Relaxing the Financial Constraint: The Impact of Banking Sector Reform on Firm Performance - Emerging Market Evidence from Turkey

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Abstract

We examine the impact of banking reform and financial crisis of 2001 on non-financial firm dynamics. Our analysis integrates the two lines of literature on financial liberalization, banking reform and access to capital and banking competition, which were addressed earlier by Bertrand, Schoar and Thesmar (2007) and Cetorelli and Strahan (2006). Our unique firm level survey data from Turkey sheds light on market structure and firm performance. We find that increased banking competition for credit along with banking concentration and financial crisis severely affects access to capital. Moreover, this effect is more pronounced with varying firm size.

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1 Introduction

In this paper, we offer evidence on the significant impact of banking reforms on firm level performance in an emerging market. Turkey provides an excellent example due to all the crises and reforms it experienced in the recent history. Our research follows the structure and techniques laid out above in the two motivating papers. The essential contribution will be presenting evidence from a very distinct, detailed and rich firm-level data i.e. our survey datas main characteristics of financing structure indicate a reduction in bank debt in both short and long-term maturities. The same is also true for trade credit; however, equity financing presents a significant increase. These results are parallel to Bertrand, Schoar and Thesmar (2007). Where we differ from the literature is on return on assets and sales. We observe that after crisis period with low inflation rates and increased competition in an open economy lowers the returns as opposed to what the developed country literature suggests. Moreover, we observe that capital costs are almost halved in the post crisis period however still double developed market costs.

As suggested by Bertrand et al. (2007) increased banking competition leads to a better allocation of bank loans across firms therefore leading to restructuring activities for better competition. We would like to see whether this would be true for an emerging market that is forced to reform the banking sector in the process of recovering from a financial crisis. In this regard we would like to answer whether such reform results in an improvement in allocation of jobs and assets among firms, controlling for the post crisis macroeconomic movements.

Series of economic reforms complemented with falling inflation rates, privatization and sale of part or all of domestic banks assets to foreign banks have also implications on bank competition in lending. This in turn alters firm behavior from financing of projects with equity and bank debt rather than trade credits and will be conditional on firm size. Cetorelli and Strahan (2006) find that improvement in banking competition leads to firms of smaller size to increase in number at the expense of medium size firms. However, those firms that have access to capital markets do not observe such affect.

We bring the two line of literature in a setting where a country Turkey- recovers from financial crisis, implements banking reform and observes a series of events in changing market structure. We have a well-organized firm level dataset for the 1995 2006 period. Our results are parallel to this finding, moreover complements them with survey data from a developing economy.

Next section discusses the relevant literature, followed by section III on financial crisis and banking reform in Turkey. Data is described in section IV and empirical analysis and results in sections V and VI.

2 Literature

This paper builds on recent publications in the literature, in particular two motivating papers: The first one is titled *"Banking Deregulation and Industry Structure: Evidence from the French Banking Reforms of 1985*[1] *,"* written by Marianne Bertrand, Antoinette Schoar and David Thesmar. They investigate how the deregulation of the French banking industry in the 1980s affected the real behavior of firms and the

[1] The Journal of Finance, vol. LXII, no. 2, April 2007.

structure and dynamics of product markets. Following deregulation, banks are less willing to bail out poorly performing firms and firms in the more bank-dependent sectors are more likely to undertake restructuring activities. At the industry level, we observe an increase in asset and job reallocation, an improvement in allocative efficiency across firms, and a decline in concentration. Overall, these findings support the view that a more efficient banking sector helps foster a Schumpeterian process of *"creative destruction"*.

The second motivational paper is *"Finance as a Barrier to Entry: Bank Competition and Industry Structure in Local U.S. Markets*[2] *,"* by Nicola Cetorelli and Philip Strahan. Their paper tests how competition in local U.S. banking markets affects the market structure of nonfinancial sectors. They find out that empirical evidence strongly supports the idea that in markets with concentrated banking, potential entrants face greater difficulty gaining access to credit than in markets in which banking is more competitive. Their empirical evidence comes from the local US banking sector. In both papers empirical evidence comes from a developed financial market.

A thorough review of both the theoretical and empirical work on the link between capital markets and economic performance is provided by Ross Levine (2005). Elias Papaioannou (2007) complements Levines extensive review with a focus on Europe. Chapter 3 of Global Development Finance (2008) covers the changing role of international banking in development finance which also played a significant role in Turkey, gaining momentum in the post-2001 era[3].

In a recent World Bank Policy Research Working Paper, Ayyagari, Demirg-Kunt and Maksimovicc (2008) investigate financing patterns and growth using a database of Chinese firms. They find heavy reliance on informal sources as an alternative to formal bank finance. Although this can be considered some evidence from emerging markets, the nature and scope of the China make less representative compared to Turkish experience.

Claessens and Tzioumis (2006) emphasize the importance of financial development through banking competition on credit availability and firm efficiency.

3 Crises and Banking Reform in Turkey

A significant proportion of recent financial crises in emerging markets were triggered by weak financial institutions, specifically the banking system.

Recently, Turkey experienced two major financial crises, in November 2000 and February 2001. Since then, according to the Banks Association of Turkey (BAT), very important steps have been taken regarding the reform of the Turkish banking sector and various measures have been initiated to strengthen the system

[2]The Journal of Finance, vol. LXI, no. 1, February 2006.

[3]Aysan and Ceyhan (2007) report that in 2005, foreign capital inflow to Turkeys banking sector amounted to approximately six billion dollars and the growth rate of the banking sector is forecasted to be eight percent on average in the next 15 years. Foreign asset share (participation banks included) in the Turkish financial sector is 17.5 percent as of May, 2006. 2 Foreign share in consumer credits is found out to be 42.6 percent while they occupy 41.7 percent share in the mortgage sector. Additionally, foreigners have been net debtors with debts to banks and to other financial institutions constituting 48.2 and 45.7 percent of the sector, respectively.

The Banking Regulation and Supervision Agency (BRSA) and the State Banks Joint Management Board have been fully implementing the reform strategy set forth in the context of the economic restructuring program.

Even prior to the 2000 and 2001 crises, the Turkish banking system started to go through a restructuring phase following IMF recommendations. The abandonment of traditional banking activities, excess branches and staff, dependency on a unhealthy-inflationary macroeconomic environment, huge open position, excessive risk taking, lack of diversification, connected/illegal lending, lax accounting regulations were among the problematic characteristics of the sector. State owned banks were suffering from subsidized lending and continuous losses as well. Interestingly, Turkish Banks were still profitable and IMF cited Turkey as having the most profitable banking sector in the OECD.

Shortly before the financial crises, a new economic program backed by IMF was implemented in order to establish a sound macroeconomic environment and sustainable growth. With this program government targeted inflation reduction and committed to several structural reforms, one of which was on banking sector. In 1999, with the stimulus from the IMF, the government gave up its reluctance of bank liquidation and took over two insolvent banks; Interbank and Bank Ekspres. However, this program ended up causing some additional problems for the banking system because of the fragile structure.

The economic reform program was successful in terms of reaching some of its target such as better fiscal situation and lower interest rates, however inflation resisted. With lower interest rates it was getting harder for the bank to raise funds from abroad and on October 2000 two more banks were taken over by the Savings and Deposits Insurance Fund (SDIF), which triggered further speculations about the health of the Turkish banking system.

According to the Letter of Intent of the government of Turkey to IMF from December 18th of 2000, during the last ten days of November and in early December, Turkish financial markets experienced a period of high volatility. Financial difficulties of one medium-sized bank, which was subsequently taken over by the SDIF, and the sell-off by that bank of large stocks of government paper in the secondary market led primary dealers to suspend the posting of the rates on government paper. This triggered massive capital outflows, in spite of the rise of interest rates to 100200 percent. At the same time, the Central Bank of Turkey increased the supply of net domestic assets well outside the interval set by the economic reform program, out of concerns for the effect that excessively high interest rates would have on the banking system. Those events, in the context of weaker international market sentiment for emerging economies, led to a loss of US$6 billion of foreign exchange reserves. On November 30, the Central Bank of Turkey announced that it would stop providing liquidity to the market, to avoid further loss of reserves. Interest rates, however, skyrocketed to over 1000 percent. The pressure on financial markets eased only with the announcement of a policy strengthening and the request of access to the Supplemental Reserve Facility.

As a result of these severe developments, a Banking Sector Restructuring and Rehabilitation Program was commenced in order to recapitalize weak banks, eliminate open positions, ensure mergers and acquisitions between banks and restructure state banks. However just after announcing the program the biggest economical crises of the Turkish Republic began. Overnight interest rates soared to 5,000% and the government abandoned the crawling-peg regime under the original plan and floated the Turkish lira in February 2001. With the rapid loss in value of Turkish Lira, two more bank failures followed.

The consequences of the November 2000 and February 2001 crises were severe; 20 banks were closed, 36,000 bank employees (out of a total of 174,000) lost their jobs and more than $25 billions were spent to restructure the banking system. The reform of the Turkish Banking system was inevitable and long overdue. Banking Regulatory and Supervisory Agency (BRSA) prepared and announced the Banking Sector Restructuring Program in May 2001. The aims of the program were to address the structural problems of the banking sector and establish a competitive banking system.

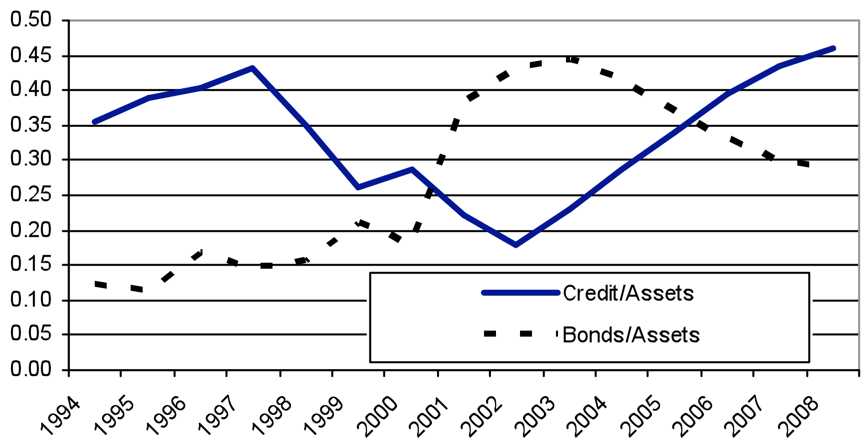
In fact, BRSA began operations at the beginning of September 2000. It first attempted to solve the problems of the banking system just before the February 2001 crises. On January 2001, it merged five Turkish banks (Egebank, Ya?arbank Yurtbank, Bank Kapital, Sumerbank) into one bank and put it up for sale. On April 2001, Ulusalbank was added to this merger. Until the end of the 2001 there was an ongoing effort to create mergers, liquidation, and privatization that directly affected a total of 20 banks with an estimated cost of $6.2 billion. The Turkish Treasury spent $6.8 billion to eliminate short-term open positions of banks. The number of banks decreased from 81 to 54 during the three-year period; 1999-2002. According to Kibritcioglu (2005), between 1997 and 2002, the SDIF took over 20 banks with more than 37000 employees and succeeded to create new job places for more than 10000 in their new banks. The number of banks (incl. the banks under the SDIF) declined from 81 in 1999 to 54 in 2002, while the number of bank branches dropped from 7691 to 6106 in the same period. Government officials estimate that Turkey has spent some USD 44 billion (or 30% of GDP) since 1997 to reform the banking sector, which suffers from inherent structural weaknesses

In addition to these financial and structural developments BRSA tried to improve the regulation and supervision of the banking sector. In May 2004 BRSA changed the full insurance system and declared that only the first 50,000 TL of any deposit would be under guarantee, which covered 64% of all deposits. A new law tightened the limits of loan exposure. Banks were obligated to maintain a minimum 8% of net-worth-to-risk-asset ratios and net general foreign-currency positions were limited to 20% of their capital base. Accepting deposits from investment banks were restricted.

Between 2001-2007, there have been significant improvements in the structure and strength of the Turkish banking sector. The asset size of the banking sector increased from 171.9 billion to 515.3 billion YTL, 89.5% of the GDP, which indicates financial deepening - but it is still much lower than the European Union Countries. Also Loan/GDP ratio increased from 17.6% to 37.4%. Reduction of non-performing loans/gross loans ratio from 17.6% to 3.7% can be interpreted as a clear indication that the banking sector has been getting healthier.

As of March 2007, there were 50 banks in the Turkish banking system; 16 of them are foreign and only one of them is a BRSA bank. By looking at these numbers and other indicators such as the Herfindahl-Hirschman Index ("HHI") of market concentration, one can argue that Turkish banking system has undergone a significant concentration.

Figure 1: From Bonds to Credit



Source: Authors calculations, the BRSA

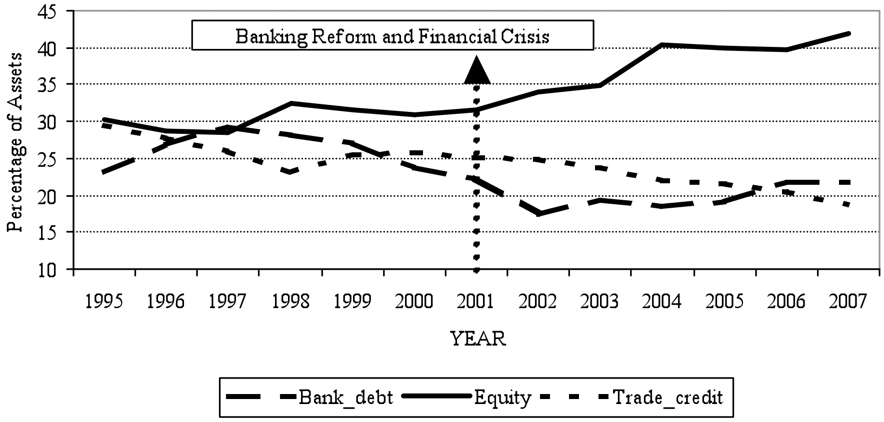
An important result of the crisis is banks willingness to move away from financing the government to private sector. Even though we saw a steady rise in bond portfolio in banks balance sheets reaching up to 45% of the sector, we observe a steady decline to levels below 30%. With increased bank competition towards extending credit to firms we saw a sharp reversal in credits share in banks balance sheet reaching to over 45% of the portfolio by the end of 2007 from below 20% during the crisis (Figure 1). Two forces played an important role in this process; one is with lower public sector borrowing requirement and lower nominal interest rates that lead to a reduction in the profitability in investing in bonds, and second a portfolio shift to credit was inevitable, in other words banks reinvented the role of suppliers of credit and therefore, increased competition for lending.

The access to credit has never been this easy for firms at all size. With high and stable real growth rates reaching to 7% on average in the post crisis period reflected the profitability of firms, which was larger than high cost of credit. Domestic currency lira - cost of credit fell to below 20% on average, however appreciating lira lowered cost of borrowing in foreign currency terms. In this time period, we observe a significant rise in foreign currency exposure of firms reaching to 100 billion dollars (15 % of GDP) by the end of 2006. Moreover, in firms total bank debt foreign currency financing on average reached to 70% of their balance sheet.

An interesting feature of the choice of financing by firms is their shift to more of equity and debt financing away from trade credit in the post crisis period (Figure 2). In the pre-2001 period equity financing was mainly due to high and volatile cost of capital, however growth rate of equity remained higher than bank debt in the post-crisis period as well. On the other hand, parties moved away from trade credit and we begin to observe a steady fall in this period[4].

[4] Anecdotal evidence suggests that the use of credit cards induced larger bank intermediation in transactions rather than old style trade credit financing.

Figure 2: Bank Reform and Financial Crisis



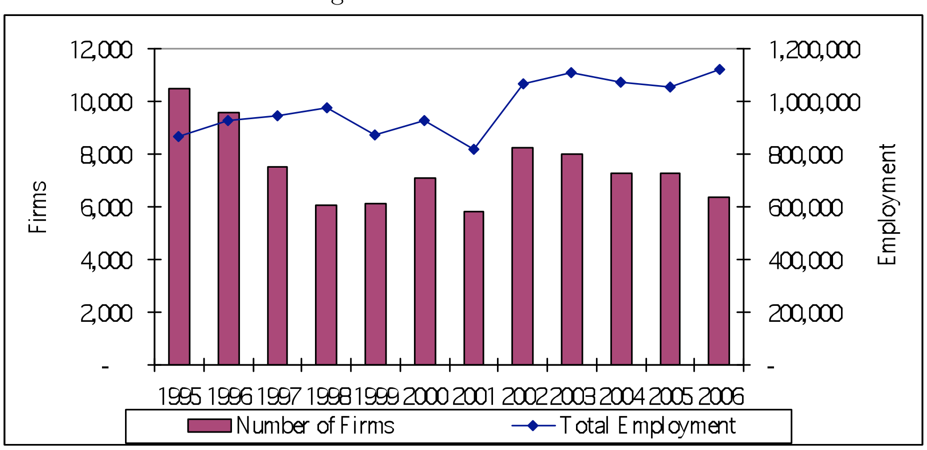
Source: Authors calculations, the BRSA

4 Data

4.1 Firm-level Data

We use the firm level survey data on balance sheets, income statements and employment that are collected by the Central Bank of Turkey over non-financial firms[5]. The period of analysis is 1995 2007 on an annual frequency.

Figure 3: Number of Firms



Data covers on average 7478 firms over the sample period. Although this is less than one percent of total number of firms in Turkey, it covers all sectors with 14 industries and 28 sub-industries and 11 percent of total employment in non-financial firms in Turkey (Figure 3) [6]. Therefore, we believe that it is a good representation of the population. Survey data also have industry classification codes under the NACE Rev.

[5]We believe that balance sheet and income statement data coincide with the actual tax files of the Ministry Finance, which is impossible to obtain at the time being.

[6]The survey aims to include the largest 1000 firms under Istanbul Chamber of Commerce (ISO) classification and those firms who are already in a credit agreement with banks, where the status is followed through the Banking sector.

1.1 standard[7]. The response to survey is voluntary, however, there is a good number of firms that files data regularly, and the cross checking of the validity of numbers with participating firms are done regularly by the Central Bank staff if "abnormal" figures are recorded.

Although the survey data dates back to 1989, the exchange rate crisis of 1994 and the transition to the Generally Accepted Accounting Principles (GAAT) in 1995 led us to work with data in the post 1995 period up to 2006. Individual firms have a ticker which is unique that allows us to construct the panel data set. We also have industry level identifiers, the geographical location of the firm, the number of employees, the date of establishment, the legal status[8], whether they are quoted at the Istanbul Stock Exchange (ISE) and have foreign partnerships. The latter two identifiers will play an important role in identifying access to capital. Firms that are in a credit relationship with a bank constitute 96 percent of our sample, and in the year 2007, 200 firms are quoted at the ISE, and 294 firms on average have foreign partnership over the sample period.

Our data suggests a striking effect of the crisis is the shift of employment from small and large size firms to medium size firms. Employment in firms with less than 20 employees and larger than 1000 employees fell in the post crisis/reform period. And we observe a 13 percent increase in employment in medium sized firms. We also observe a 27% increase in establishment size in the same period. (Table 1)

We closely follow Bertrand et al. (2007) in the definition of our variables. We define corporate performance as the return on assets (ROA), computed as the ratio of net profits to net total assets. Net profits is defined as market value of sales minus all expenditures of production minus taxes. Net total assets are net of depreciation. Capital cost is the interest payments on financial debt over total debt. Total debt is both short and long-term debt that firms engage into. Trade credit, equity and debt are ratios over the sum of the book value of equity, total debt and trade payables, respectively. Total debt is all financial debt payable, this is an advantage of our dataset over Bertrand et. al where they could only identify total debt payables that include debt to social security administration and to the tax authorities. We define outsourcing as the ratio of intermediate product consumption to total sales. Among our ratios debt represents bank dependence. This is constructed in two steps first, we ratio debt over the sum of book value of equity, debt and trade payables. Then take the non-weighted average over industry classification for the full sample. The main characteristics of financing structure indicate a reduction in bank debt in both short and long-term maturities. The same is also true for trade credit; however, equity financing presents a significant increase. These results are parallel to Bertrand et al. (2007). Where we differ from the literature is on return on assets and sales. We observe that after crisis period with low inflation rates and increased competition in an open economy lowers the returns as opposed to what the developed country literature suggests. Moreover, we observe that capital costs are almost halved in the post crisis period however still double developed market costs.

[7] Nomenclature statistique des Activits conomiques dans la Communaut Europenne Statistical Classification of Economic Activities in The European Community. The main structures of classifications have been developed by cooperation between the United Nations Statistical Commission, International Labour Organization (ILO), International Monetary Fund (IMF), United Nations Educational, Scientific and Culture Organization (UNESCO) and other authorized organizations in related areas. (Turkish Statistical Institute, STATISTICAL CLASSIFICATION OF ECONOMIC ACTIVITIES IN THE EUROPEAN COMMUNITY, NACE rev. 1.1,.2003)

[8] Legal status is whether the company is a partnership, limited participation or a corporation.

Table 1: Employment and Average Establishment Size

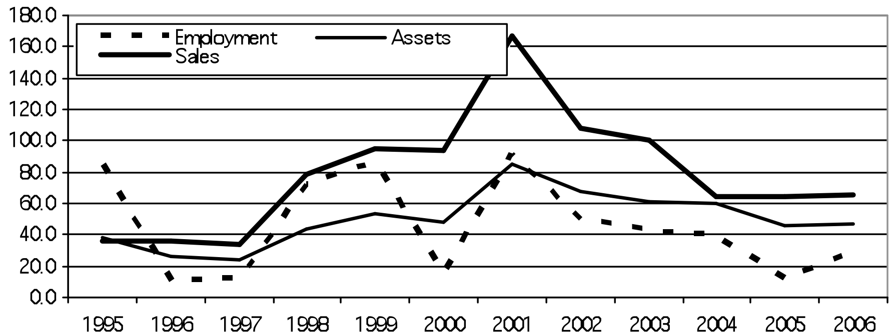
	Total Sample		Before Crisis/Reform		After Crisis/Reform	
	Mean	*Std. Dev.*	*Mean*	*Std. Dev.*	*Mean*	*Std. Dev.*
Establishments per capita	0.7	0.2	0.9	0.2	0.7	0.1
Employment 0 - 5	5.4	1.7	6.0	1.8	4.6	1.3
Employment 5 - 19	21.1	3.7	22.0	3.8	19.9	3.9
Employment 20 - 99	39.7	3.7	37.1	3.2	42.1	2.8
Employment 100 - 999	25.7	5.0	22.6	4.5	28.9	3.9
Employment 1000+	8.1	5.6	12.3	4.5	4.6	3.8
Average Establishment Size	140.51	31.92	123.29	29.24	157.67	29.67

Total assets triple and total sales almost doubles in the post reform period, however one has to be careful in dealing with nominal figures due to inflation. Therefore, we will normalize our variables with consumer price index in pursuing our analysis. This also shows itself in large standard errors.

4.2 Industry-level Data

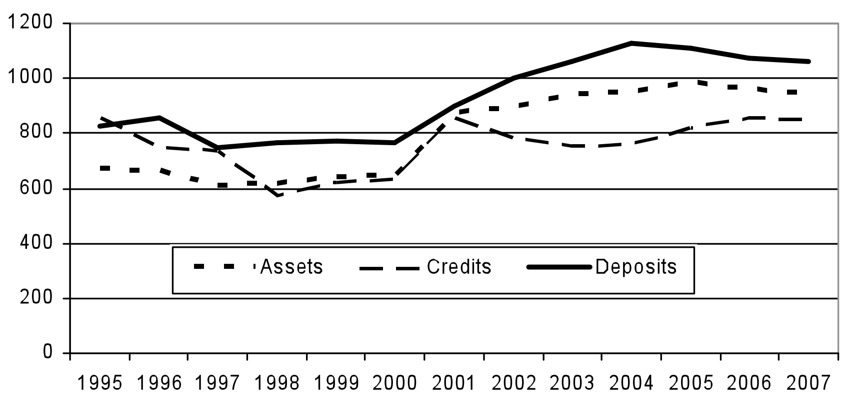
We constructed two sets of concentration indices, one for banking and the second for our non-financial firms at industry level[9].

Figure 4: HHI Index for Firms



For banks we used assets, credits and deposits. Each of these measures indicates an increased bank concentration in the post crisis/reform period (Figure 4).

Figure 5: HHI Index for Banks



On the firm side the period up to the crisis presents an increased concentration however a sharp reversal in the post crisis period if we are to look for total sales, assets and employment (Figure 5).

[9] We constructed Herfindahl-Hirschman Index (HHI) HHI for firm level and bank level.

5 Results

5.1 Change in Capital Structure After the 2001 Banking Reform

Table below shows the sectoral changes in capital structure post-2001 regulations distinguishing between sectors by their dependence on bank financing prior to 2001. The regressions reported below follow Bertrand et al. (2007). In each regression, fixed effects are employed at firm and year level, as well as control variables for firm size (log of lagged sales), interaction term between post-2001 dummy (After) and the pre-reform level bank dependence in the firms industry. We also accounted for industry-specific linear time trends.

The findings reported in column 1 indicate that firms in more bank-dependent sectors experience an increase in their debt after reform. Bank debt increases by an average of approximately 4 percent for a firm in an industry that is at the 75th percentile of the pre-2001 banking dependence distribution compared to a firm in an industry that is at the 25th percentile of that distribution[10].

Column 3 and column 5 reveal that more bank dependent sectors decrease their equity finance and experience a slight increase in the use of trade credit after the 2001 banking reforms. Trade credit goes up on the average by approximately 3 percentage points for a firm in an industry that is at the 75th percentile of the pre-2001 banking dependence distribution compared to a firm in an industry that is at the 25th percentile of that distribution.

Column 7 indicates that cost of capital declines in more bank-dependent sectors after 2001. This reflects cost of the opaque and distorted regulatory environment and illegal lending before the 2001 banking reforms in Turkey.

Overall, firms in the more bank-dependent industries rely more on bank debt and trade credit after the banking reforms and less so on equity.

The results in the even columns check whether the changes in capital structure depend on firms operating performances. In an uncomplicated framework where the banks choose their borrowers more selectively after the banking reform, the worst performing banks would be affected the most and hence exhibit the largest changes in capital structure. Results from columns 2 and 4, indicate that poorly performing firms do indeed experience the largest change in the capital structure. However, the results indicate that their bank debt increases and their equity finance decreases. Firms financing behaviors might be driven by the changes in the demand for bank capital and not related to stricter monitoring and regulations. Alternatively, these relatively poorly performing firms might still have a better access under the new stricter screening of creditors compared to the era of wide spread illegal lending before 2001[11].

Results presented in column 8 point out that the cost of capital declines less for poorly performing firms, which would reflect the regulatory impact of the reforms.

[10] Pre-2001 banking dependence is 0.20 at the 25th percentile compared to 0.60 at the 75th percentile.

[11] Holding owners would by private banks, collect deposits by offering high interest rates and than would lend back to their own holding with low interest rates.

5.2 Changes in Capital Bank Lending

In Table 4 below, we report how firm-level bank debt changes according to firm-level changes in ROA before and after the 2001 banking reform. We observe significant changes in bank lending behavior following the reform.

6 Conclusion

In this paper, we offer evidence on the significant impact of banking reforms on firm level performance in an emerging market. We investigate the effect of banking reforms implemented in Turkey after the severe 2000/2001 crises. Our unique firm-level data which covers 7478 Turkish firms over the period of 1995-2007 allows us to explore the changes in firm behavior, firm performance and industry structure as a result of an extensive banking reform in 2001.

We report substantial changes in firm financing and bank lending practices after the bank reform. Firms in the more bank-dependent industries rely more on bank debt and trade credit after the banking reforms and less so on equity.

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