

## Expectations, the business cycle and the Mexican peso crisis

Moritz Cruz,<sup>+</sup> Edmund Amann and Bernard Walters<sup>++</sup>

### Abstract

The 1994-95 ‘Peso’ crisis did not display characteristics which allow it to be easily captured by traditional crisis models. Models based on Minsky’s financial fragility hypothesis offer more persuasive accounts but have been supported by relatively little direct empirical evidence. This paper provides such evidence with particular attention paid to the role of domestic financial liberalisation in the process. Minsky’s hypotheses about the evolution of expectations over the business cycle are tracked using business survey data. In addition, crisis indicators are constructed, reflecting the changing vulnerability of the economy to shocks. The findings support a Minskyian interpretation of the crisis.

*Key words:* Financial liberalisation, Financial crises, Expectations, Mexico.

*Jel classification:* E12, E32, E44, E6.

### 1. Introduction

The Mexican crisis of 1994-1995 has often been described as the first economic crisis of the 21st century. Unlike other recent emerging market economic crises, for example that of Brazil (1999) or even that of Mexico in 1983, the 1994-95 crisis exhibited few of the normal indicators of incipient instability, such as fiscal imbalance or growing difficulties in financing current account disequilibria. For this reason the Mexican crisis (and the subsequent Asian crisis) represented a challenge to established approaches to crisis modelling. Not surprisingly these events induced a vigorous response from economists. The major part of the resulting literature attempted to model the “new crises” through a variety of amendments to the first and second-generation models of Krugman (1979) and

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*Address for correspondence:* Moritz Cruz, Instituto de Investigaciones Económicas, Universidad Nacional Autónoma de México (UNAM), Torre II de Humanidades, 3<sup>er</sup> piso, Ciudad Universitaria, 04510, México.  
e-mail address: aleph3\_98@yahoo.com

<sup>+</sup> Instituto de Investigaciones Económicas, UNAM.

<sup>++</sup> University of Manchester, Economic Studies, Oxford Road, M13 9LP, England.

Obstfeld (1994, 1996). However, a number of alternative explanations have, explicitly or implicitly, employed Minsky's (1982) financial instability hypothesis (FIH) to explain the new form of financial crises in emerging economies (see *inter alia* Grabel 1996a,b, 1999, Lopez, 1997, Kregel, 1998, 2001, De Paula & Alves, 2000, Arestis, 2001, Arestis & Glickman, 2002, Palma, 2003, and Sau, 2003). It is also worth noting that some of the issues arising from the crises in the 1990s were anticipated by Frenkel (1983) in an interesting interpretation of the Southern Cone financial crises of the early 1980s.<sup>1</sup>

A central feature of explanations based on the FIH is the endogenous evolution of expectations in the aftermath of the adoption of financial liberalisation programmes (FLP). The initial application of the policies is hypothesised to induce more optimistic expectations, which generate higher levels of economic activity and subsequent regimes of medium and high growth. However, the interaction between the optimistic expectations of business and the increasingly liberal credit environment generates a structure of financial liabilities which gradually alters the balance of risks facing an economy. This process leads, in the new financially de-regulated environment, to economies becoming increasingly vulnerable to both internal and external shocks, with a crisis ineluctably following.

Although these models provide persuasive accounts of the new form of crisis they have not so far been accompanied by any direct empirical evidence concerning the impact of FLP on agents' expectations and on their evolution over the ensuing cycle. In addition, although these models suggest that the FLP increases the vulnerability of economies to external shocks, this has also not been substantiated with supporting evidence, particularly regarding the risk of suffering a speculative attack. The purpose of

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the present paper is to provide direct evidence, in the case of the Mexican crisis, about how FLP impacted on expectations and on the degree of vulnerability

This paper is set out as follows. Section 2 briefly presents the FIH framework, stressing the role that FLP might have in the evolution of expectations and the further evolution of the business cycle and pointing out its effect on financial innovations (by increasing the supply of domestic credit and extending opportunities to speculate) which in turn trigger a Minskyian crisis that goes from external to domestic conditions. Section 3 presents a range of evidence to substantiate the view that the Mexican crisis of 1994-95 can be understood in terms of Minsky's framework, adjusted for the impact of the FLP. The behaviour of the Mexican economy after the full implementation of the FLP in the late 1980s is presented and shown to follow distinct regimes of growth, until a final collapse. The corresponding evolution of expectations is examined using business survey data, which is shown to move in step with the evolution of the growth regimes. This section also illustrates, using a number of crisis indicators, how, during the upswing, the economy accumulated an ever-riskier profile in terms of the likelihood of suffering a speculative attack. Finally, in Section 4, the conclusions are presented.

## **2. The financial instability hypothesis**

Minsky's FIH has its origins in his close observation of a number of the characteristic features of modern capitalist economies (see Minsky, 1982, 1986). First is the way in which investment in a modern economy is typically financed through the accumulation of debt, which firms subsequently need to service and ultimately discharge. This perspective stresses how firms must hold expectations not merely of future profit but also

of the profile of current and future cash flows relative to the availability and terms on which they expect to be able to obtain further credit from the financial system.

The second observation is that expectations, when not grounded in specific information, are predominantly a function of recent experience, which if sustained, is projected into the future. The consequence of this is that expectations of businesses about their future profitability and cash flow, and of the financial sector about the riskiness of their lending, develop endogenously over the cycle. A lengthy period of steady growth gradually induces more optimistic and finally euphoric expectations.

The third feature that Minsky highlights is the way the rules governing how businesses, including financial businesses, deal with risk, particularly insolvency risk, evolve over the business cycle. In particular, the size of the buffer of cash and credit lines kept to absorb unforeseen changes in cash inflows and outflows (dubbed the margin of safety) is continuously re-evaluated in the light of recent experience and evolving expectations.

The interaction of these essential features, in Minsky's scheme, drives the economy endogenously to a financial crisis. This process is articulated through a schematic classification of how firms order their financial commitments as the business cycle evolves through its characteristic phases. Minsky (1982) defines a hedge unit as a business in which current and prospective cash flows, given its margin of safety, are sufficient to fulfil its contractual commitments. A hedge unit is not easily vulnerable to exogenous shocks, and if a majority of firms can be classified as hedge units, the economy as a whole will display a low degree of financial fragility. In the early part of a business cycle, the medium growth regime, most firms will be hedge units.

However, if optimistic expectations become entrenched some firms will judge that, relative to these expectations and the perceived capacity of the financial system to supply further credit, being fully hedged represents a loss of profitability. These firms raise their borrowing above the level that would allow immediate repayment of principal so that their expectations of the future include an assumption that they will easily be able to refinance their positions. Minsky calls such units speculative because their viability depends crucially on the validation of these expectations. Such firms are evidently more vulnerable to exogenous shocks and as their numbers rise, so does the overall financial fragility of the system. As rising expectations fuel investment and economic growth quickens, the proportion of such speculative units will rise. Finally, Minsky defines Ponzi units as speculative units where liabilities have grown so large that cash flows are insufficient to cover either interest or principal repayment so that firms need to refinance their position continuously with new debt. Such units have no margins of safety and are extremely dependent on market conditions. As more firms become Ponzi units the overall fragility of the system rises, the economy operates in the high growth regime and an exogenous shock is very likely to induce a crisis.

Minsky's FIH is therefore "an investment theory of the business cycle"<sup>2</sup> (Minsky, 1982, p. 95) in which the economy passes through a series of regimes related to firms' margins of safety in which "(T)he mix of hedge, speculative, and Ponzi finance in existence at any time reflects the history of the economy and the effect of historical developments upon the state of long term expectations" (Minsky, 1982, p. 99). Expectations, the business cycle and the degree of financial fragility evolve in a parallel fashion.

Minsky developed his FIH in the context of a US economy, which was largely insulated from the problems generated by changes in exchange rates and capital flows. However, the transfer of his ideas to an open financially liberalised context introduces greater complexity. This is because the external financial conditions now introduce both new sources of finance and of risk. This requires a number of amendments to Minsky's original framework.

In the first place Minsky's classification of units becomes problematic. This is because a firm can resemble a hedge and a Ponzi unit at the same time, depending on whether an internal or external perspective is taken. For example, consider a firm which embarks on a long term gestation project issuing debts repayable in foreign currency. If the firm expects to be able to meet its financial commitments adequately it can be considered a hedge unit. However, the same firm can be classified as a speculative unit, and perhaps even resembles a Ponzi, since it is now more vulnerable to both domestic and external financial conditions (see Arestis & Glickman, 2002). Furthermore, a unit that "borrowed *short-term* in foreign currency to finance domestic long-term assets would also be speculatively financing itself under both of Minsky's criteria: as well as needing continually to roll debts over, it will also be vulnerable to changes in interest rates... [and] to exchange-rate movements"<sup>3</sup> (Arestis & Glickman, 2002, p. 242). The resultant *super-speculative* financing unit may predominate in a financially de-regulated environment. It follows that the regime in which the economy is operating cannot be inferred from the firms' margins of safety in a direct fashion and nor, in addition, is the degree of financial fragility so evident.

Secondly, in an unregulated context, financial innovations extend beyond the frontiers of the economy concerned, increasing access to financing and extending opportunities to speculate (Arestis & Glickman, 2002). Agents will tend to increase their long term financing projects, but there is reason to believe that speculative activities may dominate (see Grabel, 1996a). Speculative transactions validate their profits through the increase in asset prices, and the rise in asset prices will encourage further capital inflows. Agents' expectations may be based mainly on the returns from these activities and, importantly, the stream of these flows is likely to determine the stability of key variables, such as the domestic rate of interest and the exchange rate. A sudden decrease in inflows of foreign capital, for example, would be expected to have a negative impact on the foreign exchange rate alongside a rise in the domestic rate of interest. As a result, in the very short term, even when the trend of foreign capital inflows returns to its former level or capital ceases to flee, a negative shift in agents' expectations might be expected to strengthen because their financial commitments might have been increased considerably, while current and future income flows might be affected negatively. As a consequence, the regime in which the economy is currently operating has the potential to change dramatically, i.e. from the high to the medium growth regime. In other words, the evolution of the business cycle is likely to reflect the waves of flows, resulting in swift movements from one regime to another.

The effect of FLP on financial innovations, particularly the increase in portfolio investment, implies that the economy "becomes prone (i) to a crisis that is domestic in origin but impacts on its external situation... (ii) to a crisis that is external in origin but impacts on its domestic situation... and (iii) to crisis-intensifying interactions between (i)

and (ii)” (Arestis & Glickman, 2002, p. 243). In other words, the FIH provides the framework to understand how speculative attacks lead to a financial crisis.

In case (i), the process that leads to a crisis starts in a typical Minskyian way. For example, a rise in the rate of interest and/or an increase in the price of raw materials or salaries provoke a reversal in the present value of realised and expected returns. A decrease in the expected value of current cash flows may generate increasing series of financial defaults with spreading consequences as *super-speculative* and Ponzi units find it difficult to refinance their debts. Even hedged units will now be speculatively financed ones “in the sense that their debts are denominated in foreign currency whereas their cash flows are not” (Arestis & Glickman, 2002, p. 243). Given the reduction in cash inflows, many firms will now look for liquidity, trying to diversify their portfolio by selling out their positions and buying assets denominated in foreign currency. “The domestic currency will be sold out heavily, triggering an exchange rate crisis” (Ibid). The decrease in the exchange rate will negatively affect the firms’ balance sheets, increasing their debt ratio. Unstable financial fragility will inevitably occur and even with government intervention a crisis will be the likely final result.

The possibility that a crisis develops in case (ii) depends on whether, once the economy is financially open to the global markets, it can be regarded as a financing entity or unit in relation to the external value of its currency. The basic idea is that the central bank accumulates foreign assets, which are reflected directly in the size of its foreign reserves. In this sense, the country concerned can be classified in terms of Minsky’s taxonomy according to the size of its debt-to-international-reserves ratio. When reserves are substantial in relation to debts, the country remains the equivalent of a hedge-



financing unit. However, when “endogenous processes drive up the foreign liabilities, and especially the short-term liabilities... its debt-to-reserves ratio rises and it becomes increasingly doubtful that its authorities will continue to be able to finance the transactions they may be called upon to undertake to protect the exchange rate” (Arestis & Glickman, 2002, p. 244). The country concerned can then resemble a speculative, Ponzi or even a *super-speculative* unit with respect to the world and it is ready to suffer speculative attacks.

It is worth noting that the initial surge in inflows distorts the extent to which the country resembles a hedge or a *super-speculative* unit, and at the same time minimises the importance of the external deficit consequence for the *stability* of the exchange rate. In other words, the imbalances generated by the inflow of capital are not immediately noticed because the stability generated by these inflows has a self-reinforcing effect in the sense that the longer the exchange rate remains stable, the more the markets consider it will remain so, and the greater the funds international investors will be able to commit. The higher the foreign reserves are, the more robust the economy under concern appears (Kregel, 2001, p. 202).

Under weak conditions of policy credibility the domestic currency is highly likely to suffer a speculative attack (see Grabel, 1996a). It will be inevitable if speculators detect any worsening in the domestic conditions or in fundamentals. Under a speculative attack, the authorities will respond by, “hold[ing] back from expanding domestic liquidity in the face of collapsing domestic asset prices and instead raise the interest rates to bolster the exchange rate, bowing to pressures emanating from the international monetary system” (Arestis & Glickman, 2002, p. 244). With an exchange rate devalued and high

rates of interest, agents' balance sheets will be negatively affected, their debt ratios will increase and, if they are unable to honour their debts, will spread a series of defaults. Financial fragility will be high and again, even with government intervention, the final outcome is likely to be a crisis.

In summary, the Minskyian framework suggests that crises emerge endogenously as the outcome of a process in which businesses and financial institutions interact to generate a structure of debt financing with an ever increasing degree of risk. The incorporation of financial liberalisation into this framework suggests that the progression towards financial fragility will quicken, with increased international borrowing exposing firms, in the case of a currency devaluation, to the danger of sharply increased foreign liabilities financed from domestic income streams. Section 3 now discusses the degree to which an evaluation of the empirical evidence supports this Minskyian characterisation in the case of Mexico's 1994-95 Peso crisis.

### **3. Expectations, the business cycle and financial crisis: the Mexican experience**

The Mexican economy has long been one of Latin America's largest, most diversified and sophisticated. Following the revolutionary years of 1910-20 Mexico underwent a period of profound structural change, a process which intensified following World War II as the economy rapidly industrialised and Foreign Direct Investment (especially from the US) flowed inwards on a large scale. Partially as a result of these developments and at least in some part due to its role as an important oil producer, Mexico experienced rapid growth throughout much of the post war period up until the beginning of the 1980s. However, as had become ever more apparent, such growth, based as it was on an inward-

looking industrialisation strategy, could not be sustained without serious external imbalances which in turn needed to be financed by large inward capital flows. By 1983 it was evident that such flows could no longer be maintained and an abrupt process of stabilisation and adjustment became inevitable.

Since 1983, the evolution of the Mexican economy has been conditioned by the perceived need to move away from the old model of import substitution with the emphasis being increasingly placed on openness in trade and investment. The seal was set on this break with the past by the initiation in 1994 of the North American Free Trade Agreement of which Mexico was a founder member. The important point to note in the present context is that Mexico's move towards ever-greater integration into the global economy was associated with an increasingly open and liberal approach to the operation and regulation of domestic financial markets. This was to have profound macroeconomic consequences by the middle of the 1990s.

To begin examining the series of events which culminated in crisis it is worth starting with a review of the evolution of real GDP over the 1980-1995 period. As can be seen in Figure 1, economic growth prior to 1987 was unstable, with marked ups and downs, particularly during the period from 1982 to 1986. Restrained aggregate demand, reflected in low levels of investment (the average rate of growth of gross investment during these years was -6.5%) characterised the period. It can be inferred that expectations were muted or even pessimistic. Growth was also constrained as a result of an unfavourable external environment.<sup>4</sup> However, from 1987 to 1994, conditions markedly improved with GDP following an upward and stable trend. As part of this process, the level of investment rose and so, in tandem, did domestic aggregate demand

(investment increased by 244% and private consumption by 228% during the 1988 to 1994 period).

**<<Here Figure 1>>**

Our brief review of the evolution of Mexican GDP raises the following questions. In the first place, is it possible to argue that during the whole period 1987-1994 the pattern of investment was dominated by improving expectations, which were reflected in an upward growth path? If so, what then caused the marked change in Mexico's trend growth and what were the implications for financial stability? We argue that the stabilisation plan launched officially in December of 1987 resulted in a reversal of negative expectations among both domestic and external investors. Against this optimistic backdrop and in the context of an increasingly open economic and financial environment, Mexico evolved from a medium growth regime to a high growth regime. Though ostensibly successful in terms of its initial impact on growth, the new stabilisation programme marked the beginning of a transition from robustness to financial fragility.

*The medium growth regime*

After the 1986 oil shock and the 1987 run on the peso, President De la Madrid put in place a stabilisation plan in late 1987.<sup>5</sup> The new strategy was based initially on an incomes policy,<sup>6</sup> with the exchange rate as the anchor (the exchange rate was fixed in February 1988). Additionally, the government adopted policies of fiscal and monetary retrenchment aimed at attaining fiscal balance (if not a surplus), which by extension would act as a restraining influence on price formation. The stabilisation plan was

complemented with a privatisation programme, which embraced the banking system. These important policy shifts were coupled with extensive trade and financial liberalisation policies.

The implementation of this series of measures led to a reversal of negative economic expectations among investors. The key factor in this reversal (which sparked the initiation of the “stable” economic period) was the set of excellent initial macroeconomic results achieved after the implementation of the stabilisation plan.

The initial effects of the stabilisation plan saw inflation fall from 159.1% in 1987 to 51.7% in 1988 and further still to 19.7% in 1989. The fiscal deficit, too, began to move in a favourable direction, decreasing from 14.1% of GDP in 1987 to 4.5% in 1989, half of the reduction being achieved in just a single year. The nominal rate of interest in 1987 was 123%, falling to 55.4% in 1988 and reaching 48.7% in 1989. These results, which were accompanied by favourable external conditions, started to change expectations. The latter, in turn, made their effects felt in terms of investment, consumption and growth.

Gross investment registered a sharp increase in 1988, reaching a rate of growth of 11.7%. However, its dynamism diminished the next year when it grew by just 5.7%. Private consumption, on the other hand, moved in the opposite direction; it grew just 1.8% in 1988, but the following year rose by 6.5% (see Table 1). Initially then, investment increased after the stabilisation plan started. However, as is known, the positive investment multiplier effect takes time to make its effects felt, and during 1988 consumption did not fulfil agents’ expectations. This was mainly as a result of the retrenchment policies being applied. In other words, firms did not sell what they initially estimated they would. As a consequence, they halted their investments during the next

year (1989). However, the reality turned out to be that in 1989, due to the multiplier effects of investments made previously, consumption grew extraordinarily quickly. As a result, the rate of economic growth followed the same pattern. Having declined from 1.7% in 1987 to 1.3% in 1988, it rose sharply to 4.0% the next year (see Table 1). In sum, the figures allow us to suggest not only that a change in expectations was under way, but that during the years from 1987 to 1989, the economy was already operating in the medium growth regime.

**<<Here Table 1>>**

In order to confirm that shifts in expectations are taking place, it is important not to rely solely on inferences drawn from observed movements in key macroeconomic variables. Instead, it is vital to gain some understanding of the actual evolution of agents' expectations in a more direct manner. Fortunately, to this end, we have been able to gain access to data generated by the Business Opinion Semi-annual Survey (hereafter referred to as BOSS) conducted by the Mexican Central Bank.<sup>7</sup>

According to the BOSS, in answer to the question of what investors expected business conditions would be for the first semester of 1987, 30% expected they would be “good”, while just 14% considered they would be “bad”. Furthermore, responding to the same question with reference to the second semester, 41% of firms interviewed estimated that business conditions would be “good” and just 8% expected they would be “bad”. Optimistic expectations rose for the first semester of 1988, when 54% of respondents estimated the conditions would be “good” and just 3% considered they would be “bad”. Expectations, however, changed slightly for the second semester of that year. The percentage of investors expecting favourable conditions decreased to 41 whereas the

percentage expecting bad conditions to prevail increased to 5. For the first semester of 1989, most of the interviewees (54%) expected business conditions to be reasonable, while 38% felt that they would be “good” and 8% “bad” (see Figure 2).

On the other hand, in answer to the question whether respondents would alter the level of investment during the first semester of 1987, 36% said they would increase it and almost the same percentage (37%) said they would decrease it while 17% said they would not undertake any new investments. For the second semester of 1987, 42% estimated they would increase investment and 37% said they would maintain it at the same level. For the first semester of 1988, 48% of respondents estimated they would increase investment, while 23% would maintain it constant. However, for the second semester of 1988 there was a notable change in expectations with 34% of the firms estimating that they would increase investment, against 25% expecting to maintain it at the same level and 29% expecting to decrease it. Finally, for the first semester of 1989, 29% of investors said they would decrease investment but the majority indicated that they would increase it or keep it constant. For the second semester of 1989, more than one third of investors, 34%, expected to maintain the same level of investment and 31% said they would increase it. A full summary of these data is given in Table 2.

In sum, an examination of the evolution of expectations in the period immediately following the implementation of the stabilisation plan shows rising confidence in terms of both business conditions and estimates of future investments. Also, the data indicate that alterations in investment closely tracked changes in agents’ expectations. Thus, for example, when optimistic expectations reached their height, in 1988, the rate of

investment was at its highest as well. Equally, during the following year, when expectations were less optimistic, the rate of investment was lower.

**<< Here Figure 2>>**

**<<Here Table 2>>**

In addition to the impact of the stabilisation plan, from 1988 onwards, the Mexican economy for a period also received considerable stimulus from the effects of structural reforms opening up and liberalising the financial sector.<sup>8</sup> As this process unfolded, Mexico started to attract external inflows on an impressive scale.

Initially, due to the economic instability prior to 1988, and the tight monetary policy that characterised the stabilisation plan, both lenders and borrowers were cautious in their willingness to increase advances (or accumulate liabilities) and did not seek to fully tap the potential generated by accelerated capital inflows. Financial institutions adopted tight lending policies while would-be borrowers financed most of their investment requirements from retained earnings. However, as soon as expectations changed (as they did markedly from the first semester of 1989) firms started to borrow from financial institutions. This phenomenon can be observed in the evolution of domestic credit indicated in Table 1. Domestic credit to the private sector increased significantly in just one year, from 11.1% of GDP in 1988 to 15.5% of GDP in 1989. The BOSS again provides some valuable evidence concerning the reaction of the private sector, this time to the increasingly favourable financial market conditions being experienced by the end of the 1980s. During the second semester of 1988, for example, 71% of those surveyed confirmed that they had requested a credit from the domestic



financial system. During the next two semesters of 1989, the picture remained similar, as between 64 and 70% of respondents had registered a request for credit (see Table 3).

This suggests that, not only were firms looking for funds to embark on new projects, but also that the financial system had available the necessary liquidity to lend. This boosted debt-financed investment,<sup>9</sup> something that reinforces the view that the economy was evolving in a Minskyian fashion and, accordingly, beginning to operate in a medium growth regime. As we will see, this swiftly became a high growth one.

<<Here Table 3>>

#### *The high growth regime*

By 1990, the economy was already operating in the high growth regime. The Mexican Central Bank's annual report (1990, p. 1)<sup>10</sup> states in its first sentence: "The main aim achieved during 1990 was, without doubt, the notable improvement in agents' expectations concerning the evolution of the Mexican economy over the short and long term". The report further notes (p. 2). that "This optimistic environment propelled a... significant rise in total investment and a relatively high increase in the pace of economic activity" In other words, according to Mexico's Central Bank, agents thought the future looked exceptional.

The empirical evidence confirms the Central Bank's enthusiasm in a number of respects. In the first place, 1990 represented the fourth consecutive year of economic expansion and was a year in which the rate of GDP growth, at 5%, proved the highest of the entire 1987-94 period. Secondly, other key macroeconomic indicators continued exhibiting very positive trends. Compared to 1989, the fiscal deficit shrank by 2.5% of GDP while over the same period the nominal rate of interest declined to 34.4% p.a. even

though the rate of inflation had risen by practically ten percentage points. Additionally, domestic credit to the private sector continued to rise, reaching 17.4% of GDP in 1990. Banks, for their part, were able to increase lending thanks to large external capital inflows attracted by the implementation of the Brady Plan and the announcement of the forthcoming North American Free Trade Agreement. Furthermore, the external environment was favourable in the sense that it was characterised by a continuous reduction in international interest rates. In addition, the US recession in the early 1990s favourably contributed to increased capital inflows as foreign investors sought more buoyant market alternatives (Ros, 2001). Given these conditions and the passage of further investor-friendly legislation,<sup>11</sup> agents became even more optimistic and this fact was reflected in the marked rate of growth in gross investment and private consumption, which reached 13.1% and 6%, respectively (see Table 1).

The BOSS survey illustrates the extent to which expectations were boosted in the wake of these developments. Figure 2 shows that for the first semester of 1990, the majority of investors (63%) expected “good” business conditions while just 4% estimated they would be “bad”. The expectations data for the next semester proved even more optimistic with 67% of respondents estimating that good conditions would continue. By contrast, only a tiny minority, (3% in fact), considered that conditions would deteriorate. Despite this, 37% of respondents estimated they would decrease investment for the first semester of 1990, whereas between 27 and 24% expected to increase it or maintain it at the same level. During the second half of 1990, the outlook improved further with 31% of respondents estimating they would increase investment while 29% stated that they would

invest at the same level. However, there was no change in the percentage of respondents estimating that they would decrease it (see Table 2).

### *The shift of regimes*

During the critical pre-crisis period from 1991 to 1994 expectations became characterised by disquieting signs of growing uncertainty (see Figure 2). The sense of greater expectational volatility finds its analogue in the unstable pattern of growth registered during these years. In 1991 the rate of growth was 4.1% but two years later it decreased to 1.9% and the following year rose to 4.4%.

In other respects too, macroeconomic performance, though ostensibly creditable, did display underlying signs of incipient instability. For example, the fiscal deficit of 1990 became a surplus in the two subsequent years thanks to the revenues obtained from the privatisation process.<sup>12</sup> However, by 1994 the fiscal position had deteriorated once more with a deficit of 0.03% of GDP being registered. The nominal rate of interest continued its decreasing trend, declining from 24.9% in 1991 to 18.9% in 1994. With respect to investment and consumption, both variables displayed an unstable evolution. In particular, in 1993, gross investment decreased 2.5%, but the following year its growth rate was high and positive, at 8.3%.

This macroeconomic evidence suggests that the economy shifted from the high to the medium growth regime and then returned to the high regime. Which events acted to shape expectations during this period of transition? Among the developments that helped to boost enthusiastic expectations was the signing of the free trade agreement with the US and Canada in 1992, an event which effectively completed an ongoing programme of

trade liberalisation initiated in the mid-1980s. In addition, over a thousand state-owned companies were privatised, a process which embraced the banking system and the telecommunications sector. Initially heartened investors may have been by these developments, nevertheless by 1993-4 they had to contend with other events of an increasingly perturbing nature. These included the deterioration of the US external accounts, growing speculation against the Peso, the increasing Mexican external deficit, the political shock engendered by a regional uprising in early 1994, and, of critical importance, a marked rise in the volatility of external flows.

As will be seen, through their dampening effects on optimistic expectations, the latter developments were to play a crucial role in the financial crisis that arose towards the end of 1994. Still, whether these events would have proven sufficient on their own to precipitate a crisis without the presence of a further structural influence on expectations is open to doubt. It is to this further structural influence, the FLP, that the discussion now turns.

Despite the fact that the Mexican financial system had been subject to a programme of liberalisation, by the early 1990s it still remained underdeveloped by advanced country standards. That is, specialised financial institutions offering competitive services had not developed and long-term financing through securities was restricted to large firms (only recently, in 1998, was a derivatives market opened). These factors meant that Mexico's financial system could be characterised as a (bank) credit-based system in "which the capital market was weak and firms depended heavily on credit for rising finance beyond retained earnings" (Stuart, 1993, p. 291). There is little doubt, then, why the indebtedness of firms increased rapidly with growth, boosting the

vulnerability of the economy to domestic and external shocks with banks preferring to lend short (towards financing and speculation) rather than to longer term investment projects (see Studart, 1993, 1995). In fact, the preference of profit-seeking agents for more profitable and short-term investments increased considerably (portfolio investment, for example, grew by 6159% from 1988 to 1994, while direct investment grew just 287% in the same period).

In sum, there is evidence to suggest that financial liberalisation as it developed in Mexico exercised a critical structural influence on the formation of expectations. With optimistic expectations dominating, the conditions for the subsequent collapse were created because agents reduced their balance sheets' margins of safety, with the number of *super-speculative* units rising. International foreign reserves, for example, reached high levels (US\$25 billion in 1994) meanwhile the amount of debt increased as well, especially short term debts (US\$31 billion in 1994) and also the number of non-performing bank loans increased (they doubled every year from 1990; by 1994 they reached 10% of GDP, see Calva, 1996, and Palma, 2003). Furthermore, the increase in speculative transactions raised the dependence of the economic upswing on the continuation of these inflows. In other words, not only did financial fragility increase substantially but so also did the risk of suffering speculative attacks once negative expectations came to predominate among certain agents.

As events turned out, such speculative attacks were not long in coming as investors, preoccupied by both domestic and external negative developments in 1993 and 1994, came to doubt the government's ability to continue to maintain its macroeconomic policy framework. When foreign currency reserves were depleted in December 1994, the

authorities had no option but to float the Peso and to deal with the drastic consequences for the domestic financial system.

*From financial fragility to a financial crisis*

One of the initial effects of the liberalisation strategy, as has been highlighted, was the surge of capital inflows. These had profound repercussions for the financial system. Banks were flush with money to lend and, as a consequence, domestic credit expanded. Between the inception of the FLP in 1988 and 1994, the year in which the crisis broke out, domestic credit to the private sector rose from 11% to 39% of GDP (see Table 1). As a consequence of the rise in credit availability afforded by rising capital inflows, the tight lending policies of the past were progressively abandoned and there was an increasing underestimation of borrower's risk.

One impact of the relaxation of lending criteria, which was to have serious long term implications, was felt in terms of the increasingly large proportion of bad and doubtful loans in financial institutions' portfolios. According to (Ros, 2001, p. 126-7), "The deterioration of banks' balance sheets is revealed by the increase in nonperforming loans, which rose from a negligible amount in 1990 to about 9 percent of total bank loans in 1994".<sup>13</sup> Thus, the quality of the loans and the creditworthiness of borrowers declined over time, increasing the level of financial fragility in the banking system<sup>14</sup> and non-banking sector. This fact was later confirmed when the financial crisis was coupled with a banking crisis.<sup>15</sup>

To support the contention that Mexico was encountering troubling levels of financial fragility, that is, the ability of the country's public and private borrowers to

fulfil outstanding debts was becoming increasingly precarious, we have calculated two ratios. Following Grabel (1999, 2000, 2003) the ratios have been calculated with the objective of indicating prevalent levels of locational and maturity mismatch. The first ratio comprises the proportion of foreign currency denominated debt to domestic currency denominated debt while the second comprises the proportion of short term debt to long term debt. According to Grabel (2003) if the latter ratio and gross capital formation are rising over time, then this would indicate the emergence of maturity mismatch.<sup>16</sup>

Employing these ratios, Figure 3 indicates that the Mexican economy accumulated a dangerous level of fragility risk during the years under analysis. Panel (a), for example, depicts a sharp rise in the risk relating to locational mismatch. Overall, the trends demonstrate a growing preference among agents to finance projects with debt repayable in foreign currency. This is especially true after 1990 when the implementation of liberalisation policies allowed unrestricted access to external markets. Taking full advantage of Mexico's growing financial openness, during the 1988–94 period, there was a marked increase in firms requesting credits from abroad (Table 3). During the second semester of 1989, just 6% of the firms requested a credit from abroad. By the first semester of 1994 this proportion had increased substantially, reaching 34%. As can be seen, the locational mismatch ratio rises with little variation until the last quarter of 1993. Thereafter, it declines until the first quarter of 1995, when the crisis erupted. In sum, the ratio provides evidence of the high levels of locational mismatch that the economy was accumulating over time.

Panel (b) shows a decided preference among agents to finance projects with long-term debt until 1992; low levels of maturity mismatch dominate up to that year. From 1992 onwards, however, a major change in borrowing patterns is evident and short-term credit becomes increasingly preferred as a mode of financing long-term obligations. The economy then starts to register increasing levels of maturity mismatch, with the latter reaching its highest level in 1994. This finding is further underlined by the fact that the evolution of this ratio matched the evolution of gross capital formation after 1992. Both variables follow the same rising trend and even show similar shorter-term fluctuations. This evidence suggests that at least part of the country's fixed asset base was financed via short-term credit.

**<< Here Figure 3>>**

#### *Speculative attacks*

Given the short-term profit-seeking nature of investors and the prevalent regulatory conditions, specifically, the lack of capital controls, most of the capital surge experienced in the run up to crisis went into financing portfolio activities. This, according to Blaine (1998, p. 32) had the effect of “fuelling a speculative ‘bubble’ in Mexican financial markets”. Foreign portfolio investment increased sharply after 1990. By the third semester of 1993 portfolio investment had reached almost US\$7 billion, representing around 93% of total foreign investment.<sup>17</sup>

In the run up to crisis, speculators found and exploited plenty of opportunities to improve their short-term earnings. Capital inflows remained healthy as foreign investors responded positively to apparently promising economic indicators. However, there was a structural weakness implicit in Mexico's new-found ability to tap the resources of foreign



savers. Most capital inflows were attracted only for relatively short periods. The fact that these inflows could reverse easily, whenever market sentiment changed, only increased the risk of suffering speculative attacks.

To shed some light on the level of risk of experiencing such attacks, we have again constructed a series of ratios in the spirit of Grabel (op. cit.). These ratios indicate the risk of suffering large capital outflows (capital flight) as well as degree of the vulnerability to a collapse in the external value of the Peso (currency risk).

Figure 4, panel (a), shows the ratio of foreign international reserves to private and public foreign-currency-denominated debt and, *pace* Grabel, indicates the extent to which the Mexican economy was encountering flight (lender) risk. This ratio rose, especially after 1990 when the surge in foreign flows accelerated. This reflected confidence among investors regarding the state of the economy based on the well-received policy developments already discussed. However, by the first quarter of 1994, a series of events (see below) had profoundly eroded investor confidence. The ratio sharply reverses itself, as investors start to sell their positions and the inflow of foreign currency starts to decrease.

Figure 4, panel (b), depicts the currency risk ratio i.e. the ratio of international reserves to the accumulated current account deficit.<sup>18</sup> As is evident, the ratio falls over time, although with marked variations, which were basically due to the movements in foreign reserves during the period under analysis. It should be noted that in the run up to the crisis the current account deficit was rising, from a deficit of US\$1.03 billion in the first quarter of 1989 to one of US\$7.9 billion in the third quarter of 1994.<sup>19</sup> This was accompanied by a growing capital account surplus, which allowed not only the current

account deficit to be financed but also facilitated an increase in the volume of foreign exchange reserves. However, as (De Paula & Alves Jr., 2000, p. 590) note, a “larger and growing current account deficit will only be sustainable if equivalent levels of long-term external funding are available, associated with productive investment capable of generating a future flow of exchange rate sufficient to pay outstanding debt”. As we have noted, this was not the case in Mexico since most of the foreign capital inflows were destined for the purchase of short-term, speculative portfolio assets while the bulk of bank lending to the private sector was for the purposes of extending consumer credit.

Since the current account kept deteriorating throughout the whole period, and short-term inflows had continued to be drawn in from 1990, the reversal in external funding from early 1994 left Mexico in a very precarious situation. The large external deficit was no longer *an indicator by which to measure Mexico's economic success*,<sup>20</sup> but was a symptom instead of the perils of the openness strategy adopted. Agents' lack of belief in the government's ability to maintain the peg increased, leaving the economy prone to speculative attacks. The currency risk ratio amply indicates the growing danger in which Mexico found itself. This is especially true after the first quarter of 1994, when the ratio fell from a value of 3.8 to 2.1, with a further fall to 0.82 being experienced in the last quarter of that year.

**<<Here Figure 4>>**

#### *The Minskyian collapse*

From early 1994 a series of political events<sup>21</sup> led to a huge reversal in positive expectations and to the opening up of yawning credibility gap about the ability of the government to maintain in place its economic policies, especially with respect to the

currency peg. In response, investors halted their short-term acquisitions and, furthermore, decided to take their money out. The government, in an effort to stem the outflow, began the dollarization of the stock of domestic government debt with the conversion of its peso-denominated Treasury bill debt (CETES), long-term bonds (Bondes) and, inflation-indexed, long-term bonds (Ajustabonos) into dollar-indexed short-term debt (Tesobonos).<sup>22</sup> At the same time, it increased the rate of interest on Treasury bills. In fact, after the assassination of the PRI's presidential candidate in March, the government increased the CETES rate by around six points, from 9.6 to 15.7%, and spent US\$10 billion defending the peso.

Tesobonos were issued in maturities that were multiples of seven days, but most were ninety-one days. This conversion of the debt had two significant effects. First, it increased the Mexican government's dollar-indexed debt relative to its foreign reserves. By August, the amount of Tesobonos outstanding was roughly equivalent to the stock of international reserves (around US\$16-17 billion). Second, it reduced the average maturity of government bonds from a peak of 306 days in April 1994 to 206 in December 1994 (Ros, 2001). The consequence was a large amount of debt (CETES and Tesobonos) becoming due in 1995. In sum, when speculators realised the impossibility of the government continuing to attract capital, they decided to attack the peso (in March and November) in order to obtain sizeable profits.<sup>23</sup> Their strategy was to liquidate their positions and move their money out to more secure financial centres. The final speculative attack came on December 20 and over the next two days Mexico lost around US\$4 billion in international reserves. On December 22<sup>nd</sup> the Central Bank reported that the peso would be allowed to float freely.

The set of speculative attacks initiated from early 1994 and finishing in December 20<sup>th</sup> impacted on key variables that determined the degree of financial fragility of units' balance sheets. For example, from January 1994 to February 1995, the peso depreciated with respect to the dollar by 82.9% and the interest rate rose from 10.5 to 42.7%, representing an increase of 301.6%. These abrupt movements led not only to the government finding itself in a highly leveraged position, with only a slim chance of covering its short term debts, but to economic agents in general suddenly experiencing an increase in their financial liabilities beyond all expectations. With agents' margins of safety reduced to a minimum or largely breached, the interlinked system of payments broke down and the collapse came as a corollary. Furthermore, due to the policy constraints it had imposed on itself, the government was unable to fulfil its function as lender of last resort. Nor was it able to increase the fiscal deficit. On the contrary, the orthodox macroeconomic measures that had been the order of the day were reinforced, first, with the objective of halting the outflow of capital and, second, with the aim of meeting the conditionality obligations attaching to the bailout received from the US.

Despite the prompt resumption of growth and the remarkably swift adjustment of the external deficit following the 1994 crisis, the domestic financial sector found itself in profound difficulties. In particular, much of the banking system had been crushed under the weight of a mismatch between foreign currency denominated liabilities and peso denominated assets. Seeking to prevent utter collapse, the state engaged in an unprecedented banking rescue package, which eventually led the state owning the majority of the financial system. Thus, ironically, what had begun as an attempt to induce

greater financial liberalisation ultimately culminated in the exact opposite: the reversion of large sections of the domestic financial system into the hands of the state.

#### **4. Concluding remarks**

In this paper we have attempted to provide supporting empirical evidence for a Minskyan interpretation of the Peso crisis. In section 2 an outline of Minsky's theory of financial fragility was presented. This highlighted the way in which expectations, rates of economic growth and the financing of investment evolve over the business cycle. The theory places particular emphasis on how increasing levels of risk arise endogenously from the interaction of business decisions about safe levels of debt and financial institutions' judgements about appropriate levels of lending and of the financial instruments used. This section also highlighted how Minsky's insights can be amended as an economy is opened, following a financial liberalisation package.

Section 3 presented a range of evidence to support this characterisation of the Peso crisis. First, the evolution of GDP was examined. This appears to follow a clear progression of regimes, consistent with Minsky's schema. The behaviour of expectations over these regimes was then analysed using the BOSS data. The BOSS data has not been widely used but provides an important direct source of information about expectations. Its use provides one of the contributions of this paper. The BOSS data substantially confirmed the hypotheses presented in section 2. There is clear evidence of expectations evolving from the regime of medium growth to one of high growth. The instability of expectations in the later period, when growth was high but unstable, is clear. In addition, the ensuing collapse is evident in the data. In this sense, this paper has opened a via

through which the evolution of crises might be empirically proved, particularly in recent crisis-affected economies. Finally, this section tracked the vulnerability of the economy to crisis through the construction of a number of crisis indicators. These show how Mexico evolved from a period of financial robustness to one of increasing fragility and finally instability.

A number of conclusions are supported by our review of the evidence. First, the Peso crisis can be persuasively explained in terms of Minsky's framework. An important finding is that the onset of financial liberalisation in a Minskyan sense proved a key determinant of the transition of the economy to crisis. There are three dimensions to this. In the first place, financial liberalisation, in generating more optimistic expectations among agents, accelerated the movement of the economy from a medium to a high growth regime. In the second place, financial liberalisation, through increasing the access of agents to external sources of capital, raised the pace at which liabilities could be accumulated by the private sector. As a consequence, the speed at which Mexico approached crisis rose significantly. Thirdly, the increasing exposure of agents to foreign currency denominated liabilities itself represents a source of accentuated risk since, in the event of any devaluation, agents' obligations in local currency terms could suddenly expand.

Our analysis differs from the attempts by various neoclassical models to grapple with the complexity of the emerging market crises of the 1990s. In the first place, all the vintages of neoclassical analysis ultimately ground a crisis in macroeconomic fundamentals, which pre-dispose an economy to crisis, with its onset being triggered by a re-assessment of expectations in the light of some exogenous disturbance. In this

paradigm, expectations do not evolve in a dynamic fashion; the financial system is exogenous and there is no analysis of the processes leading up to the crisis in terms of changing financial balances and the behaviour of the financial institutions.

In a Minskian framework, by contrast, expectations evolve in a dynamic fashion, the changing nature of the financial system is an explicit driver of the crisis with its seeds found in the behaviour of the economy during the period of robustness; it is the experience of steady growth which gradually makes expectations more optimistic and alters the behaviour of both firms and financial institutions towards risk, which is reflected in their choices about how investment is financed. In short, in the Minskian world, crises are endogenous to the process of growth and change. This paper has provided evidence to indicate that Mexico's experience during the Peso crisis evolved in a fashion consistent with this Minskian interpretation.

## Endnotes

<sup>1</sup> In this paper Frenkel discusses the relationship between risk and the degree of balance of payments disequilibrium. This has echoes of Minsky's ideas applied to the open economy.

<sup>2</sup> For a presentation of the FIH as a theoretical framework for a three-regime business cycle and for empirical evidence see Cruz (2005 and forthcoming).

<sup>3</sup> An increase in the interest rate has two effects on firms' balance sheets. First, it reduces the present value of the cash flows expected to be earned from operating leveraged financial projects. Second, it increases the cash flow commitments for financing charges when lending is primarily short term or set on an adjustable or roll over basis. For a firm with a large proportion of imported inputs, export sales or foreign borrowing, depreciation in the exchange rate has the same effect on cash flow commitments as an increase in interest rates (Kregel, 2001, p. 197). Furthermore, aggregate demand might decrease (and also current and expected cash flows) as a consequence of fiscal retrenchment and a tight monetary policy applied in order to regain investors' confidence.

<sup>4</sup> Sharp declines in oil prices were registered in the early and mid 1980s and affected drastically Mexico's major source of foreign currency, oil exports. Additionally, in the mid 1980s the world economy underwent an economic slump.

<sup>5</sup> The model was neo-liberal in inspiration, exhibiting, as Lustig (1992, p. 1) puts it, a "tendency...for the market to replace regulation, private ownership to replace public ownership, and competition, ..., to replace protection. Nothing illustrates the change in strategy more vividly than the pursuit of the free market agreement with the United States [and Canada]".



<sup>6</sup> The main goal of this kind of policy is to control and regulate wages and prices. The “Pacto de Solidaridad Economica” (the name given to the agreement reached between the government, business and the labour sector) was the first instrument to attain this objective.

<sup>7</sup> It should be noted that the survey is semiannual and is applied to the manufacturing sector.

<sup>8</sup> A series of domestic financial reforms bolstered yet further the already more positive expectations engendered by the stabilisation plan. The core elements of the FLP comprised a number of elements, the first being the Brady Plan signed in July 1989. The Plan allowed for the cost-effective refinancing of external debt and represented what in essence was a final exit from the debt crisis of the early 1980s. Additionally, starting in 1988, a succession of rule changes relaxed banks’ reserve requirements, while measures granting credit quotas to high priority sectors and imposing interest rate controls were scaled down. Finally, and very significantly, 1989 and 1990 saw the elimination of restrictions to foreign investment in domestic bonds (principally government bonds) and stock markets. (Ros, 2001).

<sup>9</sup> In fact “The amount of loans to the private sector rose from US\$17.6 billion in 1988, to US\$102.2 billion in 1994” (Gil-Diaz & Carstens, 1996, p. 168), an increase of some 480%.

<sup>10</sup> Available at [www.banxico.org.mx/gPublicaciones/FSPublicaciones.html](http://www.banxico.org.mx/gPublicaciones/FSPublicaciones.html) (in Spanish). The document, in fact, contains plenty of statements confirming optimistic expectations gaining ground from the beginning of President Salinas’ administration (late 1988) and their consequent impact on the economic upswing.

<sup>11</sup> In order to give greater security to private sector investors, the Financial Group Law was enacted in July 1990. The law allowed private-sector majority ownership of Mexican banks and initiated the privatisation process. Foreign investment of up to 30% was permitted in Mexican banks.

<sup>12</sup> The government received revenues of US\$12 billion from the sale of commercial banks in 1991-92.

<sup>13</sup> In this respect, Lopez (1997, p.172) stresses that “the deregulation of credit, together with the rise in the multiplier of credit and with the reduction in the share of the safe (government) loans in the total loans of banks, brought about an enlargement in non-performing loans. The share of the latter in the total assets of the banking system grew from less than 1% in 1988 to over 5% in 1994.”

<sup>14</sup> Trigueros (1998) in his study of the impact of capital inflows and investment performance in Mexico points out that “It is to some extent natural to expect that such a rapid increase in bank-issued credit went hand in hand with a poor assessment of the creditworthiness of bank credits”.

<sup>15</sup> In fact, “reported non-performing loans as a share of total loans in the banking sector rose precipitously in 1995—from 7.4 percent of total loans in 1994 to nearly 17 percent by September 1995. By international standards, a banking system with overdue loans of 4 percent is considered to be in a ‘poor’ situation” (Cypher, 1996, p. 453).

<sup>16</sup> See Grabel (2003) for a comprehensive discussion on the use of ratios to measure financial fragility.

<sup>17</sup> Importantly, (Ros, 2001, p. 114) notes that “In the initial stages of the surge (1989 and 1990), inflows involved foreign loans to the private sector and the acquisition of bank

deposits, but the liberalization of the domestic money and stock markets redirected inflows toward government bonds and stocks”.

<sup>18</sup> Grabel (1999, 2003) also proposes the ratio of reserves to total short-term external obligations (the sum of accumulated foreign portfolio investment and short term hard-currency denominated foreign borrowing) as an indicator of currency risk.

<sup>19</sup> It is noteworthy that in terms of recent historical experience, in Latin America and Southeast Asia, the maximum sustainable external deficit to GDP ratio seems to be of the order of 2-3% (depending on circumstances) beyond which international financial markets tend to demonstrate concern (see Thirlwall, 2003). Mexico’s external deficit to GDP ratio was 6.9% in 1994.

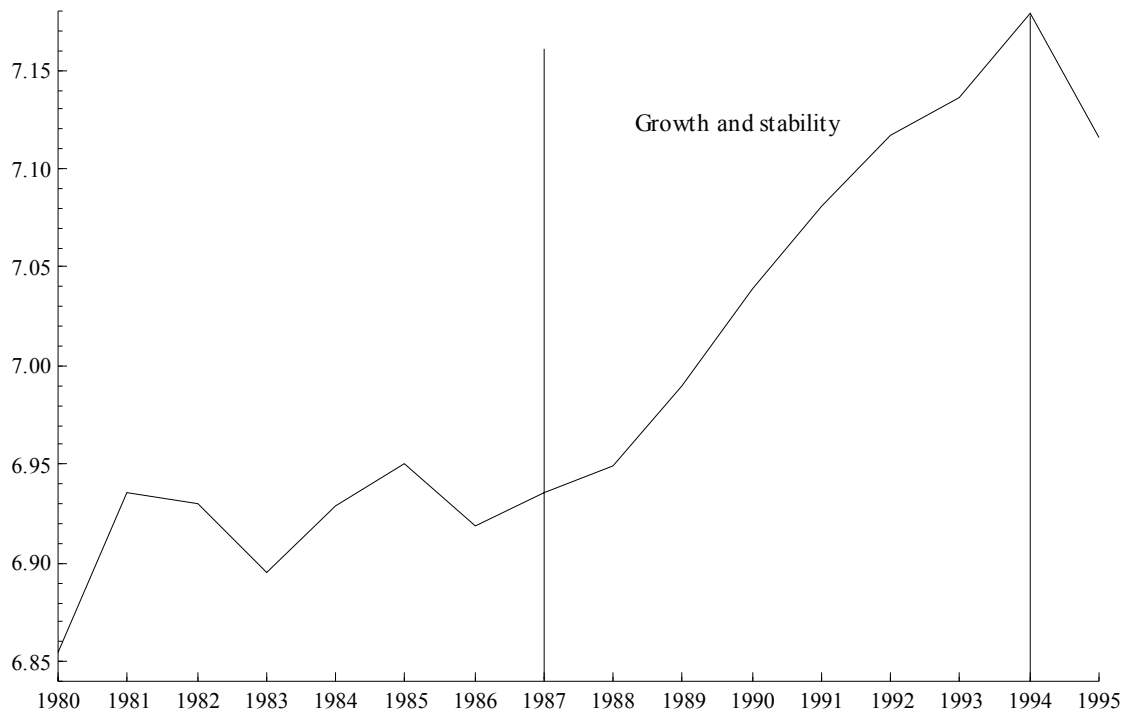
<sup>20</sup> In 1994, and before the crisis, the Governor of Mexico’s central Bank stated “The size of the current account deficit is, in a certain sense, the measurement of the country’s success, not of its failure [...]; the greater the success of Mexico as an attractive country for investment, the bigger the current account deficit will be” (Lopez, 1997, p. 173, fn 12).

<sup>21</sup> These political events included the presidential election, the armed rebellion in Chiapas and the assassinations of the Partido Revolucionario Institucional (PRI) presidential candidate, Luis Donaldo Colosio, and PRI Secretary General, Jose F. Ruiz Massieu.

<sup>22</sup> Foreign investors were the major holders of short term government securities by late 1993 according to Ros (2001).

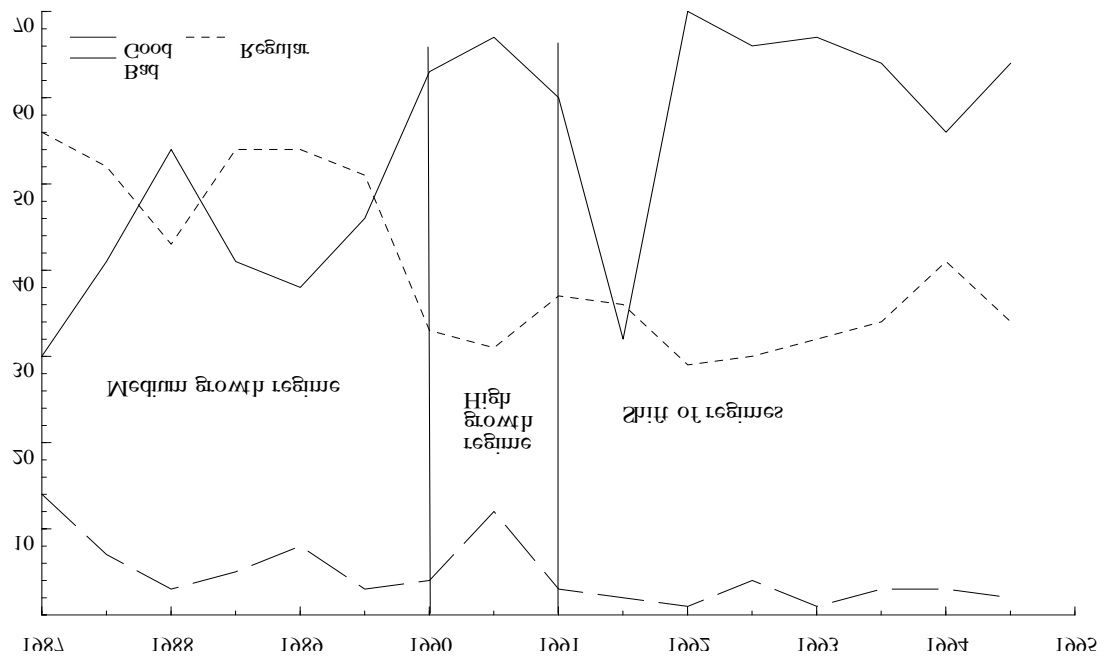
<sup>23</sup> During the last 10 months of 1994 the Central Bank sold roughly US\$19 billion of its foreign reserves.

**Figure 1 Annual Mexican GDP (1993=100), logs, 1980 – 1995**



Source: IMF (2002).

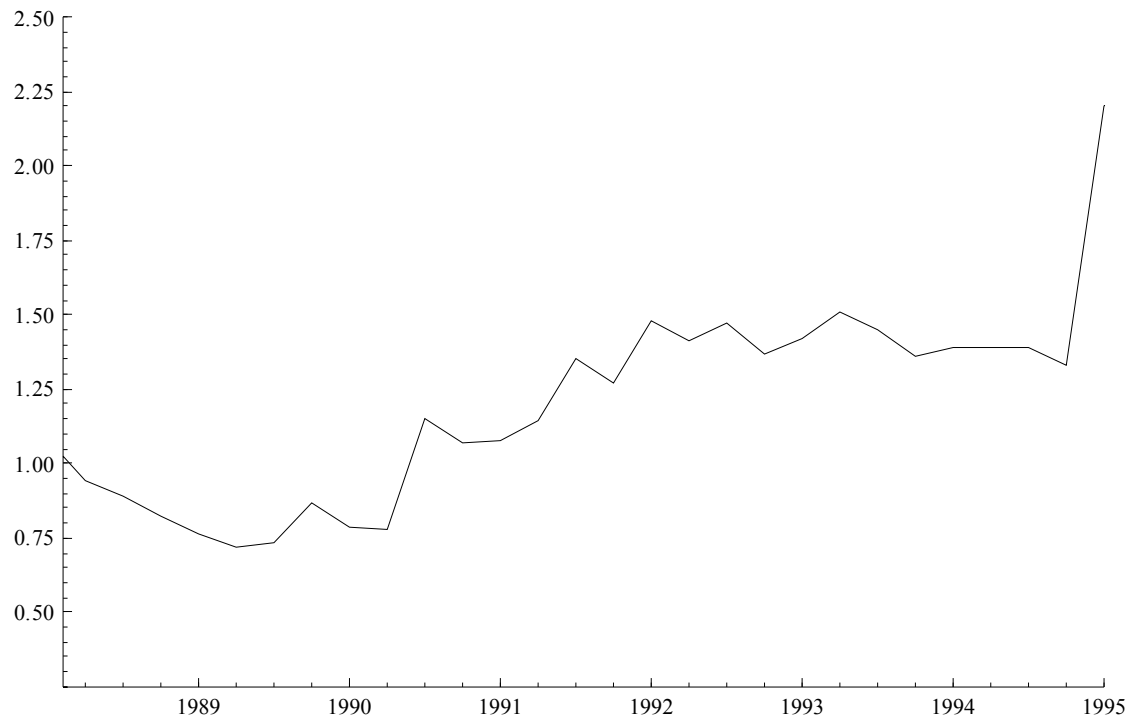
**Figure 2. Evolution of Expectations according to Business Conditions, Percentages, 1987-1994**



Source: Banco de Mexico (several issues), *Indicadores Economicos*.

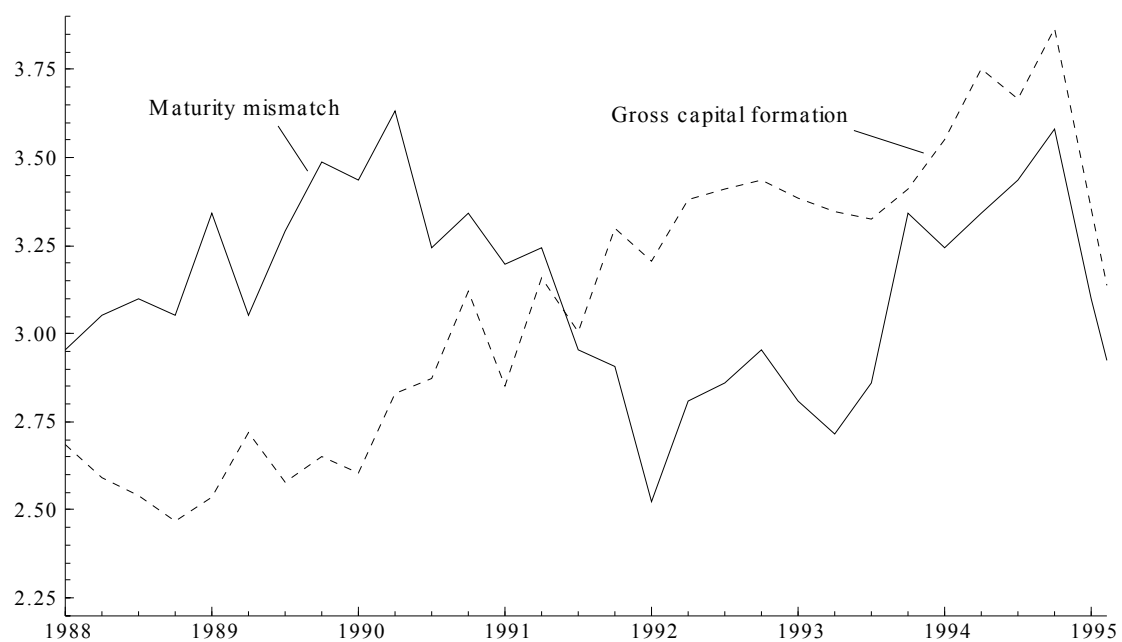
**Figure 3 Fragility risk**

(a) Quarterly locational mismatch, 1988-1995



Source: Own elaboration with data of the IMF (2002).

(b) Quarterly maturity mismatch and gross real capital formation, (1995=100) , 1988-1995

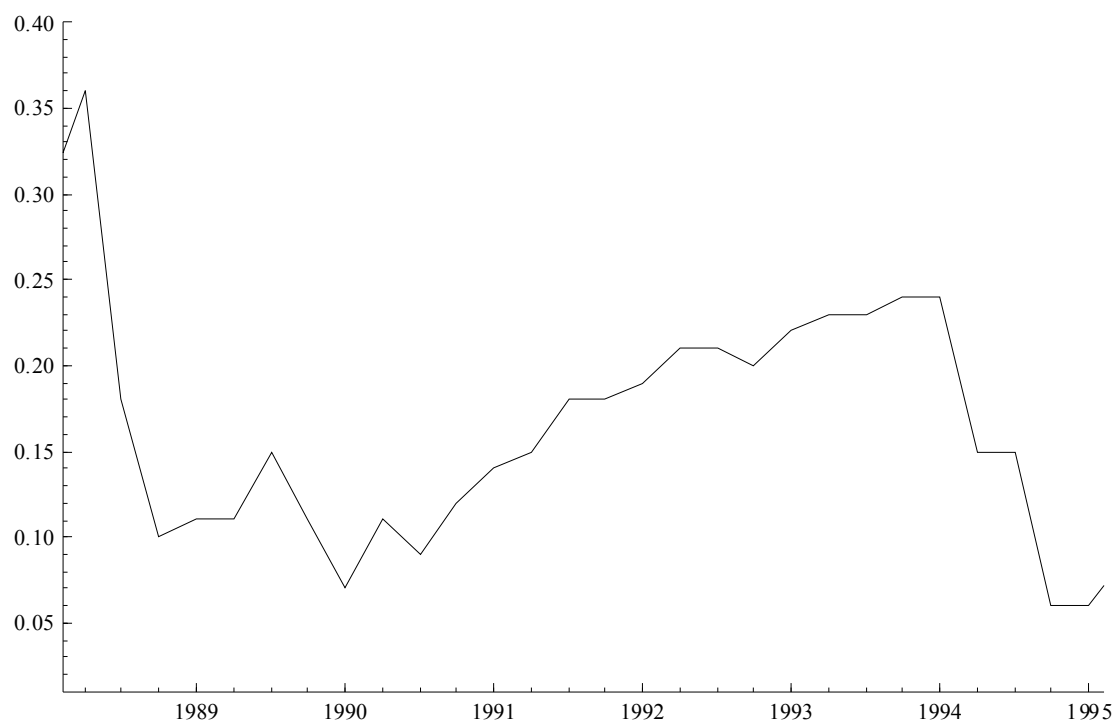


Note: both variables have been adjusted in their mean and range.

Source: Own elaboration with data of the Sistema de Finanzas y Deuda Publica (several issues), Secretaria de Hacienda y Credito Publico and IMF(2002).

**Figure 4 Flight and currency risks**

(a) Quarterly flight (lender) risk, 1998-1995



Source: Own elaboration with data of the *Sistema de Finanzas y Deuda Publica* (several issues), Secretaria de Hacienda y Credito Publico.

(b) Quarterly currency risk, 1989-1995



Source: Own elaboration with data of the IMF (2002) and the Instituto Nacional de Estadística, Geografía e Informática (INEGI), (available at: [www.inegi.gob.mx](http://www.inegi.gob.mx)).

**Table 1 Selected macroeconomic variables**

| Variable   | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995  |
|--|------|------|------|------|------|------|------|-------|
| GDP <sup>1</sup>                                   | 1.3  | 4.0  | 5.0  | 4.1  | 3.5  | 1.9  | 4.4  | -6.5  |
| Gross Investment <sup>1</sup>                      | 11.7 | 5.7  | 13.1 | 10.9 | 10.8 | -2.5 | 8.3  | -29.0 |
| Consumption <sup>1</sup>                           | 1.8  | 6.5  | 6.0  | 4.7  | 4.3  | 1.5  | 4.3  | -8.4  |
| Domestic Credit to the private sector <sup>2</sup> | 11.1 | 15.5 | 17.4 | 20.9 | 28.0 | 31.7 | 38.7 | 29.2  |

<sup>1</sup>Rates of growth; <sup>2</sup> expressed as a percentage of GDP.

Sources: Banco de México, (available at: [www.banxico.org.mx](http://www.banxico.org.mx)) and World Bank, *World Development Indicators*, 2004, CD-Rom.



**Table 2 Evolution of investments according to business conditions, 1987 – 1994**

| Investments                   |                |                |                | Investments                   |                |                |                |
|-------------------------------|----------------|----------------|----------------|-------------------------------|----------------|----------------|----------------|
| I <sup>1</sup>                | E <sup>2</sup> | D <sup>3</sup> | N <sup>4</sup> | I <sup>1</sup>                | E <sup>2</sup> | D <sup>3</sup> | N <sup>4</sup> |
| 1 <sup>st</sup> semester 1987 |                |                |                | 2 <sup>nd</sup> semester 1987 |                |                |                |
| 36                            | 10             | 37             | 17             | 42                            | 37             | 14             | 17             |
| 1 <sup>st</sup> semester 1988 |                |                |                | 2 <sup>nd</sup> semester 1988 |                |                |                |
| 44                            | 28             | 15             | 13             | 34                            | 25             | 29             | 12             |
| 1 <sup>st</sup> semester 1989 |                |                |                | 2 <sup>nd</sup> semester 1989 |                |                |                |
| 36                            | 20             | 29             | 15             | 31                            | 34             | 20             | 15             |
| 1 <sup>st</sup> semester 1990 |                |                |                | 2 <sup>nd</sup> semester 1990 |                |                |                |
| 27                            | 24             | 37             | 12             | 31                            | 29             | 29             | 11             |
| 1 <sup>st</sup> semester 1991 |                |                |                | 2 <sup>nd</sup> semester 1991 |                |                |                |
| 32                            | 32             | 24             | 11             | 48                            | 26             | 21             | 5              |
| 1 <sup>st</sup> semester 1992 |                |                |                | 2 <sup>nd</sup> semester 1992 |                |                |                |
| 30                            | 37             | 27             | 5              | 28                            | 27             | 23             | 12             |
| 1 <sup>st</sup> semester 1993 |                |                |                | 2 <sup>nd</sup> semester 1993 |                |                |                |
| 31                            | 33             | 29             | 8              | 33                            | 35             | 20             | 12             |
| 1 <sup>st</sup> semester 1994 |                |                |                | 2 <sup>nd</sup> semester 1994 |                |                |                |
| 23                            | 33             | 31             | 13             | 24                            | 45             | 18             | 13             |

Notes: All the figures are percentages.

<sup>1</sup> increase ; <sup>2</sup> equal; <sup>3</sup> decrease; <sup>4</sup> nil.

Source: Banco de Mexico (several issues), *Indicadores Economicos*.

**Table 3 Credit requested sector as a % of total requests, 1988 – 1994.**

| Semester | Requested |    | Semester | Requested |    |
|----------|-----------|----|----------|-----------|----|
|          | 1         | 2  |          | 1         | 2  |
| 87-1     | 73        | 9  | 91-1     | 67        | 22 |
| 87-2     | 70        | 8  | 91-2     | 72        | 25 |
| 88-1     | 69        | 15 | 92-1     | 66        | 19 |
| 88-2     | 71        | 10 | 92-2     | 67        | 24 |
| 89-1     | 64        | 8  | 93-1     | 65        | 25 |
| 89-2     | 70        | 6  | 93-2     | 65        | 25 |
| 90-1     | 68        | 12 | 94-1     | 61        | 34 |
| 90-2     | 74        | 17 | 94-2     | 64        | 33 |

Notes: 1 credit requested of the domestic financial credit system; 2 credit requested of abroad.

Source: Banco de México (several issues), *Indicadores Economicos*.

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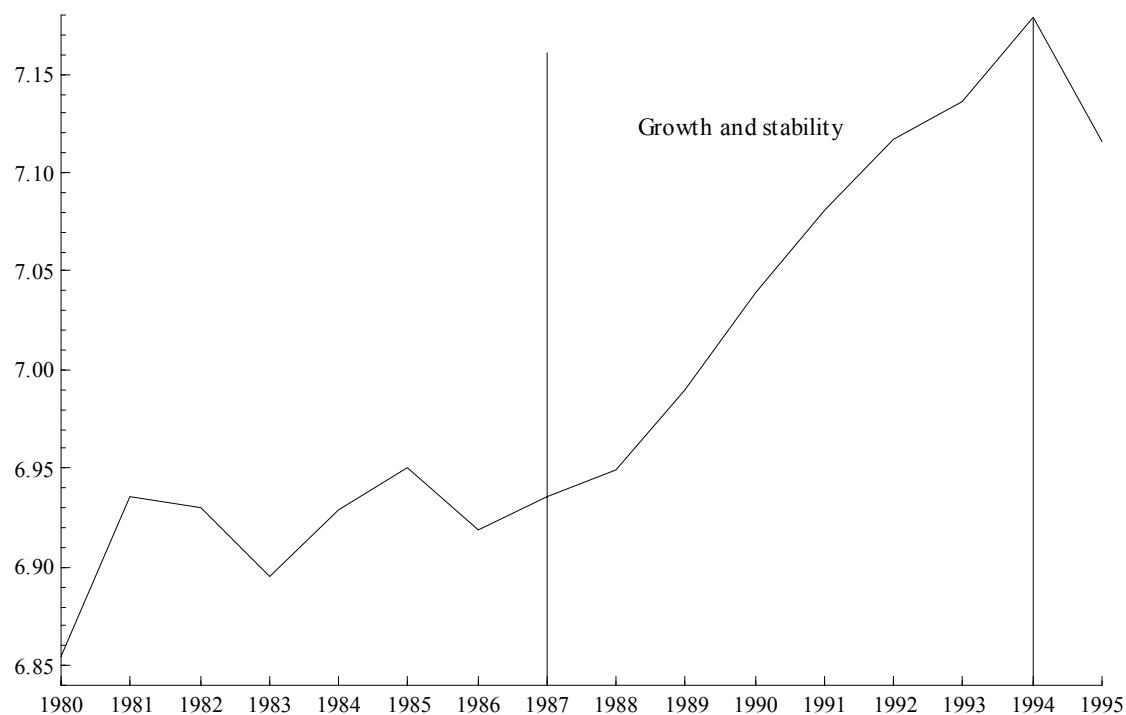
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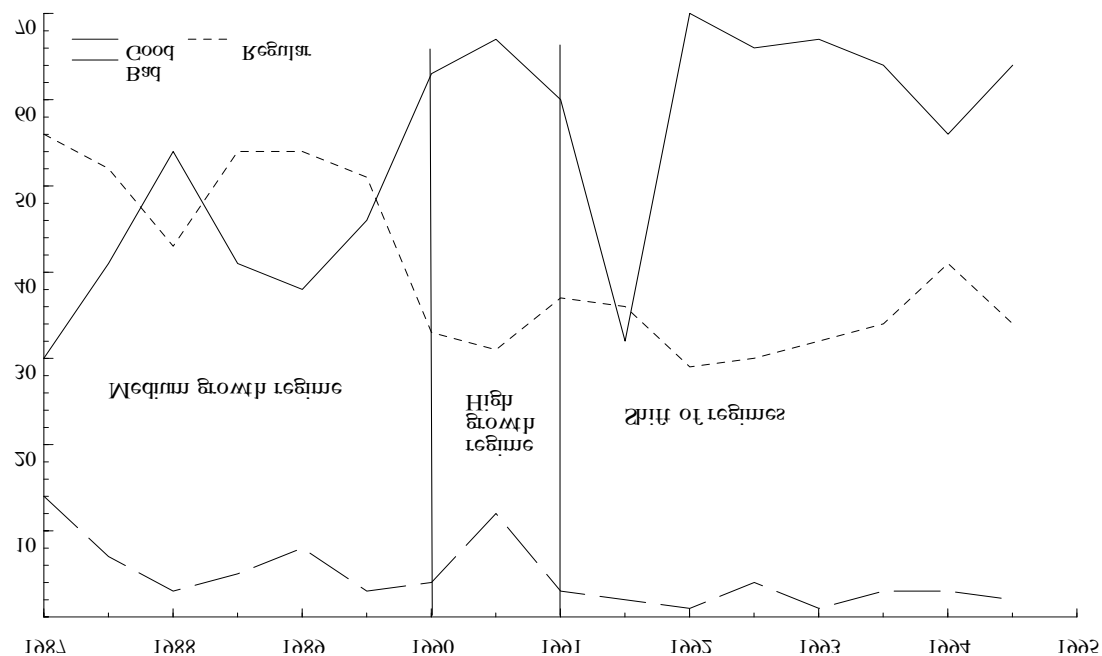
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**Figure 1 Annual Mexican GDP (1993=100), logs, 1980 – 1995**



Source: IMF (2002).

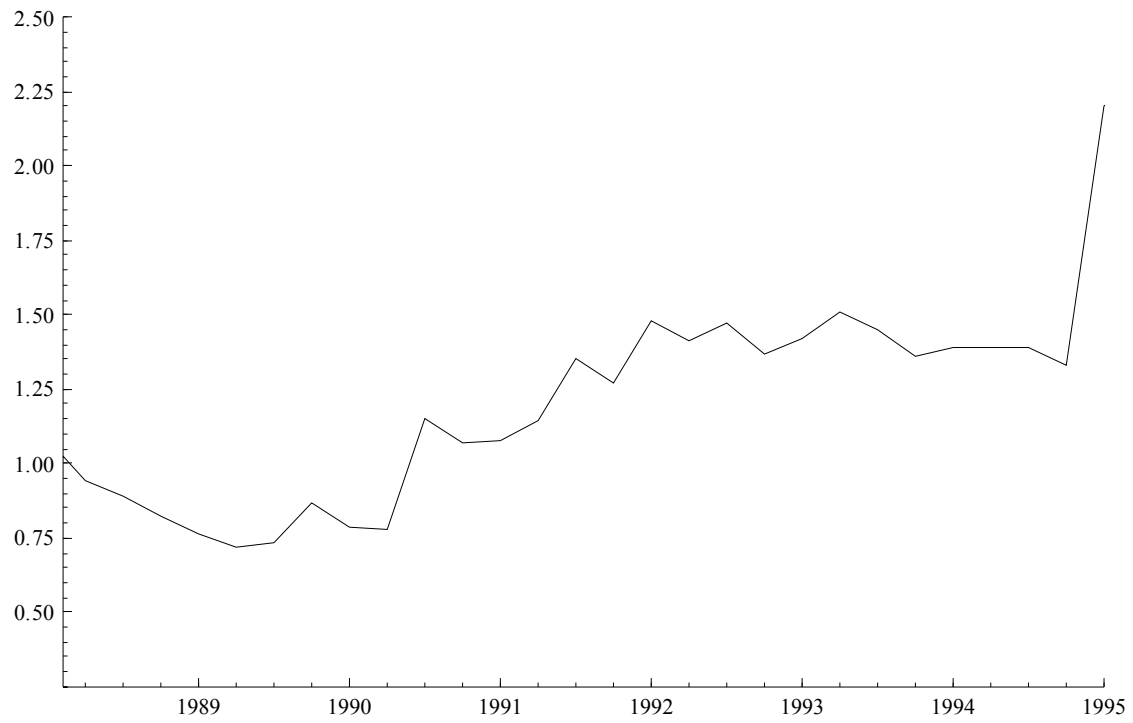
**Figure 2. Evolution of Expectations according to Business Conditions, Percentages, 1987-1994**



Source: Banco de Mexico (several issues), *Indicadores Economicos*.

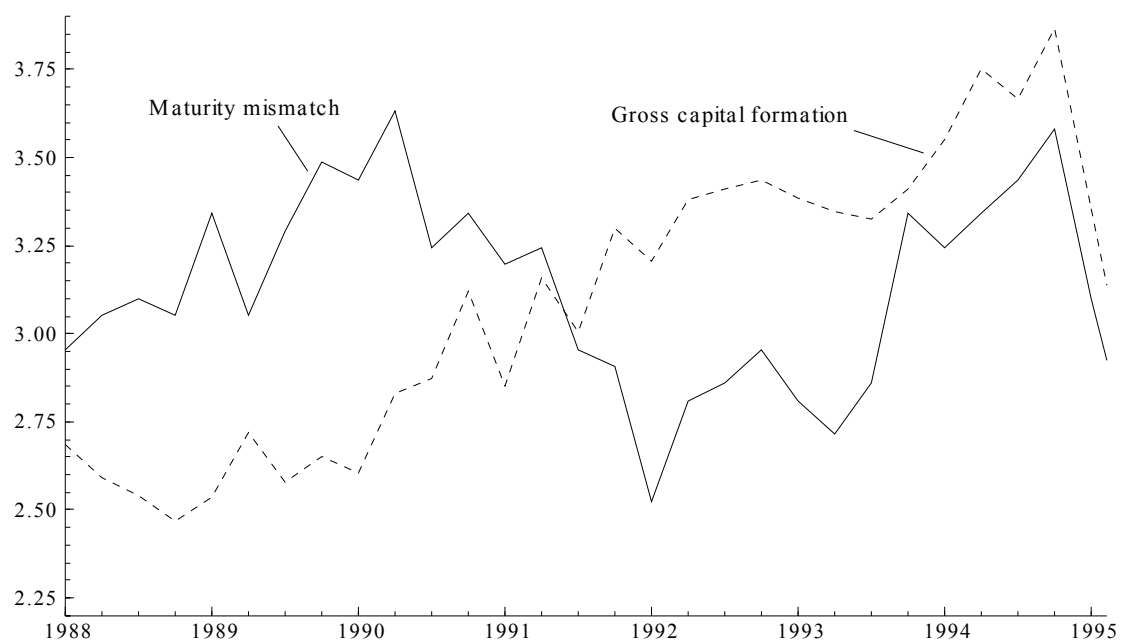
**Figure 3 Fragility risk**

(a) Quarterly locational mismatch, 1988-1995



Source: Own elaboration with data of the IMF (2002).

(b) Quarterly maturity mismatch and gross real capital formation, (1995=100) , 1988-1995



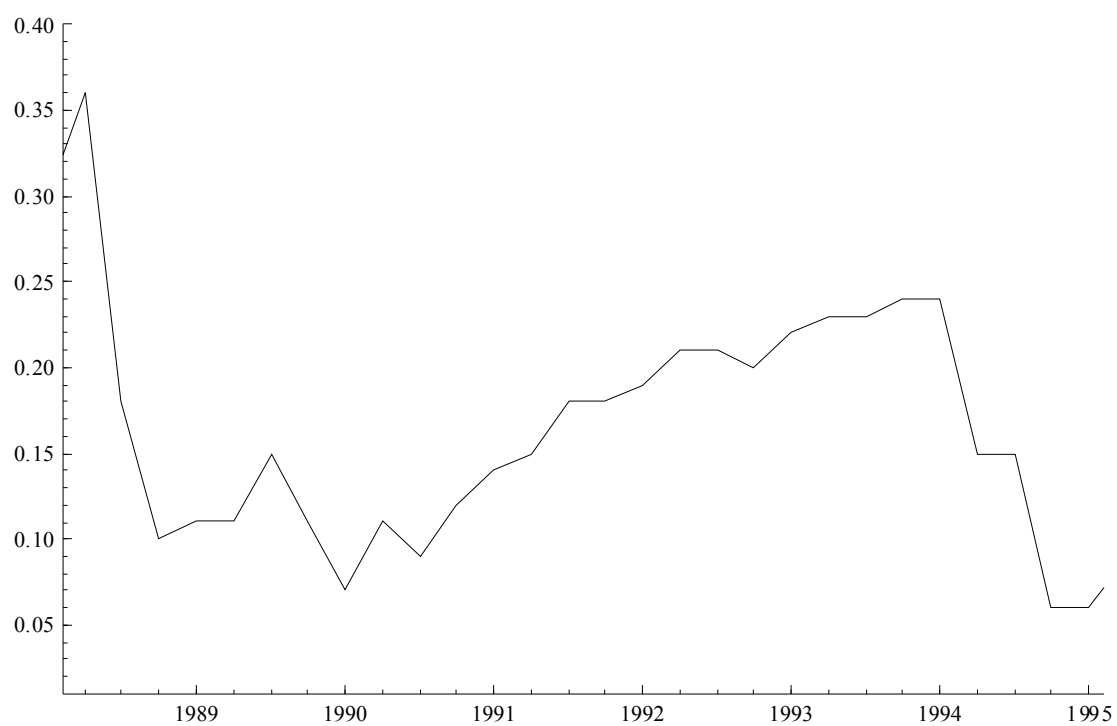
Note: both variables have been adjusted in their mean and range.

Source: Own elaboration with data of the Sistema de Finanzas y Deuda Publica (several issues), Secretaria de Hacienda y Credito Publico and IMF(2002).



**Figure 4 Flight and currency risks**

(a) Quarterly flight (lender) risk, 1998-1995



Source: Own elaboration with data of the *Sistema de Finanzas y Deuda Publica* (several issues), Secretaria de Hacienda y Credito Publico.

(b) Quarterly currency risk, 1989-1995



Source: Own elaboration with data of the IMF (2002) and the Instituto Nacional de Estadística, Geografía e Informática (INEGI), (available at: [www.inegi.gob.mx](http://www.inegi.gob.mx)).

**Table 1 Selected macroeconomic variables**

| Variable   | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995  |
|--|------|------|------|------|------|------|------|-------|
| GDP <sup>1</sup>                                   | 1.3  | 4.0  | 5.0  | 4.1  | 3.5  | 1.9  | 4.4  | -6.5  |
| Gross Investment <sup>1</sup>                      | 11.7 | 5.7  | 13.1 | 10.9 | 10.8 | -2.5 | 8.3  | -29.0 |
| Consumption <sup>1</sup>                           | 1.8  | 6.5  | 6.0  | 4.7  | 4.3  | 1.5  | 4.3  | -8.4  |
| Domestic Credit to the private sector <sup>2</sup> | 11.1 | 15.5 | 17.4 | 20.9 | 28.0 | 31.7 | 38.7 | 29.2  |

<sup>1</sup>Rates of growth; <sup>2</sup> expressed as a percentage of GDP.

Sources: Banco de Mexico, (available at: [www.banxico.org.mx](http://www.banxico.org.mx)) and World Bank, *World Development Indicators*, 2004, CD-Rom.

**Table 2 Evolution of investments according to business conditions, 1987 – 1994**

| Investments                   |                |                |                | Investments                   |                |                |                |
|-------------------------------|----------------|----------------|----------------|-------------------------------|----------------|----------------|----------------|
| I <sup>1</sup>                | E <sup>2</sup> | D <sup>3</sup> | N <sup>4</sup> | I <sup>1</sup>                | E <sup>2</sup> | D <sup>3</sup> | N <sup>4</sup> |
| 1 <sup>st</sup> semester 1987 |                |                |                | 2 <sup>nd</sup> semester 1987 |                |                |                |
| 36                            | 10             | 37             | 17             | 42                            | 37             | 14             | 17             |
| 1 <sup>st</sup> semester 1988 |                |                |                | 2 <sup>nd</sup> semester 1988 |                |                |                |
| 44                            | 28             | 15             | 13             | 34                            | 25             | 29             | 12             |
| 1 <sup>st</sup> semester 1989 |                |                |                | 2 <sup>nd</sup> semester 1989 |                |                |                |
| 36                            | 20             | 29             | 15             | 31                            | 34             | 20             | 15             |
| 1 <sup>st</sup> semester 1990 |                |                |                | 2 <sup>nd</sup> semester 1990 |                |                |                |
| 27                            | 24             | 37             | 12             | 31                            | 29             | 29             | 11             |
| 1 <sup>st</sup> semester 1991 |                |                |                | 2 <sup>nd</sup> semester 1991 |                |                |                |
| 32                            | 32             | 24             | 11             | 48                            | 26             | 21             | 5              |
| 1 <sup>st</sup> semester 1992 |                |                |                | 2 <sup>nd</sup> semester 1992 |                |                |                |
| 30                            | 37             | 27             | 5              | 28                            | 27             | 23             | 12             |
| 1 <sup>st</sup> semester 1993 |                |                |                | 2 <sup>nd</sup> semester 1993 |                |                |                |
| 31                            | 33             | 29             | 8              | 33                            | 35             | 20             | 12             |
| 1 <sup>st</sup> semester 1994 |                |                |                | 2 <sup>nd</sup> semester 1994 |                |                |                |
| 23                            | 33             | 31             | 13             | 24                            | 45             | 18             | 13             |

Notes: All the figures are percentages.

<sup>1</sup> increase ; <sup>2</sup> equal; <sup>3</sup> decrease; <sup>4</sup> nil.

Source: Banco de Mexico (several issues), *Indicadores Economicos*.

**Table 3 Credit Requested by the manufacturing sector as a % of total requests, 1988 – 1994.**

| Semester | Requested |    | Semester | Requested |    |
|----------|-----------|----|----------|-----------|----|
|          | 1         | 2  |          | 1         | 2  |
| 87-1     | 73        | 9  | 91-1     | 67        | 22 |
| 87-2     | 70        | 8  | 91-2     | 72        | 25 |
| 88-1     | 69        | 15 | 92-1     | 66        | 19 |
| 88-2     | 71        | 10 | 92-2     | 67        | 24 |
| 89-1     | 64        | 8  | 93-1     | 65        | 25 |
| 89-2     | 70        | 6  | 93-2     | 65        | 25 |
| 90-1     | 68        | 12 | 94-1     | 61        | 34 |
| 90-2     | 74        | 17 | 94-2     | 64        | 33 |

Notes: 1 credit requested of the domestic financial credit system; 2 credit requested of abroad.

Source: Banco de México (several issues), *Indicadores Economicos*.