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Macroeconomic Crisis and Firm Performance

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Macroeconomische crisis en ondernemingsresultaten

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CHAPTER 1:

¨What goes up, must come down¨
Law of Gravity
Sir Isaac Newton (1642-1727)

INTRODUCTION

In 1686, Newton´s Law of Gravity formalized the well-known saying: ¨What goes up, must come down¨. This law applies not only to physics and mathematics, but to everyday life. As so, the financial and economic worlds are not the exception, and we clearly see it with the economic and business cycles: Periods of expansion are followed by prosperity, contraction, and recession. After the recession, the expansion can start again.

Economists throughout time have tried to understand and reduce the magnitude of the economic cycle. They have succeeded in building theory around it as well as shortening the recession periods; nevertheless, it has been impossible to eliminate the cycle and consequently break the Law of Gravity. Even worse, they have not been able to avoid economies from falling into crisis episodes, as suggested by the recent crises in Latin America, East Asia, and Russia.

The fact is that the rate of production, income, and spending fluctuate over time, and so does the performance of companies. As we cannot avoid macroeconomic downturns, or in the extreme case macroeconomic crises, at least we can try to mitigate their negative effects on firms. The quest begins by comprehending the repercussions of economic crises on firm performance, and how these vary according to differences between corporates. Variables such as capital structure, industry, size, and internal corporate governance might help to explain these divergences. In addition, the institutional environment in which companies operate can determine much of the effects of macroeconomic crises on firm performance. Emerging market economies usually are more volatile than developed ones, due to factors such as financial repression, rigid macroeconomic policies,

and political instability. Therefore, in these types of economies, macroeconomic downturns and crises tend to be more costly. These understandings permit to suggest business policies that can favor performance once an economy enters a crisis episode.

In recent literature much research has been attained regarding the macroeconomic effects of crises, and how these effects spread to different countries through contagion channels. However, there is a lack of information on the microeconomic repercussions of these crises, particularly for emerging market economies. The book ¨Macroeconomic Crisis and Firm Performance¨ brings up additional knowledge on this topic, using as case study the Mexican 1994 currency crisis.

The book is a compendium of thematically related papers, most of them already published or accepted for publication in international and Mexican journals (chapter 2: Frontiers in Finance and Economics, vol.3, num.1; appendix 1: Economía Mexicana, vol.XIV, num.1; appendix 2: EconoQuantum, vol.2, num.2). The main group of papers is included as chapters two to four of the book, and the rest are incorporated as appendix 1 and 2. These last papers have been designed for those readers most involved and interested with the Mexican case. In fact, the two papers included as such have been accepted for publication in Mexican journals.

Chapter two begins questioning if the Mexican 1994 crisis was anticipated or not, under a firm-level perspective. According to the crisis literature, anticipated crises are less severe than non-anticipated ones, as agents are able to adjust their expectations and react in a gradual rather than in a shock manner. Under the assumption of capital structure flexibility, if Mexican firms could have forecasted the crisis, then they would have reduced their dollar denominated debt prior to it. Companies would have searched for liquidity in order to face the forthcoming crisis, which could have been achieved by increasing their cash allowances and internal financing. In addition, some firms might have begun to focus on producing for the external markets instead of the domestic one, and investment would have been reduced. These variables were considered in an event study, and

regressions were run using different possible anticipation periods: four quarters, three, two, and one quarter. The main result obtained was that Mexican firms were not able to anticipate this currency crisis, or at least that they did not have the flexibility to adjust their capital structure accordingly before it took place. This is consistent with the general belief that no one was able to anticipate this crisis, as at the time the fundamentals of the Mexican economy were optimistic.

As there was apparently no crisis anticipation, it is not surprising that this currency crisis had a significant impact on Mexican firms. Due to the previous expansion of foreign capital inflows (as a result of the liberalization process of the 1990´s), Mexican companies had more access to dollar denominated debt. Although the exchange rate was quasi-fixed during the time, it seemed that the favourable macroeconomic conditions diminished the concerns of the exchange rate risk implicit in this debt. The high levels of investment were financed mainly by bank loans and in less degree by trade credit and outside equity; therefore, debt levels were high. With the 1994 peso devaluation, firms faced a significant increase in the peso value of their dollar denominated debt. In addition, the rise of internal interest rates increased the cost of peso denominated debt. This, together with a reduction in credit options and in internal demand, caused many firms to go bankrupt or at least seriously distressed.

The crisis propagation and effects on Mexican firms are studied into depth in chapter three. The main assumption underlying this chapter is that deterioration and recovery manifest themselves through significant changes in the level of a firm's financial, operational, solvency, and performance ratios. Therefore, tests for structural change were performed to establish the occurrence and significance of these events. Specifically, the techniques developed in Andrews (1993) and Bai et al. (1998) were employed to test the null hypothesis of no change against the alternative of two instantaneous breaks in the level of a particular ratio, where the break dates were treated as unknown. Whereas the crisis' effects on balance sheets might have occurred instantaneously (as there was no anticipation of the crisis), it is reasonable to argue that recovery might have not been

sudden, but rather may have appeared gradually. Therefore, we allowed for the possibility of gradual recovery by modifying the two-breaks model in this direction. The main findings show that generally this currency crisis had negative effects on companies' balance sheets (they deteriorated between the fourth quarters of 1993 and 1995), and firms' interconnections evolved in propagation among themselves. In addition, recovery was only partial and gradual, and overall the crisis episode was prejudicial even for surviving firms. However, there were certain differences in performance according to industry. For instance, the last industries to recover were telecommunications and services, and the least wounded sectors were mining and conglomerates.

A tentative explanation for the differences in firm performance relates to internal corporate governance arrangements. Research linking firm performance and corporate governance structures has produced the consensus view that poor corporate governance is associated with lower operating performance and Tobin's Q. This is most evident during times of crises, as it is then when expropriation of stakeholders becomes more severe. Due to the circumstances, nervous investors take their money away from companies with poor governance, which further deteriorates profits and firm value. In addition, the odds of bringing in claims increase. This situation is worse in emerging markets, where external governance mechanisms (such as legal protection) are deficient.

In chapter four we consider the influence of internal corporate governance arrangements, such as bank, business, and family ties, on Mexican firms´ performance. Export-orientation and exposure to external capital markets constitute another dimension of internal corporate governance mechanisms, and are also included in the analysis. We estimated a random effects panel data model, and concluded that during the Mexican 1994 currency crisis having bank links was prejudicial for companies´ performance. The reasoning behind this remark is that during emerging markets' crisis periods, bankers usually act as accomplices instead of firm regulators. Therefore, under these circumstances, bank links represent poor governance schemes. On the contrary, during this crisis episode belonging to business

groups favoured performance. This is consistent with recent literature that evidences the positive governance effects (and risk diversification) of these business networks, as they ensure close monitoring of management and support internal trade and financing. Finally, export-orientation showed an increasing positive effect on performance, from pre-crisis to post-crisis periods.

From the findings obtained in chapters two to four, we were able to derive some business recommendations in order to reduce companies´ vulnerabilities to future macroeconomic crises. These suggestions are exposed in the conclusive remarks of chapter five: 1) Trim down both the exchange rate and the debt mismatching, in order to decrease exchange rate risk; 2) Diversify risk by producing both for local and international markets, as export-oriented companies depend less than the rest on local macroeconomic conditions. In addition, participation in international markets can imply better stakeholder protection, as exporting firms must possess good reputation in order to trade and obtain credit from external markets; 3) Rely more on equity and trade credit than on bank financing. In emerging market economies, there is evidence that suggests that banks generally act as accomplices instead of firm regulators and advisors, which lessens their governance functions. During normal periods, banks allow linked companies to increase leverage, making them more vulnerable during crisis times. Therefore, bank links negatively relate with firm performance; 4) Keep liquidity indicators high, even though in the short-run earnings are being sacrificed, in order to increase companies' flexibility to deal with crises; 5) Create networks with other companies, with the objective of building diversified business groups. This implies a type of insurance, as companies belonging to diversified business groups or conglomerates stabilize aggregate profits. These networks support internal trade and financing, and ensure close monitoring of management. Therefore, in times of crises performance for these firms can be better than for others. Nevertheless, this is an effective but expensive way (in terms of administrative and operative costs) to reduce risk, and consequently during normal periods performance tends to be poorer than for the rest of firms.

CHAPTER 2:

THE MEXICAN CRISIS ANTICIPATION AT A MICRO-LEVEL*

1 INTRODUCTION

During the period 1989-1994, Mexico was considered as a growing and stable country. The annual GDP grew on average 4%, the inflation rate was low (in 1993 it reached one digit for the first time in 20 years), and public finances were controlled. The overall public sector deficit in Mexico declined from 15% of the GDP in 1987 to less than 1% in 1993. Capital inflows, most of which were allocated to the private sector, represented 27.1% of the 1994 GDP. On average, the credit to the private sector increased 56% annually, in real terms, reaching a growth of 92% in 1994.[1]

In the early 1990's, Mexico and other Latin American countries began to liberalize the financial sector and the current account. Banks were privatised, and foreign investment increased dramatically. These events generated a boom in the banking industry, as it had access to more funds. New banks started operating, services were expanded, as well as credit. In Mexico, credit controls and lending restrictions were abolished, as well as minimum reserve requirements. However, the credit expansion, together with bad credit analysis and poor regulation of the banking system, evolved in banks financing more risky projects. This increased banks' fragility to external and internal economic shocks.

The Mexican crisis began with the political tension during 1994. Capital outflows were generated as the response to the Chiapas conflict and the assassination of Luis Donaldo Colosio. These events, together with a growing external current account deficit, brought devaluation, which occurred at the end of the year (in a two month period, the devaluation was more than 100%). The current account deficit, in percent of GDP, grew on average 1 percentage point from 1989-1994, reaching 7% during 1994[2].

[1] See Kalter and Ribas (1999).
[2] See Kalter and Ribas (1999).

Interest rates were increased in order to avoid more devaluation, which caused economic recession and banks' insolvency (as depositors were taking their money away from banks, banks were paying higher interest rates, non-performing loans increased, and credit was reduced). The real GDP declined by 10% during 1995 and inflation reached 52% during the same year.

In several studies concerning the Mexican crisis, it is a general belief that no one was able to anticipate it. As stated by Aybar et al. (2000), the fundamentals of the Mexican economy were optimistic, and early 1994 no economist nor government official forecasted a crisis. On the contrary, Mexico was apparently ready to enter NAFTA, even with its significant current account deficit. Calvo and Mendoza (1996) reinforce this view, as they point out that the 1994 crisis took place in a different economic setting than the rest of the Mexican crises: inflation was low, there was fiscal surplus, and high reserves. Although in 1993 there was debate on the current account deficit and the real appreciation of the peso, many economists argued that this was a normal outcome of equilibrium adjustments due to the structural reforms. Nevertheless, ex-post some authors have argued that the signs of crisis were present early 1994[3], as there was a reduction in annual GDP growth to 0.5% in 1993, excessive dependency on capital inflows due to scarce internal savings, growing current account deficit, and political tensions beginning in March 1994 with the assassination of Colosio (see Aybar et al. (2000)).

However, most of these studies deal with a macroeconomic or political point of view rather than from an entrepreneurial framework. The focus of this study is to examine if Mexican firms were able to anticipate the financial crisis and adjust their capital structure accordingly. For this purpose, the quarterly balance sheet data from I 1993 to I 2001 of a sample of 73 private Mexican firms, that survived the crisis and were still operating in 2001, will be used.

[3] Other authors such as Clark (2000) mention that the signs of crisis were present even before 1993. In an excellent paper Clark uses portfolio theory joined with political economy to demonstrate that international lenders were adjusting to the forthcoming crisis as far back as 1991.

Under the assumption of capital structure flexibility, supported by Claessens et al. (2000), if firms could forecast the crisis, it is clear that these companies would have reduced their dollar denominated debt prior to the crisis. Firms would have searched for liquidity in order to face the forthcoming crisis, which could have been achieved by increasing their cash allowances and internal financing (increase social capital, reduce dividend payments, sell stock in the primary market, and increase the reserves for future capital expansions). In addition, some companies might have begun to focus on producing for the external markets instead of the domestic one, and investment would have been reduced. These variables will be considered in the event study, whose methodology is explained in the following sections.

This chapter is organized in the following way: Section 2 analyses the Mexican crisis and compares it to the Asian crisis. It appears that both crises took place in a setting of poor banking supervision and highly leveraged firms. However, in contrast to the Asian situation, in which there was in general a current account surplus, the Mexican crisis originated as a currency crisis. This section also gives some clues on detecting crises risk factors, and explains the effects of financial crises on corporates. Section 3 deals with the data description and methodology of the event study. A descriptive analysis of the firms' performance and capital structure comes before the event study, which is concerned with the anticipation of the crisis. Section 4 analyses the companies' performance and reaches the conclusion that both the ROA and the operational margin increased during the crisis period. This is attributed to a rise in exports. Section 5 studies the capital structure of firms. It concludes that, for the entire period under consideration, there is a great amount of financial vulnerability. Short-term debt represents more than half the amount of total debt, foreign-denominated debt corresponds to almost 50% of total debt, and of this type of debt, more than 50% is short-termed. Section 6 deals with the crisis anticipation analysis. The model to be used is explained and the regression results are discussed. The regressions were run using different possible anticipation periods: four quarters, three, two, and one

quarter, and allow for industry and size effects. The main result obtained is that Mexican firms were not able to anticipate the 1995-1996 financial crisis, or at least that they did not have the flexibility to adjust their capital structure accordingly before the crisis took place. Section 7 outlines the conclusions of the chapter and makes suggestions for further work on this topic.

2 ANALYSIS OF THE MEXICAN CRISIS

2.1 Crisis background

According to Kalter and Ribas (1999), the factors that originated the Mexican crisis were: the real appreciation of the Mexican peso[4], a weak banking system, political instability, the rise in the US interest rates, maturity and currency mismatches in public-debt management, an increment in non-performing loans relative to total loans from 5.5% in 1992 to over 8% in mid 1994, inappropriate banking regulations, and moral hazard related to the belief that the IMF would bail out risky loans. In addition, there was an increasing current account deficit.

2.2 Similarities and differences between the Mexican and Asian crises

Although several firm-level surveys providing data on corporate crisis and recovery have been made for Asia (for example Hallward-Driemeier (2001)), less attention has focused on Mexico, though there are a number of similarities with the Mexican crisis. Pomerleano (1998[a]) points out that the Asian crisis had its roots in financial sector weaknesses (like poor bank supervision), inconsistent macroeconomic policies, reversal in capital flows, and the distortion generated by guarantees on the financial system. He also mentions the corporate roots of the crisis, as firms were excessively leveraged and there was poor profitability. According to his analysis, Asia suffered from a lack of financial discipline; companies used household

[4] Stone (2000[b]) recalls that overvaluation of the exchange rate also makes external borrowing less costly, so countries become more leveraged in foreign currency. This increases vulnerability to crises.

savings to increase their indebtness in foreign currency, banks did not consider risk appropriately while lending (only 55% of the firms needed to provide audited statements to receive a loan (see Hallward-Driemeier (2001))), and there was a lack of transparency in the system. As an example, traditionally the Korean financial system was used as a government instrument to finance industrial production. Therefore, banks did not take into account market principles as they offered credit. Borensztein and Lee (2000) point out that Chaebol firms were the ones who suffered the most from the new credit rules imposed by banks during the crisis. In the region, 60% of firms went bankrupt during this period.

Krugman (1999) states that the East Asian Crisis originated in corporate balance sheet problems, such as high levels of short-term and unhedged corporate borrowing, and volatile international capital flows. Stone (2000[b]) for example, studies the impact of corporations in financial crises, using data from 9 crises: Chile, Mexico (83), Hungary, Poland, Mexico (95), Indonesia, Korea, Malaysia, and Thailand. He describes the evolution of crises in three phases: 1) A vulnerability phase, in which there is a credit expansion for some sectors, usually guided by development and growth governmental policies. This results in excess leverage and undiversified bank portfolios. 2) A contraction phase, where the countries stop receiving capital inflows due to an external shock (like an increase in international interest rates) or the deterioration of expectations concerning the corporate sector. The first effect is depreciation, which is transmitted to the real sector and then to the banks as corporations seize paying their debts. This in turn generates credit rationing and worsens the real sector performance. The outcome is a recession. 3) A recovery phase, in which the government takes an active role to restructure the corporate sector. This recovery takes on average two years.

Claessens et al. (1998) reach similar conclusions with respect to the corporate roots of the Asian crisis. They find that the combination of high investment and low profits in Asia indicate that much external financing was used in the financial structure of those firms. Outside equity was scarcely used due to the underdeveloped capital markets, and retained

earnings were limited, so leverage was high in most countries. Short-term debt was very important in several places, especially Malaysia, Taiwan, and Thailand. This type of capital structure reveal high risk, as firms find it difficult to survive rises in interest rates, depreciation and declines in the demand for their products.

The Mexican crisis, like the Asian crisis, took place in a setting of poor bank supervision, implicit and explicit loan guarantees, and great amounts of investment. As Detragiache and Spilimbergo (2001) indicate, a situation in which short-term external liabilities were not matched by foreign assets of similar characteristics. In both crises non-bank capital markets were incipient, lacking alternative financing options for companies, and therefore firms were highly leveraged. Stone (2000[a]) points out the importance of developing non-bank sources of corporate financing (equity, commercial paper, and bond markets) to reduce the countries' vulnerability to a crisis, and the severity of the latter. These markets not only provide an alternative to financing, but also allow hedging against the risk of exchange rate devaluation, and for better corporate governance (which is especially important in places where there is a high degree of ownership concentration).

In contrast to the Asian situation, in which there was in general a current account surplus, the Mexican crisis originated as a currency crisis. The exchange rate was overvalued, there was a current account deficit, and foreign reserves were dropping; the result was the December 1994 devaluation of the Mexican peso. Kalter and Ribas (1999) point out the effect of Mexico's fiscal policy in the real exchange rate, measured as the relative price of traded to nontraded goods. Their study uses data from 1987-1994, which corresponds to the period of trade and financial liberalization. For this period, the prices of nontradable goods increased on average 33% annually. Compared to a 23% price increase in the tradable goods sector, this means that the real exchange rate appreciated by over 40%. Kalter and Ribas (1999) argue that an increase in government expenditure (which increases aggregate demand, interest rates, and capital inflows) and taxation causes an increment in production costs. This is

translated into a price increase for nontraded goods, but not for traded goods. The higher production costs that affected the tradable goods producers, together with the increment in domestic interest rates, increased the companies' and banks' vulnerability. The real appreciation of the exchange rate caused by the fiscal policy was a distortion that discouraged the production of exportable merchandise. Imported goods became more attractive, which developed eventually into a current account deficit. Due to the quasi-fixed exchange rate in Mexico prior to the crisis, this reduced the amount of foreign reserves held by the Central Bank. Soon speculation took place, causing capital flights, currency and financial crisis.

2.3 Detecting risk factors of financial crises

There are several risk factors that might announce a financial crisis. Detragiache and Spilimbergo (2001) study the relationship between liquidity and financial crisis. They use a sample of 69 countries, from 1971-1998, in which there are 55 crisis episodes and 950 observations. A crisis equation is tested, where the dependent variable corresponds to the occurrence of a debt crisis, and the independent variables are liquidity indicators, variables controlling for the size and structure of the external debt, and a set of macroeconomic variables. Their results indicate that liquidity variables are highly significant and show the expected signs. In addition, countries with greater amounts of external debt, less opened to the rest of the world, and with more overvalued exchange rates, seem to be more exposed to financial crises. The rest of the macroeconomic variables not related to the external debt did not showed to be highly significant.

Wei and Wu (2001) use a simple 2-period model to study the relationship between corruption and the different types of capital flows: foreign direct investment, bank loans, and portfolio capital inflows. The results show that corruption affects mainly foreign direct investment, followed by portfolio capital inflows, and to a minor extent bank loans. Therefore, countries perceived to have relatively high levels of corruption (like Mexico) are more vulnerable to currency crisis, due to the composition of their capital flows.

Downes et al. (1999) use a practical methodology to evaluate the "financial system soundness" of countries. It involves both a qualitative and quantitative evaluation of the financial system. The qualitative evaluation takes into account macroeconomic risk factors, such as lending expansions, changes in asset prices, and volatility of capital inflows and exchange and interest rates. It considers also financial system health indicators (such as foreign exchange exposure of the entities, credit concentration, and maturity structure of liabilities and assets), institutional regulations used to avoid excessive risk-taking, and systemic liquidity arrangements offered by organizations such as the Central Banks. The quantitative evaluation deals with bank-by-bank analysis of balance sheets. As Stone (2000[a]) states, perhaps the best way to avoid a crisis is to look for signs of vulnerability by monitoring balance sheets of banks and corporations.

2.4 Effects of the Mexican crisis on the corporate sector

This financial crisis had an important impact on firms. Due to the previous expansion of foreign capital inflows, Mexican companies had more access to dollar denominated debt. Although the exchange rate was quasi-fixed (band fluctuation) during the time, it seemed that the macroeconomic conditions diminished the concerns of the exchange rate risk implicit in this debt. The high levels of investment were financed mainly by bank loans and in less degree by trade credit and outside equity; therefore, debt levels were high. With the 1994 devaluation, firms faced a significant increase in the peso value of their dollar denominated debt. In addition, the rise of internal interest rates increased the cost of peso denominated debt. This, together with a reduction in credit options and in internal demand (sales declined due to the economic recession), caused many firms to go bankrupt.

3 DATA DESCRIPTION AND METHODOLOGY

3.1 Data

The quarterly balance sheets from I 1993 to I 2001 of a sample of 73 private, non-financial Mexican firms, who survived the crisis and are still operating, will be employed. The databases were obtained through INFOSEL, a Mexican information enterprise, whose original source of data is the Bolsa Mexicana de Valores (Mexican Stock Market). Therefore, all firms are listed in the stock exchange, and are considered as big companies (on average their assets represent more than one million US dollars). The information on the 73 firms corresponds to a comparable and balanced panel.

3.2 Methodology

The methodology employed in this event study is based on the one proposed by Campbell et al. (1997). This is modified to suit the current research and it also uses the methodology in Barber and Lyon (1996). The data set is quarterly and ratios are used; the ratios are constructed based on constant peso observations (from 2000). The description and steps for this event study are the following:

Study the firms' performance pre, during, and post crisis. The pre-crisis episode includes data from 1993 and 1994, as the crisis took place in December 1994. The crisis period corresponds to 1995 and 1996, and the post crisis period is 1997 to 2001. Since the measures that will be employed are not influenced by the liability structure of firms, this analysis will be useful in order to study specifically how the crisis affected profitability. In addition, it will allow detecting if, similar to the Asian case, firm profitability was sparse before and during the crisis. The ratios that will be employed are:

a. Rate of return on assets (ROA) in local currency, which is calculated as earnings before interest and taxes (EBIT) in constant pesos / total assets.

The use of EBIT results useful for comparing firms with different tax situations and different degrees of financial leverage. The benchmark that will be used to determine the adequacy of the results is the US and Germany ROA for the period 1988-1996: 5.3% for the US and 4.7% for Germany[5].

b. Operational margin, which refers to sales-costs of good sold / sales. Once more US and Germany results (1988-1996 average) will be used: 14.4% for the US and 14.6% for Germany.

Study the firms' capital structure pre, during, and post crisis. An analysis of the firms' capital structure will show how highly leveraged firms were prior to the crisis, and to which extent the debt represented short-term, foreign currency denominated loans. As discussed earlier, these are symptoms of crisis vulnerability. In addition, the analysis of the capital structure during the crisis can be useful to study the incidence of a credit crunch, defined as the impossibility to offer credit to profitable companies. Finally, by referring to the post-crisis capital structure, one could detect if firms changed their financing strategies after the crisis experience. The ratios that will be employed are:

a. Leverage, which is calculated as total debt / equity. This ratio measures how much borrowed money a company is using, relative to its equity, and shows corporate vulnerability. The benchmarks used in this case are 103.4% for the US and 151.4% for Germany, which correspond to the period 1988-1996.

b. Liquidity, which refers to short-term debt / total debt. This ratio indicates the maturity of the debt. Once more US and Germany results (1988-1996 average) will be used: 24.1% for the US and 44.7% for Germany.

[5]For the US and Germany benchmarks see Claessens et al. (1998).

c. Foreign debt/ total debt, which indicates the importance of foreign debt in the firms' capital structure, and shows vulnerability to exchange-rate risk.

d. Foreign short-term debt/ total foreign debt. This ratio is also used to study corporate vulnerability.

e. Interest payment coverage, which is computed as earnings before interest and taxes (adding back depreciation, which is the same as EBITDA or operational cash flow) / interest expenses. This shows the ability of cash flows to pay back the interests. The benchmark that will be used is the US "A" rated companies' coverage of 8 times[6].

Event definition and event window. The event under study is the anticipation of the Mexican crisis (1995-1996) by Mexican firms. The event window is defined as 1994, due to the belief that if there was any anticipation, it could not be prior to 1-year time. The information from 1993 will be used to determine normal firm behavior prior to the crisis. The variables of interest for this study are:

a. Leverage ratio. If firms were able to foresee the crisis, prior to its occurrence they would have reduced the leverage ratio, by decreasing total debt and/or increasing equity.

b. Liquidity ratio. Just like the leverage ratio, this ratio should have declined prior to the crisis, if companies were able to anticipate it. The participation of short-term debt in total debt would have been reduced, in order to better the firms' financial situation before the approaching crisis.

c. Foreign debt / total debt. Once more, it is expected that this ratio would have been lowered before the crisis took place, assuming firms anticipated the latter, for the devaluation would increase the value of the debt in peso terms.

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[6] See Pomerleano (1998[b]).

d. Cash allowances, which is calculated as the sum of money and temporal investments, over total assets. This ratio gives an idea of how liquid a firm is. Therefore, in order to deal with the forthcoming crisis, firms would have increased the participation of cash allowances in total assets prior to the crisis (assuming there was anticipation).

e. Internal financing (which results as the addition of social capital, selling of stock, and reserves for future capital expansions, minus paid dividends) over total debt. This ratio offers an understanding of the importance of self- financing for a firm, and its reliance on external financing. The argument on the behavior of this indicator prior to the crisis, if firms were able to foresee the latter, is analogous to the cash allowances case.

f. Exports / total sales, which refers to the proportion of product sold outside the national frontiers. If firms anticipated the crisis, they would have made efforts to increase their foreign sales prior to its occurrence, in order to deal with a future contraction in the internal demand for their products.

g. Investment / total assets. This ratio shows the participation of investment in total assets. If firms were able to anticipate the 1995-1996 financial crisis, it is expected that they would have delayed their investment projects for after the crisis. Therefore, this ratio should have declined.

Definition of normality and abnormality of the variables. Normality refers to the ratios during 1993. Abnormality would correspond to the 1994 ratios, if they differ significantly from the previous ones.

Testing Procedure. The general equation to be used in order to test for abnormal ratios is the following[7]:

[7] This model specification is used instead of a structural one for several reasons: 1) The objective of the paper is to test if there was crisis anticipation, not to explain the determinants of this anticipation; 2) It is not the purpose of this research to explain what determines the ratios under consideration, which actually depend on issues such as firm strategy; 3) It is not necessary to include macroeconomic variables since Mexico's macroeconomic situation was stable during the period under study.

$$R_{it} = \beta_0 + \beta_1*T + \beta_2*Dummy + \beta_3*Dummy*Telec + \beta_4*Manuf + \beta_5*Telec + \beta_6*Com + \beta_7*Const + \beta_8*Serv + \beta_9*Hold + \beta_{10}*Others + \beta_{11}*Dn + \beta_{12}*Dn*Dummy \quad (1) ;$$

$$i=1,..,73, \quad t=1,...,8$$

where:

R= ratio under consideration,
T= Time,
Dummy= 1 for 1994 and 0 for 1993 in the case of 1 year anticipation,
Telec= 1 for Telecommunications Industry, 0 for others,
Manuf= 1 for Manufacturing Industry, 0 for others,
Com= 1 for Commercial Industry, 0 for others,
Const= 1 for Construction Industry, 0 for others,
Serv= 1 for Services Industry, 0 for others,
Hold= 1 for Holdings, 0 for others,
Others= 1 for rest of industries, without including Mining Industry (reference industry), 0 for others,
Dn= 1 for big firms (more than 10,000,000,000 pesos, 26 firms in total) and 0 for small firms

This equation allows considering industry and size effects on the selected ratios.

The main hypothesis tested is that for each of the ratios under study, there is abnormality in the 1994 ratios. This implies that there is evidence that firms were able to anticipate and adjust to the financial crisis, no matter the size or industry they belong to. To test the abnormal ratios in 1994, one must check that the parameters are statistically different to zero. For this the t-statistic is used, or alternatively, the Wilcoxon test statistic if extreme observations are frequent.

In order to correct for heteroskedasticity and autocorrelation, the Newey-West procedure was used. Ordinary least squares offer consistent parameter estimates in the presence of heteroskedasticity but its standard errors will not be accurate (this affects the t-statistic). With the Newey-West method, the estimates remain the same but their standard errors are corrected. The procedure involves constructing a general covariance matrix estimator consistent both with heteroskedasticity and autocorrelation.

4 ANALYSIS OF THE FIRMS' PERFORMANCE PRE, DURING, AND POST CRISIS

The analysis of the companies' performance is based on the rate of return on assets (ROA) and the operational margin. The following ratios were obtained using quarterly balance sheets from 73 Mexican firms, from I 1993 to I 2001. They correspond to average ratios, for the pre-crisis (1993 and 1994), crisis (1995 and 1996), and post-crisis (1997-2001) periods.

Table 1 Firm Performance

Variable	*Pre-Crisis*	*Crisis*	*Post-Crisis*	*US*	*Germany*
ROA	**5.84%**	**6.40%**	**6.70%**	**5.30%**	**4.70%**
Operational Margin	**32.33%**	**34.55%**	**33.37%**	**14.40%**	**14.60%**
Exports/ Total Sales	**10.85%**	**18.89%**	**18.77%**	**N.A.**	**N.A.**

The average ROA and operational margin for the US and Germany is used as a benchmark. It corresponds to the period 1988-1996. N.A. refers to non-available data.

The Mexican firms' rate of return on assets, for the three periods considered, is higher than for Germany and US companies. It is worthy of note that this indicator follows an increasing tendency, even during the crisis period (1995 and 1996). This means that either earnings increased or assets declined, or both. Looking at the data, it comes into sight that during the crisis period both earnings and assets increased, on average 13.45% and 17.64%, respectively. During the post-crisis era, earnings grew on average 8.76%, and assets declined 2.65%. Therefore, the progress shown in this indicator is attributed in a great degree to an increment in earnings.

The obvious question that rises in this setting is how could average earnings increase, when the economy was suffering from the 1995-1996 recession[8]. One tentative answer is that the crisis did not affect all sectors in the same way. For example, during this period production increased 1.5% in the telecommunications industry, 2.7% in the mining industry, and 3.0% in the manufacturing industry. The sectors that were worst affected were construction (growth of -6.9%) and commerce (growth of –5.4%). From the 73 firms studied, 34 belong to the telecommunications, mining, and manufacturing sectors, which represents almost half of the sample. There are only 20 firms from the construction and commerce industries, less than 30% of the sample.

Another explanation for the increment in earning is attributed to the behaviour of the operational margin. Once more it seems that this indicator is much higher for Mexico than for US and Germany. The operational margin increased during the crisis period (possibly to face the crisis, assuming goods' price-elasticity is not too high) and then declined during the post-crisis era (1997-2001). The second question that arises then is who were buying goods during the crisis. The data shows that national consumption declined on average 3.3% during 1995 and 1996. However, the participation of exports in total sales increased 8 percentage points during the crisis period. This can be accredited to the devaluation, which made Mexican products cheaper in the international markets. Contrary to the Asian case, Mexican firms' performance seems to be appropriate, even during the crisis period.

5 ANALYSIS OF THE FIRMS' CAPITAL STRUCTURE PRE, DURING, AND POST CRISIS

The analysis of the companies' capital structure is based on foreign debt / total debt, foreign short-term debt / total foreign debt, interest payment coverage, leverage, and liquidity ratios.

[8] During 1995, the internal production decreased by 6.17%. In 1996 it increased 5.15%, which gives an average decline of 0.5% during the crisis period.

Table 2 Capital Structure

Variable	*Pre-Crisis*	*Crisis*	*Post-Crisis*	*US*	*Germany*
Liquidity	**62.84%**	**62.17%**	**55.14%**	**24.10%**	**44.70%**
Leverage	**108.99%**	**132.46%**	**125.38%**	**103.4%**	**151.4%**
Foreign Debt/ Total Debt	**40.30%**	**49.26%**	**43.24%**	**N.A.**	**N.A.**
Foreign Short Term Debt/ Foreign Total Debt	**58.31%**	**58.32%**	**54.47%**	**N.A.**	**N.A.**
Interest Payment Coverage	**36.42 times**	**14.29 times**	**111.58 times**	**8.00 times**	**N.A.**

The prior ratios were obtained using quarterly balance sheets from 73 Mexican firms, from I 1993 to I 2001. They correspond to average ratios, for the pre-crisis (1993 and 1994), crisis (1995 and 1996), and post-crisis (1997-2001) periods. Average ratios for US and Germany are used as a benchmark. They correspond to the period 1988-1996. N.A. refers to non-available data.

Mexican firms show financial vulnerability, as their short-term debt represents more than 60% of the total debt. However, there is a small tendency to reduce the participation of short-term debt in total debt, possibly after the crisis experience. In US and Germany, this indicator is much lower, 24.1% and 44.7% respectively.

Another measure of corporate vulnerability is the leverage ratio, which measures how much borrowed money a company is using relative to its equity. This ratio increased during the crisis period, reaching 132.46%, higher than the US ratio of 103.4%, but still lower than Germany's ratio of 151.4% (period 1988-1996). After the crisis, this ratio smoothly declined to 125.38%.

Almost half of Mexican firms' debt is foreign denominated debt. Even after the crisis, this percentage remained high: 43.24%. Of this debt, more than 50% is short-term debt, which once more reflects financial vulnerability, and brings the question of how these firms survived the crisis. A tentative explanation for this highlights the importance of debt-relief programs. For the pre-crisis period, earnings could cover on average 36

times the interests paid, much higher than for US firms. During the crisis, the interest payment coverage was reduced to 14 times, possibly because the devaluation caused interest payments to increase in peso terms, due to the high amount of foreign debt. The data shows that effectively interest payments increased 108.75% during the crisis period. After the crisis, the interest payment coverage reached 111 times, which may suggest that firms were not paying interests, as part of the debt-relief program. In fact, during this period interest payments declined 43.78%.

A natural question that comes up is why firms after the crisis experience still have high amounts of dollar denominated debt. Perhaps peso credit is scarce or too expensive. The 1995 exposition on monetary policy by the Bank of Mexico announced that there would be a strict credit policy as part of a restrictive monetary policy. For the crisis period, peso credit to the private sector declined by 12.53%; during the post-crisis period, on average this type of credit was reduced 0.08% annually. However, like the Korean case, it seems that there was not a credit crunch in Mexico, since the profitable firms under study continued to receive loans. Their debt increased on average 26.87% from the pre-crisis to the crisis period, and then it continued increasing (1.80% on average).

The elevated amount of foreign debt in the capital structure of these companies can be due both to the strict credit policy and the high peso interest rates. During the pre-crisis episode, peso loans were charged with average interest rates of 18.6%. Inflation during this time reached 7.5%; therefore, real interest rates were approximately 11.1%. During the same period, companies were able to obtain dollar denominated loans at a cost of less than 6%. This made dollar denominated credit more attractive. During the crisis period the situation was reversed, as peso interest rates increased to 42.5%, the inflation rate boosted to 40%, and the difference became just 2.5%. Dollar rates for this period were much higher than that, so peso denominated debt was obviously preferred. However, the strict credit policy did not allow for an expansion of this type of debt as is reflected in the higher proportion of foreign debt in the firms' total debt. During the post-crisis period, peso interest rates were on average 21% and prices

increased 12% on an average annual base. The real peso interest rates became then approximately 9% and the dollar interest rates that apply to these companies were on average 6.5%. Once more dollar denominated debt became more attractive.

The higher cost of peso denominated debt, the experience of the debt-relief programs, together with a reduction in the devaluation expectations that emerged with the floating exchange rate regime and the betterment of the economy, can explain why these firms continue to finance themselves with foreign-denominated debt.

6 CRISIS ANTICIPATION

6.1 Variables

The ratios of interest to examine if Mexican firms anticipated the 1995-1996 financial crisis are the leverage ratio, liquidity ratio, foreign debt / total debt, cash allowances / total assets, internal financing / total debt, exports / total sales, and investment / total assets. The behavior of many of these variables has already been explained. The rest of them are shown in the following table.

Table 3 Crisis Anticipation Ratios

Variable	*Pre-Crisis*	*Crisis*	*Post-Crisis*
Cash Allowances/ Total Assets	**7.50%**	**5.87%**	**5.89%**
Internal Financing/ Total Debt	**318.64%**	**7.80%**	**5.79%**
Investment/ Total Assets	**11.46%**	**10.52%**	**9.38%**

The prior ratios were obtained using quarterly balance sheets from 73 Mexican firms, from I 1993 to I 2001. They correspond to average ratios, for the pre-crisis (1993 and 1994), crisis (1995 and 1996), and post-crisis (1997-2001) periods.

The cash allowances refer to money and temporal investments. They represented 7.5% of total assets during the pre-crisis period and then they decreased to 5.9%. The amount of investment, relative to the firms' assets, shows also a declining tendency.

Before the crisis, the internal financing (includes social capital, selling of stocks, and reserves for future capital expansions, and subtracts paid dividends) represented more than 3 times the value of the total debt. Perhaps this was one of the factors that helped firms survive the financial crisis, as they had enough internal funds to deal with the problems that emerged. During the crisis the internal financing dramatically declined to 7.8% of total debt, and it has been following a decaying tendency in recent years.

6.2 The model

In order to test if firms anticipated the crisis, equation (1)[9] was estimated. The hypotheses tested were that: 1) all firms anticipated the crisis: $\beta_2 \neq 0$; 2) only big firms were able to anticipate the crisis (or at least that they were the only ones that had the flexibility to adjust before the crisis occurred): $\beta_{12} \neq 0$; and 3) only those firms belonging to the telecommunications industry were able to anticipate the crisis, as there were rumors that this industry had knowledge about the coming crisis: $\beta_3 \neq 0$.

6.3 Regression results

The regressions were run using different possible anticipation periods: four quarters, three, two, and one quarter. The following table shows the results for the four quarters period.

[9] See page 18.

Table 4 Results for 4-Quarters Anticipation

4-Quarters Anticipation					
Dependent Variables	**Independent Variables**				
Variables	**T**	**Dummy**	**Dummy *Telec**	**Dn**	**Dn* Dummy**
Leverage	-0.034	0.38	0.09	0.12	-0.24
Liquidity	0.001	-0.01	0.08	**-0.14**	-0.04
Foreign Debt / Total Debt	**0.020**	-0.02	-0.02	**0.17**	0.00
Cash Allow/ Assets	-0.001	-0.01	-0.06	**-0.02**	**0.03**
Internal Fin/ Debt	0.780	**-12.94**	2.02	-8.60	9.64
Exports/Sales	0.003	-0.00	-0.01	-0.01	0.01
Invest /Assets	0.002	-0.01	-0.03	0.04	0.02

The regressions were obtained by the method of ordinary least squares, using the Newey-West covariances. The issues on bold represent that they are significant at a 10% level.

The results indicate that big firms have significantly less short-term debt in their capital structure than small firms. This makes them less vulnerable to financial shocks. However, the participation of foreign debt in total debt is higher for big firms than for small ones, which represents a higher exposure to exchange-rate risk. Actually, in the aggregate, the proportion of foreign denominated debt in the firms' total debt shows an increasing tendency, which represents a generalized corporate threat. On the other hand, big firms, compared to small ones, tend to maintain a higher proportion of investment in their assets (but not significantly higher). However, the participation of cash allowances (money and temporal investments) is smaller for big companies; therefore, it seems they have more long-term investments and less liquidity. This might not be prejudicial for these companies, since they have less short-term liabilities to deal with.

In 1994, contrasted to 1993, big firms increased significantly more their cash allowances than small firms, perhaps to deal with the coming crisis. However, the rest of the variables considered did not show any abnormal

change during 1994. Therefore, it is not possible to conclude that big firms anticipated the financial crisis.

Compared to 1993, in 1994 firms reduced significantly the internal financing of their operations. If companies were able to anticipate the crisis, one would expect that internal financing would increase prior to the crisis (as explained in prior sections). No other variable showed an abnormal performance during 1994; therefore, it is not possible to conclude that firms anticipated the financial crisis.

The telecommunications industry, compared to the rest of industries, decreased (however not significantly) its cash allowances in 1994. If these companies expected the crisis, they should have increased their cash allowances instead. During 1994 no variables for this sector showed an abnormal performance, which indicates that these firms were not able to foresee the crisis.

In conclusion, there is no statistical evidence to support either of the hypotheses using a 1-year anticipation basis. The next table shows the results using 1994's last three quarters as the anticipation period.

Table 5 Results for 3-Quarters Anticipation

3-Quarters Anticipation					
Dependent Variables			**Independent Variables**		
Variables	**T**	**Dummy**	**Dummy* Telec**	**Dn**	**Dn* Dummy**
Leverage	-0.035	0.40	0.10	0.08	-0.23
Liquidity	-0.004	0.01	0.06	**-0.15**	-0.03
Foreign Debt / Total Debt	**0.018**	-0.00	-0.00	**0.18**	-0.02
Cash Allow /Assets	-0.000	-0.01	-0.05	-0.01	0.02
Internal Fin /Debt	-0.400	-6.25	1.59	-6.67	7.71
Exports/Sales	0.003	0.00	-0.00	-0.01	0.01
Invest /Assets	0.000	-0.01	-0.01	**0.04**	0.01

The regressions were obtained by the method of ordinary least squares, using the Newey-West covariances. The issues on bold represent that they are significant at a 10% level.

The results in this case are quite similar to the ones obtained using 1994's 4 quarters as the event window. The main differences are that the internal financing of firms did not decline significantly during II-IV 1994, and compared to small firms, during II-IV 1994 big firms did not increase significantly their cash allowances. Once more, there is no statistical evidence to support either of the hypotheses. The following table contains the results using two quarters as the anticipation period.

Table 6 Results for 2-Quarters Anticipation

2-Quarters Anticipation					
Dependent Variables	**Independent Variables**				
Variables	**T**	**Dummy**	**Dummy*Telec**	**Dn**	**Dn*Dummy**
Leverage	0.004	0.15	0.14	0.02	-0.10
Liquidity	-0.006	0.03	0.04	**-0.16**	-0.02
Foreign Debt / Total Debt	**0.016**	0.01	0.01	**0.18**	-0.03
Cash Allow/ Assets	-0.002	-0.01	-0.05	-0.01	0.02
Internal Fin/ Debt	-0.974	-2.60	1.32	-5.37	6.40
Exports/Sales	0.002	0.01	-0.01	-0.01	0.00
Invest /Assets	0.000	-0.01	0.03	**0.04**	0.02

The regressions were obtained by the method of ordinary least squares, using the Newey-West covariances. The issues on bold represent that they are significant at a 10% level.

It is easy to notice that the results show to be analogous to the ones obtained using 1994's 3 quarters as the event window. The next table corresponds to the results using only one quarter as the anticipation period.

Table 7 Results for 1-Quarter Anticipation

1-Quarter Anticipation					
Dependent Variables		**Independent**	**Variables**		
Variables	**T**	**Dummy**	**Dummy* Telec**	**Dn**	**Dn* Dummy**
Leverage	0.084	-1.11	0.30	-0.13	1.02
Liquidity	-0.005	0.03	0.04	**-0.16**	-0.00
Foreign Debt / Total Debt	0.011	**0.07**	0.09	**0.18**	-0.07
Cash Allow /Assets	-0.002	-0.02	-0.06	-0.01	**0.03**
Internal Fin /Debt	-1.066	-1.37	1.31	-4.46	5.52
Exports/Sales	0.002	0.02	-0.02	-0.04	-0.01
Invest /Assets	0.001	-0.02	0.00	**0.04**	0.02

The regressions were obtained by the method of ordinary least squares, using the Newey-West covariances. The issues on bold represent that they are significant at a 10% level.

In this case the results are quite similar to the ones obtained using 1994's 2 quarters as the event window. The main differences are:

1. In the last quarter of 1994 leverage decreased (however not significantly) for all firms, compared to the prior period. This might manifest anticipation of the crisis, as firms would have reduced their debt and/or increase their equity in order to prepare and survive a coming calamity. The crisis anticipation hypothesis is reinforced by the fact that cash allowances increased significantly for big firms during this period.

2. The amount of foreign denominated debt in the capital structure of firms increased significantly during the last quarter of 1994. This gives no evidence for the crisis expectation hypothesis; if this were the case, one would expect foreign denominated debt to decline with respect to total debt. An alternative explanation for the increment in this ratio would be the dramatic rationing of peso denominated loans during this period of time.

Once again, there is no statistical evidence to support either of the hypotheses. Therefore, it seems that these Mexican firms were not able to anticipate the 1995-1996 financial crisis, or at least that they did not have

the flexibility to adjust their capital structure accordingly before the crisis took place. However, it is important to consider the limitation that perhaps some firms anticipated the crisis less than a quarter before it occurred. The available data refers to quarterly information; therefore, this hypothesis is not possible to test.

7 CONCLUSION

The 1995-1996 Mexican crisis was a surprising, unexpected episode. Not long before its occurrence, Mexico was considered as a developed country; expectations were favorable, which were reflected in high amounts of foreign capital and investment. During the crisis, many banks and companies went bankrupt, the economy suffered from a recession, high inflation, and devaluation, and internal consumption was greatly reduced.

The present study shows that even those firms who survived the crisis, and were still operating in 2001, did not foresee the coming event. Therefore, they did not adjust their capital structure accordingly. The reasons why they survived the crisis cannot be explained by assuming they had knowledge of the future calamity. However, it is possible to argue that they possessed several advantages prior to the crisis that helped them face it, and that their managers were clever in adjusting to the new situation.

The advantages many of these firms had prior to the crisis, that helped them deal with the latter, were basically high levels of internal financing (it includes social capital, selling of stocks, and reserves for future capital expansions, and subtracts paid dividends) and a first-class reputation, which gave them access to loans even during the crisis period. On the other hand, right after the crisis they were aided with debt-relief programs, which temporarily excused them from interest payments.

The administration of these firms was also successful in managing the crisis. On average, during this catastrophic period the return on assets increased as well as the operational margin. This was possible due to a

remarkable increment in exports, which can be both accredited to the managers' effort and to the devaluation.

The 1995-1996 Mexican financial crisis took most people for surprise. Although many explanations have been attempted, the general belief is that the overvalued peso was its main determinant. In order to avoid future calamities, soon after the crisis, the quasi-fixed exchange rate model was substituted for a flexible model. At the time of the study, Mexico once more had a healthy economy, with less than two digits inflation, peso interest rates in the order of 14%, high internal consumption, and annual growth of more than 6%. Future studies will reveal in what ways the change in the exchange rate model affected the capital structure of firms.

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CHAPTER 3: MACROECONOMIC CRISIS AND INDIVIDUAL FIRM PERFORMANCE: THE MEXICAN EXPERIENCE*

1 INTRODUCTION

To deal with the economic problems carried from the 1980s' so-called *Debt Crisis,* early 1990's Mexico and other Latin American countries initiated stabilization programs. As part of these programs, Mexican President Carlos Salinas de Gortari privatized public enterprises and 18 banks, pursued tight monetary and fiscal policies, and fixed the exchange rate of the peso against the US dollar. In order to control inflation, the *Pacto* was signed among government, business, and labor representatives. In addition, in 1992 Mexico signed the Brady Plan, reducing its external public debt to 22% of GDP. The government then relaxed monetary policy in order to stimulate credit, liberalized interest rates, and permitted the exchange rate to fluctuate in a band[10]. Credit controls and lending restrictions were abolished, as well as minimum reserve requirements. These events generated a boom in the banking industry, as it gained access to more funds. New private banks started operating, and services and credit were expanded. This was the end of the financial repression in Mexico (see Cabello, 2001). However, the credit expansion, together with bad credit analysis and poor regulation of the banking system, evolved in banks financing more risky projects. This increased banks' fragility to internal and external economic shocks.

By the end of 1993, few economists had foreseen a downturn in the Mexican economy, as the fundamentals were optimistic. As pointed out by Calvo et al. (1996), the 1994 Mexican crisis took place in a different setting than other crises: inflation was low, there was a fiscal surplus, and foreign reserves were large. The government was confident about the stability of the economy, and Mexico was apparently ready to enter NAFTA. However, in 1994 the current account deficit (which grew on average 1 percentage

[10] See Aybar et al., 2000; Doshi et al., 2001.

point per year during 1989-1994, reaching 7% of GDP in 1994) continued to expand, as the peso was overvalued. As long as external capital continued to enter the country there was no apparent risk. However, several political events took place in 1994, which generated a strong capital outflow.

In March 1994 Presidential candidate Luis Donaldo Colosio was assassinated. This event was followed immediately by a 6% devaluation of the peso and a doubling of domestic short-term interest rates (e.g., Aybar et al., 2000). In addition, the Chiapas conflict happened later that year, and foreign investors doubted new President Zedillo´s willingness to maintain the quasi-fixed exchange rate regime. Indeed, on December 20th, 1994, the Mexican peso was allowed to float. Christmas came with 40% devaluation; in a two-month period the peso´s devaluation was around 100% (e.g., Kalter et al., 1999).

Interest rates were subsequently increased in order to avoid further devaluation of the peso. This caused economic recession and banks' insolvency: depositors withdrew their money from banks, banks were forced to pay higher interest rates, non-performing loans increased, and credit was reduced. Real GDP declined by 10% during 1995 and inflation reached 52% during the same year.

As expected, the macroeconomic crisis had a significant impact on individual firms. Due to the previous expansion of foreign capital inflow, Mexican companies had attained more access to dollar denominated debt. Although the peso exchange rate was quasi-fixed (band fluctuation) at the time, it seemed that the favorable macroeconomic conditions diminished concerns about the exchange rate risk implicit in this debt. The high level of investment was financed mainly by bank loans and to a lesser degree by trade credit and equity; therefore, debt levels were high. With the 1994 peso devaluation, firms faced a considerable increase in the peso value of their dollar denominated debt. In addition, the higher domestic interest rates increased the cost of peso denominated debt. This, together with a reduction

in credit options and internal demand, caused many firms to go bankrupt or at least to be seriously distressed.

The main purpose of this chapter is to determine the timing and magnitude of surviving firms' balance sheets variations (both downturn and recovery), related to the December 1994 Mexican currency crisis. For this reason, different financial, operational, solvency, and performance ratios are examined for this type of companies, and tests for structural change are performed on groups of firms formed according to characteristics such as relative size and industry. Firms that continued operating after the currency crisis bound the sample, in order to identify the overall ex-post impact of this crisis on balance sheets.

A significant number of papers have been published on the topics of financial crises in general and the Mexican 1994 crisis in particular. However, there are still several gaps in this research area. First of all, most studies deal with the question of how a financial crisis in one country affects itself or other countries from a macroeconomic point of view, ignoring the direct microeconomic effects on individual companies. There are only few firm-level analyses; a notable exception is Forbes (2002, 2004), who studied how financial crises affect firms inside and outside the crisis region, testing for the different contagion channels put forward in the literature. In addition, a considerable amount of research has considered corporate performance during financial crises[11]; nevertheless, this is a rather new topic for Mexico[12].

[11] For instance, four hypotheses have been tested in the recent literature to explain the relationship between the 1997 East Asian financial crisis and corporate performance (e.g., Claessens et al., 2000). These can be summarized as: 1) aggregate macroeconomic shocks causing firms' downturns; 2) weak balance sheets prior to the crisis making firms vulnerable when the latter takes place; 3) financial markets' imperfections resulting in credit crunches at the time of the crisis; and 4) inefficiency of debt resolution facilities. Although the purpose of this paper is not to test these hypotheses, there is some insight concerning the first three.

[12] For a sample of papers on the Mexican crisis, see Calvo et al. (1996); Carstens et al. (1998); Kalter et al. (1999); Kaminsky et al. (1999), and Martinez et al. (2001). With regard to papers on macroeconomic effects of crises and corporate performance during financial crises, see Allen et al. (2000); Chan et al. (2002); Claessens et al. (2000);

This study is relevant for three reasons. First of all, the Mexican 1994 economic crisis provides a perfect scenario for a natural experiment on corporate performance during crises. Unlike the Asian 1997 crisis, in which there is no consensus on the exact date when this event took place, in Mexico it is clear that the crisis began at the end of the year 1994. It is then possible to study differences in performance prior, during, and after the crisis, without committing a mistake on the event date. Second, there has been in Mexico a lot of debate concerning the ways companies survived the crisis. Some have argued that certain entrepreneurs were informed about the devaluation of the peso before it took place, which favored the performance of their firms during this episode. If this is true, the anticipation of the crisis can be witnessed in balance sheet variations such as declines in leverage, short-term debt, and US dollar denominated debt before the crisis took place[13]. Others believe the government favored mostly big companies, providing them with credit lines and reducing their interest expenses. Third, in an emerging market like the Mexican, it is common for stock markets to be underdeveloped. With banks going bankrupt, there are few alternatives for distressed firms to finance their operations. One alternative is trade credit (and the amount of time given to pay for it), which is represented in balance sheets as bill payment rotation. Therefore, the study of firms´ balance sheets before, during, and after the financial crisis can provide useful information on the ways companies colluded with the government and other stakeholders in order to survive.

There is still a theoretical and empirical gap on how firms' balance sheets deteriorate and recover from a crisis. Important, but unanswered questions include: Which are the relevant variables to consider? Does the timing of the downturn and recovery vary systematically according to firms' characteristics? What are the important relationships between companies that can help explain the spreading between them?

Edwards et al. (2002); Edwards et al. (2001); Hernandez et al. (2001); Kaminsky et al. (2000); Kim et al. (1999); Krugman (1999); Sachs et al. (1996).

[13] See Watkins (2006).

For the purpose of this research, Mexican corporate performance prior, during, and after the December 1994 currency crisis is considered. There are immediate effects on firms at the time of the crisis, which need not necessarily be negative as some firms may benefit. However, balance sheets' changes with certain lags before (and after) the crisis are also of interest, as these would suggest corporate roots of the crisis (and interconnections between the initially affected firms and the rest could result in spreading between firms). The main findings show that there are multiple directions of the Mexican crisis' cause and effect framework: firms' decisions influenced the macroeconomic outcome; the currency crisis had negative impacts on companies' balance sheets, and firms' interconnections evolved in propagation among themselves. In addition, recovery was only partial and gradual, and overall the crisis episode was prejudicial even for these surviving firms.

This chapter is organized as follows. Section 2 describes the data. Fourteen ratios are extracted from quarterly balance sheets of 88 private, non-financial Mexican companies that survived the crisis. The methodology used to examine balance sheets' variations is explained in Section 3. Tests for parameter instability and structural change are applied to individual ratios (which are then grouped into four principal components) for each industry and size of firms. Results are presented and discussed in Section 4, showing some evidence for corporate roots of macroeconomic crises. Section 5 points out the main conclusions of the research.

2 DATA DESCRIPTION

The data set is compiled from quarterly balance sheets (from the first quarter 1993 (93.1) to the first quarter 2001 (01.1)) of 88 private, non-financial Mexican firms that survived the 1994 crisis and were still operating in 2001. The data was obtained through INFOSEL, a Mexican information enterprise, whose original source of data is the Bolsa Mexicana de Valores (Mexican Stock Market). Historic data was completed with microfilms found in the Mexican Stock Market, which makes the data set unique. All firms are listed on the stock exchange, and are considered as

large companies. The information on the 88 firms corresponds to a balanced panel, in constant Mexican pesos (base year 2000).

Following several authors[14], the following ratios were constructed for the analysis:

1. Leverage (LEV), which is calculated as total debt / equity.
2. Debt ratio (DR), measured as total debt / total assets.
3. Liquidity (LIQ), which refers to short-term debt / total debt.
4. Foreign debt / total debt (FD/TD), which indicates the importance of dollar denominated debt in the firms' capital structure, and signals vulnerability to exchange rate risk.
5. Foreign short-term debt / total foreign debt (FSTD/TFD). This ratio is also used to measure corporate vulnerability.
6. Interest payment coverage (IPC), which is computed as earnings before interest and taxes (adding back depreciation, which is the same as EBITDA or operational cash flow) / interest expenses.
7. Internal financing (IF), which results as the sum of social capital, selling of stock, and reserves for future capital expansions, minus paid dividends / total debt.
8. Short-term assets / short-term debt (STA/STD), which is an indicator for solvency.
9. Bill payment rotation (BPR), which is calculated as total sales / average bills unpaid.
10. Inventory rotation (IR), which refers to costs of goods sold / average inventory.
11. Exports / total sales (X/Sales), which refers to the proportion of products sold outside the national borders, and gives an idea of the importance of the international markets for a firm.
12. Operational margin (OM), which refers to operational earnings / total sales.
13. Rate of return on assets (ROA), which is defined as earnings before interest and taxes (EBIT) / total assets.
14. Rate of return on equity (ROE), computed as EBIT / equity.

[14] For example Claessens et.al. (2000) and Pomerleano (1998).

Firms are grouped according to their size and industry. The classification includes seven industries (with abbreviations and number of firms in brackets): Telecommunications (Tel; 4 firms), Manufacturing (Man; 35), Commerce (Com; 15), Construction (Const; 11), Services (Serv; 6), Conglomerates (Congl; 10), and Mining (Min; 7). Firms were also arranged into three different groups according to their relative sizes: Large (more than $10, 000, 000 in assets – 28 firms), Medium (Med-between $1, 000, 000 and $10, 000, 000 in assets – 38 firms), and Small (less than $1, 000, 000 in assets – 22 companies).

For industry X, the value of ratio K for a particular period corresponds to a weighted average of this ratio registered for all firms belonging to this industry. The weight that is given to each firm corresponds to the proportion of its assets with respect to the industry's total assets. The same procedure was used in order to construct ratios for the different firm size groups.

3 METHODOLOGY

The main assumption underlying this research is that deterioration and recovery manifest themselves through significant changes in the level of a firm's financial, operational, solvency, and performance ratios. Therefore, for the sample of 88 Mexican firms, tests for structural change are performed to establish the occurrence and significance of these events. Specifically, the techniques developed in Andrews (1993) and Bai et al. (1998) are employed to test the null hypothesis of no change against the alternative of two instantaneous breaks in the level of a particular ratio, where the break dates as treated as unknown.[15] Note that this analysis is univariate, in the sense that it is tested for structural changes in each ratio individually. An alternative approach is to test for common breaks in multiple ratios simultaneously, as developed by Bai et al. (1998). Empirical work related to this type of methodology can be obtained from

[15] An excellent non-technical survey of the literature on the econometrics of structural change can be found in Hansen (2001).

Bekaert et al. (2002). These authors used several financial and macroeconomic variables simultaneously, in order to detect the dates of market integration for a sample of 20 countries.

The basic structural change regression model is given by

$$Y_t = a_1 + a_2(D_{1t} - D_{4t}) + a_3(D_{2t} - D_{4t}) + a_4(D_{3t} - D_{4t}) + b_1 I(t \geq \tau_1) + b_2 I(t \geq \tau_2) + \varepsilon_t, \quad (1)$$

where Y_t denotes the ratio under consideration, D_{st}, s=1,…,4, are quarterly dummy variables taking the value 1 if quarter t corresponds with season s and 0 otherwise, and $I(A)$ is an indicator function for the event A. In the model in (1), τ_1 and τ_2 are the break dates for a ratio's downturn (or upturn) and recovery, respectively, which are treated as unknown. The quarterly dummy variables are included to account for the pronounced seasonal patterns that can be observed in many of the ratios. Most ratios also display substantial autocorrelation, which has been accommodated by using heteroskedasticity and autocorrelation-consistent (HAC) standard errors and test statistics.[16] Initially the analysis is performed using individual ratios; they are then classified into performance (ROE, ROA, and OM), solvency (LEV and STA/STD), operational (BPR, IR, and X/Sales), and financial ratios (DR, IPC, LIQ, FD/TD, FSTD/TFD, and IF), for which a principal components' analysis is conducted.

Estimates of the break dates, along with the remaining parameters are obtained by minimizing the sum of squared residuals in (1), where an exhaustive grid search is performed over all possible combinations of τ_1 and τ_2 such that each sub-period contains at least 15% of the available observations. Confidence intervals for the break dates are computed using the methods developed in Bai (1997).[17] Conditional on the break date

[16] Because of the small sample size (T=33 observations), it was decided not to include lagged Y_t's in (1).

[17] When computing these confidence intervals, the variance of the error term in the regression (1) is allowed to be different before and after the break. This results in asymmetric confidence intervals, with less uncertainty about the break date in the high than the low volatility period.

estimates, the remaining parameters can be estimated by least squares, and Newey-West HAC standard errors are obtained in the usual fashion. Note that in (1), a_1 measures the average level of the ratio before the first structural change, while b_1 and b_2 indicate the effects of the first and second breaks, respectively. The average level of the ratio after the first break (crisis) is given by $a_1 + b_1$, while the sum $a_1 + b_1 + b_2$ gives the average level after the second break (recovery). Hence, an interesting hypothesis to examine in (1) is $b_1 + b_2 = 0$, which implies that the ratio Y_t returns to its pre-crisis level after recovery occurs. If $|b_1| > |b_2|$, recovery was only partial, while, on the other hand, if $|b_1| < |b_2|$, the particular group of firms not only recovered, but in fact benefited from the crisis.

To test for the presence and significance of the structural changes, the following procedure is used. Let $W(\tau_1, \tau_2)$ denote the HAC Wald test of the null hypothesis $b_1=b_2=0$ in the regression model (1). As noted above, these break dates are treated as unknown. The supremum Wald statistic (denoted Sup$W$) is then employed, which is obtained as the maximum of the point wise Wald statistics $W(\tau_1, \tau_2)$ using the same grid of values for τ_1 and τ_2 as in the estimation of (1) discussed above. Given the small sample size (T=33), it is not appropriate to rely upon the (non-standard) asymptotic distribution of the Sup$W$ statistic to determine its significance. Hence, the bootstrap is used as recommended in Hansen (2000).[18] In case the null hypothesis cannot be rejected, or if the sign of the point estimates of b_1 and b_2 do not correspond with the expected signs under the crisis-recovery model, we estimate a model with a single structural change (and test for its significance) to examine whether the particular financial ratio experienced a level shift only due to the crisis or only due to recovery.

Whereas the crisis' effects on balance sheets may occur instantaneously, it is reasonable to argue that recovery might not be sudden, but rather may appear gradually. Therefore, we allow for the possibility of gradual recovery by modifying equation 1 as follows:

[18] Specifically, the stationary bootstrap of Politis et al. (1995) has been employed to accommodate the autocorrelation in Y_t. The number of bootstrap replications is set equal to 999.

$$Y_t = a_1 + a_2(D_{1t} - D_{4t}) + a_3(D_{2t} - D_{4t}) + a_4(D_{3t} - D_{4t}) + b_1 I(t \geq \tau_1) + b_2 G(t;\gamma,\tau_2) + \varepsilon_t, \quad (2)$$

Where the function G (t; γ, τ_2) is given by

$$G\ (t;\gamma\ ,\tau_2\ )\ =\ \begin{cases} 0\ , & if\ \ t\ \leq\ \tau_1 \\ (1\ +\ \exp(\ \ -\gamma\ (t\ -\ \tau_2\ )))^{\ -1}\ , & if\ \ t\ \succ\ \tau_1 \end{cases}\ ,\ (3\ )$$

The function (3) thus is equal to 0 until the first structural change (crisis) occurs, then jumps to $(1+\exp(-\gamma(t-\tau_2)))^{-1}$ in the period following the break, and continues to increase gradually towards 1 as *t* increases. The parameter γ determines the smoothness of the recovery: when $\gamma \longrightarrow \infty$, the function (3) becomes an indicator function *I* ($t \geq \tau_2$). Hence, the gradual recovery model in (2) nests the instantaneous recovery model in (1) as a special case. τ_2 refers to the moment when recovery is halfway through, as (3) is equal to 0.5 when $t = \tau_2$.

4 FIRMS' PERFORMANCE DURING CRISIS AND RECOVERY

This section starts with a basic preliminary data analysis, examining the ratios' average values during the pre-crisis, crisis, and post-crisis periods. Then the results from the structural change tests and the corresponding regression models are described.

4.1 General results

4.1.1 Descriptive analysis

The first column of Table A1 in the appendix shows the average values for the 14 ratios under consideration, averaged across all firms during the pre-crisis, crisis, and post-crisis periods. During the pre-crisis period (from 93.1 till 94.3), the debt structure of Mexican firms reflected high levels of financial vulnerability. Short - term debt on average represented almost half of total debt. In addition, foreign-denominated debt corresponded to more

than 50% of the debt (with 41% being short-term). It was clear that the peso devaluation would be devastating; however, firms continued obtaining dollar-denominated debt as it was cheaper and there was confidence in the Mexican economy and the exchange rate regime.

During the pre-crisis episode, peso loans were charged with average interest rates of 18.6%. Inflation during this time reached 7.5%, resulting in real interest rates of approximately 10.3%. During the same period, companies were able to obtain dollar denominated loans at a cost of less than 6%. This made dollar denominated credit more attractive. During the crisis period (94.4 to 97.3) the situation was reversed, as peso interest rates increased to 42.5%, inflation boosted to 40%, and the real interest rate was just 1.8%. Dollar rates for this period were much higher, so peso denominated debt was obviously preferred. However, the strict credit policy did not allow for an expansion of this type of debt as reflected in the higher proportion of foreign debt in the firms' total debt. The firms' indebtedness grew considerably, especially with respect to dollar-denominated debt, which increased the possibility of going bankrupt. During the post-crisis period, peso interest rates were on average 21% and prices increased 12% on an average annual base. The real peso interest rates became then approximately 8% and the dollar interest rates that applied to these companies were on average 6.5%. Once more dollar denominated debt became more attractive.

Most of the debt indicators (except for the debt ratio) improved after the crisis, although pre-crisis levels were not reached anymore; in this sense, recovery from the crisis (which was possible due to the growth in exports, good liquidity indicators and internal financing, as well as governmental programs that delayed the payment of interests[19], and network considerations) was just partial. Leverage increased during all periods, which is attributed mostly to increments in total debt (21.89% on average), as EBIT and equity did not decline significantly.

[19] Its effect can be seen in the improvement of the interest payment coverage indicator during the post-crisis period.

Mexican enterprises experienced a demand cut during the crisis, which is evidenced by the remarkable increase in the amount of days it took to sell inventories. In addition, as firms were suffering from the crisis, the amount of time given to pay back for trade credit increased (although not significantly), which also reduced the frequency of cash flows. In spite of this, due to the expansion of exports (as a result of the peso devaluation), returns were not seriously damaged. However, the crisis did not affect all firms in the same way; as shown in sections 4.2 and 4.3, some sectors even benefited.

4.1.2 Econometric results for univariate series

Table 1
Results from the gradual recovery and two-breaks models: All firms

	Gradual Recovery Model		**Two-Breaks Model**	
	First break	τ_2	***First break***	***Recovery***
LEV	95.3 b_1= 0.68	96.4 b_2= -0.62 γ = 200.0	95.3 b_1= 0.85 (0.20)	96.3 b_2= -0.79
DR	94.4 b_1= 0.04	00.1 b_2= 0.10 γ = 14.3	94.3 b_1= 0.04 (0.00)	NO
LIQ	95.3 b_1= 0.04	97.3 b_2= -0.03 γ = 138.3	95.3 b_1= 0.04 (0.20)	97.3 b_2= -0.03
FD/TD	95.1 b_1= 0.10	99.2 b_2= -0.17 γ = 6.6	94.3 b_1= 0.09 (0.40)	NO
FSTD/TFD	95.2 b_1= 0.04	99.1 b_2= -0.03 γ = 116.2	95.1 b_1= 0.04 (0.80)	NO
IPC	95.1 b_1= -5.32	95.3 b_2= 7.68 γ = 2.4	94.3 b_1= -3.08 (0.20)	95.4 b_2= 4.40
IF	93.4 b_1= -0.86	99.4 b_2= -1.06 γ = 11.9	93.4 b_1= -0.72 (0.00)	NO

Table 1
Results from the gradual recovery and two-breaks models: All firms (continue)

	Gradual Recovery Model		**Two-Breaks Model**	
	First break	τ_2	***First break***	***Recovery***
STA/STD	94.4 b_1= -0.40	00.1 b_2= -0.27 γ = 146.2	94.3 b_1= -0.41 (0.00)	NO
BPR	95.3 b_1= 0.49	00.3 b_2= 1.07 γ = 132.9	NO	NO
IR	95.3 b_1= 16.46	00.3 b_2= -5.13 γ = 1.2	95.2 b_1= 15.99 (0.00)	97.2 b_2= -1.44
X/Sales	93.4 b_1= 0.04	94.4 b_2= 0.11 γ = 44.4	94.4 b_1= 0.04 (0.30)	NO
OM	95.1 b_1= 0.03	95.2 b_2= -0.05 γ =11.7	95.4 b_1= -0.04 (0.10)	96.4 b_2=0.02
ROA	94.4 b_1= -0.05	95.1 b_2=0.05 γ = 143.1	94.1 b_1= -0.03 (0.10)	95.1 b_2= 0.02
ROE	94.4 b_1= -0.13	95.1 b_2= 0.13 γ = 137.4	NO	NO

This table refers to initial break points, half-through recovery dates (τ_2, gradual recovery model), and recovery dates (two-breaks model), for each of the 14 ratios under consideration. No significant presence of breaking points is described with a NO. For the gradual recovery model, the first break point is bounded between 1993 and 1995. This has been done since the two-breaks model shows that balance sheets deteriorated between the fourth quarters of 1993 and 1995. Values for b_1 (effect of first break point), b_2 (effect of second break point), and γ (smoothness of recovery) are shown, as well as bootstrap p-values of the SUPW test (in parenthesis) for the two-breaks model. Asymptotic p-values of the SUPW test for the two-breaks model are all smaller than 0.01.

Table 1 provides results for univariate series, for the gradual recovery model and the two-breaks model[20]. In general, the estimates of b_1 show the expected signs[21] and are significant at a 20% confidence level. According to the two-breaks model, only two ratios do not manifest the expected results: bill payment rotation, as the first break point takes place after the crisis era, and return on equity, given that there does not seem to be any shock at all. The gradual recovery model shows that bill payment rotation actually increased during the third quarter 1995, and continued increasing during the following periods. In this sense, the crisis had a permanent negative effect on this ratio. As for ROE, the gradual recovery model suggests it declined during the crisis and recovered rapidly (the value for γ is relatively big, greater than 100).

With respect to recovery, as expected there are few significant recovery breaks for the two-breaks model, due to the fact that recuperation from the crisis was gradual. For recovery to occur, first there has to be a prior break point, b_1 and b_2 must show opposite signs, and recovery has to take place before the third quarter of 1998, given that in August 1998 there was another currency crisis (although not as important as the one in 1994)[22]. Consequently, for the following ratios there seems to be an initial break point, but not a recovery one: debt ratio, foreign debt as percentage of total debt, foreign short-term debt / total debt, internal financing, short-term assets / short-term debt, and exports / total sales. The gradual recovery model confirms that the crisis had a permanent effect on the debt ratio, internal financing, short-term assets / short-term debt, and exports / total sales (this being the only case where the effect is positive). With respect to the rest of the variables (foreign debt / total debt and foreign short-term debt / total debt), there seems to be gradual recovery.

The two-breaks model fits accurately for leverage, liquidity, interest payment coverage, inventory rotation, operational margin, and ROA. In this

[20] The first column of tables A2 and A3 in the appendix gives further details.
[21] b_1 is expected to be positive for all ratios expect for interest payment coverage, internal financing, short-term assets / short-term debt, operational margin, ROA, and ROE. The opposite is expected for b_2.
[22] See Pratap et al. (2003).

sense, for these ratios the crisis' effect was temporary, as the initial negative shock is weakened by a second shock of opposite sign. Taking into account all ratios, balance sheets deteriorated between the fourth quarters of 1993 and 1995, which points out the possibility that firms were in bad shape before the occurrence of the macroeconomic crises (this may suggest corporate roots of the crisis; see Pomerleano, 1998[a,b]). It seems that in general corporations recovered from the crisis between the first quarter of 1995 and the third quarter of 1997.

The first ratio that showed a decline was internal financing (the last one was operational margin); the first ratio to manifest recovery was ROA (the last one was liquidity). This suggests that financial ratios present downturns before performance ratios, and that the latter are the first to recover. However, inspecting the rest of the ordering, there does not seem to be a regular pattern. Instead, internal financing declined almost at the same time as did return on assets (93.4 and 94.1, respectively). As a result, one quarter before the crisis ratios such as debt ratio, foreign debt / total debt, interest payment coverage, and short-term assets / short-term debt already weakened. These suggests firms were in "bad shape" before the crisis took place, which may provide evidence for the corporate roots of macroeconomic crises' hypothesis, and the second hypothesis regarding the relationship between financial crises and corporate performance in East Asia.

When the currency crisis took place (last quarter of 1994), there were some positive and negative results: exports immediately rose, which made possible return on assets' recovery (95.1); later in 1995 an aid program to delay interest payments was implemented by the government, which improved interest payment coverage. On the other hand, due to the crisis, companies experienced an increase in foreign short-term debt / total debt (95.1) and inventory rotation (95.2, because of shrinking internal demand). Nonetheless, the positive effect on exports and the government's support made possible a turn down in leverage (96.3). Between the end of 1996 and beginning of 1997, operational margin and inventory rotation showed recovery, as firms once more faced increasing demand for their products.

Finally, by the third quarter of 1997 there was some debt restructuring, reducing the percentage of short-termed debt with respect to total debt.

Considering the gradual recovery and two-breaks models together, this crisis improved interest payment coverage and exports' ratios. According to the gradual recovery model, there is also a post-crisis positive effect for foreign debt / total debt. Due to the rise in exports, ROA and ROE did not significantly deteriorate. However, both the two-breaks and gradual recovery models show that this crisis was prejudicial for most of the debt indicators and operational margin. Consistent with the two-break model, excluding interest payment coverage, the degree of weakening is seen to be greater than recuperation; therefore, although firms recovered from the 1994 currency crisis, the improvement was just partial (and overall the crisis episode was prejudicial for firms). Taking into account the alternative model, due to the adjustment for gradual recovery, it seems that the overall effect of the crisis was neutral. Nevertheless, during the transition from the crisis to full recovery, this crisis did have adverse consequences on firms.

4.2 Industry results

4.2.1 Descriptive analysis

Columns 2 to 8 of table A1 in the appendix show the accounting ratios' average levels during the pre-crisis, crisis, and post-crisis periods for the different industries. Taking into account pre-crisis debt variables, one can conclude that conglomerates, construction, and services were exposed to the highest levels of financial vulnerability. Together with mining, they had the greatest levels of foreign-denominated debt with respect to total debt; as well, construction enterprises possessed the utmost debt ratio (almost 50%), followed closely by conglomerates and services sectors.

The less vulnerable industries (regarding debt indicators) were mining and commerce. The mining industry, although it had an important percentage of its debt in foreign-denominated currency, also had the lowest debt ratio (followed by telecommunications and commerce). Similarly, even though

commercial business had 84% of its debt as short-term debt, its level of foreign-denominated debt (with respect to total debt) was the lowest of all industries. This is the main reason why this sector was one of the few that after the crisis was able to reduce its debt ratio.

Due to the large amounts of dollar-denominated debt, when the peso devaluation took place, interest payments immediately increased. The interest payment coverage indicator declined over 20% for telecommunications, construction, and services. It is interesting to note, however, that this indicator increased by 97% for the mining industry, which reflects a significant improvement (seven times) in its earnings during the crisis period. This was possible mainly because mining exports increased by 115% during this time. During the post-crisis period, manufacturing, commerce, construction, and services revealed important progress in the interest payment coverage indicator, which relates to governmental policies to temporarily postpone interest payments. In fact, this indicator increased thirteen times for the services' industry; this was the worst performing sector during the crisis and therefore the one that needed governmental aid the most.

The services industry presents the worst financial and operational results during and after the crisis period. Leverage increased more than 5 times during the crisis, earnings declined by 187% during the same period, and it exhibited negative returns on assets and on equity during both the crisis and post-crisis periods. In addition, prior to the crisis, values for ratios such as short-term assets / short-term debt, exports/total sales, and internal financing were much lower than for the majority of industries.

In contrast, the mining industry was the most robust sector prior to the crisis. It had comparatively the highest percentage of sales in foreign markets[23], which made it less vulnerable to internal shocks compared to other industries. Instead of being injured by the crisis it benefited, as its operational margin, earnings, return on assets and return on equity

[23] Not only it had the highest exports/sales ratio, but also the price of its goods is determined in international markets.

increased during that period. Other strengths it possessed prior to the crisis that helped to survive were its relatively high internal financing and liquidity indicators[24].

Taking into consideration the behavior of earnings, it can be argued that manufacturing, conglomerates, and commerce also benefited during the crisis. During this period, their earnings increased with 90%, 62%, and 26%, respectively. Both conglomerates and the manufacturing sector showed increases in operational margin (although this is significant only for manufacturing), which could be seen as a strategy to overcome the crisis, assuming low price-elasticity for its goods. An alternative and perhaps more accurate explanation for the rise in the operational margin is that the peso's devaluation was such that firms in these industries could increase both the operational margin and exports. During the crisis period exports grew on average 104% for the manufacturing industry, and 180% for conglomerates.

Together with mining and construction, conglomerates and manufacturing had the highest exports / total sales ratio prior to the crisis, which made them less vulnerable. Manufacturing also showed one of the highest interest payment coverage ratios (after commerce), and had adequate levels of internal financing and liquidity. As for conglomerates, this is the most diversified industry, which is an effective but expensive way (in terms of administrative and operative costs) to reduce risk. Commerce, on the other hand, was not only the least indebted industry together with mining and telecommunications, but it also had the lowest level of dollar-denominated debt.

The only industries that were seriously wounded during the crisis were services and to a lesser degree telecommunications. As for the telecommunications industry, prior to the crisis it possessed one of the lowest exports / total sales ratios (together with commerce and services).

[24] These results for services and the mining industry support the second hypothesis on the relationship between financial crises and corporate performance in East Asia (e.g., Claessens et al., 2000).

Therefore, the internal demand decline it suffered (as seen by the inventory rotation indicator that increased by 56 days) had a negative effect on its earnings, which declined 16% during the crisis period.

Taking into account the firms' performance during and after the crisis, it seems that external markets played a major role in explaining the survival of these companies, followed by the capital structure.

4.2.2 Econometric results for univariate series

Columns 2 to 8 of tables A2 and A3 in the appendix show the industry results for univariate series, for the two-breaks model and gradual recovery model. In general, the estimates of b_1 show the expected signs and are significant at a 20% confidence level. According to the first break point, apparently telecommunications and services were harmed at the time of the currency crisis. This is as expected, since prior to this event they had the lowest exports / total sales ratios[25], making them more exposed than other industries to local macroeconomic conditions. The contrary occurred for the mining sector, as it did not depend as much as the rest on the Mexican economy[26]. Results show that the remaining industries were not significantly influenced by the crisis.

On an industry basis, there are not many differences for the timing of the first break point. However, the sector that most reflected the official timing of the macroeconomic crisis was services, whose balance sheets deteriorated between the third quarters of 1994 and 1995. Once more this is an expected outcome, as services represents the most vulnerable industry prior to the crisis, with less flexibility to react once this event took place.

When considering recovery in the two-breaks model, balance sheets for manufacturing, telecommunications, commerce, and services reveal

[25] Excluding commerce.

[26] This provides evidence in favor of the first hypothesis on the relationship between financial crises and corporate performance in East Asia (e.g., Claessens et al., 2000). In addition, as most of the mining sector assets were denominated in US dollars, this sector suffered less from exchange rate risk.

improvements, and the opposite occurs for the mining industry. Overall, the crisis episode was favorable for manufacturing and commerce, which were also the first to recover (as shown by ROA). This can be partly explained by their pre-crisis high interest payment coverage ratios; in addition, manufacturing exported an important percentage of its products, and commerce possessed relatively the lowest foreign-denominated debt in its debt structure.

According to the two-breaks model, overall the crisis was harmful for telecommunications, construction, and services. With regard to construction, it had one of the greatest debt ratios prior to the crisis, and much of its debt was denominated in US dollars. Construction was the last industry to recover from the currency crisis, between the third quarter of 1997 and the second quarter 1998. This coincides with the Mexican GNP's recuperation during the third quarter 1997; it is not surprising for construction is especially sensitive to macroeconomic fluctuations. The gradual recovery model points out telecommunications being the only industry to be permanently (and negatively) influenced by the crisis.

Finally, results show that conglomerates and mining did not benefit nor weakened from this episode. As for the mining sector, the initial boom it experienced from the devaluation was a temporary effect; regarding conglomerates, they were efficient reducing risk, as they represent the most diversified industry of all.

4.3 Size results

4.3.1. Descriptive analysis

The last three columns of Table A1 in the appendix show the values of ratios when firms are grouped according to size. Regarding debt structures, at first glance it seems that prior to the crisis small companies were the least vulnerable. As they are less likely to obtain dollar denominated debt, the percentage of foreign debt to total debt was the lowest for all firms. However, it is also true that due to their small size and high-risk levels, they

have more difficulties in obtaining long-term credit. Their short-term debt represented more than 70% of their total debt, higher than for medium and large companies. Small firms also had the highest debt ratios for all periods considered, which reflects the importance of bank credit compared to other (cheaper) types of financing such as internal financing and trade credit.

Prior to the crisis, large companies were less leveraged than smaller ones; this relationship changed during the crisis period, when small firms became the least leveraged. Looking at the leverage data and considering that small firms' equity declined on average 16% during the time, there is evidence of an important credit crunch for small companies[27]. After the crisis leverage increased for small companies, however it remained lower than for other firms.

Small firms were the most vulnerable companies prior to the crisis, as their exports represented less than 3% of their total sales during the pre-crisis period, their liquidity and internal financing indicators were lower than for larger firms, and they were facing negative returns on assets and on equity. Also, their operational margin was negative during the pre-crisis and crisis periods, which could reflect an aggressive sales strategy, sacrificing profit in order to gain liquidity and overcome the immediate difficulties.

The higher returns on assets and on equity during the post-crisis era show that in general the crisis favored small firms. This can be attributed to the peso devaluation, which made possible a significant growth in exports, operational margin, and sales (as suggested by lower inventory rotation values). With respect to medium and large companies, there is no evidence of important changes in returns, even though for both types of firms, exports increased significantly (comparing the pre-crisis and post- crisis periods). A tentative explanation could be that sales declined considerably due to the internal demand cut, as shown by the increase in the number of days it took to sell the inventory and by reduced operational margin for large companies.

[27] This provides evidence for the third hypothesis of the relationship between corporate performance and the East Asian financial crisis.

4.3.2 Econometric results for univariate series

The last three columns of tables A2 and A3 in the appendix show the size results for univariate series, for the two-breaks model and gradual recovery model. In general, the estimates of b_1 show the expected signs and are significant at a 20% confidence level. The first break for both small and medium firms took place between the fourth quarter of 1993 and the first quarter of 1996. However, contrary to medium enterprises, small companies reveal for the most part balance sheets' improvements. As for large companies, the first break came about later in time: between the third quarter 1994 and the same quarter 1995. Therefore, one could argue that medium enterprises were financially and operationally unhealthy before the devaluation occurred, partly infecting large companies, and providing some evidence for the corporate roots of macroeconomic crises' hypothesis[28].

Crisis propagation between medium and large firms can be explained by the operational margin and inventory rotation. A tentative explanation is that, due to competition between companies and goods' substitutability, two quarters after medium firms' operational margin declined (95.1) large firms experienced the same. But the effects do not end here, as during 1996 large firms' poorer performance seems to have had consequences on medium companies. Trade links might have influenced this spreading, as medium enterprises experienced an increment in their inventory rotation three quarters later (during 96.1) than larger firms. As large companies were suffering from a demand cut, their claims for medium firms' products declined as well, in part increasing the latter's inventory rotation. Small firms were the first to manifest a rise in this indicator, however almost two years before the rest.

With respect to recovery dates, there are no significant differences between medium and large companies (there is just a one-period lag in favor of medium firms). According to the two-breaks model, overall the currency

[28] It is worthwhile to notice that large companies' balance sheets also weakened before the macroeconomic crisis took place.

crisis was beneficial for small companies and prejudicial for large ones; medium enterprises seem to be in between, since they were not favored nor damaged by this crisis. With respect to the gradual recovery model, the crisis was beneficial for small firms, and had a neutral effect on medium and large companies.

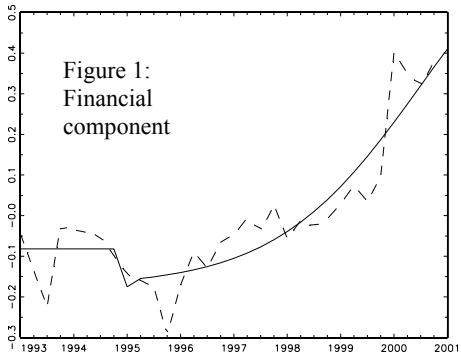
4.4 Robustness check: Principal components analysis

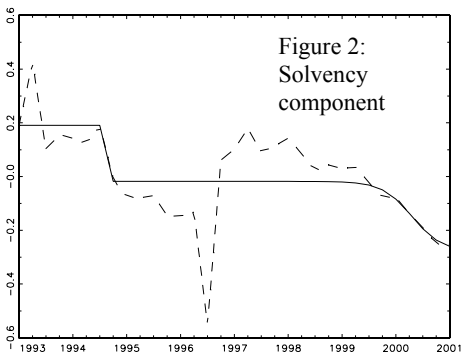
To examine the possibility of joint structural change in multiple ratios, and also simplify the study, a principle components analysis is conducted. Four components are constructed, which relate to the different kinds of ratios under study: 1) Performance (ROE, ROA, and OM), 2) Solvency (LEV and STA/STD), 3) Operational (BPR, IR, and X/Sales), and 4) Financial (DR, IPC, LIQ, FD/TD, FSTD/TFD, and IF). The analysis is applied to normalized variables, such that they all have mean 0 and variance 1. The results for normalized variables are more meaningful because the variance of the original variables differs widely across ratios. The first principal component is considered, which in general explains more than 60% of the variance. For each component the gradual recovery model in (2) is estimated[29]. Results are shown in table A4 in the appendix.

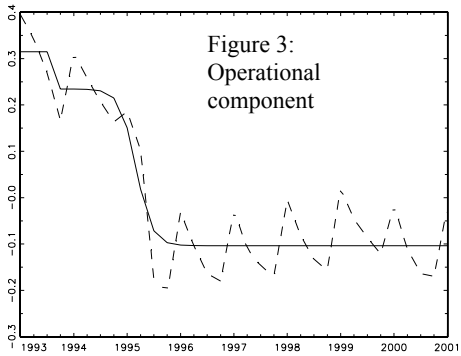
Consistent with the prior analysis, results show that the overall effect of the crisis is positive for small firms and negative for telecommunications. In general the currency crisis did not deteriorate nor improved firms' balance sheets; however, there are negative effects on solvency and operational ratios (see figures 2 and 3). In contrast, financial and performance ratios were not seriously influenced by the crisis (see figures 1 and 4). In fact, there seems to be a significant smooth recovery of the financial component after the crisis, which relates to the favorable outcome of interest payment coverage. As for the performance component, due to the rise in exports, returns did not strongly declined.

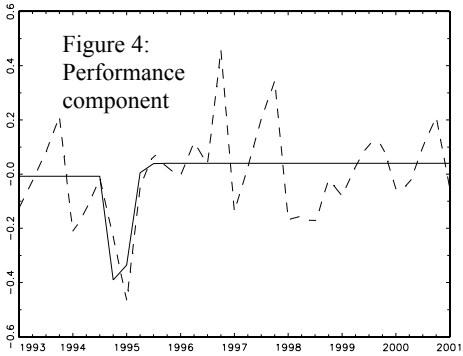
[29] Only results from the gradual recovery model are considered, as it seems that corporations smoothly recovered from the crisis.

Regarding the break date, it seems there are two crisis effects: the first one is a negative effect taking place at the time of the currency crisis (94.4), and the second one is a positive effect during the third quarter 1995. All components were damaged during the crisis era, except for financial ratios, due to the great increment of interest payment coverage early 1995. Afterwards, operational ratios continued deteriorating, solvency ratios adjusted to a slightly lower level than prior to the crisis, and there was improvement in performance indicators. However, it is not possible to establish a single recovery date, as it took place gradually between 1995 and 2000. Nevertheless, the last industries to recover were telecommunications and services, which as stated in previous sections, were most seriously wounded by the crisis.









5 CONCLUSION

The causality between the 1994 Mexican currency crisis and corporates' performance is mixed. Although this crisis had immediate negative consequences even on surviving companies (which are reflected in ratios such as foreign short – term debt / total foreign debt and inventory rotation), and a positive direct effect on exports, it is also true that most financial indicators weakened right before this episode took place. During the third quarter of 1994, ratios such as the debt ratio, foreign debt / total debt, interest payment coverage, and short-term assets over short – term debt were deteriorated. This could be attributed to a prior decline in internal financing and return on assets, for which firms increased their dollar claims (being these less expensive than peso loans). Therefore, there is some evidence for corporate roots of the Mexican currency crisis, as firms were demanding more dollar-denominated debt.

It is interesting to notice that overall, on an annual basis, investment rose during the third quarter of 1994. During that time, large and medium firms' total assets increased 5% and 14%, respectively, and only small firms experienced a 6% decline on this variable. This supports the general belief that the 1994 crisis was a surprising event. According to the pre-crisis period debt structure of firms, there is also no evidence on crisis anticipation; short-term debt and dollar denominated debt were high, and leverage actually increased during all periods. The conspiracy explanation on how bigger firms survived the crisis due to privileged information and financing is not supported either, as results show that in general this crisis had a negative impact on big firms and a positive one on small companies. Nevertheless, this conclusion is not robust, as the sample of firms considered are the biggest ones in Mexico. What can be interpreted from the data is that collusion between the government, companies, and other stakeholders had a significant impact on the survival of firms. This is represented by governmental programs that delayed the payment of interests and an increase in the amount of days given to pay back for trade credit.

There is also some indication of propagation between firms. This effect is difficult to determine at an industry level; however, under a size approach it seems that medium and large companies could have influenced each other's balance sheets. Spreading is better perceived through performance and operational ratios, such as the operational margin and inventory rotation, rather than financial and solvency ones.

Summarizing, the analysis in this chapter provides evidence for multiple directions of the crisis' cause and effect framework: firms' decisions influenced the macroeconomic outcome, the currency crisis had negative impacts on companies' balance sheets, and firms' interconnections evolved in spreading between them.

The principal components analysis points out that financial and performance ratios for surviving companies were not seriously influenced by the crisis, which relates to the favorable outcomes of interest payment coverage and exports. As a result of the significant rise in exports, the peso devaluation had a positive impact on financially strong companies. Furthermore, the lesser were the initial dependencies on the Mexican economy, the better the conditions for firms during the crisis, as revealed clearly by the mining sector. The last industries to recover were telecommunications and services, which were most seriously wounded by the crisis, as prior to this event they possessed the lowest exports / total sales ratios. According to this experience, conglomerates were efficient reducing currency risk, which might justify their existence in economically unstable countries.

The Mexican firms´ experience during the 1994 macroeconomic crisis derives some corporate governance recommendations, which are crucial to avoid future calamities, as even in 2001 these companies showed several vulnerabilities. These suggestions are: 1) Reduce both the exchange rate and the debt mismatching; 2) Search for more external markets (not only the U.S) in order to diversify risk; 3) Increase social capital and savings, as well as selling of stocks, in order to depend less on bank credit; 4) Keep

liquidity indicators high, even though in the short-run earnings are being sacrificed.

6 APPENDIX

Table A1
General results for univariate series

	All FIRMS	Man	Tel	Com	Const	Serv	Congl	Min	Small	Med	Large
LEV (times)											
Pre-crisis	0.8	0.9	0.7	0.7	1.1	0.8	0.9	0.6[1]	1.2	1.0	0.8
Crisis	1.1	0.9	0.6	0.5	1.2	5.9	1.1	0.7[2]	0.0	1.0	1.1
Post-crisis	1.2[3]	1.1	0.9	0.7	1.2	2.2[3]	1.6[3]	1.1[3]	0.9	1.2	1.2[3]
DR (%)											
Pre-crisis	41.7[1]	42.7[1]	35.5[1]	36.4	49.9[1]	45.0[1]	46.5[1]	32.5[1]	44.5[1]	42.8[1]	41.6[1]
Crisis	45.9[2]	44.6	33.0[2]	35.6	53.2[2]	78.9[2]	57.4	37.5[2]	53.5[2]	47.1	45.7[2]
Post-crisis	48.5[3]	44.3	43.8[3]	35.5	55.0[3]	61.0[3]	58.4[3]	47.6[3]	60.6[3]	44.9	48.9[3]
LIQ (%)											
Pre-crisis	46.0[1]	47.4	25.5[1]	84.2	36.6[1]	40.2[1]	56.4	59.0[1]	71.9	61.0	43.6[1]
Crisis	49.2[2]	48.2	40.6	83.6[2]	32.1[2]	63.3[2]	59.3[2]	47.0[2]	69.4	61.7[2]	47.3
Post-crisis	47.2	46.6	45.1[3]	74.5[3]	42.1[3]	44.3	47.3[3]	35.5[3]	69.4	48.2[3]	46.9[3]
FD/TD (%)											
Pre-crisis	52.9[1]	50.0[1]	47.3[1]	11.7[1]	66.8[1]	68.4	64.0[1]	69.2[1]	29.2	40.0[1]	54.9[1]
Crisis	62.8[2]	62.1[2]	58.6[2]	18.7[2]	75.5	69.2[2]	68.5	77.2[2]	25.6[2]	54.2[2]	64.2[2]
Post-crisis	53.8	52.2	41.8[3]	14.8	73.1[3]	49.1[3]	66.0	69.0	20.4[3]	46.3[3]	55.2
FSTD/ TFD (%)											
Pre-crisis	41.4[1]	44.5	18.7[1]	69.8[1]	30.2	34.6[1]	59.6	52.7[1]	65.9	57.4	38.9[1]
Crisis	44.7	45.8	31.9	82.5[2]	26.3[2]	58.4[2]	59.1[2]	38.3	66.7	54.7[2]	43.2
Post-crisis	43.2	47.1	29.9	79.1[3]	42.3[3]	40.1	41.9[3]	31.6[3]	66.3	46.6[3]	42.5[3]
IPC (times)											
Pre-crisis	9.8	13.6	9.8[1]	36.1	2.5[1]	1.5[1]	1.5	2.3[1]	8.8[1]	6.1[1]	10.3
Crisis	8.8[2]	13.4[2]	7.2[2]	38.6[2]	1.9[2]	0.0[2]	1.7	4.6[2]	3.7[2]	4.6[2]	9.4[2]
Post-crisis	11.5[3]	18.1[3]	4.8[3]	50.7[3]	4.2[3]	12.9[3]	2.4	1.3[3]	10.3	10.6[3]	11.7[3]

Table A1
General results for univariate series (continue)

	All FIRMS	Man	Tel	Com	Const	Serv	Congl	Min	Small	Med	Large
IF (times)											
Pre-crisis	2.6[1]	2.3[1]	2.2[1]	1.9[1]	1.6[1]	1.0[1]	1.1[1]	16.3[1]	1.6	7.7[1]	1.8
Crisis	2.2[2]	2.6	2.7[2]	2.5	1.3[2]	0.4[2]	0.9	5.1[2]	1.5	4.1[2]	1.9[2]
Post-crisis	1.7[3]	2.4	1.6[3]	2.2	1.4[3]	3.4[3]	0.9[3]	1.4[3]	1.5	2.6[3]	1.6[3]
STA/ STD (times)											
Pre-crisis	2.2[1]	1.9	3.1[1]	1.4	1.6[1]	1.5[1]	1.3[1]	7.7	1.6[1]	3.8[1]	2.0[1]
Crisis	1.7	1.8[2]	2.2	1.3[2]	1.3[2]	0.6[2]	1.1[2]	3.1	2.2[2]	1.6[2]	1.7
Post-crisis	1.8[3]	2.1[3]	2.0[3]	1.6[3]	1.2[3]	1.1[3]	1.2[3]	2.9[3]	1.9[3]	2.3[3]	1.7[3]
BPR (days)											
Pre-crisis	5.0	5.4	2.3	22.0	2.2	1.3	2.8	3.8	4.6	4.3	5.1
Crisis	5.5	5.7	2.5	29.4	2.5	1.3[2]	3.0	3.8	5.4[2]	4.7	5.6
Post-crisis	6.0	6.3	2.6	26.4	3.2	2.9[3]	3.2	2.8	9.2[3]	4.5	6.2
IR (days)											
Pre-crisis	4.4[1]	2.4	6.6[1]	4.1	7.3	5.3	2.6	2.8	9.0	4.8	4.3[1]
Crisis	16.4	2.8	62.3[2]	4.4	6.1	4.5[2]	3.1	3.6[2]	6.8[2]	6.0[2]	17.9
Post-crisis	19.0[3]	3.2	78.1[3]	4.0	5.2	7.6[3]	3.1	4.7[3]	4.8[3]	7.3[3]	20.9[3]
X/Sales (%)											
Pre-crisis	12.5[1]	12.1[1]	11.5[1]	0.0[1]	12.5[1]	2.3	15.1[1]	34.1[1]	2.5[1]	9.7[1]	13.0[1]
Crisis	25.2	21.5	16.4[2]	0.2[2]	44.1	4.2[2]	28.7	47.3	10.3	19.5[2]	26.1
Post-crisis	24.6[3]	21.6[3]	10.0	0.7[3]	43.5[3]	8.8[3]	30.2[3]	48.0[3]	9.7[3]	17.4[3]	25.8[3]
OM (%)											
Pre-crisis	18.5	8.5[1]	37.0[1]	4.0[1]	24.8[1]	24.3[1]	13.1	7.7[1]	-5.5	8.8	21.0
Crisis	17.4	14.0	29.4[2]	2.8[2]	19.4[2]	-0.7	13.9	21.9[2]	-1.1	8.5	20.2
Post-crisis	17.0[3]	14.0[3]	31.9[3]	5.0[3]	22.3[3]	10.7[3]	12.2	10.2	0.1[3]	12.4[3]	19.3[3]
ROA (%)											
Pre-crisis	3.8	1.9	8.0	2.9	3.9	2.6[1]	2.7	1.6[1]	-0.3	2.1	4.1
Crisis	4.1	3.3	5.6	4.0	4.0	-2.6	3.7	6.7[2]	0.1[2]	2.0	4.4
Post-crisis	3.6	3.6[3]	5.9	4.5	3.2	-0.4	2.9	2.1	2.1[3]	3.4	3.7

Table A1
General results for univariate series (continue)

	All FIRMS	Man	Tel	Com	Const	Serv	Congl	Min	Small	Med	Large
ROE (%)											
Pre-crisis	6.2	2.7	11.7	4.0	8.3	4.6	4.5	3.3[1]	-7.7	1.8	6.9
Crisis	5.6	3.2	7.9	6.5	10.3	-34.0	7.8	10.6[2]	-3.1[2]	3.6	6.6
Post-crisis	6.6	6.2	10.5	7.8[3]	6.3	-0.5	6.4	2.8	10.4[3]	4.9	6.8

This table refers to the average values for the 14 ratios under consideration, during the pre-crisis (93.1 till 94.3), crisis (94.4 till 97.3), and post-crisis (97.4 till 01.1) periods. Firms are grouped according to their industry and relative size.
1/ Pre-crisis and crisis values are significantly different at 10% confidence level.
2/ Crisis and post-crisis values are significantly different at 10% confidence level.
3/ Pre-crisis and post-crisis values are significantly different at 10% confidence level.

Table A2
Two-breaks model: timing and effect

	First break-point										
	ALL FIRMS	Man	Tel	Com	Const	Serv	Congl	Min	Small	Med	Large
LEV	95.3/ -	95.4/ +	NO	95.3/ +	NO	95.3/ -	NO	NO	95.2/+	95.3/ +	95.3/-
DR	94.3/ -	96.4/ +	NO	NO	94.3/ -	94.4/ -	94.3/-	NO	94.4/ -	NO	94.3/ -
LIQ	95.3/ -	NO	95.3/ -	NO	93.4/+	95.3/ -	94.3/ -	93.4/+	95.4/+	NO	95.3/ -
FD/TD	94.3/ -	94.3/ -	94.4/ -	93.4/ -	94.3/ -	95.1/ -	95.1/ -	93.4/ -	93.4/+	94.3/ -	94.4/ -
FSTD/ TFD	95.1/ -	NO	96.4/ -	93.4/ -	93.4/+	95.3/ -	93.4/+	95.3/+	NO	NO	95.1/ -
IPC	94.3/ -	96.2/ +	94.4/ -	95.4/ +	NO	NO	NO	95.1/+	94.1/ -	NO	94.3/ -
IF	93.4/ -	95.4/ +	NO	95.1/ +	94.3/ -	NO	94.4/ -	93.4/ -	NO	93.4/ -	95.1/+
STA/ STD	94.3/ -	94.3/ -	95.1/ -	93.4/ -	94.3/ -	94.3/ -	94.3/ -	93.4/ -	96.1/+	93.4/ -	94.3/ -
BPR	NO	95.4/ -	NO	95.2/ -	95.4/ -	NO	93.4/+	NO	NO	95.2/ -	NO
IR	95.2/ -	95.4/ -	95.2/ -	95.2/ -	94.4/+	94.3/ +	94.4/ -	94.1/+	93.4/ -	96.1/ -	95.2/ -
X/ Sales	94.4/ +	94.4/ +	94.4/ +	94.4/ +	94.4/+	NO	94.4/+	95.1/+	94.4/+	94.4/ +	94.4/ +
OM	95.4/ -	94.4/ +	94.4/ -	95.1/ -	95.1/ -	95.3/ -	94.1/+	94.4/+	94.1/+	95.1/ -	95.3/ -
ROA	94.1/ -	94.1/ -	94.3/ -	94.1/ -	96.4/ -	94.3/ -	95.4/+	95.1/+	95.4/+	94.3/ -	95.1/ +
ROE	NO	94.1/ -	93.4/ -	94.2/ -	NO	95.3/ -	95.4/+	95.1/+	95.1/+	94.3/ -	NO
Interval / sign	**93.4-95.4/-**	**94.1-96.4/0**	**93.4-96.4/ -**	**93.4-95.4/0**	**93.4-96.4/0**	**94.3-95.3/ -**	**93.4-95.4/0**	**93.4-95.3/+**	**93.4-96.1/+**	**93.4-96.1/ -**	**94.3-95.3/-**
Recovery break-point											
	ALL FIRMS	Man	Tel	Com	Const	Serv	Congl	Min	Small	Med	Large
LEV	96.3/ +	NO	NO	97.2/ -	NO	96.3/ +	NO	NO	96.2/ -	97.3/ -	96.3/ +

Table A2
Two-breaks model: timing and effect (continue)

Recovery break-point											
	ALL FIRMS	Man	Tel	Com	Const	Serv	Congl	Min	Small	Med	Large
DR	NO	NO	NO	NO	NO	97.4/ +	NO	NO	NO	NO	NO
LIQ	97.3/ +	NO	NO	NO	NO	97.3/ +	97.3/+	NO	97.3/ -	NO	97.3/ +
FD/TD	NO	NO	98.1/ +	NO	NO	97.2/ +	NO	NO	NO	NO	NO
FSTD/ TFD	NO	NO	NO	96.1/ +	98.2/ -	97.3/ +	NO	NO	NO	NO	NO
IPC	95.4/ +	NO	95.4/ +	NO	NO	NO	NO	97.4/ -	97.1/ +	NO	95.4/ +
IF	NO	NO	NO	NO	97.3/+	NO	NO	NO	NO	NO	NO
STA/ STD	NO	96.3/ +	NO	96.2/ +	NO	97.4/ +	97.2/+	NO	97.1/ -	97.2/ +	NO
BPR	NO	NO	NO	96.3/ +	NO	NO	NO	NO	NO	96.4/ +	NO
IR	97.2/ +	NO	96.4/ +	96.3/ +	NO	97.2/ -	NO	96.1/ -	94.4/ +	NO	97.2/ +
X/ Sales	NO	95.4/ -	97.4/ -	NO	NO	NO	NO	NO	NO	NO	NO
OM	96.4/ +	NO	98.2/ +	96.4/ +	97.4/+	NO	NO	95.4/ -	NO	96.1/ +	NO
ROA	95.1/ +	95.1/ +	95.4/ +	95.1/ +	NO	NO	97.4/ -	97.4/ -	NO	95.4/ +	97.4/ -
ROE	NO	96.1/ +	NO	95.2/ +	NO	96.3/ +	96.4/ -	97.4/ -	NO	95.3/ +	NO
Interval / sign	**95.1-97.3/ +**	**95.1-96.3/+**	**95.4-98.2/+**	**95.1-97.2/+**	**97. 3-98.2/0**	**96.3-97.4/+**	**96.4-97.4/0**	**95.4-97.4/ -**	**94.4-97.3/ 0**	**95.3-97.3/+**	**95.4-97.4/ +**
Overall effect											
	Average	Man	Tel	Com	Const	Serv	Congl	Min	Small	Med	Large
LEV	0	+	0	0	0	0	0	0	+	0	0
DR	-	+	0	0	-	-	-	0	-	0	-
LIQ	0	0	-	0	+	0	+	+	+	0	-
FD/TD	-	-	+	-	-	+	-	-	+	-	-
FSTD/ TFD	-	0	-	-	-	-	+	+	0	0	-

Table A2
Two-breaks model: timing and effect (continue)

Overall effect											
	Average	Man	Tel	Com	Const	Serv	Congl	Min	Small	Med	Large
IPC	+	+	-	+	0	0	0	0	0	0	+
IF	-	+	0	+	-	0	-	-	0	-	+
STA/ STD	-	+	-	0	-	-	-	-	+	-	-
BPR	0	-	0	-	-	0	+	0	0	0	0
IR	-	-	-	+	+	-	-	-	+	-	-
X/ Sales	+	+	-	+	+	0	+	+	+	+	+
OM	-	+	-	+	-	-	+	0	+	+	-
ROA	0	+	-	+	-	-	0	0	+	+	0
ROE	0	+	-	+	0	0	+	0	+	+	0
Overall effect	**-**	**+**	**-**	**+**	**-**	**-**	**0**	**0**	**+**	**0**	**-**

This table deals with initial breaking points and recovery dates (two-breaks model), for each of the 14 ratios under consideration. No significant presence of breaking points is described with a NO. Positive (negative) effects on balance sheets are shown with a + (-) sign. Considering all 14 ratios, no predominating effects (70% or more) are described with a 0. The overall effect of the crisis is identified according to the sign and magnitude of the first and second breaking points (b_1 and b_2) for each individual ratio. The null hypothesis $b_1 = -b_2$, which implies that the ratio Y_t returns to its pre-crisis level after recovery occurs, has been tested using the heteroskedasticity and autocorrelation consistent version of the Wald test (10% significance level).

Table A3
Gradual recovery model: timing and effect

	Breaking point										
	ALL FIRMS	Man	Tel	Com	Const	Serv	Congl	Min	Small	Med	Large
LEV	95.3/-	93.4/-	93.3/-	95.1/-	93.4/+	95.3/-	94.4/-	94.4/-	95.3/+	95.1/-	95.3/-
DR	94.4/-	93.4/-	94.4/+	95.3/+	93.4/+	95.1/-	94.4/-	94.4/-	94.4/-	94.3/-	94.4/-
LIQ	95.3/-	94.4/-	95.1/+	95.3/+	93.4/+	95.3/-	93.3/+	93.3/+	95.1/-	95.2/-	93.4/+
FD/TD	95.1/-	94.4/-	95.1/-	93.4/-	94.4/-	95.2/-	95.2/-	93.3/-	93.3/+	94.4/-	95.1/-
FSTD/ TFD	95.2/-	95.3/+	95.3/-	94.1/-	93.4/+	95.3/-	93.3/+	93.3/+	93.4/+	93.4/+	95.2/-
IPC	95.1/-	95.1/-	95.1/-	94.4/-	95.1/-	94.1/-	95.1/-	95.2/+	94.2/-	94.4/-	95.1/-
IF	93.4/-	95.3/+	95.2/+	95.2/+	94.4/-	94.4/-	95.1/-	93.4/-	95.3/+	93.3/+	95.2/+
STA/ STD	94.4/-	94.4/-	95.2/-	94.1/-	93.4/+	94.4/-	94.4/-	93.3/-	95.3/+	93.3/-	94.4/-
BPR	95.3/-	94.2/+	94.4/+	95.3/-	94.4/+	94.3/+	94.1/+	93.4/-	94.4/+	95.3/-	95.2/-
IR	95.3/-	95.1/-	95.3/-	95.3/-	94.4/-	94.4/+	94.4/+	93.3/+	94.2/-	93.3/-	95.3/-
X/ Sales	93.4/+	95.1/+	95.1/+	94.4/+	93.4/+	94.2/-	95.1/+	93.3/+	93.3/-	95.1/+	93.4/+
OM	95.1/+	95.1/+	95.1/-	95.1/-	95.2/-	95.3/-	93.3/+	95.1/+	94.2/+	95.3/-	95.3/-
ROA	94.4/-	94.4/-	93.4/+	94.4/-	95.2/+	94.1/-	94.4/-	95.2/+	94.4/-	94.3/-	94.4/-
ROE	94.4/-	94.2/-	94.1/-	94.4/-	95.2/+	95.3/-	94.4/-	95.2/+	95.1/-	94.4/-	94.4/-
Interval / sign	93.4-95.3/ -	93.4-95.3/0	93.3-95.3/0	93.4-95.3/-	93.4-95.2/0	94.1-95.3/-	93.3-95.2/0	93.3-95.2/0	93.3-95.3/0	93.3-95.3/-	93.4-95.3/-
	τ_2										
	ALL FIRMS	Man	Tel	Com	Const	Serv	Congl	Min	Small	Med	Large
LEV	96.4/+	00.1/-	00.3/-	95.3/+	94.4/-	96.4/+	00.3/-	99.3/-	96.2/-	95.3/+	96.4/+

Table A3
Gradual recovery model: timing and effect (continue)

τ_2

	ALL FIRMS	Man	Tel	Com	Const	Serv	Congl	Min	Small	Med	Large
DR	00.1/-	00.1/-	00.3/-	00.1/-	94.4/-	98.1/+	96.1/-	99.3/-	98.3/-	00.1/-	00.1/-
LIQ	97.3/+	00.1/+	95.3/-	99.4/+	98.3/-	98.4/+	97.3/+	95.4/+	95.3/+	00.2/+	95.1/-
FD/TD	99.2/+	99.3/+	98.1/+	98.4/+	00.1/+	97.3/+	99.3/+	99.3/+	96.1/+	99.4/+	99.2/+
FSTD/TFD	99.1/+	99.4/-	99.2/+	96.2/+	99.2/-	98.1/+	97.3/+	95.4/+	00.1/-	97.1/+	99.1/+
IPC	95.3/+	99.4/+	95.3/+	96.4/+	98.4/+	98.1/+	95.2/+	97.4/-	97.4/+	97.3/+	95.3/+
IF	99.4/-	00.1/-	00.2/-	99.4/-	97.2/+	97.4/+	00.1/-	96.2/-	00.2/-	93.4/-	00.1/-
STA/STD	00.1/-	96.4/+	00.1/-	96.3/+	94.4/-	97.4/+	97.2/+	99.2/-	98.1/-	94.1/-	00.1/-
BPR	00.3/-	00.3/-	95.1/-	96.3/+	96.2/-	97.4/-	00.1/-	97.2/+	98.1/-	97.2/+	00.2/-
IR	00.3/+	99.3/-	96.4/+	96.2/+	95.1/+	96.4/-	95.1/-	96.2/-	94.4/+	96.2/-	00.3/+
X/Sales	94.4/+	96.1/-	97.4/-	99.3/+	95.1/+	97.1/+	00.1/+	94.4/+	95.1/+	00.3/-	94.4/+
OM	95.2/-	99.1/-	98.2/+	98.4/+	97.4/+	97.1/+	99.4/-	98.1/-	00.2/+	96.2/+	00.2/-
ROA	95.1/+	95.1/+	94.1/-	95.1/+	97.1/-	99.2/+	95.1/+	98.1/-	99.2/+	96.1/+	95.1/+
ROE	95.1/+	96.2/+	00.3/+	95.2/+	98.1/-	96.4/+	95.1/+	98.1/-	00.3/+	95.3/+	95.1/+
Interval / sign	**94.4–00.3 / 0**	**95.1-00.3/0**	**94.1-00.3/0**	**95.1-00.1/+**	**94.4-00.1/0**	**96.4-99.2/+**	**95.1-00.3/0**	**94.4-99.3/0**	**94.4-00.3/0**	**93.4-00.3/0**	**94.4-00.3/0**
Overall effect											
	Average	Man	Tel	Com	Const	Serv	Congl	Min	Small	Med	Large
LEV	0	-	-	+	+	0	-	-	+	0	0
DR	-	-	-	-	-	-	-	-	-	-	-
LIQ	0	+	-	+	-	0	+	+	+	0	0
FD/TD	+	+	+	-	0	+	+	0	+	0	+

Table A3
Gradual recovery model: timing and effect (continue)

Overall effect											
	Average	Man	Tel	Com	Const	Serv	Congl	Min	Small	Med	Large
FSTD/ TFD	0	-	+	-	0	0	+	+	0	+	0
IPC	+	+	-	+	+	+	+	0	0	+	+
IF	-	-	0	-	-	+	-	-	-	0	-
STA/ STD	-	+	-	0	-	-	-	-	+	-	-
BPR	-	0	0	-	-	-	-	+	-	0	-
IR	0	-	-	+	+	-	-	-	+	-	0
X/ Sales	+	+	-	+	+	+	+	+	+	0	+
OM	-	+	-	+	-	-	-	0	+	+	-
ROA	0	+	-	+	0	0	0	0	0	+	0
ROE	0	+	+	+	0	0	0	0	0	+	0
Overall effect	**0**	**0**	**-**	**0**	**0**	**0**	**0**	**0**	**+**	**0**	**0**

This table deals with the first breaking point and half-through recovery dates (τ_2), according to the gradual recovery model, for each of the 14 ratios under consideration. For this model, the first break point is bounded between 1993 and 1995. This has been done since the two-breaks model shows that balance sheets deteriorated between the fourth quarters of 1993 and 1995. Positive (negative) effects on balance sheets are shown with a + (-) sign. Considering all 14 ratios, no predominating effects (70% or more) are described with a 0. The overall effect of the crisis is identified according to the sign and magnitude of the first breaking point and τ_2 (b_1 and b_2) for each individual ratio. The null hypothesis $b_1 = -b_2$, which implies that the ratio Y_t returns to its pre-crisis level after recovery occurs, has been tested using the heteroskedasticity and autocorrelation consistent version of the Wald test (10% significance level).

Table A4
Principal components analysis
Gradual recovery model

Break point date and sign

	All Firms	Man	Tel	Com	Const	Serv	Congl	Min	Small	Med	Large	Mode	Inter
Fin. ratios	95.1/-	95.3/+	95.3/+	95.1/+	93.4/+	95.3/-	93.3/+	93.4/+	93.3/+	95.1/-	94.1/+	95.3/+	93.3 - 95.3 /+
Solv ratio	94.4/-	95.3/+	95.3/-	95.1/-	93.4/+	94.4/-	94.4/-	93.3/-	95.3/+	93.4/-	94.4/-	94.4/-, 95.3/+	93.3 - 95.3 /-
Oper ratios	93.4/-	94.4/+	95.3/-	95.3/-	95.1/+	94.4/+	95.1/-	93.4/-	93.3/-	95.1/-	93.4/-	95.1/-	93.3 - 95.3 /-
Perf. ratios	94.4/-	94.4/-	94.4/-	94.4/-	95.2/+	95.1/-	94.4/-	95.1/+	95.2/+	94.4/-	94.4/-	94.4/-	94.4 - 95.2 /-
Mode	94.4/-	94.4/0 95.3/+	95.3/0	95.1/0	93.4/+	94.4/0	94.4/-	93.4/0	93.3/0	95.1/-	94.4/-	94.4/-, 95.3/+	
Interval	93.4-95.1/ -	94.4-95.3/+	94.4-95.3/-	94.4-95.3/-	93.4-95.2/+	94.4-95.3/-	93.3-95.1/-	93.3-95.1/0	93.3-95.3/+	93.4-95.1/-	93.4-94.4/-	94.4-95.3/0	93.3 - 95.3 /-

τ_2 and sign

	All Firms	Man	Tel	Com	Const	Serv	Congl	Min	Small	Med	Large	Mode	Inter
Fin. ratios	00.3/+	00.1/-	99.3/-	99.4/-	98.3/-	97.4/+	98.1/+	95.4/+	00.3/+	97.2/+	00. 3/-	00.3/0	95.4 - 00.3 /0
Solv. ratios	00.2/-	00.1/-	00.3/-	95.3/+	94.4/-	96.4/+	96.3/+	99.3/-	97.3/-	95.3/+	00.2/-	95.3/+	94.4 - 00.3 /0
Oper ratios	95.2/-	00.3/-	97.3/+	96.2/+	97.4/-	97.1/-	00.1/-	96.2/-	95.1/+	96.1/-	95.2/-	96.2/0	95.1 - 00.3 /-
Perf. ratios	95.2/+	95.1/+	00.3/+	95.2/+	97.3/-	98.3/+	95.1/+	98.1/-	00.3/+	95.2/+	95.1/+	95.1/+	95.1 - 00.3 /+
Mode	95.2/0	00.1/-	00.3/0	ALL/ +	ALL/-	ALL/ +	ALL/ +	ALL/-	00.3/+	ALL/ +	ALL/-	ALL/ 0	
Interval	95.2-00.3/0	95.1-00.3/-	97.3-00.3/0	95.2-99.4/+	94.4-98.3/-	96.4-98.3/+	95.1-00.1/+	95.4-99.3/-	95.1-00.3/+	95.2-97.2/+	95.1-00.3/-	95.1-00.3/0	94.4 - 00.3 /0

Table A4
Principal components analysis
Gradual recovery model (continue)

Overall effect

	All Firms	Man	Tel	Com	Const	Serv	Congl	Min	Small	Med	Large	Final effect
Fin. ratios	0	-	-	-	-	+	+	+	+	+	0	0
Solv. ratios	-	-	-	+	0	-	-	-	+	-	-	-
Oper ratios	-	0	-	-	+	-	-	-	+	-	-	-
Perf. ratios	0	+	0	+	0	0	0	0	0	+	0	0
Final effect	**0**	**0**	**-**	**0**	**0**	**0**	**0**	**0**	**+**	**0**	**0**	**0**

This table refers to the principal components' analysis (first principal component-gradual recovery model), for the four types of ratios under consideration. Positive (negative) effects on balance sheets are shown with a + (-) sign. Considering the four kinds of ratios, no predominating effects (70% or more) are described with a 0. The overall effect of the crisis is identified according to the sign and magnitude of the breakpoint and τ_2, for each ratio category. The null hypothesis $b_1 = -b_2$, which implies that the ratio Y_t returns to its pre-crisis level after recovery occurs, has been tested using the heteroskedasticity and autocorrelation consistent version of the Wald test (10% significance level).

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CHAPTER 4:
CORPORATE GOVERNANCE AND PERFORMANCE DURING NORMAL AND CRISIS PERIODS: EVIDENCE FROM AN EMERGING MARKET PERSPECTIVE*

1 INTRODUCTION

Research linking firm performance and corporate governance structures has produced the consensus view that poor corporate governance is associated with lower operating performance and Tobin's Q (see La Porta et al., 1999, and Klapper and Love, 2003, among others). This is most evident during times of crises, as it is then when expropriation of stakeholders becomes more severe (see Mitton, 2002, and Kim and Lee, 2003). Due to the circumstances, nervous investors take their money away from companies with poor governance, which further deteriorates profits and firm value (see Rajan and Zingales, 1998, and Johnson et al., 2000[a]). In addition, the odds of bringing in claims increase. This situation is worse in emerging markets, where external governance mechanisms (such as legal protection) are deficient.

Nevertheless, there is still no consensus on the definition of "good" corporate governance arrangements. The literature provides contradicting empirical results on the relationship between firm performance and corporate governance variables (particularly internal ones, such as family ownership, business group affiliation, and bank links). These differences can be explained taking into account two important elements: the particular business environment faced by the companies (developed or emerging markets), and the period of time considered (times of crises or normal times). Although several studies keep in mind either of these issues independently, we believe this research is one of the few to take into account both aspects at the same time.

Related to emerging markets' crisis periods, authors such as Mitton (2002) and Baek et al. (2004), show that family controlled firms perform better than others. However, in normal times there is no significant relationship

between performance and family ownership, as confirmed by Ho and Williams (2003). On the other hand, there is evidence from the literature that business groups favour firm performance in emerging market economies (see Khanna and Palepu, 2000); nevertheless, the advantages of having these types of networks decline as the economy develops (see Joh, S.W., 2003; Johnson et al., 2000[b]). Finally, during times of crises bank links represent negative corporate governance schemes, especially for firms operating in emerging market economies (see Baek et al., 2004). Nonetheless, these associations tend to be positive during normal periods, as described by Castañeda (2005).

This chapter examines the effects of internal corporate governance mechanisms on performance during normal times and in times of crises, under an emerging market perspective. Particularly, we consider the influence of corporate governance arrangements such as bank, business, and family ties on performance. In addition, we argue that export-orientation and exposure to external capital markets constitute another dimension of internal corporate governance mechanisms, and include them in the analysis. Size of companies, productivity, foreign-denominated debt over total debt, cash flows over total assets, and leverage are employed as control variables. We use as case study the period around the Mexican 1995 currency crisis. This crisis provides an excellent scenario for a natural experiment on corporate performance. Unlike the Asian 1997 crisis, in which there is no agreement on the exact date when this event took place, in Mexico it is clear that the crisis began at the end of the year 1994 (December 20th). It is then possible to study differences in performance prior, during, and after the crisis, without committing a mistake on the event date.

We find significant differences in firm performance according to these corporate governance characteristics. In general, bank links represent negative governance schemes, while having family ties, belonging to business groups, and being export-oriented constitute positive governance mechanisms. Nonetheless, these conclusions are not robust during all

periods. For instance, during normal times having group affiliation weakens performance, while the contrary is found during the crisis period.

This chapter is organized as follows. Section two deals with theory and literature review on corporate governance, and concludes with the Mexican case. Section three refers to the hypotheses and data used for this study, and presents descriptive statistics. Section four shows econometric results on the relationship between performance and corporate governance variables. Section five concludes.

2 THEORY AND LITERATURE REVIEW

2.1 Corporate Governance

Corporate governance involves institutional arrangements intended to ensure that company stakeholders' rights are not violated. By stakeholders we refer to all outsiders involved in one way or another with the firm: equity holders, creditors, and other capital suppliers; employees, consumers, suppliers, and the government. In the words of Kose and Senbet (1998, page 372), "Corporate governance deals with mechanisms by which stakeholders of a corporation exercise control over corporate insiders and management such that their interests are protected". This relates to the agent-principal problem, as described by Jensen and Meckling (1976) and Myers (1977).

Traditionally, the literature mentions agency costs of equity and debt. Agency costs of equity occur when managers maximize objectives other than performance (such as empire-building strategies or maximization of wages), which are not in the interest of shareholders. Agency costs of debt occur between equity and debt holders. These refer to actions such as excessive dividend payments, asset substitution, underinvestment, monitoring and bonding (see Jensen and Meckling, 1976, and Band, 1992). More recently, authors allude to agency costs in a broader way, which is centred in the figure of the stakeholder. Then, any action against stakeholders' interests carries a type of agency cost.

Agency costs can be diminished through different types of governance mechanisms. Boubakri et al. (2005) classify these mechanisms as external and internal. Based on this classification, we consider external governance mechanisms as those not directly controlled by a firm, such as the legal system, labour markets, and markets for corporate control. These vary across countries, and the general view is that in this sense stakeholders are better protected in developed economies than in emerging markets. Authors such as La Porta et al. (2000) have studied differences in external corporate governance structures between nations, and how these mechanisms protect outsiders from insiders. They have focused on the importance of the legal system to avoid expropriation of minority shareholders and creditors; expropriation dealing with the generation of private benefits by managers or large shareholders that are not shared by others. Regulatory measures such as clear accounting and disclosure procedures, transparency, and efficient judicial systems to enforce investor protection have been widely discussed. In addition, authors such as Marnet (2004) have focused on the importance of joint regulation and monitoring to reduce agency costs, allowing for some human irrationality. Well-functioning labour and takeover markets also permit alignment with stakeholders' interests, as there is constant pressure for outside directors and managers who fear they can be substituted (see Fama and Jensen, 1983). Many of these external corporate governance mechanisms obviously function better in developed markets than in emerging markets.

Internal governance mechanisms relate to those directly controlled by a company, including ownership structure, board composition, and exposure to international trade and financial markets. We split ownership structure into three categories: ownership concentration, family ownership, and informal ownership. Ownership concentration relates to the amount of control rights and power enforced by stockholders of a firm, being members of the same family or not. By family ownership we mean the fraction of equity held by members of the same family. Informal ownership relates to the power and control outsiders hold in a company by means of belonging to the same group (business or bank).

In countries with poor external governance mechanisms, agency problems are generally reduced by managers having more control of the firm (as described by Shleifer and Vishny (1997), and more recently by Boubakri et al. (2005)). Nevertheless, Tosi et al. (2003) have found that companies with a high degree of management control but dispersed ownership are more susceptible to corporate governance problems, as managers of these types of firms have less constraints to act according to their own interests. This view is shared by Bunkanwanicha et al. (2003), who conclude that concentrated ownership relates to better governance, as large shareholders have greater interest to have a firm running properly. This implies a lower incentive to expropriate stakeholders and more control over management. The same argument can be expanded to family owned companies. In these companies large shareholders, members of the board, and even management usually are related, which creates greater incentives to have the firm running well. An example is shown by Kim (2005), who refers to Chaebol firms as having better productivity performance than companies with less family ownership concentration. On the other hand, authors such as Baek et al. (2004) mention that high ownership concentration (especially in family hands) reduces firm performance, particularly during crisis episodes. Under these firm value destruction circumstances, it becomes more attractive to expropriate minority shareholders. And, if external governance mechanisms do not function properly, the odds for these types of actions increase, pushing firm performance further down.

Regarding informal ownership, several authors have emphasized the positive governance effects of business groups, particularly diversified groups, in emerging economies. As stated by Khanna and Palepu (1996), these networks support internal trade and financing, and ensure close monitoring of management. The reputation issue is relevant in these transactions, which reduces the moral hazard and adverse selection problems. The same arguments can be used to explain the favourable effects of bank links on firm performance, as these institutions act as credit suppliers, manager monitors and financial advisors, and they can contribute with knowledge on the industry the company belongs to (see Hoshi et al.,

1990, Kang and Shivdasani, 1995, and Kroszner and Strahan, 2001). However, other authors such as Kim and Lee (2003) and Baek et al. (2004) reveal that during emerging markets' crisis periods, bankers act as accomplices instead of firm regulators (for instance, by providing credit to finance losses). This effect can be seen as well between business group members.

The other two internal governance mechanisms under consideration are board composition and exposure to international trade and financial markets. Board composition relates to the number of board members and the organization of the board of directors. Stakeholders´ protection differs according to board composition; for instance, small independent boards, where the CEO is not the president of the board, have many times been related to better alignment with stakeholders' interests. Authors such as Rosenstein and Wyatt (1990), Brickley et al. (1994), and Cotter et al. (1997) report that the presence of independent board members (those not related with the company itself) reduces agency costs between managers and shareholders. This positive effect is more significant in firms where board members are substituted regularly, on the basis of firm performance. Lipton and Lorsch (1992), Yermack (1996), and Jensen (1993) mention that small boards are more efficient than big ones, as there is better communication among board members, which makes it is easier to take decisions. Regarding the CEO duality, it has mostly been argued that the board of directors loses its monitoring function for companies where the CEO is also the president of the board (see Mangel and Singh, 1993, and Jensen, 1993).

Exposure to international trade and financial markets are also important corporate governance variables, especially for firms operating in emerging markets. As external governance mechanisms are weak in these types of countries, participation in international markets can imply better stakeholder protection. For example, companies listed in the U.S. through American Depository Receipts (ADRs) must comply with US GAAP accounting procedures, and are subject to SEC laws that protect minority shareholders (see Klapper and Love, 2003, and La Porta et al., 2000). In

addition, exporting firms must possess good reputation in order to trade and obtain credit from external markets. Although the literature has mentioned ADRs as a means for better corporate governance schemes, to the best of our knowledge export-orientation as a governance mechanism has not been contemplated yet.

2.2 The Mexican case

On December 20th 1994, due to internal and external pressures, Mexican authorities were forced to liberalize the exchange rate regime. Internally, Mexico faced an increasing current account deficit. In addition, there was political instability due to the assassination of presidential candidate Luis Donaldo Colosio, together with a guerrilla conflict in the south of Mexico (Chiapas). Externally, U.S. interest rates were increasing. Jointly these factors caused substantial capital outflows, which evolved in a shift from a fixed exchange rate regime to a floating one, and the devaluation of the Mexican peso. The year 1995 started with the devaluation of the peso of around 100%, inflation of more than 50%, and a significant increase in interest rates. Real GDP declined 10% during this year. Many companies and banks went bankrupt, as not only did their debts increase in peso terms, but they were also highly indebted in dollar-denominated currency.

Despite this economic catastrophe, some firms were able to survive the crisis, and others even benefited from it. Two obvious questions that result from this are, first, why did some firms survive and others did not, and second, why did some firms perform better than others? Recent studies on the Asian 1997 financial crisis have focused on corporate governance mechanisms in order to answer these types of issues (see Mitton, 2002; Baek et al., 2004). Our paper adds to this literature for emerging markets by examining the Mexican case.

Mexico's industrial environment has been characterized as one with diversified firms, controlled by few influential families, who possess ties with the government and banks (see Castañeda, 2002). This kind of business atmosphere is quite normal in emerging markets, where external

governance mechanisms are weak. There are high agency costs, which do not permit the existence of well-functioning capital markets. The existence of conglomerates is common, as these stabilize aggregate profits and therefore serve as insurance when capital markets are incipient (see Aoki, 2001; Fischer et al., 1994). In addition, in order to finance firms´ operations, emerging economies usually rely on bank credit and informal capital markets. The existence of these types of markets is possible in Mexico, as families usually control several firms (and banks), and create networks with other families holding other companies. The existence of internal capital markets permits business groups to move funds from booming companies (usually export-oriented firms, which have greater access to foreign capital markets) to others that otherwise would not be able to obtain credit. Also, there is an important amount of inter-group trading taking place.

3 HYPOTHESES AND DATA

3.1 Hypotheses

For a specific economy, "good" and "bad" internal corporate governance schemes differ in times of crises and in normal times. Therefore, we hypothesize that the benefits for a firm to have a particular governance structure depend on the period under study. In addition, during crises firms operating in emerging market economies present more turbulence than those in developed economies, particularly because stakeholders are less protected. It is more probable for firms to go bankrupt, and therefore internal corporate governance arrangements play a more significant role than in developed nations.

According to the corporate governance literature for emerging markets, in normal times we would expect family links, bank ties, and business group affiliation to have a positive impact on firm performance. Nevertheless, these local networks are probably prejudicial for company performance during crisis periods. Authors such as Bunkanwanicha et al. (2003) and Singh and Davidson (2003) suggest that during normal periods family

ownership reduces agency costs, which favors firm performance. This is known as the convergence of interest hypothesis. The same argument can be extended to companies having business or bank links, as these networks provide effective monitoring functions (see Khanna and Palepu, 1996; Hoshi et al., 1990). However, during crisis episodes there is evidence supporting the alternative entrenchment hypothesis. In this value destruction circumstances, it becomes more attractive to expropriate minority shareholders and bank or business group members (see Baek et al., 2004; Lang and Stulz, 1994), which reduces firm performance. Regarding exposure to international financial and commodities markets, we hypothesize that these are beneficial for company performance during all periods, as they imply better stakeholder protection (see La Porta et al., 2000).

3.2 Sample and data sources

Although several authors have analyzed corporate governance effects on performance, there are few papers concentrating on individual countries, and to our knowledge none related to the Mexican 1995 crisis. This is probably due to the lack of publicly available company information and the difficulty to obtain historic data; for instance, there is no information on ownership structure, and the Mexican Securities Market provides online company data only from 1996 onwards. In order to deal with the lack of data, we have created proxies for bank, business, and family ties, as described in the next paragraphs.

We have built a unique database using five sources[30]: Mexican Securities Market's (BMV) online resources, microfilms at BMV for historic data and for firms who are not currently listed on the market, Annual Financial Facts and Figures (published by BMV), and electronic devices such as SIVA (Integrated System of Automated Securities) and Infosel-Financiero. This dataset refers to last quarter non-balanced company information, from 1990

[30] We want to thank Gonzalo Castañeda for providing access to his company database, created as part of CONACYT Grant No. 32583-D, and Jaime Diaz Tinoco for providing access to SIVA. Our thanks also to Patricia Angel Vazquez for her help at BMV.

till 2000, for all listed non-financial firms (176 in total). The data contemplates all surviving, non-surviving, and late entry companies. All monetary variables are presented in real terms (Mexican pesos of the year 2000).

3.3 Variables

Information on internal corporate governance is difficult to obtain in Mexico. In particular, there is no data on ownership structure. Hence, as stated before, for the purpose of this research we have created proxies for family ownership and informal ownership, which we manipulate as dummy variables. Ownership concentration is harder to construct accurately, so we have excluded it from the analysis. We have also ignored board composition, as all our proxies are built out of it. Consequently, adding board composition does not contribute significantly.

We consider a company to be family owned when two or more members of the board have the same first and second last names, which suggest they are brothers or sisters. Regarding informal ownership, we have constructed two indicators: 1) companies having bank links, meaning that at least one of the firm's board members belongs to the directorate of one or more banks; 2) firms having group affiliation, taking place when two or more board members of a firm sit on the board of at least another listed firm, whatever their position.

For companies having external links, we consider an export-oriented firm as one whose exports represent more than 50% of its sales. Companies issuing American Depository Receipts (ADRs) are regarded as those with exposure to external capital markets.

As a performance variable we have chosen return on assets (defined as EBIT over total assets) instead of Tobin's Q. Tobin's Q is a market based measure; therefore it is not an adequate indicator in countries with incipient capital markets like the Mexican. In addition, this ratio is not available for the whole sample of Mexican companies, as some firms were not quoted

during 1995[31]. For robustness check, profit margin on sales is employed (defined as EBIT plus depreciation and amortization, over net sales).

The log of assets is employed to capture size effects. Control variables for performance such as productivity, foreign-denominated debt over total debt, cash flows over total assets, and leverage are used. Productivity is defined as net sales over net capital stock; high levels of productivity are associated with high performance. Foreign-denominated debt is taken into account since it makes a firm more vulnerable to fluctuations in the economy. Cash flows over total assets are directly related to the probability of a company to expand and diversify. This makes a company less vulnerable, particularly during crises. Finally, leverage is defined as total debt over equity. As it increases, so does the exposure to shocks and the amount of agency costs of debt (see Berger and Bonaccorsi di Patti, 2005).

3.4 Descriptive statistics

Table 1 refers to the number of listed firms during the Mexican pre-crisis (1990-1994), crisis (1995-1996), and post-crisis (1997-2000) episodes, according to corporate governance characteristics. Although there are 176 private, non-financial companies in total, not all of them were listed during the same periods of time. From 1990 till 1994, 126 firms were quoted in the Mexican Securities Market; this number increased to 147 during 1995 and 1996, and declined to 139 from 1997 till 2000.

The majority of companies represented possess family, bank, or business links. This is consistent with the business environment of many emerging market economies, as described by authors such as Aoki (2001). Firms having business ties dominate the pre-crisis era; bank links are the norm during the crisis episode, while family ties show a declining tendency from the pre-crisis to the post-crisis periods. Surprisingly, only a minority of firms participate in international trade or financial markets; nonetheless,

[31] But their information was public since they issued bonds or commercial paper in BMV, see Castañeda (2005).

after the crisis experience more corporates have been exposed to these markets than before.

Table 1: Number of companies during the Mexican pre-crisis (1990-1994), crisis (1995-1996), and post-crisis (1997-2000) periods, according to firm characteristics

	NUMBER OF FIRMS					
Firm Characteristics	***Pre-Crisis***		***Crisis***		***Post-Crisis***	
All Firms	126	(100%)	147	(100%)	139	(100%)
Family Tie	73	(58%)	74	(50%)	61	(44%)
Bank Link	75	(60%)	96	(65%)	92	(66%)
Business Group	87	(69%)	86	(59%)	91	(65%)
Export-Oriented	5	(4%)	19	(13%)	16	(12%)
Exposed to ADRs	10	(8%)	5	(3%)	25	(18%)

The number of listed Mexican companies during the pre-crisis, crisis, and post-crisis periods are shown in table 1. The percentage of companies with a particular characteristic (with respect to the total number of firms during each period) is in parenthesis.

Tables 2 and 3 present summary statistics for the performance variables of interest, during the Mexican pre-crisis (1990-1994), crisis (1995-1996), and post-crisis periods (1997-2000). From table 2 it is possible to observe the strong deviation of the data from its mean and median, particularly during the crisis and post-crisis episodes. There are several extreme observations, such as the maximum value for profit margin on sales of 54755. Due to these types of outliers, average performance (measured both by ROA and PROFIT) seems to follow an increasing tendency from the pre-crisis to the post-crisis era. Nevertheless, median values indicate a reduction in firm performance during the crisis period, and a partial recovery (with respect to pre-crisis values) in the post-crisis era. In order to allow some volatility in the data, but also eliminate extreme observations, ROA values greater than 1 and less than –0.5 are eliminated as outliers, which represent 51 observations. PROFIT values greater than 1 in absolute value are also eliminated as outliers, which represent 74 observations.

Table 2: Descriptive statistics for ROA and PROFIT during the Mexican pre-crisis (1990-1994), crisis (1995-1996), and post-crisis (1997-2000) periods

	RETURN ON ASSETS			**PROFIT MARGIN ON SALES**		
Statistics	***Pre-Crisis***	***Crisis***	***Post-Crisis***	***Pre-Crisis***	***Crisis***	***Post-Crisis***
Mean	0.06	0.37	1.52	0.12	0.69	128.5
Median	0.06	0.03	0.05	0.12	0.10	0.11
Maximum	1.76	41.06	507.18	5.24	45.44	54755.00
Minimum	-0.40	-0.80	-0.79	-2.07	-3.07	-25.31
Standard Deviation	0.13	2.67	22.02	0.35	3.95	2421.60

In table 3 extreme observations have already been excluded. This table shows mean values for companies´ ROA and PROFIT during the three periods under study, according to corporate governance characteristics. It is interesting to notice that average ROA is the same during all periods: 0.05; however, its volatility is higher during the crisis episode (the same for PROFIT). This implies that during the crisis, compared to normal times, there are stronger differences in performance between firms. Taking a closer look at the data, it seems that during the crisis era most companies suffered from performance reductions, except for export-oriented ones and those belonging to business groups. In the post-crisis period, performance indicators bettered.

Table 3: Mean values for ROA and PROFIT during the Mexican pre-crisis (1990-1994), crisis (1995-1996), and post-crisis (1997-2000) periods, according to firm characteristics

	RETURN ON ASSETS			**PROFIT MARGIN ON SALES**		
Firm Characteristics	***Pre-Crisis***	***Crisis***	***Post-Crisis***	***Pre-Crisis***	***Crisis***	***Post-Crisis***
All Firms	0.05	0.05	0.05	0.11	0.09	0.13
	(0.10)	(0.15)	(0.12)	(0.17)	(0.24)	(0.17)
Family Tie	0.07	0.03	0.05	0.12	0.07	0.12
	(0.10)	(0.14)	(0.12)	(0.15)	(0.25)	(0.17)
Bank Link	0.05	0.04	0.05	0.11	0.08	0.13
	(0.09)	(0.13)	(0.12)	(0.17)	(0.25)	(0.17)
Business Group	0.05	0.05	0.05	0.12	0.11	0.14
	(0.09)	(0.16)	(0.11)	(0.17)	(0.26)	(0.18)
Export-Oriented	-0.01	0.04	0.04	0.04	0.12	0.11
	(0.09)	(0.14)	(0.07)	(0.23)	(0.20)	(0.09)
Exposed to ADRs	0.07	0.05	0.06	0.16	0.11	0.15
	(0.08)	(0.05)	(0.10)	(0.20)	(0.08)	(0.17)

Table 3 presents mean values for the two performance variables of interest: RETURN ON ASSETS and PROFIT MARGIN ON SALES. ROA values greater than 1 and less than –0.5 are eliminated as outliers, which represent 51 observations. PROFIT values greater than 1 in absolute value are eliminated as outliers, which represent 74 observations. Firms are classified as having family, bank, or business links. Companies are further grouped according to export-orientation (50% or more of sales outside Mexico) and exposure to ADRs (dummy variable). Standard deviation is shown in parenthesis.

4 RESULTS

4.1 Methodology

This section presents econometric results for the relationship between internal corporate governance and performance indicators (ROA and PROFIT). A random effects panel data model is estimated, using the

Swamy-Arora estimator of the component variances; time fixed effects are also introduced. T-values based on standard errors that are robust to cross-sectional heteroskedasticity are exposed. The sample includes data from 1990 till 2000, arranged from the pre-crisis (1990-1994), crisis (1995-1996), to the post-crisis era (1997-2000). The equality of the corporate governance coefficients obtained for the three periods under consideration is analysed through Wald tests. According to the descriptive analysis of the data, return on assets values greater than 1 and less than –0.5 are eliminated as outliers, which represent 51 observations. Profit margin on sales values greater than 1 in absolute value are eliminated also as outliers, which represent 74 observations. Export / Sales values greater than 1 and less than 0 are removed too (2 observations).

4.2 Econometric results for return on assets

The second column of table A1 in the appendix shows econometric results for the relationship between return on assets (ROA) and different corporate governance variables, during the Mexican pre-crisis, crisis, and post-crisis episodes. Control variables for performance, such as size, productivity, leverage, cash flows over total assets, and foreign debt over total debt are included, and present the expected signs (being productivity and cash flows over total assets significant at a 1% level). As stated in the prior section, results are constructed by estimating a random effects panel data model, using the Swamy-Arora estimator of the component variances. Time fixed effects are also introduced, which reflect the negative outcome on performance of both the December 1994 Mexican crisis and a minor currency crisis taking place during August 1998. Table A2 in the appendix tests the equality of the corporate governance coefficients obtained (through Wald tests) for the three periods under consideration.

From table A1 it seems that for the whole period under study, in Mexico family ties represent good governance schemes. Although this conclusion is robust only during the post-crisis era, pre-crisis, crisis, and post-crisis coefficients are not significantly different according to Wald tests. This finding is in general consistent with corporate governance literature for

emerging economies, however one would expect a temporary negative effect of family links on firm performance during the crisis period.

Regarding informal ownership, during normal periods having bank links show no significant effect on Mexican firms´ performance (measured by ROA). Nevertheless, as expected, this type of governance arrangement faded performance during the crisis era, when banks were also financially distressed. The negative effect of bank links on return on assets during the crisis is a transitory outcome, as pre-crisis and post-crisis coefficients are not significantly different. On the other hand, belonging to business groups temporarily favoured firm performance during the crisis period; however, this does not represent a good governance mechanism during normal times. Although these last results contradict recent corporate governance literature on the topic for emerging market economies, they can be explained with risk diversification theory. Companies belonging to diversified business groups or conglomerates stabilize aggregate profits, therefore in times of crisis performance for these companies can be better than for others. Nevertheless, this is an effective but expensive way (in terms of administrative and operative costs) to reduce risk, and consequently during normal periods performance tends to be poorer than for the rest of firms.

Exposure to international trade and financial markets is expected to be beneficial for companies during all periods. Exports show an increasing favourable effect on return on assets, from the pre-crisis to post-crisis periods. Pre-crisis and post-crisis coefficients are significantly different, which reflects the permanent positive outcome of exports on performance. With respect to ADRs, during normal times they show no significant impact on Mexican firms´ performance. Nevertheless, they have a negative, temporary effect on return on assets during the crisis period, which cannot be explained with the theory.

4.3 Robustness check: profit margin on sales

The fourth column of table A1 in the appendix shows econometric results for the relationship between profit margin on sales (PROFIT) and different

corporate governance variables, during the Mexican pre-crisis, crisis, and post-crisis episodes. The same control variables for performance are employed as in section 4.2, which in general show the expected signs (being leverage and cash flows over total assets significant at a 10% level). Once more time fixed effects reflect the negative outcome on performance of both the December 1994 Mexican crisis and the minor currency crisis taking place during August 1998. On average, results are quite similar to those attained using ROA as the dependent variable.

For all periods under study, family links show no significant effects on profit margin on sales. In addition, according to Wald tests, these coefficients for the pre-crisis, crisis, and post-crisis episodes are not significantly different. Nevertheless, as in ROA, the signs of these coefficients are positive for the whole time horizon, which indicate the favourable propensity of family links on firm performance.

Analogous to the results obtained considering return on assets, during the crisis period bank links represent negative governance mechanisms. However, contrary to the prior analysis, this negative outcome extends to the post-crisis era (although not statistically significant). On the other hand, and consistent to the conclusions obtained through ROA, belonging to business groups favoured performance during the crisis; however, this is not a good governance mechanism during normal times. Nonetheless, in this case these last results represent only tendencies, as the coefficients are not statistically significant, nor different from each other according to Wald tests.

Exports show a positive influence on profit margin on sales from the pre-crisis to crisis periods (as in ROA). However, its favorable outcome on performance deteriorates in the post-crisis era. Nevertheless, only pre-crisis and crisis coefficients are significantly different according to Wald tests, which points towards the beneficial effects of exports on PROFIT during the crisis. As in the case of return on assets, ADRs are significantly negative only during the crisis period. This is a temporary effect, as crisis

and post-crisis coefficients are significantly different according to Wald tests.

5 CONCLUSION

Internal and external corporate governance arrangements determine to some extent firm performance and value. Internal corporate governance schemes are particularly relevant for companies operating in emerging market economies, as external governance mechanisms (such as legal protection and markets for corporate control and management) are deficient in these types of markets. In addition, ¨good¨ and ¨bad¨ internal governance structures differ in times of crises and in normal times. As emerging market economies tend to be more volatile than developed ones, this differentiation is crucial in the design of governance policies.

Considering the above, we have derived the following governance conclusions concerning companies operating in emerging market economies:

1. Family links positively relate to firm performance during all times, as concentrated ownership is an incentive for having a company running well. This implies a lower motivation to expropriate stakeholders and more control over management. This conclusion is shared by authors such as Kim (2005), who refers to Chaebol firms as having better productivity performance than companies with less family ownership. There is no evidence from the results of our research that during times of crises this kind of links increases the odds of expropriation of minority shareholders.

2. Bank ties represent ¨bad¨ governance mechanisms during crisis episodes; however, during normal times they make no significant difference on firm performance. These conclusions indicate that in general bankers act as accomplices instead of firm regulators and advisors, which lessens their governance functions. During normal periods, they allow related companies to increase leverage, making them more vulnerable during crisis

times. This evidences the findings by Kim and Lee (2003) and Baek et al. (2004), for the recent East Asian financial crisis.

3. Business group affiliation reduces firm performance during normal times, but it represents a ¨good¨ governance arrangement during crisis episodes. As these episodes cannot be perfectly anticipated, and are relatively frequent in emerging market economies, these types of networks are associated with positive governance mechanisms (as exposed by Khanna and Palepu, 2000). This implies a type of insurance, as companies belonging to diversified business groups or conglomerates stabilize aggregate profits. Therefore, in times of crises performance for these companies can be better than for others. Nevertheless, this is an effective but expensive way (in terms of administrative and operative costs) to reduce risk, and consequently during normal periods performance tends to be poorer than for the rest of firms.

4. Export-orientation tends to be a positive governance mechanism, as it reduces firms´ dependency on local macroeconomic conditions. In addition, participation in international markets can imply better stakeholder protection, as exporting firms must possess good reputation in order to trade and obtain credit from external markets. This is shared by authors such as Klapper and Love, 2003.

6 APPENDIX

Table A1: Firm performance and corporate governance arrangements during the Mexican pre-crisis (1990-1994), crisis (1995-1996), and post-crisis (1997-2000) periods

VARIABLE	RETURN ON ASSETS		PROFIT MARGIN ON SALES	
Family Tie				
Pre-Crisis	0.02	(1.05)	0.02	(0.63)
Crisis	0.02	(1.21)	0.00	(0.06)
Post-Crisis	0.01 *	(1.35)	0.04	(0.78)
Bank Link				
Pre-Crisis	0.00	(0.13)	0.02	(0.36)
Crisis	-0.09 ****	(-2.37)	-0.18 ***	(-1.98)
Post-Crisis	0.00	(0.15)	-0.06	(-1.13)
Business Group				
Pre-Crisis	-0.02	(-1.13)	-0.06	(-1.23)
Crisis	0.05*	(1.36)	0.06	(0.96)
Post-Crisis	-0.05 *	(-1.49)	-0.05	(-0.65)
Exports / Sales				
Pre-Crisis	-0.11 ***	(-2.34)	-0.27 ***	(-2.25)
Crisis	-0.04 ***	(-2.15)	-0.08*	(-1.32)
Post-Crisis	0.00	(0.09)	-0.17 **	(-1.69)
Exposure to ADRs				
Pre-Crisis	0.01	(0.63)	-0.05	(-0.39)
Crisis	-0.14 ****	(-4.13)	-0.16 ****	(-2.72)
Post-Crisis	0.00	(-0.10)	0.00	(-0.03)
Size	0.00	(0.20)	0.02	(1.19)
Productivity(-1)	0.04 ****	(4.10)	0.03	(1.13)
Foreign Debt(-1) /Total Debt (-1)	-0.01	(-1.16)	0.01	(0.28)
Cash Flows(-1) /Total Assets (-1)	0.27 ****	(2.37)	0.25 **	(1.70)
Leverage(-1)	-0.08	(-1.21)	-0.29 ****	(-2.51)
Period=1992	0.00	(-0.40)	-0.01	(-1.18)
Period=1993	-0.02 ****	(-4.39)	-0.03 **	(-1.65)
Period=1994	-0.08 ****	(-17.33)	-0.16 ****	(-18.55)
Period=1995	-0.01	(-0.43)	-0.04	(-0.44)
Period=1996	0.00	(0.07)	0.00	(-0.02)
Period=1997	-0.02 **	(-1.76)	-0.02	(-0.65)
Period=1998	-0.04 ****	(-2.42)	-0.06*	(-1.39)
Period=1999	-0.02	(-0.76)	-0.02	(-0.36)
Period=2000	0.03 *	(1.41)	0.04	(0.96)

*, **, ***, **** Significant at 20%, 10%, 5%, and 1% levels, respectively.

The table presents results from estimating a random effects panel data model, using the Swamy-Arora estimator of the component variances. Time fixed effects are also introduced. The sample includes data from 1990 till 2000. RETURN ON ASSETS values greater than 1 and less than –0.5 are eliminated as outliers, which represent 51 observations. PROFIT values greater than 1 in absolute value are eliminated as outliers, which represent 74 observations. Export / Sales values greater than 1 and less than 0 are eliminated also as outliers (2 observations). t-values based on standard errors that are robust to cross-sectional heteroskedasticity are in parenthesis.

Table A2: Wald tests for the equality of pre-crisis (1990-1994), crisis (1995-1996), and post-crisis coefficients (1997-2000)

	RETURN ON ASSETS			**PROFIT MARGIN ON SALES**		
Variable	***Pre-Crisis vs Crisis p-values***	***Crisis vs Post-Crisis p-values***	***Pre-Crisis vs Post-Crisis p-values***	***Pre-Crisis vs Crisis p-values***	***Crisis vs Post-Crisis p-values***	***Pre-Crisis vs Post-Crisis p-values***
Family Tie	0.92	0.91	0.96	0.71	0.69	0.77
Bank Link	**0.03**	**0.03**	0.98	**0.05**	0.25	0.28
Business Group	**0.08**	**0.07**	0.40	0.12	0.30	0.91
Exports / Sales	0.14	0.27	**0.04**	**0.05**	0.30	0.39
Exposure to ADRs	**0.00**	**0.00**	0.66	0.40	**0.03**	0.72

p-values smaller than 0.10 are shown in bold.
The null hypothesis is the equality of the coefficients for the periods under consideration.

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CHAPTER 5:

CONCLUSIONS

In this book we have studied the effects of macroeconomic crises on firm performance, under an emerging market perspective. Using Mexico as case study, we begin questioning if Mexican companies were able to anticipate the 1994 currency crisis. Assuming capital structure flexibility, we analyse the evolution of seven financial ratios during different possible anticipation periods: four quarters, three, two, and one quarter. Results indicate that this crisis was a surprising, unexpected episode, as firms did not adjust their capital structure accordingly. Consequently, many firms went bankrupted or at least seriously distressed. Nevertheless, there were significant differences in firm performance between companies, which can be explained with capital structure, industry, and internal corporate governance arguments.

With the 1994 peso devaluation, Mexican firms faced a considerable increase in the peso value of their dollar denominated debt. In addition, higher domestic interest rates increased the cost of peso denominated loans. This, together with a reduction in credit options and internal demand, had negative outcomes on a good number of companies. Nonetheless, the significant rise in exports, attributable to the peso devaluation, had a positive impact on financially strong firms. Regarding capital structure considerations, we realize that the advantages many survival firms had prior to the crisis, that helped them deal with the latter, were high levels of internal financing, liquidity, and a first-class reputation. These gave corporates access to capital markets even during the crisis period. In addition, right after the crisis they were aided with debt-relief programs, which temporarily excused them from interest payments.

With respect to industry factors, we observe that prior to the crisis the mining sector was the most robust industry of all. It had comparatively the uppermost percentage of sales in foreign markets, which made it less vulnerable to internal shocks compared to other industries. Other strengths

it possessed, that helped its performance during the crisis, were its relatively high internal financing and liquidity indicators. On the contrary, the most seriously wounded industries (and the last to recover) were telecommunications and services, as prior to this event they had the lowest exports / total sales ratios. The services industry presented the worst financial and operational results during and after the crisis period. Leverage increased more than 5 times during the crisis, earnings declined by 187% during the same period, and it exhibited negative returns on assets and on equity during both the crisis and post-crisis periods. In addition, prior to the crisis, values for ratios such as short-term assets / short-term debt and internal financing were much lower than for the majority of industries. On the other hand, conglomerates (which represent the most diversified industry) were efficient reducing currency risk, which might justify their existence in economically unstable countries.

Concerning internal corporate governance arguments, it can be interpreted from the data that collusion between the government, companies, and other stakeholders had a significant impact on the survival and performance of firms. This is represented by governmental programs that delayed the payment of interests and an increase in the amount of days given to pay back for trade credit. We come across evidence that there are positive effects of business groups on related firms´ performance, during the crisis period. These networks support internal trade and financing, and ensure close monitoring of management. The existence of internal capital markets permits business groups to move funds from booming companies (usually export-oriented firms, which have greater access to foreign capital markets) to others that otherwise would not be able to obtain credit. We also realize that during the crisis period bank links represent negative governance mechanisms. During normal periods, banks allow interconnected companies to increase leverage, making them more vulnerable during crisis times. Therefore, firm performance declines during these episodes. Finally, in Mexico family ties are good governance schemes, as concentrated ownership seems to be an incentive for having a company running well.

We find that on average the Mexican 1994 currency crisis had negative effects on companies' balance sheets, which deteriorated between the fourth quarters of 1993 and 1995. In addition, recovery was only partial and gradual, and overall the crisis episode was prejudicial even for surviving firms. Concluding, this macroeconomic crisis was costly and had permanent effects on corporates, as expected for emerging market economies. Through this crisis experience we derive five corporate recommendations for firms operating in these types of economies, in order to lessen their vulnerabilities to macroeconomic crises: 1) Trim down both the exchange rate and the debt mismatching, so as to decrease exchange rate risk; 2) Diversify risk by producing both for local and international markets, as export-oriented companies depend less than the rest on local macroeconomic conditions. In addition, participation in international markets can imply better stakeholder protection, as exporting firms must possess good reputation in order to trade and obtain credit from external markets; 3) Rely more on equity and trade credit than on bank financing. In emerging market economies, there is evidence that suggests that banks generally act as accomplices instead of firm regulators and advisors, which lessens their governance functions. During normal periods, banks allow linked companies to increase leverage, making them more vulnerable during crisis times. Therefore, bank links negatively relate with firm performance; 4) Keep liquidity indicators high, even though in the short-run earnings are being sacrificed, in order to increase companies' flexibility to deal with crises; 5) Create networks with other companies, with the objective of building diversified business groups. This implies a type of insurance, as companies belonging to diversified business groups or conglomerates stabilize aggregate profits. Therefore, in times of crises performance for these firms can be better than for others. Nevertheless, this is an effective but expensive way (in terms of administrative and operative costs) to reduce risk, and consequently during normal periods performance tends to be poorer than for the rest of firms.

Several studies deal with the question of how a currency crisis in one country affects itself or other countries from a macroeconomic point of view, ignoring the direct microeconomic effects on individual companies.

There are only few firm-level analyses; therefore, the main challenge for future research is to broaden knowledge in this area, using more crisis cases.

NEDERLANDSE SAMENVATTING (SUMMARY IN DUTCH)

Door Thom en Toos Vermeiden

(Goede vrienden zijn moeilijk te vinden; uitstekende vrienden bijna onmogelijk. Dank jullie wel! Karen)

"Wat omhoog gaat moet naar beneden komen"
"De wet op de zwaartekracht"
Sir Isaac Newton (1642-1727)

In 1686 formuleerde Newton de "wet op de zwaartekracht" met het zeer bekende gezegde: "Wat omhoog gaat moet naar beneden komen". Deze wet is niet alleen van toepassing op fysica en mathematica, maar ook op het leven van alledag. De financiële en economische werelden vormen daar geen uitzondering op en ook zien wij duidelijk de cyclische bewegingen: perioden van groei en welvaart worden gevolgd door krapte van de markt en recessie, waarna weer een periode van groei kan intreden.

Door de tijden heen hebben economen getracht de omvang van de economische cycli te begrijpen en te beperken. Naast het formuleren van een theorie zijn zij erin geslaagd de perioden van recessie te verkorten. Desondanks is het onmogelijk gebleken de cyclische bewegingen te elimineren en daardoor de wet op de zwaartekracht ongedaan te maken. Erger nog, zij zijn niet in staat geweest te voorkomen dat economieën in perioden van crises terecht kwamen, zoals gebleken is bij de recente crises in Latijns Amerika, Oost-Azië en Rusland.

Het is een gegeven dat, gezien over een zekere periode, de productieomvang, inkomsten en uitgaven fluctueren en als gevolg daarvan de rentabiliteit van de ondernemingen. Omdat wij de neergaande macro-economische bewegingen niet kunnen voorkomen of, erger nog, in een macro-economische crisis belanden, kunnen wij tenminste een poging doen om de negatieve effecten voor bedrijven te beperken. Het onderzoek begint bij het begrijpen van de negatieve effecten van economische crises op de rentabiliteit van een onderneming en hoe deze kunnen variëren, samenhangend met de verschillen in bedrijven. Variabelen zoals kapitaalstructuur, tak van industrie, omvang van de onderneming alsmede

interne regels met betrekking tot "corporate governance", kunnen helpen om verschillen in resultaten te verklaren. Bovendien, veel van de effecten van economische crises op de bedrijfsresultaten, worden bepaald door het ondernemersklimaat waarin bedrijven opereren. Markten van opkomende economieën fluctueren meestal sterker dan markten van oudere economieën. Dit als gevolg van onder andere financiële restricties, rigide macro-economisch beleid en politieke instabiliteit. Bij die economieën lijken de negatieve macro-economische effecten van een crisis groter. Deze kennis geeft aanleiding te veronderstellen dat, zodra een economie beland is in een crisisperiode, er een bedrijfsbeleid gevoerd zou moeten worden dat gunstig is voor de rentabiliteit.

Uit recente literatuur blijkt dat veel research is gedaan naar de macro-economische effecten van crises en hoe deze effecten de economieën van andere landen heeft beïnvloed. Echter, er is een gebrek aan informatie over de micro-economische terugslag van deze crises, in het bijzonder voor opkomende markteconomieën. Het boek "Macroeconomic Crisis and Firm Performance" geeft meer inzicht in dit onderwerp. Daar is gebruik gemaakt van de "case study - The Mexican 1994 currency crisis".

Dit proefschrift omvat een samenvatting van artikelen over dit onderwerp, waarvan de meeste al zijn gepubliceerd (of voor publicatie goedgekeurd) in internationale en Mexicaanse tijdschriften. De belangrijkste artikelen staan in hoofdstuk 2 t/m 4 en de rest is opgenomen in bijlage 1 en 2 van dit proefschrift. Deze laatste artikelen zijn bestemd voor die lezers die nauw betrokken zijn bij en geïnteresseerd in de Mexicaanse situatie. Feitelijk zijn de twee opgenomen artikelen als zodanig ook geaccepteerd voor publicatie in Mexicaanse tijdschriften.

Hoofdstuk 2 begint met de vraagstelling of de Mexicaanse crisis op bedrijfsniveau al of niet verwacht was. Volgens crisisliteratuur zijn voorziene crises minder ernstig dan onvoorziene, omdat alerte bestuurders hun plannen geleidelijk kunnen bijstellen en niet plotsklaps. Als Mexicaanse bedrijven de crisis zouden hebben voorzien en als er een flexibele kapitaalstructuur was, dan zouden zij hun dollargerelateerde

leningen tijdig en dus voorafgaande aan de crisis hebben kunnen verminderen. Bedrijven zouden dan gezocht hebben naar mogelijkheden om de op handen zijnde crisis beter te lijf te gaan. Dat had bereikt kunnen worden door hun liquiditeit en interne financiering te vergroten. Bovendien zouden enkele bedrijven een begin gemaakt hebben om zich te richten op het produceren voor buitenlandse markten in plaats van binnenlandse, waardoor de investeringen beperkt zouden zijn. In een "event study" werden deze variabele factoren meegenomen, en er werd teruggeblikt aan de hand van verschillende aangenomen periodes: vier kwartalen, drie, twee en één kwartaal. De belangrijkste uitkomst was dat Mexicaanse bedrijven niet in staat waren deze valutacrisis te voorzien en dat zij niet de flexibiliteit hadden om vóór het ontstaan van de crisis hun kapitaalstructuur aan te passen. Dat komt overeen met de heersende mening dat niemand in staat was deze crisis te voorzien, omdat destijds de graadmeters van de Mexicaanse economie gunstig waren.

Omdat er klaarblijkelijk geen crisisverwachting was, is het niet verrassend dat deze valutacrisis ernstige gevolgen voor Mexicaanse bedrijven had. Door toestroom en uitbreiding van buitenlands kapitaal (als gevolg van het liberaliseringproces van de 90er jaren van de vorige eeuw) de hieraan voorafging, hadden Mexicaanse bedrijven meer toegang tot dollargerelateerde leningen. Alhoewel de wisselkoers gedurende die tijd min of meer gefixeerd was, leek het erop dat door de gunstige macro-economische omstandigheden de zorgen over het koersrisico, dat impliciet met dit soort schulden verbonden is, afnamen. Het hoge niveau aan investeringen werd hoofdzakelijk gefinancierd door bankleningen en in mindere mate door handelsoverschotten en buitenlandse activa; daardoor was het niveau van de schuldenlast hoog. Met de devaluatie van de peso in 1994, werden bedrijven geconfronteerd met een enorme stijging in peso's van hun dollargerelateerde leningen. Bovendien, doordat binnenlandse interestpercentages stegen werden de kosten van pesogerelateerde leningen hoger. Dit alles veroorzaakte, met een beperking van de kredietmogelijkheden en binnenlandse vraag, bij veel bedrijven faillissement of op zijn minst ernstige financiële problemen. De studie over de uitbreiding van de crisis en de effecten ervan op Mexicaanse bedrijven

wordt uitgebreid beschreven in hoofdstuk 3. De belangrijkste aanname, die ten grondslag ligt aan dit hoofdstuk, is dat verslechtering en herstel blijken uit significante wijzigingen in de hoogte van de ratios voor de financiële, operationele en solvabiliteitsgerichte bedrijfsresultaten. Met het oog daarop werden analyses uitgevoerd naar structurele veranderingen, om te kunnen vaststellen waarom deze gebeurtenissen plaatsvonden en wat het belang ervan was. In het bijzonder werden de technieken die zijn ontwikkeld in Andrews (1993) en Bai e.a. (1998) gebruikt om de "nul hypothese" van geen verandering te kunnen vaststellen en af te zetten tegen het alternatief van twee spontane breuken op het gebied van een specifieke ratio, waarvan de breukdata als onbekend werd behandeld. Terwijl de effecten van de crisis op de jaarrekeningen plotseling zouden kunnen hebben plaatsvinden (daar er geen crisisverwachting was) is er alle reden om te beargumenteren dat het herstel zich niet plotseling maar eerder geleidelijk zou hebben ontwikkeld. Daarom hebben wij de mogelijkheid van een geleidelijk herstel mede in de overweging genomen door het "twee breuken model" in deze richting aan te passen. De belangrijkste bevindingen tonen aan dat deze valutacrisis in het algemeen negatieve effecten had op de jaarrekening van bedrijven (ze verslechterden tussen het vierde kwartaal van 1993 en dat van 1995), en de onderlinge verbondenheid, zoals die zich geleidelijk ontwikkeld en verspreid had. Bovendien was het herstel slechts gedeeltelijk en geleidelijk; over de hele linie was de crisisperiode schadelijk, zelfs voor bedrijven die het hoofd boven water konden houden. Er waren echter verschillen in rentabiliteit al naar gelang bedrijfstak. Om een voorbeeld te noemen: de bedrijfstakken, die zich het laatst herstelden, waren telecommunicatie en dienstverlening en de minst getroffen sectoren waren de mijnbouw en de conglomeraten.

Een voorlopige verklaring voor de verschillen in de rentabiliteit van bedrijven is toe te schrijven aan de interne "corporate governance" regels. Onderzoek naar een koppeling tussen rentabiliteit en de "corporate governance" regels heeft geleid tot de volgende mening waarover consensus bestaat: slechte handhaving van de "corporate governance" regels hangt samen met lagere operationele resultaten en Tobin's Q. Dat komt het meest naar voren ten tijde van crises, omdat juist dan de

waardevermindering voor investeerders ernstiger wordt. Als gevolg van omstandigheden halen nerveuze investeerders hun geld uit bedrijven die de "corporate governance" regels slecht naleven, wat opnieuw de winsten doet verminderen en de waarde van het bedrijf. Bovendien nemen de kansen toe dat er claims worden ingediend. Deze situatie is slechter voor opkomende markten, waarbij externe bestuurlijke mechanismen (zoals in de wet vastgelegd protectionisme) tekort schieten.

In hoofdstuk 4 bezien wij de invloed van interne "corporate governance" regels op de rentabiliteit van Mexicaanse ondernemingen ten aanzien van banken, bedrijfsactiviteiten en familiebanden etc. Exportoriëntatie en de risico's van buitenlandse kapitaalmarkten vormen samen nog een dimensie van de mechanismen van interne "corporate governance" regels en deze zijn ook betrokken in de analyse. Wij hebben een globale inschatting gemaakt van de effecten en wel met behulp van een model, waarin een lijst met ingeschatte gegevens is opgenomen en hebben geconcludeerd dat tijdens de Mexicaanse valutacrisis van 1994 het hebben van bancaire verplichtingen nadelig was voor de rentabiliteit van ondernemingen. De argumentatie voor deze opmerking is dat banken in crisistijd, voor opkomende economieën, meestal meer oog hebben voor hun eigen belang dan voor dat van bedrijven. Onder die omstandigheden zijn bancaire relaties synoniem en staan voor slechte interne afspraken en bedrijfsbeleid. Daarentegen is gebleken dat het deel uitmaken van zakengroepen een positieve invloed heeft op bedrijfsresultaten. Dat is in lijn met recente literatuur waaruit blijkt dat er positieve effecten zijn van goede "corporate governance" regels (en risicoverschillen) van deze zakelijke netwerken, omdat zij er zorg voor dragen, dat het management van dichtbij wordt gevolgd en de binnenlandse handel en financiering ondersteunen. Tenslotte is gebleken dat exportoriëntatie een stijgend positief effect geeft op het bedrijfsresultaat en wel vanaf de periode vóór de crisis als daarna.

Op basis van de in hoofdstuk 2 t/m 4 beschreven bevindingen waren wij in staat enkele zakelijke aanbevelingen te doen om de kwetsbaarheid van bedrijven voor toekomstige macro-economische crises te beperken. Deze

suggesties worden uiteengezet in de concluderende opmerkingen van hoofdstuk 5:

1. Beperk de risico's van zowel de omrekeningskoersen als van de verkeerd samengestelde leningen, teneinde de risico's van wisselkoersen te verkleinen.

2. Spreid risico's door zowel voor binnenlandse als voor buitenlandse markten te produceren, omdat blijkt dat exportgeoriënteerde bedrijven minder dan andere bedrijven afhankelijk zijn van de locale macro-economische omstandigheden. Bovendien, deelname aan internationale markten kan een betere bescherming betekenen voor de "stakeholders", omdat exporterende bedrijven een goede reputatie moeten hebben om handel te kunnen drijven en om financiering van externe markten te verkrijgen.

3. Vertrouw meer op activa en handelskrediet dan op financiering door banken. In opkomende markteconomieën is er voldoende aanleiding om te concluderen dat banken in het algemeen hun eigen belang voorop stellen in plaats van als belangenbehartigers of adviseurs op te treden, waardoor de werking van de eigen "corporate governance" regels wordt beperkt. Tijdens normale perioden geven banken aan ondernemingen, die gelieerd zijn de reikwijdte van hun spankracht te vergroten, waardoor ze meer kwetsbaar zijn tijdens een crisis.

4. Houd de liquiditeitsindicatoren hoog, zelfs indien dit voor de korte termijn nadelig is voor de bedrijfsresultaten, teneinde de flexibiliteit van de ondernemingen om met een crisis om te gaan te vergroten.

5. Creëer netwerken met andere bedrijven, met het doel zakengroepen op te bouwen met meerdere uiteenlopende activiteiten of vorm multinationals waardoor de gezamenlijke winsten worden gestabiliseerd. Deze netwerken ondersteunen de handel en financiering binnen de groep en zorgen ervoor dat het management van dichtbij wordt gevolgd. Daardoor kunnen de bedrijfsresultaten van deze firma's beter zijn dan van andere bedrijven.

Hoewel het een effectieve manier is, is het ook duurder (wat betreft administratieve en operationele kosten) om de risico's te beperken. Als gevolg daarvan is het bedrijfsresultaat in normale perioden vaak minder dan dat van andere bedrijven.

APPENDIX 1:

Appendix 1: Propagación de crisis en las empresas: La experiencia mexicana (published at Economía Mexicana XIV, num 1, 119-135 (2005)). Summary in English attached.

APPENDIX 1:

economía mexicana NUEVA ÉPOCA, vol. XIV, núm. 1, primer semestre de 2005

PROPAGACIÓN DE CRISIS EN LAS EMPRESAS: LA EXPERIENCIA MEXICANA

Karen Watkins, Jaap Spronk y Lucía Félix

SUMMARY IN ENGLISH:

CRISIS PROPAGATION ON FIRMS: THE MEXICAN EXPERIENCE

Karen Watkins, Jaap Spronk, and Lucía Félix

The degree of crisis propagation on firms can be determined according to operational and financial results. This paper studies how 88 private, non-financial Mexican firms suffered and recovered from the 1994 economic crisis. Quarterly data is obtained from the Mexican Stock Exchange (BMV), which includes performance, financial, and activity corporate information (from the first quarter 1993 till the first quarter 2001). From this data six financial ratios are constructed: return on assets, profit margin on sales, interest rate coverage, debt ratio, inventory rotation, and bill payment rotation.

The following regression equation is run using Newey-West covariances:

$Ri_T = a_0 + a_1 t + a_2 d_{1iT} + a_3 d_{2iT}$,

where:

R = Ratio under study
i = 1, 2, ..., 88 (firms)
T = 1, 2, ..., 33 (quarters)
t = Time
a_0 = Constant
d_1 = Downturn dummy variable. If the effect is seen in the first quarter 1995,

$$d_1 = 0 \rightarrow t < I95$$
$$d_1 = 1 \rightarrow t \geq I95$$

d_2 = Recovery dummy variable. If recovery is seen in the first quarter 1997,

$$d_2 = 0 \rightarrow t < I97$$
$$d_2 = 1 \rightarrow t \geq I97$$

To determine a priori downturn and recovery periods, the rate of change (with respect to the equivalent quarter of the previous year) of the ratios under study is graphed against time. Using the graphs as a starting point, additional regressions are run changing the value for the dummy variables. The best-fitted regressions are chosen. The equation is run for each individual firm, and afterwards these are grouped according to industry and size.

The hypotheses tested are that there is neither downturn nor recovery in the selected ratios: $a_2 = a_3 = 0$. If there is downturn and $|a_2| > |a_3|$, recovery is just partial; if $|a_2| = |a_3|$, there is total recovery, and if $|a_2| < |a_3|$, recovery is greater than downturn. To test that $a_2 = -a_3$ (at a 10% level), Wald tests are employed. Finally, MANOVA and ANOVA procedures are used in order to check aggregate differences in downturn and recovery between groups of companies.

Results show that the periods and degree of deterioration and recovery depend on the industry and size of companies. Conglomerates were both wounded and recovered before the rest of industries. The sector that

showed the lowest level of perturbation was mining, and the most injured one was services.

APPENDIX 1:

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PROPAGACIÓN DE CRISIS EN LAS EMPRESAS: LA EXPERIENCIA MEXICANA

Karen Watkins, Jaap Spronk y Lucía Félix

Resumen: El grado de propagación de las crisis en las empresas puede determinarse a partir de sus resultados financieros y operacionales. En este trabajo, se estudia cómo 88 empresas privadas (no financieras) mexicanas se perjudicaron y recuperaron de la crisis económica de 1994. Se encuentra evidencia de que los periodos y magnitud de la caída y la recuperación dependen de la industria y tamaño de las compañías. Los conglomerados se vieron afectados y se recuperaron antes que el resto de las industrias. La industria que reflejó el menor grado de perturbación fue la minera, y el sector más perjudicado fue el de servicios.

Palabras clave: propagación de crisis, crisis financiera, análisis empresarial (F3, GO, G3)

Abstract: The degree of crisis propagation on firms can be determined according to operational and financial results. This research studies how 88 private, non-financial Mexican firms suffered and recovered from the 1994 economic crisis. Results show that the periods and degree of deterioration and recovery depend on the industry and size of companies. Conglomerates were both wounded and recovered before the rest of industries. The sector that showed the lowest level of perturbation was mining, and the most injured one was services.

Keywords: crisis propagation, financial crisis, firm-level data (F3, GO, G3)

1 INTRODUCCION

Las crisis financieras, según Mishkin (1992), se presentan cuando hay una perturbación en el sistema financiero que causa que los problemas de información asimétrica (selección adversa y riesgo moral) se acrecienten. Cuando hay una crisis, la mala condición de los negocios y la incertidumbre sobre la salud de los bancos impulsa a los inversionistas a sacar sus fondos de estas instituciones, y éstos a ofrecer menos créditos. La cantidad de intermediación financiera realizada por los bancos disminuye, empeorando los problemas creados por la selección adversa y el riesgo moral. El mercado se vuelve incapaz de canalizar los fondos eficientemente y, como consecuencia de esto, la actividad económica se contrae considerablemente. En estas condiciones, a muchos bancos les es imposible recuperar sus préstamos, lo que provoca erosiones en su valor neto. Es así como las crisis financieras se caracterizan por un descenso en los precios de los activos[32] y por la caída de un número considerable de empresas financieras y no financieras.

El objetivo principal de este estudio es determinar la cronología y magnitud de la caída y recuperación empresarial, relacionadas con la crisis económica mexicana de 1994. En otras palabras, ya que las crisis guardan una relación estrecha con las tensiones en los sectores financieros y empresariales, este estudio se centra en analizar cómo las empresas mexicanas fueron afectadas por la crisis financiera de 1994. Para este propósito se utilizan los datos financieros trimestrales de una muestra de 88 empresas privadas mexicanas que sobrevivieron la crisis, desde el primer trimestre de 1993 hasta el primer trimestre de 2001.

A inicios de la década de 1990, México y otros países de América Latina iniciaron procesos de liberalización del sector financiero y la cuenta corriente. Se privatizaron bancos y se incrementó considerablemente la inversión extranjera. Esto generó un boom en la industria bancaria, dado el

[32] A los inversionistas les resulta difícil distinguir entre empresas rentables y no rentables. Por tal motivo, perciben los bonos y las acciones de las empresas menos atractivos, lo que provoca la disminución en su precio. Esta caída en el precio de los activos se debe también a que las empresas empiezan a tener pérdidas.

mayor acceso a fondos; nuevos bancos empezaron a operar, se expandió el crédito y los servicios financieros. En México, los controles y restricciones crediticias fueron minimizados, así como se abolieron los requerimientos de reservas. La expansión del crédito, junto con un mal análisis y supervisión del mismo, conllevó al financiamiento de proyectos riesgosos. Esto incrementó la vulnerabilidad del sector financiero ante las perturbaciones económicas.

La crisis mexicana comenzó con las tensiones políticas durante 1994. Hubo fugas importantes de capital en respuesta al conflicto de Chiapas y al asesinato de Luis Donaldo Colosio. Estos eventos, junto con un creciente déficit de cuenta corriente (el cual ascendió en promedio 1 punto porcentual por año durante 1989-1994), trajo consigo la devaluación del peso al final de 1994. En un periodo de dos meses, la devaluación del peso superó el 100% (véase Kalter y Ribas, 1999). Las tasas de interés se incrementaron a fin de evitar mayores salidas de capital. Esto generó recesión económica e insolvencia bancaria. Los depositantes sacaron el dinero de los bancos, los bancos pagaban mayores tasas de interés, los créditos morosos se incrementaron y el crédito se vio reducido. El PIB real cayó 10% durante 1995 y la inflación alcanzó 52% durante el mismo año. No fue sino hasta el final de 1997 cuando el PIB real se recuperó completamente.

Como es de esperar, la crisis macroeconómica se propagó hacia las empresas. Durante esta crisis, las compañías mexicanas tenían mucho acceso a la deuda denominada en dólares estadounidenses. A pesar de que al inicio de la década de 1990 el tipo de cambio era semifijo, esto es, fluctuación dentro de una banda, las favorables condiciones macroeconómicas reducían las preocupaciones por el riesgo cambiario implícito en esta deuda. Los grandes montos de la inversión se financiaban principalmente con préstamos bancarios y en menor medida con crédito comercial y venta de acciones; por lo tanto, el nivel de endeudamiento era considerable. Con la devaluación del peso en 1994, las empresas mexicanas enfrentaron un aumento significativo en el valor en pesos de la deuda denominada en dólares. Además, el incremento de las tasas de interés locales acrecentó el costo de la deuda en pesos. Lo anterior, junto con la

disminución en las opciones crediticias y en la demanda interna, hizo que muchas empresas quebraran o al menos fueran seriamente perjudicadas.

A raíz de la crisis asiática de 1997, tuvieron lugar una serie de encuestas empresariales que ofrecían información sobre la caída y recuperación de las compañías orientales. Un ejemplo de ello lo ofrece Hallward-Driemeier (2001). Sin embargo, menos atención se le ha dado a la propagación de la crisis mexicana de 1994. Este estudio pretende cubrir de alguna manera este faltante.

La propagación empresarial de las crisis macroeconómicas puede determinarse mediante el comportamiento de variables financieras y operacionales. El presente estudio analiza cómo una muestra de 88 compañías mexicanas (no financieras y privadas) se perjudicaron y recuperaron de la crisis de 1994. Se concluye que el momento y la extensión de la caída y la recuperación dependen del sector industrial y el tamaño de las empresas. Las compañías más perjudicadas fueron las pertenecientes a la industria de servicios; otros sectores como el minero se vieron más bien beneficiados. Los conglomerados fueron los primeros en recuperarse, representando en promedio las empresas más grandes.

El trabajo está organizado de la siguiente manera. La sección 2 se ocupa de la descripción de los datos y la metodología del estudio de hechos. Se explica el modelo que se emplea. En la sección 3 se presentan dos apartados de resultados. En el primero se hace un breve análisis descriptivo general, a partir de los resultados financieros promedio que muestran las empresas para la época pre crisis, crisis y post crisis. El segundo apartado se refiere al análisis econométrico. En esta sección se llega a la conclusión de que la industria de servicios fue la más afectada durante la crisis, aunque la primera en verse perjudicada fue la de conglomerados. Por otro lado, la industria que sufrió menos fue la minera, debido a que era la más orientada al mercado externo (y poseía entonces el menor descalce y riesgo cambiario). Asimismo, se encontró que las empresas grandes gozaron del menor deterioro, incluso puede argumentarse que la crisis les benefició. La sección 4 se refiere a las conclusiones y limitaciones del trabajo.

2 METODOLOGIA

2.1 Datos

Para esta investigación se utilizan los estados financieros (en miles de pesos constantes) de 88 empresas mexicanas que operaban en 1994 y sobrevivieron la crisis, teniendo como fuente la Bolsa Mexicana de Valores. La base de datos cubre información trimestral (para todos los trimestres disponibles a partir del primer trimestre de 1993, hasta el primer trimestre de 2001) de seis razones financieras[33]:

1) Rendimiento sobre activos (ROA), medido como utilidad neta / activos totales promedio.
2) Margen de operación, calculado como utilidad de la operación / ventas totales.
3) Cobertura de la tasa de interés, medida como utilidad antes de intereses e impuestos / gasto por intereses.
4) Razón de endeudamiento, calculada como pasivos totales / activos totales.
5) Rotación del inventario, medida como costo de los productos vendidos / inventario promedio.
6) Rotación de cuentas por cobrar, calculada como ventas / cuentas por cobrar promedio.

La base de datos cubre únicamente aquellas empresas que operaban antes, durante y después de la crisis; es decir, las sobrevivientes. A pesar de existir un sesgo de selección evidente, se decidió trabajar con estas empresas con el fin de examinar la magnitud y cronología de la propagación de la crisis en las empresas más fuertes del sistema económico mexicano de la época. Asimismo, resulta de interés conocer el efecto neto de la crisis *ex post*, con

[33] Dado el carácter exploratorio de este trabajo, las razones se eligieron tal que pudieran reflejar los efectos de la crisis tanto en el rendimiento (razones 1 y 2), como en el financiamiento (razones 3 y 4) y actividad de las empresas (razones 5 y 6). Estas variables se escogieron a partir de una serie inicial de 16 razones financieras, donde se eliminaron las que presentaban altos grados de correlación con las aquí señaladas.

el fin de determinar si la caída empresarial fue mayor o menor que la recuperación para las empresas sobrevivientes.

2.2. Metodología

El método para estimar el modelo de propagación empresarial consiste en mínimos cuadrados ordinarios. Antes de estimarlo, se corrigen los datos por heteroscedasticidad y autocorrelación, utilizando las covarianzas de Newey-West.

El modelo de propagación empresarial es el siguiente:

$$Ri_T = a_0 + a_1 t + a_2 d_{1iT} + a_3 d_{2iT},$$

donde:
R = Razón financiera en cuestión
i = 1, 2, ..., 88 (empresas)
T = 1, 2, ..., 33 (trimestres)
t = Tiempo. Es variable de tendencia, para mejorar el ajuste
a_0 = Constante
d_1 = Variable dummy de deterioro. Si el efecto se observa en I 95,

$$d_1 = 0 \rightarrow t < I95$$
$$d_1 = 1 \rightarrow t \geq I95$$

d_2 = Variable dummy de recuperación. Si la recuperación se da en I 97,

$$d_2 = 0 \rightarrow t < I97$$
$$d_2 = 1 \rightarrow t \geq I97$$

Para determinar de antemano los trimestres donde ocurre la caída y la recuperación de las empresas, se grafican (con respecto al tiempo) las tasas de variación de las razones financieras en cuestión de un trimestre con respecto al mismo periodo del año anterior. Utilizando los gráficos como punto de partida, se corren algunas regresiones adicionales cambiando los valores de las variables dummy. Se escogen los valores de las dummy de aquellas regresiones que presentan el R^2 más alto. El modelo econométrico se corre para cada empresa en forma individual y para cada razón

independiente. Se agrupa posteriormente por industria y tamaño de las empresas.

Al obtener a_2 y a_3, se somete a prueba que sean estadísticamente diferentes de cero (al 10% de significancia). Para ello se utiliza el estadístico T-HAC, el cual se adquiere de una prueba *t* que considera heteroscedasticidad y autocorrelación en las series. Las hipótesis nulas (Ho_1 y Ho_2) consisten en que no hay caída ni recuperación, respectivamente.

Se espera que los signos de a_2 y a_3 sean:

1) Para ROA, a_2 signo negativo y a_3 positivo.
2) a_2 negativo y a_3 positivo para el margen de operación.
3) En la cobertura de la tasa de interés, se espera que a_2 tenga signo negativo y a_3 signo positivo.
4) a_2 positivo y a_3 negativo para la razón de endeudamiento.
5) Para la rotación del inventario, a_2 negativo y a_3 positivo.
6) En la razón de rotación de cuentas por cobrar se espera que a_2 tenga signo negativo y a_3 positivo.

Si la empresa se ve perjudicada y $|a_2| > |a_3|$, la recuperación es parcial; si $|a_2| = |a_3|$, la recuperación es total y si $|a_2| < |a_3|$, la recuperación supera al deterioro. Para probar la hipótesis que $a_2 = -a_3$ (al 10% de significancia), se utiliza una versión de la prueba de Wald consistente con heteroscedasticidad y autocorrelación en las series.

Se realiza el análisis para cada empresa y luego se ve si el periodo de deterioro y recuperación está relacionado con la industria y tamaño de las firmas[34,35]. Para ello se efectúa un estudio MANOVA, que considera todas

[34] Se obtienen los promedios ponderados de las razones financieras por industria y por tamaño. La ponderación que tiene cada empresa dentro de una categoría industrial (o de tamaño) es el monto de sus activos totales / monto de los activos totales de todas las empresas que pertenecen a esa categoría. De esta manera, se le da mayor ponderación a las empresas que tienen mayor representabilidad en el mercado.
[35] El criterio de tamaño se define arbitrariamente de acuerdo con los activos de las empresas. Se consideran empresas pequeñas aquellas cuyos activos totales son menores a

las razones financieras elegidas y determina si existen diferencias entre los grupos establecidos de tamaño empresarial e industria. Para observar las diferencias por cada razón financiera de forma individual, se aplica un estudio ANOVA[36,37] .

3 RESULTADOS

3.1. Análisis descriptivo general

El análisis descriptivo general se basa en la evolución de las seis razones financieras elegidas (considerando las 88 empresas), durante los periodos de pre crisis (I-1993 a III-1994), crisis (IV-1994 a III-1997) y post crisis (IV-1997 a I-2001). El valor promedio de estas razones financieras para cada uno de los tres periodos mencionados se obtiene de la siguiente manera: partiendo de las empresas individuales, se hace un promedio simple por razón financiera, para los periodos de pre crisis, crisis y post crisis. Tomando estos valores para todas las empresas, se pondera de acuerdo con la proporción de activos de cada empresa en relación con el total de activos de la muestra.

Los resultados del cuadro 1 señalan que, durante la época pre crisis, las empresas mexicanas presentaban altos niveles de riesgo de insolvencia. La razón de endeudamiento era cercana a 50%; conjuntamente, más de la

un millón de pesos; medianas las que cuentan con activos totales entre un millón y 10 millones, y las empresas grandes son aquellas que tienen activos mayores a 10 millones de pesos. Se estudian además siete categorías industriales: manufactura, telecomunicaciones, comercio, construcción, servicios, conglomerados y minería.

[36] El estudio ANOVA y MANOVA se realiza a través de la prueba de Brown-Forsythe, que es una modificación de la prueba de Levene, en la cual se reemplaza la diferencia absoluta de medias por la diferencia absoluta de medianas y así se obtiene una prueba superior en términos de eficacia y capacidad. En esta prueba, la hipótesis nula es que la varianza de todos los grupos es igual. La alternativa es que al menos un grupo tiene distinta varianza. Entonces, si $P<0.10$, no se rechaza la hipótesis alternativa (es decir, los grupos son distintos para esa variable en particular).

[37] La prueba de Levine está basada en un análisis de varianza (ANOVA) de diferencia absoluta de medias. El estadístico F en esta prueba se acerca a una distribución F con G=1 grados de libertad en el numerador y N-G grados de libertad en el denominador; bajo la hipótesis nula de igual varianza entre los grupos.

mitad de esta deuda estaba denominada en dólares estadounidenses, por lo que había en general mucha exposición al riesgo cambiario. Como es de esperar, durante la crisis esta situación empeoró.

Las empresas, como consecuencia del aumento de la deuda, tuvieron mayores dificultades para generar la cantidad suficiente de ingresos que cubrieran los gastos por intereses. Esto se refleja levemente en la razón de la cobertura de las tasas de interés, que pasó de 9.62 veces durante la época pre crisis a 8.74 veces durante la crisis. En el periodo post crisis, la cobertura del pago de intereses llegó a 11.55 veces, ya que las empresas no estaban pagando intereses como parte del programa de alivio de la deuda.

Las variables que pueden brindar una luz de alerta sobre posibles disminuciones en las utilidades son las razones de actividad[38], que demuestran la eficacia con la cual se administran los activos de una empresa. Estas razones presentaron aumentos en las épocas de crisis y post crisis. En especial, se observa un deterioro en la rotación del inventario, que pasó de 4.38 días en la época pre crisis a 16.71 días durante la crisis, llegando hasta 19.03 días en la post crisis, lo que refleja la caída en la demanda interna.

[38] Las variables consideradas son rotación de las cuentas por cobrar y rotación del inventario.

*Cuadro 1. Resultados financieros promedio para las épocas pre crisis, crisis y post crisis**

Razón financiera	***Pre crisis***	***Crisis***	***Post crisis***
Razón de endeudamiento	41.65%	46.13%	48.27%
Cobertura de las tasas de interés	9.62 veces	8.74 veces	11.55 veces
Rotación de las cuentas por cobrar	4.94 días	5.51 días	5.96 días
Rotación de inventarios	4.38 días	16.71 días	19.03 días
Margen de operación	18.31%	16.56%	16.81%
ROA	3.76%	3.99%	3.73%

* Los datos se obtuvieron según la metodología que se explica en el trabajo, tomando en cuenta las 88 empresas.

A pesar de la reducción en las ventas, no cambiaron significativamente las utilidades ni los activos totales, lo que revela sólo un pequeño efecto empresarial de la crisis cambiaria para las empresas sobrevivientes consideradas. De acuerdo con los resultados del cuadro 1, el ROA promedio pasó de 3.76 a 3.99% durante la crisis. Como se explica en el siguiente apartado, esto puede tener su origen en que la crisis no afectó por igual a todos los sectores. La razón de rentabilidad que sí mostró deterioro durante la crisis fue el margen de operación.

Con lo anterior y dado el comportamiento de las razones analizadas, se puede concluir que las empresas estudiadas se perjudicaron levemente de la crisis. Asimismo, ya que posterior a este evento se muestran pocas mejoras en las razones financieras consideradas, se puede alegar que las empresas tan sólo se recuperaron parcialmente.

Algunas de las posibles explicaciones de la supervivencia de estas empresas durante la época de crisis son el aumento en las exportaciones (la proporción de ventas en el extranjero con respecto a las ventas totales casi se duplicó durante la época de crisis), la buena capacidad de hacer frente a

problemas de liquidez reflejada en la razón circulante y el nivel de financiamiento interno, y los programas gubernamentales de no pago de deudas.

3.2. Análisis econométrico

3.2.1. Por industria

Se consideran 35 empresas de la industria de la manufactura, 4 firmas de telecomunicaciones, 15 empresas de comercio, 11 empresas de construcción, 6 compañías de servicios, 10 conglomerados y 7 empresas de minería. En general, se observa deterioro y recuperación empresarial, y a_2 y a_3 presentan los signos esperados.

Los resultados del modelo econométrico, resumidos en los cuadros 2 y 3, muestran que en promedio la industria de conglomerados fue la que se vio perjudicada primero (IV-94) a raíz de la crisis económica. Esto tiene su explicación en el hecho de que los conglomerados, al ser corporaciones formadas por varias empresas independientes, interrelacionadas por vínculos de propiedad, son las empresas que representan en mayor medida la economía del país[39].

Cuadro 2. Periodos de deterioro por industria

Razón financiera	*Manufactura*	*Telecomunicaciones*	*Comercio*	*Construcción*	*Servicios*	*Conglomerados*	*Minería*
Razón de endeudamiento	II-95	III-95	I-95	I-95	I-95	I-95	I-95
Cobertura de las tasas de interés	I-95	II-96	III-95	I-95	IV-94	IV-94	IV-95
Rotación de las cuentas por cobrar	II-95	II-95	II-96	II-95	1-95	I-95	III-95
Rotación de inventarios	I-95	II-95	I-96	II-95	I-95	IV-94	I-96
Margen de operación	I-95	I-95	I-95	I-95	IV-95	IV-94	IV-95
ROA	I-95	I-96	II-95	I-95	IV-94	IV-94	II-95
Moda	*I-95*	*II-95*	*I-95*	*I-95*	*I-95*	*IV-94*	*IV-95*
Intervalo de deterioro	***I-95 a II-95***	***I-95 a II-96***	***I-95 a II-96***	***I-95 a II-95***	***IV-94 a IV-95***	***IV-94 a I-95***	***I-95 a I-96***

[39] Por lo tanto, es de esperar que tengan repercusiones al mismo tiempo que hay problemas en la economía. Véase Roll (1988).

Cuadro 3. Periodos de recuperación por industria

Razón financiera	*Manufactura*	*Telecomunicaciones*	*Comercio*	*Construcción*	*Servicios*	*Conglomerados*	*Minería*
Razón de endeudamiento	I-96	I-96	III-96	IV-96	I-96	I-96	III-96
Cobertura de las tasas de interés	II-96	I-97	I-97	II-95	II-95	II-95	IV-95
Rotación de las cuentas por cobrar	II-96	II-96	II-96	IV-96	II-97	IV-95	IV-95
Rotación de inventarios	I-97	II-96	II-96	II-97	II-97	I-96	I-96
Margen de operación	II-97	II-95	II-96	I-96	II-96	I-96	IV-96
ROA	II-95	III-96	I-96	II-96	III-96	III-95	II-96
Moda	*II-96*	*II-96*	*II-96*	*IV-96*	*II-97*	*I-96*	*IV-95*
Intervalo de recuperación	***II-95 a II-97***	***II-95 a I-97***	***I-96 a I-97***	***II-95 a II-97***	***II-95 a II-97***	***II-95 a I-96***	***IV-95 a IV-96***

La existencia de conglomerados aumenta y diversifica los activos de las empresas; por tal motivo, a pesar de ser las primeras empresas en ser afectadas, su grado de deterioro es comparativamente bajo. Esto explica también que los conglomerados sean los primeros en recuperarse entre los periodos II-95 y I-96. El grado de recuperación que presentan supera al de deterioro, permitiendo así no sólo una recuperación, sino también una mejoría en sus estados financieros posterior a la crisis.

La industria de servicios sigue muy de cerca a la industria de conglomerados, mostrando una caída entre IV-94 y IV-95, y una recuperación que en promedio fue mucho menor que ésta. El deterioro tan rápido en la industria de servicios pudo haber tenido su origen en el hecho de que casi 70% de su deuda era denominada en dólares (y ésta era de las industrias menos orientadas al mercado externo), de la cual alrededor de 40% era de corto plazo.

En promedio, las últimas industrias en verse perjudicadas (en este orden) son:

1) Comercio. Previo a la crisis mostraba una sana estructura de la deuda. Junto con telecomunicaciones y minería, poseía los menores niveles de

apalancamiento. Su nivel de recuperación posterior a la crisis fue total, incluso superó al descenso.

2) Telecomunicaciones. Antes de la crisis presentaba uno los niveles más bajos de la razón de endeudamiento (después de la industria minera), así como los menores porcentajes de deuda denominada en dólares (sólo superada por comercio) y de deuda de corto plazo con respecto a deuda total. Su sana estructura de deuda pudo haberle permitido retrasar la caída. Otras razones de este retraso pueden haber sido que esta industria tenía el mayor margen de operación previo a la crisis (37%, lo cual es posible dada su estructura monopólica) y el mayor rendimiento sobre los activos (de casi 8% previo a la crisis). Sin embargo, la recuperación en esta industria fue sólo parcial. Esto da indicios que, no obstante la estructura de capital es importante para retrasar el deterioro, el grado de recuperación posterior se debe en mayor medida a otras variables tales como la importancia del mercado externo. Por lo tanto, es de esperar que tengan repercusiones al mismo tiempo que hay problemas en la economía.

3) Minería. Las empresas que componen esta categoría en general se vieron afectadas[40] durante el cuarto trimestre de 1995. Esta industria presentaba durante las épocas pre crisis y crisis niveles de financiamiento interno superiores al resto de las industrias, lo cual le ayudó a retardar la caída y superar la crisis. Otra razón para su tardío deterioro y satisfactoria recuperación es que este sector tenía la mayor relación con el exterior (con una razón de exportaciones/ventas totales de casi 40% previo a la crisis y de 48% durante la misma). Es por ello que la industria minera durante la época de crisis pudo incrementar el margen de operación y el rendimiento sobre los activos. La recuperación de las empresas mineras fue mayor a la caída que sufrieron; es decir, la crisis cambiaria les benefició.

A pesar de ser las industrias de comercio, telecomunicación y minería las últimas en deteriorarse, como se observa en el cuadro 3, no fueron las últimas en recuperarse. Las industrias que se recuperaron al último fueron

[40] La caída en esta industria se observa básicamente en las razones de endeudamiento, rotación del inventario y de las cuentas por cobrar.

servicios (en realidad no puede decirse que hubo recuperación), construcción y manufactura, y esta última es la única industria de las tres que logró una recuperación mayor al grado de deterioro. Las industrias que muestran la recuperación más rápida son minería y conglomerados, que en promedio se recuperaron en el primer trimestre de 1996. Resumiendo, en todas las industrias se dio una caída y una recuperación en distintos grados y en distintos periodos.

3.2.2. Por tamaño

Se consideran 22 empresas pequeñas, 38 medianas y 28 grandes. En general, se observa deterioro y recuperación empresarial, y a_2 y a_3 presentan los signos esperados.

Después del estudio econométrico (que se resume en los cuadros 4 y 5) por tamaño de las empresas, se puede concluir que en promedio las empresas grandes se vieron afectadas primero por la crisis que las empresas pequeñas y medianas. Existen varias explicaciones para esto: las empresas grandes se pueden considerar como conglomerados de empresas pequeñas, pues por lo general éstas se dedican a diversas actividades o producen distintos productos. Por tal motivo, estas empresas representan más en la economía del país y, como consecuencia, las perturbaciones en la economía se ven reflejadas de inmediato en sus estados financieros. Otra explicación que iría en sentido contrario, pero que puede aplicarse al caso, es que cuando las empresas grandes tienen problemas financieros y operacionales, éstas provocan efectos inmediatos en la economía del país como un todo (ya que representan la mayor parte de la economía).[41] Por último, un motivo evidente de por qué estas empresas se afectaron primero es que muestran comparativamente el mayor nivel de endeudamiento en dólares previo a la crisis.

[41] Para un análisis de cómo las empresas pueden conllevar a una crisis macroeconómica, véanse Krugman (1999) y Claessens, Djankov y Lang (1998).

Cuadro 4. Periodos de deterioro por tamaño

Razón financiera	***Pequeñas***	***Medianas***	***Grandes***
Razón de endeudamiento	II-95	I-95	I-95
Cobertura de las tasas de interés	I-95	I-95	IV-94
Rotación de las cuentas por cobrar	I-96	II-95	II-95
Rotación de inventarios	I-95	I-95	I-95
Margen de operación	I-95	I-95	I-95
ROA	I-95	I-95	I-95
Moda	*I-95*	*I-95*	*I-95*
Intervalo de deterioro	***I-95 a I-96***	***I-95 a II-95***	***IV-94 a II-95***

Cuadro 5. Periodos de recuperación por tamaño

Razón financiera	***Pequeñas***	***Medianas***	***Grandes***
Razón de endeudamiento	I-96	III-95	I-96
Cobertura de las tasas de interés	IV-96	I-96	II-95
Rotación de las cuentas por cobrar	I-97	IV-95	I-96
Rotación de inventarios	III-95	I-97	III-96
Margen de operación	I-97	I-96	I-96
ROA	II-95	II-95	III-95
Moda	*I-97*	*I-96*	*I-96*
Intervalo de recuperación	***II-95 a I-97***	***II-95 a I-97***	***II-95 a III-96***

A pesar de lo anterior, no hay muchas diferencias con respecto al periodo de perturbación, ya que en promedio todas las empresas se vieron perjudicadas en el primer trimestre de 1995. En cambio, en lo que se refiere a la recuperación, se observa que las empresas grandes fueron las primeras en recuperarse y que las pequeñas se recuperaron al último. Esto refleja la mayor flexibilidad financiera y acceso al crédito de las empresas más grandes, así como su mayor exposición a los mercados internacionales[42].

Con los resultados anteriores por tamaño e industria y dadas las conclusiones obtenidas del análisis ANOVA (en el cual, sólo la variable margen de operación presentó varianzas iguales) y MANOVA, se puede concluir que el periodo de deterioro y recuperación sí está relacionado con la industria y el tamaño de las empresas.

4 CONCLUSIONES

En el momento en que se desencadena una crisis macroeconómica, ésta se propaga hacia las empresas, que se ven afectadas por las crisis tanto de su propio país como externas. En este documento se estudió la propagación sufrida por las empresas mexicanas en la crisis financiera
que se dio en diciembre de 1994. Utilizando una metodología de estudio de eventos, se encontró que hubo en general deterioro y recuperación empresarial. Este deterioro se dio en la mayoría de las empresas en el primer trimestre de 1995, y la recuperación se dio en la mayor parte de los casos en el segundo trimestre de 1996.

Se encontró evidencia de que el tiempo de caída y recuperación depende del tamaño de las empresas y la industria a la cual pertenecen. Los resultados muestran que los conglomerados se vieron afectados y se recuperaron antes que el resto de las industrias. Una explicación para ello es que los conglomerados, al dedicarse a varias actividades distintas, son las empresas que representan en mayor medida a la economía del país y, por tanto, es de esperarse que tengan repercusiones al mismo tiempo que hay

[42] Previo a la crisis, las empresas grandes exportaban más de 13% de su producción; este porcentaje era cercano a 10% para las compañías medianas y 3% para las pequeñas.

problemas en la economía. La industria que reflejó el menor grado de perturbación (más bien la crisis le benefició) fue la industria minera, que mostró la mayor participación dentro del comercio internacional. La industria más afectada fue la de servicios, ya que previo a la crisis presentaba la mayor vulnerabilidad dentro de su estructura de deuda.

Con respecto a los resultados por tamaño de las empresas, se observó que las empresas grandes se deterioraron antes y en menor grado que las demás. Lo anterior se puede explicar considerando a las empresas grandes como conglomerados de empresas pequeñas. Asimismo, las firmas grandes fueron las primeras en recuperarse, lo cual refleja su mayor flexibilidad financiera, acceso al crédito y participación dentro del comercio internacional.

Se pudo llegar a la conclusión de que las empresas sobrevivieron la crisis, a pesar de que en general tenían excesivas deudas en dólares, particularmente por tres razones: el aumento en las exportaciones, la buena capacidad de hacer frente a problemas de liquidez y los programas gubernamentales para retrasar el pago de deudas.

A partir de la experiencia de las empresas mexicanas en la crisis de 1994, se derivan algunas recomendaciones de política empresarial. Con ello se pretende reducir las probabilidades de propagación de las próximas crisis. Lo anterior es importante, ya que a pesar de que las empresas se pudieron recuperar de la crisis de 1994, aún en el año 2001 seguían mostrando problemas en su estructura de capital.

Dentro de las medidas que las empresas podrían tomar para reducir su grado de vulnerabilidad ante las crisis están: *1)* disminuir la deuda denominada en dólares, así como la deuda de corto plazo; *2)* ampliar el mercado externo, no sólo hacia Estados Unidos, sino con el resto del mundo para diversificar el riesgo; *3)* ampliar el capital de los socios, promover la venta de acciones y el ahorro dentro de las empresas, que les permita tener un financiamiento interno lo suficientemente grande como para enfrentar las futuras crisis, así como depender menos del

financiamiento bancario; *4)* cuidar de no caer en problemas de liquidez, manteniendo las razones de liquidez en niveles altos aunque se sacrifique un poco de rentabilidad.

En lo que se refiere a las limitaciones del estudio, se puede señalar que dentro de éste no se capturó a toda la economía real. Dada la disponibilidad de información, sólo se tomaron en cuenta empresas que cotizan en bolsa (en general, son las empresas más grandes). Otra limitación es que la muestra de empresas para algunas industrias es muy pequeña para generalizar; sin embargo, ésta es la única información disponible.

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APPENDIX 2:

Appendix 2: Corporate governance and performance during the aftermath of the 1994 Mexican crisis (published at EconoQuantum, vol. 2, number 2).

APPENDIX 2:

CORPORATE GOVERNANCE AND PERFORMANCE DURING THE AFTERMATH OF THE 1994 MEXICAN CRISIS

Karen Watkins, Jaap Spronk, and Dick van Dijk

ABSTRACT

Good corporate governance arrangements have been associated with high performance. This paper studies the effects of family, bank, and business group ties on Mexican firm performance during the period 1995-1997. Two performance variables are taken into account for robustness reasons: return on assets and profit margin on sales. Results show that companies with positive corporate governance schemes performed better than the rest during this period.

Keywords: corporate governance, firm performance (G30)

RESUMEN

Buenos mecanismos de gobierno corporativo se relacionan con buen desempeño empresarial. Este artículo estudia los efectos de los vínculos familiares, bancarios y empresariales en el desempeño de las empresas mexicanas durante el período 1995-1997. Dos variables de desempeño son empleadas por razones de solidez: retorno sobre los activos y margen de ventas. Los resultados muestran que durante este período, el desempeño de

las firmas con mejores estructuras de gobierno corporativo fue más favorable que para las demás.

Palabras clave: gobierno corporativo, desempeño empresarial (G30)

1 INTRODUCTION

The Mexican 1994 economic crisis started with the devaluation of the Mexican peso, on December 20th, 1994. This unexpected event took place in a setting of fixed exchange rate regime, low inflation, fiscal surplus, and large foreign reserves. During 1994 Mexican authorities were confident about the stability of the economy; nevertheless, the growing current account deficit and political shocks during that year generated strong capital outflows. The outcome was a shift to a floating exchange rate regime, devaluation of more than 100%, inflation of around 50%, and recession. During 1995 real GDP declined 10%, interest rates rose considerably in order to avoid further devaluation, and credit was reduced.

Mexican companies were forced to adapt to the new circumstances, or declare bankruptcy. As a consequence of the currency devaluation and the rise in domestic interest rates, companies´ peso and dollar denominated debt increased in real terms. In addition, firms faced cash constraints as internal demand dropped and credit was restricted. The outcome for Mexican firms was mixed: some firms survived the crisis, others did not, and some even benefited from it.

The explanations for Mexican companies´ differences in performance after the 1994 economic crisis derive from two sources: financial and operational robustness prior to the crisis, and corporate governance schemes. The first of these streams relate to initial conditions; for instance, profitable firms with low debt levels had better odds to survive the crisis than others (for a recent study on this issue see Watkins et al., 2005). Regarding corporate governance schemes, recent studies on the 1997 Asian

financial crisis have proved that good corporate governance improves performance (see Mitton, 2002, and Kim and Lee, 2003).

Our paper adds further insight into the role of corporate governance in the aftermath of economic crises, by examining the Mexican case. In particular, we consider the influence of corporate governance arrangements such as bank, business, and family ties on firm performance during the immediate period after the crisis: 1995 to 1997. Mexico's industrial environment has been characterized as one with diversified firms, controlled by few influential families, who possess ties with the government and banks (see Castañeda, 2002). For robustness reasons we take into account two performance measures: return on assets (ROA) and profit margin on sales (PROFIT). Although several papers have analysed corporate governance effects on performance (see Claessens et al., 2000), to the best of our knowledge there is none related to the aftermath of the Mexican 1994 crisis. We believe this is due to the lack of publicly available corporate governance data, and the difficulty to obtain historic financial information. We have built a unique database for 176 listed non-financial companies using five sources: Mexican Securities Market's (BMV) online resources, microfilms at BMV for historic data, Annual Financial Facts and Figures (published by BMV), and electronic devices such as SIVA and Infosel-Financiero.

Our main result is that firms with good corporate governance schemes performed considerably better than others during the period 1995-1997. In particular, belonging to diversified business groups favoured performance, while having bank or family ties was prejudicial for firms.

The paper is organized as follows. Section 2 deals with the theory on corporate governance and the hypotheses to test. Section 3 describes the data set and variables employed. Section 4 discusses the results, which are based on a dynamic panel data model with random effects. Section 5 concludes.

2 THEORY AND HYPOTHESES

Corporate governance can be defined as a collection of procedures that provide protection for companies´ stakeholders. In the words of Kose and Senbet (1998), ¨Corporate governance deals with mechanisms by which stakeholders (equity holders, creditors, and other claimants who supply capital, as well as employees, consumers, suppliers, and the government) of a corporation exercise control over corporate insiders and management such that their interests are protected¨. This relates to the agent-principal problem, as described by Jensen and Meckling (1976) and Myers (1977).

Agency costs can be reduced through different governance mechanisms. Boubakri et al. (2005) classify these mechanisms as internal and external. Internal governance mechanisms relate to ownership structure (such as ownership concentration); external mechanisms refer to the legal system, labour markets (such as markets for outside directors competing in reputation as experts in monitoring CEO´s; see Fama and Jensen, 1983), and takeover markets (markets for corporate control).

For the purpose of this paper we focus on internal governance mechanisms, which are directly controlled by a firm. We classify ownership structure into three sub-categories, according to available information for Mexican firms: independent, family ownership, and informal ownership. Independent firms are those having no family, business, or bank links. By family ownership we refer to companies where two or more members of the board of directors possess the same first and second last names, meaning they are brothers or sisters. This is a proxy for companies where the majority of equity is held by the same family. Informal ownership relates to companies having group or bank links, which implies that not only direct stakeholders have power over the decisions of the firm. Ownership concentration is not a publicly available variable in Mexico, therefore it is excluded from the analysis.

Bennedsen and Wolfenzon (2000), and Maury (2005), claim that when investor protection is poor (meaning external governance mechanisms are

weak), family controlled companies become attractive as the private benefits of control represent a relevant share of the company's value. Then, under these conditions it is easier to expropriate minority shareholders. Authors such as Alba et al. (2003), Lee (1998), and Baek et al. (2004) have related concentration of ownership in family hands with poor performance (as in Thailand and Korea, late 1990´s). The argument behind this is that inexperienced family members, instead of professional managers, usually take control of these types of firms. On the same line, Kim and Lee (2003), and Mitton (2002) argue that during the Asian crisis companies with lower proportion of outside ownership performed worse than the rest. In order to reduce to some degree this outcome, in Mexico the Code of Corporate Governance recommends at least 20% of directors for listed companies to be outsiders (see Dahyaa and McConnell, 2004). This derives our ***first hypothesis: Firms having family ties performed worse than those without during the period 1995-1997***.

Diversified companies and conglomerates stabilize aggregate profits, which is important in countries with incipient capital markets like the Mexican (see Aoki, 2001). In times of crisis performance for these companies can be better than for independent ones, which favours the risk diversification argument (see Claessens et al., 2000). This argument can be extended to diversified business groups. Castañeda (2000, 2005) points out that during the Mexican crisis, internal capital markets permitted the flow of funds from booming companies (mainly exporting firms) to the rest of the economy. These business groups favoured the survival of many companies, as they improved capital allocation. We can add that being part of a diversified business group can stabilize aggregate sales, due to internal group trading. In addition, within the groups there are important governance functions. As stated by Khanna and Palepu (1996), these networks support internal trade and ensure close monitoring of management. On a similar line, Claessens et al. (2000) point out that after the Asian crisis, firms belonging to diversified business groups had 3% higher market valuations than the rest. This brings out our ***second hypothesis***: ***Firms belonging to diversified business groups performed better than other firms during the period 1995-1997.***

The recent East Asian downturn has shown that during crises companies with bank links perform worse than independent ones, in particular in countries where regulation is poor. As stated by Lee (1998), Claessens et al. (2000), and Morck and Nakamura (1999), Asian firms having bank ties were extremely leveraged before the 1997 crisis. This increased their vulnerability to shocks, and made them more susceptible to agency costs of debt (see Kim and Lee, 2003). These companies were exposed to higher risk levels than the rest, and were able to obtain credit to finance losses. Instead of monitoring and disciplining them, banks acted as firms' accomplices. In addition, as firms relied heavily on banks for financing their investments, when banks faced financial troubles, even profitable firms were not able to obtain credit (see Baek et al., 2004). This generates our ***third hypothesis*** to test: ***In Mexico, bank links had a negative impact on firms´ performance during the period 1995-1997.***

3 DATA

3.1 Sample, data sources, and variables

Last quarter non-balanced data (from 1995 till 1997) for all listed non-financial firms (176 in total) is extracted from the Mexican Securities Market (BMV). Firms that were not listed at least during one of this after crisis years are not taken into account, as the interest of the paper is to study corporate governance effects on firm performance during the aftermath of the crisis. Two sources of data from electronic systems are used: SIVA (Integrated System of Automated Securities) and Infosel-Financiero. Data for firms who are not currently listed on the market, and historic data is extracted through microfilms at BMV. The list of board of directors (for 1994) is obtained through the Annual Financial Facts and Figures, published by BMV. All monetary variables are presented in real terms (Mexican pesos of the year 2000).

Corporate governance variables are introduced as dummies for group affiliation (two or more board members of a firm sitting on the board of at

least another listed firm, whatever their position), bank linkages (at least one of the firm's board members belongs to the directorate of one or more banks), and family ties (two or more members of the board having the same first and second last names, meaning they are brothers or sisters). Groups are further described as diversified and not diversified groups. As for the definition of a diversified group, it is considered as one that is composed of many firms (at least fifteen, for internal capital and trade markets argument), from all sizes and industries (risk diversification), with at least one export-oriented company (50% or more of sales outside the country - competitiveness positive effect), and with one or more firms having access to foreign stock markets through American Depository Receipts (foreign financing and better accounting procedures, which favours good corporate governance).

Return on assets (ROA) is defined as the ratio of EBIT to total assets; to reduce the weight of extreme observations in the econometric analysis, ROA values higher than 20% in absolute value have been excluded. Profit margin on sales (PROFIT) is defined as EBIT + depreciation and amortization, over net sales. Tobin's Q is not employed as a measure of performance: being a market based measure, it is not an adequate indicator in countries with incipient capital markets like the Mexican. In addition, this ratio is not available for the complete sample of Mexican companies, as some firms were not quoted during 1995 (but their information was public since they issued bonds or commercial paper in BMV; see Castañeda, 2005).

Three size dummies, arranged according to market assets´ value, are introduced. Small companies are considered as those with less than $1,000,000 in assets; medium firms possess between $1,000,000 and $10,000,000 in assets; big enterprises consist of companies with more than $10,000,000 in assets. In addition, seven industry categories are employed to capture size and industry specific effects; for instance, it is expected that during crises small companies have more financial constraints than the rest (see Titman and Wessels, 1998), and industries such as the services sector depend more on the local economy. In fact, industry effects usually predict

between 17 and 20% of financial performance (see Coles et al., 2001). In addition, control variables for performance such as productivity (net sales over net capital stock; it is associated with higher performance), foreign-denominated debt over total debt (foreign debt makes a firm more vulnerable to fluctuations in the economy), cash flows over total assets (the greater, the higher the probability of a company to expand and diversify; this makes a company less vulnerable during crises), and leverage (total debt over equity; as it increases, so does the exposure to shocks and the amount of agency costs of debt - see Berger and Bonaccorsi di Patti, 2005) are used.

3.2. Descriptive statistics

Table 1 in the appendix presents descriptive statistics for return on assets and profit margin on sales, during the immediate post-crisis year. In 1995 there were 142 quoted firms, which are classified as independent, or having bank, family, or business ties (diversified or not). These companies are further grouped according to size and industry.

During the year 1995, the average return on assets and profit margin on sales were 0.04 and 0.07, respectively. During 1993, which represents a normal year, the average values for ROA and PROFIT were 0.07 and 0.12 (according to information from BMV, see Table 2 in the appendix). This reflects that due to the crisis, on average performance declined substantially during the immediate aftermath year 1995. However, this conclusion is not accurate for all types of firms. For example, independent companies seem to outperform firms in all other categories, with an average ROA of 0.07. The same is true for companies belonging to business groups, as they present profit margin on sales of 0.09. On the lower end are companies with family and bank ties, with ROA of 0.01 and 0.02, respectively.

These results are in general consistent with the theory, except for the case of independent companies. According to the corporate governance literature for emerging market economies, companies belonging to business groups perform better than independent ones in times of crisis; see

Claessens, Djankov, and Xu, 2000. However, independent companies in Mexico have initial advantages over the rest of firms, which might explain this apparent controversy. First of all, 60% of these independent firms are export-oriented. In particular, these types of companies performed better than others due to the positive impact of the devaluation of the Mexican peso; their average PROFIT during 1995 was 0.12. Second, more than half (56%) of the independent companies in the sample are big. As explained in the next paragraph, big companies have less financial and operational constraints than the rest.

From table 1 it becomes evident that there are size and industry effects on performance during 1995. Big companies performed much better than the rest during and after the crisis, which can be attributed to their greater operational and financial flexibility. In times of crisis, scarce credit is assigned mainly to the biggest (and perhaps not the most profitable) companies. For instance, prior to the Mexican 1994 crisis, big companies were less leveraged than others. This relationship changed during the crisis period, when small firms became the least leveraged. Considering that small firms' equity declined on average 16% during the time, there is evidence of an important credit crunch for small firms.

On an industry basis, the best performing sectors were mining, manufacturing and conglomerates. The mining industry does not depend as much as the rest on the local economy, as it exports most of its products (and their prices are fixed in international markets). Therefore, it is not surprising that the Mexican crisis practically had no impact on its aftermath results. Manufacturing also depends less than other sectors on the domestic demand, as an important proportion of its products are sold in external markets. As for conglomerates, in times of crisis they serve as an insurance, for their diversification stabilizes aggregate profits. During the crisis period exports grew on average 104% for the manufacturing industry, and 180% for conglomerates. Services, commerce, construction, and telecommunications are more connected to the local economy; therefore internal macroeconomic shocks have a greater impact on them.

4 REGRESSION RESULTS

In this section, the relationship between firm performance and corporate governance schemes is analysed. Table 3 in the appendix displays results from estimating a dynamic random effects panel data model, using the Swamy-Arora estimator of the component variances. The reported t-values are based on standard errors that are robust to cross-sectional heteroskedasticity, so random effects can be employed. Time fixed effects are also introduced, in order to study the dynamics of performance during the immediate post-crisis years. ROA values greater than 0.20 in absolute value are treated as outliers, as in aftermath crisis years it is expected performance to be low. In fact, the median ROA for the period 1995-1997 is 0.04. The sample includes data from 1995 till 1997, which reflects the crisis aftermath period.

From table 3 the main conclusion is that internal corporate governance arrangements did influence Mexican firm performance during the period 1995-1997. Consistent with the literature, having bank or family ties was prejudicial for companies, while belonging to business groups (particularly diversified business groups) favoured performance.

Companies participating in diversified business groups had several advantages over the rest of firms. First of all, they created efficient internal capital markets, as described by Castañeda (2002). From the publicly available data published by BMV, it is evident that these firms had twice the amount of trade credit compared to the rest of companies. Second, this data shows that there was an important flow of internal trade taking place. Specifically, during 1995 companies from diversified business groups had three times more net sales than the other firms, which means they did not face such a sharp drop in demand. These companies acted like a small economy, creating their own demand and supply, and therefore they were not so much exposed to the local economic downturn.

In general there are not significant differences in performance according to size or industry indicators. Therefore, it seems that internal corporate

governance variables are more powerful explaining performance during the aftermath period, compared to size or industry effects.

All control variables taken into account are significant, except for leverage. Productivity and cash flows over total assets present the expected signs, however foreign debt over total debt has opposite sign. Lagged ROA and PROFIT are significant and positive, which reflects the influence of initial conditions on performance. Time effects, which are introduced in the regressions by including the periods 1996 and 1997 are also significant and positive, which indicate recovery.

5 CONCLUSION

Poor corporate governance arrangements are related to lower performance and firm value. This is particularly true in times of crisis, when stakeholders are less confident about firms´ robustness, and expropriation is more feasible. In these circumstances nervous agents take their money away from companies with poor corporate governance, which further deteriorates firm value. In contrast, companies with good corporate governance schemes have better odds of surviving an economic downturn.

As expected, the Mexican 1994 currency crisis had larger aftermath effects on companies with poor corporate governance schemes. We have shown that firms having bank or family links performed worse than those without them, and that companies belonging to diversified business groups were the least injured during the economic downturn. Initial conditions were also important in explaining performance during the period 1995-1997, as shown by the positive results of independent firms. These companies were mainly export-oriented and big, which represents an advantage over the rest of firms.

From these conclusions we derive several recommendations for Mexican companies, in order to deal with future crises: 1) To diversify risk by producing both for local and international markets. 2) To participate in international financial markets through American Depository Receipts. 3)

To create networks with other companies, with the objective of building diversified business groups. 4) To rely more on equity and trade credit than on bank financing. 5) To hire managers according to experience and aptitude, and not based on family attributes.

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7 APPENDIX

Table 1: Descriptive statistics for the year 1995

Firm Characteristic	***Number of Firms***	***RETURN ON ASSETS***			***PROFIT MARGIN ON SALES***		
		Mean	**Minimum**	**Maximum**	**Mean**	**Minimum**	**Maximum**
All Firms	142	0.04	-0.63	0.86	0.07	-0.76	0.95
		(0.16)			(0.25)		
Independent	25	0.07	-0.19	0.54	0.05	-0.74	0.32
		(0.14)			(0.20)		
Bank Link	97	0.02	-0.63	0.58	0.07	-0.76	0.95
		(0.15)			(0.26)		
Family Tie	76	0.01	-0.63	0.51	0.06	-0.76	0.80
		(0.15)			(0.24)		
Business Group	90	0.04	-0.63	0.86	0.09	-0.76	0.95
		(0.18)			(0.26)		
Diversified Group	18	0.01	-0.33	0.23	0.08	-0.76	0.56
		(0.13)			(0.26)		
Small	37	0.02	-0.19	0.25	0.06	-0.74	0.32
		(0.08)			(0.16)		
Medium	60	0.02	-0.63	0.54	0.05	-0.76	0.82
		(0.17)			(0.27)		
Big	45	0.08	-0.29	0.86	0.11	-0.72	0.95
		(0.20)			(0.29)		
Commerce	22	-0.01	-0.63	0.36	-0.02	-0.76	0.50
		(0.21)			(0.28)		
Conglomerates	14	0.04	-0.29	0.58	0.07	-0.72	0.95
		(0.19)			(0.36)		
Services	10	-0.03	-0.16	0.04	0.00	-0.70	0.16
		(0.06)			(0.27)		
Mining	3	0.11	0.00	0.23	0.31	0.06	0.56
		(0.16)			(0.36)		
Construction	17	-0.02	-0.20	0.06	0.03	-0.33	0.32
		(0.08)			(0.17)		
Manufacturing	69	0.08	-0.24	0.86	0.12	-0.74	0.82
		(0.17)			(0.23)		
Telecommunications	7	-0.03	-0.11	0.05	0.06	-0.05	0.20
		(0.06)			(0.10)		

Table 1 presents descriptive statistics (year 1995) for the two performance variables of interest: RETURN ON ASSETS and PROFIT MARGIN ON SALES. Values equal or greater than one in absolute value have been excluded as outliers. Firms are classified as independent, or having bank, family, or group (diversified and not) links. Companies are further grouped according to size and industry. Standard deviation is shown in parenthesis.

Table 2: Descriptive statistics for the period 1990-2000

	ROA		PROFIT	
Period	***Mean***	***Standard Deviation***	***Mean***	***Standard Deviation***
1990	0.07	0.08	0.13	0.14
1991	0.08	0.07	0.15	0.12
1992	0.06	0.07	0.13	0.15
1993	0.07	0.11	0.12	0.15
1994	0.00	0.14	0.01	0.23
1995	0.04	0.16	0.07	0.25
1996	0.05	0.16	0.11	0.24
1997	0.05	0.12	0.14	0.17
1998	0.04	0.12	0.10	0.17
1999	0.05	0.12	0.14	0.16
2000	0.05	0.16	0.13	0.19

Table 2 presents mean values (years 1990-2000) for the two performance variables of interest: RETURN ON ASSETS and PROFIT MARGIN ON SALES. Values equal or greater than one in absolute value have been excluded as outliers.

Table 3: Firm performance and corporate governance arrangements

VARIABLE	RETURN ON ASSETS	PROFIT MARGIN ON SALES
Bank Link	-0.01**** (-1.46)	-0.04** (-1.93)
Family Tie	-0.01**** (-1.50)	-0.03* (-4.47)
Business Group	0.01**** (1.56)	0.02 (1.23)
Diversified Group	0.03* (6.51)	0.07* (3.72)
Small	0.01*** (1.63)	0.00 (-0.09)
Big	0.00 (0.48)	-0.03 (-1.33)
Commerce	0.03 (1.00)	0.00 (0.02)
Conglomerates	0.01 (0.19)	-0.08 (-1.31)
Services	-0.01 (-0.10)	-0.06 (-1.20)
Construction	0.01 (0.36)	0.03 (0.36)
Manufacturing	0.06* (2.36)	0.04 (0.46)
Telecommunications	0.00 (-0.37)	0.05 (0.61)
Productivity (-1)	0.01* (2.70)	0.00 (-0.18)
Foreign Debt (-1)/Total Debt (-1)	0.00 (-0.25)	0.02* (4.71)
Cash Flows (-1)/Total Assets (-1)	0.11* (3.69)	0.30* (5.66)
Leverage (-1)	0.00 (-0.56)	0.00 (-0.41)
Period=1996	0.02* (6.70)	0.04* (16.18)
Period=1997	0.02* (3.61)	0.06* (5.58)
ROA (-1)	0.03* (4.41)	
PROFIT (-1)		0.02*** (1.52)

*, **, ***, **** Significant at 1%, 5%, 10%, and 15% levels, respectively.

The table presents results from estimating a dynamic random effects panel data model, using the Swamy-Arora estimator of the component variances. The reported standard errors are robust to cross-sectional heteroskedasticity. The sample includes data from 1995 till 1997. RETURN ON ASSETS values greater than 0.2 in absolute value are eliminated as outliers, which represent 24 observations. t-values based on standard errors that are robust to cross-sectional heteroskedasticity are in parenthesis.

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Macroeconomic Crisis and Firm Performance

In recent literature much research has been produced regarding the macroeconomic effects of crises, and on how these effects spread to different countries through contagion channels. However, there is a lack of information on the microeconomic repercussions of these crises, particularly for emerging market economies. The book "Macroeconomic Crisis and Firm Performance" brings up additional knowledge on this topic, using as case study the Mexican 1994 currency crisis. We begin questioning if the Mexican 1994 crisis was anticipated or not, under a firm-level perspective. The main result obtained is that Mexican firms were not able to anticipate this currency crisis, or at least that they did not have the flexibility to adjust their capital structure accordingly before the crisis took place. The crisis propagation and effects on Mexican firms are then studied into depth. The main findings show that this currency crisis had generally negative effects on companies' balance sheets, and firms' interconnections evolved in propagation among themselves. In addition, recovery was only partial and gradual, and overall the crisis episode was prejudicial even for surviving firms. Nevertheless, there were some differences in performance, related to firm characteristics such as internal corporate governance arrangements. We conclude that, during the Mexican crisis, having bank links was prejudicial for companies´ performance. On the contrary, during this crisis episode, belonging to business groups contributed to firm performance. An export-orientation showed to have an increasingly positive effect on performance, from pre-crisis to post-crisis periods. From the findings obtained, we derive a number of recommendations in order to reduce companies´ vulnerabilities to future macroeconomic crises.

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