

BANKING RISKS AND EFFECTIVENESS OF BANK LENDING CHANNEL IN TURKEY

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Abstract

The paper provides a descriptive analysis of the Turkish banking system, its risk structure, and the possible effects of the liquidity, interest, and currency risks on their loan and securities portfolios. Focusing on the pre-crisis period, the paper investigates whether the Turkish banking system has been deteriorated and become vulnerable to tight monetary policy shocks or capital outflows because of the maturity and currency mismatches. It is concluded that the main assumptions of the bank lending theory, given by Bernanke and Blinder (1988), are likely to be valid for Turkey when banks' balance sheets become fragile due to risk-inducing monetary policies in the system.

Keywords: Bank lending channel, monetary policy, banking risks, Turkey.

Özet

Bu makale Türk Bankacılık sistemi ve sistemin risk yapısı ile bu risklerden likitide, faiz ve kur risklerinin, bankaların kredi ve menkul değerler portföy kararları üzerindeki olası etkilerinin açıklayıcı bir analizini yapmaktadır. Makale, krizler öncesi dönemi inceleyerek, bu bağlamda Türk bankacılık sistemindeki vade ve kur uyumsuzluğu halinde sıkı para politikası sonucunda sermaye kayıplarına zafiyeti olup olmadığını ve sistemin böylece bozulup bozulamayacağını araştırır. Çalışmada, sistemde riske neden olacak para politikaları olması durumunda Türkiye'de, Bernanke ve Blinder (1988) tarafından ortaya atılan, banka borç verme teorisinin ana varsayımlarının geçerli olabileceği sonucuna varılmıştır.

Anahtar kelimeler: Kredi kanalı, para politikası, bankacılık riskleri, Türkiye

1. INTRODUCTION

Bank balance sheet mismatches have played an important role in leading to banking and currency crises. Some differential characteristics, such as asset size, liquidity strength, and capital structure, also provide a rationale for the existence of a bank lending channel of monetary transmission. Although empirical studies of the bank lending channel have mainly investigated countries that are less likely to experience a banking and currency crisis, it is plausible that the bank lending

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channel could apply to countries that are prone to banking crisis. The validity of this assumption first requires identifying if existing risk factors in bank balance sheets that lead to banking and currency crisis also create an environment in which monetary policy is likely to work through the bank lending channel.

As explored by Bernanke and Blinder (1988), “bank lending theory” assumes that loans and securities are imperfect substitutes, in contrast to the traditional money channel. They argue that open market sales, which represent the tight money controlled by the Central bank, drain reserves from banking system and would, in turn, limit the supply of loans by reducing banks access to loanable funds. This effect implies that banks are not able to easily substitute their lost deposits with alternative liability sources resulting from drains in reserves. In this context, the response of bank loan supply to the monetary policy is independent of the traditional money channel in which the response is observed just in the liability side of the banks such as deposit creation. While the monetary contraction and interest rate increases would reduce spending directly, Bernanke and Blinder (1988) show that it could also reduce spending indirectly by shrinking bank loan supply, in bank lending theory. A monetary contraction will reduce deposits on the liability side of banks’ balance sheets. Banks will be unwilling to absorb deposit losses completely by reducing security holdings, assuming that loans and securities are imperfect substitutes on the asset side. Bernanke and Blinder show that in this case a monetary contraction will also reduce the supply of loans.

If the immediate origins of a financial crisis lie in the banking system, as they did in the Turkish crisis, it is interesting to examine if there would be a relationship between these origins and the factors that cause the bank lending channel to be operative.

Banking sector fragility in Turkish banks such as maturity and currency mismatches and credit and liquidity risks accumulation which have been discussed as causes of recent (2000-2001) financial and banking crises have been analyzed in some earlier studies. Özatay and Sak (2002: 10-18) clearly present the mechanics of the crisis process by analyzing the structural characteristics of the Turkish banking system and by providing facts regarding the risk accumulation in the banking system in the form of increases in currency and maturity mismatches, and in non-performing loans, all of which make banks highly vulnerable to capital reversals before crisis. They also attribute the high Public Sector Borrowing Requirement (PSBR) and its financing method through government securities, which commercial banks demand, as roots of the fragility of the banking system. These studies, however, have not analyzed possible effects of risks on the supply of loanable funds from commercial banks in the context of the bank lending channel.

This paper, therefore, has three main objectives. First, it gives some information related to the structure of Turkish banking system and a brief historical survey of its underlying monetary policy. Second, it presents an analysis of the

stylized facts explaining banking crisis, such as liquidity, interest, and foreign exchange risks. Finally, it analyzes the relationship between these risks and the assumptions necessary for the bank lending channel to be relevant in Turkey. In this manner, this paper discusses how the banking risks lead to a fragile banking environment and the validity of the main assumptions of bank lending theory. This background may provide a reference for the bank lending implications to be empirically tested.

The rest of the paper is organized as follows. The next section presents the structure of the Turkish banking sector, especially in terms of the banking risks they bear in their balance sheets. It also discusses the monetary policy conducted after the 1994 financial crisis and how these policies resulted in accumulating banking risks that are presumably related to banking and currency crises. Section 3 discusses how banks' balance sheets became vulnerable to monetary policy shocks because of the existence of risks in their balance sheets. This section also considers whether the main assumptions of the bank lending channel are likely to be valid after banks' balance sheets become fragile due to risk-inducing monetary policies. The final section concludes.

2. THE TURKISH BANKING SECTOR

2.1. The Risk Structure of the Turkish Banks Prior to the Crisis Period

Although Turkish banks are exposed to a number of banking risks, including credit, liquidity, interest rate, and foreign exchange risk, only three major risk structures for Turkish banks will be included into the analysis in this paper. These are liquidity, interest rate and currency risks. These risks are the most pronounced and often blamed for the recent liquidity (banking) and currency crises in November 2000 and February 2001. Former Governor of the Central Bank of the Republic of Turkey, Ercel (1999: 3-4) summarized these risks that the Turkish banks mostly face;

Liquidity Risk arises when Turkish bank depositors prefer to hold short-term deposits on the liability side of banks' balance sheets while borrowers, in an environment of high inflation expectations and uncertainty, prefer longer term loans on banks' asset side. This structure leads to a mismatch in the maturity structures of the assets and liabilities that eventually creates liquidity risk.

Interest rate risk occurs when the maturity of interest-sensitive liabilities is relatively shorter than the maturity of interest-sensitive assets in the balance sheets. This implies that banks have shorter external funds than the maturity of assets. This mismatch in intervals between assets and liabilities makes banks' assets and liabilities more sensitive to changes in interest rates.

Foreign exchange risk involves the difference between the Turkish lira and foreign exchange interest rates. In other words, the difference between the domestic interest rate and the nominal depreciation of the Turkish lira causes banks to face foreign exchange risk. This is exactly what was observed after the November crisis, in which there has been a difference between the level of interest rates and the pre-announced rate of depreciation of the Turkish lira, which eventually led to a collapsing fixed exchange rate regime and the realization of currency risk in the balance sheets of banks having higher currency mismatches. Since foreign exchange denominated external finance in their liabilities is used to invest in Turkish lira-denominated assets (mostly in government securities), banks were in a high foreign exchange risk environment. A typical type of foreign exchange risk that the Turkish Bank has faced since 1985 involves taking short positions for foreign exchange (Ercel, 1999: 3-4).

When it is assumed that liquidity drains from the banking (financial) system should cause credit or bank lending channel to operate, it should go to the roots of this liquidity crushes. In Turkey, monetary contractions, as well as international capital outflows, should play a crucial role in determining the liquidity volume in the system (Boratav, and Yeldan, 2001: 13-24, Eichengreen, 2001: 5-14, Alper and Saglam, 2001: 13, Özatay and Sak, 2002: 25). Thus, the relation between monetary policy actions by the central bank and the movements in foreign capital need to be well understood and will be discussed in the next section.

2.2. The Monetary Policies Conducted After 1994 Financial Crisis and Risk Accumulation of Turkish Banks

In order to understand why the Central Bank of the Republic of Turkey (CBRT) performed monetary policy in the period of 1996-2000 that led to commercial banks accumulating unhedged interest and currency risks in their balance sheets, the lessons drawn by the CBRT from its previous experiences after the 1994 Currency Crisis and alternative monetary policy accordingly should be highlighted first.¹

The main underlying reason behind the crisis of 1994 was the uncontrollable growth of the domestic debt stock. Growing budget deficits and PSBR, following the capital account liberalization from 1989 to 1994, produced an overvalued domestic currency. Along with extensive short-term borrowing of commercial

¹ The monetary policies by the Central Bank of the Republic of Turkey (CBRT) mentioned throughout the dissertation have been cited from the Annual Reports of CBRT and speeches of the presidents of the bank.

banks, these factors set the weak economic background prior to the crisis (Celasun, 1998: 5-10).

Özatay (2000:18-19) and Celasun (1998: 8) argue that, from the end of 1993, the financial mechanism of public deficit, domestic debt, that had been in use for more than a decade, had been given up and switched to large cash advances from the CBRT in which the Treasury paid almost no interest on up to 15% of budget expenditures. Several auctions of short-term maturity domestic debt (Treasury bills) were canceled for the sake of lowering short-term interest rates and changing the maturity structure of the government debt along with Central Bank resources (were given to the order of Treasury). Investors in domestic public debt instruments switched to foreign currency-denominated assets.

Meanwhile, there were some negative macroeconomic fundamentals including very high public sector deficits and debt relative to GNP ratios. The existence of a vulnerable banking sector may prevent policy-makers from taking necessary actions to increase interest rates to defend their currencies. High offshore borrowing in foreign currencies was channeled into domestic currency assets by commercial banks. The efforts of banks to close open positions led to capital outflows and the central bank heavily intervened in the foreign exchange market, selling foreign currency to the commercial banks at relatively low rates, which eventually resulted in the loss of international reserves. These shocks triggered a crisis, and the Turkish lira depreciated by almost 70 % against the U.S. dollar in the first quarter of 1994 (Özatay, 2000: 10-14).

2.2.1. What lessons did The Central Bank draw from the 1994 financial crisis to be used in conducting monetary policies for the next periods?

As Celasun (1998) pointed out, the policy of interventions in the domestic borrowing market and accordingly declining maturity of the domestic public debt was a poor idea when an economy has a large and rising PSBR and lower maturity of debt stock, and its financing heavily depends on domestic credit expansion at a time of high currency substitution and high inflationary expectations. The lesson drawn from this experience in 1994 financial crisis by the Central Bank is the idea that the crisis was the natural outcome of the interventions in the domestic borrowing market, which resulted in having a low and steadily declining average maturity of the debt stock. This declining stock maturity can be taken as a measure of the vulnerability to policy shocks and as a good indicator of forthcoming problems (Celasun, 1998: 24).

The lesson drawn from choosing financial method of high PSBR and accordingly implemented monetary policies mainly shaped the policies in the

period from 1996 to 2000. These policies basically redirected the financing of domestic debt from the Central Bank to commercial banks. Monetary policies also convinced commercial banks to hold higher average maturities of domestic debt instruments relative to the pre-crisis period.

During the 1996-1997 years, the Turkish Monetary Authority, CBRT, basically aimed at stabilizing rapid short-term price fluctuations and reducing uncertainties in financial markets. To do so, the Central Bank tried to reduce price fluctuations in both the short-term Turkish lira and foreign currency markets and to establish an inflation expectation adaptive to foreign currency fluctuations. On the other hand, the volatility in interbank money market (overnight) rates was being reduced, so that this interest rate would be a good reference for the banks to maintain stability of prices and market uncertainties.

The monetary policies starting from 1996, therefore, also implicitly aimed at convincing the commercial banks to finance through high-rated treasury securities and government bonds. The public debt instruments used to finance domestic debt are mainly short term treasury bills whose maturities are less than one year and long term-government bonds that have a maturity structure of more than one year. Since 1997, the ratio of short-term securities to longer-term government bonds that commercial banks had been holding in their assets started to decline gradually from about 1 in 1997:Q1 to 0.04 in 2001:Q2 (see Table 2). Commercial banks with this kind of portfolio structure were mainly motivated by both high-yield profits from these securities and by the consequences of monetary policy conducted given period while the domestic debt stock was still increasing. In order to encourage commercial banks to purchase public debt instruments, the CBRT conducted a monetary policy to convince banks that they were operating in an environment secure from interest and currency risks accumulated in their balance sheets.

Since monetary policy was announced for the purpose of stabilizing financial markets rather than controlling inflation, tight monetary policy was more pronounced until April 1997 and continued until the end of 1999 with the effects of Russian financial crisis in August 1998. In order to maintain price stability, therefore, the central bank conducted an exchange rate policy that would be in accordance with the expected inflation rate. By this way of price stability, the Central Bank minimized the volatility in the real exchange rates. On the other hand, the overnight interbank interest rates are not allowed to fluctuate by decreasing the volatility of the rates during the same period (Ercel, 1998: 18. paragraph).² The Central Bank, in accordance with the targets, used monetary

² Gazi Ercel, the former president of the Central Bank, summarized the exchange rate-based monetary policy:

"... the exchange rate basket (1 U.S. dollar and 1.5 Deutsche marks) will be increased steadily and in parallel with the inflation rate. The stability of exchange rate policy enables

policy instruments, which are mainly foreign exchange market operations at inter-bank foreign exchange and foreign currency markets, repo and reverse repo transactions, outright purchases/sales at open market, and inter-bank money market operations at inter-bank money market. The Central Bank aimed to keep “reserve money” within limits and to try to minimize fluctuations in exchange and interest rates, while adjusting the liquidity. Thus, reserve money was the operational target of the bank, by using open market operations, the inter-bank money market, and the foreign exchange market to maintain stability.³

Indeed, the effects of such monetary policy have been observed in the behavior of overnight interest rates and foreign exchange rates during the period from 1996 to 1999. Volatility of overnight interest rates between 1996 and 1999 was significantly less than that of period between 1994 and 1996 (Sak, 2000: 6).⁴

2.2.2. Consequences of monetary policies on banking risks: Interest Rate and Liquidity Risk

Özatay and Sak (2002: 13) argue that, as a measurement of interest rate risk, the maturity mismatch has been a structural feature of the banking system since domestic banks were only able to borrow mostly short term in the domestic currency and invested these liabilities on longer-term assets in the form of relatively longer-term government bonds. The long-term government bonds were financed by shorter-term borrowing. Therefore, the ratios of assets to liabilities with matching maturities declined over time since the liabilities were more of a short-term nature while the maturities of assets were longer.

As discussed in Section 2.2.1 and shown in Table 2, Turkish commercial banks started to finance the large fraction of the domestic debt through both short and long-term securities between 1996 and 2001. Moreover, the maturity structure of the securities that banks hold in their assets tends to gradually shorten, while both domestic debt stock and banks’ ratios of short-term securities to their total

the market to have a clear view of the increase in the monthly exchange rate basket by following the rates announced for surrender requirements. This offers the markets a parameter to help them shape their expectations accurately. In short, the exchange rate basket and the interest rates, which are determined in accordance with this basket provide an important packet of information concerning the equilibrium of the nominal variables in the economy.” (Gazi Ercel, April 1, 1998: 14. paragraph).

³ See CBRT, 1997 Annual report for further details.

⁴ I would like to thank to Dr. Güven Sak for sending his report. Sak (2000: 6) compares the volatility of overnight interest rates between the two periods along with the volatility of changes in foreign exchange rates within the same periods. For example the volatility of interest rates were 0.35 before 1996 while it was 0.09 between 1996-1999.

assets were increasing, during this period. This obviously led to maturity mismatches between interest bearing assets and interest bearing liabilities of the banking system.

As Özatay and Sak (2002: 14) discussed, along with vulnerabilities on the asset side of the commercial state banks' balance sheets such as financing high volume of duty losses through short-term domestic liabilities, on the liability side of commercial private banks' balance sheets, Repos and short-term domestic deposits, as well as foreign exchange (FX) credits and deposits are basically used to finance these assets. The ratio of Repos to Turkish lira deposits was high while the maturity of Repos was much shorter than maturity of three-month domestic deposits. The reason why banks accumulated interest rate risks in their balance sheets was the monetary policy implemented between 1996-1999, which aimed at providing banks' confidence to continue funding the government. As described in the section that gives the details for monetary policy implemented in this period, the volatility of overnight interest rates declined as a result of the monetary policy and banks became more precise regarding to forecast their external cost of borrowing short-term liabilities such as, Repos and short term deposits, which led to increase the maturity mismatches in their balance sheets.

2.2.3. Consequences of monetary policies on banking risks: Currency Risk

On the other hand, as an alternative source of finance to government securities, commercial banks increased their foreign exchange borrowing with the effect of monetary policy conducted in the same period. Therefore, their unhedged net open foreign exchange exposures have significantly increased. Since the banking system has short foreign exchange position, a loss of bank capital is more likely to occur if the domestic currency depreciates. Finally, this has been a potential danger that destroys the capital of banks with unhedged foreign exchange exposure. As discussed by Özatay and Sak (2002: 13) in their paper, borrowing necessity by domestic banks in foreign-denominated liability sources was also the result of the fact that they were not able to borrow in domestic currency within a long-lasting high inflation period.⁵

By implementing the monetary policy that aimed at preventing price fluctuations, the CBRT conducted an exchange rate policy that would be in accordance with the expected inflation rate. By this type of Central Bank's exchange rate policy, as discussed earlier, the commercial banks were encouraged to purchase domestic public debt instruments, i.e., securities, to fund the government budget deficit. The other reason for conducting a policy that prevented

⁵ This case also shown for developing countries by See Goldfajn, I. and R. Rigobon (2000).

the domestic currency from depreciating was to keep exchange rates in a band that reflects a crawling peg exchange regime and keep inflation rates low and stable. The certainty in the expected exchange rate depreciation made banks able to forecast their external finance cost from foreign exchange borrowings and created a safer environment to ease the purchase of securities.

Turkey's real exchange rate was appreciated by about 10 % between January 1997 and February 2001 (Eichengreen, 2001: 3), while the volatilities of exchange rates and inflation were almost equal to about 50 % during 1996-1999⁶. Therefore, the spread between domestic interest rate and the nominal depreciation of the Turkish lira encouraged banks to place foreign currency funds in Turkish lira funds and hence open their foreign exchange positions.

3. THE THEORETICAL BACKGROUND FOR THE ASSUMPTIONS OF BANK LENDING CHANNEL IN TURKISH FINANCIAL SYSTEM

I am going to answer the question of whether the bank lending channel is relevant for the Turkish economy by examining the assumptions of the bank lending theory given by Bernanke and Blinder (1988: 435-439). Furthermore, the possible effects of banking risks taken and accumulated by banks in their balance sheets during the last decade in Turkey will be introduced in to this examination in order to make a link between these banking risks and their effect on the environment in which the supply of loans by commercial banks are likely to be more sensitive to monetary policy. In this context, the analysis in this section tries to answer the following questions:

- a. Are Turkish banks dominant or/and unique sources of intermediated credit?
- b. Can the Central Bank directly influence the volume of credit by adjusting banks reserves? Can Turkish monetary policy significantly affect the supply of bank loans?
- c. Are loans and securities imperfect substitutes for both borrowers and banks?⁷ Can Turkish banks easily replace lost deposits (if any) as a result of monetary contraction with alternative source of funds?

⁶ Sak (2000: 8) measures the volatility of nominal exchange rate (U.S. Dollar) about 27% and of inflation rate about 33% before 1996 and the volatility of nominal exchange rate (U.S. Dollar) about 52% and of inflation rate about 50% between 1996 and 1999.

⁷ Similar analysis has been made by Inan (2001) in order to investigate whether a credit channel is operative in Turkey. Inan (2001: 17) concluded that Turkish financial system has distinctive environment, in which a credit channel, in general, might work.

3.1. Are Turkish Banks Dominant or Unique Sources of Intermediated Credit?

If banks rely on mostly reservable demand deposits as an important source of funds, contractionary monetary policy, by reducing the aggregate volume of bank reserves, will reduce the availability of bank loans to the real economy. Because a significant number of firms and households rely heavily or exclusively on bank financing, they cannot easily switch to alternative forms of external financing and a reduction in loan supply will depress aggregate spending.

As in most developing countries, domestic credit in Turkey is exclusively dependent on the lending capacity of Turkish banking system since other important sources of financing such as stock exchange and alternative non-financial credit institutes are primitive and hence unimportant (İnan, 2001: 10).

The most important financial sources used by the firms in Turkey are basically bank loans, commercial bills, and asset shares (equity) of firms in the stock market. Among them, the most important financial tool in the last decade was bank loans. The second most commonly used source was equity. As shown in Table 3, during the last decade, the percentage of bank credits used by private agents was about 70-85% while the ratio of equity in the stock market was about 20-25%. The other financial tools used by the firms such as commercial paper, are trivial.

As mentioned earlier, higher PBSR and higher real interest rates make financial markets vulnerable to shocks, firms, as a second source then attempt to use their own equity. However, as observed in developed countries, the importance of commercial bills are trivial because of the inability of firms to compete against the higher returns of government securities that simultaneously attract banks to yield high profits for the sake of accumulating interest rate and liquidity risks in their balance sheets. On the other hand, bank loans have a dominant role in financing of the private firms as Table 3 indicated, which could be shown as one of the required assumptions of credit channel, as well as money channel.

3.2. Can Turkish Monetary Policy Significantly Affect the Supply of Bank Loans?

In this section, whether the Turkish monetary policy affects real economy through the credit channel of monetary transmission mechanism, in general, will be investigated. As an independent transmission channel from the money view, the credit channel of monetary transmission mechanism works if banks reduce their

supply of loans in response to a squeezing of bank reserves by contractionary monetary policy. In order to discover the existence of a credit channel, the first thing to analyze is to determine the factors draining bank reserves. These could be either monetary policy actions that reduce reserves directly or long-term monetary policies that lead to liquidity constraints facing banks, due to capital outflows.

According to the textbook argument, in a small open economy with a predetermined exchange rate regime, unrestricted capital movements, and perfect currency substitution, a central bank has no room to perform independent monetary policy actions since liquidity volume exposed to the financial market is determined by the need to peg nominal exchange rates and hence targeted inflation rates. However, the existence of imperfect substitution of domestic and foreign assets, due to some capital restrictions and target band of exchange rates, gives the domestic monetary authority some room to conduct monetary policy where there is a spread between domestic interest rates and inflation target (the slope of the exchange rate band) which causes a capital inflow and overvalues the domestic exchange rate.

In such a case, if capital movements are intermediated mostly by banks and monetary policy leads to capital outflow that in turn drains reserve in banking system, then the effects of monetary policy tools conducted by the central bank should be relevant even in case of small-open economy. If this is the case, when the central bank does not want to ease the net domestic assets for fear of fuelling foreign exchange outflow, the financial system suffers from the severe illiquidity that increases the cost of external finance.

3.2.1. Can Turkish Banks easily replace lost deposits as a result of monetary contraction with alternative source of funds?

If a bank lending channel is operative in an given economy, when the central bank tightens monetary policy by squeezing bank reserves, it should generate a corresponding reduction in the supply of bank loans. As a response to a monetary and hence liquidity tightening, banks have two ways to offset reserve drains and accordingly to prevent their loan supply from declining. On the liability side, the composition of its liabilities should be changed by issuing instruments not subject to a reserve requirement and government insurance. That is, these liabilities should be both nonreservable and noninsurable. These instruments should be adequate and in a good quality. For a financial system subject to analysis in terms of the existence of a bank lending channel, the health of managed liabilities is crucial for determining bank lending channel.

This analysis would be interesting if an economy's financial system did not have large CDs (Certificate of Deposits) or had only such instruments as very short-term inter-bank loans and foreign borrowing, which are also subject to interest rate and currency risks. This issue will be more crucial if the risks that banks face and accumulate in their balance sheets stem from the necessity to finance the government through securities (bonds). If the latter is true and effective, the second option that banks have to prevent loan supply from draining reserves would automatically disappear since they would not be reluctant to sell securities.

As banks finance themselves with nondeposit sources of external finance as a response to tightening monetary policy and bank reserves, the Modigliani and Miller (1958: 261-297) theorem still holds and bank lending channel is less likely to work. However, this argument was mostly applied for banking systems, whose managed liabilities are large denomination CDs, medium-term notes, or some other securities, which are mostly denominated domestic currency and free of currency risk. Even though managed liabilities, which are supposed to frictionlessly offset shocks to banks' deposit drains, include some foreign exchange non-deposit liabilities, if these banks operate in an economy that is likely to suffer from large devaluation risks, such as experienced in developing countries, the financing reserve drains with any kind of nondeposit liabilities reduce the possibility of the bank lending channel. Thus, type and risk structure of nondeposit external finance of banks in the event of draining reserves should be re-examined in the light of currency risks banks face if they mostly finance themselves with nondeposit liabilities that potentially bear currency risk. In this case, there would be a real skepticism of whether these kinds of sources of external finance could really make up the shortfall in reserve and deposit drains in the event of contractionary monetary policy.

This case may be applicable to the Turkish banks. As seen in Table 1, for the whole system, deposits, banks borrowed, and equities, consequently, are most important financing sources of total assets. However the ratio of these liabilities to total assets was higher for large banks than small banks. Moreover, among these liabilities, deposit ratios are not high enough, though. As an average, the ratio of deposits to total assets is 58.2% for small banks and 63.8% for large banks (61% for whole system).

On the other hand, for a more healthy external finance source, the combination of deposits and equities, the difference between large and small banks has widened by 10% (63.3% for small, 73.4% for large banks). Only by including borrowings from other banks does the financing ratio of total assets for both sized banks, slightly favor for small banks (92.4% for small, 88.2% for large banks). This fact obviously shows that small banks were not as successful in collecting deposits as large banks were. However, given inadequate liabilities, they were able to replace their lost deposits with an alternative source of external financing. Since

the ratio of foreign exchange-denominated borrowing to total bank borrowing is very high, banks are subject to huge currency risk and faced with the danger of losing their capital in cases of domestic currency devaluation.⁸ These type of external finance looks well in good times in terms of getting profits from high interest government securities, if they invest. Taking into account the recent increase in very short term Repo financing, all off-deposit financing of small banks reflects significant currency, interest rate, and liquidity risks in their balance sheets. This fact could also be shown as banks are not indifferent at the margin between issuing insured and reservable deposits and off-deposit liabilities, which are uninsured and nonreservable in terms of reserve requirements.

In the Turkish banking system, all demand deposits and time deposits are reservable and insured.⁹ Therefore, a contractionary monetary policy by using reserve requirement tool can change the volume of both demand and time deposits but cannot change the volume of (non-reservable and) uninsured deposits. Imposing reserve requirements on time deposits, then, also hampers banks' ability to raise funds in the event of drains in reserves (Like Regulation Q). At this point, one should be careful in defining time deposits in Turkish banking system that is not exactly same as CDs (the Certificate of Deposits) like in the U.S.

In such manner, the Modigliani and Miller (1958) theorem is not likely to hold for the liabilities of Turkish banks. Thus, small banks were not able to raise reservable and insurable deposits, presumably because of the adverse-selection problem that prevents new deposit creation. Such alternative external financing as borrowing from other banks and repos, were used, although they were exposed to currency and interest rate risks and hence interest rates movements and currency devaluation, which directly affect the liquidity and asset side of their balance sheets. As a consequence, during the sample period, Turkish banks could not replace their lost deposits with other healthy alternative source of funds such as new equities and certificates of deposits. Instead they were mostly engaged in risky managed liabilities carrying interest and currency risk.

⁸ Their capital ratio to total assets has, indeed, dropped to 5.1 percent after currency crisis from 11.1% in 1997.

⁹ While they are still subject to reserve requirement, deposits collected from firms and entrepreneurs are not insured by government. On the other hand, there is another requirement for these kinds of sources of liabilities, disponibility rate requirement, even though its relative importance in monetary policy is not as important as reserve requirement.

3.3. Are Turkish Banks' Loans Perfect Substitutes for Other Assets on Their Balance Sheets?

Kashyap and Stein (1997: 1-33) and Kashyap, Stein and Wilcox (1993: 78-98) show that, in the case of the United States, small banks are typically “weak” in terms of balance sheet strength and are thus unable to use their liquid assets as a buffer. Following a contractionary monetary policy shock, both (small and large) banks will lose deposits on the liability side. On the asset side, they argue that if monetary policy affects bank lending it will reduce loans more at the bank with fewer liquid assets. The more liquid bank can protect its loan portfolio by drawing down its buffer stock of cash and securities. The less liquid bank will have to reduce loans if it does not want its ratio of cash and securities to assets to shrink too low.

In the Turkish banking system, banks hold securities, loans, and other liquid assets in the asset side of their balance sheets. Among them, they hold securities and other liquid assets, such as loans to other banks as a buffer stock. The response of these assets to any reserve drains will depend on the asset quality and risk structure of these assets. In this manner, whether these liquid assets are really liquid is an important issue (İnan, 2001: 13). The most important liquid asset is securities used as a buffer stock by banks in case of liquidity drains in the system. However, securities are not held by the banks for the buffer stock purposes, *per se*.¹⁰ As discussed in earlier sections, banks invest in securities with profit motivation because of higher domestic borrowing by government and, hence, higher interest yields on these securities. From this point of view, banks may not be reluctant to liquidate their securities in case of liquidity contractions because of alternative cost of giving up these profits. Another reason that banks cannot easily draw their securities as a response of liquidity drains is the maturity structure of the securities, which tend to be longer because of monetary policies implemented especially after 1996.

As discussed above, this leads to a mismatch in the maturity structures of the assets and liabilities of the banking sector that eventually creates liquidity risk and interest rate risk if they are sensitive to interest rate. Liquidation of such securities obviously results in decline in the value of these securities in the secondary market, in a higher interest rates environment stemming from liquidity constraint in the system. Here, whether the secondary bond market is regulated and works in a competitive nature is an open question and uncertain future interest rates in the securities market may prevent us from calling these assets really liquid during a liquidity crisis.

¹⁰ Especially state banks are likely to be under pressure from government by a law or regulation so they must fund the government through securities, in a required amount.

Another large fraction of liquid assets the Turkish banks include in their balance sheet is lending to other banks. In the calculation of the liquidity ratio in the Turkish literature, these type of assets are attributed as liquid assets though there are still some doubts concerning whether these assets should be treated as real liquid assets. First, the opposite (borrowing) item exists on the liability side of the balance sheets. If these assets (loans to banks) are easily liquidated when the liquidity drains, expecting a rise in the volume of bank borrowings in their liability side is a plausible assumption. In this case, considering whether a bank is a net lender or borrower should be a more plausible way in deciding if this bank is liquid in terms of this type of assets. The same logic may be true for interbank lending/borrowings. However, either the dual structure of the banking system as Özatay and Sak (2002: 14) discussed or borrowing of the banks contains borrowings from out of system, i.e., from foreign banks, does not necessarily require the symmetric structure between them. Nevertheless, according to balance sheet data, the whole system seems to be in net borrower, and borrowing in foreign currency. One can conclude that the banking system faces a currency and interest rate risk if these foreign loans have shorter maturities than bank assets. This structure deteriorates the health of liquid assets. Because of the existence of currency and interest rate risk in banks that carry such seemingly liquid assets, either contractionary monetary policy or capital outflows from the system not only make banks more sensitive to a liquidity crisis but also creates an environment in which banks' loan supply decline since they might not able to use these liquid-like assets as a buffer stock.

In the Turkish system, even if banks have enough liquid-ready assets, as well as there are secondary markets where these assets could be easily liquidated, the liquidity in the banking system should be associated with risks banks face (İnan, 2001: 9). With contractionary monetary operations of the Central Bank that reduces liquidity, total risk and risk perception by international lenders to domestic banks mainly shape the liquidity structure and hence the supply of loanable funds to the private sector. Given the predominance of banks in domestic financial markets, Turkish banks' foreign borrowings play an important role in channeling private capital inflow and outflow into and out of the country.

On the other hand, asymmetric information structure between the risk perception of bankers and international lenders who fund the domestic system is likely to determine whether the bank lending channel works. While commercial banks accumulate currency and interest rate risks in their balance sheets with a low degree of risk perception (Sak, 2000: 12), international capital lenders to the domestic banking system might evaluate the domestic bank system as very risky (high degree of risk perception). On the contrary, banks that do not hesitate to accumulate banking risks in their balance sheets might not be sensitive to the negative future effects of these risks, hence, their perception of banking risk is likely to be weak. This asymmetric structure in perception of banking risks

between borrowers and lenders then should lead both to have sudden capital outflows that in turn creates vulnerable structure in balance sheets for banking crisis and to decline in volume of loans in the system. Thus, if a monetary policy encourages banks to have excessive risks by making them to ignore the risk perception of the foreign capital lenders, along with a direct effect through draining liquidity, this policy could also have an indirect effect on loans.

In the light of this fact, if banks accumulate excessive risks in their balance sheets and the foreign lenders perceive that these risks have reached dangerous levels, capital outflows from domestic financial markets would be inevitable. This fact is also consistent with leading factors of both banking and financial crises, as well. The results indicate that contractionary monetary policy reduces lending more at excessive risk-taking banks.

4. CONCLUSION

This paper has analyzed unhedged banking risks as the most pronounced leading factors of the recent crisis in Turkey, as well as their possible effects on Turkish banks' portfolio decisions through reshaping the balance sheets. These risks were also introduced as factors that cause the theoretical assumptions of credit channel (and bank lending channel, in particular) to be valid. Given the risk structure of Turkish banking system, as well as monetary policy implemented accordingly, the possible effects of the liquidity, interest, and currency risks accumulation in their balance sheets on their loan and securities portfolios were examined. Under these conditions bank lending, as well as banking and then, currency crisis depends on the same origins, namely unhedged banking risks that in turn deteriorates the banks' capital structure.

In general, the choice of financing method of high PSBR through selling government securities to commercial banks and the according precautions in the sense of decreasing the volatility of domestic interest and exchange rates by the central bank encouraged banks to continue this type of financing. However, along with the potential effects of existing external factors, this risk-encouraging policy seems to be wrong because this risk structure has been shown as most important leading factor for the banking crises that eventually turns out a financial crises in 2000 and 2001. By explicitly considering the role of implementing these types of monetary and foreign exchange policy by the central bank, the possible effects of the quality and health of the banks' balance sheets on their lending decisions have been emphasized in this paper. As long as bank assets have a low degree of liquidation of their buffer stocks and off-deposit bank liabilities have high degree of currency and maturity mismatches, the state of the banking sector will play a crucial role in bank capital erosion, as well as the volume of lending contraction during this period and after the crisis as a credit crunch.

As a special case of this proposition, the Turkish banking system, whose characteristic of banks is that they transform short and foreign exchange-denominated liabilities into longer and domestic currency-denominated assets, has been analyzed descriptively. An interesting result of this analysis is that carrying unhedged banking risks has produced a fragile banking system in which lending volume is likely to be more sensitive to tight monetary policy or/and capital outflows because of the amplified effects of interest rate shocks to the risk-taking banks and eroded capital structures. From this point of view, banking risk accumulation and asymmetric perception of these risks between banks and international lenders lead to both banking and financial crises as well as validity of the main assumptions of bank lending channel for Turkey. Another point worth emphasizing is that small banks' balance sheets were more badly hurt by risk-taking activities, in terms of declining the supply of loanable funds and capital crunch.

Although the propositions mentioned in this paper are not considered as evidence, instead, they might be considered preconditions for the lending channel to occur and used a reference for the bank lending implications to be empirically tested. In attempting to investigate whether these assumptions of bank lending theory lead to transmission mechanism of bank lending channel in Turkey, further empirical tests of these assumptions is necessary.

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Table 1: Composition of the Commercial Turkish Banks' Balance Sheets as Average of 1997-2001.

	Small Banks	Large Banks
Number of Banks	50	10
Mean Assets (2001 TL Billions)	304,280	3,575,869
Median Assets (2001 TL Billions)	206,888	3,343,501
Fraction of Total System Assets	0.299	0.701
<i>Fraction of Total Assets in Size Category</i>		
Cash	0.011	0.013
Securities	0.186	0.143
Interbank Lent	0.029	0.009
Central Lent	0.016	0.009
Banks Lent	0.192	0.095
Reserve Requirements	0.039	0.047
Total Loans	0.270	0.327
Other (Stock) Assets	0.257	0.357
Total Deposits	0.582	0.638
Interbank Borrowed	0.028	0.007
Central Borrowed	0.011	0.003
Banks Borrowed	0.291	0.148
Funds	0.000	0.030
<i>Equity</i>	0.051	0.096
Other Liabilities	0.037	0.078

Source: Author's processed data originally taken from CBRT and Bank Association of Turkey.

Table 2: The Maturity Structure of Domestic Debt Instruments Withheld by Commercial Banks and the Securities Portfolio of Commercial Banks As a Ratio of Total Assets

	TB/GB(TL)	TB/GB(TOT)	TB(TL)/TB(TOT)	GB(TL)/GB(TOT)	Sec/T.Assets
1996:Q2	0.97	1.00	0.85	0.87	0.13
1996:Q3	1.94	1.82	0.81	0.76	0.14
1996:Q4	0.96	1.05	0.68	0.74	0.16
1997:Q1	0.50	0.79	0.48	0.75	0.16
1997:Q2	0.32	0.69	0.34	0.74	0.13
1997:Q3	0.47	0.71	0.41	0.62	0.13
1997:Q4	0.60	0.67	0.56	0.62	0.14
1998:Q1	1.44	0.98	0.77	0.52	0.15
1998:Q2	0.84	0.71	0.78	0.66	0.17
1998:Q3	0.93	0.72	0.78	0.61	0.15
1998:Q4	1.09	0.77	0.83	0.58	0.16
1999:Q1	0.60	0.51	0.79	0.67	0.17
1999:Q2	0.49	0.36	0.96	0.71	0.18
1999:Q3	0.29	0.22	0.97	0.75	0.19
1999:Q4	0.20	0.15	1.00	0.75	0.20
2000:Q1	0.13	0.10	1.00	0.78	0.18
2000:Q2	0.04	0.03	1.00	0.78	0.18
2000:Q3	0.04	0.03	1.00	0.79	0.16
2000:Q4	0.03	0.03	0.67	0.77	0.17
2001:Q1	0.12	0.14	0.62	0.68	0.21
2001:Q2	0.04	0.04	0.64	0.82	0.35

Note: TB(TL) and GB(TL) are Treasury bonds and Government bonds in Turkish lira, TB(TOT) and GB(TOT) are Treasury bonds and Government bonds in total of Turkish lira and foreign currency. Source: CBRT.

Table 3: The Fraction of Financial Sources of Private Firms and Agents

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Equity	0.26	0.31	0.28	0.23	0.22	0.20	0.16	0.15	0.18	0.27	0.31
Other	0.03	0.02	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Loans	0.71	0.67	0.7	0.77	0.77	0.80	0.84	0.85	0.82	0.73	0.69

Source: İnan's (2001) paper, SPK Monthly Bulletin, and CBRT.