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The Real Effects of Bank Restructuring in the Wake of Crisis: Evidence from Turkey

Kriz Sonrası Bankacılık Sektörünün Yeniden Yapılandırılmasının Reel Etkileri: Türkiye Örneği

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ÖZET

2000'li yılların başında yaşadığı iki ciddi kriz sonrasında Türkiye bankacılık sektörü adına bir dizi radikal reform tesis etmiştir. Bu çalışma, tespit edebildiğimiz kadarıyla söz konusu bankacılık reformlarının reel ekonomi üzerindeki taşma etkilerini ampirik olarak araştırmayı deneyen ilk çalışmadır. Endüstri düzeyinde veriler vasıtasıyla 1998-2003 periyodunun incelendiği çalışmada farkların farkı kullanılmıştır. Çalışmanın sonuçları, yeniden yapılandırma reformlarının bankalara bağımlı büyük firmalar üzerinde olumlu taşma etkileri olduğunu, küçük firmaların kendilerini bankacılık sisteminde hayata geçirilen katı önlemlerin sebep olduğu sonuçlardan korumakta yetersiz olduklarını ve bankalar üzerindeki bu sıkı denetimin, bankalara bağımlı firmaların dış finansmana erişimini kısıtladığını ortaya koymaktadır. Söz konusu tüm bulgular politika yapıcılar açısından önemli sonuçlar barındırmaktadır.

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ABSTRACT

Following the two severe crises in the beginnings of 2000s, Turkey had to implement a radical set of reforms in her banking sector. This study is the first attempt to empirically investigate the spillover effects of these reforms on the real economy. Using industry-level data for the period 1998-2003, the study employs a difference-in-differences approach. The set of findings indicate that the restructuring reforms had positive spillovers for bank-dependent large firms, small firms were not able to shield themselves from the stricter measures over banks restricted bank-dependent firms to access external funds. All these findings have important implications for policymakers.

INTRODUCTION

Reform activities in financial sectors -in the banking sector more particularly- have quite strong spillover effects for the real economy. Any resulting change in the way that various types of firms finance themselves has also implications for the entire economy. For instance, both theoretical suggestions and empirical findings imply that improved regulations over banks reduce bank lending. Reduction in bank loans is more destructive for small firms due to the fact that the small firms are dependent on banks as financial intermediaries and bank loans constitute their major external funding source.

In the beginnings of 2000s, Turkey had to implement a radical reform in her banking sector following two severe crises, one in November 2000 and the other one in February 2001. The first crisis could be seen as a "liquidity crisis", and according to Onis (2009:1) it could have been prevented if the Central Bank of Turkey infused more liquidity into the system. The banking crisis of February 2001, on the other hand, had far dramatic consequences. Economy-wide unemployment increased from 6.5 percent to 10.3 percent. The banking sector had to cut its work force by a considerable amount. According to Onis (2009:1), the second crisis showed the structural problems inherent in the Turkish economy and all sections of the society were negatively affected by the crisis.

In order to reduce the negative impact of the crises, the "Transition to Stronger Economy Program" was started to be implemented in 15th of May 2001. The Program aimed at eliminating risks and problems that could not be resolved, and establishing stability in the banking industry via financial and operational restructuring. The main pillar of the program was the "Banking Sector Restructuring Program", which envisaged financial and operational restructuring of public banks, and transforming the fragile private banking system into a healthy structure. The program also included provisions for increasing the effectiveness of screening and monitoring in the banking industry. In this regard, stricter measures for ensuring the quality of Turkish banks' assets were adopted. For instance, the amount of credits given by a bank to a specific holding could not exceed 25 % of that bank's equity capital.

In the realm of operational restructuring, significant changes were made. The number of branches of the public banks was reduced. The top management of the public banks had to report to a joint administrative board, which was also responsible for preparing public banks for privatization. For the banks transferred to the State Deposit Insurance Fund (SDIF),[1] their numbers of branches were reduced via mergers and acquisitions. The rest of the private banks rationalized their numbers of branch and personnel to increase their cost effectiveness. Because of restructuring in the Turkish banking sector, the number of banks decreased from 72 in June 2001 to 50 in December 2003. Similarly, the number of branches and the number of employees fell from 7,530 and 155,299 in June 2001 to 6,087 and 124,030 in December 2003, respectively (Küçükbıçakçı, 2004:1),[2]

Thus, the reforms and restructuring of the banking market in Turkey after 2000-2001 crisis included, inter alia, stronger capital structures, superior risk management and supervision, improved screening by authorities. These reforms and measures, in turn, resulted in a healthy, efficient and strong banking sector in Turkey (Steinherr et al., 2004:1; Yayla et al., 2008:9; Öncü & Aktaş, 2007:247; Özkan-Günay et al., 2013:80), However, even though the effects of these restructuring reforms on the Turkish banking system is analyzed and identified, there has been no empirical investigation of the spillover effects of these

[1]Between 1999 and mid-2001 a total of 16 banks were taken over by SDIF (Damar, 2009). After a financial and operational restructuring process, which included the elimination of problematic credits, reductions in deposit rates, decreases in foreign exchange positions, and came at a cost $21.4 billion, these banks were liquidated (Damar, 2007).

2The roots of overexpansion in the Turkish banking sector and the process of bank restructuring in Turkey is explained in detail in Damar (2007).

restructuring reforms on the real economy. This study is the first attempt to measure the real effects of these post-crisis bank restructuring reforms in Turkey. This, Issue deserves attention due to the fact that banks are the main sources of external finance for Turkish firms, and spillovers from the reforms, if any, will have consequences for industrial activities and economic growth in Turkey.

In order to gauge the real effects of these post-crisis bank restructuring reforms in Turkey, the current study employs a difference-in-differences approach. The identifying assumption is that firms that are more dependent on banks for external funding are affected more heavily after the bank restructuring in Turkey. Stated differently, firms that are more dependent on bank loans should respond more disproportionately to bank restructuring reforms.

The first set of empirical results indicate that the average number of employees in large firms that operate in bank-dependent industries increased significantly following the banking reforms. This finding could be interpreted as that bank-dependent large firms did not have to downsize themselves and they sustained their growth prospects. Secondly, there is weak evidence that the share of industry sales made by bank-dependent small firms was reduced during the post-restructuring period. Thirdly, an increase in the share of equities to liabilities in the post-restructuring period for bank-dependent industries is reported. This finding reveals that bank-dependent firms are restricted in terms of accessing to external funds, and they switch their funding sources from external funds to internal funds.

The plan of the paper is as follows: the next section summarizes the existing literature on the real effects of banks' negative financial conditions in addition to the mitigating real effects of banking industry interventions following a crisis, and describes how our work is related to the existing literature. Section 3 develops the hypotheses to be tested in the analysis. Section 4 explains our identification strategy in more detail and describes the data. Section 5 presents the empirical results and Section 6 concludes the study.

1. Related Literature

There is a long empirical literature on the spillovers from banking to the real economy. Scholars have provided ample empirical evidence that developed banking markets are strongly related to better prospects for future economic growth (see Levine (2005) for a survey), However, these spillovers from banking industries to the real economy need not always be positive. A related strand of the literature focuses on the real effects of banks' negative financial conditions. Peek & Rosengren (1997:1) find that risk-based measures in response to Japanese stock market decline led to a statistically and economically significant decrease in lending by Japanese banks in the US. Using the transmission of Japanese shocks to the US commercial real estate lending as a natural experiment, Peek & Rosengren (2000:37) further find that real economic activity in the commercial real estate sector in the United State was adversely affected by the financial distress of globally active Japanese banks. In a similar analysis, Klein et al. (2002:664) show that the transmission of Japanese shocks to the US reduced the number of foreign direct investment projects by Japanese firms in the US.

Braun and Larrain (2005:1097) study annual production growth rates for manufacturing industries in more than 100 countries and find that industries that are more dependent on external finance are more adversely affected during recessions. Ashcraft (2005:1712) employs the closures of healthy subsidiaries of a failed multi-bank holding company as a natural experiment and finds these closures reduced real income in the corresponding local county. Kroszner et al. (2007:187) investigate the real effects of banking crises and find that industries that are more dependent on external finance go through a larger decline in value added during banking crises. Similarly, in their cross-country analysis of banking crises, Dell'Ariccia et al. (2008) reach the conclusion that banking crises have real effects that are partly brought by the lending channel. More specifically, they find that more financially dependent industries lost 1 percentage point of growth annually in comparison to less financially dependent industries. In their analysis of the effects of banking crises on

manufacturing exports, Iacovone & Zavacka (2009:1) find that the exports of industries that are more dependent on external finance grow considerably less during a banking crisis.

In their survey of 1,050 Chief Financial Officers (CFOs) in the US, Europe, and Asia, Campello et al. (2010) find that firms planned significant cuts in capital spending, tech spending, and employment during the global financial crisis of 2008. Duchin et al. (2010:418) investigate the effect of financial crisis that began in August 2007. They find that corporate investment decreased considerably following the crisis, and that the decrease is the greatest for firms that operate in sectors dependent on external finance. Using the Russian crisis of 1998 as an exogenous shock to the US banking system, Chava & Purnanandam (2011:116) find that firms that relied on banks for external finance experienced larger valuation losses, and their capital expenditures and profitability decreased more significantly in comparison to firms that are dependent on public-debt market for external finance. Chor & Manova (2012) examine the collapse of international trade flows during the global financial crisis started in 2008 and find that exports of financially vulnerable industries were hit harder by the financial crisis. Using a sample of 18 OECD countries, Levintal (2013:556) analyzes the real effects of shocks to banks' balance sheets and shows that industries that depend more on external finance are affected more significantly by these shocks. In their analysis of 97 countries, Bernal-Verdugo et al. (2013:1202) find that banking crises have a significant negative impact on unemployment.

Another related strand of the literature focuses on the mitigating real effects of banking industry interventions following a crisis. Klingebiel et al. (2001:1) investigate the impact of bank restructuring policies on short-term stock returns of non-financial companies during the East Asian crisis and find that the prices of non-financials react positively to announcements of government guarantees on bank liabilities. Using a sample of 40 banking crisis Detragiache & Ho (2010:10) examine whether bank support measures that use greater amounts of fiscal outlays boost economic performance during the crisis and find that these measures were linked to lower real GDP growth. Giannetti & Simonov (2009:135) use the Japanese banking crisis to investigate real effects of bank bailouts. In their firm-level study, they find that government recapitalizations increase the value of borrowers of recapitalized banks. Laeven & Valencia (2013:147) investigate the effects of bank recapitalization on firm growth in 50 countries during the crisis that started in September 2008. They show that bank recapitalization has a significant impact on the growth of financially dependent firms.

Even though there is a plenty of studies on the real effects of bank crises and mitigating real effects of banking industry interventions, the empirical literature on the real effects of post-crisis bank restructuring in Turkey has been extant. In the only study of indirect real effects of post-crisis restructuring, Damar (2007:2886) investigates the relationship between post-crisis bank consolidation and the number of bank branches, and finds that consolidation is associated with branch closures in small and uncompetitive markets where the buyer bank did not formerly operate. Thus, the current study contributes to the current literature on the spillovers from banking sector to the real economy by investigating the direct real effects of post-crisis restructuring in Turkey.

2. Hypothesis Development

A number of hypotheses can be developed regarding the impact of banking restructuring in Turkey. These hypotheses are based on insights from the broad "access to finance and growth" literature. By affecting the ease of access to and cost of credit for certain types of firms, the regulatory and restructuring reforms can have multiple effects on the size distribution of firms in an industry, and the funding of investments.

Existing financial intermediary concept sheds light on to explain the bank dependency of small firms. Diamond (1984:393) states that the presence of financial intermediaries as a "delegated monitor" lowers the monitoring costs and mitigates the free-rider problem that arises in public market for investors as the saving units. Boyd & Prescott (1986:211) reveal that financial intermediaries facilitate information gathering for borrowers and lowers costs. Similarly, Hubbard (1994:1) argues that existing principal-agent problems are reduced with

the presence of financial intermediaries. In addition, Petersen & Rajan (1994:3) stress that the ability of banks to establish a relationship with small firms not only for borrowing but also for other financial services during longer-terms eliminates informational problems and lowers the cost of available funds to small firms. According to Peek & Rosengren (1995a:625), banks are the institutions specializing in providing external sources for small and medium sized firms that are informationally opaque and have particular credit evaluation processes.

Arising asymmetric information problems between small firms and lenders lead bank loans and other external funding sources to be imperfect substitutes. Romer et al. (1990:149) argue that asymmetric information plays a crucial role in credit markets and they point out that the information about borrower gathered by a bank is relevant for borrower's ability to get loan. If banks cut down the lending for these borrowers, other intermediaries cannot replace banks because of the lack of information. Bernanke & Blinder (1988:435) state that asymmetric information problems emphasize the significance of financial intermediaries, and banks exist to solve these informational deficiencies. According to Bernanke et al. (1991:205), a decline in the bank lending due to capital shortage is able to affect bank-dependent borrowers and overall economic activity as long as bank loans and other types of financing instruments are imperfect substitutes. Under the condition that bank loans are easily replaced with other sources of funding, the cost of credit that borrowers face diminishes and loan reduction have a small effect on overall economic activity. Peek & Rosengren (1995c:1) urther state that the presence of asymmetric information problems makes bank loans and other type of external fund instruments imperfect substitutes especially for small firms that are not able to get into debt in public loan markets. Therefore, firms that do not have much opportunity and ability to attain funding sources from national loan markets will be more dependent on bank loans as an external source.

The strict enforcement of banking regulations over risk-based capital standards have significant impact over banks' lending abilities. According to Myers & Majluf (1984:187), banks tend to derogate their loan volume instead of issuing new equity due to the presence of asymmetric information. Furlong (1992:23) argues that in response to the enforcement of new risk-based capital standards, banks tend to shrink their riskier loans and hold risk-free ones such as treasury securities in their portfolios in order to capture the imposed standards. Berger & Udell (1994:585) further state that risk-based capital standards lead banks to abstain from commercial lending,of which risk weights are higher. As a matter of fact, commercial borrowers that are not able to substitute bank loans with other external funding sources in public markets are adversely affected from this loan shortage. Peek & Rosengren (1995a:625) stress that binding regulatory constraints reduce bank loans with the presence of asymmetric information and costly information gathering. In addition, Brinkmann & Horvitz (1995:848) point out that changes in capital requirements affect the banks that failed to achieve new standards or those that have little capital shortage more adversely. Thakor (1996:279) argues that risk-based capital requirements increase the bank's loan funding costs due to a rise in credit rationing. Van den Heuvel (2002:259) states that due to equity fall off, banks with the fear of future capital inadequacy miss profitable project opportunities even though their current capital requirements are not binding. Furthermore, Gambacorta & Mistrulli (2004:436) discuss that imperfect capital markets limit the ability of banks to raise their funds through debt or equity to utilize the existing lending opportunities. Thus, binding capital requirements have a significant impact over bank lending.

Many studies also argue that regulatory capital restrictions over banks deteriorate the availability of loans given to bank-dependent small firms. In their analysis of the effect of capital regulations over lending activities, Peek & Rosengren (1995b:679) indicate that loan shrinkage is linked to an implementation of capital constraints. They also point out that the large part of the deterioration of bank loans is associated with the bank-dependent borrower loans. Berger & Udell (1995:351) claim that banks obtain relevant and private information about borrowers and use gathered data to set interest rate for a loan accredited to those borrowers. Moreover, information deficiencies that arise in the credit relationship between banks and firms are more problematic for smaller firms. While large firms can access to external funds from national credit markets, small firms are more dependent on banks, as the

long-term synergy between small borrowers and lenders lowers information problems. Hancock & Wilcox (1998:983) discuss that since small firms have less substitutes in terms of external financing and are more dependent on bank loans, aggregate economic activity of small firms are more adversely affected in comparison to that of large firms with the loan reductions of banks. Berger & Udell (1998:613) conclude that regulatory and supervisory activities to clench the bank soundness against systemic risks might result with the substantial decline of loans to bank-dependent small firms. Berger & Udell (2002:32) suggest that the dependency of small firms to banks as an external fund supplier make them into more vulnerable to the banking sector shocks.

In brief, the relevant literature is abundant with arguments suggesting that stricter regulatory environment over banks tend to reduce bank lending for both small and large firms. In addition, small firms that are more dependent on bank loans are affected more adversely by loan reduction.

Based on this short review, two hypotheses can be developed regarding the real impact of banking sector restructuring reforms in Turkey. They are as follows:

Hypothesis 1: The real impact of access to bank loans following restructuring have been heterogeneous across small size, medium size and large firms. Since banks have less informational problems about large firms, stricter restrictions bite these firms less and they have greater growth prospects.

Hypothesis 2: Following stricter regulatory oversight on Turkish banks, these banks have been less keen on providing credits to firms. Consequently, Turkish firms have substituted bank loans with other forms of external finance.

In the next section, we explain the data and empirical strategy used to test these hypotheses.

3. Data and Empirical Strategy

The data used in this study is obtained from the Company Account Statistics compiled by the Central Bank of Turkey. In an attempt to screen firms that operate in the real economy, the Central Bank of Turkey has been collecting and publishing data on the yearly financial accounts of Turkish firms since 1990. The data is then transformed into the aggregated financial accounts data by the economic sectors. The aggregated financial accounts of the industries, known as the Sectoral Balance Sheets (SBS), are accessible on the website of the Central Bank of Turkey under the title of "*Company Accounts*". These accounts can be said to be the largest and the most reliable source of annual income statement and annual balance sheet data on Turkish firms.

The sample period covers the years 1998-2003. The list of the sectors included in the analysis is provided in Table 1. In the same table, the industries' bank credit dependence measured by bank credits as percentage of total liabilities in 1998 is also presented. Among manufacturing industries, bank credit dependence is the highest for the "*manufacture of wearing apparel, dressing and dyeing of fur*" industry whereas non-banking service industries have the highest bank credit dependence. Having computed the industries' bank credit dependence in 1998, we then sort these industries and find the median value for bank credit dependence.

Then, to test whether bank restructuring have real effects, we employ the "*difference-in-difference*" approach used by Rajan & Zingales (1998:559), Our conjecture is that industries that are more dependent on bank credits –which have above-median bank credit dependence figures- are affected more after a bank restructuring. Thus, firms that are more dependent on banks for external finance should react more disproportionately to bank restructuring reforms. In order to test this conjecture, we employ a simple difference-in-differences (DID) methodology. The simple DID estimates for the differential "*real*" impact of the restructuring reforms on more bank-dependent industries can be demonstrated in Table 2.

An alternative regression-based estimator produces the same outcome in the table. It can be shown that the estimate for θ in the regression equation below is equivalent to $\hat{\theta} = (P_{1, MD} - P_{0, MD}) - (P_{1, LD} - P_{0, LD})$,

$$REAL\ ECONOMY\ VARIABLE_{i,t} = \beta_0 + \beta_1 REFORM_t + \theta(REFORM_t XMEDIAN_i) + \varepsilon_{i,t} \quad (1)$$

In the econometric specification above, $REAL\ ECONOMY\ VARIABLE$ corresponds to a different variable in each regression. To gauge whether banking restructuring reforms have had any real effects, we first investigate if there has been any differential effect of the reforms on the sizes of average small firm (*AVGSMALL*), average medium firm (*AVGMEDIUM*), and average large firm (*AVGLARGE*) in a bank credit-dependent industry. The size is proxied by the number of personnel. The size of average small firm in an industry is calculated by dividing the total number of employees who work at firms with less than 50 employees by the number of those firms. The size of average medium firm, on the other hand, is constructed by dividing the total number of employees who work at firms with more than 49 employees and less than 501 employees by the number of those firms. For average large firm, the size is obtained by dividing the total number of employees who work at firms with more than 500 employees by the number of those firms.

We then analyze whether the percentage of sales by small firms (*%SALESMALL*), by medium size firms (*%SALEMEDIUM*), and by large firms (*%SALELARGE*) change in a bank credit-dependent industry following the banking reforms. Again, the classification for the firm size is determined according to the number of personnel employed as described in the previous paragraph.

Last but not the least, we attempt to see if the ratio of equities to liabilities *(%EQUITY*) have changed in a bank credit-dependent industry in the post-restructuring period. Table 3 reports the descriptive statistics on these variables.$REFORM_t$ is a dummy variable indicating the post-restructuring reforms period.$MEDIAN_i$ is a dichotomous variable representing the industries with above-medianbank credit dependence. An interaction term between these two binary variables, $REFORM_t XMEDIAN_i$, is also included in the analysis. Our interest is on the parameter on this variable. Finally, $\varepsilon_{i,t}$ is the idiosyncratic error term.

With regards to the empirical validity of our econometric specification, the critic may oppose to our identifying strategy as government interventions might be endogenous responses to real economic activity. Yet, in the current context there is no reason to suggest that the restructuring reforms were aimed at correcting financial problems in certain industries. Thus, we argue that government policies are uncorrelated with financial dependence, and therefore, our empirical strategy is sound.

4. Econometric Results

The results for the analysis the real economy variables are displayed in **Hata! Başvuru kaynağı bulunamadı.**.All models are estimated with industry fixed effects. The variable of interest is $REFORM_t XMEDIAN_i$ in all models. The results in the first six columns provide answers to test the validity of Hypothesis 1.

As can be seen from **Hata! Başvuru kaynağı bulunamadı.**,$REFORM_t XMEDIAN_i$ is positive and statistically significant at 1% significance level only for the specification in which the dependent variable is *AVGLARGE*. The coefficient on $REFORM_t XMEDIAN_i$ suggests that bank dependent large firms expanded their employee base nearly by 295 people in comparison to less bank-dependent large firms. However, there has been no change in the sizes of bank-dependent small or medium firms following the restructuring activities in Turkey, as the coefficients on $REFORM_t XMEDIAN_i$ are statistically insignificant in the first and second column.

When the dependent variable is the percentage of industry sales by firms with various sizes, it is seen that the variable of interest enters negatively and statistically significantly (at 10% significance level) to the regression equation where *%SALESMALL* is the dependent variable. This result implies that bank-dependent small firms' market share is reduced approximately by 3.44 percent in the post-restructuring period. Even though this figure can be said to be small in magnitude, it can be concluded that the market share of the small firms dampens after strict oversight activities on the Turkish banking sector.

Taken altogether, the results presented in the first six columns of the table provide supporting evidence for the first hypothesis. Following the restructuring reforms in the Turkish banking sector, large firms that are more dependent on bank credits increased their sizes in terms of the number of employees. Moreover, the industry shares of bank-dependent small firms (measured using sales figures) decreased. Thus, as stated in Hypothesis 1, stricter restrictions on the Turkish banking system affected large firms positively while small firms seem to suffer from these changes.[3]

To check the validity of the second hypothesis, we look at the seventh column in **Hata! Başvuru kaynağı bulunamadı.**. The coefficient on the variable of interest, $REFORM_t XMEDIAN_i$, is statistically significant at the 5% significance level. The magnitude of the coefficient reveals that equities over liabilities for bank-dependent firms increased nearly by 3.13 percent against less bank-dependent firms in the post restructuring period. This result demonstrates that bank-dependent firms transformed their funding sources and tended to increase their internal funding against external funds. Thus, Hypothesis 2, which states that Turkish firms have substituted bank loans with other forms of external finance, has been verified in the current research design.[4]

5.1. Robustness Checks

A relevant concern in the current study is that the more bank-dependent and less bank-dependent industries are on different growth paths before the restructuring activities took place. Thus, in order to get unbiased estimates of the effect of restructuring reforms, it should be the case that the more bank-dependent and less bank-dependent industries display common trends in the pre-restructuring period. This assumption is known as the parallel-trends assumption, which we formally test. To do so, we drop all post-restructuring observations (2002-2003) and redefine the "*REFORM*" variable by choosing a year when there were no restructuring reforms. More specifically, we consider the periods 1998-2000as "fake" post-reform periods.

The results of the tests are displayed in Table . As can be seen from the table, none of the point estimates of the variable *FAKEoo X MEDIAN* is statistically significant in any estimation equation. This means that our estimates comparing pre- and post-restructuring periods are unbiased.

A further, Issue is that the shockwaves of the two crises that Turkey went through in November 2000 and February 2001 might dampen the reliability of our estimates concerning the effect of restructuring reforms in Turkey. In order to isolate the effect of the crises, if any, we include the natural logarithm of inflation-adjusted industry net sales (*LN_ADJ_NET_SALES*) in estimation equation [1]. This way, we can control for the changes in demand arising from the shockwaves of the crises. The results are reported in **Hata! Başvuru kaynağı bulunamadı.**. When compared to the results in **Hata! Başvuru kaynağı bulunamadı.**, it is seen that the point estimates for the variables of interest and the associated statistical significances do hardly change, which verifies the robustness of our findings.

CONCLUSION

This paper presents the first analysis of the real effects of the post-crises bank restructuring reforms in Turkey. This, Issue deserves attention due to the fact that alternative channels for obtaining external finance such as capital markets are not well-developed in Turkey and

[3]In order to understand the mechanisms that led to this finding, we need further analysis. For instance, one should check if bank loans given to small firms have decreased and/or credits given to large firms by banks have increased. Unfortunately, such data are not available.

[4] Due to the structure of the data, we cannot distinguish whether small firms or large firms have substituted bank credits with internal sources of funding. The effect that we have found is an aggregate real effect on Turkish industries.

banks are the main sources of external finance for Turkish firms. Therefore, spillovers from the banking reforms, if any, will have consequences for industrial activities and economic growth in Turkey.

In order to gauge the real effects of these post-crisis bank restructuring reforms in Turkey, the current study employs a difference-in-differences approach using industry-level data during the period 1998-2003. The identifying assumption is that firms that are more dependent on banks for external funding are affected more heavily after the bank restructuring in Turkey. Stated differently, firms that are more dependent on bank loans should respond more disproportionately to bank restructuring reforms.

The empirical results reported in this study stress that bank-dependent large firms that are informationally more opaque than small and medium-sized ones are less sensitive to the restructuring reforms implemented for stabilizing the banking system in Turkey. Overall, the empirical findings that provide supportive evidence for the developed hypotheses can be categorized into three headings.

Firstly, it is revealed that the average number of employeesin large firms that operate in bank-dependent industries increased significantly following the banking reforms that mandate strict oversight while there is no significant change for the average number of workers employed by small and medium sized firms. Thus, bank-dependent large firms do not downsize and they sustain their growth prospects. Secondly, there is weak evidence that bank-dependent small firms were affected more adversely in the post-restructuring period. It is reported that the share of industry sales made by bank-dependent small firms was reduced significantly following the restructuring reforms in the banking sector. Therefore, small firms that have more informational problems from the banks' perspective were not able to shield themselves from the consequences of the stricter measures imposed on the banking system. Thirdly, strict oversight activities over Turkish banks had also stronger effects for bank-dependent firms to access to external funds. An increase in the share of equities to liabilities in the post-restructuring period for bank-dependent industries reveals that bank-dependent firms are restricted in terms of accessing to external funds. Therefore, these firms switch their funding sources from external funds to internal funds.

All these empirical findings highlight that the restructuring reforms over the Turkish banking sector following the crises affected bank-dependent large firms more positively than small and medium-sized ones both in real and financial terms. Strict oversight activities over the banking sector have had stronger impact on financially constrained firms that are not able to substitute bank loans with other types of external funds. Therefore, it is crucial to ensure mechanisms for small firms to diversify their external funding sources to eliminate the negative effects of restructuring reforms over real economy.

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APPENDICES

Table 1: The List of the Industries in the Sample

NAME OF THE INDUSTRY	BANK CREDIT DEPENDENCE (BANK CREDITS AS % OF TOTAL LIABILITIES)
1. MANUFACTURE OF FOOD PRODUCTS AND BEVERAGES	31.50
2. MANUFACTURE OF TOBACCO PRODUCTS	21.33
3. MANUFACTURE OF TEXTILES	34.23
4. MANUFACTURE OF WEARING APPAREL, DRESSING AND DYEING OF FUR	40.93
5. MANUFACTURE OF LEATHER AND LEATHER PRODUCTS	27.18
6. MANUFACTURE OF WOOD AND WOOD PRODUCTS	16.88
7. MANUFACTURE OF PULP, PAPER & PAPER PRODUCTS, PUBL. & PRINTING	21.75
8. MANUFACTURE OF COKE, REFINED PETR. PRODUCTS AND NUCLEAR FUEL	10.05
9. MANUFACTURE OF CHEMICALS, CHEMICAL PROD.& MAN-MADE FIBRES	26.73
10. MANUFACTURE OF RUBBER AND PLASTIC PRODUCTS	20.58
11. MANUFACTURE OF OTHER NON-METALLIC MINERAL PRODUCTS	22.45
12. MANUFACTURE OF BASIC METALS AND FABRICATED METAL PRODUCTS	26.13
13. MANUFACTURE OF MACHINERY AND EQUIPMENT N.E.C.	22.35
14. MANUFACTURE OF ELECTRICAL AND OPTICAL EQUIPMENT	25.13
15. MANUFACTURE OF TRANSPORT EQUIPMENT	24.80
16. MANUFACTURE OF FURNITURE, MANUFACTURING N.E.C.	25.88
17. MINING AND QUARRYING OF ENERGY PRODUCING MATERIALS	18.28
18. MINING AND QUARRYING EXCEPT ENERGY PRODUCING MATERIALS	23.45
19. ELECTRICITY, GAS AND WATER SUPPLY	33.75
20. SITE PREPARATION	10.18
21. BUILDING OF COMPL.CONSTR.OR PARTS THEREOF, CIVIL ENGINEERING	21.33
22. GENERAL CONSTR. OF BUILDINGS AND CIVIL ENGINEERING WORKS	35.85
23. BUILDING INSTALLATION	7.40
24. BUILDING COMPLETION	9.65
25. WHOLESALE AND RETAIL TRADE	23.20
26. HOTELS AND RESTAURANTS	31.23
27. TRANSPORT, STORAGE AND COMMUNICATION	18.35
28. FINANCIAL LEASING	49.38
29. OTHER CREDIT GRANTING	55.08
30. INSURANCE AND PENSION FUNDING, EXC.COMPULSORY SOCIAL SECURITY	0.08
31. REAL ESTATE, RENTING AND BUSINESS ACTIVITIES	18.05
32. EDUCATION	29.80
33. HEALTH AND SOCIAL WORK	9.98
34. OTHER COMMUNITY, SOCIAL AND PERSONAL SERVICE ACTIVITIES	42.60

Table 2: The Illustration of Difference-in-Differences Estimation

REAL ECONOMY VARIABLE	MORE BANK-DEPENDENT (MD)	LESS BANK-DEPENDENT (LD)	DIFFERENCE
T_0 = Pre-Restructuring Period	$P_{0, MD}$	$P_{0, LD}$	$P_{0, MD} - P_{0, LD}$
T_1 = Post- Restructuring Period	$P_{1, MD}$	$P_{1, LD}$	$P_{1, MD} - P_{1, LD}$
Change	$P_{1, MD} - P_{0, MD}$	$P_{1, LD} - P_{0, LD}$	$\hat{\theta} = (P_{1, MD} - P_{0, MD}) - (P_{1, LD} - P_{0, LD})$

Table 3: Summary Statistics

Below-Median Bank Credit Dependent Industries	*Pre-Restructuring*					*Post-Restructuring*				
	Obs.	Mean	Std. Dev.	Min	Max	Obs.	Mean	Std. Dev.	Min	Max
Average Small Firm Size (*AVGSMALL*)	68	22.78	5.00	12.83	29.70	34	22.66	4.75	14.44	30.73
Average Medium Firm Size (*AVGMEDIUM*)	68	158.96	21.52	118.80	206.67	34	162.89	27.64	122.10	244.00
Average Large Firm Size (*AVGLARGE*)	65	1926.21	2315.95	506.00	10592.39	31	1763.70	1916.86	600.00	8197.44
% of Sales by Small Firms (*%SALESMALL*)	68	0.13	0.13	0.00	0.51	34	0.15	0.15	0.01	0.56
% of Sales by Medium Firms (*%SALEMEDIUM*)	68	0.46	0.20	0.11	0.92	34	0.45	0.19	0.13	0.86
% of Sales by Large Firms (*%SALELARGE*)	68	0.41	0.26	0.00	0.84	34	0.39	0.26	0.00	0.83
% of Equities (*%EQUITY*)	68	31.92	13.38	12.10	63.10	34	35.18	12.26	19.40	57.00
Above-Median Bank Credit Dependent Industries	*Pre-Restructuring*					*Post-Restructuring*				
	Obs.	Mean	Std. Dev.	Min	Max	Obs.	Mean	Std. Dev.	Min	Max
Average Small Firm Size (*AVGSMALL*)	68	22.44	4.71	12.86	32.87	34	21.77	6.33	10.00	32.81
Average Medium Firm Size (*AVGMEDIUM*)	68	162.10	47.26	55.00	290.78	34	168.85	53.82	62.75	330.71
Average Large Firm Size (*AVGLARGE*)	52	1073.69	496.01	514.00	2947.71	27	1127.08	568.88	523.00	3007.75
% of Sales by Small Firms (*%SALESMALL*)	68	0.19	0.25	0.00	0.99	34	0.18	0.22	0.00	0.95
% of Sales by Medium Firms (*%SALEMEDIUM*)	68	0.51	0.22	0.01	0.95	34	0.53	0.24	0.05	0.92
% of Sales by Large Firms (*%SALELARGE*)	68	0.30	0.26	0.00	0.82	34	0.29	0.28	0.00	0.85
% of Equities (*%EQUITY*)	68	29.74	12.39	2.20	53.40	34	36.14	11.58	11.70	61.00

Table 4: The Results for the Difference-in-Differences Estimations

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dep. Var.	*Average Small Firm Size* (*AVGSMALL*)	*Average Medium Firm Size* (*AVGMEDIUM*)	*Average Large Firm Size* (*AVGLARGE*)	*% of Sales by Small Firms* (*%SALESMALL*)	*% of Sales by Medium Firms* (*%SALEMEDIUM*)	*% of Sales by Large Firms* (*%SALELARGE*)	*% of Equities* (*%EQUITY*)
REFORM	-0.1208	3.9349	-228.1040***	0.0218	-0.0099	-0.0119	3.2618***
	(0.430)	(2.705)	(83.579)	(0.015)	(0.012)	(0.014)	(0.940)
REFORM X MEDIAN	-0.5509	2.8113	295.5395***	-0.0344*	0.0295	0.0049	3.1324**
	(0.708)	(6.029)	(112.563)	(0.019)	(0.021)	(0.019)	(1.526)
CONSTANT	22.6112***	160.5300***	1,550.8098***	0.1621***	0.4854***	0.3525***	30.8309***
	(0.198)	(1.221)	(28.444)	(0.004)	(0.006)	(0.006)	(0.410)
Industry Fixed Effects	YES	YES	YES	YES	YES	YES	YES
Observations	204	204	175	204	204	204	204
R-squared	0.82	0.83	0.97	0.93	0.90	0.95	0.87

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 5: Falsification Tests for Robustness Checks

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dep. Var.	*Average Small Firm Size* (*AVGSMALL*)	*Average Medium Firm Size* (*AVGMEDIUM*)	*Average Large Firm Size* (*AVGLARGE*)	*% of Sales by Small Firms* (*%SALESMALL*)	*% of Sales by Medium Firms* (*%SALEMEDIUM*)	*% of Sales by Large Firms* (*%SALELARGE*)	*% of Equities* (*%EQUITY*)
FAKE00	1.2956	4.7331	110.9656	-0.0013	-0.0216	0.0229	3.4902***
	(0.865)	(2.853)	(115.090)	(0.009)	(0.022)	(0.022)	(0.978)
FAKE00 X MEDIAN	0.2648	-3.6587	-165.6938	0.0128	-0.0128	-0.0001	1.0549
	(1.065)	(5.538)	(132.340)	(0.014)	(0.030)	(0.028)	(1.746)
CONSTANT	21.5401***	158.3522***	1,519.0803***	0.1583***	0.5063***	0.3354***	27.8176***
	(0.502)	(2.491)	(64.140)	(0.006)	(0.013)	(0.013)	(0.771)
Industry Fixed Effects	YES	YES	YES	YES	YES	YES	YES
Observations	136	136	117	136	136	136	136
R-squared	0.86	0.91	0.98	0.97	0.91	0.95	0.92

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 6: Further Robustness Checks for the Effects of the Shockwaves of the Crises

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dep. Var.	*Average Small Firm Size* (*AVGSMALL*)	*Average Medium Firm Size* (*AVGMEDIUM*)	*Average Large Firm Size* (*AVGLARGE*)	*% of Sales by Small Firms* (*%SALESMALL*)	*% of Sales by Medium Firms* (*%SALEMEDIUM*)	*% of Sales by Large Firms* (*%SALELARGE*)	*% of Equities* (*%EQUITY*)
REFORM	-0.1477	5.4922*	-244.0353***	0.0185	-0.0077	-0.0108	3.5753***
	(0.440)	(3.009)	(79.722)	(0.012)	(0.013)	(0.014)	(1.001)
REFORM X MEDIAN	-0.5448	2.4597	293.4633***	-0.0337*	0.0290	0.0047	3.0615**
	(0.708)	(5.879)	(111.405)	(0.018)	(0.021)	(0.019)	(1.522)
LN_ADJ_NET_SALES	0.2166	-12.5244	119.7023	0.0268	-0.0179	-0.0089	-2.5221
	(0.905)	(8.624)	(228.039)	(0.039)	(0.041)	(0.038)	(2.238)
CONSTANT	19.4080	345.7768***	-248.1520	-0.2341	0.7501	0.4841	68.1345**
	(13.392)	(127.595)	(3,437.798)	(0.576)	(0.611)	(0.562)	(33.012)
Industry Fixed Effects	YES	YES	YES	YES	YES	YES	YES
Observations	204	204	175	204	204	204	204
R-squared	0.82	0.83	0.97	0.94	0.90	0.95	0.88

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1