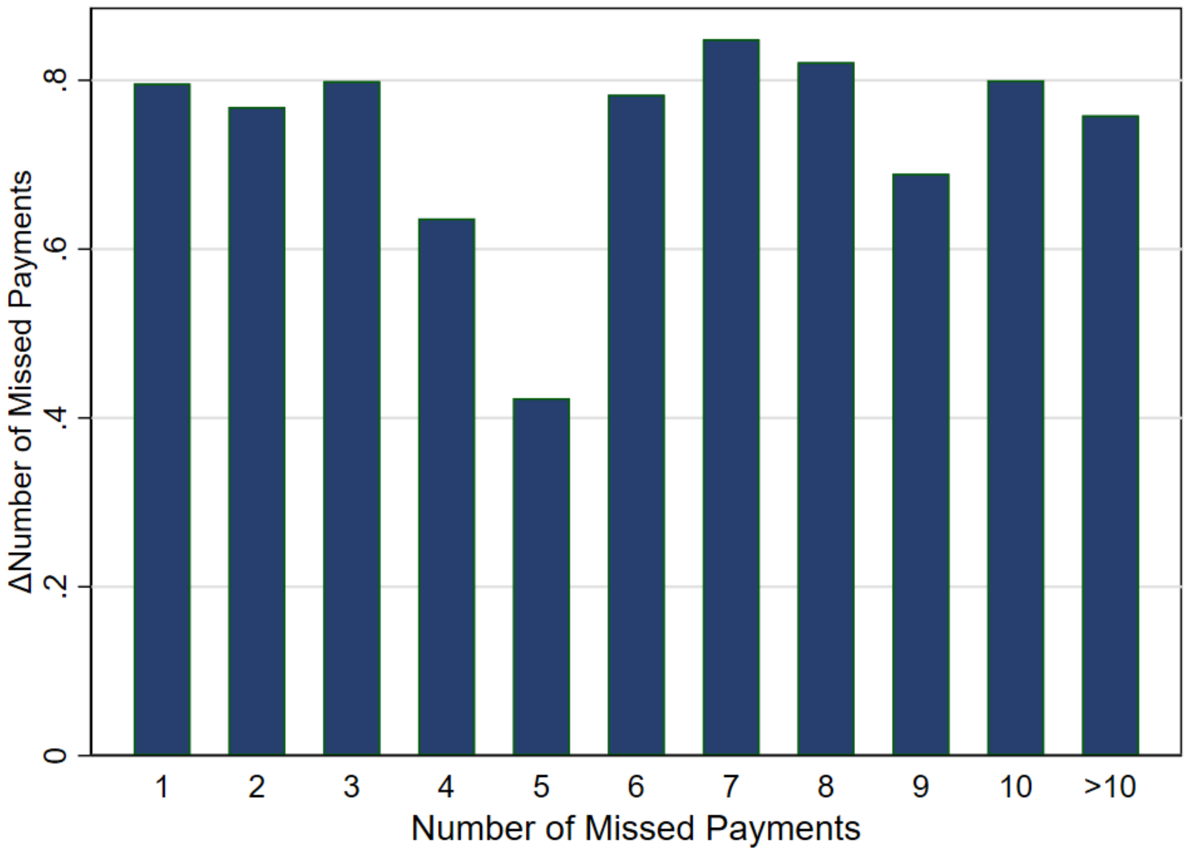


Figure 4
Missed Payments: Plot of OLS Coefficients

Figure 4 shows OLS coefficients and corresponding 95% confidence intervals obtained after regressing the quarter-to-quarter change in the number of missed dividend payments on dummies corresponding to the lagged level of missed dividends. The sample consists of 561 banks and the time coverage is from May 2009 to October 2019. The value corresponding to the number n on the $x-$axis represents the coefficient estimated on a dummy equal to 1 if the bank has n outstanding missed dividend payments. Banks with more than 10 missed dividend payments are binned together and the coefficient on the corresponding dummy is the rightmost one. Standard errors are clustered at the bank level.

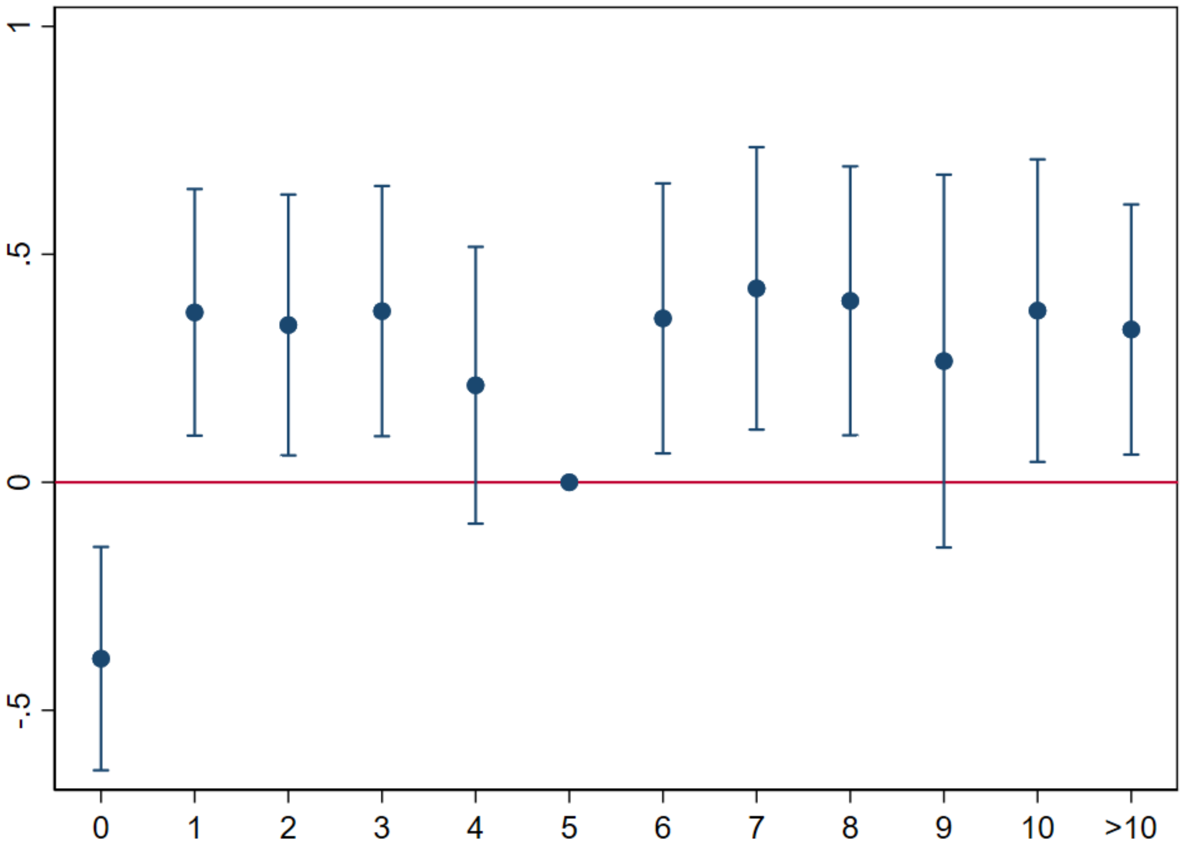
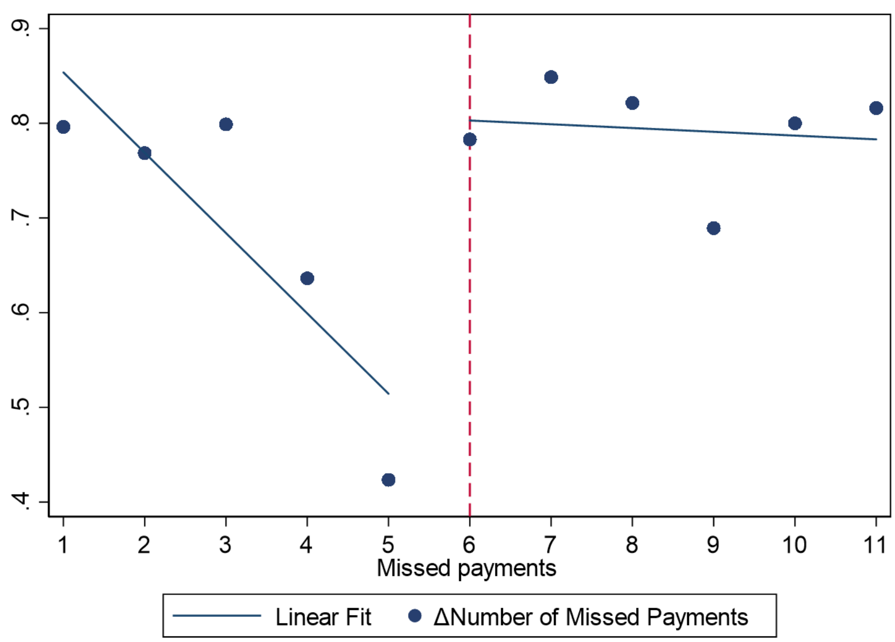


Figure 5
Change in Missed Payments: Polynomial Fits

Panels A and B of Figure 4 plot the quarter-to-quarter change in the number of missed dividend payments against the lagged number of missed payments. The sample consists of 561 banks and the time coverage is from May 2009 to October 2019. In Panel A (B) the blue line fits two linear (quadratic) relationships between the number of missed payments minus 6 and the change in missed payments, for banks with a number of missed payments between 1 and 5 (on the left) and between 6 and 11 (on the right). Standard errors are clustered at the bank level.

Panel A. Linear Fit



Panel B. Quadratic Fit

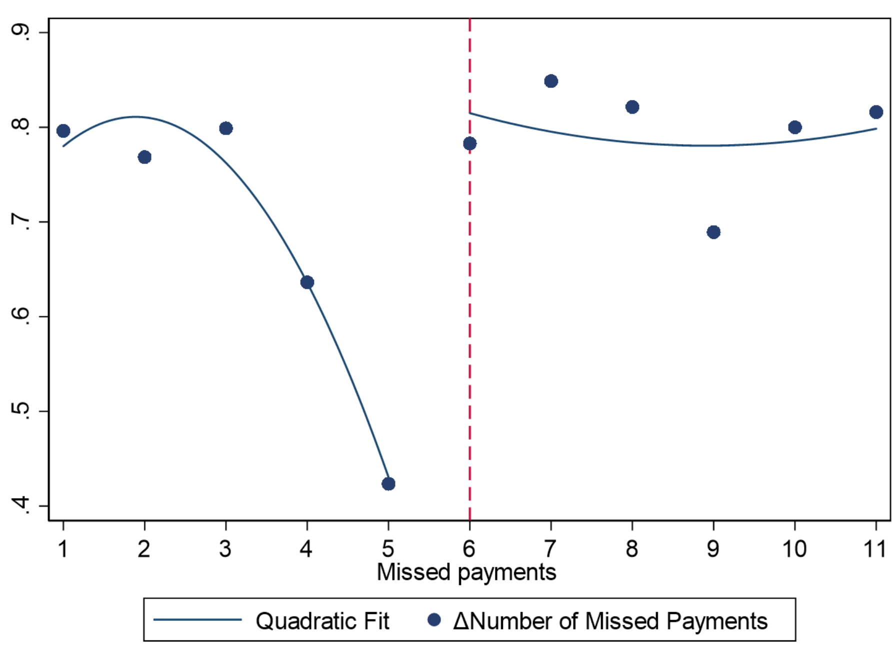
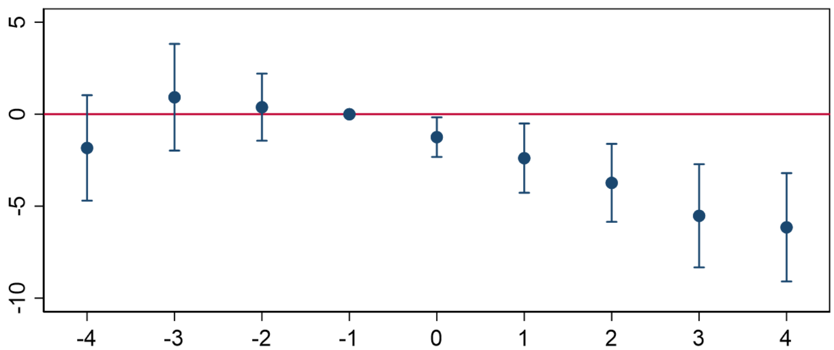


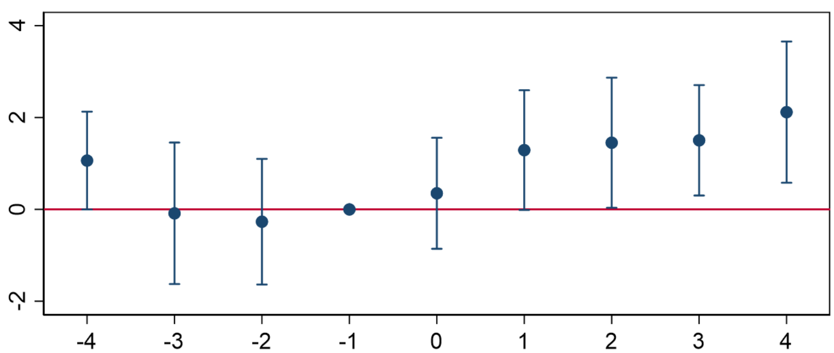
Figure 6
Event-Study Evidence

Panels A, B, and C of Figure 6 present coefficients with corresponding 95% confidence intervals from event-study regressions. A bank is "treated" if, at any point in time, it had a Treasury-appointed director. Every treated bank is matched with up to 4 control banks, matched on Log(revenues), leverage ratio, loans-to-deposits ratio, and a listed dummy. The dependent variable is listed on firm fixed effects, a vector of dummies corresponding to the difference between the event-year and the year of the observation, and the interaction of this vector with a "treated" dummy. The plot report the coefficients on these interaction terms. Standard errors are clustered at the bank-level. The dependent variables are NPLs/Loans, ROA, and ROE. NPLs/Loans represents nonaccrual and restructured loans as a percent of total loans and leases. ROA represents net income over average total assets in percentage points. ROE represents net income over average total equity in percentage points.

Panel A. NPLs/Loans



Panel B. ROA



Panel C. ROE

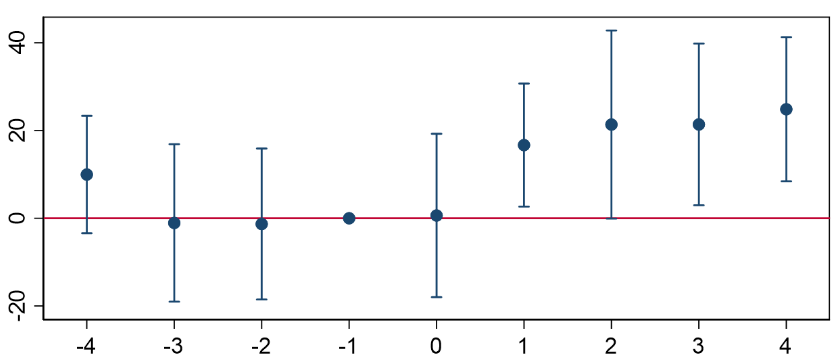
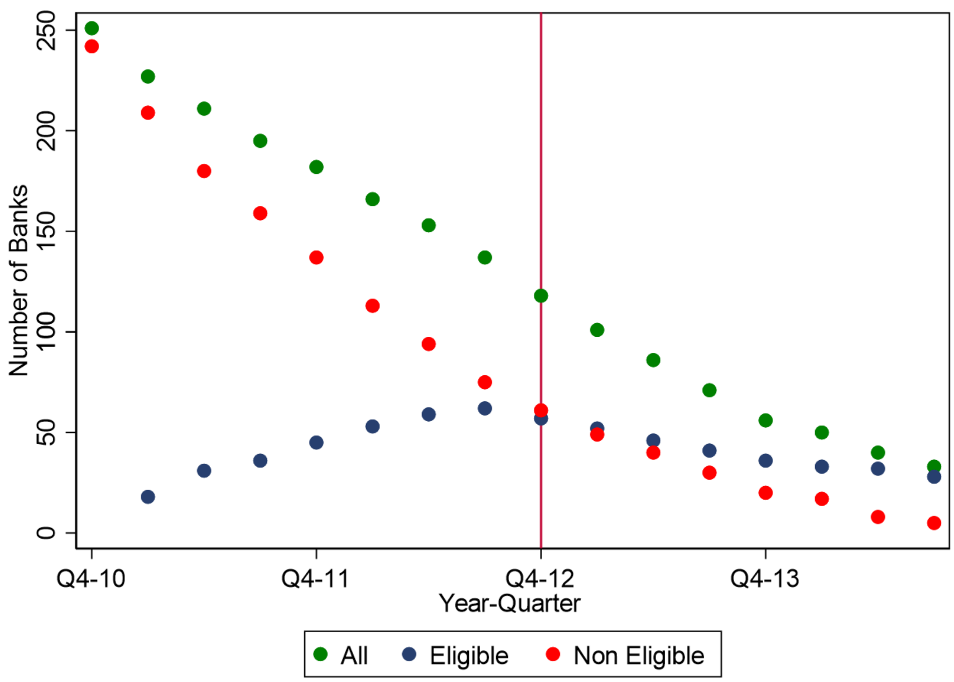


Figure 7

The "Pandit Shock": Number of Banks in the CPP

Panels A and B of Table 7 show the number of banks, which shares have not been auctioned and did not use the SBLF for the share redemption, in the CPP program at the end of each quarter. Panel A displays the total number of banks (in green), the total number of banks eligible for a director appointment (in blue) and the total number of banks non eligible for a director appointment (in red) between the last quarter of 2010 and the third quarter of 2013. Panel B restricts the attention to eligible banks.

Panel A. All Banks



Panel B. Banks Eligible For Director's Appointment

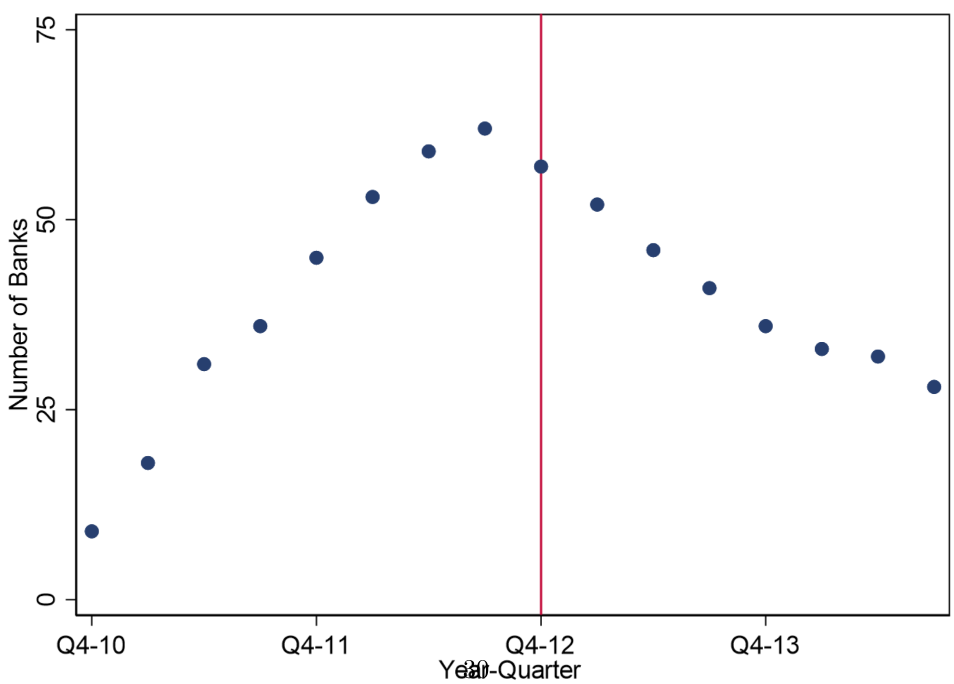
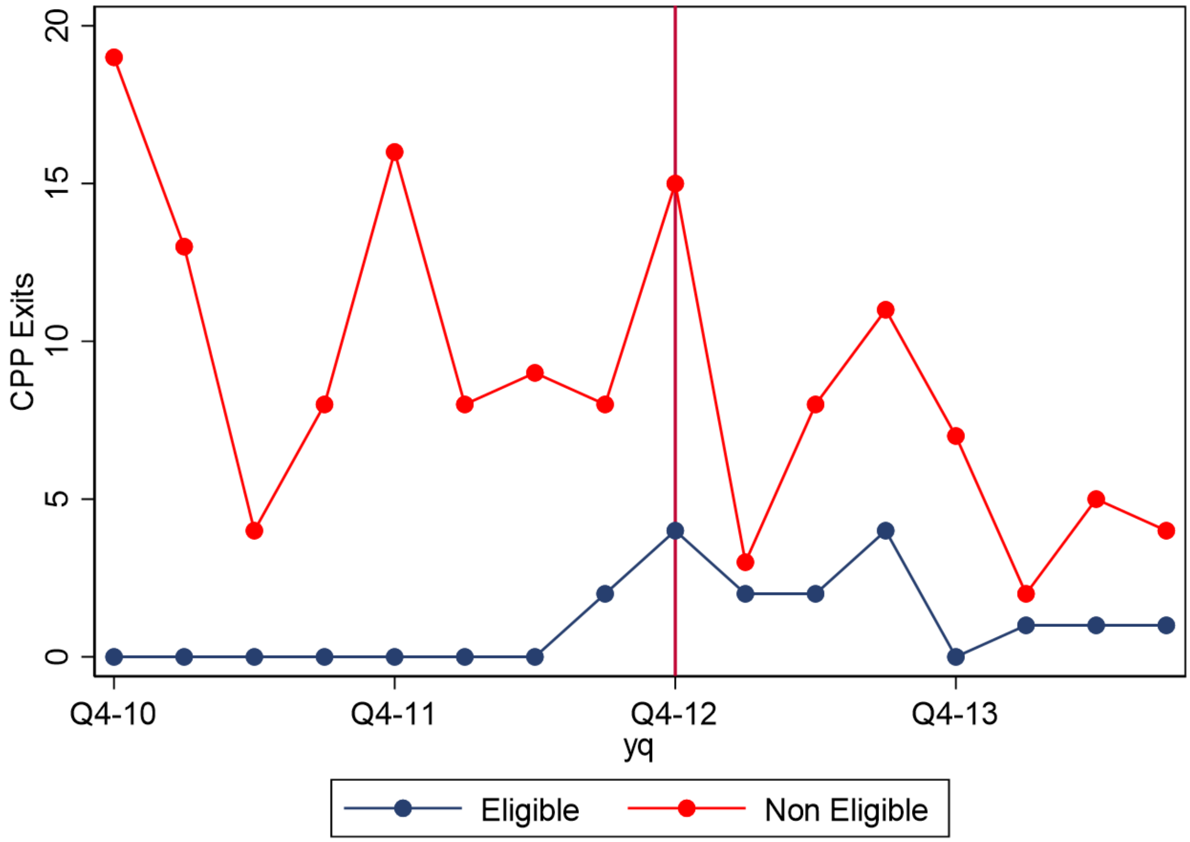


Figure 8
The "Pandit Shock": Exits from CPP

Figure 8 displays the number of bank exits from the CPP for each quarter between the last quarter of 2010 and the third quarter of 2013 for the 157 exiting banks, which shares have not been auctioned and did not use the SBLF for the share redemption. The red line plots exits from banks that are not eligible for a director appointment; the blue line plots exits from banks that are eligible for a director appointment.



7 Tables

Table 1
Descriptive Statistics

Table 1 has descriptive statistics (number of observations, mean, median, standard deviation, first, and 99^{th} percentile) for the main variables used in the paper. Panel A includes all 561 banks in the sample covering May 2009 to October 2019. Standard errors are clustered at the bank level.. Panel B only includes observations for the 193 banks which missed at least one dividend payment from May 2009 to October 2019. Number of missed payments is the number of missed dividend payments at the end of the quarter. ΔMissed payments is the quarter-to-quarter change in missed dividend payments. Log(Revenues) represents the logarithm of the sum of net interest income, noninterest income, and gains on sales of securities. Leverage Ratio represents the tier 1 capital as a percent of adjusted average assets. ROA represents net income over average total assets in percentage points. ROE represents net income over average total equity in percentage points. NPLs/Loans represents nonaccrual and restructured loans as a percent of total loans and leases. Risk Based Capital Ratio represents total regulatory capital as a percent of risk-adjusted assets in percentage points. Tier 1 Capital Ratio represents core capital (Tier 1) as a percent of risk-adjusted assets. Listed is an indicator variable for the company being publicly listed.

Panel A. Full Sample

	Obs.	Mean	Median	St. Dev.	Perc. 1	Perc. 99
Number of Missed Payments	6,725	2.42	0.00	5.10	0.00	24.00
ΔMissed Payments	6,725	0.25	0.00	0.73	0.00	1.00
Log(Revenues)	6,725	8.31	8.16	1.45	5.61	12.98
Leverage Ratio	6,725	9.17	9.21	2.79	2.00	16.03
ROA	6,725	-0.24	0.28	2.36	-10.30	2.93
ROE	6,703	-5.06	3.11	38.24	-160.37	39.01
NPLs/Loans	6,725	5.36	4.22	4.38	0.00	20.40
Risk Based Capital Ratio	6,725	14.12	13.78	4.01	4.92	26.17
Tier 1 Risk-based Ratio	6,725	12.59	12.30	4.02	2.98	24.62
Listed	6,725	0.46	0.00	0.50	0.00	1.00

Panel B. Banks with at least 1 Missed Payment

	Obs.	Mean	Median	St. Dev.	Perc. 1	Perc. 99
Number of Missed Payments	2,075	7.85	6.00	6.45	1.00	30.00
ΔMissed Payments	2,075	0.74	1.00	1.14	-5.00	1.00
Log(Revenues)	2,075	7.96	7.87	1.18	5.42	11.23
Leverage Ratio	2,075	7.75	7.97	3.52	0.15	16.51
ROA	2,075	-0.83	0.01	2.85	-13.28	3.33
ROE	2,055	-16.11	0.16	58.05	-243.47	63.72
NPLs/Loans	2,075	8.31	7.27	5.49	0.11	23.76
Risk Based Capital Ratio	2,075	12.74	12.60	5.06	0.43	29.62
Tier 1 Risk-based Ratio	2,075	11.17	11.16	5.10	0.22	28.25
Listed	2,075	0.38	0.00	0.49	0.00	1.00

Table 2
Baseline Results

Table 2 presents regressions where the dependent variable is the change in the number of missed dividend payments between quarter t and quarter $t-1$. The sample contains the 561 banks covering May 2009 to October 2019. Missed Payments= n is a dummy equal to 1 if the bank has missed n payments at the end of quarter $t-1$; Missed Payments> 10 is a dummy equal to 1 if the bank has missed more than 10 payments at the end of quarter $t-1$. Columns 2 through 4 control for quarter fixed effects. Column 3 also controls for Log(Revenues) and the Leverage Ratio. Column 4 also includes ROA, NPLs/Loans, Risk Based Capital Ratio, Tier 1 Risk Based Ratio, and Listed as control variables. Log(Revenues) represents the logarithm of the sum of net interest income, noninterest income, and gains on sales of securities. Leverage Ratio represents the tier 1 capital as a percent of adjusted average assets. ROA represents net income over average total assets in percentage points. NPLs/Loans represents nonaccrual and restructured loans as a percent of total loans and leases. Risk Based Capital Ratio represents total regulatory capital as a percent of risk-adjusted assets in percentage points. Tier 1 Capital Ratio represents core capital (Tier 1) as a percent of risk-adjusted assets. Listed is an indicator variable for the company being publicly listed. The control variables are measured at the end of quarter $t-1$. Standard errors, in parentheses, are clustered at the bank level. ***, **, and * indicate statistically different from zero at the 1%, 5%, and 10% level of significance, respectively.

	(1)	(2)	(3)	(4)
Missed Payments=0	-0.387***	-0.400***	-0.348***	-0.273**
	(0.125)	(0.122)	(0.122)	(0.121)
Missed Payments=1	0.373***	0.357***	0.371***	0.375***
	(0.138)	(0.136)	(0.134)	(0.131)
Missed Payments=2	0.345**	0.334**	0.351**	0.364***
	(0.146)	(0.144)	(0.141)	(0.135)
Missed Payments=3	0.375***	0.361***	0.361***	0.362***
	(0.140)	(0.137)	(0.136)	(0.133)
Missed Payments=4	0.213	0.200	0.198	0.199
	(0.155)	(0.153)	(0.151)	(0.148)
Missed Payments=6	0.359**	0.368**	0.355**	0.345**
	(0.151)	(0.151)	(0.149)	(0.145)
Missed Payments=7	0.425***	0.433***	0.425***	0.410***
	(0.158)	(0.158)	(0.156)	(0.153)
Missed Payments=8	0.398***	0.399***	0.388***	0.375***
	(0.150)	(0.149)	(0.146)	(0.144)
Missed Payments=9	0.266	0.276	0.262	0.253
	(0.208)	(0.212)	(0.211)	(0.208)
Missed Payments=10	0.376**	0.388**	0.380**	0.378**
	(0.169)	(0.168)	(0.166)	(0.164)
Missed Payments>10	0.335**	0.374***	0.352**	0.347**
	(0.140)	(0.144)	(0.142)	(0.141)
Log(Revenues)			-0.016***	-0.025***
			(0.005)	(0.007)
Leverage Ratio			-0.023***	-0.001
			(0.006)	(0.006)
ROA				-0.012***
				(0.003)
NPLs/Loans				0.017***
				(0.003)
Risk Based Capital Ratio				0.003
				(0.013)
Tier 1 Risk-based Ratio				-0.014
				(0.013)
Listed				0.006
				(0.018)
Observations	6,725	6,725	6,725	6,725
R^2	0.205	0.210	0.218	0.228
Year-Quarter FE		X	X	X

Table 3
Polynomial Approximation

Table 3 presents regressions where the dependent variable is the change in the number of missed dividend payments between quarter t and quarter $t-1$. The sample consists of 561 banks and the time coverage is from May 2009 to October 2019. Missed payments$\geq$ 6 is a dummy equal to 1 if the bank has missed at least 6 dividend payments by the end of the previous quarter. The regressions also include two first-order (columns 1 and 3) and second-order (columns 2 and 4) polynomials on the number of missed payments minus 6, separately estimated for banks below and above the 6-missed payments cutoff, interacted with the Missed payments$\geq$ 6 dummy. Columns 3 and 4 also include the following control variables: Log(Revenues), Leverage Ratio, ROA, NPLs/Loans, Risk Based Vapital Ratio, Tier 1 Risk Based Ratio, Listed, and quarter fixed effects. Log(Revenues) represents the logarithm of the sum of net interest income, noninterest income, and gains on sales of securities. Leverage Ratio represents the tier 1 capital as a percent of adjusted average assets. ROA represents net income over average total assets in percentage points. NPLs/Loans represents nonaccrual and restructured loans as a percent of total loans and leases. Risk Based Capital Ratio represents total regulatory capital as a percent of risk-adjusted assets in percentage points. Tier 1 Capital Ratio represents core capital (Tier 1) as a percent of risk-adjusted assets. Listed is an indicator variable for the company being publicly listed. The control variables are measured at the end of quarter $t-1$. Standard errors, in parentheses, are clustered at the bank level. ***, **, and * indicate statistically different from zero at the 1%, 5%, and 10% level of significance, respectively.

	(1)	(2)	(3)	(4)
Missed Payments $\geq$ 6	0.373***	0.668***	0.382***	0.648***
	(0.132)	(0.247)	(0.129)	(0.232)
Observations	1,607	1,607	1,605	1,605
R^2	0.010	0.012	0.051	0.053
Degree of Polynomial	1	2	1	2
Controls			X	X

Table 4
T-Tests

Table 4 presents $t-$tests computed under the null hypothesis that the means of the variables Log(Revenues), Leverage Ratio, Loans/Deposits, and Listed are equal for treated and control banks. The sample contains 54 banks. Each of the 12 banks receiving a Treasury-appointed director ("treated") is matched with at most four banks that have the closest propensity score ("control"), using the four variables listed above as predictors of the director appointment. A maximum difference of 0.025 in the propensity scores is required. Log(Revenues) represents the logarithm of the sum of net interest income, noninterest income, and gains on sales of securities. Leverage Ratio represents the tier 1 capital as a percent of adjusted average assets. Loans/Deposits represents the ratio of total Loans & Leases (Net of Unearned Income & Gross of Reserve)/ Total Deposits. Listed is an indicator variable for the company's primary common stock either being currently or previously listed. The matching variables are measured at the beginning of the appointment year. The first and second column report means for the four variables for treated and control banks, respectively. The third column reports the difference between the two means. The fourth column reports the $p-$value computed under the null hypothesis that the means are equal.

Variable	**Mean Treated**	**Mean Control**	**Treated – Control**	**p–value**
Log(Revenues)	10.770	10.855	-0.085	0.820
Leverage Ratio (%)	7.308	8.256	-0.948	0.370
Loans/ Deposits (%)	74.283	74.992	-0.708	0.855
Listed	0.667	0.682	-0.015	0.923

Table 5
Difference-in-Difference Results

Table 5 presents difference-in-difference regressions where the dependent variable is indicated on the top of each column. The sample contains 54 banks. Treated is a dummy equal to 1 if a bank had a Treasury-appointed director. Every treated bank is matched with up to 4 control banks, matched on Log(revenues), leverage ratio, loans-to-deposits ratio, and a listed dummy. For treated banks, Post is a dummy equal to 1 after the director appointment. For control banks, it is a dummy equal to 1 after the matched treated bank has received a director appointment. NPLs/Loans represents nonaccrual and restructured loans as a percent of total loans and leases. ROA represents net income over average total assets in percentage points. ROE represents net income over average total equity in percentage points. Risk Based C.R. represents total regulatory capital as a percent of risk-adjusted assets in percentage points. Tier 1 C.R. represents core capital (Tier 1) as a percent of risk-adjusted assets. All the regressions include year and firm fixed effects. Standard errors, in parentheses, are clustered at the bank level. ***, **, and * indicate statistically different from zero at the 1%, 5%, and 10% level of significance, respectively.

Dependent Variable:	NPLs/Loans	ROA	ROE	Risk Based C.R.	Tier 1 C.R.
	(1)	(2)	(3)	(4)	(5)
Post × Treated	-3.219***	1.051***	13.575***	0.218	-0.071
	(0.568)	(0.323)	(3.717)	(0.666)	(0.777)
Post	0.636	0.057	-0.982	0.810	1.244**
	(0.685)	(0.267)	(3.568)	(0.537)	(0.509)
Observations	460	460	455	460	460
R^2	0.713	0.477	0.473	0.615	0.611
Year FE	X	X	X	X	X
Firm FE	X	X	X	X	X

Table 6
CEO Turnover and Compensation

Table 6 presents difference/in/difference regressions where the dependent variables are either a CEO turnover dummy (column 1) or the logarithm of CEO total compensation (columns 2 through 4). Treated is a dummy equal to 1 if a bank had a Treasury-appointed director. Every treated bank is matched with up to 4 control banks, matched on Log(revenues), leverage ratio, loans-to-deposits ratio, and a listed dummy. For treated banks, Post is a dummy equal to 1 after the director appointment. For control banks, it is a dummy equal to 1 after the matched treated bank has received a director appointment. Performance is either ROA (in column 3) or ROE (in column 4). ROA represents net income over average total assets in percentage points. ROE represents net income over average total equity in percentage points. All the regressions include year and firm fixed effects. Standard errors, in parentheses, are clustered at the bank level. ***, **, and * indicate statistically different from zero at the 1%, 5%, and 10% level of significance, respectively.

Dependent Variable:	Turnover	Log(Compensation)		
	(1)	(2)	(3)	(4)
Post × Treated	-0.005	-0.247*	-0.196*	-0.210*
	(0.055)	(0.133)	(0.112)	(0.119)
Post	0.016	0.141	0.149	0.205*
	(0.084)	(0.112)	(0.113)	(0.121)
Performance			0.009	0.035
			(0.053)	(0.062)
Post × Performance			-0.045	-0.090
			(0.103)	(0.100)
Post × Treated × Performance			0.246*	0.261**
			(0.124)	(0.111)
Treated × Performance			-0.038	-0.072
			(0.063)	(0.070)
Observations	442	260	256	252
R^2	0.127	0.907	0.919	0.922
Year FE	X	X	X	X
Firm FE	X	X	X	X
Performance Measure	—	—	ROA	ROE

Table 7
The "Pandit Shock": Difference-in-Difference Analysis

Table 7 presents the average number of exits per quarter by splitting observations according to whether banks are eligible for a director appointment and whether an exit occurs before the fourth quarter of 2012 for a sample of 157 banks. The last column reports difference between the first two columns, and the last row reports the difference between the first two rows. The cell at the bottom right corner of the table reports the "difference-in-difference" estimate. Robust standard errors are reported in parentheses.

	Before	**After**	**After − Before**
Not Eligible	10.625 (1.752)	6.875 (1.552)	-3.750 (2.340)
Eligible	0.250 (0.250)	1.875 (0.515)	1.625 (0.573)
Eligible − Not Eligible	-10.375 (1.770)	-5.000 (1.635)	**5.375** **(2.410)**

A Appendix

A.1 Proof of Proposition 1

Let V_n the value function of a bank with n missed payments. Clearly, for $n \geq N^*$ the bank has no incentive to pay dividends, nor it can enjoy the private benefit; hence, $e_n^* = V_n^* = 0$ for all $n \geq N^*$. Now consider the problem of a bank that has missed $N^* - 1$ dividend payments. The bank's value function can be written as:

$$V_{N^*-1} = e\beta(V_{N^*-1} + B) - k\frac{e^2}{2} \tag{A.1}$$

The first-order condition implies:

$$\frac{\partial V_{N^*-1}}{\partial e} = 0 \Leftrightarrow e = \frac{\beta(V_{N^*-1} + B)}{k} \tag{A.2}$$

By plugging expression A.2 into A.1, we obtain:

$$V_{N^*-1}^* = \frac{k - \sqrt{k}\sqrt{k - 4\beta^2 B}}{2\beta^2} - B \tag{A.3}$$

and

$$e_{N^*-1}^* = \frac{k - \sqrt{k}\sqrt{k - 4\beta^2 B}}{2k\beta}. \tag{A.4}$$

This value is a positive real number, as ensured by the assumption that $k > 4\beta^2 B$, and is lower than 1, as ensured by the assumption that $k > \beta B/(1-\beta)$. Equation A.1 also has a second root that, under the assumption that $k > \beta B/(1-\beta)$, implies that $e_{N^*-1}^* > 1$. Hence, the only economically sensible value for $e_{N^*-1}^*$ is the one in equation A.4.

Now consider a generic period $n < N^* - 1$. The value function can be written as:

$$V_n = B + e\beta V_n + (1-e)\beta V_{n+1}^* - k\frac{e^2}{2} \tag{A.5}$$

The first-order conditions implies:

$$\frac{\partial V_n}{\partial e} = 0 \Leftrightarrow e = \frac{\beta(V_n - V_{n+1}^*)}{k} \tag{A.6}$$

Plugging A.6 into A.5, and after some algebra, we obtain:

$$V_n^* = V_{n+1}^* + \frac{k - \sqrt{k}\sqrt{2V_{n+1}^*(1-\beta)\beta^2 + k - 2\beta^2 B}}{\beta^2} \tag{A.7}$$

Notice that $V^*_{n+1} \geq 0$. To see that, notice that the manager could simply set $e^* = 0$ forever and achieve 0 utility. This observation, together with the assumption that $k > 4\beta^2 B$, ensures that the rightmost term under the square root is positive and, hence, the solution is well-defined.

Also, notice that $V^*_{n+1} < B/(1-\beta)$. To see that, notice that $V^*_{n+1} = B/(1-\beta)$ is the value function of a manager that obtains the private benefit in every period with probability 1 but has an effort cost equal to 0, which is not achievable. Simple algebra shows that this upper bound on V^*_{n+1} implies that the ratio in equation A.5 is strictly positive, which further implies that $V^*_n > V^*_{n+1}$. Hence, V^*_n is decreasing in n.

We can plug expression A.7 into equation A.6 and find:

$$e^*_n = \frac{k - \sqrt{k}\sqrt{2V^*_{n+1}(1-\beta)\beta^2 + k - 2\beta^2 B}}{k\beta} \tag{A.8}$$

The $B/(1-\beta)$ upper bound for V^*_{n+1} ensures that $e^*_n > 0$. Moreover, simple algebra shows that the assumption that $k > \beta B/(1-\beta)$ guarantees that $e^*_n < 1$. As before, the alternative root of equation A.7 implies a value for e^*_n greater than 1 and can thus be discarded.

e^*_n is decreasing in V^*_{n+1}, which is, in turn, decreasing in n. Hence, e^*_n is increasing in n. The probability that the bank with n missed payments will miss the next payment is given by $1 - e^*_n$. Thus, this probability is decreasing in n. ■

The values of e^*_n for $n < N^* - 1$ in Figure 1 can be obtained starting from expression A.1, plugging it into expression A.7 to obtain the value of e^*_n from equation A.8, and so on for every n, recursively up until $n = 1$.

A.2 Director Appointment Events

Table A1
Dates of U.S. Treasury's Appointments and Directors' Names

Table A1 lists appointment dates and names of directors appointed by the U.S. Treasury pursuant to missing six or more payments on CPP shares. The four banks at the bottom of the table are excluded from the analysis presented in Sections 4.3 and 4.4.

Bank Name	Date 1st Appointment	1st Director	Date 2st Appointment	2st Director
Royal Bancshares of Pennsylvania, Inc.	2011–07–19	Gerard M. Thomchick	2011–09–30	Wayne Huey, Jr.,
Centrue Financial Corporation	2011–09–21	Richard "Chan" Peterson	2012–04–25	Dennis Battles
Citizens Republic Bancorp, Inc.	2011–09–21	William M. Fenimore, Jr.	2011–10–05	Madeleine L. Champion
PremierWest Bancorp	2011–12–20	Mary Carryer	2012–03–14	Bruce Currier
First Security Group	2012–02–09	Robert Lane	2012–03–22	William Grant
Intervest Bancshares Corporation	2012–03–23	Susan Roth Katzke	2012–10–24	C. Wayne Crowell
Bridgeview Bancorp, Inc.	2012–04–19	James Kane		
First Trust Corporation	2012–06–12	Randall Howard	2012–08–06	Paul O'Connor
Blue Valley Ban Corp	2012–09–12	James Gegg		
Citizens Bancshares Co.	2012–09–12	James Gegg		
Old Second Bancorp, Inc.	2012–11–8	Duane Suits		
Northern States Financial Corporation	2012–12–14	P. David Kuh		
Not in Sample				
First Banks, Inc.	2011–07–19	John S. Poelker	2011–07–19	Guy Rounsaville, Jr.
Anchor Bancorp	2011–10–03	Duane Morse	2011–10–03	Leonard Rush
Rogers Bancshares, Inc.	2012–01–09	Larry Mingledorff		
Central Bancorp, Inc.	2014–02–06	Larry Mingledorff	2014–02–06	Paul Clabuesch

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