The Effect of TARP on Bank Risk-Taking

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ABSTRACT

One of the largest government responses to the financial crisis that began in 2008 was the implementation of the Troubled Asset Relief Program (TARP), a program of the U.S. Treasury to purchase equity in financial institutions. The purpose of TARP was originally explained to be the stabilization of the financial sector through increased capitalization of banks. However, in subsequent public discourse, TARP recipients were encouraged to use the funds to increase lending even as the riskiness of borrowers was increasing. In this paper, we analyze the effect of the TARP capital injections on bank risk-taking. Using a panel of TARP and non-TARP banks, we compare the risk ratings of commercial loan originations before and after the TARP capital injections. Following the capital injections, we find that the risk rating of loan originations significantly *increased* at large TARP banks but significantly *decreased* at small TARP banks relative to non-TARP banks. This suggests that TARP had differing effects on the risk-taking of banks depending on bank size. The result may be due to the conflicting goals of the TARP program as it relates to capitalization and expanded lending.

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1. **Introduction**

The Troubled Asset Relief Program (TARP), a program of the U.S. Treasury to purchase equity in financial institutions and recapitalize the financial sector, was the largest of the U.S. government's measures in 2008 to address the financial crisis. The provision for TARP by Congress allowed the Treasury to purchase or insure up to $700 billion of "troubled" assets or to purchase equity in the banks themselves. On October 28, 2008, the first wave of TARP equity infusions was made under Treasury Secretary Henry Paulson to six of the largest bank holding companies.[1] Shortly thereafter, more banks received funds from the government under the TARP program.

The intended effect of TARP on bank lending was not entirely clear when the program was first created. In one respect, TARP was designed to improve the safety and soundness of the banking system through increased capitalization. One of the explicit objectives in TARP was also to discourage "excessive risk-taking" by banks, which was believed to have been one of the factors that led to the financial crisis. The Emergency Economic Stabilization Act (EESA) passed by Congress in 2008, which created TARP, includes two provisions aimed at reducing excessive risk-taking. However, TARP was also implicitly designed to increase bank lending through the infusion of government funds. Figure 1 shows that total commercial and industrial loans in the U.S. began to fall dramatically near the end of 2008, which is also the window of time in which the Treasury began making capital infusions into banks under the TARP program. To expand lending during an economic downturn would likely require banks to increase the riskiness of their lending. Given the potentially conflicted nature of these two objectives, it is an open question as to how TARP might have affected risk-taking incentives. In this paper, we try to empirically identify whether TARP had an effect on bank risk-taking.

The conflicted nature of the TARP objectives reflects the tension between different approaches to the financial crisis. While recapitalization was directed at returning banks to a position of financial stability, these banks were also expected to convert their new cash into risky loans. TARP was a use of public tax-payer funds and some public opinion argued that the funds should be used to make loans, so that the

[1] These bank holding companies included Bank of America, Bank of NY Mellon, Citigroup, J.P. Morgan Chase, State Street, and Wells Fargo.

benefit of the funds would be passed through directly to consumers and businesses. Shortly after the first round of injections in October 2008, Anthony Ryan, Acting Treasury Under Secretary for domestic finance, said in a speech: "As these banks and institutions are reinforced and supported with taxpayer funds, they must meet their responsibility to lend" (Ryan, 2008). A congressional oversight panel charged with evaluating the TARP program also issued a report which criticized the U.S. Treasury for having no ability to ensure that banks were lending the money that they received from the government (Congressional Oversight Panel, 2009).

One of the potential areas of bank activities in which the TARP capital infusions might have an effect is commercial lending. Using data from the Survey of Terms of Business Lending (STBL), we examine the lending patterns of both TARP and non-TARP recipients around the time of the TARP capital infusions. We use the STBL data because they contain risk rating information on a quarterly measure of loan originations for a large sample of US banks of various sizes. By using the STBL we can analyze data on loan originations and risk before and after TARP infusions. Specifically, we identify how the risk ratings of commercial loan originations at TARP banks change relative to non-TARP banks in response to the TARP capital infusions.

In our analysis, we first use an event-study methodology to evaluate the effect of TARP on bank risk-taking. This approach compares the average change in the risk of loan originations at TARP banks relative to non-TARP banks after the TARP infusions. One challenge in taking this approach is that the type of commercial loan originations can differ significantly by bank size. To control for some of these differences, we stratify the sample by bank size and compare TARP and non-TARP recipients by size class. In the second part of our analysis, we use loan-level regressions to evaluate whether TARP banks reduce the average riskiness of their loan originations after receiving TARP funds.

Our results indicate that TARP had a surprising effect on bank risk-taking. In our event study and in our regression results, we find evidence that the average risk of loan originations at large TARP banks *increased* relative to non-TARP banks through 2009 whereas the average risk at small TARP banks *decreased* relative to non-TARP banks. This may reflect the conflicted purposes of the TARP program. Although TARP money was given to increase bank stability and reduce incentives to take excessive risks, it was

also given with the understanding that the funds would be used to expand lending during a period of increased risk. These two objectives have an opposing influence on bank risk-taking that may have led to a different effect of TARP on lending by large and small banks.

The remainder of our paper is organized as follows: Section 2 reviews the related literature and Section 3 describes the data construction and descriptive statistics. Section 4 describes the methodology and results for the event-study and loan-level regression analysis used to compare risk-taking at TARP banks to non-TARP banks. Section 5 concludes.

2. **Related Literature**

In this section, we begin by reviewing some of the literature related to compensation and risk-taking. This issue was particularly important during the financial crisis and directly relates to the provisions on executive compensation in TARP. We also address measures of risk-taking in the banking literature. Lastly, we consider some of the issues related to liquidity provision by the banking sector.

As mentioned in the introduction, the congressional act of EESA, which funded the TARP program, included several provisions related to compensation. The first provision removes the IRS 162m tax incentive for "performance-based pay," which contributed to the use of incentive compensation in the form of bonuses. In this provision, performance-based pay over $1 million would no longer be tax deductible. The second provision in TARP related to compensation and risk-taking details how compensation committees are to review executive compensation policies for features that may induce excessive risk-taking.[2] Promptly after the Treasury infusion, the financial institution's compensation committee must review the incentive compensation arrangements of its senior executive officers (SEOs) with the institution's senior risk officers to ensure that these arrangements do not encourage the SEOs to take unnecessary and excessive risks that threaten the value of the financial institution.[3] Thereafter, the compensation committee must meet at least annually with senior risk officers to undergo

[2] This provision falls under section 111(b)(2)(A) of EESA.
[3] Compensation committees are required to do this review within 90 days of receiving TARP funds.

a similar process. These rules are important because they apply to all TARP recipients while the Treasury holds an equity or debt position acquired under the program (EESA, 2008). All else equal, one would expect these provisions to reduce risk-taking at TARP banks.

Several papers have looked at executive compensation and bank risk-taking in the financial crisis. Fahlenbrach and Stulz (2009) investigate whether bank performance during the crisis is related to CEO incentives and share ownership before the crisis. The authors find no evidence that banks with CEOs whose incentives were better aligned with the interests of their shareholders performed better during the crisis. However, DeYoung et al. (2009) find evidence linking contractual risk-taking incentives to risk-increasing business policy choices. These two papers underscore the debate about the role of executive compensation in the financial crisis.

We broaden the analysis to look at risk-taking in general by using a measure of risk-taking that is particularly suited to banking. The literature on bank risk-taking includes measures of bank risk based on credit risk, default risk, equity risk, value-at-risk, return on assets, balance sheet measures of bank risk, and supervisory ratings. For instance, Salas and Saurina use a measure of credit risk based on the proportion of loan losses over total loans (2003), Gonzalez uses a measure based on non-performing loans to total bank loans (2005) and Jimenez, Lopez, and Saurina use a measure based on commercial non-performing loans (NPL) ratios which is an ex-post measure of credit risk (2007). One shortcoming of these measures is that they are all backward-looking, which makes them less useful for evaluating the effect of TARP during the actual implementation of the program. In contrast, we use risk ratings on new loan originations. The advantage of our measure is that it can show how the risk characteristics of current loan originations change in response to the program. This is especially useful for this exercise because we can also project the likely effect of the TARP infusion on future loan losses.

Lastly, one of the other significant banking issues during the financial crisis was the amount of corporate draw-downs of lines of credit. This is an important issue when trying to control for changes in loan composition driven by borrower demand. As the commercial paper market dried up, many firms borrowed from existing lines of credit at

banks as a source of funds. Gatev and Strahan (2006) argue that banks have an advantage in hedging liquidity risk, which makes them ideal liquidity providers during periods of financial distress. The authors show that there is evidence of a shift from market funding to intermediary funding during these periods. Jimenez et al. (2009) also show that firms increase their credit line usage as firms approach default. Clearly, these shifts in loan demand can affect loan originations apart from changes in banks' risk-taking incentives. To address these issues, some of our analysis focuses specifically on "spot" loan originations, which are loans not made under commitment. By focusing on spot originations, we will be able to more clearly identify changes in banks' lending standards.

3. **Data and Descriptive Statistics**

Our primary data are from the Survey of Terms of Business Lending (STBL). The STBL is a panel survey conducted by the Federal Reserve each quarter consisting of a stratified sample of insured commercial banks and U.S. branches and agencies of foreign banks. The STBL collects data on gross commercial and industrial (C&I) loan originations made during the first full business week in the middle month of each quarter. The data are used for policy purposes to estimate the terms of loans extended during that week by banks in the survey. The authorized size for the survey is 348 domestically chartered commercial banks and 50 U.S. branches and agencies of foreign banks.

We analyze two years of STBL data from November 2007 through November 2009. We include these dates in order to span the periods of the financial crisis as well as the TARP capital injections. This provides a picture of how bank and loan characteristics, including loan risk, changed from the period before the TARP injections to the period after the TARP injections.

We combine these data with information from the U.S. Treasury Department on the identity of TARP recipients. The TARP program was directed primarily at bank holding companies (BHCs), therefore the Treasury data consists of mostly BHCs and a few banks. In total, there were 441 TARP recipients during this time period. The Treasury information includes the identity and location of the institution, the date the institution received TARP funds, and the amount of the funds received.

The third data source is the National Information Center (NIC) data on the ownership structure of commercial banks. NIC identifies the "topholder" of each bank, which is the ultimate owner of each bank and, in many cases, is a bank holding company. Many bank holding companies own multiple banks. Because previous research indicates that banks within a bank holding company coordinate their activities through internal capital markets (e.g., Campello, 2002), we use NIC to construct a data set at the topholder level, which is the combined Call Report data for each bank within each bank holding company.[4] We use topholders as of the fourth quarter 2008. Out of the 360 banks in the STBL panel, we matched 295 banks to NIC.

Because we wanted to examine the periods prior to, during, and after the crisis, we chose to keep only banks that were in all 9 quarters of the STBL survey. The STBL panel of smaller banks consists of a stratified random sample which does not stay consistent from quarter to quarter. In order to include both the pre and post crisis period, we significantly reduced our sample from 295 banks to 98 banks. Using the STBL, NIC, and the Treasury data, we construct a subsidiary level file that includes 41 TARP banks and 47 non-TARP banks. TARP recipients are identified by Treasury and non-TARP banks are banks in the STBL not identified by Treasury. After removing observations with missing loan maturity, this gives us 148,128 loan-level observations.

We divide our TARP and non-TARP banks based on total assets, which are available through Call Report data.[5] Banks of different sizes may have different risk profiles; therefore, separating banks by size helps to analyze the effect on different risk groups. The three asset categories we use are as follows: Large (>$10 Billion), Medium ($10 Billion to $2.5 Billion), and Small (<$2.5 Billion). We match non-TARP banks to TARP banks based on bank size. Because banks of different sizes received TARP capital infusions at roughly the same time, this allows us to compare TARP and non-TARP banks based on the periods before and after the TARP capital infusions.

Table 1 shows the descriptive statistics for the loan and bank characteristics used in our analysis. The statistics are subdivided for non-TARP and TARP recipients as well as for the period before and after the TARP capital infusions. By splitting the data along

[4] Using the NIC attributes table, we use the topholder id to construct a data set at the subsidiary level. We keep subsidiary identifier, geographic identifiers, and charter type.
[5] RCON2170 is the Call Report variable for total assets of the bank.

these two dimensions, we can report the difference between TARP to non-TARP banks (column 3) and the difference between the period before and after the TARP infusions (row 3). The bottom right part of table (column 3, row 3) shows the difference-in-difference results, which indicates how TARP banks differ from non-TARP banks after the capital infusions *relative to* their difference prior to the capital infusions. Because selection for receiving TARP funds was an endogenous choice by the Treasury, it is important to control for inherent differences between TARP and non-TARP banks.

Our key variable is the risk rating of each loan issued by a bank in the STBL sample.[6] The STBL began including bank reported risk ratings for each loan in May 1997. The risk rating variable is defined as follows: 1=minimal risk, 2=low risk, 3=moderate risk, 4=acceptable risk, 5=special mention or classified asset, such that the risk rating is an index that increases with risk.[7] We eliminate cases where the risk rating is zero (no risk) or missing. It is interesting to note that the average risk rating of loan originations at the TARP banks is significantly greater than the average risk rating of loan originations at the non-TARP banks both before and after the TARP injections. This unconditional mean indicates that, over the two-year time horizon of November 2007 to November 2009, banks that received TARP funds were originating higher-risk commercial loans. The bottom of column 3 also shows that this difference increased after the TARP injections. In other words, the riskiness of originations by TARP banks increased more than that of non-TARP banks. This is the first indication that the TARP capital injections may have increased bank risk-taking.

The other loan characteristics are commitment, maturity and the log of loan size. The commitment variable identifies whether a loan was made under commitment. It is a dummy variable equal to 1 if the amount of commitment is greater than zero and 0 otherwise.[8] This is an important demand-side control, because loans extended under commitment do not reflect current "risk-taking" by the bank. The maturity variable is the months to maturity.[9] The log of the loan size is the log size of the loan in dollar

[6] The risk rating in the STBL has been used in other research, such as Berger et al. (2005).
[7] QTBLA344 is the risk rating variable in the STBL.
[8] QTBL1915 is the amount of the loan commitment in the STBL. This is used to create a dummy variable where commitment=1 if QTBL1915 is greater than zero and 0 otherwise.
[9] QTBL7969 is the loan maturity variable in the STBL.

amount.[10] Prior to May 2006, the STBL did not include loans less than $1,000. In May 2006, the minimum size of loans reported in the STBL was increased to $3,000. Therefore we eliminate any loans less than $3,000 from our analysis. The mean values for each of these variables, except for commitment, are significantly different between the TARP and non-TARP banks at the 1% level before and after the TARP infusions. Over the two-year time horizon of November 2007 to November 2009, TARP banks were originating smaller loans with shorter maturity that were more likely to be made under commitment. The difference-in-difference calculation shows that, after the capital injections, the TARP banks originated even smaller and shorter maturity loans relative to the non-TARP banks. The number of loans made under commitment by TARP banks decreased relative to non-TARP banks.

The bank characteristics are the log of bank size and capitalization. Bank size is simply measured as total assets and capitalization is the ratio of total bank equity capital to bank size.[11] Note that the measure of bank equity includes "preferred stock," which was the form of the TARP capital infusions into the bank holding companies. Column 3 shows that the TARP banks were larger than non-TARP banks on average and became larger relative to non-TARP banks after the government assistance. Interestingly, the TARP banks were less capitalized than the non-TARP banks prior to the infusions, but became relatively less capitalized after the infusions. This suggests that these banks suffered larger losses in the later period of the sample.

4. **Empirical Methodology and Results**

We use two approaches to evaluate the effect of TARP on bank risk-taking in more detail. Our first approach uses a basic event-study analysis to examine the change in the average risk of loan originations for TARP recipients compared to non-TARP recipients. The second approach uses the loan-level data to see if the injection of TARP funds affected risk-taking after controlling for other factors.

In our event study, we use our stratification of banks into three bank size categories (Large, Medium, and Small) to compare changes in risk-taking after the TARP

[10] QTBL1921 is the loan size variable in the STBL.
[11] RCON3210 is the total bank equity capital variable in the Call Report.

capital infusions. Figure 2 illustrates the relative average risk of C&I loan originations across banks that received TARP capital and banks that did not receive TARP capital infusions. Each average risk time-series is normalized to be zero at the time of TARP capital infusions. The date of the TARP capital infusions for each size category is the basis for the relative time periods, which is also used for the matching sample of non-TARP banks. Using this setup, we can identify the changes in risk-taking by TARP banks relative to non-TARP banks following the capital infusions. We also examine the behavior of non-TARP banks in relation to TARP banks to assess general trends.

Table 2 shows the amount and statistical significance of the changes illustrated in Figure 2. To calculate the statistical significance of this difference, we estimate the following regression:

$$\Delta Average\ risk\ difference_{t,a} = \beta_1 \Delta average\ risk\ of\ TARP\ recipients_{t,a} - \beta_2 \Delta average\ risk\ of\ non-TARP\ recipients_{t,a}$$

where

$Average\ risk\ difference_{t,a}$ = the difference in the average risk for group size *a* over the year following the TARP infusions

$average\ risk\ of\ TARP\ recipients_{t,a}$ = average risk of TARP recipients for group size *a* over the year following infusions

$average\ risk\ of\ non-TARP\ recipients_{t,a}$ = average risk of non-TARP recipients for group size *a* over the year following infusions

We will refer to these results in conjunction with the discussion of the figure.

The first panel of Figure 2 illustrates that the average risk rating of loan originations by large TARP and non-TARP banks increased after the TARP capital infusion period. The non-TARP banks had a consistently lower average risk prior to and after the TARP capital infusion date. After the infusion period, both TARP and non-

TARP banks both showed a steady increase in their risk profile with the TARP banks having a consistently higher risk rating over the non-TARP banks. This is consistent with the finding in Table 1 that TARP may have increased risk-taking. Table 2 shows that the increase in riskiness among both TARP and non-TARP banks was significant, but that the difference in the average change post-infusion is not significant.

The medium size banks, illustrated in the second panel of Figure 2, show a slightly smaller increase in risk-taking. In the quarter after the capital infusion, both the TARP and non-TARP banks increase their risk rating at a similar rate. After the first quarter, the non-TARP banks appear to continue to increase their risk profile while the TARP banks show a slight decrease in their risk profile. In the case of the medium-sized banks, it appears that the TARP capital infusion may have contributed to slightly less risk-taking. Table 2 confirms that the difference of -0.082 in average change post-infusion is significant at the 10% level.

As shown in the third panel, the small TARP recipients decreased the risk of their loan originations directly following the TARP capital infusion while the non-TARP banks had an increase in their risk profile. The TARP risk rating is consistently lower than the non-TARP risk rating following the TARP capital infusion period in Figure 2. This is the first evidence that the TARP capital infusions may have reduced risk-taking among the small banks. However, the difference in the average change is not significantly significant. We now turn to our loan-level analysis to control more closely for other factors.

In our second analysis, we do a loan-level regression analysis on the characteristics of banks' risk-taking. Our main hypothesis we want to test is whether the risk ratings of loan originations by TARP banks changed after the TARP infusions. This is the hypothesis that the injection of TARP funds will affect a bank's risk-taking incentives. To test this hypothesis, we estimate the following full specification:

$$risk_{i,t,l} = \beta_1 TARP\ recipient + \beta_2 Ln(Bank\ Size) + \beta_3 Capitalization$$

$$+ \beta_4 Commitment + \beta_5 Maturity + \beta_6 Ln(Loan\ Size)$$
$$+ \alpha_1 bank_i + \alpha_2 quarter_t + \varepsilon_{i,t,l}$$

The results are also shown for specifications excluding the loan characteristics as well as the time fixed effects.

In this baseline regression model, we define the dependent variable as the risk rating given in the STBL. The key explanatory variable is "TARP Recipient" which is a dummy variable with a value of one when a bank becomes a TARP recipient. The additional explanatory variables include other bank and loan characteristics that may be related to risk-taking. We include quarter dummies to control for any aggregate effects of the financial crisis in each quarter and we include bank fixed effects to control for heterogeneity that is constant over time and correlated with risk. Because the regression includes bank fixed effects, the identification comes from a within-bank change in the risk of loan originations. The inclusion of the bank fixed effects (bank *i*) and time fixed effects (quarter *t*) produces a difference-in-differences estimate of the effect of the TARP infusions on the riskiness of loan originations, controlling for pre-existing differences across banks. The coefficient β_1 measures how much the riskiness of lending by TARP recipients changed relative to non-TARP recipients after the TARP infusions.

Table 3 shows the regression results for risk-taking. The data are first divided by bank size, as in the event study, to control for overall differences in business strategies. The grouping of columns indicate the subsamples of data for large, medium, and small banks. Within each subsample, we consider three specifications of the regression model. The first column includes only bank characteristics and bank fixed-effects. The second column within each grouping adds the loan charactistics and, finally, in the full specification the time fixed-effects for each quarter are added as well.

The results after controlling for these other factors confirm the basic results of our event study. In considering the coefficient on TARP recipient for large banks, it is clearly positive and significant at the 1% level. This indicates that TARP banks increased their risk-taking after the TARP infusions relative to non-TARP banks. In column 3, the coefficient of 0.026 indicates an increase of 0.026 relative to the TARP pre-infusion average risk rating of 3.439. This appears to be relatively small in economic

significance, but it is noteworthy given that it is a relative increase in risk-taking rather than a decrease in risk-taking. For medium banks, there does not appear to be a significant difference in risk-taking between TARP and non-TARP banks after controlling for other factors. This suggests that the differences observed in the event study may be due to changes in other underlying characteristics. The coefficient on TARP recipient for small banks is consistently negative and significant at the 1% level. As in the event study, this implies that small TARP recipients decreased their risk-taking relative to other small non-TARP recipients following the capital infusions. In column 9, the coefficient of −0.185 indicates a decrease of 0.185 relative to the TARP pre-infusion average risk rating of 3.439. This appears to be a change of larger economic significance for the small banks relative to the large banks.

The other explanatory variables do appear to have a significant relationship with risk ratings. Both larger bank size and higher capitalization appear to be generally associated with higher risk ratings. Commitment draw-downs are associated with a significantly higher risk rating at large banks. An increase in loan size and loan maturity is associated with a significant decrease in the risk of the loan at large and medium-sized banks. The power of the tests for small banks may be limited due to the smaller number of loans being originated.

5. **Conclusion**

The Treasury Asset Relief Program involved a major infusion of government funds into the banking system in an attempt to stabilize financial markets. The program was developed by congressional mandate; however, the purpose of the program was not entirely clear from the beginning. The program was originally portrayed as an effort to reduce the risk profile of banks by increasing bank capitalization. In this respect, the program even involved requirements on executive compensation that were intended to reduce incentives for excessive risk-taking. However, the public response to the program also generated a significant push for banks to convert the funds into loan originations. Based on this purpose, banks were being encouraged to make more loans in an economic downturn which may have increased the degree of risk-taking through lending. The conflict between these two social objectives leads to conflicting predictions on the effect

of TARP on bank risk-taking. In this paper, we examine the effect of TARP on bank risk-taking through commercial loan originations.

To test for changes in risk-taking at TARP banks, we create a panel data set of commercial loan originations that includes periods prior to the financial crisis as well as the TARP capital injection period. Using an event-study methodology, we first analyze the change in the average risk rating between the TARP and non-TARP banks by bank size. We then use loan-level regression analysis to test the hypothesis that the TARP capital injection lowered the risk rating of loan originations at TARP recipients.

The results from the event study illustrate that the average risk rating at large TARP recipients appears to have increased more than at large non-TARP recipients following the capital infusions. Conversely, the risk of loan originations by small TARP recipients appears to have decreased relative to non-TARP recipients. Although these results are not significant for the average time series, they are suggestive of a differential effect on risk-taking. In our regression results, we find consistent evidence that the TARP capital injection significantly increased the risky lending by the large banks receiving the funds and significantly decreased the risky lending by the small banks receiving the funds. These results are statistically significant after controlling for other bank and loan characteristics.

Overall, we find that the degree of risk in commercial loans made by TARP recipients appears to have *increased* for large banks but *decreased* for small banks. These results suggest that the effect of TARP capital injections on bank risk-taking differed by bank size. One possible explanation for this finding is that TARP had two conflicting social objectives which counteracted one another in their effect on bank risk-taking. In the effort to improve bank capitalization and safety and soundness, TARP may have reduced incentives to take on risk for small banks, yet, as a program implicitly expected to create additional lending, it may have increased incentives to take on risk for large banks. Given these conflicting objectives, it is not entirely surprising that TARP did not have a uniform effect on risk-taking.

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Figure 1: Total Amount of C&I Loans Outstanding during the Crisis

This figure shows aggregate commercial and industrial (C&I) loans from commercial banks in the U.S. from November 2007 to November 2009. The data are from the H.8 Statistical Release from the Board of Governors of the Federal Reserve System, which provides an estimated weekly aggregate balance sheet for all commercial banks in the United States. Each date is the weekly value of total non-seasonally adjusted C&I loans as of the week of the STBL survey. For example, November 2007 is the amount of C&I loans as of the week of November 7, 2007.

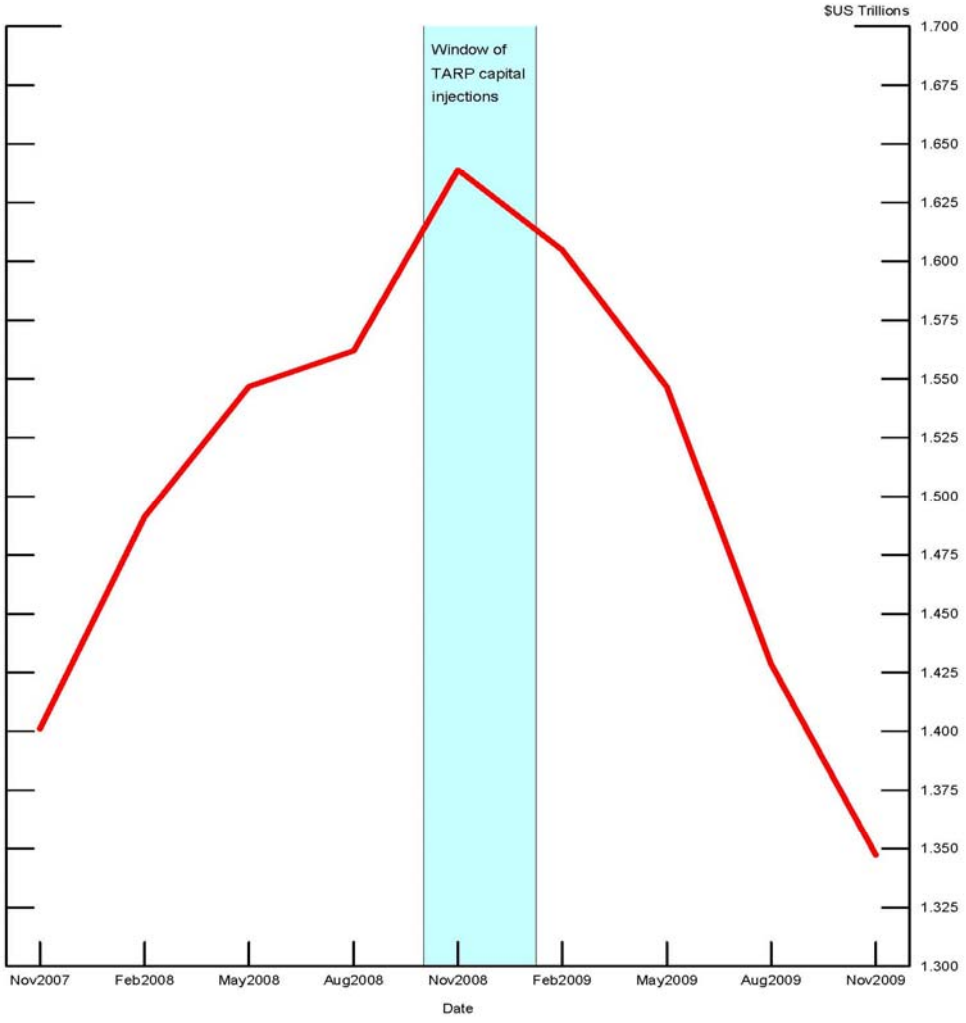

Figure 2: Relative Risk of Loan Originations by TARP and Non-TARP Banks

This figure shows the relative average risk of C&I lending across banks that received TARP capital infusions and banks that did not receive TARP capital infusions. The data are from the Survey of Terms of Business Lending, which records the risk rating of each loan that a bank makes during one week of each quarter. Risk ratings range from 1 (the safest) to 5 (the riskiest). The banks are stratified into three subsamples based on their size: large (total assets > $10 Billion), medium ($10 Billion ≥ total assets > $1 Billion), and small (total assets < $1 Billion). Each average risk time-series is normalized to be zero at the time of the TARP capital infusions. The date of the TARP capital infusions for each size category is the relative time period for the non-TARP banks.

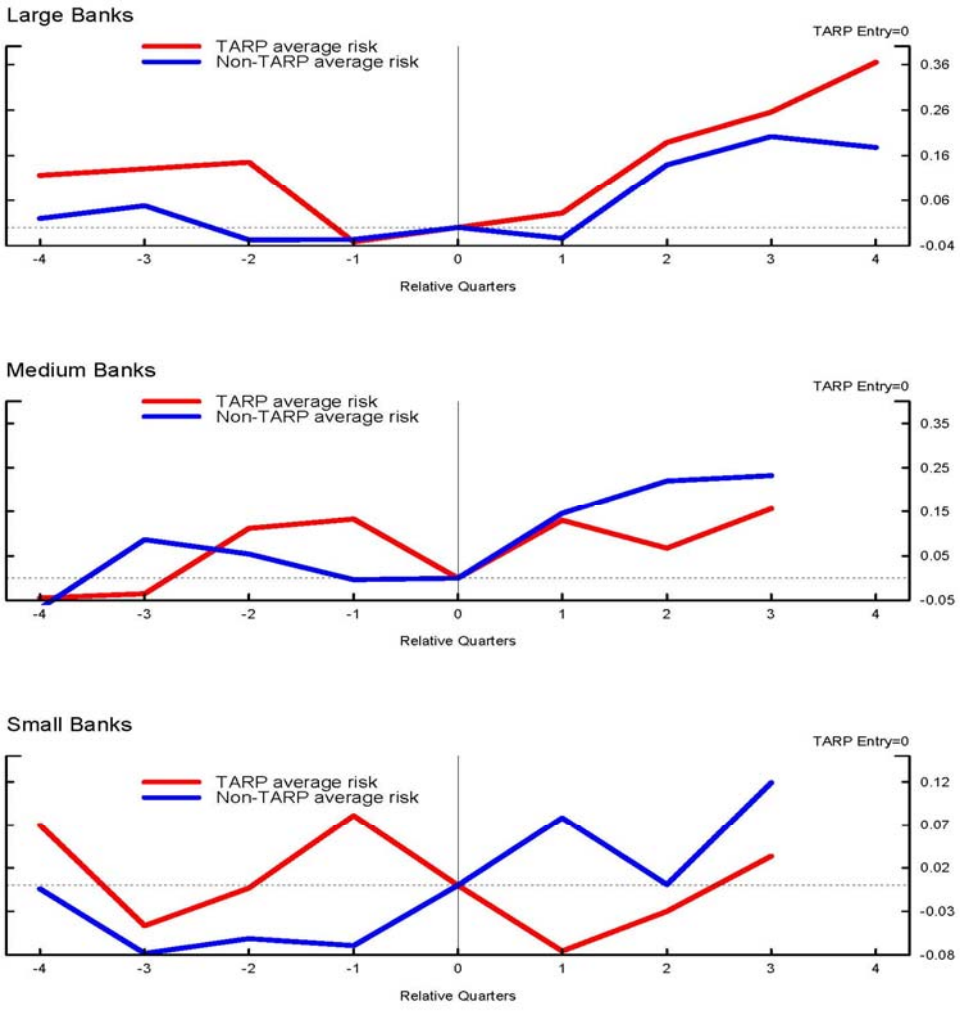

Table 1: Descriptive Statistics

This table shows the mean and standard deviation of several loan and bank characteristics. Each statistic is differentiated by the period before and after TARP and whether the bank was a recipient of TARP funds. Differences are then calculated across both dimensions. Differences-in-differences are shown in the bottom right corner. The t-tests indicate whether the means of the characteristics significantly differ along the dimension of comparison and standard deviations are shown in parentheses, with *, **, and *** indicating significance at 10%, 5%, and 1% respectively. The loan characteristics are from the Survey of Terms of Business Lending and the bank characteristics are from the Call Report. "Risk Rating" is the 1 to 5 risk rating on a loan, "Commitment" is a dummy variable indicating whether the loan was issued under an existing commitment, "Maturity" is the maturity of the loan in months, "Ln(Loan Size)" is the log of loan size in dollars, "Ln(Bank Size)" is the log of total assets, and "Capitalization" is bank equity/assets.

		(1)		(2)		(3)	
		Non-TARP Recipient		**TARP Recipient**		**TARP − Non-TARP**	
		Mean	Std Dev	Mean	Std Dev	Mean	Std Dev
(1)	**Before TARP Period**						
	Loan Characteristics						
	Risk Rating	3.366	(0.781)	3.439	(0.842)	0.073***	(0.004)
	Commitment	0.911	(0.284)	0.943	(0.231)	0.032***	(0.002)
	Maturity	19.711	(26.359)	14.807	(19.421)	-4.905***	(0.184)
	Ln(Loan Size)	11.388	(1.584)	11.327	(1.611)	-0.061***	(0.014)
	Bank Characteristics						
	Ln(Bank Size)	16.776	(1.735)	18.603	(1.621)	1.827***	(0.014)
	Capitalization	0.111	(0.033)	0.097	(0.018)	-0.013***	(0.000)
(2)	**After TARP Period**						
	Loan Characteristics						
	Risk Rating	3.405	(0.831)	3.502	(0.867)	0.097***	(0.008)
	Commitment	0.941	(0.235)	0.945	(0.229)	0.004*	(0.002)
	Maturity	18.408	(24.858)	13.472	(17.330)	-4.936***	(0.172)
	Ln(Loan Size)	11.467	(1.644)	11.307	(1.578)	-0.160***	(0.014)
	Bank Characteristics						
	Ln(Bank Size)	17.202	(1.634)	18.898	(1.459)	1.696***	(0.013)
	Capitalization	0.113	(0.029)	0.090	(0.017)	-0.022***	(0.000)
(3)	**After − Before**						
	Loan Characteristics						
	Risk Rating	0.039***	(0.009)	0.063***	(0.005)	0.024**	(0.011)
	Commitment	0.030***	(0.003)	0.001	(0.318)	-0.029***	(0.003)
	Maturity	-1.303***	(0.282)	-1.335***	(0.109)	-0.031	(0.252)
	Ln(Loan Size)	0.079***	(0.018)	-0.020**	(0.009)	-0.098***	(0.020)
	Bank Characteristics						
	Ln(Bank Size)	0.425***	(0.019)	0.295***	(0.009)	-0.131***	(0.020)
	Capitalization	0.002***	(0.000)	-0.007***	(0.000)	-0.009***	(0.000)
	Number of Banks	47		41			
	Number of Observations	33,266		114,862			

Table 2: Average Change in Risk of Loan Originations after TARP Injections

This table shows changes in the risk of loan originations by TARP and non-TARP banks as depicted in Figure 2. The amounts shown are the average change in risk ratings during the period following the TARP capital infusions. Risk ratings range from 1 (the safest) to 5 (the riskiest). The banks are stratified into three subsamples based on their size: large (total assets > $10 Billion), medium ($10 Billion ≥ total assets > $1 Billion), and small (total assets < $1 Billion). Standard deviations are shown in parentheses, with *, **, and *** indicating significance at 10%, 5%, and 1% respectively.

	TARP	**Non-TARP**	**TARP − Non-TARP**
Large banks	0.210**	0.123*	0.087
	(0.070)	(0.051)	(0.086)
Medium banks	0.118***	0.199***	-0.082*
	(0.026)	(0.027)	(0.038)
Small banks	-0.024	0.066*	-0.090
	(0.032)	(0.035)	(0.047)

Table 3: Effect of TARP on Risk of Loan Originations

This table shows the results of loan-level regressions of loan risk on bank and loan characteristics. The dependent variable is the risk category of a loan in the Survey of Terms of Business Lending, which ranges from 1 (the safest) to 5 (the riskiest). The key explanatory variable is "TARP Recipient" which is a dummy variable with a value of one when a bank becomes a TARP recipient. The columns reflect the stratification of the data into three subsamples of banks based on their size: large (total assets > $10 Billion), medium ($10 Billion ≥ total assets > $1 Billion), and small (total assets < $1 Billion). For each subsample, there are three specifications incorporating a varying degree of controls. The results of all time effects are shown in the final specification, where the excluded quarter dummy is 2007 Q4. All regressions include bank fixed-effects as well. Standard errors are shown in brackets, with *, **, and *** indicating significance at 10%, 5%, and 1% respectively.

	Large Banks			**Medium Banks**			**Small Banks**		
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**
Bank Characteristics									
TARP Recipient	0.090	0.086	0.026	-0.021	-0.023	-0.008	-0.134	-0.133	-0.185
	[0.000]***	[0.000]***	[0.010]***	[0.269]	[0.214]	[0.759]	[0.002]***	[0.002]***	[0.000]***
Ln(Bank Size)	0.216	0.199	0.256	-0.041	-0.036	-0.614	-0.026	-0.028	-0.048
	[0.000]***	[0.000]***	[0.000]***	[0.642]	[0.687]	[0.000]***	[0.689]	[0.666]	[0.496]
Capitalization	2.224	2.293	0.558	5.797	5.801	5.028	-0.928	-0.898	-0.972
	[0.000]***	[0.000]***	[0.090]*	[0.000]***	[0.000]***	[0.000]***	[0.193]	[0.208]	[0.184]
Loan Characteristics									
Commitment		0.19	0.189		0.049	0.026		0.036	0.034
		[0.000]***	[0.000]***		[0.159]	[0.445]		[0.313]	[0.343]
Maturity		-0.002	-0.002		-0.001	-0.001		0.000	0.000
		[0.000]***	[0.000]***		[0.001]***	[0.001]***		[0.476]	[0.438]
Ln(Loan Size)		-0.029	-0.028		-0.031	-0.032		-0.005	-0.004
		[0.000]***	[0.000]***		[0.000]***	[0.000]***		[0.483]	[0.587]
Bank Fixed Effects	Y	Y	Y	Y	Y	Y	Y	Y	Y
Time Fixed Effects	N	N	Y	N	N	Y	N	N	Y
Number of Observations	121735	121735	121735	18855	18855	18855	7538	7538	7538
Adjusted R-Squared	0.178	0.186	0.188	0.216	0.219	0.225	0.284	0.284	0.285