

Timing the Mexican 1994-95 financial crisis using a Markov switching approach.

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It is increasingly asserted that recent financial crises have been driven by changes in market sentiment, the latter stemming from alterations in so-called fundamentals. There are, however, few studies aimed at identifying empirically whether this is true. Applying a Markov switching autoregressive model and using the broad money-to-international reserves ratio as the variable that captures market confidence, this paper *times* the start and the end of Mexico's 1994-95 financial crisis. The estimated probabilities indicate that financial panic started since November 1993 and that it ended in May 1995. It is established that the beginning and end of the crisis is associated with a change in private agents' confidence and *not* to *ex post* events, such as the abandonment of the exchange rate or the recovery of the economy led by export growth. The results also indicate that in order to recover agents' confidence, the government had to reinforce its strategy of financial liberalisation. This placed strong limitations on the authorities' room for manoeuvre in setting macroeconomic policy.

Key words: Markov switching autoregressive model; market confidence; financial crises; Mexico.
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1. Introduction

One of the most well-worn arguments within the vast and divergent literature concerning recent financial crises is that they stem from changes in market confidence. Such confidence is held to rest on so-called economic fundamentals and domestic political conditions. As soon as the fundamentals diverge from what may be considered *sound*, so it is argued, the confidence of investors ebbs away causing progressive withdrawals of capital overseas. In emerging economies, such withdrawals can have a devastating impact. Once private agents begin to withdraw capital abroad it consequently becomes increasingly

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difficult to maintain steady growth. When the scale of the withdrawals becomes sufficiently large, in the absence of capital controls, contractions in GDP indubitably follow.

Within this setting, it is conventionally asserted that the start of any financial crisis is associated with the decision to float the exchange rate freely. The end of crisis occurs once the ensuing currency depreciation triggers export growth recovery. On a superficial level, there is some evidence to suggest that such an explanation fits the facts of a range of emerging market financial crises experienced over the past two decades. In the case of Brazil, for example, the decision to allow a float of the *Real* at the start of 1999 became associated with a sharp reduction in foreign capital inflows (Amann & Baer, 2003). The scale of this reduction was so accentuated that only under the auspices of an IMF standby facility was Brazil able to continue to meet its debt servicing obligations. Nevertheless, short run growth performance was very badly affected. At the same time devaluation was associated with severe trauma in the financial system despite the fact that currency floatation had been widely anticipated. Some 2-3 years after the crisis, however the economy had clearly entered a period of recovery, the most notable feature of which was a strong improvement in export performance. The rise in exports was closely tied to the now highly competitive valuation of the *Real*.

More recently, the case of Argentina appears to offer some support for the floatation → crisis → export-based recovery story. At the beginning of 2002, the Argentine Peso was allowed to float freely downwards following the abandonment of a decade-long convertibility plan. As in the Brazilian case, the floatation of the Peso was at first associated with an acute economic crisis with GDP contracting sharply in 2002. The financial sector was among the worst affected and, indeed, suffered far more than its

Brazilian counterpart a couple of years earlier. Subsequently, however, the more competitive exchange rate valuation has helped to induce a sharp increase in Argentinean exports. This has in turn been associated with a healthy recovery in growth performance.

While explanations such as these appear superficially persuasive, the question arises as to whether meaningful conclusions can be drawn from an examination of the real objective facts of an event that has been associated with changes in market confidence, which itself a subjective rather than objective phenomenon.¹ In other words, it is important to draw a methodological distinction between variations in the fundamentals and agents' perceptions of them. One should not presume that alterations in the fundamentals always map in a direct and consistent manner into the evolution of market sentiment. Consequently we propose to adopt an alternative approach, strongly influenced by the seminal contributions of Minsky (1982, 1986). Minsky focuses his analysis on the relevance of expectations in the endogenous evolution of an economy. He argues that, in order to understand how and when financial crises start and end, we need to employ and analyse variables that allow us capture subjective changes in market confidence.

The Mexican financial crisis of 1994-95 provides an ideal setting for an exercise of this nature. The crisis, famously dubbed "the first of the 21st Century", has some similarity with those of Argentina and Brazil in that it eventually entailed floatation and substantial currency depreciation. However, in some regards the Mexican crisis stands apart from its counterparts elsewhere in Latin America or, indeed, Asia. This is to do with the fact that its emergence was linked not to sharp deteriorations of the internal or even the external balance (two key fundamentals), but rather, to the growing exposure of private agents to risk based on their rapid accumulation of debt. As these agents became increasingly overextended, the likelihood that sudden alterations in market perception could trigger

crisis also rose (Cruz, Amann & Walters, forthcoming). In this context especially, we would argue that a proper understanding of the crisis requires a thorough understanding of the shifting pattern of agents' expectations.

The aims of this paper are twofold. In first place the paper sets out to identify *when* financial crises start and terminate. To this end, we propose, in the context of Minsky's financial instability hypothesis (FIH), the broad money-to-international reserves (M2/R) ratio as the variable that can best capture changes in agents' confidence as alterations in economic or political fundamentals occur and affect agents' capacity to service their debts. The second aim of this paper is to identify *which events* contribute to the start and the end of a financial crisis. This enables us to reach some conclusion as to whether financial liberalisation compromised economic policy in the *ex post* sense (Gabel, 1996).

In order to shed light on these issues, we proceed in the following manner. Section 2, which follows this introduction, offers a brief explanation as to why the M2/R ratio is an appropriate means of capturing changes in private agents' confidence in the context of Minsky's FIH. Next, Section 3 briefly explains the MS-AR model and applies it to the Mexican experience. Specifically, we *time* the 1994-95 Mexican crisis, applying a two-regime Markov switching autoregressive (MS-AR) model and presenting the results. Following this, some general and policy-related conclusions are drawn.

2. Minsky's financial instability hypothesis and the M2/R ratio.

Minsky (1982, 1986) approach stresses that we live in a world where investment decisions are formed on the basis of expectations and where expected cash flows to cope with the financial commitments incurred in the investment process can vary. Investment therefore determines the pace of the economy, and is dependent on cash flows and agents' financial

requirements. Cash flows are based on expectations and they vary according to market conditions.² If cash flows are more than enough to satisfy current cash commitments³ then “they are the source of dividends and retained earnings which positively affect long term expectations of banks, firms and shareholders” (Bellofiore & Ferri, 2001, p. 13). Accordingly, cash flow variations affect agents’ balance sheets, leaving them either servicing their debts, embarking on new projects, or defaulting on their debts. Since the economy is an interlinked system — a network of intertemporal, uncertain cash flows — non-payment of debts by one firm to another (especially banks) generates multiple defaults. This succession of defaults may, in certain circumstances, provoke the collapse of the economy.

In this sense, the cyclical nature of an economy is the result of fluctuations in private investment and the endogenous evolution of agents and institutions due to their profit-seeking nature, and to domestic and external conditions. Importantly, this endogenous tendency towards instability is exacerbated in a financially deregulated context, particularly when financial liberalisation is haphazardly implemented and capital controls are removed. This is because some agents are propelled to embark on projects with a long gestation period, issuing short-term debts denominated in foreign currency. This, in turn, increases the country’s vulnerability to sudden and swift endogenous domestic changes or external disturbances (the economy is now more vulnerable to increases in the rate of interest or sudden movements of the exchange rate, see footnote 4).

Right after the Mexican crisis of 1994-95 ended there emerged a surge in interest concerning the causes of currency crises. This interest only increased in the wake of subsequent financial collapses all over the developing world. The literature which has

issued forth has revealed the high importance of the M2/R ratio as an indicator of currency crises. As emphasised by Calvo & Mendoza (1996) “the ratio M2/R is a very good indicator of crises and financial difficulties”. And this is so because it “... captures the extent to which liabilities of the banking system are backed by international reserves...” (Bird & Rajan, 2003, fn. 10, p. 881). In this sense, the larger the ratio, the lower is the ability of a country to weather a speculative currency attack (Calvo & Mendoza, 1996).

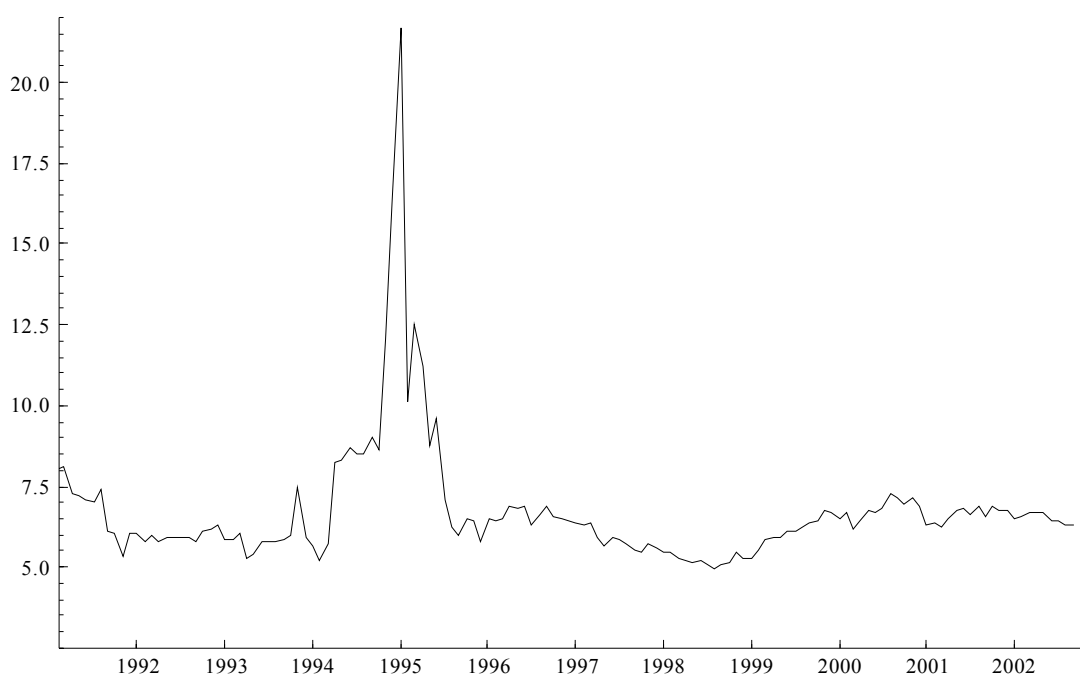
What is important to note is that the ratio not only assesses the potential demand for foreign assets among domestic agents, but that in doing so, it also captures the extent to which agents’ confidence shifts with respect to changes in the fundamentals. Therefore, to a large extent, this ratio is capable of disclosing the intentions of agents to withdraw capital from an economy. This is an intention that is likely to be fulfilled only when no capital controls are in existence. For example, when private agents opt to demand foreign exchange persistently and in large amounts, one likely explanation behind this behaviour is that agents’ expectations are sceptical concerning the capacity of the government to maintain ‘policy credibility’. Such scepticism has typically arisen surrounding the maintenance of a currency peg when no capital controls have been set aside, the recent experiences of Argentina and Brazil being cases in point (Amann & Baer, 2003).

Let us trace through, in the context of Minsky’s FIH, the consequences of a swift change in domestic market conditions (e.g. a devaluation of the foreign exchange rate⁴). If a swift change of this type occurs, agents’ preference to hold a higher proportion of domestic currency (cash) may alter essentially for two reasons. On the one hand, agents will need to exchange domestic currency in order to discharge foreign currency denominated debt. On the other hand, agents will maintain holdings of foreign denominated currency so as to hedge themselves against future downward movements in the external value of the

domestic currency. This may translate into a decreasing level of domestic currency and an increasing demand for foreign currency.

In this sense, during periods of calm, a low M2/R ratio is expected. Meanwhile, prior to, and during a crisis, an increasing domestic currency to international reserves ratio might be expected to prevail. Figure 1 shows that Mexico's M2/R ratio follows the expected pattern prior to (and after) the crisis: from the early 90s to mid 1993 the ratio shows a decreasing and stable trend. This indicates that financial calm dominated. However, between the end of 1993 and 1995 the ratio soared and was very unstable with marked up and downs. This suggests, as expected, that agents' confidence was becoming progressively undermined, a process that led to the onset of financial panic.

Figure 1. Monthly evolution of the M2/R ratio, 1990.1-2002.9



Source: IMF-*International Financial Statistics*, 2002, Cd-Rom.

Importantly, in the same way that the M2/R ratio allows one to identify *when* agents' financial panic started (in the form of withdraws of capital), it also allows to verify *why* and *when* agents returned to financial calm. In this sense, the use of the M2/R ratio enables us to capture the policy measures implemented by the government in the aftermath of the crisis aimed at regaining agents' confidence and stemming capital flight. The argument in this regard is that in order to regain market confidence, the government must implement policies that reinforce the financial liberalisation strategy. In other words, policy autonomy, according to Grabel (1996), as a result of the adoption of a financial liberalisation agenda, can be seen as compromised in an *ex ante* and *ex post* sense. On the one hand, a country's government (especially a developing one) that seeks to attract and maintain external investment inflows (direct and portfolio) as a strategy to boost growth may be from the beginning severely constrained in an *ex-ante* sense. For a government, to create an adequate climate to attract capital, it is necessary to adopt a set of policies aimed at securing investors' confidence and reward. These policies include restrictive monetary and fiscal policies aimed exclusively at price stabilization, maintaining interest and exchange rates higher than otherwise would be preferred and sound public finances, i.e. budgetary balance or surplus. In addition, privatisation programmes and measures to liberalise the economy would be necessities (Grabel, 1996).

On the other hand, in the event of a run of capital or a currency crisis the government could be compelled to adopt reinforcing measures aimed at reversing the outflow of capital. These measures would essentially involve an intensification of the policies initially adopted. Thus, the policy autonomy will be in a state of an *ex-post* constraint, a situation which may be aggravated once the country receives financial support from a multilateral institution (Grabel, 1996). Hence policymakers, once they have implemented a financial

liberalisation strategy, may have little room to manoeuvre. Their ability to reduce or mitigate the risks introduced by the strategy, and therefore to avert a crisis may also be limited. This leaves little or no scope for growth-oriented policies.

3. Timing the 1994-95 Mexican financial crisis

To shed light on whether the M2/R ratio is able to capture the changes that agents' confidence might undergo prior, during and after a crisis and to recognise the policy measures that are necessary to adopt to regain market confidence in this section we apply the MS-AR model (see Hamilton, 1989, 1994). So as to accomplish this we employ the rate of growth of Mexico's monthly seasonally adjusted M2/R ratio (IMF-International Financial Statistics, 2002, Cd-Rom) from 1990.1 to 2002.9.⁵ The reason for choosing this period is that it reflects fully the adoption of the financial liberalisation strategy.⁶ The latter, of course, has frequently been associated with the origin of the financial collapse (see, *inter alia*, Cruz, Amann & Walters, forthcoming).

Assuming (as Coe (2002) does) that the financial sector is at any point either in a regime of financial calm or in one of panic⁷ (the former associated with increased uncertainty), we have established that an adequate two-regime model corresponds to an MSIH(2)-AR(13) schema.⁸ The specification of this model has a shifting intercept and variance terms (MS *Intercept-Heteroskedastic*). Recall that "... for a MSI[*ntercept*] model smoothing and filtering probabilities are less computationally demanding (and therefore much faster) than the statistical analysis with a MSM[*ean*] model" (Krolzig, 1997, p. 126).

The model representation is:

$$y_t = \delta_{s_t} + \sum_{k=1}^{13} \phi_k y_{t-k} + \varepsilon_t$$

where $\varepsilon_t \sim NID(\sigma_{s_t}^2)$ and $s_t \in \{1,2\}$ are generated by a first-order Markov chain. For a first order Markov chain the probability the s_t equals some particular value j depends on the past only through the most recent value s_{t-1} :

$$P\{s_t = j | s_{t-1} = i\} = p_{ij}$$

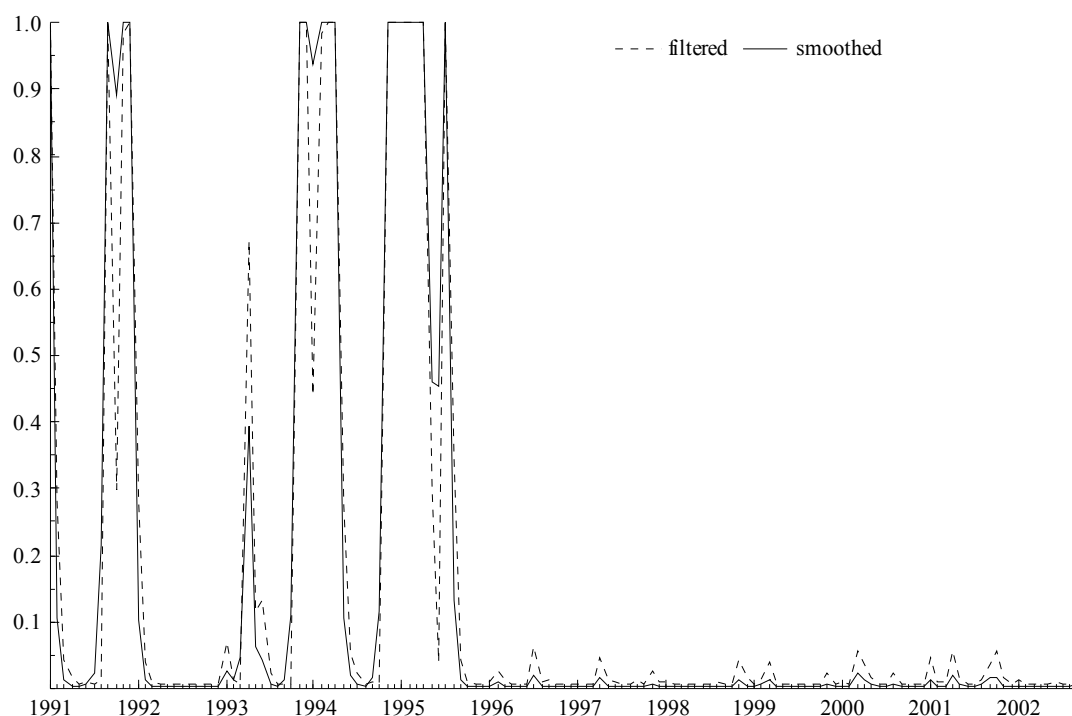
Such a process is described as an N -state Markov chain with transition probabilities $\{p_{ij}\}_{ij=1,2,\dots,N}$. The transition probabilities p_{ij} give the probability that state i will be followed by state j . Note also that:

$$\sum_{j=1}^N p_{ij} = 1.$$

The maximum likelihood estimation of the model is based on an implementation of the expectation maximization two-step algorithm proposed by Hamilton (1989). The estimations reported herein were carried with the MSVAR class for Ox (see Krolzig, 1998).

Figure 2 shows the estimated filtered and smoothed probabilities of the regime of financial panic. If the disruptions of the financial sector during the period under analysis can be thought of as a shift to a regime of financial crisis, this should be reflected in the smoothed and filtered probabilities. More specifically, one would expect to see a probability close to one assigned to the financial panic regime during periods in which agents' confidence changed (Coe, 2002).

Figure 2. Probabilities of Regime of Financial Panic



As we can see, the probabilities suggest that there are three marked periods in which financial panic dominated. However, the first period, which spans during the last quarter of 1991 (see Table 1), is the result not of (negative) changes in the fundamentals (1991 was one of the most successful years in terms of economic growth since trade and financial liberalisation reforms were adopted⁹) but of an atypical increase in M2 due, as Mexico's Central Bank (1991, p. 9) points out, to the substantial rise (by 157.7 per cent) of M1. This was a consequence of the boom in checking account deposits.¹⁰

Table 1. Financial panic regime classification

Period	Probability
1991:9 - 1991:12	0.9726
1994:11 - 1995:4	1.0000
1995:7 - 1995:7	1.0000

Regarding the second period, the probabilities are consistent with the assertion that the change in the domestic conditions (and the change in market sentiment) began in early 1994, due to the *Zapatista* army rebellion in January. However, as can be seen, from November 1993, the probabilities started to increase, reflecting the financial sector's initial uncertainty about domestic conditions. One of the events that kept the probability of panic high was the assassination of the Partido Revolucionario Institucional (PRI) presidential candidate, Luis Donaldo Colosio, in March. These events had two main negative reinforcing effects.

The first was a speculative currency attack in March. As a consequence, from March to April international reserves fell around US\$6 billion. The exchange rate band then was loosened by around 4 per cent, driving the exchange rate from \$3.11 pesos/dollar in January to \$3.27 in April.¹¹ The second negative event was the continuous increase in the domestic rate of interest, putting pressure on the cost of agents' debts. According to the probabilities classification, the economy re-established itself in the calm regime in May, suggesting that the measures taken by the authorities were, to some extent, successful in restoring agents' confidence.

This calm, however, lasted only six months, as once again, political events – this time the assassination of the PRI Secretary General, Jose F. Ruiz Massieu in September – dented agents' confidence. Also, economic imbalances contributed to the undermining of

agents' confidence: Mexico's level of current account deficit and short term external debt were high by international standards standing at 6.9 per cent and 9.2 per cent of GDP respectively. Taken together, these factors led to another speculative attack in November. International reserves fell by around US\$5 billion in just one month, falling by another US\$6 billion the following month. It is in November, precisely, when probabilities shifted once again from (still) low values to unity. And it was in this month when, we argue, the crisis started and not on December 20, when the exchange rate peg was abandoned.

Table 2 supports the above evidence. It shows that the transition probabilities from the panic regime to the calm regime (and vice versa) are high. This indicates the fact that agents' confidence was likely to shift very rapidly and that, in the context of free mobility of capital, the final upshot was likely to be a financial crisis.

Table 2. Estimated transition probabilities of the MSIH(2)-AR(13)

	p_{iP}	p_{iC}	Duration
Panic Regime	0.7434	0.2566	3.90
Calm Regime	0.0383	0.9617	26.12

When and why did confidence return to the financial sector? The fact that the crisis lasted until May of 1995 (when probabilities of the financial panic regime became negligible again) seems to suggest that financial calm gained hold once more with the stabilisation of the exchange rate and the decline in the domestic rate of interest. These improvements stemmed from three main economic measures, all of which were announced during the beginning of 1995 and which were exclusively aimed at regaining investors' confidence. First, during the early days of January, and again in March, the government promised to reinforce the economic policies recommended by the liberalisation agenda, that

is, to continue the process of financial and trade deregulation as well as the adoption of a tighter monetary policy and the reinforcement of fiscal retrenchment.

Second, the government guaranteed to honour outstanding debts. This was done thanks to the massive financial bailout (around US\$50 billion) provided by the US government. In early January the US government announced an initial bailout for Mexico of around US\$15 billion and the IMF offered an additional US\$2 billion. Later, in mid-January, when the crisis was deepening, the US government increased the bailout to US\$40 billion and in early February it offered US\$50 billion. However, it was not until the 22nd of that month that the bailout was approved by the US President. Finally, a federal insurance savings fund was created (this instrument was known as the FOBAPROA). This measure was taken essentially to rescue from bankruptcy several banks that were unable to discharge their foreign currency denominated debts. In sum, the return of agents' confidence and the beginning of the end of the financial crisis began in May of 1995 and *not* when exports recovered. The restoration of agents' confidence took six months, though, as Figure 1 indicates, another short-lived panic was registered in July. All this evidence is further supported by Buirra (1999) who notes that "the Mexican recession was deep, but it was also brief, thanks to the structural reforms undertaken in Mexico... and to the Mexican government's determination to pursue the IMF-supported economic recovery program" (p. 7).

The above facts suggest that the Mexican government was indeed policy compromised in the *ex-post* sense and that in order to control the crisis or regain investors' confidence in the aftermath of the collapse it had to reinforce the measures initially applied, when the financial liberalisation strategy was fully adopted in 1990. This did not leave

scope for growth-oriented goals. It can be argued, therefore, that Mexico lost a unique opportunity to change its economic strategy and return to a pro-growth path.

4. Conclusions

This paper analysed the experience of Mexico in 1994-5 as it underwent what has often been termed “the first economic crisis of the 20th Century. The crisis was distinct in that its foundations rested more upon the accumulation of private sector liabilities than on “conventional” fiscal or current account disequilibria. Rather than modelling the crisis in terms of a link between the evolution of *ex post* fundamentals and changes in agents’ behaviour, our analysis has followed an alternative, Minskyan path. Our analysis sought to ground itself on an examination of the impact of agents’ subjective expectations. Applying a two-regime MS-AR model, we showed that the beginning and end of a financial crisis is associated with an alteration in private agents’ confidence linked to economic and/or political changes that could *not* be characterised as *ex post* events. Thus, we find that the evolution of financial crisis was little affected by the key *ex-post* events of the Mexican Crisis. These were the abandonment of the exchange rate anchor and the eventual recovery of the economy led by export growth.

Our estimated probabilities suggest that the Mexican crisis started in November of 1994 with the second speculative attack of that year and not in December 20, when the exchange rate was allowed to float freely. The financial panic lasted six months, until May 1995, when financial calm was restored again. The return of calm was a direct consequence of the economic measures that the government took during the early months of the collapse. These measures were aimed explicitly at regaining investors’ confidence and centred on

reinforcing financial liberalisation. Ironically, it can be argued that it was the very presence of financial liberalisation which had predisposed the Mexican economy to crisis in the first place.

These findings have more general implications both in a policy sense and in terms of crisis modelling. Regarding the former, it is clear that once an economy adopts a strategy of financial liberalisation, policy autonomy is sacrificed in the interest of maintaining investors' confidence. This renders difficult or perhaps impossible the pursuit of a conventional growth-oriented strategy. The final result is that even when the economy is able to overcome the financial panic, its growth is likely to remain at low levels. This is particularly true where there has been a failure to implement systemic supply-side policies aimed at boosting non-financial sector competitiveness. In the same vein, our findings support the hypothesis that the presence or absence of capital controls might be fundamental in triggering or averting a financial crisis. Regarding crises modelling, the evidence presented in this paper makes it clear that the effective analysis of crises requires that much more attention be paid to the measurement and examination of market expectations. Alterations in market fundamentals do not necessarily alter expectations in a smooth, consistent or predictable manner. We have argued, therefore, that the incorporation of a variable for expectations, in this case the M2/R ratio, is a vital part of the modelling exercise.

Notes

¹ For example, Obstfeld (1994) in describing his second generation-currency model argues that the reason for governments resisting speculative attacks depends on what he calls endogenous variables. These endogenous variables are basically the market expectations of depreciation, i.e. economic agents, in the past, expected the domestic currency would be depreciated at some time and/or they now expect it will be depreciated in the future (see Alves Jr., Ferrari & De Paula, 2000).

² For example high or low levels of aggregate demand and the cost of credit.

³ Cash commitments are created at the same time that investment is made.

⁴ It is important to highlight that an increase in the interest rate has two singular effects on agents' 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 firms 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).

⁵ The monthly growth rate is calculated as $100 \cdot \ln(y_t/y_{t-1})$. The ADF statistic test for the test of the null hypothesis that a series is I(1) against the alternative that it is I(0) around a constant is -13.08 This implies a rejection of the hypothesis that the growth rate of the seasonally adjusted M2/R follows a random walk at the 1 percent level.

⁶ Mexico initiated a financial deregulation strategy from 1977 which was intensified in 1988. However, it can be argued that only in 1990 that the strategy of financial openness was fully launched. In March 1989 the Brady Plan to refinance the external debt was announced and in July it was signed. There followed a succession of measures to relax or

abolish bank reserve requirements, credit quotas to high priority sectors and control over interest rates were implemented. The elimination of restrictions governing foreign investment in domestic bonds, most government bonds, and the stock market took place in 1989 and 1990. In order to give security to investors, the Financial Group Law was announced and passed in July 1990. The Law allowed private-sector majority ownership of Mexican banks and initiated the privatisation process. Also, foreign investment in banks was permitted at a level of up to 30% of total equity (Ros, 2001).

⁷ Coe (2002) proceeds in a different way by applying a Markov switching model in its multivariate form (MS-VAR) to make inferences about the timing of the 1930 US financial crisis. He employs monthly data from 1919 to 1941 concerning the rate of growth of the deposit-currency ratio and a proxy for the cost of credit intermediation (defined as the yield spread of corporate bonds rated Baa by Moody's, and the yield of long-term government bonds). The former is expected to be low during the years of the crisis due to the withdrawal of money; the latter is expected to increase during the crisis as a consequence of the rise in the cost of credit intermediation.

⁸ The Akaike Information Criteria (AIC) was used to select the lag order.

⁹ In 1991, for example, Mexico's GDP grew 4.1 per cent and other macroeconomic indicators (like inflation, the fiscal deficit and the nominal rate of interest) also exhibited an improving trend. The optimism that had prevailed since 1990 was enhanced by the announcement of the forthcoming NAFTA agreement with the United States and Canada. During this period, Mexico received large amounts of capital inflows (by 1992 it was the world's second largest emerging market).

¹⁰ It is worth noting that using quarterly data, the MS-AR does not capture this substantial increase.

¹¹ Since 1988, as a part of a stabilisation programme, Mexican authorities had implemented a crawling peg exchange rate system.

References

- Alves Jr., Ferrari, A. and De Paula, L. "The Post Keynesian critique of conventional currency crisis models and Davidson's proposal to reform the international monetary system." *Journal of Post Keynesian Economics*, 2000, 22, 207-225.
- Amann, E. and Baer, W. "Anchors away: the costs and benefits of Brazil's devaluation". *World Development*, 2003, 31, 1033-1046.
- Banco de México. *Resumen del Informe Anual*. México, 1991.
- Bellofiore, R. and Ferri, P., eds. *Financial fragility and the investment in the capitalist economy. The legacy of Hyman Minsky*. Vol. I, UK: Edward Elgar, 2001.
- Bird, G. and Rajan, R. "Too much of a good thing? The adequacy of international reserves in the aftermath of crises." *World Economy*, 2003, 26, 873-891.
- Buira, A.. "An alternative approach to financial crises". *Essays in International Finance*, Princeton University, 1999, 212.
- Calvo, A. and Mendoza, E. "Mexico's balance-of-payments: a chronicle of a death foretold". *Journal of International Economics*, 1996, 41, 236-264.
- Coe, P. "Financial crisis and the great depression: a regime switching approach". *Journal of Money, Credit, and Banking*, 2002, 34, 76-93.
- Cruz, M., Amann, E. & Walters, B. "Expectations, the business cycle and the Mexican peso crisis". *Cambridge Journal of Economics*, forthcoming.
- Gabel, I. "Marketing the third world: the contradictions of portfolio investment in the global economy". *World Development*, 1996, 24, 11, 1761-1776.
- Hamilton, J. "A new approach to the economic analysis of nonstationary time series and the business cycle". *Econometrica*, 1989, 57, 357-384.
- Hamilton, J. *Time Series Analysis*. USA: Princeton University Press, 1994.

- Kregel, J. "Yes 'it' did happen again. The Minsky crisis in Asia" in R. Bellofiore and P. Ferri, eds., *Financial fragility and the investment in the capitalist economy. The legacy of Hyman Minsky*. Vol. II, UK: Edward Elgar, 195-212, 2001.
- Krolzig, H-M. "Econometric modelling of Markov-Switching Vector Autoregressions using MSVAR for Ox". Institute of Economics and Statistics and Nuffield College, Oxford University, 1998.
- Krolzig, H-M. *Markov-switching Vector Autoregressions. Modeling Statistical Inference, an application to the business cycle analysis. Lecture Notes in Economics and Mathematical Systems 454*. Berlin: Springer-Verlag, 1997.
- Minsky, H. *Inflation, recession and economy policy*. Great Britain: Wheatsheaf Books, 1982.
- Minsky, H. *Stabilizing an unstable economy*. USA: Columbia University Press, 1986.
- Obstfeld, M. "The logic of currency crises." *Cahiers économiques et monétaires*, 1994, 43, 189-213.
- Ros, J. "From the capital surge to the financial crisis and beyond: the Mexican economy in the 1990's" in *Financial crises in "successful" emerging economies*, R. French-Davis, ed. USA: ECLAC-Brookings Institutions Press, 107-140, 2001.