

Chapter 2 Literature Review

The Asian financial crisis in 1997 and the Mexican crisis in 1994 have given rise to a renewed interest in the field of predicting exchange rate crises. A flurry of articles has come out from the world's premier authority on currency crises matters, the IMF.

Graciela Kaminsky, Saul Lizondo and Carmen Reinhart (1997) carried out a study on the use of economic indicators to construct an early warning system to predict a currency crisis. The writers proposed a signals approach whereby a number of economic indicators were monitored to detect any systematic behaviour pattern prior to a crisis. A set of indicators was identified. Exceeding a threshold level, would issue a signal and the signals would be collectively evaluated to predict a possibility of a crisis occurring. Gerardo Esquivel and Felipe Larrain (1998) carried out a formal empirical analysis of the determinants of currency crises for 30 countries over a 2-decade period. The writers also gave a detailed discussion on defining currency crises for the purpose of carrying out quantitative studies. The writers concluded that the determinants most of which were identified in the literature could be used to predict currency crises using both the so-called traditional (first generation) model of Krugman and the self-fulfilling (second generation) models of currency crises. Giancarlo Corsetti, Paolo Pesenti and Nouriel Roubini (1998) have also made an extensive study on the determinants of the Asian financial crisis. The writers carried out empirical analyses on the determinants to see if this could have been used to predict and or explain the crisis. Nouriel Roubini (1999) also gave an extensive coverage to determinants of currency crises on his website. Peter Wickham (1993) had also carried out a survey of exchange rate indicators for developing countries. That study notes that despite the many and varied approaches used to determine real exchange rates, the behaviour of the different indicators remain largely similar.

There are 2 basic lines of empirical analyses on the determinants of currency crises: single country analyses and multi-country cross-section or panel data analyses (Esquivel & Larrain, 1998). Single country analyses focus on the behaviour of a number of economic indicators in influencing currency devaluation. Herminio Blanco and Peter Garber (1986) made a classic study of a single country empirical analysis on Mexican Peso devaluations between 1976 and 1982. Linda Goldberg (1994) extended the work by studying the Mexican Peso crises in the 1980's. Robert Cumby and Sweeder Van Wijnbergen (1989) carried out a similar study on Argentina while Ceyla Pazarbasioglu and Inci Otker (1997) examined currency crises in the European countries. The inference from all these studies is that domestic macroeconomic indicators play a key role in determining currency crises. However small sample numbers employed and specific situations cited limit the use of the findings (Esquivel & Larrain, 1998).

The literature is now becoming rich with contributions to multi-country studies effort. Sabastian Edwards (1989) carried out one of the first multi-country study on currency crisis. His sample size was 17 developing countries. He could find a link between real exchange rate appreciation and declining foreign reserves and that of the probability of a devaluation. Other recent papers on the subject (that are also mentioned elsewhere in the literature review are Frankel & Rose, 1996; Sacchs, Tornell & Velasco, 1996; Flood & Marion, 1997; Goldfajn & Valdes, 1997 and Kaminsky, Lizondo & Reinhart, 1998).

Andrew Berg and Catherine Pattillo (1998) building on the work of Kaminsky, Lizondo and Reinhart above, have made a thorough analysis of 3 econometric methods/models that have been used to predict currency crisis. The first model, the so-called Kaminsky-Lizondo-Reinhart signals approach (Kaminsky, Lizondo & Reinhart, 1997) was based on measuring the behaviour of 15 economic indicators. Unusual behaviour will trigger an alarm and a good signal was defined as one that resulted in a crisis within 24 months. Unusual behaviour was further defined as movement beyond the mean by 3 standard deviations. Graciela Kaminsky, Saul Lizondo and Carmen Reinhart first proposed this model in 1998. The second model was based on the work of Jeffery Frankel and Andrew Rose (Frankel &

Rose, 1995). This model defines a currency crash when the nominal exchange rate depreciates by at least 25% and that the depreciation also exceeds the change in the previous year's rate by at least 10%. This model used 10 economic variables. The third model studied was the so-called Sacchs, Tornell and Velasco cross-country regressions. This model differed from the earlier two in that it focuses in measuring the magnitude of the crisis rather than the timing of the crisis. It seeks to measure which countries are most likely to be affected by a change in the global environment. Jeffery Sacchs, Aaron Tornell and Andres Velasco (1996) first proposed this model in 1996. Berg and Pattillo concluded that the performance of the 3 models in predicting the Asian financial crisis in 1997 was only moderate. The models, especially that of Kaminsky, Lizondo and Rienhart, were better than merely guessing but none of the models could predict the timing of the crisis.

Kaminsky in 1999 have carried out detailed study on banking crises in a large number of countries with a view of constructing an early warning system to predict banking and currency crisis. The author concluded that the Asian financial crisis did not exhibit features that were different from other crises and that the crisis was somewhat predictable. There was evidence that poor economic indicators pointed to a distressed banking sector that was waiting for a crisis to happen. However what could not be predicted was the timing of the crisis (Kaminsky. 1999).

Several writers have tried to apply econometric methods to predict exchange rate movements. Mark (1995), Chinn and Mease (1995) and Bauer (1995) have all tried to show a relationship between economic fundamentals and exchange rate movements. The obvious logic here being that macroeconomic fundamentals can be used as signals to predict an exchange rate crisis. However Jeremy Berkowitz and Lorenzo Giorgiani (1997) argued that such methods are inherently unreliable in predicting long horizon exchange rate movements. This view appears to be supported by the work of Pierre-Richard Agenor, John McDermott and Eswar Prasad (1999). These writers have examined the macroeconomic fluctuations of developing countries and could see no correlation between exchange rates (both nominal and real) and macroeconomic fundamentals.

2 models of currency crises have been developed so far: the traditional or first generation model and the self-fulfilling or second-generation model of currency crises. These two models have been adequately described in the literature. Robert Flood and Nancy Marion (1998) have made a detailed study on the development of various currency crisis models. Gerardo Esquivel and Felipe Larrain (1998) have also described the two models in details as mentioned earlier.

The traditional model is based on the work of Paul Krugman (1979). In this model it was proposed that excessive credit growth over money demand would lead to a loss of international reserves that in turn will induce a speculative attack. This model attempted to predict speculative attacks on exchange rate regimes by looking at domestic credit expansion and weak economic fundamentals. The first generation models that were based on the experiences of the 70s and 80s currency crises in South America There have been several extensions to this model (see Kaminsky, Lizondo & Reinhart, 1997; Flood & Garber, 1984; Esquivel & Larain, 1998 and also the survey done by Agenor, Bhandari & Flood, 1992).). In fact some of the earliest work in currency crises prediction can be traced to the traditional model by Krugman. Krugman's model was in fact base on an earlier model by Stephen Salant and Dale Henderson (1978) that was developed to prevent speculative attack on the then government controlled price of gold! This model in turn was developed from the work of Harold Hotelling (1931) almost half a century earlier!

The self-fulfilling crisis models (e.g. Okzan & Sutherland, 1995) do not depend on economic fundamentals rather on the interactions between economic policies that are based on the economic environment and economic agents who contribute to the economic environment (i.e. the government construct economic policies in response to changes in the environment and this causes economic agents to formulate their expectations taking environmental changes into account. However at the same time it is the expectations of the economic agents themselves that influences government policies). Thus the economy may shift from one equilibrium level to another without any change in the fundamentals. The second-generation models are based on governments' inability to defend the exchange rate regimes

because of policy constraints. Esquivel and Larrain (1998) have given a fairly concise description of the self-fulfilling model. In contrast to the first-generation models, the second-generation models were based on the experiences of currency crises in the 90s in Europe and Mexico (and now Asia). Two ideas have been introduced in the self-fulfilling model: herding behaviour where limited information lead to rumours (Calvo & Mendoza, 1997) and Contagion effects where trade linkages results in currency crises spreading regionally or even globally (Gerlach & Smets, 1995; Masson, 1998).

Steven Radelet and Jeffery Sachs (1998) have described 5 types of financial crises. It was pointed out by the writers that understanding which type of crisis was currently afflicting the region was crucial in diagnosing the causes and in constructing an early warning systems. Further, the authors have also forwarded the role of 'triggering events' in actually precipitating crises.

Ilan Goldfajn and Rodrigo Valdes (1997) have analysed survey data of many countries over several years to see if exchange rate expectations and overvaluations are predictors of currency crises. The writers conclude that exchange rate expectations cannot predict currency crisis and that exchange rate crises are largely unpredictable events. Also there has been much effort in the IMF towards establishing a correlation between market expectations and exchange rate changes and macroeconomic fundamentals (for example see Caramazza, 1993; Bartolini, 1993; Rose and Svensson, 1993; Marsh and Tokarick, 1994). The overall conclusion is that these indicators can indicate market pressure towards a change in the nominal exchange rate but cannot predict the change itself.

Betty Daniel (1997) has proposed another variation of the self-fulfilling currency crisis model – one where fiscal policy can precipitate a crisis independent of macroeconomic fundamentals. This model tried to explain the sudden and rapid exchange rate collapses that have been observed in recent years. Daniel argued that instantaneous exchange rate collapse could occur as a result of policies that increase the government's reliance on seigniorage revenues. Long run viability of a fixed exchange rate regime requires fiscal constraint. If this constraint is not met,

then exchange rate collapse is instantaneous. Eliot Katler and Armando Ribas (1999) too investigated the role of government's fiscal policy in the Mexican currency crises of 1994 and concluded that financial deterioration of the traded goods sector was the main cause of the crisis.

Another dimension to the currency crisis is the impact of capital inflows in destabilising exchange rate regimes. Christian Jochum and Laura Kodres (1998) investigated the impact of the introduction of futures contract on the underlying spot market. The authors concluded that the futures market did not destabilise the spot market.

Currency crisis and banking crisis tend to go hand in hand that they have been called the twin crisis (Kaminsky, 1999). Therefore investigations into predictors of banking crises will have a direct bearing in the development of an early warning system for a currency crisis. Asli Demirguc-Kant and Enrica Detragiache (1997) investigated factors that were associated with systemic banking crises among developing and developed countries. It was found that banking crises tended to occur when macroeconomic fundamentals were weak. Daniel Hardy and Ceyla Pazarbasioglu (1998) investigated banking crises in a large number of countries over a 2-decade period in an attempt to find indicators of systemic banking failures. Hardy and Pazarbasioglu found that banking crises resulted in economic crises with a fall in GDP and a decline in the real exchange rate among others. However the banking crises in Asia in 1997 appeared to affect the economy more severely especially the sharp depreciation of the real exchange rate. The writers further concluded that banking difficulties and failures resulting from domestic economic problems led to severe banking problems but ones that governments could contain. However banking problems resulting from foreign interactions such as capital inflows resulted in banking problems that led to crisis levels. Mario Blejer and Liliana Schumacher (1998) looked at a different angle in the effort to predict currency crises that of central bank solvency. Blejer and Schumacher used the value at risk model to assess central banks vulnerability to default and credibility crises. The writers found that central banks with high values at risk could not defend a currency peg.

At the present time, more than 2 years after the financial crisis was sparked by the now famous de facto devaluation of the Thai Baht on July 2, 1997, there is a wealth of literature on the subject. All the regular newsmagazines and journals have carried out extensive reports on the subject. For example see Asiaweek, July 31, 1998, which carried an investigative report on the collapse of the Bangkok Bank of Commerce in 1996. The report implied that this was the beginning of the Asian financial crisis and Asiaweek, August 28, 1998, which highlighted the problems in Malaysia that led to the crisis. One of the first attempts to explain the 1997 Asian financial crisis was carried out by the newsmagazine, Asiaweek, July 25, 1997 which correctly tried to first of all explain what currency devaluation is all about in as simple a language that one can manage in International finance. Further it must also be pointed out that concern on the problems with the balance of payments for many of the countries that would eventually be affected by the currency crisis were voiced out loudly at a very early stage. For example, even a relatively far removed publication like the Economic Times (of India) had published an analytical report on the subject in the end of 1996 (Subbarao, 1996). Justin Fox (1998) gave an early snapshot of them where the problems of bad banking practices, crony capitalism and the devaluation of the Yuan in 1994 are all explored as combining to result in the chaos.

There have been several good articles that have examined the Asian financial crisis. The World Bank (1998) has carried out an extensive survey of the Asian financial crisis. This report gives an excellent write up on the development of the crisis especially on the role of slowing export growth in 1996 as the precursor to the crisis in 1997 and focuses on the weaknesses of banks and the financial system as the source of the crisis. As a key social institution, the World Bank also correctly addressed the impact of the crisis on the social fabric of the societies affected by the crisis and the potential damage to the environment.

The research staff at the IMF has written extensively on various aspects of the Asian financial crisis. These articles (too many and too diverse to cite here) are all available at the IMF web site, www.imf.org.

Some writers like Corsetti, Pesenti and Roubini (1998), Roubini (1998), Parker (1998) and Moreno (1999) are of the view that the root cause of the Asian financial crisis was stress placed on the affected economies by persistent current account deficits. And the poor record of current account deficits was due to poor fundamentals. While other writers like Ohmae (1998) are of the opposite opinion, "currencies fluctuate for many reasons and some of the reasons have nothing to do with fundamentals". He pointed out that though the trade levels between the US and Japan remained fairly stable, the exchange rates between their currencies fluctuated by as much as 50%".

Kenichi Ohmae (1997) has written an elaborate article on the Asian financial crisis where he provided insight into the link between politics (Myanmar's inclusion into ASEAN & China's devaluation of the Yuan in 1994), international currency traders and the impact of the new world order brought about by technological innovation. Ohmae has in fact argued that the resultant devaluation of the Asian currencies will provide for more competitive economies.

Professor Paul Krugman of MIT, a regular columnist of the Fortune magazine has written much about the subject. In one of his articles (Krugman, 1998) published at about the same time as Malaysia imposed currency controls to effect a stable exchange rate, he argued that currency controls was the only way to maintain a stable exchange rate regime in an environment of low interest rates. Stable exchange rates and low interest rates were crucial to getting affected highly geared companies back on their feet. A high interest rate regime prescribed by the IMF and one that worked for Mexico in 1995 did not work for Asia because of the high gearing ratio (debt was 4 – 5 times the equity!) and prevailing low inflation levels.

The economic boom seen in Asia in the 1990s was due to huge amounts of 'hot money' flowing into the region buying local stock and driving up local stock exchange indices to dizzying heights (Fox, 1998). These short-term capital inflows were chasing the reported high growth earnings of emerging countries. However when earnings began to drop, the huge and dramatic capital inflow turned into an

equally huge and nightmarish capital outflow. A basic problem of investing in emerging markets is that the economies function as renters. In the case of Malaysia, the economy was geared towards providing for adequate infrastructure and cheap labour for multinationals to utilise to produce global brands that are sold primarily in the developed countries. This kind of economic activity conferred profits only to property developers, utilities and resource companies – 'the usual emerging market mix'. However these companies were active only in the non traded sector and could not generate foreign exchange

Most of the news reports were also critical of the way Asian governments ran their countries with many editorials clamouring for more democratic and open societies very much in the mode of the successful nations of Europe and North America. Needless to say this has drawn a strong defensive posture from Asian governments bent on maintaining the status quo though some changes are beginning to take place in South Korea, Thailand and Indonesia.

The IMF has come in for much criticism for its role in resolving the financial crisis in Asia. The main thrust of the IMF rehabilitation programme has been to lend money to bankrupt governments to roll over short-term loans that cannot be rescheduled. In return for the loans, the IMF demanded that governments carry out austerity measures designed to make the country solvent again. These measures have hit the man in the street hard and made it easy for politicians and vested interest groups to deride the prescriptions of the IMF. However as elegantly pointed out by Delhaise (1998), "The IMF merely substituted its own fund for the funds of hundreds of worried lenders. It has taken money from Paul's government to lend to Peter so he can reimburse Paul. This is no cure for the malady Asia is suffering". The cure will be reforms. This, the IMF has pushed for. The reforms are painful as they call for low GDP growth rates, government budget cuts and high short-term interest rates among others. This is particularly hard for a whole generation of peoples accustomed to high growth rates year after year.

Some of the criticisms levelled against the IMF are: the IMF should have allowed its funds to restore financial flows especially in the industries geared for the export

market (Delhaise, 1998), the strategy of high interest rates did not work in Asia as it did in Latin America because inflation was generally low and companies had high debt burdens. Under those conditions high interest rates served to cause further harm (Wade & Veneroso, 1998), the moral hazard problem created when the IMF bailed out the international creditors (Corsetti et al, 1998b; Moreno, 1999). Much has also been said of the weakness of the IMF in not being sufficient enough in predicting the crisis. However it was pointed out that the IMF (and indeed the developed nations of the world had tried to warn Asian countries of their concern. For example after the Mexico crisis in 1994, the IMF warned Thailand about its concern of level of short term borrowing in the face of a weakening financial system. However, the Thai government did not listen and the IMF was fearful of precipitating the very crisis that it was trying to avoid if it went public (Delhaise, 1998). Current political thinking does not allow for the IMF and developed countries to force measures on the rest of the world. Overall the debate still rages on: which would have been the better policy – loose or tight monetary policy?

The Asian financial crisis has focused investigation on the role of capital mobility in world trade. There is acknowledgement that unfettered capital mobility is hazardous to countries with weak financial systems (Beddoes, 1999, Krugman, 1998). In retrospect, Malaysia and the other countries affected by the financial crisis did the wrong thing when they carried out liberalisation of capital inflows without liberalising the banking and financial sector; the sequence should have been the other way around (Aghevli, 1999). So now that Malaysia has embarked on the path of capital controls the subject has rekindled interest. There have been several papers on the subject especially with reference to Asia (Schuknecht, 1999; Anon, 1998; Corsetti et al, 1998b).

Now that market watchers have had the time to digest the events that unfolded since 1997, there is a growing awareness of the weakness of the international financial markets (Radelet and Sachs, 1999). It is now clear that the principal cause of the Asian crisis was the sudden and rapid reversal of private capital flows. It is now acknowledged that corruption, moral hazard and weak banking

systems alone cannot explain the crisis. The industrialised countries had over 50 years to develop an institutional framework comprising a lender of last resort, tough banking supervision and regulation, deposit insurance and bankruptcy laws to safeguard their economies (Radelet and Sachs, 1999). Such an environment was presumably non-existent in Asia in 1997.

The failure of the initial strategy of the IMF in stabilising the currencies of Thailand, South Korea and Indonesia, and the fact that Malaysia is enjoying some success with capital controls, has underscored the need for policy responses that are tailor made for each individual country where prevailing and unique conditions are taken into consideration. The Malaysian government has argued its case along this line. The necessary conditions for the successful implementation of the conventional policies of the IMF were not present in Asia in 1997 as they were in Latin America in 1994 and earlier (Ali Abul Hassan, 1999). Further more the Malaysian experience was a classic case of looking beyond textbooks in search of real world solutions.

The failure of the IMF to quickly stabilise the worst affected currencies have prompted calls for its reform. Wade and Veneroso (1998) have argued for the setting up of the AMF (Asian Monetary Fund) to compete with the IMF – the IMF always argues for free competition so now it is about time it gets some competition for itself! Bergsten, 1998 has called for expansionary domestic policies as opposed to 'export led recovery' policies. This is a fine line to walk as excessive domestic credit expansion was blamed as one of the causes of the crisis. Karunaratne, 1999 has argued for alternative currency models to better analyse and explain the current Asian malaise. A key puzzle is that most of the affected Asian countries had strong fundamentals and yet were susceptible to rapid capital outflows that depreciated currencies.

Finally a powerful message is beginning to seep through to Asia. The so-called 'Asian way' may be a liability rather than an asset. Strong legal and political institutions rather than dubious political nexus should support business interactions (Parker, 1998).