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The Thai Currency Crisis: Fracture in a Fixed Exchange Rate Regime

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The Thai Currency Crisis in Hindsight

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Introduction

If the financial press had been paying attention to some crucial barometers of currency instability in Thailand last year, the ensuing crisis in Asia would perhaps not have been so much of a surprise. On July 2, 1997, the Thai government allowed the Baht to float against the Dollar for the first time in a decade. As we all now know, this effective devaluation set off a train of events which would shock all of the Asian economies which had hitherto enjoyed unqualified growth and prosperity for the last several years.

To make sense of the events which precipitated the collapse of the Baht, we have to understand something about how exchange rates function in the international economy. The exchange rate of a currency with respect to another is simply the price of one currency denominated in another. These rates of exchange can either be fixed or floating. If rates float, it means that the price of one currency with respect to another is allowed to fluctuate freely as market conditions dictate. In this case, the price is determined in the same way that any other commodity is valued, by relative supply and demand. The complex of factors which determine this supply and demand for currencies forms the body of the study of international finance. An early attempt to put together the factors involved in such a model was put forth by English philosopher David Hume. The model we study in this course shows how money supply and demand, domestic and foreign price levels and exchange rates are related in open economies.

The major difference between a system of floating rates and fixed exchange rates is that the exchange rate of a currency is fixed with respect to another when the central bank of one country makes the commitment to fix that rate. It is usually, but not necessarily, the country of origin whose central bank decides to fix a currency's rate of exchange. The action used to accomplish this is called currency market intervention, which simply means that the central bank will buy or sell currencies to fix the rate.

With floating rates, the price of one currency with respect to another is set automatically by market forces. The factors which accomplish this are the two great conservation laws of international financial markets: purchasing power parity, and interest rate parity. I term these mechanisms conservation laws because they function analogously to the conservation laws of classical physics. When one billiard ball strikes another and transfers its energy to it, the momentum of the total collision remains at a constant value even though the two balls have divergent speed and direction. In the same way, the value of one currency is related to another by constant factors which can be calculated. Those factors are purchasing power parity, which states that when currencies are converted into one another, the value of equivalent goods which can be purchased is equal across currencies; and interest rate parity, which similarly states that

the price of funds, paid as interest is the same across all currencies. If this were not the case, funds, or goods would flow across borders to equalize these rates. Floating exchange rates, therefore, act as a mechanism of adjustment, continuously balancing the values of currencies with respect to each other so that major disparities are not allowed to develop.

With fixed rates, however, the central bank of the host country has to absorb these forces which are normally converted into exchange rate fluctuations. But, like the conservation laws of mechanics, the forces of supply and demand in the market must eventually force the value of a given currency to clear the market at the right price. If this rate of exchange has been held artificially low, or high, by central bank intervention, the exchange rate of this currency will shift, precipitously, like a seismic fault, into alignment.

This is what happened with the Baht..

The Warnings of Trouble

The International Monetary Fund Annual Report for 1997 includes the consultations which the fund made to its member nations for that year. In this most recent report, published before the advent of the crisis, the director's consultation to Thailand is an illuminating look into the state of the art of economic prognostication.

Although the report gives some cautionary guidance on the situation in Thailand, it does not predict the full dimension of the crisis which was to come. The report does credit the government of Thailand for the policies which have led to prosperity and stability up to that point: "Directors strongly praised Thailand's remarkable economic performance and the authorities' intention to maintain a tight monetary stance." However, the Directors cautioned that the "large and volatile" capital flows had to be addressed. It was made clear that the policy of exchange rate stability had its cost. Recall that because Thailand committed to peg its currency to the dollar, it loses flexibility in its monetary policy. This is because the central bank has to maintain the monetary balance to keep the exchange rate steady. The IMF, sensing trouble with the large capital inflows, urged greater exchange rate flexibility.

Exchange Rate (Baht price of Dollars)

[exchange rate will devalue Baht to here if nothing is done]

$R_{us} + E_e - E$ [real return in Baht value of dollar

E denominated assets]

R_{thai}

L(R,Y) Thai CB

FA MB

[Thai CB must sterilize by this DA

amount to keep peg at E0]

Money holdings (Real, domestic; in Thailand)

[figure 1.1. The monetary base of a country is effectively equal to the liabilities on the balance sheet of the central bank. This monetary base, MB in the diagram, is multiplied through credit creation to equal the actual money supply in circulation. When funds flow into the country from abroad, (as in diagram [1.1]), the real money supply $MB1/P$ must expand to $(MB1 + FA)/P$. These foreign assets FA, show up in the asset side of the central bank balance sheet (see T diagram). In order to keep the liability side at a constant MB, the central bank must sterilize the inflow of foreign assets with a sale of domestic assets (i.e., Baht denominated bonds).]

In the face of large capital inflows, the Thai central bank had to sell domestic assets (i.e., Baht bonds) in order to keep its liabilities, hence the monetary base, constant (See table 1 – total debt). If we assume that assets denominated in different currencies are perfect substitutes, then interest rate parity must equalize the return across all currencies so that the dollar value rate of return on Baht denominated assets must equal the US interest rate plus any premium for exchange rate devaluation of the Baht.

$$R(\text{thai, dollar terms}) = R_{us} + (E_e - E)/E.$$

E is the Baht price of Dollars.

In the present situation, however, the sale of domestic Baht denominated assets by the Thai central bank, simultaneously depleted the central bank holdings of Baht denominated assets and delivered these Baht domestic assets to private investors in Thailand's real estate sector (men closely linked to the government). These Thai investors, by buying these bonds, had assumed an increased exchange rate risk as a result. The price for this transaction was thus the risk premium for a bond, B, with respect to a risk free asset, A, is

$$r = r(B - A),$$

so that the adjusted interest rate parity condition is now

$$R_{\text{thai}} = R_{us} + [(E_e - E)/E] + r.$$

The rate of return for financial instruments denominated in Baht is now augmented by the amount of the risk premium. This added premium on Baht denominated assets compounded the existing capital inflows. It is axiomatic that capital will find the risk-equalized investment which maximizes its rate of return, and that is exactly what happened in this case. Much of the foreign capital inflow was being sucked up by the boom in real estate and infrastructure development taking place at that time. While the IMF 1997 Annual report praised the Thai economy for its "remarkable economic performance," the report certainly did not sound an equally enthusiastic alarm over the riskiness of some of these investments.

Apparently, the foreign creditors holding the notes to this debt started to sense that the structure was teetering. The economy, which, in the IMF report:

"(The Directors) noted, economic fundamentals remained generally very strong, characterized by high saving and investment, a public sector surplus, strong export growth in recent years, and a manageable debt..."

was appearing more and more to be a house of cards to the creditors on the street. This bubble, which the Directors claimed had levels of short-term debt which were "somewhat high," was about to burst (see table 1 – short term debt). Perhaps the IMF report understated the fragility of the structure to hold off precisely the sort of catastrophic deflation which was about to occur.

The Crash

Nobody sees these things coming. In the high stakes game of debt and currency arbitrage, the game theoretical solution implies an outcome in which the first man out wins big, and the ones behind lose just as big when the pyramid crashes down. Perhaps the first match was lit when Japanese creditors sensed that the overall risk of their investments exceeded the risk-augmented interest on these Baht denominated instruments. This would be apparent to anyone who took the time to look at the figures for Thailand's ballooning current account deficit (see table 3 – current account). With a deteriorating current account how would Thailand service its debt? They started to shorten the maturities of their outstanding loans. After this, the capital flight compounded quickly.

The Thai government, in its determination to defend the peg, was now hemorrhaging from its war chest of foreign reserves as it attempted to fend off the speculative attacks. [See fig. 1.2, below]

[Expected exchange rate of the Baht is up
(devalued) in the face of declining position

E

. .R

dM

M/P

[fig. 1.2, To hold the Baht exchange rate fixed at E_0 after the market decides it will be devalued to E_1 , the Thai CB must use its foreign reserves to buy Baht and thereby shrink the money supply from MB_0 to MB_1 .

Step 1.

Expected devaluation of the Baht (E_e becomes $E_e + dE$) shifts interest rate parity yield curve out.

Step 2.

Baht will depreciate to E_0' if nothing is done.

Step 3.

To keep the peg at E_0 , Thai CB must use its reserves to buy dM amount of Baht.

Table 1. Debt Picture of Thailand (figures in \$U.S., Millions).

Source: Global Development Finance 1998, Country Tables p. 532, (Washington: The World Bank)

1994 1995 1996

Total Debt

65, 522

83,166

90,824

Long Term Debt

36,343

42,071

53,210

Short Term Debt

29,179

41,095

37,613

Table 2.

Foreign Currency composition of Thailand's debt.

Figures in Percentages.

Source: Global Development Finance 1998, Country Tables p. 532, (Washington: The World Bank)

1995,1996,1997

Deutsche Mark

2.3

2.4

2.1

Japanese Yen

51.1

47.7

45.4

U.S. Dollar

23.8

27.8

32.1

Table 3.

Current account position of Thailand. Figures in US\$ million.

Source: Global Development Finance 1998, Country Tables p. 532, (Washington: The World Bank)

1993 1994 1995 1996 1997

Current Acct

-6,364

-8,085

-13,550

-14,690

-2,917

Capital Acct

10,271

12,255

20,713

16,859

-15,333

Note: Figures for 1998 are unreliable or unavailable.

The IMF press release dated August 20, 1997 wrote the fitting epitaph to this Asian Tiger:

After a decade of great economic success, aided by a strong track record of prudent macroeconomic policies, Thailand's economic situation deteriorated progressively in recent years, and became increasingly vulnerable since 1993, as reflected in a persistent and widening current account deficit, which peaked at 8 percent of GDP in 1996; an associated high external debt burden (50 percent of GDP), of which some 40 percent is short-term; and serious weakness in the financial system, particularly, but not exclusively, in finance companies. The situation was exacerbated by external shocks.

From mid-1996, Thailand was confronted with a series of adverse developments, including a sharp slowdown in exports and GDP growth; growing difficulties in the property sector; a sharp fall in the stock market; and some weakening of the fiscal position.

During the first half of 1997, the authorities took some measures to address the growing signs of fiscal deterioration, as well as to strengthen the financial and property sectors, but these proved insufficient to restore market confidence. Growth and investment continued to slow, support for financial companies accelerated progressively, and there was evidence of growing financial disintermediation. In this environment, there followed a series of increasingly serious attacks on the Baht. [Emphasis added.]

The Thai equity markets would ultimately lose some 50% of their value before the markets would stabilize, and this is indeed a loss in output which will not be recovered. The financial disintermediation referred to in the passage is the informational loss occurring as a result of destroyed fiduciary relationships in the banking system. True, we need to call for increased transparency and rationality in the Thai banking system, but it may be too late to avert a long convalescence.

Of equal interest to the professional economist is the observation that the IMF engaged in its own style of historical revisionism by this statement in the above release: Thailand's economic situation deteriorated progressively in recent years. This pronouncement is a sharp turnaround from the decidedly optimistic tone sounded in the Annual Report for 1997 which was written four months before the crisis.

Epilogue

In the wake of the currency shocks reverberating through Asia, the community of professional economists and policymakers is once again looking for the touchstone which will allow reliable prediction of crises such as this. The problem shares some systemic features with efforts to predict stock price movements: any systematic predictive method will be incorporated into the rational expectations of the market and will therefore skew the results of the phenomena under study. A crisis is by definition an unpredictable event.

This is not to say that the search for this holy grail is futile and should be abandoned. In the present case, there has been voluminous research into currency crises and an associated phenomenon, contagion.

The IMF Survey, dated August 18th of 1997, presents a survey of the available wisdom on this subject. The article takes as its point of departure the 1979 study of financial crises by Paul Krugman, then of Stanford. Several features of the present crisis in Thailand could be gleaned from the theoretical results of Krugman's paper. Barometers of an impending crisis could be, *inter alia*, a higher demand for traded goods (and a corresponding deterioration of the current account:

$$CA = CA(EP^*/P; Y-T),$$

Likewise, higher prices for non-traded goods leading to a real appreciation of the currency (in the present situation, the dominant non-traded item is real estate;

P (price level) up implies $q = EP^*/P$ down).

Further, according to Krugman's model, uncertainty about credit policy, or about the reserve losses that the home government is willing to sustain in order to defend the peg, are factors which could be indicators of an impending crisis.

The IMF Survey article goes on to cite a summary of 25 empirical studies which provide support to the use of the sort of indicators implied by the Krugman model. The major problem, according to my point of view, is not the validity of these factors, but rather it is a surfeit of information without sufficient resolution. Any of these linked indicators in combination could provide a reliable touchstone for financial crisis if not for the fact that a crisis is a catastrophic event, the outcome of which is extremely sensitive to variation in the input parameters. Timing is crucial here, as is the very subjective psychology of the official and private actors in the game. I have some personal experience in doing technical analysis in the stock and futures markets. One thing you learn in that business is how fickle the markets are with respect to quick fluctuations. When the trendline has been heading up for so many clicks, your money is riding on a guess when the momentum is going to turn. Often, one sell order will shift the weight at a crucial fulcrum point, and dollars, like rats off a sinking ship, will flee as fast as they ran aboard.

All markets show the same organic behavior. The game-theoretical solution is always: first in wins, cash rushes through the breach until there is no longer any return; all the players mill around the table testing, probing, for the avalanche fault. When it comes, it's the same rush in reverse. This is how the cash flowed in Thailand.

What, then, can we look for as a reliable feature of stability or instability?

If one surveys the recent experience of the following economies: Japan, Korea, Singapore, Hong Kong, and Thailand, what features of their economic terrain provide landmarks to guide us in our analysis. For one thing, all five economies have experienced healthy growth and export activity in recent years. Japan and Korea, have perhaps the most advanced manufacturing infrastructure, Thailand has the niche in the lower value-added trade, and Hong Kong and Singapore are more oriented to financial and service sectors.

It doesn't appear, therefore, that infrastructure development, or the composition of trade are the determining factors in susceptibility to shocks in the currency or equity markets.

The social infrastructure, likewise, shows great variability. Japan, Korea, and Singapore, for example, have populations which are virtually 100% literate with a high proportion of university educated workers. Japan and Korea have been shaken by recent financial crises, but Singapore has not. Thailand, a country with a much lower level of human capital investment is ground zero for the present crisis, but Hong Kong, a city with enormous inequalities in wealth and education has been able to hold a stable center.

It appears to me that the crucial factor determining the reaction of these economies to the crisis of confidence sweeping the region is that of transparency and regularity in the banking system. Japan, which has financial institutions which have weathered the storms of change for up to 700 years, has also relied on a tradition of handshaking between the government ministries and the zaibatsu which has perhaps sacrificed market rationality to the values of continuity and tradition. This private-public culture has led, in some cases, to a limitation of exposure to market forces and a lack of public scrutiny which in turn, has caused a crisis of confidence in Japanese institutions. Likewise, the Chaebols of Korea, and Thai property trusts have operated without the sort of oversight which we take for granted here.

Finally, therefore, the question of managing crises leads to the recommendation for increased regulation and oversight of the credit sectors in developing economies. In the July 11, 1997 conference on managing economic crises sponsored by the Centre for Economic Policy Research, Morris Goldstein of the Institution for International Economics echoed the call for greater oversight of financial institutions, but other participants expressed doubt about the possibility of an enforceable standard for bank soundness.

It is clear that if agreements such as Bretton Woods or the ERM have not held the industrialized economies to a policy agreement, there will be great difficulties in applying a binding financial standard to the economies of Asia.

Notes:

Annual Report 1997, International Monetary Fund, Washington D.C., p. 91.

More precisely, to a basket of currencies heavily weighted with the dollar.

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Another way to say this is to state that the Thai CB needed to soak up excess money in the

economy by the open market sale of Thai government bonds.

Global Development Finance 1998, Country Tables p. 532, (Washington: The World Bank)

Most of this debt was in the hands of Japanese creditors (see table 2 – foreign currency denominations of debt).

Global Development Finance, *ibid.*

Global Development Finance 1998, *op. cit.*, p.532

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