Financial liberalization and economy crisis: macromodelling the Thai economy

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CHAPTER 8
SUMMARY, CONCLUSIONS, AND FURTHER STUDIES

8.1 Thesis Summary and Conclusions

This thesis has sought to accomplish three objectives. Firstly, to examine factors underlying the development of world financial markets, including increased integration of world financial markets and the economic implications arising from world financial markets developments. Secondly, to examine the causes, consequences and some preliminary thought about policy lessons arising from the financial and economic crisis that afflicted Thailand and other East Asian countries. Thirdly, to develop a long run dynamic macroeconomic model for Thailand. The model emphasizes the effects of exogenous shocks arising from Thai financial liberalization policies since the 1980s and their impact upon the development of the Thai economy. In particular the financial and economic crisis that erupted in July 1997 was focused upon. In addition the model developed was utilized to compare the macroeconomic consequences between the IMF policy approach and the Radelet and Sachs approach arising from exogenous shocks, such as those occurring in domestic and global financial markets and appropriate policy response, for the Thai economy.

The findings obtained from this study can provide an important insight into the causes and effects of the Thai financial and economic crisis, and the appropriate means by which to address them.

8.1.1 General Review of the Study

The integration of world financial markets has grown significantly over the past three decades. This phenomenon can be traced back to the 1960s and 1970s, with the growth in international trade through the rapid expansion of multinational corporations, financial liberalization, the massive recycling of OPEC oil revenues and the growth of Eurocurrency markets. These all combined to contribute to highly
integrated world financial markets, and thereby intensifying the flows of global capital and goods.

In the 1980s the developments in world financial markets changed significantly. Advances in computer technology and communication satellites, the rapid expansion of securitization, the growth in derivative markets all combined to foster the integration of national financial markets even further.

The changing financial environment and financial innovations has had a great influence on the rapid growth of international financial markets both in industrial countries and developing countries. The rapid economic growth in the East Asian economies has been led by rapid export expansion and supported by substantial capital inflows. However, with the benefit of hindsight the developments in world financial markets, the massive capital inflows, in particular the short-term flows, became an important factor in creating the financial turmoil in East Asia that erupted after mid 1997 and its widespread impact upon world financial markets. The crisis began in Thailand but rapidly affected other South East Asian countries, and then later to Korea, Russia and Brazil.

The major conclusion resulting from a review of the literature has been that the major factors underlying the buildup to the crisis in East Asia arose from changes in the world economic environment and the rapid financial sector liberalization in the Asian countries. The changes in the external environment, such as the decline of asset yields which have been in part influenced by the very low level of interest rates in the major industrial economies since the early 1990s, made the Asian markets an increasingly attractive investment opportunity. This, together with the radical liberalization of capital accounts in the Asian countries undertaken in the late 1980s and early 1990s, led to the buildup in foreign capital inflows. As is so often the case with overly rapid financial liberalization of the domestic financial system, the prudential regulation of banks and financial institutions does not keep pace. At the same time the domestic banking system was unable to allocate the greatly increased capital flows efficiently. These problems were particularly severe in Thailand where
the high volume of capital inflows, and in particular the short-term flows, were used mainly to finance non-productive investments. Much of this went into ambitious property development; and much went into financial rather than real assets.

The crisis was exacerbated by mismanagement of the foreign exchange rate policy by Asian governments before and during the onset of the crisis. Governments in each of the crisis countries kept their exchange rates fixed in the early 1990s. This policy encouraged short-term flows, since borrowers could borrow cheap funds from abroad without worrying about a loss from exchange risk because they believed that nominal exchange rates would be pegged indefinitely. The massive capital inflows contributed to the real appreciation of their exchange rates, with the investment boom financed by the foreign capital flows leading to a rise in the price of non-tradable goods and services (especially construction and property) while the prices of tradable goods and services remained relatively fixed. Therefore the real exchange rate, which is measured by the ratio of the price of tradable to non-tradable goods, began to gradually appreciate. In addition, the US dollar strengthened against the Japanese Yen. Hence the East Asian, and in particular ASEAN, currencies, which were virtually pegged to the US dollar, appreciated. The real appreciation of the exchange rate reduced competitiveness in the export sector causing large current account deficits that became unsustainably high, and making currencies overvalued. Instead of allowing a more flexible exchange rate system, the governments in the crisis countries, in particular Thailand, ran down their foreign exchange reserves in a vain defence of their currencies from speculative attacks. As the reserves depleted rapidly, vulnerability to financial crisis occurred.

The structural weakness in their domestic financial systems was the root cause of the financial crisis in East Asia. In East Asia, institutional developments in the financial sector have lagged behind real sector developments. Financial liberalization policy was implemented in order to attract foreign capital inflows to sustain their economic growth without an improvement in the institutional structure of the domestic financial markets. The structural weakness in domestic financial markets
distorted investment incentives. Weak supervision of the financial sector; lax regulatory standards; poorly managed financial liberalization; inadequate corporate governance and the general lack of transparency allowed the problems to grow by encouraging over-borrowing and over-investment to excessive and highly risky investments.

The weakness in domestic financial markets, combined with the exchange rate policy mistake by retaining a fixed exchange rate regime alongside the opening of the capital account, contributed to the crisis in East Asia. However, the key issue is whether these problems add up to a crisis of the magnitude that took place in late 1997 and 1998 in Asia. Radelet and Sachs (1999) argue that these problems were not so severe enough to warrant complete collapse of the currencies in the region, a total breakdown of the banking system, and the depth and severity of the economic contraction. Radelet and Sachs (1998a, 1998b, 1999) argue that the crisis is mainly the result of a self-fulfilling panic of investors, while others argue that a build up of pressure from country-specific problems, in particular a serious weakness in their financial systems and governance and poor economic policies in the region, led to the crisis (Corsetti et al. (1998), Dornbusch (1998), Krugman (1998a)$^1$, as well as the International Monetary Fund (IMF).

In order to gain an insight into the important aspects of the crisis faced by Thailand, and moreover, to evaluate and suggest a number of crucial lessons from the impact of financial crisis on the Thai economy, a dynamic macroeconomic model for the Thai economy was constructed in Chapter 5.

8.1.2 Developing a Macroeconomic Model

The major aim of this study has been the introduction and development of a dynamic rational expectations macroeconomic model, emphasizing the long run, to

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$^1$ Krugman has changed his point of view on the causes of the crisis. A more recent analysis (Krugman, (1999)) argues that such weaknesses within the Asian economies, such as corruption and moral hazard, cannot explain the depth and severity of the crisis. It should, instead, be blamed on financial panic and overly-liberalized international and domestic financial systems.
analyze the adjustment processes arising from a variety of shocks emanating from the financial and economic crisis in Thailand that erupted in July 1997.

The model has its foundations in three general theoretical models, namely, the Mundell-Fleming (MF) (1961), Dornbusch (DB) (1976) and the Portfolio Balance Model (Branson (1976, 1977, 1984)). As mentioned above, the liberalization of the capital account in the East Asian countries since the late 1980s created a substantial increase in capital flows into these countries. From a policy perspective, a large scale of capital flows affects the efficacy of monetary and fiscal policy under different exchange rate regimes and different degrees of capital mobility.

The MF model allows one to analyze why large scale foreign capital inflows resulting from a radical liberalization of the capital account, undertaken in the late 1980s and early 1990s in East Asia and Thailand in particular, might lead to a real appreciation of the exchange rate and as a result a deterioration in the current account balance. The model implies that under a fixed exchange rate regime, with perfect capital mobility, a sustained interest rate differential leads to massive capital inflows and contributes to a real appreciation of the domestic currency through increased inflationary pressure. The reason is that to maintain the fixed exchange rate regime the authorities have to intervene in the foreign exchange market by purchasing the foreign exchange that flows in, this increases the foreign exchange reserves and thereby increasing the domestic money supply. An increase in the money supply generates excess demand in the goods market and may lead to an increase in domestic prices resulting in a real appreciation via higher domestic inflation. Allowing the exchange rate to float may cause an appreciation of the nominal exchange rate, but the monetary base and money supply will not be affected directly. In the event of a sudden withdrawal of foreign capital resulting from a panic by domestic and international investors during the onset of crisis in the East Asian countries, this would contribute to a sharp depreciation of the domestic currencies. In this case the intervention of the monetary authorities in defending the fixed exchange rate regime
will lead to a continuous depletion of foreign exchange reserves that will result in a foreign exchange crisis.

However, financial liberalization with a flexible exchange rate also generates negative effects by creating substantial volatility of the exchange rate, as occurred, for example, in Thailand and Korea where their domestic currencies depreciated dramatically after floating their exchange rates. The DB model explained that with perfect capital mobility and a flexible exchange rate, financial markets respond instantaneously to exogenous shocks. Combined with the fact that goods markets are slower to react to such shocks, a difference of adjustment speeds between goods and financial markets as well as exchange rate expectations may contribute to the overshooting of the exchange rate in the short run. This may partly explain the sharp depreciation of the Asian currencies after allowing their exchange rate to float in 1997, and the significance of the financial sector in transmitting the impact of exogenous shocks to the real sector of the economy.

However a defect in the MF and DB models arises from the assumption of perfect substitutability of domestic and foreign assets. In a situation where domestic and international investors have lost their confidence in holding Asian currencies, the domestic and foreign assets cannot be regarded as perfectly substitutable because investors perceive that domestic assets have become more risky as compared with foreign assets. The PBM model allows changes in perceived risk to play a significant role in influencing the exchange rate. An increase in the perceived riskiness of domestic assets compared with foreign assets resulted in a decline in the demand for domestic assets and increased demand for foreign assets. As a result in the short-run the effects of the perceived increase in risk attached to holding domestic assets will lead to an increase in the domestic interest rate and a depreciation of the domestic currency. This is the significant factor in explaining the rapid and substantial depreciation of the East Asian currencies during the onset of the crisis. Therefore the major contribution of this thesis is that the model developed allows for the effects of a
change in risk perceptions to impact upon the exchange rate and ultimately the current account balance and other key macroeconomic variables.

Another major contribution of the PBM model is that it focuses upon the long run nature of the adjustment process. The MF model is a comparative static model that concentrates only on a comparison of equilibrium states before and after an exogenous shock, and hence it does not establish the path of the endogenous variables during the adjustment process between two such equilibrium states. From a policy perspective this is a major deficiency. The DB and PBM models are dynamic models that allow variables to react to each other through time and hence it explains the adjustment process for the time path of the endogenous variables. However the DB model is still regarded as short run model. It says nothing about developments in the current account and its role in generating long run equilibrium. This is remedied in the PBM model. The link between the short and long runs is from foreign asset stock accumulation via developments in the current account. A current account surplus implies an accumulation of foreign asset stock, this in turn affects the level of wealth which, in the adjustment to long run equilibrium, feeds back into the financial market and exchange rate behavior. However the PBM model is a partial equilibrium model, and hence it says nothing about output, employment and so on.

Apart from these three models, the model developed also has its foundations in models such as Harvie (CH) (1993) and Harvie and Kearney (HK) (1994) which are general equilibrium models emphasizing the dynamic long run nature of the adjustment process. The contributions of the CH and HK models are that they incorporate capital stock accumulation in stimulating economic growth. It also emphasizes the role of equity claims on the domestic physical capital stock in linking the financial and real sectors.

These three models, in particular the CH and HK models, provide the building blocks in developing the macroeconomic model for Thailand used here. In the CH and HK models, and also in this study, a deterministic framework is adopted. A deterministic model is one in which the adjustment process is determined or known
by economic agents. The deterministic model used here is analyzed under the assumption of rational expectations and this is equivalent to the case of perfect foresight.

As is well known, the features common to models of this sort are characterized by saddlepoint stability, in which long run equilibrium can only be achieved if the economy is on the relevant stable saddlepath. Such models include variables which can be characterized as being either pre-determined non-jump variables, or non-predetermined jump variables. In this study, the real exchange rate (in the case of a flexible exchange rate regime) and Tobin's q in financial markets are non-predetermined jump variables, capable of adjusting instantaneously to an exogenous shock, while real money balances, the stock of foreign assets, the physical private and public capital stocks in non-financial markets exhibit stickiness of adjustment, and hence are pre-determined non-jump variables. The non-predetermined jump variables are required to make discrete jumps, arising from shocks, in order to instantaneously get the economy to its new stable saddlepath, which will ultimately take the economy to its long run steady state.

In sum the model developed enabled the identification of the way in which exogenous shocks transmit their effects to the domestic economy. Increased financial integration implies that developments in international financial markets are transmitted more rapidly and with a greater impact to domestic financial markets. Domestic financial markets are therefore expected to adjust to any shocks instantaneously, while the goods and factor markets adjust more slowly. Therefore, especially in the short run, financial markets play a significant role in transmitting such shocks to the real economy through a change in share prices, the exchange rate and interest rate and also through wealth effects on consumption/investment decisions, and ultimately also has an impact on the ability of the authorities to conduct effective macroeconomic policy. This formed the core of this study.

However, a number of significant amendments are required to make this framework more applicable to the case of Thailand. The model developed payed
particular attention to the effects of exogenous shocks from Thai financial liberalization policies in the late 1980s and early 1990s, and in particular the ongoing financial crisis, and their impact upon the development of the Thai economy. Four different scenarios arising from financial liberalization were constructed and analyzed in which an exogenous shock occurs in an economy operating with different exchange rate regimes and under different degrees of capital mobility. Scenario I shows an economy operating under imperfect capital mobility and a flexible exchange rate; scenario II is a situation of imperfect capital mobility in conjunction with a fixed exchange rate; scenario III is associated with perfect capital mobility and a fixed exchange rate; and scenario IV implies perfect capital mobility associated with a flexible exchange rate.

With the nominal exchange rate fixed, as shown in scenarios II and III, the money supply and hence monetary growth, is endogenously determined. The money supply will change from two sources-domestic credit expansion, assumed to be zero, and accumulation\decumulation in foreign exchange reserves held by the central bank. Changes in foreign exchange reserves are endogenously determined by balance of payments surpluses or deficits arising from developments in the current account and capital flows, given the fixed nominal exchange rate. In contrast, under a flexible exchange rate (scenarios I and IV), the nominal exchange rate is capable of adjusting so that either capital inflows or outflows will have no effect upon foreign exchange reserves. As a result in the fixed exchange rate version of the model, growth of the money stock is exogenous while the exchange rate is endogenous.

Under perfect capital mobility (scenarios III and IV) two assumptions are required. The first is freedom of capital movement-absence of impediments to capital flows in the form of capital controls, transaction costs, taxes and so forth. The second is perfect substitutability of assets denominated in domestic currency and foreign exchange. Hence the riskless uncovered interest parity holds \( e = r - r^* \). In the case of imperfect capital mobility (scenarios I and II), capital is still assumed to be freely mobile and this assumption is relevant for Thailand as its domestic financial markets
are highly integrated with global financial markets but assets are assumed to be imperfect substitutes. Hence the riskless uncovered interest parity condition does not hold and is replaced by \( e = r - r^* - rp^b \).

As a result the model developed can be utilized to compare the macroeconomic consequences of exogenous shocks and policy response to such shocks to the Thai economy operating prior to the onset of the financial crisis (scenario III) and during/after the onset of the crisis (scenario I). This study paid particular attention only to the flexible exchange rate in conjunction with the existence of the risk premium version of the model (scenario I), which can be regarded as representative of the Thai economy during the period of the financial crisis since mid 1997. Therefore only scenario I was used to conduct a simulation analysis in Chapter 7.

With regard to scenario I, the existence of the risk premium is one of the essential features of the model utilized. This is because the impact of a jump in the risk of investing in the Thai economy during the crisis period seems to have played a significant role in the rapid and sharp depreciation of the Thai currency in 1997 and also a temporary and severe economic disruption of the Thai economy.

In addition, the model developed emphasized the role of short-term flows in contributing to an expansion of non-productive investment, and the long-term flows in stimulating productive investments and enhancing the productive capacity of output supply.

The role of public spending was also emphasized by separating public spending into two categories, current public spending and capital public spending. This can be used to compare the effects of variations between public investment spending and public consumption upon the Thai macroeconomic adjustment process, and on long run output supply which could be affected by such fiscal shocks.

Finally, the model developed incorporated the impact of a sharp decline of aggregate supply brought about through financial and corporate sector insolvencies.
The output-reducing effects of bankruptcies can be treated as an exogenous shock to the Thai economy during the onset and duration of the crisis.

Before conducting a simulation analysis, in Chapter 7, the model was empirically estimated by using appropriate Thai data. The following section summarizes the findings from empirical estimation and testing.

8.1.3 Estimation of the Model

The model is estimated using the Microfit 4 package. The data employed for the estimation are limited to annual data from 1960 to 1996. Before proceeding on a full course of econometric estimation, all relevant data needed to be tested for stationarity or non-stationarity. The Dickey-Fuller and the Phillips-Perron tests were employed to test for the presence of unit roots. The results indicated that only world real income ($y^*$) is trend stationary (I(0)). Twenty-one variables were found to be non-stationary of different orders. Six of these variables, namely, real private sector wealth ($w^p$), domestic price level ($p$), aggregate demand ($y^d$), corporate capital stock ($k^p$), domestic holdings of foreign assets which is expressed in domestic currency terms and deflated by the domestic price level ($f+e-p$), and the real value of the domestic physical capital stock ($k^p + q$), appeared to be stationary in second differences, I(2).

Tests for structural breaks were conducted for these six variables which were found to be trend stationary in second differences, I(2), because failure to adequately account for breaks in the deterministic trend function can bias the Dickey-Fuller statistic toward incorrectly not rejecting the null hypothesis for a unit root. The results indicated that all variables involved appeared to have a trend with a constant slope and exhibited a major structural change in 1973 (oil price shock) and/or 1986 (trade and financial liberalization policy shock). Corporate capital stocks become stationary in levels, I(0), while the other five variables concerned became first difference stationary, I(1). Having established that all variables concerned, except world real income, private capital stock which are integrated of order zero, are integrated of the
same order, I(1), testing for cointegration was applied to detect whether a long run relationship existed between the variables involved.

The maximum likelihood cointegration technique (Johansen (1988) and Johansen and Juselius's (1990)) is used to estimate the seven equations, namely, equation (2) private consumption, equation (4) non productive investment, equation (8) trade balance, equation (9) the demand for real money balances, equation (13) real private sector wealth, equation (14) the current account balance, and equation (19) aggregate supply. The results indicate the existence of long run relationships (or cointegration) for all equations employed, except equation (8) and (19). However it may be possible that structural changes during 1973 and/or 1986 caused the variables concerned to drift apart. Hence for these two equations, dummy variables were included to capture the effects of the structural breaks on the possibly cointegrating relationships. The results of cointegration tests are reversed turning from no cointegration to cointegration. The findings from these tests were that the presence of structural breaks in 1979 and/or 1986 are one of the major factors in determining whether the time series data are stationary or non stationary and whether cointegrated or not cointegrated.

The finding of cointegration relationships allows us to formulate the short-run adjustment process in terms of an error-correction model (ECM). All estimated seven equations, except equation 8, pass all diagnostic tests for model adequacy. These include the Lagrange Multiplier test for first order serial correlation and Ramsey’s tests for functional form and heteroskedasticity. Equation 8, the trade balance, suffers from residual serial correlation and heteroskedasticity. These unsatisfied diagnostic tests may cause misleading statistical and therefore economic inferences. With regard to the estimated short run parameters obtained from the ECM model, some of the parameters did not have the expected signs and reasonable magnitude, and many of the associated confidence intervals were disappointingly large.

Overall, the problem that can be found from obtaining the long run and short run estimated coefficients from cointegration and an error-correction techniques
respectively are the sensitivities to structural definitions and changes and estimation methods for different (sub) samples. This may be due to a very serious "degree of freedom" problem and hence these estimates are indicative only, providing a range of possible parameters values for Chapter 7 simulation analysis.

8.1.4 Simulation analysis and policy implications

The estimated parameters obtained from cointegration and error-correction techniques, as well as imposed parameter values due to unsuccessful attempts to estimate them or in order to ensure model stability, were then used to conduct a simulation analysis. Due to the complexity of the model developed here, it was impossible to derive analytically unambiguous results for the steady-state properties of the model. Therefore, an analysis of the steady state and dynamic properties of the model, was conducted by numerical simulation. The numerical simulation program utilized to derive these results is call “Saddlepoint”, which is designed to solve linear rational expectations models with constant coefficients.

The simulation analysis was conducted in order to analyze the macroeconomic consequences of exogenous shocks to the Thai economy operating during and after the crisis that erupted since 1997. Chapter 7 emphasized the important aspect of the Thai crisis: namely the impact of a jump in the perceived financial risk in investing in the Thai economy; the impact of an increase of short-term flows in financing non-productive investments; and the impact of a collapse in aggregate supply resulting from financial and corporate sector insolvencies. Finally, a simulation was conducted in order to compare the IMF policy approach and the RS policy approach in response to the Thai crisis in the early stage. The intention of this chapter was to draw crucial lessons from the impact of such shocks on the Thai economy, and the impact of alternative policy responses to it.

The findings were that the contraction of monetary policy can have both potentially negative and positive effects upon the Thai economy. The decline in monetary growth contributes to a jump appreciation of the real exchange rate on
impact, and a sudden loss of international competitiveness. The major conclusion is that implementing the IMF approach by tightening monetary policy in the initial stage of the crisis could strengthen the real exchange rate. However, the major loser from such a policy contraction is that a transitory real exchange rate appreciation leads to a deterioration of the trade and current account balances, thereby exacerbating foreign debt, and also producing a sizeable deterioration of the private capital stock and aggregate supply during the adjustment process over the medium and long-run.

A policy of a temporary decline in public capital spending could also have potentially adverse effects upon the development of the Thai economy. The major losers from the policy of fiscal contraction are in regard to a decline in domestic demand, the private capital stock and aggregate supply. The benefits from such a policy contraction is that of the trade balance and foreign asset stock, which initially improve throughout the first year of the short run period.

The major conclusion is that implementing the IMF approach, by tightening monetary and fiscal policies in the initial stage of the crisis, could stabilize the exchange rate. The IMF policies produce a stronger exchange rate in the short run but they come at a potentially high cost, since such a policy contraction contributes to a more protracted decline in aggregate supply, private capital stock which is bad for long term economic growth, and aggregate demand. This implies that the IMF approach produces more favorable effects in terms of external developments (more stabilized exchange rate) while the RS approach brings about favorable effects upon domestic demand and supply. The simulation results suggest that adopting the RS approach is an appropriate policy option in the short-term, particularly in dealing with such a crisis in the early stage. The RS approach could ease the crisis in its early stages arising from the abrupt and deep contraction in domestic demand and supply. However the cost of adopting this approach is that the depreciation of the real exchange rate is larger than that for the IMF approach.

Another conclusion is that the tremendous rise in the perceived risk of Thai financial assets, both bonds and equities, can lead to severe temporary economic
disruption. However the large contractions in domestic demand can be offset partly through an improvement in the trade balance. Hence sustaining export growth is the key factor for offsetting the collapse in domestic demand. An improvement in the Thai financial system is required. In particular improving systems of accountability so that more accurate evaluations of risk can be formulated. Restructuring of the financial sector is important but needs a more comprehensive and well-thought-out financial restructuring plan, otherwise it may lead to a collapse of aggregate supply brought about through financial and corporate sector insolvencies and bankruptcies.

8.2 Further Studies

This study has focused primarily upon developing a dynamic long run macroeconomic model for Thailand to analyze the impact of the financial and economic crisis occurring since mid 1997 upon key macroeconomic variables. From this to draw major policy lessons arising from the impact of such shocks on the Thai economy, and the potential impact of alternative policy responses to it. However further study is required within the context of the theoretical framework presented.

The results suggest that exogenous shocks, such as a jump in the perceived financial risk in investing in the Thai economy and a collapse in aggregate supply resulting from financial and corporate sector insolvencies, can lead to severe temporary economic disruption. The results further suggest that adopting either the IMF or RS policy approaches produce both favorable and unfavourable effects upon the key macroeconomic variables over the adjustment process. However, further studies are required in order to improve the model developed here, such as: testing for the sensitivity of the results obtained arising from changes in some of the parameter values used in the model; introducing an explicit two-country model in order to capture international economic interdependence by analyzing the spill over effects of policy and exogenous shocks from one economy to another; conducting an explicit comparison of outcomes for a fixed and flexible exchange rate regime; introducing an explicit banking sector into the model so as to analyze the effects of shocks arising
from the weakness in the banking system on the development of the Thai economy. Further study is also required to analyze the impact of further possible policy adoptions available to the authorities to improve the economic performance of the Thai economy.

Specifically there is a need to further explore the following:

1. This study has not addressed some highly pertinent issues occurring during the onset and aftermath of the 1997 crisis. For example, in the Thai case, structural reforms with respect to the financial sector and corporate governance and bankruptcy policies and privatization, are critical for the restoration of sustained economic growth. The impact of all of these policies requires further investigation. In addition, financial sector reforms, and the need to tackle the massive overhang of non-performing loans in the financial sector are essential, as these are obstructing restoration of confidence in the Thai economy. Corporate sector reforms, such as through privatization, will be essential to improve economic efficiency and competitiveness, because the Thai government may not have the managerial capacity to administer all economic sectors and it also does not possess sufficient investment resources. However a key question is which sectors of the economy should be privatized. What will be the impact on the Thai people, in particular the poor people and those in rural areas, after the government privatizes their public service such as energy, telecommunications, water, and transport sector. A lack of true competition among firms, because of political constraints and corruption, can result in privatization not enhancing efficiency as might be expected.

In sum, in addressing the causes and consequences of the Thai crisis, microeconomic details or structural reforms of the Thai economy are just as important as that of macroeconomic policy management.

2. Relating to the macroeconomic modelling of the Thai economy, further refinements of the basic framework are required.

A. The model developed focused upon the effects of policies and shocks on a single economy, that of Thailand. However it would be useful to examine the
spillover effects of policies and shocks from one economy to another, with emphasis placed upon the channels through which events in one economy are transmitted to others. In the case of the East Asian crisis, changes in the world economic environment was a crucial factor in the buildup to it. The very low level of world interest rates since the early 1990s made Asian markets an increasingly attractive investment opportunity due to their higher returns, and hence contributed to massive capital inflows to these countries. Under a fixed exchange rate regime the large scale of capital inflows would generate a real appreciation of the domestic currency via increased inflationary pressure, resulting in current account deficits which ultimately became unsustainable. Hence a currency and financial crisis emerged in mid 1997. In addition the crisis was aggravated by an increase in US interest rates and falls in US equity markets in March and August 1997, which ultimately lead to massive capital outflows and a sharp depreciation of the real exchange rate and hence a collapse of the pegged exchange rate regime in the crisis afflicted countries.

An explicit two-country model could, therefore, be developed by assuming that one country is large (foreign economy) and the other small (the home country: Thailand). The large country that will carry out policy changes that will change the world rate of interest. Uncovered interest parity will, however, ensure the equalization of interest rates in the two economies after it has altered due to the policy change.

B. The model developed here is very sensitive to changes in the parameter values of some key macroeconomic variables in the model. Hence further study involving a sensitivity analysis of the model developed is required.

C. The experience of Thailand during the onset of the crisis showed that defending the Thai currency from speculative attack under an environment of a fixed exchange rate regime and free capital mobility was not viable. However in the context of this thesis the simulation analysis in Chapter 7 focuses only on the flexible exchange rate version of the model. Hence for further study the fixed exchange rate version of the model, developed in Chapter 5, should be simulated in order to compare the macroeconomic consequences of exogenous shocks to the Thai economy.
operating prior to the onset of the crisis (fixed exchange rate version) and during /after
the onset of the crisis (flexible exchange rate version).

D. The crisis began in 1997 with a loss of international confidence in the Thai
economy, due to the weakness of its financial sector. This study explained the
"financial sector fragility" by incorporating the risk premium on bonds in the interest
parity condition (See Table 5.2, Equation 11, Chapter 5) and also incorporating a risk
premium both on bonds and equities in Tobin's q equation (See Table 5.2, Equation
12, Chapter 5).

A more helpful alternative in the model is to assume that default risk is costly. Suppose
that an "opportunity to default" is an opportunity to avoid having to repay a
debt of D by incurring costs of αD. Provided that α<1, these opportunities will be
taken up by a debtor motivated purely by self-interest. If the costs to the debtor take
the form of a reduction in output due to a denial to those in default of the trade credit
needed to obtain working capital, then a sudden increase in opportunities for such
default could help explain both the output contraction and the failure of exports to
increase in the aftermath of the crisis.

Fane (1999) suggests that this interpretation of default risk helps, at least, in
some aspects of the Asian crisis. It was most severe in Indonesia largely because
bankruptcy laws are totally ineffective there. Thailand’s bankruptcy laws are the next
most inadequate and hence Thailand suffered more than Malaysia or Korea. In Korea
and Malaysia the crisis was less serious and recovery has been more rapid partly
because, although many large and politically influential firms have received
government bail-out, thousands of the medium and small firms that were unable either
to repay their debts or to persuade the government to bail them out have been declared
bankrupt and have had their assets taken over by creditors. As a result, a much smaller
proportion of physical assets in Korea and Malaysia than in Indonesia or Thailand has

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2 This was suggested to me by Dr George Fane, Department of Economics, RSPAS, Australian
National University, Canberra, during the Ph.D Conference in Economics and Business at the
University of Western Australia, Perth, 3-5 November, 1999, in his comments on my thesis
presentation.
been consigned to a limbo in which the assets can neither be seized by creditors, nor efficiently employed by the original owners who can no longer obtain working capital.

He argues that the role of costly default in a financial crisis can explain why a downturn in economic activity can have self-reinforcing effects. First, default by one firm can cause a chain of defaults, particularly if bankruptcy procedures are inoperative. Second, default by one firm can increase the incentives for others to default because the effectiveness of bankruptcy procedures falls as the number of cases being handled by the courts rises. Firms that may once have been motivated to pay debts because they operate in international financial markets in which credit ratings are important, will have a reduced incentive to protect their credit ratings if all domestic firms are denied access to international financial markets.

Therefore understanding risk perceptions is a crucial area for future research. In the case of the Asian crisis, the investors failed to recognize the magnitude of the risks that existed and to manage those risks adequately. We only know that there has been a change in risk perceptions when this has already had its impact in the financial markets. This study demonstrates that a change in the perception of risk in investing in Thailand can have a large impact on real economic activities. However, the factors behind a change in the risk perceptions are clearly of fundamental importance. A great deal of research is needed in these areas.

E. The crisis in East Asia, and in particular Thailand, began with a loss of international confidence in the Thai economy, due to the weakness of its financial sector (banking sector). Therefore the banking sector, both in their liabilities and assets, should appear explicitly in the model in order to analyze the impact effects of exogenous and policy shocks arising from the banking sector to the real sector. The sharp increase in the ratio of short-term debt (liabilities) owed by banks to foreign exchange reserves is one of the factors causing vulnerability to a crisis. A massive overhang of non-performing loans in the banking sector is a crucial factor in delaying the recovery of the Thai economy.