

**Managing the Thai Crisis:
Asset Bubbles, Globalization and Macroeconomic Policy***

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I. Introduction

Before the world economy enters the new millenium, it has witnessed currency and financial crises by surprise. East Asian countries have been severely hit by crises, initiating from Thailand in 1996, despite lessons learned a few decades earlier on new development experiences that developing countries or late comers might catch up with developed countries with remarkable growth and industrialization. A chapter in history has just become outdated and inconsistent with the so-called ‘convergence hypothesis.’

Why are these economies with strong macroeconomic fundamentals, all a sudden plagued with the most severe crises in the recent history? Why do successes easily and suddenly become failures? Were there any successes or miracles after all? The onset or the causes of Asian crises have recently been widely debated and a number of studies have conjectured various explanations to the new experience of booms and busts.¹ Certain countries seriously hit by the crises have to be under the policy packages sponsored by the IMF and other institutions, such as the World Bank, Asian Development Bank and several countries.

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¹ For seminal studies and influential views, see Fischer (1998), Krugman (1998c), Sachs (1997), Radelet and Sachs (1998), Stiglitz (1998a and c), Corsetti, Pesenti and Roubini (1998) and Edison, Luangaram and Miller (1998).

Thailand is the first and among the hardest hit economies. It has to be under the IMF program with financial supports amounted to 17.1 billion US\$. Indonesia and South Korea are equally hit by the crises, although they receive larger financial bailouts from the IMF-led institutions. Malaysia refuses the IMF assistance and its economic turmoil is also apparent. Crises in these countries are essentially argued to be rooted by flawed domestic fundamentals, particularly weak financial institutions, government over guarantees, overvaluation of assets, bad investment, lack of transparency, and cronyism.

Of course, once a crisis develops, it is typical to see fingers pointing at many different factors. Although there are many factors behind the crisis in Thailand and their contagion effect evident throughout East Asia, at least three major observations should receive further attention. One, while the crisis relates to fundamentals, it was not foreseen as chaotic bubbles, but rather a slowdown in economic growth. In the case of Thailand, Teerana Bhongmakapat (1990) accepted that there were several forces that would hinder Thailand's economic successes and its average growth rate tended to decline from 8.6 per cent during 1990-95 to 5.9 per cent during the second half of the 1990s. Competitiveness Subcommittee (1995) also warned that it was critical to stay away from bubbles, but did not anticipate it as a likely chaotic outcome within a few years to come. The Thai crisis involves very much with serious lack of confidence in policy management, policy makers and politics [see also Teerana Bhongmakapat (1997a and c), Corsetti, Pesenti and Roubini (1998) and Warr (1998)].² Such lack of confidence relates to pessimism and market reaction that can instantaneously produce discrete changes in country risk, while investors started to worry about emerging markets, including Thailand who was anticipated in 1996 to face the problems of sustained export slowdown, oversupplies in property markets, and rigid exchange rates. This implies that the crisis is quite unpredictable and characterized very much by self-fulfilling expectations. Two, external factors of the crises are of concern. In most studies and policy discussions, currency and financial crises have been essentially treated as consequences of weak domestic fundamentals. The domestic dimension is the main reason why the IMF program aims at correcting

² Dornbusch (1998b) viewed the Thai economy with strong fundamentals, but related the initial problem of the Thai crisis partly to the relationship between politicians and the weak banking system.

domestic fundamentals, not external roots of the problems, whereas several multilateral meetings have just recently signified the hot issue of global crisis and initiatives toward global financial reform. Financial liberalization was however highly accepted as one of the factors leading to the financial turmoil, largely because it occurred very rapidly without enough preparation and accompanying institutional changes, see Goldstein and Turner (1996) and Dwor-Frecaut, Mallikamas and Pootrakool (1998). Together with weak financial system at home, globalization of finance should be given more attention, since it may aggravate or even precede the crises. Financial flu that spreads from Thailand to other countries in the region, and to Russia and Eastern Europe is an evidence of the new era of globalized markets. In addition, whereas the Asian crisis starts from Thailand, there are certain external factors that put pressures on exchange rates and supply of foreign credits, such as spillover effects due to rising global interest rates and probably contagious effects from the Mexican financial collapse. It is crucial to see whether or not the role of global finance, such as world interest rates and the Tequila effect, explains the Thai crisis. If it is true, policy discussions may have to redirect toward correcting global finance.

Three, it involves short-term capital movements and the panic in asset markets. Japan is a case in point. Asset bubbles and collateral damages are viewed to be a major element of the financial meltdown in Thailand and some other countries in East Asia. Thailand's asset bubble was financed by capital inflows that moved very easily through the Bangkok International Banking Facility (BIBF) which is a "half-way" approach to financial liberalization.³ In Thailand, it is generally believed that asset bubbles lead to output collapses and financial crashes, not capital flows that rather affect asset prices and business activities. Speculation on asset prices during the first half of the 1990s led to overvaluation of wealth and collateral for bank credits. It may be the case that speculative bubbles accumulated the likelihood of financial collapse, but it is unclear whether movements in asset prices are either the cause or the consequence of the crisis. Miller and Luangaram (1998) argue that the

³ The BIBF scheme aims at reducing transaction costs of capital movements and therefore facilitates the speed of capital flows. Ammar Siamwalla (1997) asserted that the BIBF contributed to the property boom and excess supply in the real estate sector [see also Corsetti, Pesenti and Roubini (1998)].

asset bubble busted before the crisis and may not be the convincing explanation. Moreover, the sudden stops of capital inflows can destabilize domestic capital markets tremendously, and the resulting asset collapse would put the economy into deep recessions. Therefore, asset prices and private capital flows played an important role in the crisis process, and both could reinforce one another. The association between asset prices and capital movements matters greatly and requires further elaboration in understanding the Thai crisis and its ways out.

The purpose of this paper is to examine external causes of the crises and relevant policy implications. The emphasis is on the role of asset prices in globalized financial markets. Asset price deflation may encourage capital outflows, but, on the contrary, capital outflows are likely to dampen asset values. This paper, therefore, studies causal relationships between asset prices, such as exchange rates and equity prices, and short-term private capital movements. An examination is made whether capital flows or asset values are exogenous. Different directions of causal relationships would imply different policy strategies in dealing with the crisis.

In addition, signifying the modern role of globalization in financial markets, the Mexican crisis and its contagion effects on Thailand's asset prices are explored. This is different from a number of previous studies that mostly examine contagion effects within regions [see, for example, Masson (1998), Alba, Bhattacharya, Claessens, Ghosh and Hernandez (1998), and Glick and Rose (1998)]. The findings may lay support for global corrections if the Mexican crisis transmitted to The Thai economy through the channels of international asset markets. In terms of policy, the argument that domestic weaknesses are responsible for the Thai financial meltdown dominates the policy recommendations made by the IMF and Thai authorities, especially during the first year of the program. The existence of volatile capital flows and contagion across from Mexico to emerging markets in East Asia, if any, will suggest that domestic macro policies are not sufficient, though necessary, and additional global reforms may have to be seriously considered to suit the new era of globalization.

The paper is organized into four sections. Section II conceptualizes theoretical understanding on capital movements and asset values that possibly contributing to the capital-market crises. Section III examines statistical co-movements between asset prices and capital flows, as well as contagion effects. Section IV discusses macroeconomic policy lessons and alternatives in coping with the Thai crisis.

Macroeconomic policies here are traditionally defined as those for stabilization. Finally, we conclude in section V.

II. Asset Bubbles, Capital Movements and the Crisis: A Theoretical Perspective

Recently, there has been growing literature on the role of the credit market and the banking sector that may aggravate the adverse impact of fundamental shocks. A number of studies postulate procyclical behavior for bank credits, asset prices and business activities. Falling asset prices will affect firms' net worth and their capacity to borrow. Firms with financial distress have to liquidate their assets, causing asset prices to collapse. This will further jeopardize asset values and lead to a continuum of large shocks and recessions. At the other end, credit limitation or reduced supply of credits, both foreign and domestic, will lower prices of assets which will cause further damages on debt capacity and banks' ability to lend.

In the dynamic model constructed by Kiyotaki and Moore (1997), durable assets serve both as factors of production and collaterals for loans, and the expansion of credit-constrained firms has to be subject to their ability to acquire collateral in forms of land or other durable assets. Credit-constrained firms holding and using land as collateral will find themselves suffer even from an even small, temporary negative shock that cause prices of assets to deteriorate. For example, a small productivity shock in one sector will have spillover effects on the (common) land market. Lower land prices will have an indirect effect on firms' net worth in other sectors, generating much larger fluctuations in output and asset values than the initial shock.

The closed-economy model of Kiyotaki and Moore has been modified nicely by Edison, Luangaram and Miller (1998) to explore responses to the ending of land price bubble and the fall of exchange rates. The extension may fit the current crisis in Asia, especially in Thailand that has apparently witnessed a dramatic reduction in land prices and exchange rates.⁴ They argue that financial collapses where prudent

⁴ According to Fischer (1998) and Krugman (1998c), the role of domestic financial institutions and property prices is an essential element in understanding the crisis in Asia. Both views focus on the domestic dimension of the problems, however.

firms are brought down by imprudent firms are likely if asset values fall. The scramble for liquidity will result in “knock-on” effects as firms liquidate their land to satisfy collateral requirements, whereas the further fall in asset price will intensify the financial crisis. The bust in the bubble can, therefore, easily make insolvency out of firms with liquidity constraints.

Following the Tequila crisis, Calvo presented a series of studies theorizing the problems of capital flows and globalized capital markets, see for example Calvo (1998a and b) and Calvo and Mendoza (1998). Calvo (1998b) conjectures that a slowdown, especially a sudden stop, in capital flows would generate a crisis in capital markets. The sudden-stop crisis is possible even with current account deficits being financed by direct foreign investment, but equity and long-term bond financing might shield the economy from it. Much literature on capital-market crises relates to the functioning of the banking system and the transmission mechanism through which the financial institutions might amplify initial shocks. See Sachs, Tornell and Velasco (1996), Eichengreen and Rose (1998), Goldstein and Turner (1996), Goldfajn and Valdes (1997), and Fama (1985).

Globalization of finance is a salient feature of modern crises, and market imperfection is central to the problem. As stated by Wyploz (1998): “the combination of financial deregulation, contagion and erratic market behavior suggests that financial markets are not the epitome of perfection that they are often made to be.” Asymmetric information and incomplete markets exist in both domestic and world capital markets, of course. Sachs, Tornell and Velasco (1996) argued that, as in the Mexican Peso Crisis, international banks had a tendency to lend excessively to certain developing countries that were considered to emerge.

The rapid buildup of international lending could easily lead to crises if the perceived credit risk was sufficiently lower than its actual level, and international lending was cut back or unable to roll over. Goldstein and Turner (1996) and Wyploz (1998) are among others who considered financial liberalization as a very good predictor of currency and financial crises, as it has been in Latin America in the 1980s, in Europe in the early 1990s and recently in Asia. It is very important to know that once there is the withdrawal or sudden stop of capital flows, liquidity crisis would ensue and it could lead the affected economy into insolvency and severe crisis that probably take several years to be back on track.

Capital inflows generate both returns from improved efficiency as well as costs from greater financial risk. The point is that the bust of capital flows following the boom period is a very good indicator of currency and banking crises. The sharp decline in net capital inflows can produce even larger results. From a modeling perspective, to come up with large discrete results, like bubbles, it usually requires very large movements in initial shocks or fundamentals; otherwise an expectations-based model or a model with multiple equilibria are to be constructed.⁵ However, with a unique way of modeling, the problem of initial shocks in capital flows has been analyzed nicely by Chan-Lau and Chen (1998) who developed a model of private debt financing. Assuming that the financial system is subject to inefficiency due to costly loan monitoring, they considered a credit crunch or a reduction in the amount of loans intermediated by the inefficient financial system. One of their findings is that changes in asset values would greatly affect economic vulnerability and the severity of the financial crash.

It is realistic to take the decline in capital inflows, including the foreign supply of credit, as an exogenous shock due to the fact that, in the Asia crisis, the large and sudden reversal in private capital inflows stood in sharp contrast to favorable macro fundamentals. Furthermore, the financial system in Thailand and other Asian countries is relatively inefficient due to its stage of financial development and the slow adjustment to the new world of financial globalization that rapidly requires improvements in banking standard, transparency, supervisory/regulatory framework, and competitiveness.

Let first look at a simplified version of the model of Chan-Lau and Chen. Then a standard IS-LM-BP model with greater financial risk and costs of external financing will be depicted.

Figure 1 is an interpretation of the Chan-Lau-Chen (C-C) model where DF is the demand schedule for financial intermediation and SF is the maximum supply of credit by foreign depositor being dependent on perceived fundamental strength of the economy. On the demand side of the credit market, the optimal amount of the financial intermediary is subject to expected profits. With loan monitoring, the optimal amount that yields the local maximum expected profit is D . However, the

⁵ See Goldfjan and Valdes (1997) and Masson (1998) for models with expectations

amount of equilibrium intermediation, where demand for credit equals supply of foreign credit, can increase, unmonitored, after the switching point D^* . Suppose D^* is the amount of intermediation that yields the same expected profit as at D , and the supply of foreign credit is between D and D^* , then only D will be demanded.

The problem arises when the “safety buffer,” $SF-D^*$ shrinks and forces capital flows to move out. When SF falls below D^* , even marginally, the amount of credit demanded is only D , but the size of capital outflow jumps substantially by D^*-D . Therefore, a moderate reduction in foreign credit supply can drastically increase capital outflows, and certain fundamentals that affect supply of foreign credit and the local optimal of credit demand, D , are vital to the analyses.

In the C-C model, falling asset values, increasing (risk-free) foreign interest rates and other negative fundamental shifts can trigger the crisis. For example, as simplified in Figure 1, an increase in interest rates in the capital-rich countries will discourage investment in the less attractive emerging markets, leading to a reduction in SF . The shock will force the safety buffer, $SF-D^*$, to decline, and increase the likelihood of the crisis.

However, technically, the C-C model requires a discontinuous demand curve for credit when the expected profit from intermediary is at its local maximum. The model is good in explaining the credit market once firms become insolvent, not in the process of liquidity crunch. When the firms are at the brink of bankrupt and the economy is in for a long recession, the demand for loans will be low. The downward pressure on demand for loans, however, may not be the right answer to the declined interest rates usually observed when the recession is at the bottom. In the case of Thailand, declining interest rates are not really the result of lower output growth, but rather the expected appreciation of the domestic currency, and the lower risk or panic in the banking system.

During the period of liquidity crunch and bank run, the rise in interest rates indicates the tight credit market as the leftward shift in the credit supply curve exceeds the downward movement in the demand for loans. This is the case, though insolvent firms may demand less credits at their stage of bankruptcy.

and multiple equilibria, respectively.

Consider the standard macro analysis to gain an understanding on the likelihood of a crisis when the supply of foreign capital is contracted due to less attractive returns and higher risk premium. In this setup, we ignore the costs of improving the quality of loans (for example loan monitoring costs) and we don't have a discontinuous demand curve for loans. However, during the tough time of liquidity crisis, interest rates tend to rise, and firms apparently make a complaint on high interest costs and lack of liquidity.

In Figure 2, the credit market has typical demand and supply schedules. External factors, say world interest rates and country risk, are considered to discourage capital inflows. Risk can be affected by various fundamentals, including world interest rate and exogenous shock in capital flows, together with self-fulfilling

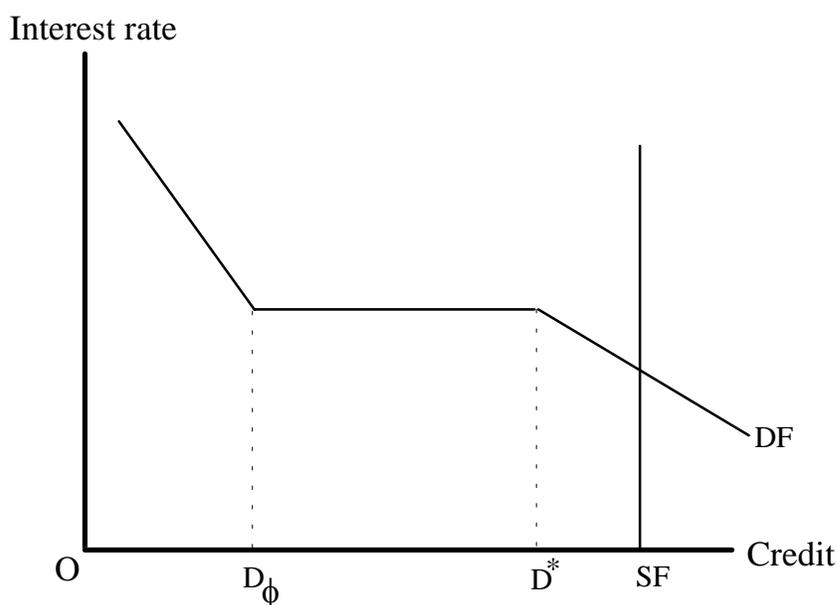


Figure 1 An Interpretation of Chan-Lau and Chen (1998)

expectations. An excessive increase in the risk premium relates to massive movements of capital flows, and, hence, the crisis becomes highly probable. It may harshly lead to high interest rates (liquidity crisis), depreciation (currency crisis), and output collapse (deep recession).

Suppose DF and SF are, respectively, the demand for loans and supply of credit. The initial equilibrium in the credit market is at point 0. Perceived country risk is assumed to rise due to pessimism toward fundamental changes, globally or domestically.⁶ The SF curve shifts from SF_0 to SF_1 since the rates of returns on domestic assets are relatively lower than foreign assets. At this stage, it is likely that portfolio investments will react promptly, while other major financial flows, such as debts and direct investment, may delay for some time. The shift in the supply of foreign funds dries up liquidity for domestic uses, and damages balance sheets of banks and business firms by putting pressures on domestic interest rates, exchange rates and production costs. The potential troubled firms and bad debts will weaken the banking system and sharply raise financial risks for the whole economy. Again, the credit supply curve moves further to the left, say from SF_1 to SF_2 , perhaps mainly due to outflows of institutional portfolio investment, and difficulties in receiving additional funds or rolling over debts. The liquidity or credit crunch that hurts firms' cash flows and retards growth will lead to a reduction in demand for credits, thereby shifting DF_0 to DF_1 . The severity of recession will determine the magnitude of interest rate reduction. Thus, when the economy is building the new base toward recovery, interest rates or other asset prices should fall. Moreover, with some signs of recovery, risk is perceived to be lower, and the SF curve will gradually move down.

It is worth elaborating somewhat more with the familiar IS-LM-BP model, as shown in Figure 3. The initial shock of greater financial risk adversely affects the

⁶ In the Asian and Tequila crises, we observe the co-movements of stock prices and exchange rates of economies in the same regions. However, contagion may not be significant only through regional links, but also market sentiments worldwide. When a local market is collapsing, global investors may have to maintain their rates of returns and risks by withdrawing their funds from some other markets. Valdes (1996) argued that lack in liquidity in a crisis-hit country would lead financial intermediaries to liquidate their assets invested in other countries, and thus might trigger a crisis elsewhere.

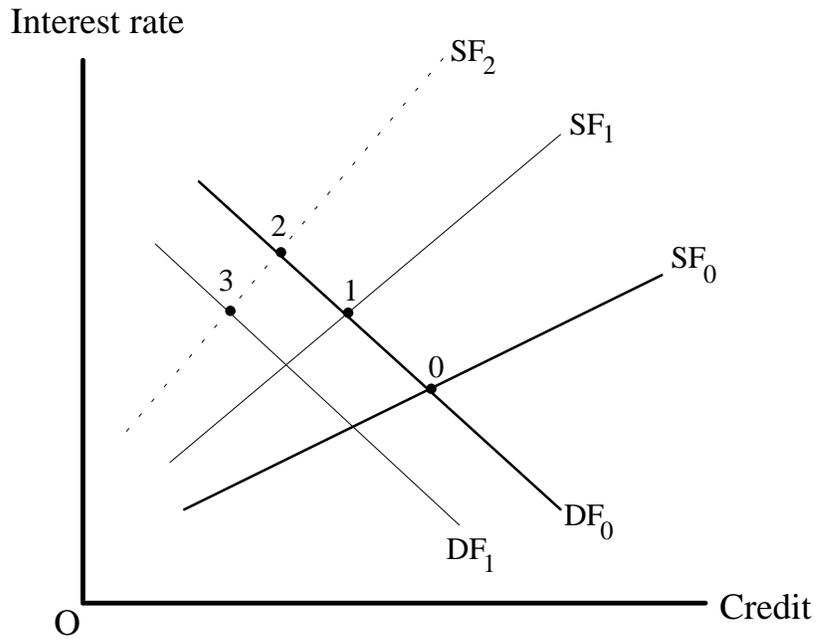


Figure 2 The Credit Market : Rising Risk and Capital Outflows

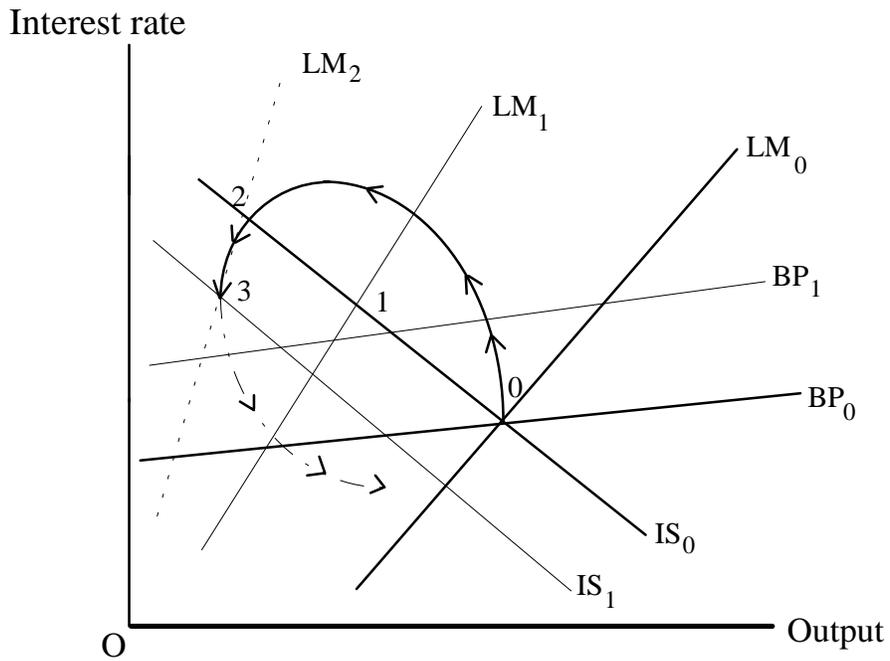


Figure 3 The IS-LM-BP Model: Rising Risk and Capital Outflows

supply of foreign capital flows, and causes the BP curve to move upward. When the exchange rate is held fixed, the loss in international reserves is evident, and in the end, domestic money supply will decline. As in the case of Thailand, the eroding balance of payments is one of the major reasons why the baht would have to float and excessively depreciate. If exchange rates are allowed to float, the ensuing depreciation will have at least three consequences that signify the currency and financial crisis, assuming that exchange rate depreciation with high volatility has a negligible impact on net exports in the short run.

First, it raises the debt burden as debt contracts are largely dominated in dollars or foreign exchanges. The banks that being dependent would all a sudden become insolvent, while corporates that taking bank loans would also find themselves unable to pay foreign debts, particularly those with short-term maturity. The problem of bad debt will jeopardize the functioning of the banking system and reduce the velocity of money, leading to the anti-clockwise rotation of the LM curve. Second, its supply-side effect through higher import prices generates inflation. A resulting decline in supply of real balances will contract liquidity and shift the LM curve to the left. Suppose, from the two reasons cited, greater risk shifts the LM curve from LM_0 to LM_1 . Third, asset prices are likely to fall due to asset liquidation, changes in exchange rates as well as stock prices. The collapse in asset or wealth will raise default risks, and adversely affect private spending, causing the IS curve to shift leftward from IS_0 to IS_1 . Hence, capital inflows are discouraged and move the LM curve to the left, say, from LM_1 to LM_2 . The equilibrium will then move along the path shown by the dark arrow during the bust period, and the recovery path is the dashed arrow.

III. Asset Prices, Private Capital Flows and Contagion: Econometric Analyses

Theoretically, fluctuations in asset prices can be either causes or consequences of changes in private capital flows. In light of sharp movements in asset prices, self-fulfilling prophecy and contagion under capital-market imperfections are crucial, while fundamental changes alone cannot explain the ups-and-downs in the bubble

manner. Here, using Thailand's data, we basically investigate the movements of asset prices, private capital flows, and their simple cointegrations.

Asset Price Movements

In Thailand, information on prices of assets, particularly land and other physical assets, is poor and, to a large extent unavailable. Still, we are able to lay out some information on asset deflation/inflation in the stock market, real estate sector, and foreign exchange market. Stock price index is a barometer for market sentiments and perceived value for firms listed in the Stock Exchange of Thailand. The real estate sector makes up for a large part of national wealth, which implies that changing property values can significantly erode or inflate national wealth. Although the official data on land and property prices are not available, we will make use of the Jones Lang Wootton and Government Housing Bank data on office, retail spaces and housing in Bangkok [see Renaud, Zhang and Koeberle (1998)]. Exchange rates as relative prices of foreign financial assets are briefly covered.

After falling during the Gulf war and the *coup d'etat* done by National Peacekeeping Force, the Thai stock market became bullish again, particularly in 1993. The averaged stock price index began to fall sharply and steadily from 1354 in the third quarter of 1995 to 246 in the third quarter of 1998, see Table 1. The slowdown in the stock market, especially for property development, was in fact evident during 1994 and 1995, before witnessing the stock market crisis of 1996-1998.

In early 1995, the Mexican Peso crisis and the Baring case shook the stock market, and the baht was attacked with the fear of problems similar to the Mexican peso. The speculative attack was short-lived, and it failed to see any sizeable devaluation, but rather an appreciation of the baht. This was mainly because speculators wrongly anticipate baht devaluation, even though the dollars were declining. Pessimism on exports slowdown and high inflation was simply false. However, shortly after the general election in November 1995, the Banharn Administration seriously faced credibility problems, while the dollars began to rise and a failing domestic bank led to lack of confidence concerning the supervising and monitoring system in the financial sector. With political difficulties under Banharn and Chavalit governments, the stock market continued to plunge further and the baht was severely under attacks, even though regional market crash had not yet been

Table 1 Average Stock Prices

	1993	1994	1995	1996	1997	1998
SET Index						
Annual	1019.3	1391.7	1293.2	1168.3	597.6	353.6
Q1	932.2	1409.2	1256.8	1344.1	754.5	471.9
Q2	862.0	1297.2	1301.9	1295.7	602.9	361.0
Q3	947.5	1431.8	1353.7	1111.7	591.5	246.2
Q4	1334.1	1425.5	1258.3	924.5	442.9	329.6*
SET Index for Property Development						
Annual	1274.2	1475.9	1016.2	792.6	270.1	69.2*
Q1	1126.9	1840.1	1017.2	977.6	417.7	108.3
Q2	1014.1	1436.1	998.9	876.4	262.7	84.0
Q3	1182.0	1358.9	1098.4	761.5	253.8	33.6
Q4	1771.5	1271.5	947.8	557.1	147.2	42.0*

* As of November 25, 1998.

Sources: Stock Exchange of Thailand and TISCO Securities Research

realized. The abolishment of the basket peg regime, once praised by international communities, led to the serious problem of the currency crisis and unhedged external debts.⁷ Defaults and rumors on debt moratoria were intensified and banks were in panic. In fact, just before the time of switching exchange rate regime, Somprasong, a major land developer, and Finance One, a major finance company, were expected to go bankrupt. Such greater risk, being aggravated later by regional crises in the region, have continued to put the stock market deeper in crisis since mid-1997.

For the property market, share prices of real estate companies can be taken as a leading indicator of property market, the property developers experienced a slight slowdown in 1994 and 1995, the period that stock prices for most listed companies had not yet declined. One of the main reasons why the property share prices slowed down somewhat was an anticipation of oversupply. The oversupply can be explained by (a) the continued corporate optimism on Thai economy, (b) high liquidity and heavy loans for the property sector, especially through fincos that extended their large lending to this sector, and (c) lag in project development and/or completion behind relatively volatile demand. According to Jones Lang Wootton, new office space supply reached its peak in 1993-1995, while the supply of retail space was strongest in 1994 and slightly declined in 1995 and 1996 [see Renaud, Zhang and Koeberle (1998)]. Housing completion in Bangkok, as reported by Government Housing Bank, was the greatest during 1994-1997. As a result, vacancy rates or oversupply in office, retail spaces and residential property were massive in 1997 and 1998.

In early 1990s, with enormous capital inflows, foreign reserves were used as a shock absorber and exchange rates were stabilized to reduce the exchange risk for exporters and the real sector. The high convertibility of the baht indicated that exchange rates might have to be flexible, or otherwise domestic interest rates had to respond to capital flows. It was essentially not possible to manage a macroeconomy by targeting both the exchange and interest rates together, despite a robust economy was growing very well. Financial liberalization policy committed during 1994 and 1995 lifted the need to reform stabilization policy accordingly. The baht was first

⁷ Before the baht was floated, the market expected the fair value of the baht at 30-32 baht per dollar. But after the float July 2, 1998, the baht immediately collapsed, and recorded low at 56.50 baht per dollar on January 12, 1998. Actually, pessimism kept increasing when the baht depreciated and even anticipated 50-70 baht per dollar.

attacked in early 1995, but it was by no means vulnerable. However, pessimism and weaknesses in domestic fundamentals together with rising dollars, the baht was severely attacked by professional speculators in December 1996, February and May 1997. The basket peg regime finally could not hold on and had to give in to a floating regime on July 2, 1997. Since that time, the baht has been excessively volatile, collapsing from 25.9 baht per dollar in 1997Q2 to 56.70 baht per dollar in December 1997, before reaching the level of 36 baht per dollar in November 1998 (see also Figure 4). In 1998, the contagious currency crisis that spread to Indonesia and other economies in the region has also blocked the tendency for the baht to appreciate and quickly approach its long-run equilibrium.

Figure 4 shows an exchange rate position index (EPI), or an indicator of exchange rate vulnerability, that incorporates exchange rate movements together with changes in international reserves. When international reserves deplete, EPI indicates currency depreciation or greater vulnerability of the baht, although the currency is held unchanged. Here, this composite index is arbitrarily defined as exchange rate minus .3 times percentage changes in international reserves, i.e.,

$$[e(t)/e(0)-1] - .3 [FR(t)/FR(0)-1],$$

where $e(t)$ and $FR(t)$ are, respectively, exchange rates and foreign reserves at time t . The period of January 1995 is chosen as the base ($t=0$). This index is used in our statistical analysis in conjunction with exchange rates. From Figure 4, from 1995 to mid 1997, the baht was stronger than its market rates, but started to depreciate quickly in the second quarter of 1997. However, with the complete data set on foreign exchange swap transactions used by the Bank of Thailand in defending the baht attacks, the EPI would move more dramatically due to losses in net international reserves in 1997.

Private Capital Flows

After the second oil shock and the beginning of the low dollar period in mid-1980s, Thailand and other East Asian economies became one of the leading destinations for private capital flows. During the last ten years, Thailand and neighboring countries were evidently different from Latin America because of the

dominant role of direct investment. However, strong domestic investment and low country risks encouraged massive private capital inflows that, in turn, brought about optimism toward investment and growth.

The financial crisis and private capital flows are related, particularly short-term debts and portfolio investment. In the period prior to the crisis, portfolio investment dropped substantially in 1996 (see Table 2). This may be due to worries concerning overheating economy, legal actions against stock market manipulation, and intensified competition in other stock markets, such as China. Portfolio investment, which dropped in 1996 and later went up in 1997, partly in response to heavy baht depreciation.

On the other end, bank lending rose sizably during 1994 and 1995. BIBF regulation played a big part. It provided low costs of borrowing with tax advantages so multinational corporations channeled their external funds in the form of loans through the BIBFs and they are not counted as foreign direct investment. The increasing role of BIBFs, obviously, reduced the maturity of external debts, leading to the problem of maturity mismatches. With a reduction in 1996, bank lending finally collapsed in 1997.

The high ratio of short-term capital flows was the main factor behind the crisis. Total private capital flows began to fall in 1996 due to the reduction in bank lending and portfolio investment. Bank lending distinctly collapsed further in 1997 since it probably took some time to withdraw or roll over. Private capital inflows reduced from 460.6 billion baht in 1996 to net outflows of 274.6 and 277.0 billion baht in 1997 and the first half of 1998, respectively. Decreased bank lending was clearly to be blamed.

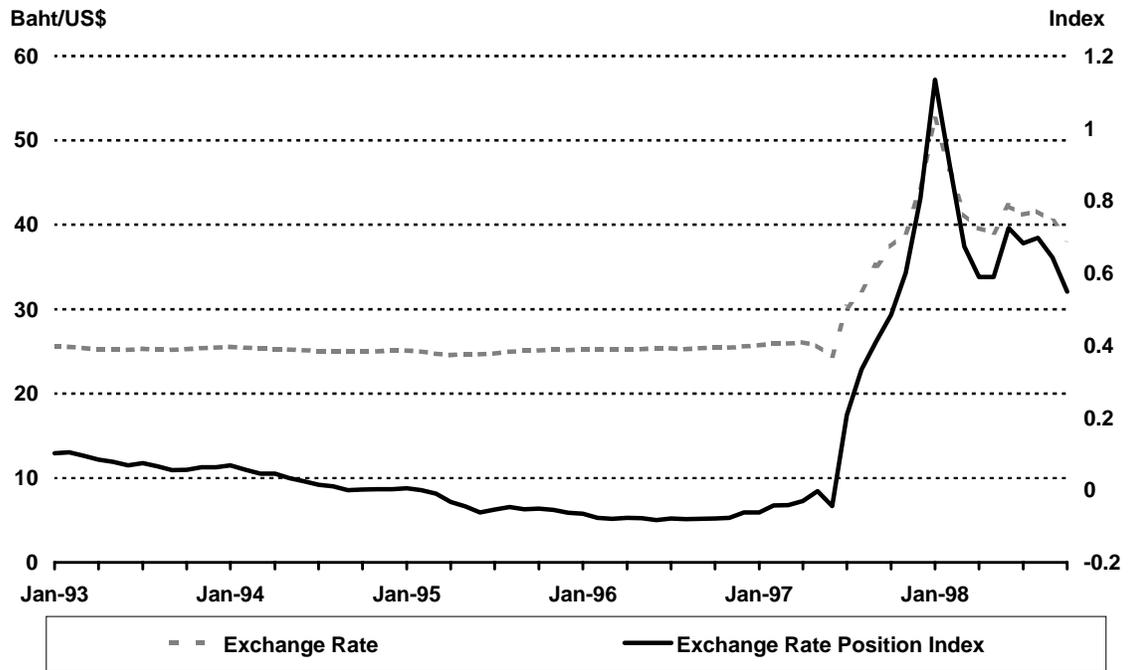


Figure 4 Exchange Rate and Exchange Rate Position Index

Table 2 Net Private Capital Flows to Thailand

	(Billion baht)						
	1992	1993	1994	1995	1996	1997	1998*
Private Capital Flows	237.2	260.9	301.9	517.6	460.6	-274.6	-277.0
Direct Investment	50.2	36.4	22.7	29.1	36.8	105.1	127.7
Portfolio Investment	14.1	122.6	27.5	81.7	88.2	138.7	34.6
- Equity Securities	11.5	67.9	-10.3	52.8	28.4	122.0	27.9
- Debt Securities	2.6	54.8	37.8	29.0	59.8	16.7	6.7
Bank Lending	49.1	91.0	349.9	279.7	126.8	-224.9	-283.4
- BIBFs	-	193.2	253.4	202.4	115.9	-77.6	-210.7
Others	123.8	10.9	-98.2	127.2	208.7	-293.5	-156.0
Official Flows	3.5	5.0	4.0	27.5	33.0	60.4	30.7
International Reserves	21.2	25.4	30.3	37.0	38.7	27.0	26.8

<i>(As % of GDP)</i>							
Private Capital Flows	8.4	8.2	8.3	12.4	10.0	-5.7	-
Direct Investment	1.8	1.1	0.6	0.7	0.8	2.2	-
Portfolio Investment	0.5	3.9	0.8	2.0	1.9	2.9	-
- Equity Securities	0.4	2.1	-0.3	1.3	0.6	2.5	-
- Debt Securities	0.1	1.7	1.0	0.7	1.3	0.3	-
Bank Lending	1.7	2.9	9.6	6.7	2.8	-4.7	-
- BIBFs	-	6.1	7.0	4.8	2.5	-1.6	-
Others	4.4	0.3	-2.7	3.0	4.5	-6.1	-
Official Flow	0.1	0.2	0.1	0.7	0.7	1.3	-

* January-June.

Source: Bank of Thailand

Contagion from Mexico

Although the root of Thai crisis involved, to a large extent, domestic elements of financial crises typically found in the recent history, more often than not, it has not been considered as an integral part of possible global crises in the modern era of financial globalization. Was the Thai crisis self-inflicted and had nothing to do with the previous crisis in Mexico? It is evident that the Thai crisis has contagious effects to other countries in the region through trade and financial linkages, but it is important to impose a question whether or not there exists a possible relationship between the recent East Asian crisis and the earlier Tequilla crisis. If it were true, we could have underestimated contagion from Mexico, or any other part of the world, to financial markets around the globe, and therefore, international measures might have to be seriously called for.

Here, we examine contagion from Mexico to the Thai stock market. Contagion is also measured in a strong sense as a shift in structural transmission across equity markets [see Forbes and Rigobon (1998)]. Co-movements between stock markets may reflect only standard channels of international shocks and a weak definition of contagion. In the strong sense, co-movements alone simply establish linkages, rather than “contagion” which is defined as a measure for the excess variation in the co-movements not explained by standard relationships.

International propagation of shocks in the case of contagious Mexican crisis is specified below:

$$SET = \alpha + (1+D) SEMX + i^* + \epsilon_t, \quad (1)$$

$$SET = \alpha + SEMX + DSEM X + i^* + \epsilon_t, \quad (2)$$

where SET and SEMX are stock price indices in the Thai and Mexican stock markets, respectively, i^* is international interest rate, and D is a dummy variable for the period of the Mexican crisis, being equal to 1 during 1994-1995, and 0, otherwise. DSEM X

is D times SEMX. International interest rate is considered as a variable that leads to the common (or ‘monsoonal’) effects to both Mexican and Thai markets, and the sign of β_3 is expected to be negative. The US three-month interbank rate is i^* . For the residual, it may be interpreted as Thailand’s country risk, which is assumed to be independently distributed or i.i.d.. Here, the contagion is captured by changes in β_4 from the pre-crisis to the crisis period, i.e. in equation (2).

The estimation result is shown below. Normally, stock prices in Mexico and Thailand move in the opposite direction, implying that financial rates of return in these two countries are substitutes, i.e., competing in terms of attracting foreign funds. But this relationship switches in a meaningful manner, as β_4 is positive and significant. We have found contagion, in a strong definition, from the Mexican stock market to the Thai stock market: during the crisis, falling Mexican stock did hurt the Thai market. For the spillover effect, β_3 is negative as expected, and higher US interest rates hurt the stock market in an emerging economy like Thailand. The findings not only admit the role of external factors of the Thai crisis, but also demonstrate a strong likelihood that contagion might very well go worldwide, rather than within geographical proximity.⁸

$$\begin{aligned} \text{SET} = & 1924.1 - 0.2406 \text{ SEMX} + 0.1709 \text{ DSEMX} - 101.57 i^* \\ & (5.9639) \quad (-2.6265) \quad (4.0954) \quad (-2.0157) \end{aligned}$$

$$R^2 = 0.8138, \quad F = 68.7349, \quad \text{D.W.} = 0.8224, \quad N=63 \text{ (1993.08-1998.10).}$$

⁸ For studies that found contagious crisis within East Asia, see Glick and Rose (1998) on trade links, and Alba, Bhattacharya, Claessens, Ghosh and Hernandez (1998) on asset price co-movements.

Equity Prices and Private Capital Flows

In discovering whether private capital flows determined asset prices, or vice versa, we apply pairwise Granger causality tests on variables related to both factors. Private capital flows include portfolio equities, portfolio debts, bank lending (BIBFs included), and BIBFs. These private capital flows are rather short-term foreign direct investment. Portfolio equities tend to react quickly to changes in market sentiments, whereas portfolio debts and bank lending may have longer maturity and require some time to withdraw or not to renew the debts. Observations on capital flows are in terms of US dollars.

Equity prices and exchange rates are used as asset prices in the analysis. Stock market values, or market capitalization, are in US dollars. For unavailable property prices which are not available, stock price index for listed real estate companies are used as a proxy. We apply the Granger causality test technique on the monthly data from January 1993, to October 1998. In cases that no relationships are found between variables, we report alternative results where data are transformed into a three-month moving average (equations with asterisks, *). This transformation may help avoid irregular fluctuations.

Table 3 shows the estimation results of causality tests between equity prices and various types of private capital flows. The Thai stock market tended to be Granger-affected by portfolio equities, but not the other way around. Portfolio equities determined real estate stock prices, and clearly were exogenous in the sense of Granger. On the contrary, portfolio debts and bank lending were Granger-caused by the equity market. For BIBFs, equity prices of property sector were exogenous, whereas BIBFs, essentially short-term loans, Granger-caused the SET index and market capitalization. The relationship between BIBFs and the SET index was two ways. The conclusion we may draw here is that short-term private capital flows, particularly portfolio equities, are likely to affect equity prices, while variations in longer-term private capital flows, such as portfolio debts and bank lending (BIBFs excluded) are likely to follow those of equity prices.

Table 4 tests the relationships between private capital flows and exchange rates as well as the EPI index. For portfolio equities, portfolio debts and BIBFs, private capital flows Granger-caused exchange rates and the EPI index. But, only the

Table 3 Equity Prices and Net Private Capital Flows: Causality Tests

Null Hypothesis	F statistic	Probability
Equity Prices and Portfolio Equities		
(1)* $P_e \not\rightarrow$ PIE	1.7755	0.1623
PIE $\not\rightarrow$ P_e	2.2020	0.0979
(2)* $V_e \not\rightarrow$ PIE	2.5555	0.0644
PIE $\not\rightarrow$ V_e	3.6519	0.0178
(3)* $P_{ep} \not\rightarrow$ PIE	1.8569	0.1474
PIE $\not\rightarrow$ P_{ep}	3.5115	0.0209
Equity Prices and Portfolio Debts		
(1) $P_e \not\rightarrow$ PID	5.4258	0.0023
PID $\not\rightarrow$ P_e	0.7628	0.5195
(2) $V_e \not\rightarrow$ PID	1.8629	0.1463
PID $\not\rightarrow$ V_e	1.1039	0.3549
(3) $P_{ep} \not\rightarrow$ PID	4.4121	0.0073
PID $\not\rightarrow$ P_{ep}	1.2320	0.3064
Equity Prices and Net Bank Lending		
(1) $P_e \not\rightarrow$ NBL	6.4784	0.0007
NBL $\not\rightarrow$ P_e	0.4013	0.7526
(2) $V_e \not\rightarrow$ NBL	3.3527	0.0249
NBL $\not\rightarrow$ V_e	1.3118	0.2793
(3) $P_{ep} \not\rightarrow$ NBL	5.5700	0.0020
NBL $\not\rightarrow$ P_{ep}	0.1104	0.9537
Equity Prices and Net Bank Lending (BIBF)		
(1)* $P_e \not\rightarrow$ BIBF	2.9733	0.0393
BIBF $\not\rightarrow$ P_e	3.1346	0.0325
(2)* $V_e \not\rightarrow$ BIBF	0.8373	0.4791

	BIBF $\not\rightarrow$	V_e	3.1816	0.0308
(3)	P_{ep} $\not\rightarrow$	BIBF	3.9978	0.0118
	BIBF $\not\rightarrow$	P_{ep}	0.5458	0.6529

Table 4 Exchange Rates and Net Private Capital Flows: Causality Tests

Null Hypothesis		F statistic	Probability
Exchange Rates and Portfolio Equities			
(1)*ER	$\not\rightarrow$ PIE	0.3040	0.8224
	PIE $\not\rightarrow$ ER	3.0409	0.0363
(2)*EPI	$\not\rightarrow$ PIE	0.4995	0.6842
	PIE $\not\rightarrow$ EPI	3.2150	0.0296
Exchange Rates and Portfolio Debts			
(1)* ER	$\not\rightarrow$ PID	1.1892	0.3222
	PID $\not\rightarrow$ ER	2.4743	0.0709
(2)* EPI	$\not\rightarrow$ PID	1.1889	0.3223
	PID $\not\rightarrow$ EPI	2.5787	0.0627
Exchange Rates and Net Bank Lending			
(1) ER	$\not\rightarrow$ NBL	3.7310	0.0160
	NBL $\not\rightarrow$ ER	2.8719	0.0440
(2) EPI	$\not\rightarrow$ NBL	3.5440	0.0199
	NBL $\not\rightarrow$ EPI	1.6680	0.1839
Exchange Rates and Net Bank Lending (BIBF)			
(1) ER	$\not\rightarrow$ BIBF	1.5702	0.2063
	BIBF $\not\rightarrow$ ER	4.5511	0.0062
(2) EPI	$\not\rightarrow$ BIBF	0.6712	0.5732
	BIBF $\not\rightarrow$ EPI	3.5861	0.0190

behavior of bank lending yielded mixed results. Exchange rates and bank lending Granger-caused each other, whereas fluctuations in EPI led to variations in bank lending.

Other than the interactions between private capital flows and asset prices, it is one step beyond to see whether or not private capital flows responded to other fundamental variables, particularly domestic and global interest rates as commonly adhered to. Table 5 provides the empirical results of causality tests between various types of private capital flows and monetary conditions, both domestic and international. Monetary conditions are defined as indicators incorporating interest rates and changes in exchange rates, that is,

$$[i(t)/i(0)-1] - .3 [e(t)/e(0)-1], \quad \text{for domestic monetary condition (MCI), and}$$

$$[i^*(t)/i^*(0)-1] + .3 [e^*(t)/e^*(0)-1], \quad \text{for foreign monetary condition (MCI*).$$

The $i(t)$, $i^*(t)$, $e(t)$, and $e^*(t)$ are domestic interest rates, foreign interest rates, exchange rates of baht/US dollars, and Japanese yen/US dollars at time t , respectively. The period of January, 1995 is selected as base, $t=0$. Domestic interest rates are three-month interbank rates, while foreign interest rates are defined as three-month interbank rates in the US money market. The results reveal that both domestic and foreign monetary conditions Granger-caused portfolio debts, whereas domestic, rather than foreign monetary condition, Granger-caused bank lending, including BIBFs. The implication is that, relative to monetary conditions in the US, domestic monetary conditions have a significant role regarding changes in the debt markets.

Based upon our findings and series of data, it can be said that the fast-moving portfolio investment caused fluctuations in the Thai stock market, particularly the real estate, resulting in sudden stops in foreign loans. These stops led to the currency crash and financial crisis. Moreover, domestic interest rate policy as well as global monetary conditions could be the critical factors that affected capital flows. The implication is that changing monetary conditions, in turn, would tremendously help

ease the crisis and its contagion. In any case, leaving out the global element of the crisis is surely a big mistake.

Table 5 Monetary Conditions and Private Capital Flows: Causality Tests

Null Hypothesis	F statistic	Probability
Portfolio Equities		
(1) MCI $\not\rightarrow$ PIE	1.4363	0.2415
PIE $\not\rightarrow$ MCI	1.6692	0.1836
(2) MCI* $\not\rightarrow$ PIE	0.4882	0.6918
PIE $\not\rightarrow$ MCI*	0.4615	0.7102
Portfolio Debts		
(1) MCI $\not\rightarrow$ PID	4.4289	0.0072
PID $\not\rightarrow$ MCI	1.4437	0.2394
(2) MCI* $\not\rightarrow$ PID	2.9158	0.0418
PID $\not\rightarrow$ MCI*	0.7997	0.4991
Net Bank Lending		
(1) MCI $\not\rightarrow$ NBL	6.6673	0.0006
NBL $\not\rightarrow$ MCI	2.9050	0.0423
(2) MCI* $\not\rightarrow$ NBL	0.7871	0.5060
NBL $\not\rightarrow$ MCI*	0.3526	0.7874
Net Bank Lending (BIBF)		
(1) MCI $\not\rightarrow$ BIBF	3.0088	0.0374
BIBF $\not\rightarrow$ MCI	2.0121	0.1222
(2) MCI* $\not\rightarrow$ BIBF	1.4566	0.2358
BIBF $\not\rightarrow$ MCI*	0.5274	0.6653

IV. Macroeconomic Policies

In coping with the Thai crisis, the initial macroeconomic framework, including the IMF-sponsored program, aimed, principally, at restoring confidence in exchange rates and fixing flawed domestic fundamentals. Devaluation was perceived as necessary to reduce the current account deficit, but excessive baht depreciation Thailand experienced shortly after the float led to strong arguments in favor of high interest rates. With heavy external debt and large current account deficit, contractionary demand management was seen as necessary, whereas weak financial institutions and bail-out over guarantees justified the IMF-supported package to close down insolvent financial firms and liquidate assets.

The framework, however, is heavily criticized and certain lessons can be drawn. The program aims at correcting domestic fundamentals but with little emphasis on global markets and self-fulfilling prophecy. In the following section, we discuss stabilization policies for alleviating the Thai crisis which involves volatile exchange rates, heavy foreign debts, the deep domestic recession and social costs of the crisis.

Domestic money, though having a small and limited role in solving the crisis, is much affected by global factors; monetary policy as a domestic measure is central to macro policy discussions in the crisis-hit economies, such as Thailand and its neighbors. Tight monetary policy was recommended to help restore confidence and stabilize exchange rates on fear of excessive baht depreciation [see Fischer (1998), Dornbusch (1998a), and Goldfajn and Baig (1998)]. Fischer (1998) stated clearly: “All [IMF-supported] programs [in Thailand, Korea and Indonesia] have called for a substantial rise in interest rates to attempt to halt the downward spiral of currency depreciation. And all [these] programs have called for forceful, up-front action to put the financial system on a sounder footing as soon as possible.” Whether or not tight monetary policy is the right dose remains debatable [see Sachs (1997), Radelet and Sachs (1998) and Stiglitz (1998c)].

Before the collapse of the baht, speculative attacks signaled for the need to manage either exchange rates or interest rates. Flexible exchange rates were implied if the authorities were reluctant to pursue an exceptionally high interest rate policy for a pretty long period of time. Unhedged foreign borrowing discouraged the authority

from giving up in the fight to defend the currency, but swap transactions to maintain international reserves greatly made information asymmetric between speculators and firms. The former received the information from money traders, while the latter simply followed official figures and words. The actual information on swap transactions in foreign reserves suggested that the baht should be more flexible, rather than pushing interest rates higher.⁹ In fact before the crisis, interest rates were almost twice as high as in Malaysia.

The attempts to have 'sound' monetary policy to restore confidence, or at least the reluctance to adopt counter-cyclical monetary policy, led to excessively high interest rates that produced harmful effects on the health of corporate and financial sectors. The 1-month repurchase rate jumped from 13.00 percent in January 1997 to around 20-24 percent during the second half of 1997 and early 1998. Real interest rates also rose considerably for several few months during the crisis. The growth of broad money, M2A, dropped on an annual basis from 18.1 percent in 1995 to 12.7 and 2.1 percent in 1996 and 1997, respectively.

It is very natural and proper for interest rates to rise in response to higher risk premiums. But adopting tight monetary policy at the onset of the crisis with huge debt and money panic could fail to stabilize exchange rates and manage the crisis for a number of reasons.

First, although both current account and balance of payments are negative, macroeconomic management demands a trade-off between internal and external balances. The initial framework that worked on fiscal and monetary contractions put an emphasis on achieving external balance by accepting the costs of output collapse. This is probably due to the beliefs that tight monetary policy effectively combats the problems of capital flights and overheating economy. But, at the other end, tight money raises default risks and retards output amid the crisis, even though it normally relates to currency appreciation. Capacity utilization reduced sharply from 79.4 in December 1995 to 58.5 and 50.7 in December 1997 and September 1998. Certainly, monetary contraction cut back private investment and consumer spending, not largely through interest costs of new projects, but through economy-wide pessimism and defaults of financial institutions which upset confidence in the baht. Domestic

⁹ This is the matter of trade-off. Fisher (1998) as well as Corsetti, Pesenti and

interest rates would rise due to higher risk premiums related to the monetary contraction. More importantly, high interest rates discouraged stock markets or asset prices that related to private capital flows (see Table 4).

Second, excessive currency depreciation and liquidity crunches occurred simultaneously, suggesting that the crisis might not be the result of the over expansion in the money supply. The sudden collapse of the baht had much to do with self-fulfilling prophecy and pessimism on the government's capabilities in stopping the panic in domestic and international asset markets. Immediately after the general election in November 1997, the new administration and economic team led by the Prime Minister Chuan Leekpai helped restore confidence remarkably, as supported by the average value of the baht declining from 40.70 baht per dollar in the fourth quarter of 1997 to 43.70 baht per dollar in the first half of 1998 amid the severe regional crisis in Indonesia and South Korea. Sachs (1997) convincingly postulated the self-fulfilling prophecy in the money market which caused the liquidity crisis and deep recession. Financial institutions failed to function properly while non-viable finance companies were closed down and sent a shock wave to the remaining of the financial sector. Although money supply contracted and inflation rates were high, a seasonally-adjusted index of income velocity of broad money (M2A) further declined from 100 in the base period (December 1996) to 99 and 92 in December 1997 and September 1998, respectively. Reduced velocity and greater bank panic generated excess demand for real balances, thereby not supporting tight monetary policy. As experienced in Thailand, since mid-1998, easing monetary conditions together with new initiatives to stop the bank panic have reinforced interest rates to decline dramatically, and such policy actions have caused the baht to appreciate pretty quickly.

Third, the weak financial system requires a serious reform to improve banking standards, and correct any moral hazard problems associated with the financial system. To right the wrong practices, the smooth process of adjustment is as essential as other processes of structural adjustment and trade liberalization. But to quickly reform the financial sector, tight money would make the process difficult and perhaps impose greater default risks on the entire banking sector which has remained

Roubini (1998) argued that the Thai monetary policy was not sufficiently tight.

unattractive to foreign investors who have great concerns over unpredictable risks and possible global financial meltdown.

As a result, it is imperative not to make monetary policy rigid so that macroeconomic adjustment can respond well to foreign capital shocks and financial reforms. However, this does not mean that monetary policy should be pursued at the expense of exchange rate depreciation. Based on our findings, exchange rates are Granger-caused by private capital flows, but not the other way around (see Table 4). Exchange rates should be allowed to find a new equilibrium in the aftermath of the currency collapse. With self-fulfilling expectations, attempts at affecting exchange rates through altering the money supply may incur considerable costs, but it matters very briefly. In any case, the ‘optimal’ level of exchange rates is essentially unknown.

To have liquidity with a minimal impact on exchange rates, the ‘helicopter policy’ is inferior to measures specifically aimed at debt restructuring and recapitalization. Successful developments in these two areas greatly resolve the problems of insolvent banks and enormous bad debts. Asset prices would not overly decline when financial intermediation can function and massive asset liquidation remains intact as the diffusion of bankruptcy is contained.

The Thai crisis is rooted in the private sector, making it difficult for the government to resolve the problem. The government basically lacks policy instruments to effectively handle bad debts, including the externals, not to mention political implications of government bail-outs. As a result, official authorities are reluctant to launch new initiatives, but are much comfortable with social expenditure programs. This is why fiscal policy has much limitation in fixing the financial crisis. The IMF-supported program requires the explicit inclusion of financial burden into the government budget. By the same token, fiscal budget is difficult to ease out collateral damages or to stabilize asset prices that have been reduced substantially.

Initially, fiscal policy targeting was to downsize the budget so as to cut down current account deficits. In 1997, the government, in consultation with the IMF staff, intended for a budget surplus by one percent of GDP. This is acceptable, given that

current account surplus is critical for the ability to pay back enormous foreign debts.¹⁰ However, tight money and output recession suggested that fiscal adjustment had to be made to stabilize output growth. Revised fiscal targets allowed (central government) budget deficits to rise to 1.4 and 2.7 percent of GDP for fiscal years 1997 and 1998, respectively. For fiscal year 1999, the budget deficit target is changed from 1.0 to 3.0 percent of GDP.

Nevertheless, easing indicative targets on government budget deficits should not be counted as expansionary fiscal policy, but rather a target change due to insufficient revenue collection. Theoretically, based on substantial current account surpluses by some 13.5 and 11 percent of GDP in 1998 and 1999, greater budget deficits should be made to stimulate the economy. In practice, conservative fiscal targets are consistent to the need to maintain fiscal discipline and assure manageable public debts. Fiscal policy, to a large extent, has been constrained by political consequences and public debt management implications to respond anti-cyclically to movements of capital flows, asset prices and output growth.

As we discuss so far, macroeconomic policies may play a stabilizing role in the Thai crisis. But limitations do remain, especially in their reaction to the capital-market crisis rooted in the private sector and global conditions. This is tantamount to saying that a resolution to a crisis and its contagion cannot overlook international measures. If the Thai crisis were really domestic, correcting domestic fundamentals would be the first-best solution for us even when living in the world of self-fulfilling expectations. But complications arrive when it is not. With global causes and implications, externalities exist and it calls for global corrections. Domestic macro policies may no longer be effective without global measures. In terms of policy management, global measures provide additional instruments for a crisis-hit country to achieve a demanding set of targets comprised of domestic interest rates, exchange rates, capital flows, and the output gap.

What international measures should be undertaken to cease such a crisis? In terms of policies that can manage capital flows and exchange rates, the Chilean

¹⁰ At the time of switching the exchange rate regime, external debts were seen critical and required macro policy responses. Assuming that real interest rates and growth were 7 and 4 percent, respectively, the current account surplus amounted to

measure is popular and preferred in the sense that it helps correct the unpleasant pattern of the flows that heavily relies on short-term capital. It also works through changing incentive structures, making it more desirable to quantitative controls and regulations that Thailand imposed during 1997. In any case, both approaches aimed at changing incentives and regulations can be very costly since they symbolize interventions that can much confuse the market and hurt capital inflows necessary for an economic recovery. Worse, the measures are likely to be ineffective as Thai capital market is a very small player in the global market.

The implication is that decisions toward global financial reform and macro policy coordination should be supported for small economies to gain maximum benefits from financial globalization. Time and energy are required in architecting a global financial reform that well balances risks and returns of capital flows or truly generates benefits all countries concerned.

In the meantime, collusive actions to quickly stabilize hard currencies can yield astonishing results. Macro policy coordination on interest rates or exchange rates by the US, the EU and Japan would greatly prevent the global crisis and currency crashes in various economies around the globe. As suggested by McKinnon (1998), interest rate policies correctly responding to exchange rate misalignments in a cooperative manner would be needed to overcome the East Asian currency crisis. Recent actions promptly made by the Fed to cut down interest rates not only cool down the conceivable likelihood of global deflation and credit crunch, but also substantially raise the ability to pay US-dominated foreign debts, thereby reducing Thailand's country risk. Baht appreciation has also kept prices of equities and real assets from further collapses. The Fed policy is a good example: international and domestic objectives are not always contradictory. During the period of dissenting proposal for global reform, international macro policy coordination is thus a practical solution that can readily save the global economy without independently threatening potential benefits provided by the world capital market.

V. Concluding Remarks

roughly 1.7 percent of GDP, and a 1 percent budget surplus was called for (see

The domestic causes of the Thai crisis have often been emphasized by a number of observers. Such views have serious implications for macroeconomic management in Thailand and other crisis-hit countries in East Asia. The IMF-supported program has followed along this line of thinking. However, if global factors, contagious effects and self-fulfilling prophecy are introduced into the Thai crisis, it will be difficult and essentially require international measures to put an end to the crisis.

This study, with econometric techniques, tests the hypotheses concerning (1) contagion from the Mexican crisis and (2) Granger-causalities between equity prices and exchange rates, on the one hand, and certain types of financial flows, on the other. The study shows that, although debt flows generally cause variations in asset prices, portfolio equity flows are exogenous in the sense of Granger. It is of importance to note that the Mexican crisis had a contagious effect on the Thai equity market. This leads to a vital question whether domestic measures are sufficient in tackling this contagious crisis, given that it is much affected by external factors.

Regarding domestic measures, contractionary monetary policy is not good enough for the crisis which requires substantial financial reform and measures to halt the self-fulfilling panic in the globalized capital market. As the crisis is rooted in the private sector, it is difficult and politically unpopular to solve various problems, bad debts and insolvency included. Fiscal expansion also faces some limitation due to declining tax revenues and a need to maintain fiscal disciplines together with well-managed public debts. It is difficult for domestic macroeconomic policies to be actively counter-cyclical, although certain capabilities for crisis management do exist

Global measures need to be found. Through them, global financial reforms should be agreed upon. Due to externalities in the global capital market, certain policy measures that can correct them are desired. One problem is it is difficult to come up with consensus blueprints that benefit a large number of global members in any near future. In the meantime, collective actions to coordinate macroeconomic policies undertaken by hard-currency countries can readily manage an onset of the

Teerana Bhongmakapat (1997b and c).

contagious or self-fulfilling crisis that may spread worldwide. Recently, cooperative policy action made by the Fed to reduce interest rates has virtually stabilized asset prices from their falls and raised the ability of Thai firms and financial institutions to repay their debts. In essence, it has quickly helped prevent the world economy from further damages caused by the potential global crisis. In the difficult process of halting the contagious crisis, international macro coordination is a must and is very much attached to global conditions.

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