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The Private Sector's Response to Financial Liberalization in Turkey: 1980-82

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The private sector's response to the short-lived episode of liberalization in Turkey in 1980-82 did not live up to expectations.

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Financial liberalization was carried out in a period when the nonfinancial corporate sector was in financial distress due to reduced profitability. The consequent emergence of substantial nonperforming loans in the banking sector, especially among smaller banks, created fierce competition for financial resources. The result was a rapid expansion of deposits and high real interest rates. Instead of forcing insolvent borrowers into bankruptcy, banks refinanced nonperforming loans as a way to prolong their own survival, and real credit to the private sector increased dramatically. Furthermore, the market mechanism turned out to be ill-equipped to induce the exit of insolvent banks and thereby increase the efficiency of allocating loanable funds.

An analysis of firm-level data reveals that nonfinancial corporations were subject to both an earnings shock (increases in costs relative to sales income) and an interest rate shock. Although the debt-to-asset ratios of profitable firms did not change, those of firms under distress actually increased, despite higher costs of borrowing.

The Turkish experience suggests that financial liberalization may not produce desired results when it occurs in a period of major macroeconomic realignments that adversely affect the profitability of the corporate sector, especially when it is implemented without an adequate regulatory framework.

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by
Izak Atiyas

Table of Contents

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1 - INTRODUCTION AND SUMMARY

In mid 1980, economic policy makers in Turkey initiated attempts to restructure and deregulate the financial sector. The main steps taken were the removal of legal restrictions on interest rates and the allowance and encouragement of financial transactions through new types of financial institutions and instruments. An important aspect of the deregulation attempts was that they were implemented simultaneously with and, indeed, as part of, a comprehensive stabilization/liberalization program.

Among the most important objectives of financial liberalization the following were mentioned by policy makers:

- Deregulation was expected to increase interest rates -which were hitherto negative in real terms-, and therefore increase financial savings and deposits in the banking sector, as well as introduce competition into the banking system, although, as will be seen below, the nature of the competition that was desired was ambiguous. It seems more plausible to assume that policy makers interpreted competition as elimination of direct government controls rather than non-collusive behavior on the part of banks.
- It was hoped that an increase in interest rates would push corporations in the private sector, which were typically highly leveraged, to reduce their indebtedness and increase their equity base. Owners of firms were advised to liquidate personal wealth and transfer it to their firms as equity capital. "Sell your villas to finance your corporations" was the call of the day. The increase in the interest rates was expected to allocate loanable funds to most profitable users.
- Bankruptcy was believed to be a major regulatory force in the corporate sector. Inefficient firms, especially those in previously protected import competing sectors, were expected either to adjust to the requirements of the

new economic policies, for example, by gearing production towards exports, or to leave the market.

On the macroeconomic side, the most important developments in 1980-82 were export orientation and disinflation.[1] The comprehensive stabilization/liberalization program included policies aimed at trade liberalization, real depreciation of the exchange rate and reduction of domestic absorption. The economy responded quickly. The Gross National Product (GNP) growth rate, which was negative in 1979 and 1980 picked up and reached 4.1% in 1981 and 4.6% in 1982; although below the 1973-77 average of 6.5%, the increase in growth rates did reflect a recovery. In the meantime, the composition of demand changed drastically: The rate of growth of domestic absorption, averaging 8.2% in 1973-77, was only 1.6 and 2.8% in 1981 and 1982. While the contribution of foreign balance to GNP growth was negative between 1973-77, it was positive in the 1980's--with the exception of 1983.[2] Exports grew by 47 and 25% in constant Turkish lira prices in 1981 and 1982 respectively. The decline in the rate of inflation was even more dramatic. The annual rate of change of the wholesale price index declined from around 107% in 1980 to 37% in 1981 and 25% in 1982 (see Figure 1). In short, 1980-82 were years of drastic realignments in major macroeconomic variables, which were bound to affect corporate performance.

The deregulation episode in the financial markets lasted two and a half years. The objective of increasing deposits and financial savings in general

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[1] For a detailed overview of macroeconomic policies and performance in the 1970s and 1980s, see Celasun and Rodrik (1987).

[2] Data from OECD, Economic Survey: Turkey, various issues. Let Y, A and B stand for GNP, domestic absorption and the current account surplus respectively, all in constant prices. Then, $Y = A + B$ and $\hat{Y} = a\hat{A} + b\hat{B}$ where hats denote percentage changes, $a = A/Y$ and $b = B/Y$. The contribution of foreign balance to GNP growth is defined as $b\hat{B}$.

was met with considerable success. However, a financial crisis broke out in 1982 and several brokerage houses went bankrupt. In 1983, the Central Bank took over the administration of some "problem" banks, put all the others under close supervision, and started to reregulate deposit interest rates. Overall, it can safely be said that the response of the financial sector to deregulation was worse than expected.

The objective of this paper is to present an overview of the events that culminated in the crisis. This will be done in two steps. First (Section 2) the events in the banking sector will be summarized. In the banking sector, shocks to the corporate sector made portions of banks' assets nonperforming. This was true especially for some smaller banks. Rather than forcing liquidation of their clients, these banks engaged in a fierce competition to collect funds, to raise resources both to meet their liabilities and to refinance non-performing loans. Interest rates soared. Some banks were thus able to survive even though they were insolvent, until the government finally intervened.

To get some clues about why bank loans might have become non-performing, Section 3 looks at the private corporate sector. Analysis of a panel data set of corporations reveals that in this period firms were subject not only to an interest rate shock, but also to a gross earnings shock (increase in costs relative to sales income). While one would expect that higher interest rates on loans would make firms reduce their indebtedness, debt to assets ratios of profitable firms did not change much during 1980-82, and those of firms under distress actually increased.

These observations suggest that financial liberalization may not generate desired responses if it is carried out when there are major changes in the

macroeconomic environment that adversely affect the profitability of and cause financial distress in the corporate, and consequently, banking sectors. Furthermore, the market mechanism did not seem to be well equipped to carry out its most essential regulatory function in an efficient manner, that is, inducing the exit of insolvent economic units and thereby decreasing inefficiency in the allocation of loanable funds.

Section 4 will conclude the paper.

2 - DEVELOPMENTS IN THE BANKING SECTOR

There were two principal sets of players in the financial crisis of 1982. On the one hand were the banks. The Turkish financial system has been dominated by commercial banks. At the end of 1979, the commercial banking system was composed of 12 state owned banks, 24 private banks and 4 foreign banks. The market was highly concentrated. The share of the largest 4 banks (one state owned and three private) in total assets was 58% and 56% in total deposits. Each of 11 smallest private banks held less than 1% of the total assets of the banking system.

Most private banks were owned or controlled by industrial conglomerates.[3] This pattern of ownership was the result of two trends: Some of the private banks were actually established by industrial groups controlled by individual families, while smaller and provincial banks were established by local businessmen and later acquired by industrial groups and transformed into nation-wide banks. New entry into the banking system was subject to the permission of the government. Prior to deregulation, the governments had been very conservative in granting the necessary permission. As a result, the

[3] One important exception is Turkiye Is Bankasi, the largest private bank in Turkey.

number of banks had been stable between 38-42 in the 1970's.

Prior to deregulation, interest rates on both deposits and credits were fixed by the government at low levels. With accelerating inflation in the 1970's, real interest rates on deposits were largely negative (see Figure 1).

Another set of players that proved especially important in the events after the deregulation were the brokerage houses. Most brokerage houses were established around the year 1979, when industrial corporations started to issue bonds.[4] Some "bankless" industrial groups, unable to enter the banking business, formed their own brokerage houses.[5] The rapid development of the--admittedly small--bond market also encouraged the establishment of independent brokerage houses.[6]

Deregulation in the banking sector was started by two important steps undertaken in July, 1980, whereby: a) Legal restrictions on deposit and loan interest rates were removed, and, b) banks were allowed to issue negotiable certificates of deposit (CDs).[7] Following Artun (1983), the events that followed these deregulatory steps and culminated in the financial crisis of 1982 can be summarized in two stages:[8]

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[4] Artun (1983, pp. 70, 77) argues that bond issues resulted from new financing requirements due to the impact of devaluations of 1978-79 on corporations.

[5] Examples are Meban of Transturk Holding, Eczacibasi Yatirim of Eczacibasi Holding and Oyak Yatirim of Oyak Holding.

[6] One has to make a distinction between the brokerage houses discussed in the text, which traded, at least in the initial stages of the process, in securities of industrial firms and banks, and, other unorganized money market institutions that collected funds solely against personal cheques and IOUs. The latter type of institutions (dubbed "market bankers" in Turkey) mushroomed following the deregulation and were the actors of another crisis that unfolded at the end of 1981. These institutions and their evolution will not be addressed in this study.

[7] For a more comprehensive overview of financial reform, see Akyuz (1988).

[8] The following summary is primarily based on accounts given in Colasan (1983, 1984a, 1984b), Ulagay (1987), and Artun (1983, 1985).

Stage 1, the Initial Months: Soon after the reform program was announced, larger banks encouraged members of the banking system to form a cartel and set deposit interest rates collusively, at a rate higher than the pre-liberalization level (30% on annual deposits). The monetary authorities did not seem to object to collusion, although they did think that the interest rate was low, given that the inflation rate exceeded 100% in 1980 (See figure 1).[9,10] In any case, the so-called gentlemen's agreement that was drawn between the banks was not adhered to; some (mostly smaller) banks offered higher deposit rates. Initially, it seems that the breakdown of the cartel agreement was due to an attempt by smaller banks to exploit their competitive edges, which arose from their lower intermediation costs. By the end of 1980, these banks offered deposit interest rates that were 2-5 percentage points higher than the 30% envisaged in the agreement. In February 1981, a new gentlemen's agreement was signed, whereby the rate of interest on one year deposits was raised to 50%. Soon, this agreement was also broken by some banks.

Besides the deposit interest rate, CDs also proved to be an important tool of competition and were widely used. A substantial proportion of CDs were marketed through brokerage houses, both through those that were independent and those that were subsidiaries of banks or holding companies. A mechanism was developed whereby banks in effect used CDs and brokers to circumvent the gentlemen's agreements and tried to increase their share in the market for deposits: CDs were issued to brokerage houses in large volumes at

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[9] As indicated in the introduction, however, the rate of inflation declined to 25% in 1982.

[10] For the period 1980-82, interest rates shown in the figure correspond to those declared in gentlemen's agreements. As discussed in the text below, actual deposit rates were higher.

a discount. The brokers would resell the CDs to the public at par; sometimes they would increase the effective interest rate by attaching to the CDs parallel interest bearing promissory notes, thereby making the CDs more attractive for depositors. The fact that the CDs originated in banks seems to have provided buyers of CDs a guarantee of their safety. The difference between the broker's buying and effective selling prices were generally lent to marginal businesses at high interest rates.[11]

Stage 2. Change in the Environment: By mid- to late-1981, the driving force behind inter-bank competition changed. Due to the poor earnings performance of the corporate sector, non-performing loans became a major problem. While meetings between banks continued and resulted in new gentlemen's agreements, especially smaller banks started to attract new deposits by increasing their interest rates to basically solve cash-flow problems created by non-performing loans, both to refinance the latter and also to meet their obligations to their claimants. In the ensuing price war for deposits some banks were known to offer as high as 65% on 1 year deposits, when the rate of inflation was 30-35%. Furthermore, two of the largest banks that previously avoided competition soon ended up joining the price war (Artun, 1985, p.55). High cost of funds increased the cost of credit dramatically (see Table 1 and the discussion below).

Sales of large amounts of CDs also continued. Some banks formed their own subsidiary brokerage houses to take advantage of the mechanism discussed above.[12] Issuing CDs through brokerage houses was not restricted to private

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[11] Corporate bond issues were limited by capital adequacy requirements. According to Artun (1983, p.70) and Colasan (1984b, p.73) these requirements became binding in 1981 for major bond issuers and the resulting reduction in new supply of securities was one of the reasons that drove brokerage houses into the CD business.

[12] For example, Istanbul Bankasi, Hisarbank and Bagbank established Fintas, Eko-Yatirim and and Fiban, respectively. All three of these banks were

banks and at least two state owned banks (Vakiflar Bankasi and Anadolu Bankasi) participated in the practice. Realizing that things were getting out of hand, in November 1981 monetary authorities prohibited banks from marketing CDs through brokers. However, it was common knowledge among market participants that some banks went on with the practice. One of the brokerage houses that continued to market CDs after the ban was Banker Kastelli.

Banker Kastelli was the largest brokerage house in the market. The institution was mainly marketing bonds of private sector companies until the end of 1980. Finding it more and more difficult to maintain a steady supply of securities, Kastelli joined the CD business in early 1981. The evolution of Kastelli's business is a good example of financial behavior under distress: In the early stages the broker was able to exercise caution in choosing its client banks and avoided marketing the CDs of risky banks. By 1982--after the ban on issuing CDs through bankers--illiquidity problems pushed Kastelli to market the CDs of those risky banks that the banker had earlier tried to avoid.[13] Furthermore, the owner of Banker Kastelli, Cevher Ozden, started to lend large volumes of credit to several businessmen, and these loans were not repaid. Ozden later rationalized this behavior in an interview as trying to maintain the survival of these businessmen so as to increase the possibility of Kastelli's own survival. In short, financial difficulties pushed Banker Kastelli to choose riskier financial strategies.

The Response of Policy Makers: Initially, policy makers had confidence in the regulatory powers of the market As the process evolved, they seem to

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intervened in and liquidated in 1983, see below.

[13] For example, those of Hisarbank, Odibank, Istanbul Bankasi (Colasan, 1984b, p. 241).

have been caught by surprise. In February 1981, by which time they had become regular participants in the banks' meetings, they indicated that they were going to "make sure that banks do not offer interest rates higher than those stipulated in the gentlemen's agreement..[such] banks will be severely punished" (Colasan 1984a, p.163). Similar threats were also made to banks that were issuing CDs through brokerage houses. Policy makers thus found themselves in the contradictory position of advocating "free" interest rates on the one hand and promoting collusion and "responsible" behavior on the other. It was also clear that policy makers did not have at their disposal any means to measure the amount of CDs that were so marketed. These threats continued to be made throughout 1981 and 1982, but they were not carried out. The gentlemen's agreements also included statements that banks which did not comply would be punished, however the nature of the penalties were not made explicit and no action was actually taken during that period.

The Crisis: The system exploded in 1982. In June, Hisarbank -a member of a financial-industrial-construction group- which was for a while on the verge of bankruptcy due to the bad fortunes of its affiliates, initiated a "campaign of high interest rates" and offered as high as 80% on 1 year deposits. The purpose of the campaign was to finance payments that were due to depositors and other holders of the bank's liabilities. The response of depositors was favorable and deposits started to be transferred to Hisarbank from other banks. Finally in the next meeting of banks two weeks later, representatives of the government forced the banks to sign a new agreement: Like the previous ones, the agreement stipulated common deposit interest rates that would be observed by banks and committed them to cease marketing CDs through brokers. This time, however, the statement also included explicit

measures to be taken against non-compliers. Three days after the meeting, the owner of Banker Kastelli, which had by then marketed a large portion of Hisarbank's CDs, fled the country.

It was during this meeting that monetary authorities became aware of the extent of the problem. It became clear that several banks were insolvent and unable to meet their payments on CDs they had issued. Representatives of the Central Bank found out that some banks actually had not even observed their reserve requirements. To avoid panic, the banks were initially provided by liquidity from the Central Bank and started to be monitored closely. Some of the bureaucrats in charge of economic affairs resigned in July. The new team changed the policy framework. In January 1983, the Central Bank started to reregulate deposit interest rates and imposed ceilings at 45% for deposits of one year maturity. Later, policy makers intervened in five private banks, removed their management and declared them bankrupt. The liabilities of four of the banks (Istanbul Bankasi, Hisarbank, Odibank and Bagbank) were transferred to state owned banks; those of the fifth bank (Isci Kredi Bankasi) were taken over by the largest private bank. Each of these five bankrupt banks were owned or controlled by holding companies.[14] Three of them had formed their own brokerage houses. In addition to those banks, several major brokerage houses also went bankrupt. Needless to say financial problems were not restricted to those institutions that went bankrupt. Non-performing loans, the current estimates of which vary between 10-30% of total assets in the banking system, continue to present a major policy problem.

It is worthwhile to emphasize the extent to which real interest rates

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[14] See Artun (1985), p.48,53. Hisarbank and Odibank were members of the same group, Kozanoglu-Cavusoglu.

increased in this period. One has to remember that official data underestimate deposit interest rates during that period, since they correspond to interest rates announced in gentlemen's agreements and do not reflect higher rates offered by most banks. Even if one is willing to assume that the actual deposit rates of interest that banks offered did not exceed those stipulated in the gentlemen's agreements, it turns out that the real ex-post interest rates on 6-months deposits were on average 15% and 18% in 1981 and 1982, respectively (see Table: 1). Table 1 also shows the increase in real lending rates, as calculated by Easterly (1988), to 50% in 1981 and 38% in 1982. In December 1981 and June 1982, when competition between banks was most fierce, ex-post annual compounded real rate of interest on 6-month deposits was as high as 24% and 20% respectively.[15] One could ask whether this increase could be primarily attributed to large forecast errors in banks' prediction of future inflation. A look at the trend in inflation during the period suggests that such was not the case: Table 2 shows that the annual rate of increases of both the consumer and the wholesale price indices were in a quite persistent decline since January 1981. One can therefore conclude that banks' need for funds in view of large amount of non-performing loans, and the consequent interbank competition for deposits was probably a more important determinant of high real rates.

The rise in interest rates is also apparent in the consolidated balance sheets of banks. In the private banks, the ratios of both interest income and expenses to average stocks of credit exceeded 40% in 1982 (Table 3). It was also clear that interest expenses rose faster than interest income: as shown

[15] The announced nominal interest rate was 50%, the rate of change in the CPI was 26.3% between Dec. 1981-Dec. 1982 and 29.5% between June 1981-June 1982.

in the last row of Table 3, interest margin (interest income minus interest expenses) as percentage in average deposits declined substantially from historical levels.[16]

What about the growth of the financial system? As Table 4 indicates, traditional measures of financial deepening show improvements in 1980-82: both the real money stock (M2) and the liquidity ratio (M2 expressed as a percentage of GNP) increased in 1981-82 after steep declines in 1978-80. Notice however, that the growth rate of real M2 was reduced by more than one half between 1981 and 1982, from 34% to 16%. The level of real deposits showed similar increases in 1981 and 1982.

The counterpart to increase in deposits on the asset side of the banking system was a rapid increase in real indebtedness of the private sector, especially in 1981, despite i) narrowing bank margins and ii) high lending rates. Total assets of the banking system grew in real terms by 31% and 18% in 1981 and 1982 (Table 5), assets of private domestic banks grew by 35% and 17%. In 1981, the rate of increase in the stock of credits to the private sector was 81% in nominal terms and 45% in real terms. Given that in that year the interest rate on loans was very high, the increase in the stock of credit meant a heavy repayment burden in the following years. In fact, "in the second half of 1982, most of real credit expansion was absorbed by the need to refinance part of the high real interest rates charged to private enterprises."[17] With an inflation rate of 25% in 1982, the increase in the

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[16] An official report prepared at the time claimed that the interest margin of credits was negative in 1981 and the first quarter of 1982 (Colasan 1984b, p.477). The standard practice of banks in Turkey was to capitalize interest payments when they were due and thus increase the principal amount outstanding. In the meantime, interest payments that were not collected were recorded as income. Therefore it is highly likely that income statements, on which figures in Table 3 are based, overstated interest income.

[17] World Bank, 1983, pp. 11-12. The same observation is made in the aforementioned report: "...the banks' inability to collect interest payments

real stock of credit was 12% between the end of 1981 and 1982, not a small rate of growth compared to historical averages. The total stock of liabilities of the private sector to the banking system increased at an even higher rate (17%) in real terms. Table 6 shows that despite a decline in total credits from the financial system[18] relative to GNP, the share of the private sector in total claims of the financial system increased from 50% in 1980 to 56% in 1981 and 63% in 1982. Of net new credits, 68% went to the private sector in 1981 and 82% in 1982. Notice again, however, that Table 5 shows that the rate of increase in both real and nominal stocks of credit to the private sector were cut by half between 1981 and 1982, mirroring the reduction in the rate of growth of M2. The decrease in the rate of growth of money and credit in 1982, after initial spurts in 1981, is not surprising. Furthermore, growth rates in 1982 were still high. However, with high debt burdens in 1982 and reduced repayment capacity due to lower corporate gross earnings (see Section 3), these reductions probably exacerbated widespread illiquidity in the private sector in 1982.

How does one try to make some sense out of all this? Deferring the issue of what kind of a shock created financial distress in the corporate--and consequently in the banking--sector to the next section, let us concentrate on how banks reacted to financial distress. It is clear that once banks were hit

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has seriously affected their liquidity. In spite of this, the banks have refinanced borrowers' outstanding interest payments and thereby have further jeopardized their cash positions." (Colasan, 1984b, p.448, my translation). Similarly, Celasun and Rodrik (1987, p. 4-17) state: "A significant part (guesstimates running around 40 to 60 percent) of the nominal credit expansion in this period was directed to refinancing of the interest payments connected with non-performing loans".

[18] "Financial system" comprises all banks and the monetary authority.

and problems of insolvency arose, they tried their best to avoid bankruptcy. Given high probable costs to bankruptcy, legal barriers to establish new banks and other sunk costs that need to be borne to re-enter the market after bankruptcy, possible reputational problems and possible rents to bank ownership (see below), this quest for survival is not very surprising. The more interesting question, however, was the mechanism. Once hit by an earnings shock, which makes a bank unable to meet, say, its interest payments to depositors the bank will try to raise additional resources to meet these payments and to avoid bankruptcy.[19] This was done in Turkey, both by raising deposit interest rates and by issuing CDs. However, higher promised interest payments mean higher stock of liabilities in the future. To cover this higher stock of liabilities, the bank has to charge higher interest rates on its loans.

What kind of borrowers would be willing to accept higher lending rates? Holders of its non-performing assets may be one possibility. The bank may bet on recovering these assets in the future, by refinancing them now. Furthermore, analogous to the bank, a borrowing firm which is on the verge of bankruptcy will be willing to accept higher lending rates if they provide a possibility for survival. The bank may be able to charge high interest rates also to borrowers that cannot borrow from other banks because of their risk characteristics--as did, for example, Kastelli, once financial distress occurred. Clearly the bank is limited by competition from other banks in the interest rate it can charge to safe borrowers. Unavoidably, then, the portfolio of the bank has to become more risky. The bank will typically be

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[19] It is interesting to note that patterns of bank behavior described here are similar in many ways to de Juan's (1987) hypothetical account of how good bankers turn into bad bankers.

willing to take additional risks since it is protected by limited liability.[20] But this is clearly inefficient: At a time when loanable funds were most needed to solve temporary liquidity problems of good firms, a sizable portion of the funds may end up being used to finance bad firms. This is exactly what happened in Turkey, especially in the case of smaller insolvent banks. Furthermore, what were essentially Ponzi schemes could not be prevented by the functioning of the market mechanism, and apparently required intervention by the state. The welfare question that needs to be addressed, then, relates to additional expected losses that were incurred after the banks became insolvent. Why was the market unsuccessful in driving insolvent banks out of the system?

The preceding question may be asked much more concretely: Why did depositors respond favorably to the interest rate "campaign" of Hisarbank? It is well known that return to depositors is not monotonically increasing in the nominal promised interest rate because higher interest rates mean the probability that they will be repaid is smaller; when interest rates are very high relative to the earnings potential of the bank, this negative effect becomes dominant and expected return to depositors starts to decline[21]. Clearly, when the nominal interest rate that Hisarbank offered was 80%, with a

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[20] That is, additional risks may increase the equity value of the bank while decreasing the value of other claims on the bank. The proposition that equity holders of a corporation with limited liability can transfer wealth from bondholders (in the present case, depositors) to themselves by increasing the riskiness of assets has been discussed extensively in the finance literature. See for example, Jensen and Meckling (1976). While higher risk increases returns in good states and decreases them in bad states, limited liability causes the payoffs of equity holders to be biased towards good states, thereby making higher risk attractive.

[21] The non-monotonicity of expected returns in contractual interest rates forms the basis of the credit-rationing literature: See, for example Stiglitz and Weiss (1983,1985).

very high probability of bankruptcy, the expected interest rate was much lower. Why did depositors not withhold their deposits?

One can develop various hypotheses to explain the observed behavior of depositors. One explanation could be that because information about banks' asset structures and balance sheets was so scarce, depositors could not tell good banks from bad banks, i.e. there was a problem of adverse selection. If the problem was just one of adverse selection, however, one could also argue that the level of interest rates offered by Hisarbank--during a period when corporate earnings were distressed, illiquidity was widespread and therefore expected bank profitability was low--should have acted as a signal revealing tha the high interest rates reflected not a higher profitability potential but Hisarbank's insolvency.

There are two other potential explanations, which, interestingly, are based on completely different assumptions about depositors' "rationality" but imply very similar behavior and market outcomes. The first hypothesis is simple and can be dubbed "interest rate illusion": Depositors in Turkey were simply not used to a liberalized financial system, and the developments were too fast for them to learn. Therefcre depositors confused promised interest rates with expected interest repayments and did not adequately take into consideration the riskiness of banks. The second hypothesis maintains that depositors are on the contrary quite rational: They are well aware of potential costs of bank bankruptcies when depositors are not protected--bank runs, increased illiquidity, disruptions in payment mechanisms and production,[22] let alone political costs. Therefore, they--correctly--foresee that if a bank goes bankrupt the government will intervene and provide ex-post

[22] See Diamond and Dybvig (1983) for a formal treatment of these ideas.

deposit guarantees--even if an explicit insurance scheme does not exist--in order to maintain the stability of and confidence in the banking system, and to avoid bank runs and the adverse political consequences of letting depositors suffer. The implication of this hypothesis also is that depositors respond to promised rates of interest, believing that in the case of incomplete repayment, the difference will be covered by the government. This argument was put forward in accounts of financial crisis in Chile.[23] Anticipation of ex-post deposit guarantees creates an implicit ex-ante subsidy from the government that is shared between the depositors and banks. Under these circumstances, it can be shown that the expected profit or equity value of a bank can be positive, even if its economic value (net of implicit subsidies) is negative.

What happens when depositors are responsive to promised rather than expected interest rates, for whatever reason? The basic point to be made is that markets can prevent the kind of Ponzi schemes that have developed in Turkey and induce the exit of unprofitable banks and firms through bankruptcies only if depositors withhold their funds from insolvent banks. Discounting the risk element in interest rate offers prevents exactly that. Absent self regulatory mechanisms in the market, efficiency requires that a supervisory institution monitor banks and be ready to intervene and liquidate them whenever they become insolvent. Such a regulatory framework was clearly

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[23] See for example, Diaz Alejandro (1985) p.8, Harberger (1985) and Hanna (1987) for a discussion. Hinds (1987, n.22) cites several instances of such "ex-post deposit guarantees" in Chile, Colombia and the USA. In Turkey, a precedent was established in 1960 when, following the failure of several banks, a Bank Liquidation Fund was established to pay off the deposit holders of these banks. All liabilities of the banks were covered. A deposit insurance scheme was formally introduced in Turkey in 1983. The transfer of insolvent banks' assets and liabilities to state-owned banks in 1983 constituted another example of ex-post deposit guarantees.

absent in the 1980-82 period. When the government did finally intervene in 1982, it was too late.

3 - ADJUSTMENT IN THE CORPORATE SECTOR

It was seen in the previous section that problems in the banking sector began when an important portion of the loan portfolios of the banks became non-performing. In this section I would like to look at the other side of the coin and review the performance of the corporate sector--major borrowers of banks, especially in 1981 and 1982--and try to provide answers to the following types of questions:

a) Did the shocks to the corporate sector simply consist of increased interest expenses or did adverse cost/demand conditions also play a role?

b) How did firms react to these shocks financially? Is there any indication that distressed firms actually increased their indebtedness during this period?

To answer these questions, a panel data set of firm-level financial statements will be analyzed. The source of data are the income statements and balance sheets of a sample of 91 firms registered at the Capital Markets Board (CMB) of Turkey. The same data set has been used by Ersel and Sak (1986) in a similar study. The data is available for the period 1979-84.

It should be noted at the outset that the sample is not representative of all private sector firms in Turkey. First, all of the firms are issuers of either stocks and/or bonds to the public or have at least 100 shareholders. Second, the average scale of the corporations in the sample is large, so that the firms in the data set can be taken as representative of large corporate sector only. The following table, taken from Ersel and Sak (1986, p.93), compares the average total assets of firms in the CMB sample sample and those

in samples compiled by the Istanbul Chamber of Industry (ICI):[24]

	1981		1982		1983	
	CMB	ICI	CMB	ICI	CMB	ICI
Average assets (Million Tl)	3264	222	5079	347	6848	487

Besides possible selectivity bias, the reader should also be cautioned that additional biases exist since the data is not corrected for inflation.

The section will proceed as follows. First profitability will be defined. It will then be decomposed into standard financial ratios that capture real and financial factors that affect profitability as well as the firm's financial response to movements in these factors. After summarizing the movements in the ratios over time, a simple analysis of variance model will be used to statistically compare average values of the ratios across time and groups of firms.[25]

Profitability and its components: I define profitability (PR) as the ratio of pre-tax income (Y) to the book value of equity (E):

$$PR = Y/E.^{26}$$

Then, PR can be decomposed in the following way:

(1) $$PR = [(EBIT \cdot AU) - (FC \cdot GR)] / (1-GR)$$

where

EBIT = EBIT margin, earnings before interest and taxes divided by net sales income,

AU = asset utilization ratio; net sales income over total assets

FC = financial costs ratio; interest expenses over total debt

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[24] The ICI samples comprise more than 1200 firms.

[25] The approach adopted here is similar to Petrei and Tybout (1985).

[26] The variables are defined in Appendix 1.

GR = gearing ratio; total debt divided by total assets.

The decomposition in equation (1) is useful because it helps one identify the real and financial factors that affect profitability. Real factors are captured by EBIT and AU. Movements in EBIT are primarily determined by movements in sales and non-interest costs. EBIT can be further divided into sub-components, the most important of which is gross margin (GM, net sales income minus cost of goods sold divided by net sales income).[27] Changes in GM reflect changes in the price of output relative to input prices and therefore is expected to be closely influenced by such economic variables as demand, wages, exchange rate, and policies that affect these variables. The asset utilization ratio, AU, reflects the rate at which assets of the firm generate sales income. It is generally interpreted as a proxy for capacity utilization; it is also analogous to average output-capital ratio. Everything else constant, increases in EBIT, GM and AU effect profitability positively.

Financial factors are captured by FC and GR. FC is influenced by interest rate and monetary/credit policies. Everything else constant, an increase in financial costs reduces profitability. The importance of financial costs for a firm's profits is directly proportional to the firm's level of indebtedness. Gearing ratio (or leverage) is an indicator of the firm's indebtedness. In general GR will be interpreted as firms' response to changes in the other variables.

The analysis of variance model: Once these financial ratios were calculated, each of them were statistically compared across time and groups of

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[27] Other components of EBIT, namely overhead and other net income (see Appendix 1 for definitions) are small in the CMB dataset. Furthermore, relatively large recording errors have been detected in these variables. See Ersel and Sak (1986), Appendix A.2. Therefore, these components will not be treated individually.

firms through a simple analysis of variance (ANOVA) model.[28] Let T stand for the number of observations for each firm and N for the number firms in the data set (assuming, for the moment, that the data is balanced). Total variation in each of the variables was decomposed into three effects:

$$r = D_F \cdot \beta_F + D_Y \cdot \beta_Y + D_L \cdot \beta_L + e.$$

where

r = the financial variable analyzed

D_F = NTxN matrix of firm effect dummy variables. The j'th column of this matrix consists of ones for firm j and zeros otherwise.

D_Y = NTxT matrix of year effect dummy variables. The t'th column of this matrix consists of ones for year t and zeros otherwise.

D_L = NTxT matrix of nested year/loss effect dummy variables. The t'th column of this matrix consists of ones for observations that have made negative profits in year t, and zeros otherwise.

β_F, β_Y and β_L are vectors of regression coefficients (of dimensions Nx1, Tx1 and Tx1, respectively) and e is an NTx1 (column) vector of independently and identically distributed disturbances.

The firm effects are assumed to capture the individual characteristics of firms that stay constant across time. The year effects capture the influence of macroeconomic variables that affect all firms equally within a year but which change over time. Finally, the matrix of "year/loss effects" was used to statistically compare, in each year, the performance of the variables across firms that recorded non-negative and negative profits. The year/loss effects were used as a proxy to measure the (marginal) effect of falling into a state of financial distress.[29]

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[28] An ANOVA model consists of OLS regressions on dummy variables.

[29] The number of observations with negative profits are 11 in 1979 and 1980 (12% of all observations), 24 (26%) in 1981, 22 (24%) in 1982, 14 (22%) in

Since as they stand, the D matrices are not linearly independent, I have normalized[30] the system so that the regression coefficients are expressed as differences from the 1979 year effects. Let the coefficients of the new model be given by B_F, B_Y and B_L. These coefficients should be interpreted in the following manner:

i) the (T-1) elements of B_Y reflect the average differences of the dependent variable relative to its average value in 1979, for the observations that correspond to non-negative profits.

ii) the (T) elements of B_L reflect the average differences of the dependent variable for observations with negative profits, relative to those with non-negative profits.

The (N-1) elements of B_F will not be reported.

There were strong outliers for all of the financial ratios. Most outliers corresponded to observations with very high losses. In some cases they suggested implausible ratios (such as gross margins of -600%), maybe due to recording errors. Since in the presence of strong outliers the estimated coefficients do not adequately reflect the bulk of the sample--especially in a simple linear model such as the present one--, observations for which the estimated error term was at least three times the standard error of regression were deleted from the sample and the model was reestimated. The largest number of observations deleted in this manner was 7. The results reported below belong to this second round of estimation. Results obtained when

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1983 and 8 (15%) in 1984.

[30] Here normalization simply means to delete just enough columns from the D matrices such that the resulting system is linearly independent, to avoid a typical "dummy variable trap."

outliers are not omitted are discussed in Appendix 2.[31]

F-statistics were calculated for each of the dependent variables to test the following null hypotheses:

H1: Differences across firms are not statistically significant (i.e. all elements of B_F are 0). Rejection of this hypothesis would mean that firm effects as a whole are significantly different from zero, i.e. that individual firm characteristics are important.

H2: Differences across years are not statistically significant (i.e. all elements of B_Y are 0). Rejection of this hypothesis would mean that the average annual values of the dependent variable are not the same across years; i.e. that macro effects are significantly different from zero.

H3: Differences across observations with non-negative and negative profits are not significant (i.e. all elements of B_L are 0).

H4: Differences between observations with non-negative and negative profits are the same across years (i.e. all elements of B_L are equal to each other).

The formulation of the null hypotheses H3 and H4 may deserve some comment: H3 is used to test whether the values of the dependent variable are on average equal between the two groups of firms. When this hypothesis is rejected, one concludes that, for that dependent variable, making losses matter on average. Suppose now that this is the case for a particular variable, and therefore that there is a statistically significant difference

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[31] Furthermore, some corrections had to be made on the data to eliminate discontinuities and inconsistencies that were created by the adoption of an inflation accounting scheme in 1983. These corrections required additional information on firms. Ersel and Sak, 1986, Appendix A.2 discusses the problem and the additional information necessary to correct it. Such additional information could not be found for some firms. As a result, 27 observations in 1983 and 37 observations in 1984 had to be deleted.

between the averages of two groups of firms. One may also want to know whether that difference is of the same magnitude in each year. H4 tests this constancy of the difference across years.

Empirical results: Before turning to the statistical results, it will be useful to take a look at how the (unweighted) averages of financial ratios evolved over time. These are summarized in Table 7.[32] First of all, we see in the first row of that table that profitability declined substantially, from 42% in 1980 to -5% in 1982, and started to pick up in 1983 and 1984. Several factors have contributed to the decline. The first is the decline in gross margins. The second row of Table 7 shows that between 1980 and 1982 gross margins declined from 26% to 19%, and continued to decrease in 1983. The movements in GM clearly indicate that sales prices increased less rapidly than the prices of inputs used in production during these years. EBIT margin has also declined during that period.

How can one account for the reduction in GM and EBIT? One explanation may be demand; increase in domestic absorption was still quite weak in 1981 and 1982. However total sales of firms in the data set did increase in real terms during these years. Increase in costs was probably more important. Using consolidated figures from another data set, Akyuz (1988) shows that raw material costs increased substantially during these years, reflecting the impact of two stabilization policies on corporate income statements: a) the impact of large devaluations on the cost of imported inputs, and b) increases in the prices of state economic enterprises which produce intermediate

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[32] Stocks such as total assets, total debt and equity in year t are expressed as averages of years t-1 and t. Therefore, the 1979 values of ratios that involved stocks were not calculated. The total number of observations that did not involve stocks was 482, whereas the total number of observations for ratios that did involve stocks was 391.

inputs.[33]

The fluctuations in the asset utilization ratio are less pronounced - except for the decline in 1981. It should be noted at this point that capacity utilization was already at very low levels in the late 1970s, mainly due to a foreign exchange crisis that prevented the use of necessary imported inputs.

Moving down Table 7, financial costs have increased between 1980 and 1982, from 13% to 18%.[34] The increase in FC reflects the effect of money and credit policies on the cost of firms' borrowing.

However, contrary to the expectations of policy makers, the increase in the cost of borrowing did not induce firms to decrease their leverage in the period 1980-82. In fact, simultaneous with the increase in financial costs, the gearing ratio also increased from 69% to 73% during these years.

How significant were these changes? To answer this question, we can now have a look at the statistical results. These are displayed in Table 8. Each block in Table 8 first displays the values of B_Y and B_L, the estimated coefficients of the year and loss effects, respectively. After that, each block displays the results of four F tests mentioned above: The values P1 - P4 are the levels of significance at which the hypotheses H1 - H4 can be rejected, respectively. For example a value of 0.012 for P4 in the block for the variable GR indicates that the hypothesis H4 can be rejected at 1.2% level of significance. A high value of P means that that particular hypothesis

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[33] Part of the increase in costs may be due to the fact that some interest expenses are recorded under Cost of Goods Sold. See the note below.

[34] Interest expense figures in income statements probably underestimate true interest expenses because a) some interest payments are recorded under the cost of goods sold account and cannot be retrieved, and b) firms that borrowed from islamic banks do not record their payments as interest expenses.

cannot be rejected at traditional levels of significance. Finally, the stars on the values of the coefficients indicate the results of individual t-tests.

Starting with profitability in the first block, once loss making observations are controlled for, the drop in the profitability of firms with positive profits is much less pronounced and statistically insignificant. As one would expect, the significance of the loss effect is high. Furthermore, the value of P4 shows that the changes in the difference between the profitability of firms making positive profits on the one hand, and losses on the other, is also significant. Another surprising result is that firm effects turn out to be insignificant: P1 has a value of 1.0. In all other ratios, the individual characteristics of firms turn out to be quite significant in explaining the variations of the dependent variables.

In the second block in Table 8, one sees that the decline in gross margins is significant, and average GM ratio of loss-making observations is significantly lower: the values of both P2 and P3 low. However, the hypothesis that the difference between the two groups of firms is constant cannot be rejected at 10% level of significance. Therefore, the increasing differential between the profitability of the two groups of firms cannot be explained solely by the performance of the GM ratios.

The reduction in EBIT is very small and not significant for profit making observations. Loss making observations have persistently lower EBIT margins. The absolute value of the difference between the EBIT margins of the two groups has declined from 0.27 to 0.20 between 1979-82 with fluctuations in the intervening years.

The changes in the ratio of asset utilization is not significant for observations with positive profits: H2 cannot be rejected at traditional

levels of significance. Firms making losses have significantly lower AU ratios (low P3). Again, the difference between the two groups of firms significantly decrease over time: The value of B_L increases from -0.441 in 1980 to -0.015 in 1984, with a P4 value of 6.9%.

The increase in average financial costs between the years 1980-82 is significant, as expected. The interesting point is that the FC ratios of observations with losses do not seem to be significantly higher than those with profits: the hypothesis that all the elements of B_L are zero cannot be rejected at the 10% level of significance. Notice that the t-statistics of the coefficients B_L are also low. Hence financial costs are not important in explaining the difference in the profitability of the two groups of firms.[35]

The results obtained so far can be summarized as follows: In the 1980-82 period there has been a decrease in the profitability of firms in the CMB data set. Although financial costs have increased considerably during those years, that component of profitability does not explain the poorer performance of firms with losses. On the other hand, loss making observations have significantly lower GM, EBIT and AU ratios.

If this interpretation is correct, then it can safely be said that firms were hit by two shocks in 1980-82: the interest rate shock took place almost simultaneously with the demand shock, as reflected in the decline in gross margins. A look at the movements in leverage can now give us an idea about how firms adjusted financially to these shocks. Also, the lower levels of GM, EBIT and AU explain only the existence of the profitability gap between the two groups of observations; why the gap has increased between 1980-82 requires further explanation.

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[35] This result changes when outliers are not omitted. See Appendix 2.

To prepare the stage, let us think about the ways in which a firm can finance a loss. It would have basically three options, or a combination thereof: sell assets (or reduce liquid assets), increase equity or increase debt. If the rate of growth of assets is positive, as in the CMB sample for both groups of firms, then a loss with a contemporaneous increase in leverage would suggest that the loss has been financed by more debt than equity.

Table 8 shows that the increase in the debt to asset ratios of profit making firms was statistically insignificant (P2 value of 12%). The movements in the leverage of loss making firms, on the other hand, is significant. In 1980, the leverage of observations with losses was on average 6 percentage points higher than that of the firms in the other group, and the difference increased to 16 percentage points in 1982 and 15 percentage points in 1984. Furthermore, this increase in the difference was significant. Since the rate of growth of assets was positive in this period for both groups of firms, these results suggest that firms financed their losses by borrowing relatively more, in exactly the same period when cost of borrowing increased substantially. These results also lead to the following rather surprising conclusion: the gap in the average profitability between the two groups of observations is primarily to be explained by the increases in the leverage of loss-making observations during a period of higher financial costs.

Everything else constant, an increase in the cost of borrowing is expected to induce firms to hold less debt. The apparent higher borrowing in the present sample must have occurred due to a shift in the demand curve for loans rather than a movement along it.

What might have caused such a shift in the demand for loans is a question that requires further research. One variable that the present analysis

suggests is the drop in earnings. There are at least two ways in which a decrease in gross earnings could induce firms to use relatively more debt than equity. The first one has to do with liquidity constraints. A drop in earnings decreases the ability of firms to finance current expenditures, including expenditures on interest. While depressed asset markets made it difficult for firms to sell assets, the thinness of equity markets and/or owners' unwillingness to share or lose control of corporations limited the extent to which financing can be secured through outside equity. Therefore firms with low earnings have to rely more heavily on debt. What about the expectations of policy makers that owners of corporations would liquidate their personal wealth and use it to finance their corporations? This leads to the second explanation. On the one hand, one might argue that the personal wealth of firm owners was simply not enough to finance the gap produced by the reduction in earnings and increases in interest costs. One the other hand, one might go one step further and argue that even if personal wealth was sufficient, the owners might not have had the incentive to allocate them to finance their firms. The idea is that if the perception of owner/managers about the near future is bleak, in the sense that the perceived probability bankruptcy is high, then they will prefer to borrow rather than jeopardize their personal wealth by advancing it towards a risky activity. This is especially true when high deposit interest rates increase the opportunity cost of investing personal wealth in the corporation rather than holding it as deposits on a personal account.[36] The two explanations are not mutually

[36] What is at play here is again the effect of limited liability. Although an increase in debt relative to equity would probably decrease the <u>total</u> (debt plus equity) value of the firm when the cost of borrowing is high, it may increase the expected wealth of the owner, where wealth consists of personal wealth plus the <u>expected equity</u> value of the firm. With a high probability of bankruptcy, even if the nominal cost of debt is high, <u>expected</u> cost of debt may still be lower than the cost of equity.

exclusive and possibly both carry an element of truth. The implications of these explanations are consistent with the comparative performance of firms in the years 1980-82 and 1984. In the 1980-82 period, debt to asset ratios increased because lower asset returns dominated the effects of increased financial costs. In 1984, however, both rates of return on assets and financial costs were high, and, firms responded by lowering their indebtedness.

4 - CONCLUSION

There were, basically, two somewhat related stories laid out in this paper. The first one was about the response of the banking system to deregulation. It was argued that the complete absence of a regulatory framework allowed insolvent banks to avoid bankruptcy by offering high rates to depositors, using funds thus collected to finance their obligations and refinance non-performing loans. The second one was related to the response of firms. Contrary to the expectations of policy makers, firms that made losses were shown to increase their debt to asset ratios even though cost of borrowing had increased. It is not possible to clearly demonstrate the correspondence between these two stories. Although in the CMB data set there were some observations with negative book values of net worth, it is not clear how many firms that had low earnings were actually insolvent.

However, there is a unifying theme between the two stories: The unexpected consequences of deregulation and increases in the level of indebtedness of firms seemed to be generated by a drop in the earnings of the corporate sector that resulted from stabilization policies and the radical changes in the economic environment. Once firms and banks are hit by

financial distress, and if bankruptcy entails private costs, then they should be expected to implement risky survival strategies. These strategies may even involve financing of firms or banks with negative economic values; as long as the ex-ante equity values of these projects are positive, due to, for example, anticipations of ex-post deposit guarantees. Furthermore, there does not seem to exist in the market a mechanism to ensure the exit of these firms or banks. What the Turkish experience points out is a potential inconsistency between macroeconomic stabilization policies, that do involve radical changes in the economic environment, and financial liberalization, especially when the latter is implemented without an adequate regulatory framework.

This last qualification is important. Given the liquidity problems that arose in the corporate sector, continuing to suppress deposit interest rates at negative real levels would probably have made things worse. There was a clear need to mobilize additional financial resources. We have seen that interest rates were quite effective in mobilizing financial resources. What was questionable however was the allocative efficiency of interest rates: once mobilized, substantial resources were used to prolong survival rather than to alleviate temporary liquidity problems or finance investment. Presumably, this additional loss could have been prevented by active supervision of the banking system and/or by setting interest rate ceilings at some maximum positive sustainable level.

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APPENDIX 1: Format of Financial Statements of Firms in the CMB Data Set.

Balance Sheet

ASSETS		LIABILITIES	
Cash and Equivalents	A1	Short Term Bank Loans	L1
Securities	A2	Other Current Liabilities	L2
Accounts Receivable	A3	Current Liabilities	L3
Inventories	A4	Outstanding Bonds	L4
Other Current Assets	A5	Long Term Bank Loans	L5
Current Assets	A6	Other Long Term Liabilities	L6
Long Term Receivables	A7	Long Term Liabilities	L7
Participations	A8	Total Debt	D
Net Fixed Assets	A9	Paid-in-Capital	E1
Investments in Progress	A10	Reserves	E2
Other Fixed Assets	A11	Allowances	E3
Noncurrent Assets	A12	Revaluation Fund	E4
		Losses from Previous Years	E5
		Pretax Income	E6
		Net Worth	E
Total Assets	A	Total Liabilities	L

Income Statement

Y1=Net Sales Income	(1)
Y2=Cost Of Goods Sold	(2)
Y3=Gross Profit	(3=1-2)
Y4=Operating Expenses	(4)
Y5=Operating Income	(5=3-4)
Y6=Other Income	(6)
Y7=Other expenses	(7)
Y8=Interest expenses	(8)
Y9=Pretax Income	(9=5+6-7-8)

Financial Ratios:

GM=Y3/Y1	Gross Margin
AU=Y1/A	Asset Utilization
FC=Y8/D	Average Financial Costs
GR=D/A	Gearing Ratio
PR=Y9/E	Rate of Return on Equity
EBIT=(Y5+Y6-Y7)/Y1	EBIT (earnings before interest and taxes) Margin.

APPENDIX 2: Regression Results When Outliers Are Not Omitted

In general, outliers that were omitted correspond to observations with very high losses. The most significant changes that occur in the regression results when outliers are not omitted are the following:

a) There is a general reduction in the values of t-statistics and number of coefficients that are significantly different from zero. The general time profiles of B_Y and B_L do not change very much.

b) The results of all of the F-tests for PR, EBIT and GR remain qualitatively the same when outliers are not omitted.

c) For GM, there were four observations that were omitted. All four belonged to a single firm that made heavy losses (the GM ratio of that firm in 1982 was -600%). Once these observations are included in the data set, Hypothesis H2 can no longer be rejected. Hypothesis H4, on the other hand, can be rejected at the 5% level. What is happening here is that inclusion of these observations decreases the relative importance of variations in the dependent variable from one year to the other (the year effect), while increasing the importance of variations across observations with positive and negative profits (the loss effect).

d) For FC, there were two observations that were omitted. When these are included, both H3 and H4 can be rejected; in other words, inclusion of these outliers results in concluding that observations with losses did have higher average financial costs.

Table 1: Interest Rates (%)

	1980	1981	1982	1983	1984
a) Real Lending Rate	-0.6	50.2	37.7	28.0	28.7
b) Nominal Deposit Rate	13.5	45.2	50.0	37.5	49.1
c) Inflation Rate (1 year ahead)	36.6	30.8	32.9	48.4	45.0
d) Ex-post Real Deposit Rate	-16.6	14.9	17.6	-5.0	7.0

Sources:
a) Easterly (1988), Table 6.
b) Central Bank of the Republic of Turkey (6 month deposits).
c) State Institute of Statistics, average annual change in CPI in the following year.
d) Calculated as

$$\frac{(1 + r_t/2)^2}{(1 + p_t)} - 1$$

where r_t is given in (a), and p_t is the average inflation rate between year t and t+1, as given in (c).

Table 2: Annual rates of inflation (%)

	Consumer Prices	Wholesale Prices
1981 Jan.	82	86
Feb.	56	47
March	45	40
April	38	34
May	30	33
June	30	38
July	33	38
August	33	37
Sept.	33	37
Oct.	29	30
Nov.	28	27
Dec.	28	26
1982 Jan.	26	25
Feb.	24	24
March	26	30
April	25	34
May	23	32
June	23	24

Consumer price index: State Institute of Statistics
Wholesale Prices: Treasury
Rates of change relative to the same month of the previous year.

Table 3: Statistics on private commercial banks

	1977	1978	1979	1980	1981	1982	1983	1984
(1) Assets	218.6	316.3	457.5	737.5	1418.7	2148.6	2709.4	4243.9
-Credits	106.5	145.3	207.5	356.8	654.6	973.7	1222.0	1608.2
(2) Liabilities	218.6	316.3	457.5	737.5	1418.7	2148.6	2709.4	4243.9
-Deposits	151.4	204.6	310.1	518.3	1080.6	1552.6	1879.3	3208.7
(3) Average Credits	95.9	124.4	173.6	272.1	483.3	798.4	1090.8	1402.0
(4) Interest Income	12.9	18.0	27.7	68.1	182.9	338.0	448.0	813.4
(5) Interest Expense	6.5	9.1	15.6	36.8	144.2	326.7	416.8	723.3
(6) Ave. Interest Inc.	3.5	14.5	16.0	25.0	37.8	42.3	41.1	58.0
(7) Ave. Interest Exp.	6.8	7.3	9.0	13.5	29.8	40.9	38.2	51.6
(8) Interest Margin	6.7	6.2	7.0	11.5	8.0	1.4	2.9	6.4

(3): Geometric average
(6) = (4)/(3)
(7) = (5)/(3)
(8)=[(4)-(5)]/(3).
Source: Turkish Bankers Association

Table 4: Indicators of financial deepening

	% Share in GNP (a)			Growth Rate (%,constant prices)		
		Deposits			Deposits	
	M2	Total	Private domestic banks	M2	Total	Private domestic banks
1978	22.22	18.69	13.64	-9.09	-12.29	-10.19
1979	19.64	16.14	11.61	-12.23	-11.14	-19.77
1980	15.77	13.39	9.04	-16.76	-8.29	-16.37
1981	18.94	17.29	11.42	33.85	63.26	40.04
1982	23.94	23.33	14.83	16.49	26.33	12.69
1983	25.17	25.21	14.79	-9.49	-8.57	-16.40
1984	22.61	14.84	13.38	6.28	-54.19	-10.19

Source: M2 from IFS.
Deposits from Turkish Bankers' Association.
(a): Stocks expressed as geometric averages.
(b): Year-end stocks deflated by the December values of WPI, IFS, Supplement of Price Statistics, 1986.

Table 5: Assets of the banking system

	% of GNP (a)			% annual growth (current prices) (b)			% Annual Growth (constant prices) (c)		
	Total Assets	Credit to Private sector	Total Claims on Private Sector	Total Assets	Credit to Private sector	Total Claims on Private Sector	Total Assets	Credit to Private sector	Total Claims on Private Sector
1977	51.3	20.4	20.9	37.8	27.3	27.4	1.1	-6.6	-6.6
1978	47.6	17.5	17.9	36.8	26.0	26.6	-8.1	-15.4	-15.0
1979	41.2	14.1	14.5	54.9	46.3	46.1	-14.7	-19.4	-19.5
1980	36.1	11.0	11.3	106.4	73.1	73.4	6.1	-11.0	-10.9
1981	44.8	13.1	13.8	63.4	80.7	86.5	30.7	44.6	49.2
1982	52.3	15.7	17.1	48.1	41.0	47.3	18.1	12.4	17.4
1983	57.7	16.4	19.2	43.7	34.3	49.3	2.0	-4.7	6.0
1984	55.5	13.8	17.1	62.2	33.6	33.9	9.4	-10.0	-9.8

Source: Central Bank, Quarterly Bulletin.

Excludes investment and development banks.

Total claims = Credits + Participations + Bonds + Other

(a) : Stocks expressed as geometric averages.

(b) : End of Year.

(c) : End of year stocks deflated by WPI (December) in IMF, IFS Supplement of Price Statistics, 1986.

Table 6: Private Sector's share in total Credit

	1977	1978	1979	1980	1981	1982	1983	1984
Total Credit/GNP	47.5	40.8	36.7	29.9	31.4	30.5	29.7	23.1
Share of Private Sector Credit in Total	50.7	50.9	49.8	52.0	59.8	65.1	68.2	74.8
Share of Private Sector in new Credit	39.4	51.7	47.6	55.3	73.9	83.3	79.2	102.5

Source: Central Bank, Quarterly Bulletin.

Table 7: Annual Non-Weighted Averages of Financial Ratios

	1979	1980	1981	1982	1983	1984
Profitability		0.424	0.240	-0.046	0.185	0.358
Gross Margin	0.233	0.262	0.223	0.193	0.183	0.218
EBIT	0.172	0.179	0.171	0.142	0.131	0.172
Asset Utilization		1.525	1.440	1.513	1.549	1.846
Average Financial Costs		0.132	0.154	0.183	0.168	0.189
Gearing Ratio		0.686	0.703	0.727	0.682	0.626

Source: CMB data set.

Table 8: Regression Results

Dep. Var.: Profitability (PR)

	1979	1980	1981	1982	1983	1984
B_Y			−0.033	−0.123	−0.125	−0.027
B_L		−0.678*	−0.832*	−1.698*	−0.907*	−0.815*
F-test	P1: 1.000		P2: 0.815	P3: 0.000	P4: 0.004	

Dep. Var.: Gross Margin (GM)

	1979	1980	1981	1982	1983	1984
B_Y		0.019	−0.016	−0.069*	−0.047*	−0.015
B_L	−0.161*	−0.090*	−0.088*	−0.125*	−0.159 *	−0.055
F-test	P1: 0.000		P2: 0.000	P3: 0.000	P4: 0.123	

Dep. Var.: EBIT Margin (EBIT)

	1979	1980	1981	1982	1983	1984
B_Y		0.015	0.002	−0.004	−0.030	−0.010
B_L	−0.266*	−0.172*	−0.108*	−0.195*	−0.204*	−0.019
F-test	P1: 0.000		P2: 0.330	P3: 0.000	P4: 0.000	

Dep. Var.: Asset Utilization (AU)

	1979	1980	1981	1982	1983	1984
B_Y			−0.018	0.002	−0.040	0.141**
B_L		−0.441*	−0.456*	−0.293*	−0.107	−0.015
F-test	P1: 0.000		P2: 0.166	P3: 0.000	P4: 0.069	

Dep. Var.: Average Financial Cost (FC)

	1979	1980	1981	1982	1983	1984
B_Y			0.029*	0.046*	0.037*	0.063*
B_L		0.022	−0.017	0.034	0.022***	−0.028
F-test	P1: 0.000		P2: 0.000	P3: 0.134	P4: 0.100	

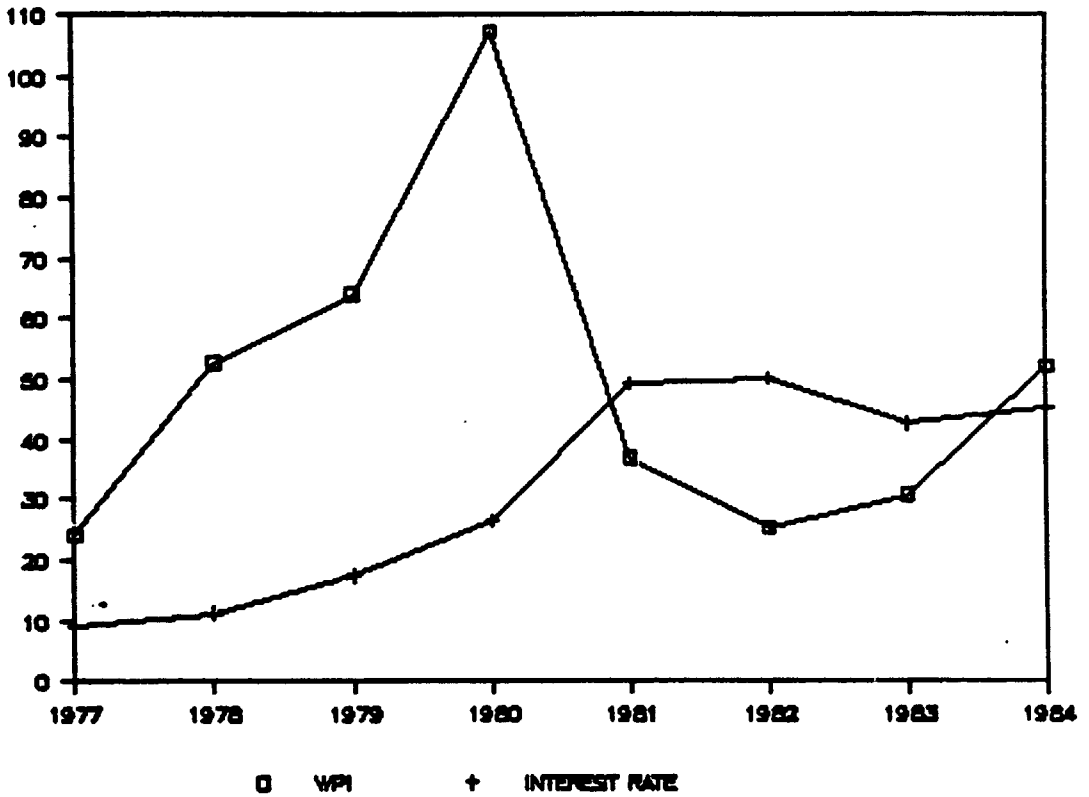
Dep. Var.: Gearing Ratio (GR)

	1979	1980	1981	1982	1983	1984
B_Y			0.015	0.017	−0.010	−0.028
B_L		0.064***	0.054**	0.159*	0.116*	0.147*
F-test	P1: 0.000		P2: 0.119	P3: 0.000	P4: 0.012	

(*) significant at 1 % level; (**) significant at 5% level; (***) significant at 10 % level.

Figure 1

INFLATION AND NOMINAL INTEREST RATE



Source:

Inflation: Treasury; average annual percentage change in WPI
Interest Rate: Central Bank; rate of interest on 1 year deposits.

Note: For the period 1980-82, interest rates in the figure correspond to those announced in banks' gentlemen's agreements and do not reflect higher rates offered by most banks.

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