

The Effect of Exogenous Shocks on Iranian Banks' Lending Behavior

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This Draft: February, 2017

Abstract

The Iranian banking system suffered from two main shocks during the period 2006-2012: International Sanctions, and the Embezzlement Scandal of 2011. Our goal is to assess the direct and indirect effects of these shocks on the supply of credit, as previous work have indicated a fall in this particular variable. Results show that the discovery of embezzlements have had a direct negative effect on credit, while no direct effect is visible to be coming from sanctions. The observation on embezzlements affirms the powerful role transparency plays in the banking system.

JEL Classifications: E50, F51, G01, G21

Keywords: Banking, Shocks, Sanctions, Fraud, Transparency

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1 Introduction

The Iranian banking sector suffered numerous shocks during the period 2006-2012 as a result of the U.S led sanctions on this sector of the Iranian economy. The real effects of these shocks were ineluctable, as due to a very limited existence of non-bank financial intermediaries, and a weak stock and bond market, banks contribute towards more than 90 percent of financing for both private and state-owned firms in the Iranian economy. As a result of this banking crisis, the loans granted by banks suffered a sharp drop . Moreover, it is also evident from looking at data that banks' debt to the central bank rose sharply prior to this time, which based on our belief that banks used borrowing from the Central Bank to fund some of their lending, could have foretold a sharp drop in loans. However, Concurrent with the imposition of U.S sanctions, Iran's banking sector suffered from another crisis, namely, that of the 2011 embezzlement scandal.

In this paper, we use a confidential bank-level panel dataset obtained from the CBI MBRI¹ for the sole purpose of conducting this research to show that surprisingly, the effect of the embezzlement scandal which was perpetrated through seven state-owned and private banks, and affected banks through the off-balance sheet and consequently the cash flow of the banks, overshadows that of the sanctions, and can be counted as the main driving force affecting the real side of Iran's economy through the sharp reduction in loan grants. Additionally, it is evident that these effects were more pronounced for private banks as compared to state-owned banks which were more able to sustain themselves.

This paper is placed in the category of those that assess banking crises, and focus on the lending channel through which the real side of the economy is affected by changes in the nominal side,

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whether it be changes monetary policy or external shocks such as sanctions or fraud. Following the contentions made by Friedman and Schwartz (1963) and the complementary work by Bernanke (1983) regarding the great depression of 1929 and how fears of a bank run instigated a deliberate decrease in bank lending which in turn led to real effects which lengthened the great depression through 1933, it has become a known fact that changes in monetary policy do in fact affect the real side of the economy through what has been coined "the lending channel" by the proponents of this view. There has been substantial empirical work dedicated to the identification and proof of the existence of such channel (Blinder and Stiglitz (1983), Bernanke and Blinder (1992), and Bernanke and Gertler (1995)). The goal of our paper, however, is not to assess whether the lending channel empirically exists, as done so by works such as those mentioned above, but to identify whether the exogenous shocks of the Iranian economy did in fact affect lending, and to what extent.

In a recent work regarding the structure of Iran's banking system, Madanizadeh and Mahmoudzadeh (2016) presented clear facts on the movements of aggregate lending in Iran's economy over the past decades(fig?). It is evident from the data gathered by them that the ratio of aggregate lending to GDP has experienced two distinct sharp drops at both the years 2007 and 2011 after following a smooth uniform increase over ten years before 2007. Taking a closer look at Iran's economy over the recent period, one also could see large recessions, as well as increases in interest rates offered by banks on deposits. Thus, the sharp drops in lending could be viewed as supply shocks as has also been indicated by Karimirad (2016). Identifying the main sources of supply shocks affecting Iran's banking system could therefore, be of substantial importance in better understanding the operation of the financial sector, facilitate policy analysis, and also help further research into the links between the financial sector and the real side of the economy in this country.

The motivation behind this paper is that if such exogenous shocks were in fact able to affect

the lending behavior of banks, then they would have had substantial explanatory power for the real effects that followed in the Iranian economy. Of course we are not neglecting the fact that these shocks, and other identified and unidentified factors have influenced the Iranian economy through other channels, but since the Iranian banking system is responsible for most of the credit (more than 90 percent) acquired by firms for their investment and production decisions, it must hold true that the real effect of any shocks through the lending channel could have been of substantial and noteworthy influence among other channels.

The main empirical work related to this paper is that of Kashyap and Stein (2000). Following Bernanke and Blinder (1992), they argue that banks with different characteristics with regards to their sizes and types respond to shocks in monetary policy. They show that first of all, the response of banks with lower liquidity ratio defined as the ratio of securities to assets is more pronounced compared to those with higher liquid assets. They also demonstrate that this effect attributed to smaller banks. Our paper is similar to the work presented in this paper with two distinctions: 1- Due to a lack of data, we work with 2000 data points instead of a million. 2- We analyze the effect of exogenous shocks instead of monetary policy shocks. We argue that the exogenous shocks that hit Iranian banks worked through the lending channel.

There have also been numerous other works dedicated to identifying the lending channel in other countries. Ferri and Kang (1999) for example, show that such a channel had been at work during the Korean economic crisis. They demonstrate that reduction in bank lending worsened the crisis through intensifying the liquidity constraints faced by those relying on bank credit. In another example, De Haan et al. (2001) use individual bank level data between 1990-1997 for Netherlands and show that loan supply reacts to monetary policy shocks, and this reaction is different for certain type of banks. They find evidence that the lending channel in Netherlands works only for unsecured

debt, while state secured lending are not affected by monetary policy shocks. Moreover, the authors demonstrate that the negative effect of monetary policy is more pronounced for smaller banks and those with lower liquidity and capital. They also distinguish the effect of such shocks with respect to different markets in which banks operate in, reacting differently to households compared to corporations. In a similar study, Kakes, Sturm, Maier, et al. (2001) use 1970-1997 data on German banks to argue against the relevance of the lending channel in this country. They show that German banks isolate their loan portfolios by offsetting the effects of monetary policy through adjusting their securities. Similarly, Ludi, Ground, et al. (2006) disprove the existence of the bank lending channel for South Africa using a Structural VAR model. For Turkey, several studies have been conducted that prove the existence of a lending channel in this country with response to monetary policy shocks (GÜNDÜZ (1997), Sengonul and Thorbecke* (2005), and Brooks et al. (2007)). For Brazil, deMello and Pisu (2010) use aggregate monthly data for the period 1995-2008 and find co-integrating vectors for the supply and demand of loans using a Vector Error Correction Model. They find a negative correlation between loan supply and a monetary policy instrument, suggesting the existence of a lending channel.

In another approach, Kishan and Opiela (2000) segregate U.S banks into three distinct categories based on their size measured by assets, as well as their capital ratios. Using data for 1980-1995, they show that bank size and capital matter with regards to the banks' response to monetary policy. For example, the loans of small undercapitalized banks are shown to be much responsive to policy shocks. Following this approach, Altunbaş, Fazylov, and Molyneux (2002) find similar results for European countries during 1991-1999.

But perhaps the most creative and informative work in the literature can be ascribed to Jiménez, Ongena, Peydró, and Saurina who published four papers on the subject using 23 million observations on bank loans in Spain. In their most relevant work, Jimenez et al. (2012), they were able to ana-

lyze bank and firm balance sheet channels to distinguish between the supply and demand of credit. They show that the bank balance sheet channel of monetary policy transmission works by reducing lending in crisis times. firm balance-sheet heterogeneity however, affects lending in both good and crisis times, and neglecting this channel will cause identification problems. The key point that distinguishes our work from that of Jimenéz et al. (2012) is that in contrast to their work which deals with analyzing monetary policy shocks which are considered to be endogenous shocks responding to the current state of the economy, on which the central bank's decision is contingent upon and neglecting the demand side for credit would arise endogeneity concerns. Our work, however, deals with the effect of exogenous shocks such as sanctions and the embezzlement scandal which completely removes the risk of such concerns.

Our goal in this paper is to work with the limited available data at our disposal to try and identify mechanisms through which bank lending has suffered due to exogenous shocks that hit the Iranian economy during the period 2006-2013.

1.1 Sanctions

The Iranian economy has suffered from imposed sanctions over the past forty years, yet the imposition of such sanctions has been intensified over the past ten years as a result of the country's nuclear program, and over 25 Iranian banks were targeted in a set of sanctions targeting the Iranian financial industry. These sanctions affected different banks at different times throughout the course of the past ten years. Figures 1 and 1.1 graphically show the timing of sanctions as the narrower lines, along with the evolution of credit, namely loans and off-balance sheet activities. It is seen that sanctions were imposed on Iranian banks in nine consecutive time periods. Table 1 delineates the number of banks that had been affected on each date, without naming the banks themselves.

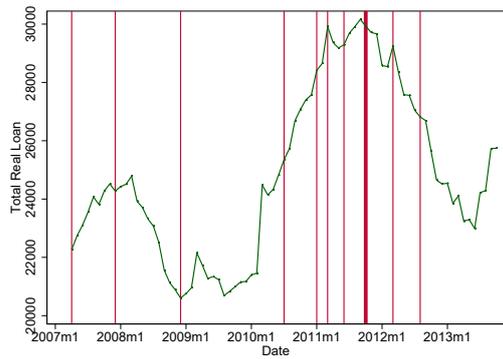


Figure 1: Total Real Loan (Deflated by CPI) and The Timing of Shocks

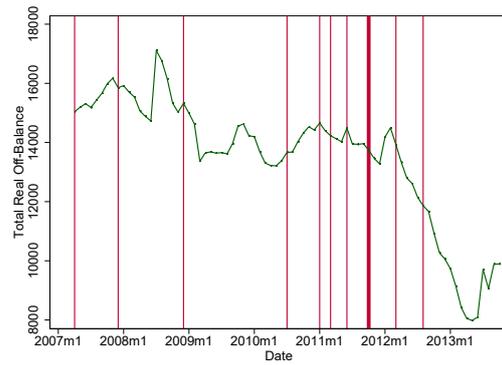


Figure 2: Total Real Off-Balance Sheet (Deflated by CPI) and The Timing of Shocks

Table 1: Dates and No. of Iranian Banks Directly Affected by Exogenous Shocks

Date	Banks Sanctioned	Banks Involved in Embezzlements
April 2007	1	0
December 2007	3	0
December 2008	1	0
July 2010	1	0
January 2011	2	0
March 2011	1	0
June 2011	1	0
October 2011	0	6
March 2012	1	0
August 2012	14	0
Total	25	6

The sanctions imposed on Iranian banks are categorized under a broad set of sanctions aimed at Iran's financial institutions as a means to combat the Iranian government's role in supporting terrorism, and to pressure Iran in its Nuclear and Ballistic Missile program. The United States' goal was to cut off Iran's access from the international financial market through imposing sanctions on major Iranian banks as well as pressuring businesses worldwide to choose between either doing business with Iran or the United States. Subsequently, several other banks were sanctioned after they were found to have been processing transactions for those that had been sanctioned. Moreover, in another action, the European Union ordered SWIFT to disconnect several Iranian banks in 2012, which severed Iran's connection from the world's major financial markets, impeding the country's means to move money in international markets.

1.2 The Embezzlement Scandal of 2011

The great embezzlement scandal of 2011 was one of the major shocks in the Iranian banking sector over the past 10 years, which affected the whole banking system after 6+1 banks were identified to have been issuing fake letters of credit(LC) to acquire assets, and inflating their off-balance sheet activities. This scandal, which incorporated 30,000 Billion Rials (3 Billion Dollars) of funds, in turn, was discovered after four years and led to widespread media coverage and the legal prosecution of those involved.

Our contention in this paper is that the resulting shock of the aftermath of the scandal's discovery could have had a far more impact than has been given credit to, where the effect could be representative to that of a transparency being implemented in the system through a fear of prosecution. We are also going to show that the effect of this shock even overshadows that of the sanctions. Figures 1 and 1.1 show the timing of this particular shock in the Iranian economy along with the timing of

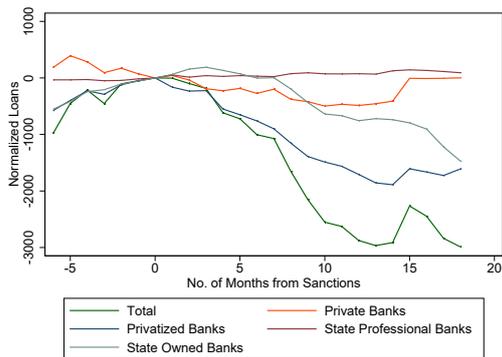


Figure 3: The Evolution of Real Loans after Sanctions

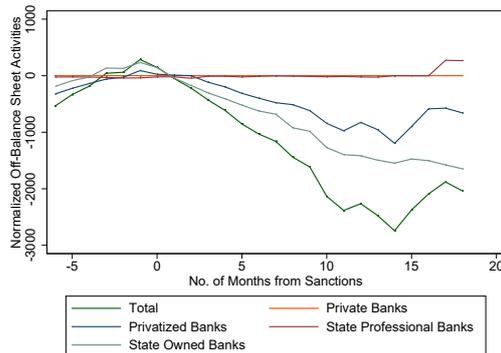


Figure 4: The Evolution of Real Off-Balance Sheet Activities after Sanctions

sanctions and the evolution of the main two credit variables. The embezzlement scandal of October 2011 is shown as a bold line.

1.3 The Aftermath of Shocks

To present our contentions more clearly and graphically, we have taken the two main credit variables in the Iranian banking system, loans and off-balance sheet activities, and normalized their values at the date of each shock's occurrence as zero to observe the evolution of credit before and after each shock more clearly. Figures 3 and 1.3 show the evolution of credit prior to, and after sanctions were levied on each bank. Figures 5 and 1.3 represent the same for the aftermath of the discovery of the embezzlement scandal.

As is seen from the figures above, there seems to be evidence of a contraction in credit in the country following the aforementioned shocks. Figures 3 and 1.3 also show that different types of banks with regards to their ownership have been affected rather differently as a result of sanctions being imposed on them, which implies that this fact should be incorporated into the identification of our model. Figures 5 and 1.3 also indicate a contraction of credit as a result of the embezzlement

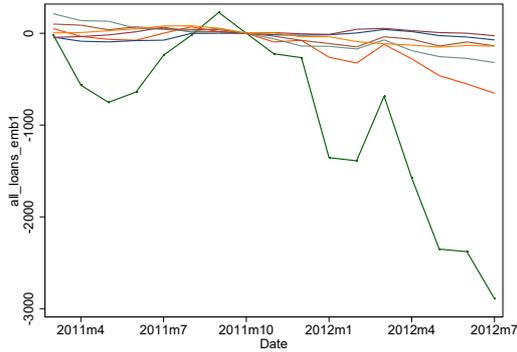


Figure 5: The Evolution of Real Loans after the Embezzlement

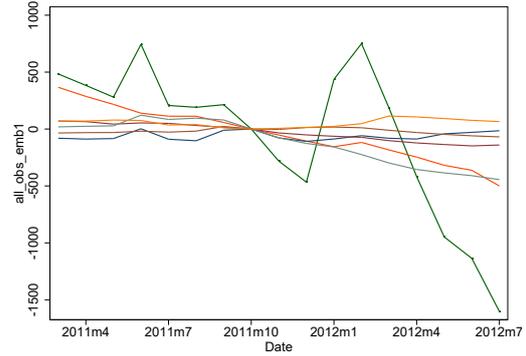


Figure 6: The Evolution of Real Off-Balance Sheet Activities after the Embezzlement

scandal, both for the total amount of credit available (indicated as the green line) as well as for each bank individually.

2 Data

In this section we are going to present our data and hypotheses more clearly. Tables 2 and 3 present the type of banks and financial institutions in our dataset along with their count, and their summary statistics for our key variables at the terminal date of the sample (2013:10). The names of the banks have been omitted in order to maintain confidentiality.

Before presenting the summary statistic tables for the key variables used in our models, it should be noted that for the regressions, all variables have been deflated using M2 (Total Liquidity in the Banking System) to control for problems arising when using CPI, and therefore, do not have any monetary unit. However, for the summary statistics, we have deflated nominal variables using CPI in order to give the reader a sense of the data and our variables in real terms. Moreover, the liquidity ratio of each bank in any given month is defined as the sum of its cash, its claims from the central

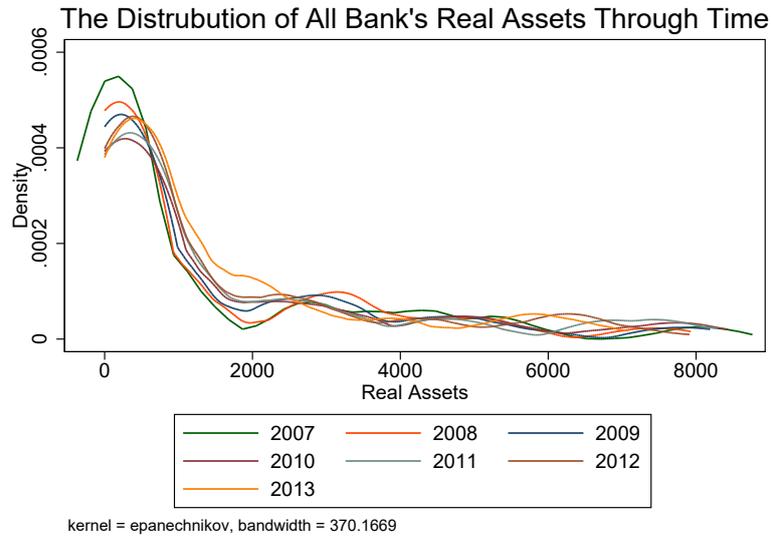


Figure 7: The Distribution of All Banks' Real Assets Through Time

banks, as well as its claims from other banks and financial institutions, divided by its assets in the same month. The banks capital ratio is also defined as the difference between its assets and liabilities divided by its assets in the same month. Figure 2 shows the distribution of banks' total real assets through time, implying little variation in the distribution of real assets in the banking system as a whole.



Table 2: Bank Categories and Summary Statistics for 2013:10

Type of Financial Institution	Count	Assets			Loan			CBDebt			Deposits		
		Mean	SD	Share	Mean	SD	Share	Mean	SD	Share	Mean	SD	Share
State-Owned Commercial Banks	3	2779.969	2978.033	0.166	1457.671	1560.037	0.17	189.531	262.430	0.11	2188.392	2254.778	0.19
Non-Bank Financial Institutions	1	732.066	0	0.016	16.95	0	0.0006	18.543	0	0.004	647.09	0	0.02
Privatized Banks	4	4123.486	2309.767	0.33	2205.187	1472.235	0.34	279.88	303.987	0.22	2930.715	1447.719	0.34
Specialized State-Owned Banks	5	2109.047	2215.86	0.21	1425.944	1592.690	0.28	618.292	900.481	0.55	900.416	923.054	0.13
Private Banks	19	736.178	721.537	0.28	284.408	315.103	0.21	19.377	55.262	0.07	578.561	590.366	0.32
Total	32	1565.5791	1871.6147	1	804.50618	1137.6535	1	161.44656	410.32342	1	1075.9333	1252.7274	1

Table 3: Bank Categories and Summary Statistics for 2013:10 (Continued)

Type of Financial Institution	Count	NPL			LiqRatio			CapRatio		
		Mean	SD	Share	Mean	SD	Share	Mean	SD	Share
State-Owned Commercial Banks	3	319.116	357.034	0.22	.19	.063	0.08	.043	.045	0.04
Non-Bank Financial Institutions	1	26.174	0	0.006	.812	0	0.11	.021	0	0.007
Privatized Banks	4	351.24	199.501	0.32	.157	.014	0.08	.058	.02	0.07
Specialized State-Owned Banks	5	136.019	95.602	0.15	.117	.071	0.08	.116	.089	0.18
Private Banks	19	71.588	135.781	0.31	.26	.211	0.66	.119	.132	0.7
Total	32	138.398	190.024	1	.235	.203	1	.1	.111	1

3 Identification

In order to successfully identify the role of exogenous shocks in affecting credit in the Iranian banking system, we have devised a baseline model which incorporates several key variables as controls:



1. **Financial Health:** Following ???, we control on the heterogeneity in the financial health of banks defined by the following variables:

- (a) Each banks' debt to the central bank, in logarithmic form, instrumented with the sum of other banks' debt to the central bank (also in logarithmic form) to control for endogeneity. We contend that this variables should be controlled for, as banks have used the loose pocket of the central bank to borrow in order to prevent the fall in their lending through debt to some extent. However, since loans themselves affect debt to CB, an issue of reverse causality arises, for which the sum of the other banks' debt to CB has been used as an instrumental variable to resolve this issue.
- (b) The liquidity, capital, and NPL to asset ratios of the banks to control for the heterogeneity in the strength of the banks' balance sheets.

2. **Size:** Among many candidates, the assets of each bank at the final date of the sample, is controlled for as a measure of size.

3. **Public Housing Project:** A dummy variable representing the Public Housing Project bubble of April 2011, which had been initiated by one of the state professional banks, and its effects eventually propagated through the banking system, affecting the balance sheets of many banks.

4. **Time and Bank Fixed Effects:** in order to control for time and bank variations.

Moreover, the standard errors have been clustered on banks in all specifications.

The baseline model could thus be formally expressed as follows:

$$BV_{it} = cons + Shock_{it} + Slope_{it} + F'_{it}\beta + \Delta_{it}\delta + Public_{it} + Size_{2013:10} + \mu_i + \tau_t + \varepsilon_{it} \quad (1)$$

Where BV_{it} is the banking variable being analyzed such as credit, $Shock_{i,t}$ is a vector containing either or both of the following: $Sanction_{i,t}$, a dummy variable, that for each bank, takes the value of 1 with a lag when the bank is sanctioned, $Embez7_{i,t}$, a dummy variable that takes the value of 1 for the banks involved in the embezzlement scandal with a lag after it was discovered, and $Embez_{i,t}$, a dummy variable that takes the value of 1 for all banks with a lag after the embezzlement scandal was discovered. $Slope_{it}$ equates $Shock_{i,t} * t$. Moreover, B_{it} is the vector of balance sheet and/or off-balance sheet variables being controlled for, and Δ_{it} represents each bank's debt to the central bank instrumented with the debt of all other banks to the central bank at the same month. Together, B_{it} and Δ_{it} constitute as the financial health controls. $Public_{it}$ is also a dummy variable controlling for the public housing bubble. μ_{it} represents bank fixed effects and τ_t represents month fixed effects.

More complicated models are subsequently defined to incorporate more control variables, and to try to distinguish pre and post sanction and embezzlement effects, as well as the effect of bank ownership.

4 Results and Interpretation

To identify the effect of shocks, for each credit variable, we start with the baseline model and first analyze each shock separately, and then concurrently in our model. Subsequently, we expand our model to incorporate the interaction terms of each shock with our control variables, as well as variables

representing bank types and ownership, to distinguish the effect of shocks on different types of banks in the Iranian banking industry.

4.1 Real Loans

Tables 4 and 5 assess the effect of each shock on real loans separately.

Table 4: The Effect of Sanctions on Real Loans

	(1)	(2)	(3)	(4)	(5)
	log(Real Loan)				
Sanctions	.232*	.231*	-.00244	-.0901	
	(1.66)	(1.66)	(-0.04)	(-0.92)	
Sanctions Slope	-.00751*	-.00745*	-.00467	-.00484	-.00463
	(-1.67)	(-1.66)	(-1.42)	(-1.46)	(-1.44)
Sanctions (t-1)				.0941*	.0106
				(1.70)	(0.17)
Constant	-7.13***	-7.13***	-6.79***	-6.81***	-6.79***
	(-48.48)	(-48.53)	(-16.81)	(-17.10)	(-17.08)
Size_Controls	N	Y	Y	Y	Y
Ownership_Controls	N	N	N	N	N
Financial_Health_Controls	N	N	Y	Y	Y
Interactions	N	N	N	N	N
Public_Housing	Y	Y	Y	Y	Y
Bank_Fixed_Effects	Y	Y	Y	Y	Y
Time_Fixed_Effects	Y	Y	Y	Y	Y
Bank_Cluster	Y	Y	Y	Y	Y

t statistics in parentheses

All Regressions are clustered on Banks and contain time and bank fixed effects. All variables have been deflated using M2. Deflation with CPI yields similar results as conducted in robustness checks.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

As table 4 shows, the baseline model cannot clearly determine the effect of sanctions on real lending as the coefficients and the significance levels are not robust among various sets of control. Table 5, however, provides much more promising results on the effect of the embezzlement scandal, where columns (3)-(5) capture the negative effect of the discovery of the scandal on lending from the banks that were involved, as well as the much less contraction occurring in those that were not

involved, which is obtained as the difference between the coefficients for "Involved" and "All Banks". From here on, we shall use the lags of the embezzlement variables as they capture the effect just as well as the date-t variables.

Table 5: The Effect of the Embezzlement Scandal on Real Loans

	(1)	(2)	(3)	(4)	(5)
	log(Real Loan)	log(Real Loan)	log(Real Loan)	log(Real Loan)	log(Real Loan)
Embezzlement (7 Involved Banks)	-.208 (-0.98)	-.208 (-0.98)	-.223** (-2.45)	-.0807 (-1.11)	
Embezzlement Slope (7 Banks)	-.0203 (-1.34)	-.0202 (-1.34)	-.00433 (-0.50)	-.00286 (-0.32)	
Embezzlement(t-1) (7 Banks)				-.168** (-2.07)	-.285** (-2.14)
Embezzlement (All Banks)	.483** (2.15)	.466** (2.12)	.195* (1.82)		
Embezzlements (All Banks)(t-1)				.19 (1.60)	.211** (2.01)
Constant	-7.5*** (-48.52)	-7.49*** (-48.49)	-7.03*** (-12.21)	-7.03*** (-12.74)	-7.04*** (-13.29)
Size_Controls	N	Y	Y	Y	Y
Ownership_Controls	N	N	N	N	N
Financial_Health_Controls	N	N	Y	Y	Y
Interactions	N	N	N	N	N
Public_Housing	Y	Y	Y	Y	Y
Bank_Fixed_Effects	Y	Y	Y	Y	Y
Time_Fixed_Effects	Y	Y	Y	Y	Y
Bank_Cluster	Y	Y	Y	Y	Y

t statistics in parentheses

All Regressions are clustered on Banks and contain time and bank fixed effects. All variables have been deflated using M2. Deflation with CPI yields similar results as conducted in robustness checks.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 6 analyzes both shocks concurrently, and our previous observations regarding each shock is affirmed. There seems to be on the one hand, a consistent negative effect from embezzlements on lending, which is more pronounced for the banks involved in the scandal, and on the other hand, a non-existent effect from sanctions. Table 7 provides more interesting results. Using interaction terms for sanctions and embezzlement, the significant effect of the embezzlement scandal's discovery is once again affirmed. Moreover, It is also shown that sanctions did affect lending through private banks, and so did the embezzlement scandal.

Table 6: The Effect of Exogenous Shocks on Real Loans

	(1)	(2)	(3)	(4)	(5)
	log(Real Loan)	log(Real Loan)	log(Real Loan)	log(Real Loan)	log(Real Loan)
Sanctions	.202 (1.51)	.201 (1.51)	-.0172 (-0.22)	-.0859 (-0.89)	
Sanctions (t-1)				.0738 (1.26)	-.00577 (-0.08)
Sanctions Slope	-.00463 (-1.18)	-.00458 (-1.17)	-.00337 (-1.01)	-.00351 (-1.04)	-.0033 (-1.01)
Embezzlement(t-1) (7 Banks)	-.2 (-0.93)	-.2 (-0.94)	-.223** (-2.42)	-.224** (-2.44)	-.224** (-2.43)
Embezzlement Slope (7 Banks)	-.0159 (-1.02)	-.0159 (-1.02)	-.00283 (-0.33)	-.0027 (-0.31)	-.00274 (-0.31)
Embezzlements (All Banks)(t-1)	.411** (2.36)	.41** (2.36)	.258* (1.91)	.257* (1.91)	.252* (1.91)
Constant	-7.46*** (-72.11)	-7.46*** (-72.05)	-7.29*** (-14.64)	-7.3*** (-14.73)	-7.29*** (-14.89)
Size_Controls	N	Y	Y	Y	Y
Ownership_Controls	N	N	N	N	N
Financial_Health_Controls	N	N	Y	Y	Y
Interactions	N	N	N	N	N
Public_Housing	Y	Y	Y	Y	Y
Bank_Fixed_Effects	Y	Y	Y	Y	Y
Time_Fixed_Effects	Y	Y	Y	Y	Y
Bank_Cluster	Y	Y	Y	Y	Y

t statistics in parentheses

All Regressions are clustered on Banks and contain time and bank fixed effects. All variables have been deflated using M2. Deflation with CPI yields similar results as conducted in robustness checks.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 7: The Effect of Exogenous Shocks on Real Loans Based on Bank Ownership, Size, and Financial Health



	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	log(Real Loan)	log(Real Loan)	log(Real Loan)	log(Real Loan)	log(Real Loan)	log(Real Loan)	log(Real Loan)	log(Real Loan)	log(Real Loan)
Sanctions	-.0172 (-0.22)	.392* (1.91)	-.0147 (-0.19)	-.139 (-1.16)	.413 (0.54)	-.00309 (-0.04)	-.0177 (-0.23)	-.0551 (-0.64)	.00891 (0.12)
Embezzlement(t-1) (7 Banks)	-.223** (-2.42)	-.231** (-2.06)	-.223** (-2.42)	-.231** (-2.48)	-.237** (-1.98)		-.219** (-2.39)	-.341** (-2.57)	.238 (0.84)
Embezzlements (All Banks)(t-1)	.258* (1.91)	.336** (2.08)	.257* (1.91)	.25* (1.91)	.358* (1.69)	.278* (1.89)	.257* (1.90)	.297** (2.08)	.28* (1.86)
Sanctions Slope	-.00337 (-1.01)	-.00365 (-1.12)	-.00336 (-1.01)	-.00296 (-0.92)	-.0036 (-1.16)	-.00366 (-1.08)	-.00336 (-1.01)	-.00166 (-0.54)	-.00382 (-1.16)
Embezzlement Slope (7 Banks)	-.00283 (-0.33)	-.00422 (-0.49)	-.00283 (-0.33)	-.0028 (-0.37)	-.00462 (-0.44)	-.00192 (-0.21)	-.00274 (-0.32)	-.0037 (-0.46)	.00038 (0.04)
SanctionsXPrivate Banks		-.576* (-1.79)							
SanctionsXState		-.179 (-0.74)							
SanctionsXPrivatized		-.455 (-1.49)							
Embez7XState						-.0529 (-0.50)			
Embez7XPrivate						-.382** (-2.31)			
Embez7XLiq Ratio									-.28* (-1.86)
Constant	-7.29*** (-14.64)	-5.48*** (-6.75)	-7.29*** (-14.64)	-3.03*** (-6.04)	-7.7*** (-10.67)	-6.93*** (-17.57)	-7.3*** (-14.61)	-3.1*** (-6.11)	-7.29*** (-15.95)
Size_Controls	Y	Y	Y	Y	Y	Y	Y	Y	Y
Ownership_Controls	N	Y	N	N	N	Y	N	N	N
Financial_Health_Controls	Y	Y	Y	Y	Y	Y	Y	Y	Y
Interactions	N	SxO	SxSz	SxSz	SxFH	ExO	ExSz	ExSz	ExFH
Public_Housing	Y	Y	Y	Y	Y	Y	Y	Y	Y
Bank_Fixed_Effects	Y	Y	Y	Y	Y	Y	Y	Y	Y
Time_Fixed_Effects	Y	Y	Y	Y	Y	Y	Y	Y	Y
Bank_Cluster	Y	Y	Y	Y	Y	Y	Y	Y	Y

t statistics in parentheses

All Regressions are clustered on Banks and contain time and bank fixed effects. All variables have been deflated using M2. Deflation with CPI yields similar results as conducted in robustness checks.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

The first column of Table 7 replicates the baseline model as we had seen in Table 6-Column (3). Column (2) controls for the interactions of sanctions and banks' ownership, where we see how private banks have been affected by sanctions, while other types of banks have remained unaffected. Columns (3) and (4) control for the interaction of sanctions and size, where two separate measures of size have been used. Column (3) uses the real assets of each bank at 2013:10, while in column (4), a dummy variable for small banks has been replaced, and both yield similar results. In column (5), the sanction variable has been interacted with all four financial health variables, and our contention is affirmed yet again, however showing a larger effect for embezzlement for non-involved banks. Columns (6) through (9) are reminiscent of columns (2) through (5) where instead, the embezzlement variable has been interacted instead of the sanction variable. In column (6), we observe the fact that the scandal has also affected private owned banks that were involved, where state owned involved banks have remained unaffected. In column (9), it is seen that banks with higher liquidity to asset ratio have been affected more by the scandal. This is discussed later.

4.1.1 Loan to Asset Ratio

Even though banks' assets were shown to be relatively constant throughout time in the Iranian banking system, it could have been so that individual banks have changed the composition of their balance-sheet portfolio, and to have acquired more assets in times of high risk and uncertainty. Thus, it is plausible that we should also assess the ratio of lending to assets, in order to control for such concerns, and to see how banks have changed the share of their assets that they chose to lend. Table 8 presents results for the baseline and more complicated models with two minor changes: 1. Did not control on size, 2. Controlled for liquidity ratio only in some models. As evident from the results, the discovery of the embezzlement scandal had been effective in decreasing the loan to asset ratio of banks, and more pronouncedly for those banks not involved.

Table 8: The Effect of Exogenous Shocks on Loan to Asset Ratio

	(1)	(2)	(3)	(4)	(5)
	Loan to Asset	Loan to Asset	Loan to Asset	Loan to Asset	Loan to Asset
Sanctions	.0137 (0.94)	-.00466 (-0.40)			-.00663 (-0.53)
Embezzlement(t-1) (7 Banks)			-.0678** (-2.44)	-.0547** (-2.18)	-.0536* (-1.84)
Embezzlements (All Banks)(t-1)			-.0646*** (-4.26)	-.0428*** (-2.67)	-.0379* (-1.88)
Liquidity Ratio		-.438*** (-4.06)		-.407*** (-3.70)	-.417*** (-3.83)
Sanctions Slope	.000315 (0.40)	-.000384 (-0.53)			-.000173 (-0.22)
Embezzlement Slope (7 Banks)			.000958 (0.63)	.000815 (0.62)	.000769 (0.58)
Constant	-.0493 (-0.41)	.0501 (0.54)	-.0644 (-0.48)	.0632 (0.51)	.0511 (0.47)
Size_Controls	N	N	N	N	N
Ownership_Controls	N	N	N	N	N
Financial_Health_Controls	Y	Y	Y	Y	Y
Interactions	N	N	N	N	N
Public_Housing	Y	Y	Y	Y	Y
Bank_Fixed_Effects	Y	Y	Y	Y	Y
Time_Fixed_Effects	Y	Y	Y	Y	Y
Bank_Cluster	Y	Y	Y	Y	Y

t statistics in parentheses

All Regressions are clustered on Banks and contain time and bank fixed effects. All variables have been deflated using M2. Deflation with CPI yields similar results as conducted in robustness checks.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 9: The Effect of Exogenous Shocks on Loan to Asset Ratio Based on Bank Ownership, Size, and Financial Health

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Loan to Asset	Loan to Asset	Loan to Asset	Loan to Asset	Loan to Asset				
Sanctions	-0.00653 (-0.52)	.134*** (3.92)	-0.00616 (-0.50)	-0.0226 (-1.42)	.116 (1.07)	-0.00135 (-0.11)	-0.00648 (-0.52)	-0.0118 (-0.88)	-0.00234 (-0.18)
Embezzlement(t-1) (7 Banks)	-.0536* (-1.85)	-.0566** (-2.29)	-.0536* (-1.85)	-.0546* (-1.94)	-.0704*** (-2.78)		-.0539* (-1.81)	-.07*** (-3.48)	.106* (1.76)
Embezzlements (All Banks)(t-1)	-.0378* (-1.88)	-.0131 (-0.59)	-.0379* (-1.89)	-.0389* (-1.92)	-.012 (-0.45)	-.0307 (-1.58)	-.0377* (-1.88)	-.0324 (-1.47)	-.0348 (-1.49)
Sanctions Slope	-.000181 (-0.23)	-.000243 (-0.36)	-.000179 (-0.22)	-.000124 (-0.16)	-.0000594 (-0.09)	-.000288 (-0.36)	-.000181 (-0.23)	.0000584 (0.09)	-.000326 (-0.50)
Embezzlement Slope (7 Banks)	.000767 (0.58)	.000321 (0.24)	.000767 (0.58)	.000772 (0.60)	.00117 (0.72)	.0011 (0.79)	.00076 (0.57)	.000648 (0.49)	7.47e-06 (0.01)
SanctionsXPrivate Banks		-.194*** (-4.44)							
SanctionsXState		-.111*** (-3.17)							
SanctionsXPrivatized		-.144*** (-3.50)							
Embez7XState						.00887 (0.29)			
Embez7XPrivate						-.112*** (-3.64)			
Embez7XLiq Ratio									-.626*** (-3.79)
Constant	.0525 (0.48)	.384*** (3.21)	.0524 (0.48)	.445*** (4.30)	-.0442 (-0.47)	.184** (2.07)	.0528 (0.48)	.434*** (4.41)	.0544 (0.55)
Size_Controls	Y	Y	Y	Y	Y	Y	Y	Y	Y
Ownership_Controls	N	Y	N	N	N	Y	N	N	N
Financial_Health_Controls	Y	Y	Y	Y	Y	Y	Y	Y	Y
Interactions	N	SxO	SxSz	SxSz	SxFH	ExO	ExSz	ExSz	ExFH
Public_Housing	Y	Y	Y	Y	Y	Y	Y	Y	Y
Bank_Fixed_Effects	Y	Y	Y	Y	Y	Y	Y	Y	Y
Time_Fixed_Effects	Y	Y	Y	Y	Y	Y	Y	Y	Y
Bank_Cluster	Y	Y	Y	Y	Y	Y	Y	Y	Y

t statistics in parentheses

All Regressions are clustered on Banks and contain time and bank fixed effects. All variables have been deflated using M2. Deflation with CPI yields similar results as conducted in robustness checks.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 9 resembles Table 7 in its specification form, where the left hand side is replaced with the loan to asset ratio. results are consistent with what we had observed earlier where the embezzlement scandal's discovery had a significant negative effect. In column (2), we see that sanctions have had a negative effect on the loan to asset ratio for private, privatized, and state owned banks, while having a positive effect for professional and non-bank institutions, which may imply that these effects have to some extent, canceled each other out. Moreover, column (6) affirms that the scandal had its effect propagated through private banks that were involved, while state owned banks were left unaffected.

4.1.2 Real Loans Based on Currency

Another way to distinguish the effect of shocks on lending is to view lending as either those made in the Iranian currency (Rials), and those made in other currencies. In order to do so, we ran our extensive model on each of these separate categories of loans: Rial Loans, and Non-Rial Loans. Tables 10 and 11 demonstrate our results for these two categories, respectively.

Table 10 yields similar results for Rial Loans to that obtained previously while in Table 11 we see a negative effect on banks that were not involved in the scandal, a reverberation from the slope variable, and a negative effect from sanctions in some of the models.

Table 10: The Effect of Exogenous Shocks on Rial Loans Based on Bank Ownership, Size, and Financial Health

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	log(Real Rial Loans)	l(Rl Rial Loans)	l(Rl Rial Loans)	l(Rl Rial Loans)	l(Rl Rial Loans)	l(Rl Rial Loans)	l(Rl Rial Loans)	l(Rl Rial Loans)	l(Rl Rial Loans)
Sanctions	.0403 (0.68)	.272 (1.53)	.0436 (0.76)	-.085 (-1.02)	-.0506 (-0.10)	.0491 (0.85)	.0403 (0.68)	.0203 (0.29)	.0468 (0.84)
Embezzlement(t-1) (7 Banks)	-.203** (-2.06)	-.21** (-2.02)	-.203** (-2.07)	-.211** (-2.18)	-.213** (-2.05)		-.204** (-2.07)	-.265** (-1.99)	.224 (0.99)
Embezzlements (All Banks)(t-1)	.151* (1.65)	.194* (1.87)	.15* (1.65)	.143 (1.58)	.17 (1.42)	.163 (1.64)	.151* (1.65)	.172* (1.79)	.16 (1.54)
Sanctions Slope	-.00363 (-1.33)	-.00372 (-1.49)	-.00362 (-1.33)	-.00322 (-1.26)	-.00342 (-1.28)	-.00381 (-1.40)	-.00363 (-1.33)	-.00273 (-1.74)	-.00445*
Embezzlement Slope (7 Banks)	-.00324 (-0.43)	-.00405 (-0.51)	-.00324 (-0.43)	-.00322 (-0.53)	-.00313 (-0.41)	-.00267 (-0.35)	-.00325 (-0.43)	-.0037 (-0.49)	-.0133** (-2.33)
SanctionsXPrivate Banks		-.32 (-1.29)							
SanctionsXState		-.0755 (-0.37)							
SanctionsXPrivatized		-.275 (-1.17)							
Embez7XState						-.0967 (-1.14)			
Embez7XPrivate						-.303** (-2.13)			
Embez7XLiq Ratio									-.0504 (-0.04)
Constant	-7.74*** (-17.46)	-5.32*** (-7.71)	-7.74*** (-17.49)	-3.1*** (-7.59)	-7.81*** (-16.00)	-7.52*** (-19.99)	-7.74*** (-17.44)	-3.09*** (-7.48)	-7.74*** (-18.44)
Size_Controls	Y	Y	Y	Y	Y	Y	Y	Y	Y
Ownership_Controls	N	Y	N	N	N	Y	N	N	N
Financial_Health_Controls	Y	Y	Y	Y	Y	Y	Y	Y	Y
Interactions	N	SxO	SxSz	SxSz	SxFH	ExO	ExSz	ExSz	ExFH
Public_Housing	Y	Y	Y	Y	Y	Y	Y	Y	Y
Bank_Fixed_Effects	Y	Y	Y	Y	Y	Y	Y	Y	Y
Time_Fixed_Effects	Y	Y	Y	Y	Y	Y	Y	Y	Y
Bank_Cluster	Y	Y	Y	Y	Y	Y	Y	Y	Y

t statistics in parentheses

All Regressions are clustered on Banks and contain time and bank fixed effects. All variables have been deflated using M2. Deflation with CPI yields similar results as conducted in robustness checks.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 11: The Effect of Exogenous Shocks on Non-Rial Loans Based on Bank Ownership, Size, and Financial Health

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	l(Rl N-Rial Loans)	l(Rl N-Rial Loans)	l(Rl N-Rial Loans)	l(Rl N-Rial Loans)	l(Rl N-Rial Loans)	l(Rl N-Rial Loans)	l(Rl N-Rial Loans)	l(Rl N-Rial Loans)	l(Rl N-Rial Loans)
Sanctions	-0.669* (-1.74)	-0.812 (-0.76)	-0.694* (-1.83)	0.217 (0.69)	-0.923 (-0.28)	-0.659* (-1.72)	-0.67* (-1.74)	-0.661* (-1.69)	-0.603 (-1.59)
Embezzlement(t-1) (7 Banks)	-0.163 (-0.36)	-0.128 (-0.26)	-0.167 (-0.37)	-0.142 (-0.30)	-0.162 (-0.34)		-0.152 (-0.35)	-0.14 (-0.22)	-0.505 (-0.31)
Embezzlements (All Banks)(t-1)	-1.17*** (-3.04)	-1.1** (-2.50)	-1.16*** (-3.04)	-1.26*** (-3.76)	-1.2*** (-2.98)	-1.17*** (-2.95)	-1.17*** (-3.04)	-1.18*** (-3.07)	-1.08** (-2.25)
Sanctions Slope	-0.00797 (-0.47)	-0.0103 (-0.57)	-0.00806 (-0.48)	-0.0107 (-0.67)	-0.0113 (-0.75)	-0.00812 (-0.48)	-0.00797 (-0.47)	-0.00828 (-0.44)	-0.00547 (-0.29)
Embezzlement Slope (7 Banks)	0.068* (1.95)	0.0705** (2.15)	0.0682* (1.95)	0.0761** (2.41)	0.0691** (2.10)	0.0712** (2.00)	0.0682* (1.95)	0.0682** (2.00)	0.129*** (3.67)
SanctionsXPrivate Banks		-0.0637 (-0.05)							
SanctionsXState		0.534 (0.50)							
SanctionsXPrivatized		0.368 (0.29)							
Embez7XState						0.0788 (0.14)			
Embez7XPrivate						-0.414 (-0.73)			
Embez7XLiq Ratio									-10.7*** (-2.69)
Constant	-0.845 (-0.38)	0.136 (0.05)	-0.836 (-0.38)	-1.04 (-0.54)	-1.47 (-0.36)	-0.343 (-0.15)	-0.857 (-0.39)	-1.82 (-1.01)	-0.976 (-0.46)
Size_Controls	Y	Y	Y	Y	Y	Y	Y	Y	Y
Ownership_Controls	N	Y	N	N	N	Y	N	N	N
Financial_Health_Controls	Y	Y	Y	Y	Y	Y	Y	Y	Y
Interactions	N	SxO	SxSz	SxSz	SxFH	ExO	ExSz	ExSz	ExFH
Public_Housing	Y	Y	Y	Y	Y	Y	Y	Y	Y
Bank_Fixed_Effects	Y	Y	Y	Y	Y	Y	Y	Y	Y
Time_Fixed_Effects	Y	Y	Y	Y	Y	Y	Y	Y	Y
Bank_Cluster	Y	Y	Y	Y	Y	Y	Y	Y	Y

t statistics in parentheses

All Regressions are clustered on Banks and contain time and bank fixed effects. All variables have been deflated using M2. Deflation with CPI yields similar results as conducted in robustness checks.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

4.2 Real Off-Balance Sheet Activities

Following the same logic developed earlier, we now focus on another credit variable, the off-balance sheet activities conducted by banks, which was also a key variable before the embezzlement scandal was discovered, where banks inflated such activities in granting forged letters of credit. Table 12 analyzes the effect of sanctions on off-balance sheet activities. Note that liquidity and capital ratios have been omitted from all models in this section. Results show that even though sanctions did not have any spot effect, they did contract credit as time passed by.

Table 12: The Effect of Sanctions on Real Off-Balance Sheet Activities

	(1)	(2)	(3)	(4)	(5)
	Log(ROB)	Log(ROB)	Log(ROB)	Log(ROB)	Log(ROB)
Sanctions	.161 (0.99)	.159 (0.99)	-.0829 (-0.81)	-.00587 (-0.05)	
Sanctions Slope	-.0144*** (-2.66)	-.0143*** (-2.64)	-.00714* (-1.83)	-.00699* (-1.76)	-.00698* (-1.77)
Sanctions (t-1)				-.0826 (-0.73)	-.0881 (-0.87)
Real Terminal Assets		-.55 (-0.95)	.329 (0.01)	.662 (0.02)	.723 (0.02)
Constant	-7.96*** (-43.44)	-7.96*** (-43.49)	-5.89*** (-7.50)	-5.88*** (-7.48)	-5.88*** (-7.46)
Size_Controls	N	Y	Y	Y	Y
Ownership_Controls	N	N	N	N	N
Financial_Health_Controls	N	N	Y	Y	Y
Interactions	N	N	N	N	N
Public_Housing	Y	Y	Y	Y	Y
Bank_Fixed_Effects	Y	Y	Y	Y	Y
Time_Fixed_Effects	Y	Y	Y	Y	Y
Bank_Cluster	Y	Y	Y	Y	Y

t statistics in parentheses

All Regressions are clustered on Banks and contain time and bank fixed effects.

All variables have been deflated using M2. Deflation with CPI yields similar results as conducted in robustness checks. Results are also robust to omitting

Liquidity and Capital Ratios

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 13: The Effect of the Embezzlement Scandal on Real Off-Balance Sheet Activities

	(1)	(2)	(3)	(4)	(5)
	Log(ROB)	Log(ROB)	Log(ROB)	Log(ROB)	Log(ROB)
Embezzlement (7 Involved Banks)	-.356** (-2.21)	-.356** (-2.22)	-.284* (-1.86)	-.147 (-1.25)	
Embezzlement Slope (7 Banks)	-.0219* (-1.67)	-.0218* (-1.67)	-.00913 (-0.72)	-.00772 (-0.57)	
Embezzlement(t-1) (7 Banks)				-.161 (-0.95)	-.408** (-2.18)
Embezzlement (All Banks)	.103 (0.51)	.0808 (0.41)	.0415 (0.28)	-.0111 (-0.17)	
Embezzlements (All Banks)(t-1)				.0493 (0.30)	.0811 (0.53)
Real Terminal Assets		-96.5 (-1.49)	-8.01 (-0.18)	-8.37 (-0.19)	-8.72 (-0.18)
Constant	-8.09*** (-73.62)	-8.07*** (-75.89)	-5.92*** (-7.45)	-5.92*** (-7.46)	-5.93*** (-7.86)
Size_Controls	N	Y	Y	Y	Y
Ownership_Controls	N	N	N	N	N
Financial_Health_Controls	N	N	Y	Y	Y
Interactions	N	N	N	N	N
Public_Housing	Y	Y	Y	Y	Y
Bank_Fixed_Effects	Y	Y	Y	Y	Y
Time_Fixed_Effects	Y	Y	Y	Y	Y
Bank_Cluster	Y	Y	Y	Y	Y

t statistics in parentheses

All Regressions are clustered on Banks and contain time and bank fixed effects.

All variables have been deflated using M2. Deflation with CPI yields similar results as conducted in robustness checks. Results are also robust to omitting

Liquidity and Capital Ratios

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 13 evaluates the effect of embezzlements. It is seen that the results from off-balance sheet activities are much similar to that of loans, yet it seems as if only the involved banks were affected. To investigate further, Tables 14 and 15, analyze the effect of both shocks, and show results from the extended model, respectively.

Table 14: The Effect of Exogenous Shocks on Real Off-Balance Sheet Activities

	(1)	(2)	(3)	(4)	(5)
	Log(ROB)	Log(ROB)	Log(ROB)	Log(ROB)	Log(ROB)
Sanctions	.124 (0.81)	.123 (0.80)	-.0975 (-0.99)	.00435 (0.04)	
Sanctions (t-1)				-.109 (-0.94)	-.105 (-1.07)
Embezzlement(t-1) (7 Banks)	-.264 (-1.50)	-.264 (-1.50)	-.259* (-1.69)	-.258* (-1.68)	-.258* (-1.69)
Embezzlements (All Banks)(t-1)	.186 (0.97)	.185 (0.97)	.195 (1.12)	.197 (1.12)	.197 (1.13)
Sanctions Slope	-.0108** (-2.08)	-.0108** (-2.07)	-.00479 (-1.17)	-.00458 (-1.09)	-.00459 (-1.10)
Embezzlement Slope (7 Banks)	-.0186 (-1.35)	-.0185 (-1.35)	-.00818 (-0.62)	-.00837 (-0.64)	-.00836 (-0.64)
Real Terminal Assets		-50.5 (-0.80)	-5.48 (-0.12)	-5.08 (-0.11)	-5.12 (-0.11)
Constant	-8.05*** (-71.13)	-8.05*** (-71.04)	-6.29*** (-9.48)	-6.28*** (-9.47)	-6.28*** (-9.44)
Size_Controls	N	Y	Y	Y	Y
Ownership_Controls	N	N	N	N	N
Financial_Health_Controls	N	N	Y	Y	Y
Interactions	N	N	N	N	N
Public_Housing	Y	Y	Y	Y	Y
Bank_Fixed_Effects	Y	Y	Y	Y	Y
Time_Fixed_Effects	Y	Y	Y	Y	Y
Bank_Cluster	Y	Y	Y	Y	Y

t statistics in parentheses

All Regressions are clustered on Banks and contain time and bank fixed effects.

All variables have been deflated using M2. Deflation with CPI yields similar results as conducted in robustness checks. Results are also robust to omitting

Liquidity and Capital Ratios

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 15: The Effect of Exogenous Shocks on Real Off-Balance Sheet Activities Based on Bank Ownership, Size, and Financial Health

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Log(ROB)	Log(ROB)	Log(ROB)	Log(ROB)	Log(ROB)	Log(ROB)	Log(ROB)	Log(ROB)	Log(ROB)
Sanctions	-0.0975 (-0.99)	.0344 (0.17)	-0.105 (-1.06)	-0.109 (-0.66)	-0.838 (-1.04)	-0.0987 (-0.99)	-0.0969 (-0.99)	-0.138 (-1.26)	-0.0931 (-0.97)
Embezzlement(t-1) (7 Banks)	-.259* (-1.69)	-.308** (-2.03)	-.259* (-1.69)	-.259* (-1.69)	-.235 (-1.55)		-.265* (-1.71)	-.373** (-1.99)	.0981 (0.21)
Embezzlements (All Banks)(t-1)	.195 (1.12)	.175 (0.92)	.198 (1.13)	.196 (1.11)	.18 (0.93)	.211 (1.18)	.197 (1.13)	.234 (1.27)	.165 (0.89)
Sanctions Slope	-.00479 (-1.17)	-.00384 (-0.96)	-.00483 (-1.18)	-.0048 (-1.19)	-.00635 (-1.63)	-.00542 (-1.42)	-.0048 (-1.17)	-.0035 (-0.82)	-.00557 (-1.53)
Embezzlement Slope (7 Banks)	-.00818 (-0.62)	-.00878 (-0.65)	-.00818 (-0.62)	-.00819 (-0.63)	-.00952 (-0.73)	-.0077 (-0.59)	-.00831 (-0.63)	-.00906 (-0.71)	-.0138 (-0.68)
SanctionsXPrivate Banks		-.048 (-0.17)							
SanctionsXState		-.172 (-0.63)							
SanctionsXPrivatized		-.331 (-1.12)							
Embez7XState						-.158 (-0.86)			
Embez7XPrivate						-.365 (-1.45)			
Real Terminal Assets	-5.48 (-0.12)	-9.78 (-0.21)	-62.8 (-1.33)		-12.1 (-0.26)	-12.1 (-0.24)	-24.2 (-0.47)		-8.45 (-0.18)
Constant	-6.29*** (-9.48)	-5.53*** (-4.59)	-6.29*** (-9.45)	-2.25*** (-3.32)	-6.39*** (-6.37)	-6.14*** (-10.20)	-6.29*** (-9.47)	-2.41*** (-3.75)	-6.26*** (-9.51)
Size_Controls	Y	Y	Y	Y	Y	Y	Y	Y	Y
Ownership_Controls	N	Y	N	N	N	Y	N	N	N
Financial_Health_Controls	Y	Y	Y	Y	Y	Y	Y	Y	Y
Interactions	N	SxO	SxSz	SxSz	SxFH	ExO	ExSz	ExSz	ExFH
Public_Housing	Y	Y	Y	Y	Y	Y	Y	Y	Y
Bank_Fixed_Effects	Y	Y	Y	Y	Y	Y	Y	Y	Y
Time_Fixed_Effects	Y	Y	Y	Y	Y	Y	Y	Y	Y
Bank_Cluster	Y	Y	Y	Y	Y	Y	Y	Y	Y

t statistics in parentheses

All Regressions are clustered on Banks and contain time and bank fixed effects. All variables have been deflated using M2. Deflation with CPI yields similar results as conducted in robustness checks. Results are also robust to omitting Liquidity and Capital Ratios

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Results from both Tables 14 and 15 affirm what we had observed before, implying a negative effect of the embezzlement scandal only for the involved banks in contracting their off-balance sheet activities.

4.3 Mechanisms of Propagation

In order to further discuss how banks have been affected by shocks in more general terms, it seems plausible to analyze their effect on other variables as well. In what follows, we briefly assess the evolution of real deposits, real NPL, and the liquidity to asset ratios of banks to see the other side of the big picture painted in previous sections.

Starting with real deposits, we run the extended model on this variable while omitting liquidity ratio. Table 16 shows how banks that were not involved in the scandal have experienced a rise in deposit accumulation, implying how people have perhaps switched from those involved banks to those that were not involved. Moreover, small banks have also experienced a rise in their deposits. However, it should be noted that two of the involved banks were also small banks. The fact that such non-involved banks have been able to accumulate more deposits after the shock could explain how they were less affected in the contraction of their lending, as they may have had more resources to make loans on.

Table 17 shows the link between sanctions and the liquidity ratio of banks, where sanctions are shown to have been contracting the liquidity in the banking system.



Table 16: The Effect of Exogenous Shocks on Real Deposits Based on Bank Ownership, Size, and Financial Health

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	l(Rl Deposits)	l(Rl Deposits)	l(Rl Deposits)	l(Rl Deposits)	l(Rl Deposits)	l(Rl Deposits)	l(Rl Deposits)	l(Rl Deposits)	l(Rl Deposits)
Sanctions	.0709 (0.97)	.211*** (2.66)	.0767 (1.11)	-.0495 (-0.60)	.544 (0.89)	.0747 (1.07)	.0707 (0.97)	.0473 (0.63)	.0669 (0.89)
Embezzlement(t-1) (7 Banks)	.0341 (0.52)	.0213 (0.28)	.0344 (0.52)	.0326 (0.46)	.032 (0.33)		.0361 (0.54)	-.039 (-0.50)	-.0224 (-0.12)
Embezzlements (All Banks)(t-1)	.291* (1.86)	.308* (1.78)	.289* (1.86)	.295* (1.88)	.392* (1.82)	.297* (1.90)	.29* (1.86)	.316* (1.96)	.301* (1.69)
Sanctions Slope	-.00509* (-1.95)	-.0048* (-1.77)	-.00505* (-1.96)	-.00493* (-1.89)	-.00549** (-2.17)	-.00518** (-2.02)	-.00508* (-1.95)	-.00403 (-1.60)	-.00493* (-1.87)
Embezzlement Slope (7 Banks)	-.00717 (-1.01)	-.0077 (-1.07)	-.00717 (-1.01)	-.00722 (-1.09)	-.00981 (-1.06)	-.00692 (-0.99)	-.00713 (-1.00)	-.00771 (-1.11)	-.00703 (-0.72)
SanctionsXPrivate Banks		-.149 (-0.97)							
SanctionsXState		-.101 (-1.02)							
SanctionsXPrivatized		-.218* (-1.73)							
Embez7XState						.0819 (1.16)			
Embez7XPrivate						-.0101 (-0.11)			
embez7Xsmall								.238*** (3.62)	
Real Terminal Assets	21.8 (1.10)	24.6 (1.24)	67.1 (1.37)		27.8* (1.72)	19.9 (1.03)	28 (1.18)		23.2 (1.18)
Constant	-5.55*** (-15.47)	-5.93*** (-10.72)	-5.56*** (-15.38)	-3.1*** (-10.05)	-5.97*** (-7.79)	-5.45*** (-16.49)	-5.55*** (-15.42)	-3.13*** (-10.06)	-5.57*** (-15.53)
Size_Controls	Y	Y	Y	Y	Y	Y	Y	Y	Y
Ownership_Controls	N	Y	N	N	N	Y	N	N	N
Financial_Health_Controls	Y	Y	Y	Y	Y	Y	Y	Y	Y
Interactions	N	SxO	SxSz	SxSz	SxFH	ExO	ExSz	ExSz	ExFH
Public_Housing	Y	Y	Y	Y	Y	Y	Y	Y	Y
Bank_Fixed_Effects	Y	Y	Y	Y	Y	Y	Y	Y	Y
Time_Fixed_Effects	Y	Y	Y	Y	Y	Y	Y	Y	Y
Bank_Cluster	Y	Y	Y	Y	Y	Y	Y	Y	Y

t statistics in parentheses

All Regressions are clustered on Banks and contain time and bank fixed effects. All variables have been deflated using M2. Deflation with CPI yields similar results as conducted in robustness checks. Results are also robust to omitting Liquidity and Capital Ratios

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 17: The Effect of Exogenous Shocks on Liquidity Ratio Based on Bank Ownership, Size, and Financial Health

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Liquidity Ratio	Liquidity Ratio	Liquidity Ratio	Liquidity Ratio	Liquidity Ratio	Liquidity Ratio	Liquidity Ratio	Liquidity Ratio	Liquidity Ratio
Sanctions	-.0396** (-2.09)	-.136*** (-3.81)	-.0368** (-2.06)	-.00625 (-0.30)	.0467 (0.31)	-.0401** (-2.12)	-.0397** (-2.08)	-.0394** (-2.06)	-.0377* (-1.93)
Embezzlement(t-1) (7 Banks)	.0409 (1.27)	.0411 (1.23)	.041 (1.27)	.0413 (1.30)	.0421 (1.39)		.0413 (1.25)	.042 (1.30)	.0426 (0.95)
Embezzlements (All Banks)(t-1)	.0851* (1.77)	.0624 (1.16)	.084* (1.77)	.084* (1.77)	.0774 (1.32)	.0844* (1.74)	.0849* (1.77)	.0846* (1.78)	.0951* (1.72)
Sanctions Slope	-.00174** (-2.13)	-.00161* (-1.90)	-.00172** (-2.13)	-.00177** (-2.25)	-.00176** (-2.32)	-.00173** (-2.11)	-.00174** (-2.13)	-.00175** (-2.05)	-.0018** (-2.08)
Embezzlement Slope (7 Banks)	-.000549 (-0.21)	-.000184 (-0.08)	-.000549 (-0.21)	-.000532 (-0.21)	-.000656 (-0.25)	-.000579 (-0.22)	-.00054 (-0.20)	-.000538 (-0.20)	-.00108 (-0.33)
SanctionsXPrivate Banks		.134*** (2.83)							
SanctionsXState		.0691 (1.05)							
SanctionsXPrivatized		.11* (2.52)							
Embez7XState						.0351 (0.95)			
Embez7XPrivate						.0463 (1.47)			
Real Terminal Assets	8.26* (1.82)	5.29 (1.20)	30.7 (1.56)		6.9 (1.63)	8.49** (1.98)	9.56* (1.67)		7.61* (1.79)
Constant	.168 (1.41)	.201 (1.26)	.167 (1.39)	.146 (1.37)	.17 (1.27)	.156 (1.28)	.168 (1.40)	.127 (1.32)	.157 (1.32)
Size_Controls	Y	Y	Y	Y	Y	Y	Y	Y	Y
Ownership_Controls	N	Y	N	N	N	Y	N	N	N
Financial_Health_Controls	Y	Y	Y	Y	Y	Y	Y	Y	Y
Interactions	N	SxO	SxSz	SxSz	SxFH	ExO	ExSz	ExSz	ExFH
Public_Housing	Y	Y	Y	Y	Y	Y	Y	Y	Y
Bank_Fixed_Effects	Y	Y	Y	Y	Y	Y	Y	Y	Y
Time_Fixed_Effects	Y	Y	Y	Y	Y	Y	Y	Y	Y
Bank_Cluster	Y	Y	Y	Y	Y	Y	Y	Y	Y

t statistics in parentheses

All Regressions are clustered on Banks and contain time and bank fixed effects. All variables have been deflated using M2. Deflation with CPI yields similar results as conducted in robustness checks. Results are also robust to omitting Liquidity and Capital Ratios
 * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 18: The Effect of Exogenous Shocks on Real NPL Based on Bank Ownership, Size, and Financial Health

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	log(Real NPL)	log(Real NPL)	log(Real NPL)						
Sanctions	-.152 (-0.50)	-.825** (-2.03)	-.157 (-0.51)	-.0966 (-0.29)	.0143 (0.01)	-.159 (-0.53)	-.153 (-0.50)	-.156 (-0.52)	-.165 (-0.55)
Embezzlement(t-1) (7 Banks)	.265 (0.88)	.186 (0.62)	.264 (0.88)	.268 (0.90)	.306 (1.09)		.266 (0.89)	.251 (0.86)	-.281 (-0.75)
Embezzlements (All Banks)(t-1)	.655 (1.43)	.472 (1.28)	.657 (1.43)	.659 (1.45)	.636 (1.28)	.647 (1.39)	.655 (1.42)	.66 (1.44)	.761* (1.71)
Sanctions Slope	-.0175 (-1.06)	-.0138 (-1.07)	-.0175 (-1.06)	-.0177 (-1.07)	-.0182 (-1.12)	-.0173 (-1.04)	-.0175 (-1.06)	-.0173 (-1.04)	-.0171 (-1.02)
Embezzlement Slope (7 Banks)	-.0218* (-1.68)	-.0198 (-1.60)	-.0218* (-1.68)	-.0218* (-1.70)	-.024* (-1.79)	-.0222* (-1.70)	-.0218* (-1.67)	-.0219* (-1.69)	-.0273* (-1.93)
SanctionsXPrivate Banks		1.2*** (2.67)							
SanctionsXState		1.53* (1.71)							
SanctionsXPrivatized		.0101 (0.02)							
Embez7XState						.183 (0.53)			
Embez7XPrivate						.339 (1.00)			
Embez7XLiq Ratio									2.09 (1.31)
Constant	-8.26*** (-6.85)	-6.63*** (-3.54)	-8.26*** (-6.85)	-6.33*** (-7.33)	-8.18*** (-5.38)	-8.41*** (-7.13)	-8.26*** (-6.87)	-6.4*** (-7.89)	-8.39*** (-7.36)
Size_Controls	Y	Y	Y	Y	Y	Y	Y	Y	Y
Ownership_Controls	N	Y	N	N	N	Y	N	N	N
Financial_Health_Controls	Y	Y	Y	Y	Y	Y	Y	Y	Y
Interactions	N	SxO	SxSz	SxSz	SxFH	ExO	ExSz	ExSz	ExFH
Public_Housing	Y	Y	Y	Y	Y	Y	Y	Y	Y
Bank_Fixed_Effects	Y	Y	Y	Y	Y	Y	Y	Y	Y
Time_Fixed_Effects	Y	Y	Y	Y	Y	Y	Y	Y	Y
Bank_Cluster	Y	Y	Y	Y	Y	Y	Y	Y	Y

t statistics in parentheses

All Regressions are clustered on Banks and contain time and bank fixed effects. All variables have been deflated using M2. Deflation with CPI yields similar results as conducted in robustness checks.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 18 demonstrates another amazing effect of the discovery of embezzlements in the Iranian banking system, which again affirms that the direct effect from the scandal in the banking system has been that of transparency. The significant negative effect on the slope coefficient for the embezzlement scandal here implies how the scandal has through time, decreased the non-performing loans of banks, making them more inclined to be transparent in their transactions, as well as the choice of their customer base.

5 Concluding Remarks

In this paper, we aimed at the assessment of two major shocks faced by the Iranian banking system over the past ten year, that of the international sanctions imposed by the United States and the European Union, and the embezzlement scandal of 2011 in which seven banks were discovered to have been issuing forged credit to acquire assets. Following previous work indicating a fall in the ratio of lending to GDP over the same period as of the shocks, and implying that the observation of recessions and high interest rates during this period indicates a supply shock to credit, we set out to evaluate whether such exogenous shock had a role in the decrease of credit over this time period.

The results attained showed a significant negative effect derived from the embezzlement scandal of 2011 on the contraction of lending, which was more pronounced for the involved banks for real loans granted, and to a lesser extent for those banks not involved in the scandal. The off-balance sheet activities of non-involved banks was also left unaffected by the scandal while involved banks experienced a contraction. These results contend that the transparent environment that was enforced throughout the banking system after the discovery of the embezzlements forced banks to behave accordingly, and thus affirms the substantial importance of having a transparent environment in the banking system.

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6 Appendix I: Figures

First Two Figures:

Timing Figures:

All of the figures from Version 6 are moved here. Figures 12 through 6.

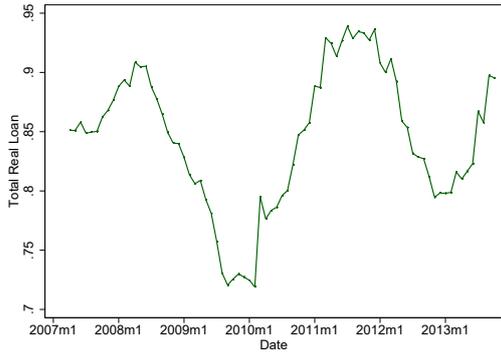


Figure 8: Total Real Loan

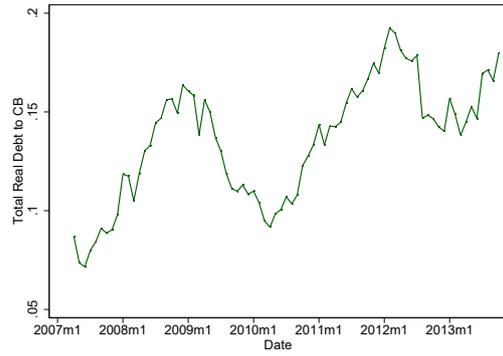


Figure 9: Total Real Debt to CB

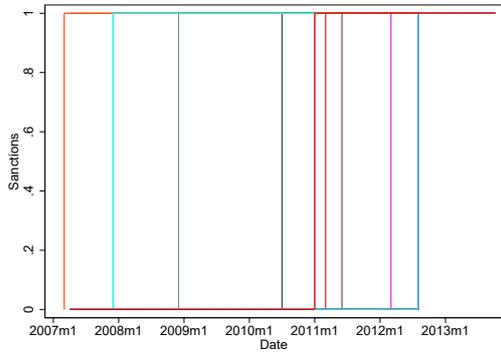


Figure 10: The Timing of Sanctions

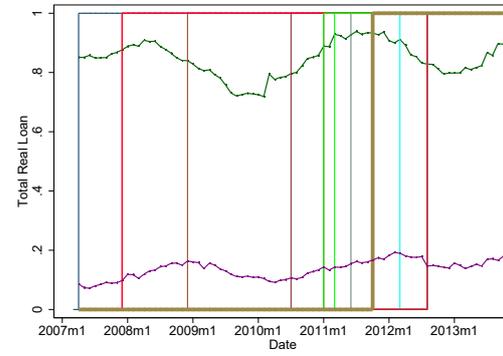


Figure 11: Hypotheses

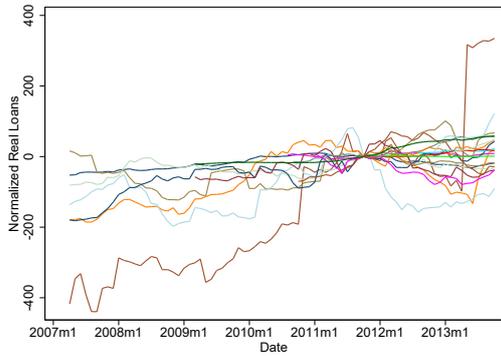


Figure 12: Normalized Real Loans for Small Banks

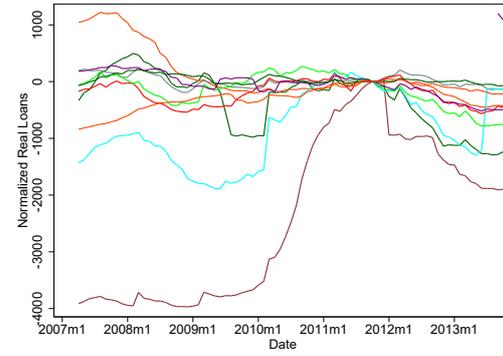


Figure 13: Normalized Real Loans for Large Banks

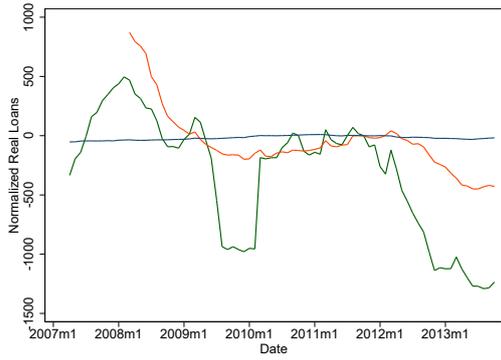


Figure 14: Normalized Real Loans for State Owned Banks

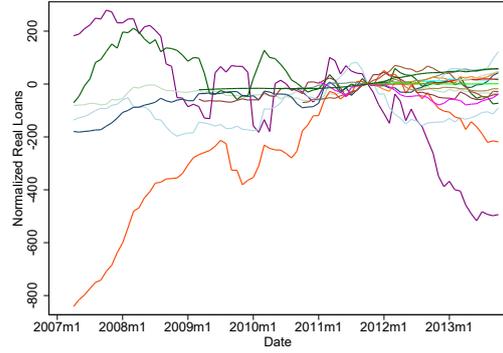


Figure 15: Normalized Real Loans for Private Banks

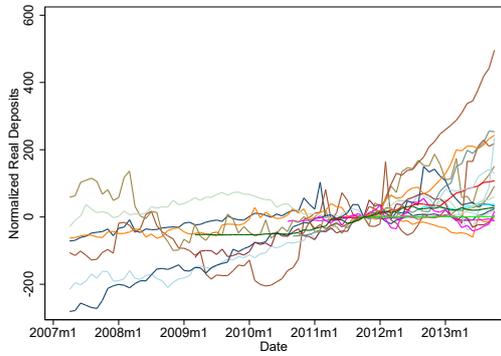


Figure 16: Normalized Real Deposits for Small Banks

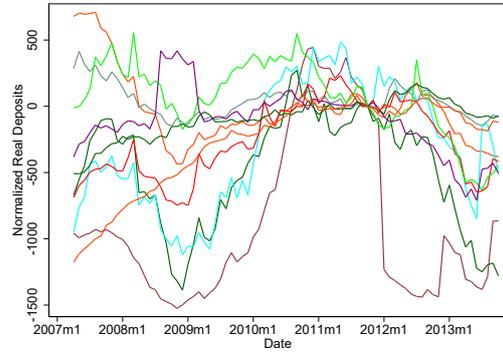


Figure 17: Normalized Real Deposits for Large Banks

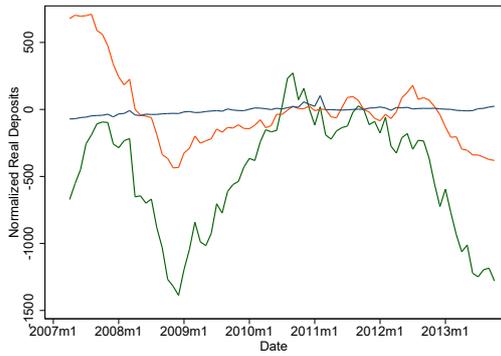


Figure 18: Normalized Real Deposits for State Owned Banks

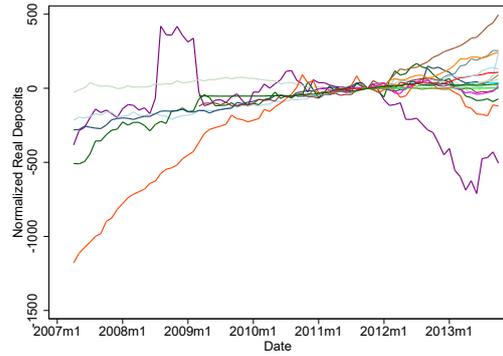


Figure 19: Normalized Real Deposits for Private Banks

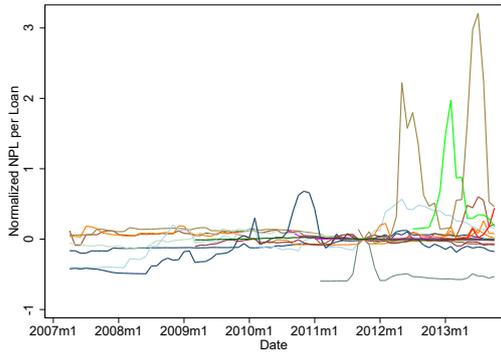


Figure 20: Normalized NPL per Loan for Small Banks

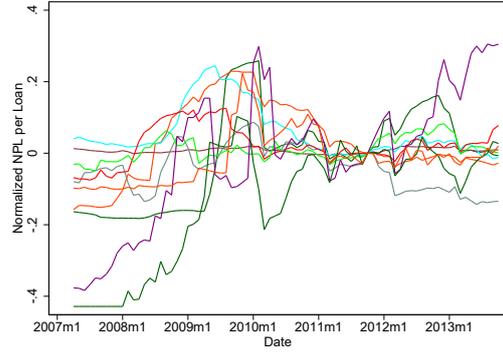


Figure 21: Normalized NPL per Loan for Large Banks

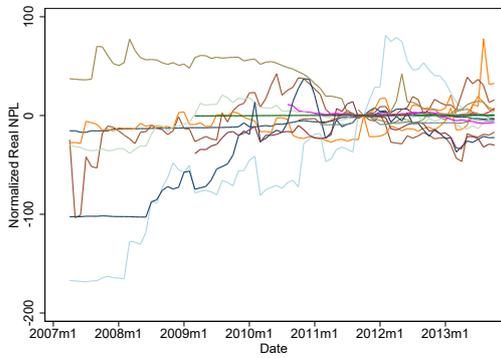


Figure 22: Normalized Real NPL for Small Banks

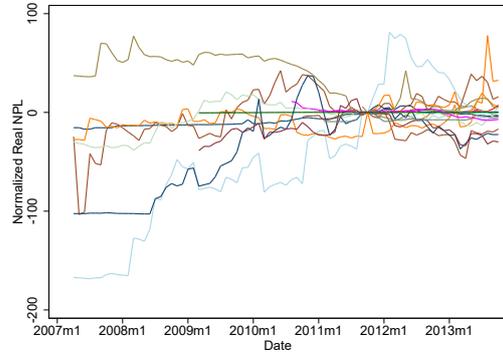
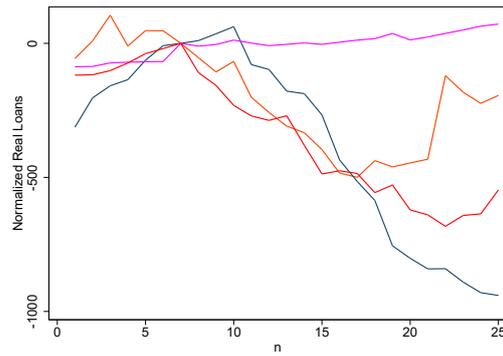
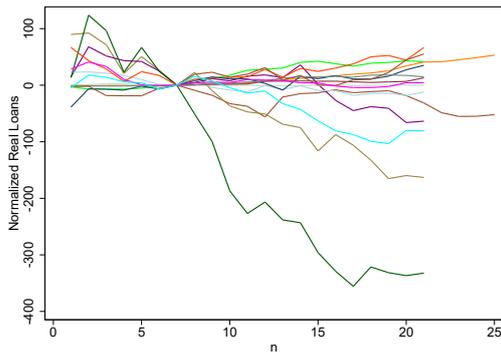
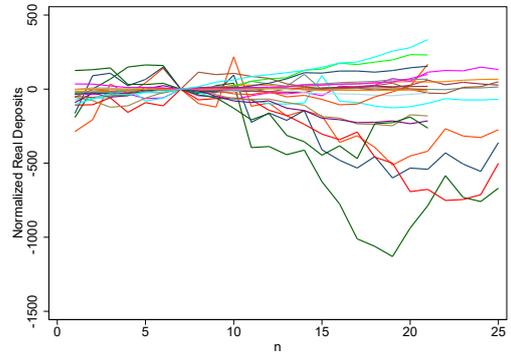
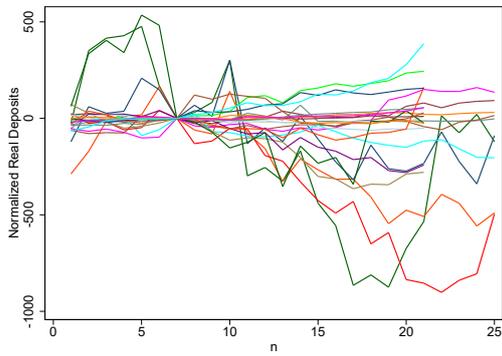
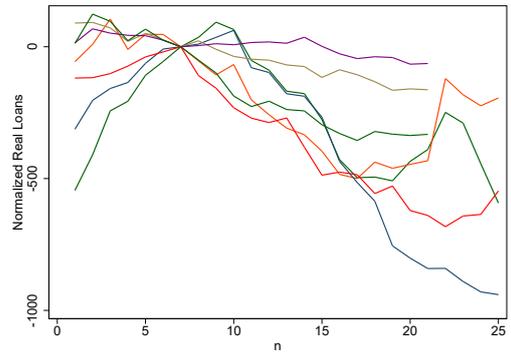
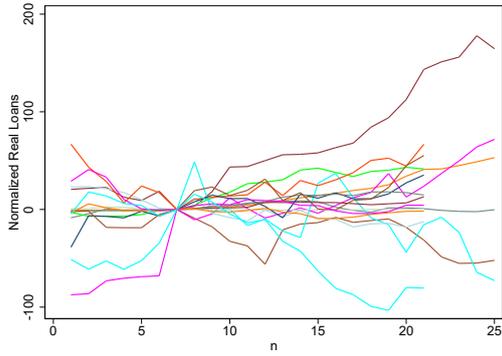
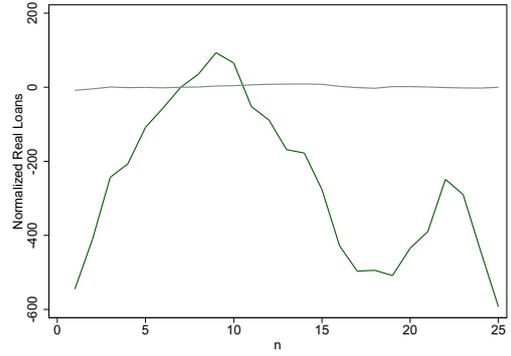
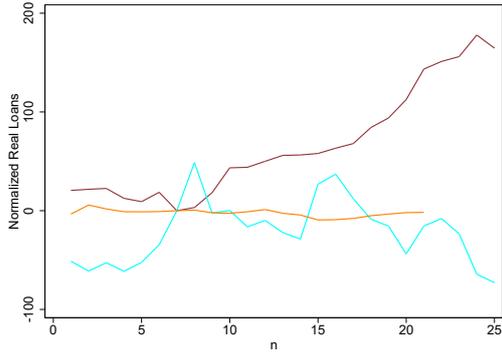


Figure 23: Normalized Real NPL for Large Banks





7 Appendix II: Data Tables

Moved from text in Version 6. Tables 19 through 26

Table 19: Bank Categories and Summary Statistics for the Whole Sample

Type of Financial Institution	Count	Obs	Assets	Assets	Assets	Loan	Loan	Loan	CBDebt	CBDebt	CBDebt	Deposits	Deposits	Deposits
			Mean	SD	Total									
State-Owned Commercial Banks	3	237	3605.459	3136.275	854493.85	1941.905	1692.139	460231.53	452.7699	450.0686	107306.47	2567.51	2204.302	608499.85
Non-Bank Financial Institutions	1	79	187.9481	152.541	14847.902	25.66283	17.75421	2027.3637	7.793682	13.28899	615.70085	168.3343	136.0835	13298.412
Privatized Banks	4	316	4044.16	1959.433	1277954.7	2226.46	1129.05	703561.44	126.6137	118.0291	40009.925	3120.047	1446.874	985934.99
Specialized State-Owned Banks	5	395	1800.719	1759.471	711284.11	1232.054	1442.297	486661.22	394.0257	628.0999	155640.13	856.9802	926.9855	338507.19
Private Banks	19	1501	469.3823	739.6826	704542.8	206.8715	333.3049	310514.11	8.635756	26.00292	12962.269	372.9571	628.0494	559808.63
Total	32	2528	1409.463	2030.077	3563123.3	776.5015	1204.029	1962995.7	125.2114	335.31	316534.5	991.3169	1460.893	2506049.1

Table 20: Bank Categories and Summary Statistics for the Whole Sample(Continued)

Type of Financial Institution	Count	Obs	NPL	NPL	NPL	Obs	LiqRatio	LiqRatio	LiqRatio	CapRatio	CapRatio	CapRatio
			Mean	SD	Total		Mean	SD	Total	Mean	SD	Total
State-Owned Commercial Banks	3	237	426.6105	444.2176	101106.7	237	.217	.072	51.439	.054	.023	12.769
Non-Bank Financial Institutions	1	79	19.76775	13.348	1561.652	79	.238	.157	18.77	.019	.083	1.478
Privatized Banks	4	316	410.893	192.752	129842.11	316	.178	.038	56.166	.051	.02	16.254
Specialized State-Owned Banks	5	395	155.422	159.033	61391.574	355	.162	.122	57.529	.212	.175	75.097
Private Banks	19	1501	58.475	129.063	87771.406	841	.237	.183	199.382	.175	.208	147.398
Total	32	2528	150.9784	241.0262	381673.44	1828	.210	.146	383.286	.138	.176	252.996

Table 21: Bank Categories and Time Series Summary Statistics for Real Assets(Mean)

Type of Financial Institution	Count	2007:04	2011:05	2011:06	2011:07	2011:08	2011:09	2011:10	2011:11	2011:12	2012:01	2012:02	2013:10
State-Owned Commercial Banks	3	3832.717	3713.241	3693.259	3702.043	3764.842	3767.015	3748.006	3691.819	3703.656	3732.786	3751.287	2779.969
Non-Bank Financial Institutions	1	148.226	223.7031	216.8558	199.7245	197.189	191.73	184.1999	185.908	180.919	180.859	181.063	732.065
Privatized Banks	4	3728.513	4439.887	4435.207	4320.268	4320.212	4328.309	4268.16	4228.784	4262.198	4213.934	4312.857	4123.486
Specialized State-Owned Banks	5	1383.816	2281.742	2317.759	2343.87	2361.931	2368.561	2330.229	2334.969	2331.228	2150.364	2199.279	2109.047
Private Banks	19	247.2134	540.7875	541.8963	542.4006	553.1342	573.5554	571.5694	578.5939	576.0981	576.7821	593.8531	736.1779
Total	32	1193.018	1587.708	1591.321	1581.621	1596.618	1610.824	1594.119	1588.895	1591.959	1560.801	1592.686	1565.579

Table 22: Bank Categories and Time Series Summary Statistics for Real Assets(Total)

Type of Financial Institution	Count	2007:04	2011:05	2011:06	2011:07	2011:08	2011:09	2011:10	2011:11	2011:12	2012:01	2012:02	2013:10
State-Owned Commercial Banks	3	11498.151	11139.723	11079.776	11106.13	11294.527	11301.044	11244.019	11075.457	11110.968	11198.358	11253.861	8339.9068
Non-Bank Financial Institutions	1	148.226	223.7031	216.8558	199.7245	197.189	191.73	184.1999	185.908	180.919	180.859	181.063	732.065
Privatized Banks	4	14914.051	17759.548	17740.829	17281.073	17280.849	17313.236	17072.641	16915.135	17048.793	16855.738	17251.428	16493.944
Specialized State-Owned Banks	5	6919.0792	11408.711	11588.794	11719.348	11809.657	11842.804	11651.145	11674.847	11656.14	10751.819	10996.393	10545.233
Private Banks	19	4697.0549	10274.963	10296.029	10305.611	10509.55	10897.552	10859.818	10993.284	10945.863	10958.86	11283.208	13987.381
Total	32	38176.562	50806.647	50922.283	50611.887	51091.771	51546.366	51011.823	50844.631	50942.682	49945.635	50965.953	50098.53

Table 23: Bank Categories and Time Series Summary Statistics for Real
Loans(Mean)

Type of Financial Institution	Count	2007:04	2011:05	2011:06	2011:07	2011:08	2011:09	2011:10	2011:11	2011:12	2012:01	2012:02	2013:10
State-Owned Commercial Banks	3	2236.659	3713.241	3693.2586	3702.0434	3764.8424	3767.0148	3748.0064	3691.8189	3703.656	3732.7861	3751.2869	1457.671
Non-Bank Financial Institutions	1	49.02628	47.801567	49.33778	50.185665	50.561115	49.286064	47.303879	47.382629	47.792744	48.05843	49.317127	16.95886
Privatized Banks	4	2114.305	2557.7276	2540.3477	2562.225	2544.0678	2546.0616	2525.5237	2489.4501	2460.8425	2471.3372	2479.1087	2205.187
Specialized State-Owned Banks	5	879.7241	1680.4245	1702.8096	1733.5905	1746.6189	1763.1322	1759.4545	1764.6801	1783.3824	1590.8845	1608.9773	1425.944
Private Banks	19	139.4428	242.43507	245.96324	249.78553	254.03607	265.2056	259.65052	260.00366	258.23802	258.61634	252.74585	284.4082
Total	32	695.758	911.91153	915.43773	927.97212	934.73826	942.54375	935.43502	928.44843	927.14204	893.0869	892.02876	804.5062

Table 24: Bank Categories and Time Series Summary Statistics for Real
Loans(Total)

Type of Financial Institution	Count	2007:04	2011:05	2011:06	2011:07	2011:08	2011:09	2011:10	2011:11	2011:12	2012:01	2012:02	2013:10
State-Owned Commercial Banks	3	6709.9759	5894.068	5895.9292	5982.1443	6125.0122	6073.3004	6053.8892	5941.6966	5953.9481	5777.2404	5732.1104	
Non-Bank Financial Institutions	1	49.02628	47.801567	49.33778	50.185665	50.561115	49.286064	47.303879	47.382629	47.792744	48.05843	49.317127	16.95886
Privatized Banks	4	8457.2187	10230.91	10161.391	10248.9	10176.271	10184.246	10102.095	9957.8004	9843.3699	9885.3489	9916.4349	8820.7493
Specialized State-Owned Banks	5	4398.6203	8402.1225	8514.0482	8667.9524	8733.0945	8815.6608	8797.2727	8823.4007	8916.9122	7954.4225	8044.8866	7129.7215
Private Banks	19	2649.4138	4606.2664	4673.3015	4745.9252	4826.6853	5038.9065	4933.3599	4940.0695	4906.5225	4913.7105	4802.1712	5403.7554
Total	32	695.758	29181.169	29294.007	29695.108	29911.624	30161.4	29933.921	29710.35	29668.545	28578.781	28544.92	25744.198

Table 25: Bank Categories and Time Series Summary Statistics for NPL(Mean)

Type of Financial Institution	Count	2007:04	2011:05	2011:06	2011:07	2011:08	2011:09	2011:10	2011:11	2011:12	2012:01	2012:02	2013:10
State-Owned Commercial Banks	3	157.64113	467.86411	453.74654	440.2384	466.48878	457.89824	467.08164	484.20836	486.18963	565.43496	570.40291	319.1159
Non-Bank Financial Institutions	1	24.7795318	.0401821	7.7756362	7.721283	7.5471349	7.4061937	7.3145638	7.4878573	7.3615537	7.2761645	6.9928417	26.174242
Privatized Banks	4	310.58478	380.11473	380.4913	378.61887	379.67783	370.11401	383.68558	403.90329	411.63264	423.79031	425.83577	351.23993
Specialized State-Owned Banks	5	136.69981	164.24642	164.37597	165.72873	167.88493	170.5401	183.89726	183.97588	171.47166	170.64101	171.65078	136.019
Private Banks	19	10.993656	72.594842	69.858066	71.644943	72.287572	72.916222	75.883763	78.357558	78.293423	80.358978	83.043999	71.587752
Total	32	82.263142	160.39455	157.50511	157.2753	160.58167	159.36455	165.76811	171.38747	170.54357	180.5865	183.05108	138.39825

Table 26: Bank Categories and Time Series Summary Statistics for NPL(Total)

Type of Financial Institution	Count	2007:04	2011:05	2011:06	2011:07	2011:08	2011:09	2011:10	2011:11	2011:12	2012:01	2012:02	2013:10
State-Owned Commercial Banks	3	472.92339	1403.5923	1361.2396	1320.7152	1399.4664	1373.6947	1401.2449	1452.6251	1458.5689	1696.3049	1711.2087	957.34771
Non-Bank Financial Institutions	1	24.7795318	.0401821	7.7756362	7.721283	7.5471349	7.4061937	7.3145638	7.4878573	7.3615537	7.2761645	6.9928417	26.174242
Privatized Banks	4	1242.3391	1520.4589	1521.9652	1514.4755	1518.7113	1480.456	1534.7423	1615.6132	1646.5306	1695.1612	1703.3431	1404.9597
Specialized State-Owned Banks	5	683.49903	821.23208	821.87986	828.64367	839.42467	852.7005	919.4863	919.87939	857.35831	853.20504	858.25391	680.09499
Private Banks	19	208.87946	1379.302	1327.3033	1361.2539	1373.4639	1385.4082	1441.7915	1488.7936	1487.575	1526.8206	1577.836	1360.1673
Total	32	2632.4205	5132.6255	5040.1635	5032.8096	5138.6133	5099.6657	5304.5796	5484.3991	5457.3944	5778.7679	5857.6345	4428.7439