Journal of Business, Economics & Finance
Year: 2013 Volume: 2 Issue: 4

BASEL ACCORDS: LESSONS FOR TURKEY

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KEYWORDS

Basel accord, banking system, financial crisis, non-performing loans, Turkey.

ABSTRACT

In the last two decades, the world economies have experienced severe financial crises. After every crisis "new" financial regulations were offered to prevent an upcoming one. Basel Criteria have become the milestone of these regulations regarding the banking sectors where the problems and the solutions of the financial crises have emanated. However, it is observed that the Basel Accords have not met the required measures in preventing the world economy from entering a global financial crisis in 2008. Turkish banking sector has been implementing its ownmeasures which are tighter than the Basel criteria since the financial crisis it went through in 2001 and has been growing in spite of the last financial turmoil unlike its developed country counterparts. Thus our aim is to compare the banking sectors of Turkey and 10 other OECD countries for the period 2000-2008, and try to answer whether Turkey performs better regarding risk management and whether she should adopt the Basel criteria or not. To this end, we perform a panel data estimation making use of measures such as capital adequacy ratio, liquid reserves, and non-performing loans. The results indicate that in time Turkish banking sectorgot better in handlingrisk management, but that it is more prone to risk compared to OECD countries.

1. INTRODUCTION

The recent global crisis that started in 2008 has shed light on the vulnerability of the financial system vis-à-vis severe economic and financial crises, and showed the importance of risk control and serious monitoring and regulation of the financial system. Although risk control cannot provide full protection for the agents of the system, updating perception of new risks lowers the vulnerability against risks. Authorities modify and update the criteria of risk control after every market failure or a crisis in financial markets. However, precautions and risk control measures did not work out well as revealed by the recent crisis. Moreover, the recent crisis has brought about controversies about the inadequacy of the very detailed and complex financial regulations. It should be underlined that recent financial crisis has specifically affected banking systems in many countries which already apply the rules of such a regulation - Basel II Accord. This is the basis for the motivation of this study.

Basel II, published in 2004 and accepted in 2006, put under jurisdiction the calculation of capital provisions, issues about supervision and auditing, and obligations about public declarations. However, the 2008 crisis, especially events like the bankruptcy of Lehman Brothers, the

nationalization of institutions like Fannie Mae and Freddie Mac, the collapse of the banking sector in Iceland, and the fact that many countries had to give immense support to their banks revealed that precautions have not been duly taken against crises and that the existing system had serious flaws. To make the banking hence the financial system stronger against future crises, the need for reforms has gained importance. In 2010 the Basel committee announced a new set of reforms, namely Basel III Accord, with a press conference. It is basically aimed at expanding the scope of the obligations of banks and plans on bringing additional obligations in order to counterbalance the systemic risks. Although this new accord does not deviate from Basel II criteria significantly, it brings tighter obligations to banking sector. It is planned and expected that countries will adopt Basel III between 2013 and 2019.

The aim of this study is to see whether there are differences in managing risks between the Turkish banking sector which has been implementing her own regulations and the countries that already implement Basel II.[1] The reason and motivation for such a comparison is that during the recent crisis many banks which are regulated under Basel II have been affected substantially, whereas the banking sector in Turkey has not been affected and came out even stronger than before the crisis.[2] In order to measure the effect of Basel criteria, we examine and compare common banking ratios of Turkey with her own country specific measures and various countries which adopt Basel criteria hoping to contribute to the literature.

In the second section we provide a brief literature review to understand the criticisms about Basel II and hence the need for Basel III. Section three outlines the reasons of why Turkey's banking sector was not affected by the recent global crisis by providing a brief retrospective historical background. In the fourth section, we apply an empirical exercise through panel data estimation, andthe last section concludes.

2. WHY THE NEED FOR BASEL III?

Bank for International Settlements (BIS) defines Basel III as a comprehensive set of reform measures, developed by the Basel Committee on Banking Supervision, to strengthen the regulation, supervision and risk management of the banking sector. Basic aims of Basel III are to improve the banking sector's ability to absorb financial and economic shocks, improve risk management and corporate governance, strengthen banks' transparency and disclosures, and improve individual banks' endurance with micro regulations while improving system's endurance with macro regulations.

The previous accord, shortly called, Basel II was accepted by the European Union (EU) in 2006. After the recent global financial crisis of 2008, it became apparent that the regulations of Basel II were not sufficient to hinder the breakdown of the banking systems and that these measures needed to be revised and developed further. Hence, in the G-20 assembly in October 2009 it was

[1] AlthoughTurkey started to implement Basel II on 01.07.2012, it is not for certain that all of the banks started complying with it. Turkish banks still use some of the existing measures and criteria of obligations which are different than in Basel II. Moreover, this study covers the period of 2000 to 2009.

[2] Although this was the case for the banking sector, Turkish economy was hit hard by the crisis, even more than the countries in which the crisis began and spread. Turkey's GDP decreased by 4.8% in 2009, whereas the U.S.A.'s (origin of the crisis) GDP decreased by 3%.

decided to set a new accord that would increase the endurance of financial system to economic and financial shocks. As a result, on 12.09.2010, Basel Committee announced a new set of reforms which is shortly called Basel III.

To understand the weaknesses of Basel II and hence the need for Basel III in a more analytical framework, in this section, we provide a brief review of the literature regarding Basel II and III accords and the issues which are underlined within the scope of Basel. As Basel III is a new accord there are a limited number of studies about it. On the other hand, there is a vast literature on Basel II. Some are analysis of the three pillars of the accord, some study the effect of Basel accords on developing countries, some try to answer how macroeconomic variables determine default rates in an economy, and yet another branch studies the behavior of banks under Basel accords. Even though there are different approaches to studying Basel accords, a vast majority of the literature unanimously claims that Basel II was far from stabilizing financial markets. This is put forth and very well explained in an influential article by Danielsson et al. (2001). It is claimed that the proposed regulations fail to consider the fact that risk is endogenous and that value-at-risk can destabilize an economy and induce crashes when they would not otherwise occur. Moreover, statistical models used for forecasting risk have been proven to give inconsistent and biased forecasts, notably underestimating the joint downside risk of different assets. It is also claimed that the Basel Committee has chosen poor quality measures of risk when better risk measures are available. Furthermore, heavy reliance on credit rating agencies for the standard approach to credit risk is misguided as they have been shown to provide conflicting and inconsistent forecasts of individual clients' creditworthiness. They are unregulated and the quality of their risk estimates is largely unobservable.

Basel II was constructed on three pillars which were a new capital adequacy requirement, supervisory review and market discipline. However, these three pillars and Basel II have been analyzed and criticized by many, tackling the issue from different aspects. Decamps, Rochet and Roger (2004) interprets the first one as a closure threshold rather than a mean of influencing banks' asset allocation. They claim that market discipline can be used to reduce capital adequacy and that for an effective market discipline, banking supervisors must be protected from political interference. Similarly, Herring (2004) states that Basel II attempts to eliminate incentives for regulatory capital arbitrage and align capital regulation with best practices in credit risk management, and it describes an alternative approach, based on mandatory issues of subordinated debt, which makes use of market discipline to achieve these goals at much lower cost. Correspondingly, Rochet (2004) argues that banking authorities should keep close relationship with bankers, and supervisory resources must be used primarily to control the behavior of banks in distress instead of implementing complex regulations inasmuch as these complex regulations will at the end be bypassed by the most sophisticated banks. In line with Rochet (2004), Zicchino (2006) claims that under Basel II banks might not have the necessity to maintain the same level of capital during periods of high economic activity as under Basel I and banks would be more vulnerable to unexpected negative shocks and if the economy falls into a recession or experiences a weakening in its growth, it would be more likely for banks' capital constraints to be binding and thus for credit to be rationed. On the other hand,Scellato and Ughetto (2010) criticize Basel II on the ground that it has negative impact on lending conditions for the small and medium sized enterprises that are relatively younger after analyzing data of 168 Italian companies.

Some studies analyze the behavior of banks under Basel accords and criticize Basel II within this framework. Benink, Danielsson and Jonsson (2008) argue that Basel II regulations lead to a harmonization of bank behavior to maintain a special level of regulatory capital. Moreover Hermsen (2010) investigates the consequences of this bank behavior and claims that although

Basel II accord aims to ensure banks having enough regulatory capital to withstand periods in which they have extraordinary losses, the accord itself provokes such extraordinary events. In another study, Moreira (2010) claims that the model used by Basel II to estimate the capital required to cover credit losses has some drawbacks and misestimates the capital needed to cover unexpected losses.

Yet some study how macroeconomic variables and bank lending and default rates interact in an economy. Ali and Daly (2010) try to improve the understanding of the credit risk modeling at the country level under the framework of Basel II capital adequacy standards and they aim to investigate the interaction between the cyclical implications of aggregate defaults in an economy and the capital stock of a bank. They construct a macroeconomic credit model and perform a scenario analysis comparing two countries, Australia and the U.S.A. They conclude that the same set of macroeconomic variables present different default rates for the two countries and finds that compared to Australia, the U.S. economy is much more susceptible to adverse macroeconomic shocks.

As aforementioned, there are a limited number of studies about Basel III. One of them, by Blundell and Atkinson (2010) suggest that although Basel III have some very useful elements, like support for a leverage ratio, a capital buffer and the proposal to deal with procyclicality through dynamic provisioning based on expected losses, it also has some major concerns. The most important one is not dealing with the most fundamental regulatory problem. Promises that make up any financial system are not implemented equally in different countries and banks can shift them around by transforming risk buckets with derivatives to minimize their capital costs. Heid (2007) examines the problem of capital-induced lending cycles and theirprocyclical effect on the macro economy in greater detail. He finds that the capital buffer that bankshold on top of the required minimum capital plays a crucial role in mitigating the impact of the volatility of capital requirements. By using a different methodology Chamia and Cosimanob (2010) utilizea dynamic banking model to endogenize the capital decision andshow that banks are likely to hold capital above the regulatory minimumto avoid being constrained. They derive the option value ofholding capital, and show how this value is affected by monetarypolicy, level of economic activity, structure of the banking industry,and by changes in the level of regulatory capital.Gordy and Howells (2006) reexaminethe problem from the perspective of market discipline. They show that the marginal impact ofintroducing Basel II depends strongly on the extent to which market discipline leads banks to vary lendingstandards procyclically in the absence of binding regulation.

Last but not the least, some study the effects of Basel II on developing countries. Tonveronachi (2009) studies implications of Basel on developing countries and finds that effective implementation of Basel II in developing countries encounters many obstacles, perhaps the biggest being the problem of setting up supervisory authorities with necessary independence, resources and skills. It is concluded that implementation of Basel II will not achieve financial stability in countries that lack the necessary structural and macroeconomic preconditions. Griffith-Jones, Segoviano and Spratt (2002), examining the effects of Basel II on developing countries regarding diversification and portfolio effects, argue that the current proposals run the risk of causing an increase in cost and/or reduction in quantity of bank lending to developing countries as a consequence of the sharp increase in capital requirements for lending. Similarly, Reisen(2001) suggests that speculative grade borrowers, bulk of emerging and developing countries, would suffer from a dramatic rise in debt costs and heightened cyclicality of global bank credit as a result of Basel II. More specifically, Basel II would raise the volatility of private capital flows to speculative grade developing countries, and hence their vulnerability to currency crises. Mrak (2003) likewise concludes that implementation of the new capital adequacy standards is likely to

have negative results for emerging markets, such as increased costs and/or diminished levels of lending to the emerging countries, bias in favour of short-term lending, enhancement of competitive advantages of large international banks and increased procyclicality.

Barth, Caprio and Levine (2008) present a survey based on information on bank regulations in 142 countries including both developed and developing countries. The data do not suggest that countries have primarily reformed their bank regulations for the better over the last decade. Following Basel guidelines many countries strengthened capital regulations and official supervisory agencies, but existing evidence suggests that these reforms will not improve bank stability or efficiency.

All of these studies show that Basel II has its own weaknesses and drawbacks analyzed from different perspectives and that it is far from creating a well-functioning banking system both in developed and emerging economies. With an improved set of criteria such as Basel III the banking systems can be strengthened against future shocks and regulated in a better manner.

3. TURKISH BANKING SECTOR

Although the banking systems in the developed countries apply Basel II criteria, they went through a devastating experience quite similar to the episode Turkey went through in 2001. Even though Turkey does not yet fully implement Basel criteria in her banking system and applies her own regulations, the banking sector came out quite strong during the recent global financial crisis. Hence, it is important to look at the experience of the Turkish banking system in retrospect to understand why and how the banking sector was not affected by the recent crisis like her developed country counterparts and to see the differences in the risk management of the banking sectors.

3.1 1980s

Turkey was a closed economy before 1980 adopting import substitution industrialization (ISI) strategy. The Turkish economy, until 1980, can be characterized by restrictive monetary policy, contraction of monetary aggregates, foreign exchange shortage, declining production, and high inflation rates. Especially, excessive borrowing and imports created a substantial imbalance between exports and imports causing a huge external debt. At the end of 1970s Turkey went through a balance of payments crisis resulting from the collapse of the inward oriented ISI model development exacerbated by the externally generated oil price shocks of the period. All together, these forced the need to stabilize the economy and reduce inflation. This crisis led to a military coup in 1980, and the minority government of the time launched a structural adjustment program. With this program, Turkey changed her overall development strategy by adopting outward oriented policies aiming to achieve export led growth. Hence, Turkey began liberalizing her financial and trade sectors to transform into a free market economy.

A more in-depth look into the evolution of financial liberalization is essential to understand the banking system in Turkish economy. Until 1980s the financial sector had been repressed with imposed ceilings on deposits and lending rates resulting in negative real interest rates, credit rationing and subsidized credits, high banking sector concentration ratios and the absence of alternative capital markets leading to inefficient savings and investment decisions. The effort of the government to maximize private sector participation in economic activity and to minimize state intervention called for measures to enhance domestic savings and channel them into physical investment. These measures included decontrolling prices, restructuring the financial system through the establishment of money and capital markets, adopting a flexible exchange rate regime

and liberalizing interest rates. By liberalization of the foreign exchange deposits and loan interest rates in July 1980, the deepening of the financial sector started its progress. On the other hand, the increasing competition between banks and brokerage houses for offering high interest rates created higher costs. Hence, the breakdown of some of these banks and brokerage houses led to a financial crisisin 1982, necessitating the implementation of some regulation on interest rate on deposits by maintaining it positive in real terms until 1988 when they were once more freed. Some other developments including the establishment of Saving Deposit Insurance Fund (SDIF) in 1983 to protect savings deposits, launching of auctioning the Turkish government securities in 1985, the establishment of inter-bank money market, the Banks Act of 1985 announcing provisions for a minimum capital base for banks and capital adequacy ratio in line with the BIS, the reopening of Istanbul Stock Exchange in 1986, and the introduction of open market operations with government securities in 1987 catalyzed the financial deepening.

During the same period, as a part of the stabilization program towards liberalizing the financial sector, also the foreign exchange regime was liberalized. The depository banks were allowed to accept foreign exchange denominated deposit accounts from residents in 1984. Meanwhile, the internalization of foreign residents' transactions by permitting them to enter in the market of government securities and to make transfers allowed the export of capital. Moreover, in 1988 the exchange rate was allowed to be determined under free market conditions. Turkey completed her capital account liberalization by the full convertibility of Turkish Lira (TL) and elimination of controls on foreign capital flows in 1989.

As a result, liberalization process increased the number of banks in the sector from 43 in 1980 to 66 in 1990. Likewise, the number of foreign banks increased from 4 in 1980 to 23 in 1990 though their share of the market was only 3.5%. Banks became more transparent by reporting their non-performing loans and they were obliged to reserve provisions for failed loans. Moreover, control of external auditing of the banks was one of the new requirements.

3.2. 1990s and 2000s

As Turkey started following populist policies after 1987, inflation started to accelerate and was high at two digit levels all throughout the 90s due to excessive spending and expansionary monetary policies prompted by local and general elections. Although the financial liberalization boosted the development of the economy, it also increased the risk of facing international shocks. In 1990s it was easier to access international funding by Turkish banks which made them hold external open positions. Increasing financial instability and the changing balance sheets of the banking sector due to increased open short positions were realized through the end of 1980s, in addition to the increasing domestic debt, which dragged the economy into yet another crisis in 1994 elevating the inflation rate into three digit numbers around 100%. The results of 1994 crisis were severe and showed the fragility of the banking sector. After the crisis government accepted a full deposit system thereby encouraging banks to be irresponsible with their actions and, therefore, removing competition conditions in the market. Consequently, banks were offering high interest rates to cover debts and open positions. These developments resulted in taking over of 6 banks by the SDIF in 1999.

A new regulation was needed in order to strengthen and consolidate the banking sector. A new institution - Banking Regulation and Supervision Agency (BRSA) - with financial and administrative autonomy was established in order to provide the supervision and transparency in the banking sector with the act of 4491 in 1999. The mission of the agency has been to safeguard the rights and benefits of depositors and create the proper environment in which banks and financial institutions can operate with market discipline, in a healthy, efficient and globally

competitive manner, thus contributing to the achievement of the country's long-term economic growth and stability. With the establishment of the BRSA, the SDIF, previously under the authority of the Central Bank, started to operate under its administration. Later, with the enactment of Act No. 5020 in 2003, the management of the SDIF was separated from the management of the BRSA.

Nonetheless, macroeconomic instability continued until the late 1990s due to delayed stabilization of the governments. Turkey had not been able to overcome her structural problems such as fiscal imbalances and high inflation rates yet she managed to sustain a rather rapid economic growth in the latter half of the 1990s until the sharp downturn of 1998-1999. The standby agreement made with the IMF after the 1994 crisis was taken off track with the Russian crisis of 1998 and the massively destructive earthquake of 1999. Following these events, a disinflation program with a crawling peg system was adopted in 2000 together with the implementation of new laws concerning the banking sector. This program seemed to be performing well concerning the macro indicators, such as the falling inflation rate and the growing domestic production, until the end of 2000. In November 2000 and February 2001 Turkey was hit by two more financial crises, the latter having devastating effects both in the banking sector and on the overall economy.

After the crises in November 2000 and February 2001, the government launched aBanking Sector Restructuring andRehabilitation Program. The aim of the program was to enhance competition in the sector and make it more effective by strengthening the private banks, restructuring the state banks, providingresolution of the banks which were transferred to the SDIF through merger, sale and liquidation,and developing the legal and institutional framework to increase supervision in the sector. As the SDIF took overbanks,the number of banks decreased from 81 in 1999 to 54 in 2002.

In February 2003, under the leadership of BRSA, a coordination committee was formed with representatives of the Banks Association ofTurkey, to ensure implementation ofNew Capital Adequacy Agreement called *CAD*-3under the EU Legislation.This new framework was different then the past developments in the banking sector because control and regulation of the sector was assigned to an autonomous body and equity levels of the banks were increased. A close and transparent supervision and control mechanism was established. Banks which failed were consolidated and sold. State banks, also part of this reformation process, started to make profits instead of losses. All of these improvements led to increased profit in the sector calling attention of foreign direct investment. As a result foreign banks started to invest in Turkish banking system and many banks were sold or merged with foreign banks at high book or market values.

According to the data of Banking Association of Turkey, banking system has grown 3.5-fold since the end of 2002 to 2008, when its total bank assets stood at a mere 126.7 billion USD. Growth has run parallel with the robust performance of the Turkish economy, strength of the Turkish Lira, record foreign investment into the banking system, and abundance of global liquidity as the nation rebounded from the 2001 crisis. Since 1997, the SDIF took control of 23 financially tottering banks, which have since been shut down, merged with stronger banks, or privatized. A dozen other private banks have also merged with affiliate banks. Although the number of banks in total decreased after all the restructuring in the last two decades, both the number and the market share of foreign banks increased in Turkey. Today there are 45 banks in total of which 16 are foreign, and the market share of foreign banks increased from 5.4% in 2000 to 41% in 2012.

3.3. Capital Requirements and Risk Minimizing Regulations

Many lessons were learned with the 2001 crisis which led to the implementation of several reforms. Structural changes have been considered in the banking law to better align Turkey with EU practices and Basel standards. The BRSA has been gaining authority over non-bank financial

institutions and also issued its own set of accounting standards with the International Financial Reporting System since 2002.

The Financial Services Act of 5411 was enacted in 2005 to empower the banking system of Turkey. According to this act, significant improvements had already been made on the regulatory front. Revisions to the regulatory framework have focused on areas such as capital adequacy, risk management, and credit limits. Additional measures taken to strengthen commercial banks included limiting the net foreign open position, reducing bank loans to owners, applying international standards to loan-loss classification and provisioning, and requiring consolidated accounting. However, compliance with the regulations is as important as adopting the regulations themselves. The BRSA, which benefits from good credibility, needs to be proactive and continues to take strong action against banks that will not follow regulations.

According to article 45 of Banking Law (5411), capital adequacy means keeping adequate own funds against losses that could arise from the risks encountered. Banks shall be obliged to calculate, achieve, perpetuate and report capital adequacy ratio, which shall not be less than 8% within the framework of the regulation to be issued by the BRSA. The Board shall be authorized to increase the minimum capital adequacy ratio, to set different ratios for each bank and to revise the risk weights of assets that are based on participation accounts taking into consideration the banks' internal systems together with their asset and financial structures. The capital adequacy ratio which is determined to be 8% by law was increased to 12% as a target by the BRSA after 2006, whereas, this ratio is set at 6% according to Basel II accord.[3]However, the banking sector realized much higher capital adequacy ratios since the recent global crisis. It was 19% in 2010, 18% in 2011 and 16.6% in 2012. The measures concerning the capital adequacy ratio are tighter in the Turkish banking system compared to Basel criteria.

Moreover, all loans are classified into five groups, such as standard, closely monitored, limited collectability, doubtful and loss. All loans classified in the third category and below, and all receivables whose principal and interest has been delayed by more than 90 days are classified as non-performing loans (NPLs). If there are several loans to the same borrower at a bank they would be classified as NPLs if the borrower defaults on any one of these loans. Banks have to establish specific provisions of at least 20% for loans classified in the third group, 50% for the fourth group, and 100% for the fifth group.

4. ESTIMATION AND RESULTS

The aim and motivation of this paper is to compare the banking sectors of the countries which apply Basel Criteria and Turkey which has her own adopted criteria. There are 112 countries which adopted Basel II. In order to make a comparison OECD countries are taken as examples including Turkey. We apply a similar methodology as in the study of Ali and Daly (2010) which also compares credit defaults of the U.S.A. and Australia. In this paper we to measure the effect of various variables on non-performing loans. Non-performing loans are one of the best examples of risk measurement because they represent the amount of problem in the system of risk management and are used as a risk variable in many studies which measure the risk regarding Basel criteria.[4]

[3] According to Basel criteria Tier 1 capital ratio is formulated as Tier 1 capital/risk adjusted assets and is set at 6%. Total capital (Tier 1 and Tier 2) ratio is formulated as Tier 1 capital/average total consolidated assets and is set at 10%.

[4]See Chang (2006), Demirgüç-Kunt et al. (2006), Majnoni et al. (2004)

Non-performing loans create a multiplier effect in the system causing more defaults due to the deposit-credit system. In order to make a sound comparison we take ratio of the non-performing loans to total gross loans. We decompose Turkey and other countries by using a dummy variable. By this way, significance and direction of the dummy would let us compare Turkey and other countries which apply Basel criteria. We also control for total rate of bank liquid reserves to bank assets ratio and rate of bank capital to asset ratio. Regression is formulated as:

$$NPL = c + \beta_1 LR + \beta_2 BC + \beta_3 D + \varepsilon$$

where *NPL* is the ratio of non-performing loans to total gross loans, *LR* is the rate of bank liquid reserves to bank assets ratio, *BC* is the rate of bank capital to asset ratio, *D* is the country dummy for Turkey, and ε is the error term.

Since as banks have more liquid reserves they are able to lend more loans which increases the possibility of defaults on loans, we expect LR to have a positive coefficient. BC which basically shows the capital adequacy is expected to have a negative coefficient because as capital adequacy increases the rate of non-performing loans should decrease. Similarly, we expect D to have a negative coefficient. The reason is that Turkey has more strict regulations compared to Basel II criteria, therefore, the country dummy which represents Turkey's LR and BC would affect the non-performing loans negatively.

The independent variables are chosen based on the three pillars of Basel criteria. Data on all variables are annual and are taken from the BIS for 2000-2008 period. Although at the beginning we tried to include 20 countries in the regression, due to lack of data 9 countries were omitted and country set was established among 11 countries, which are all OECD countries: Australia, Canada, Czech Republic, Estonia, Hungary, Israel, Japan, Mexico, Switzerland, Turkey and the U.S.A.

Table 1 shows the averages of the variables used in our model in addition to domestic credit provided by the banking sector. Although this variable is not used in our estimation, we provided the average of it to show that while Turkish banking sector implements higher risk managementand provides lower domestic credit compared to OECD countries in the period under study, the percentage of non-performing loans is much higher.[5] This makes it clear why we try to answer the question of whether Turkey should adopt Basel criteria or not.

Table 1: Averages of Selected Variables

	Domestic Credit (% of GDP)	LR (%)	BC (%)	NPL (%)
Turkey	47,03	8,91	11,39	9,38
OECD (Sample Countries)	144,26	4,16	6,05	2,62

Because panel data series may have unit roots and that regressing non-stationary series on each other is bound to yield spurious regression results, we first investigated the stationarity and order

[5] The graphs for the selected variables of each country can be seen in Table1a in the Appendix.

of integration of the variables by a panel unit root test. TheIm, Pesaran and Shin (IPS) unit root test is adopted for this purpose. The results of the IPS panel unit root test at level indicates that all variables are *I*(0) in the constant of the panel unit root regression, hence the variables are stationary. We then applied Hausman test to check whether there is endogeneity, and we accepted the null hypothesis of exogeneity concluding that we can use random effects model. The Honda LM test allows us to identify whether one way or two way random effects model must be used. We accepted the null hypothesis of no random time effects and hence estimated a one way random effects model with individual effects. We took care of existingheteroskedasticity and autocorrelation via using White period standard errors and covariance.[6] Since we have a dummy variable and we estimate a one way random effects model, Wallace-Hussain estimator is used. The results of the estimation are given in Table 2.

Table 2: Random Effects Model (dependent variable is NPL)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	5.815895	2.091362	2.780913	0.0065
LR**	0.497295	0.264618	1.879292	0.0633
BC**	-0.741090	0.336515	-2.202251	0.0301
D***	7.571675	1.247953	6.067275	0.0000

*** indicates % 0,01 probability

** indicates % 0,05 probability

Results of the panel regression indicate that rate of bank liquid reserves to bank assets ratio, rate of bank capital to asset ratio and dummy variable are significant to explain the changes in non-performing loans to total gross loans. All of the variables except the dummy variable have the expected signs. The sign and significance level of the dummy variable is the core of this paper. The positive coefficient of D reflects that Turkey's more strict regulations increase the level of risk which is indirectly calculated by NPLs when she is compared to other countries in this study.

In the light of these results we can conclude that country specific measures of the banking sector create a difference. Thus adopting her own criteria did not put Turkey in a better and safer place among the OECD countries during the period under study regarding risk management. Although Turkey made incredible restructuring in her banking system during the last decade and manages the level of risk in the banking sector better relatively to past, and her banking sector was not affected by the recent financial crisis, she does not perform better than the other countries in the regression.

[6]The results can be provided upon request.

5.CONCLUSION

In this study we try to understand whether Turkish banking system creates a difference about managing the risk in the framework of Basel criteria among the OECD countries and whether she should adopt Basel criteria or not. As it is mentioned in the third section after the financial crisis of 2001 in Turkey, the BRSA created new measures for the banking sector based on Basel Criteria. The government took over the banks which were in bankruptcy and strengthened theratio of the banks by putting capital and establishing a transparent and sound supervision and control system. The criteria of the BRSA for Turkish banking sector were higher than the Basel Criteria.For instance, rate of bank capital to asset ratio (capital adequacy) is higher than the OECD countries.As this ratio keeps high it creates an extra cost for banks, but it also creates confidence and decreases the level of the total risk in the sector. By the help of the regulations and country specific measures a new risk culture has been formed in the sector. Even though the minimum bank capital to asset ratio is declared as 12% by the BRSA, the banking sector, without any enforcement, kept this ratio around 18% for last three years after the global financial crisis hit the world in 2008. This is a simple but important risk perception and application culture in Turkish banking sector.

In order to see whether the effects of the structural changes in banking sector of Turkey would create a positive difference for managing risk for Turkey among OECD countries we performed a panel data estimation and estimated the effects of risk management on non-performing loans to total gross loans. Rate of bank liquid reserves to bank assets ratio, rate of bank capital to asset ratio and country dummy (indicating Turkey), are taken as independent variables. We find all variables to be significant. Results of the regression indicate that Turkey is not better than the countries in the regression in order to manage her risk in the banking sector.

This study displays that Turkey has taken the necessary lessons after she faced a severe financial crisis but she did not perform as good as OECD countries which adopt Basel Criteria. Although Turkey's banking sector was not affected by the recent global financial crisis, and moreover it came out quite strong from the crisis, the analysis undertaken in this study implies that Turkey should adopt and implement Basel criteria to further increase the endurance of the banking sector regarding the vulnerability to risk.

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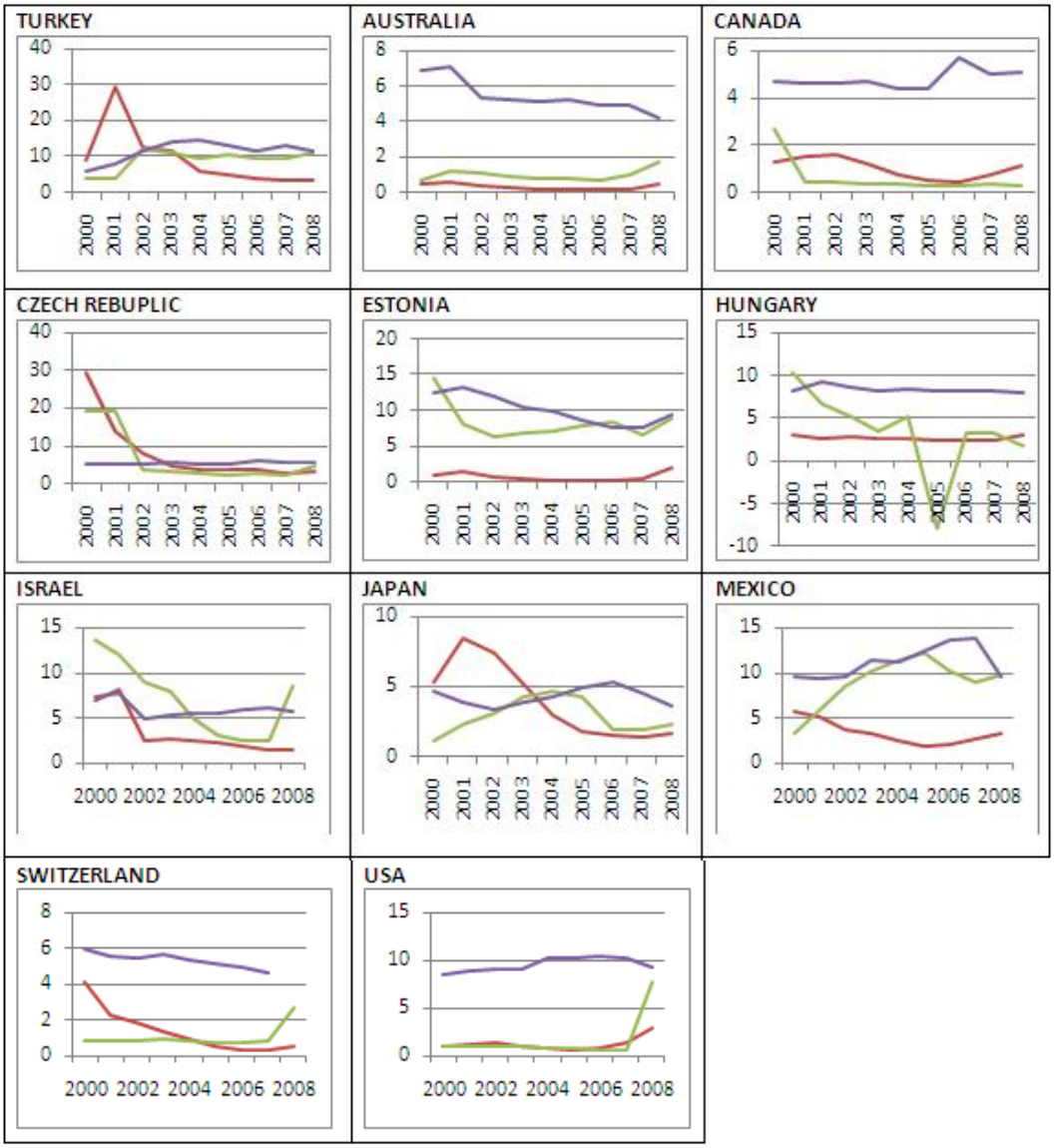
Appendix

Table 1a: Graphs of Selected Variables (Percentages) for Sample Countries, 2000-2008



Red Line: Non-Performing loans to total gross loans (NPL), Green Line: Rate of bank liquid reserves to bank assets ratio (LR), Purple Line:Rate of bank capital to asset ratio (BC)