
II Country Reports

A Country Report on Indonesia

By

Sweta Chaman Saxena¹

University of Washington and World Bank

First Draft: May 8th, 1998
This revision: August 8th, 1998

¹The author can be reached by e-mail at ssaxena@u.washington.edu or ssaxena@worldbank.org. The author is grateful to Valerie Cerra, Rahul Chaman, Haideh Salehi-Esfahani and Kar Yiu Wong for useful suggestions during the progress of this report, and to Megan Moe for proof-reading it. The views expressed in this report are solely those of the author and do not necessarily represent those of the World Bank.

I: INTRODUCTION

This decade has witnessed a crisis in Asia as well as other parts of the world. The decade began with the ERM breakdown in 1992, followed by the Mexican Peso crisis in 1994, which spread to Latin America and then the latest 1997 crisis in South East Asia, which engulfed countries like Thailand, Indonesia, Malaysia, South Korea and the Philippines. The magnitude of the crisis in Asia was unexpected by most observers - Asia had been praised as a miracle for its outstanding performance since the late 1980s and early 1990s; some of the economies involved in the crisis even earned the title of “Asian Tiger”. If everything was going fine, then what went wrong in these economies to cause the crisis of this magnitude? What are the lessons that the world should learn from this Asian crisis? As Paul Krugman puts it, “The biggest lesson to learn from Asia’s troubles isn’t about economics; it’s about governments.”

While there were some economists who questioned this miracle theory, following the onset of the crisis, the economic policies and trends in the Asia countries have come under increasing scrutiny in an effort to determine if the crisis may have been averted. The early skeptics of the Asian Miracle had attributed the success of these economies to the “Perspiration Theory” rather than “Inspiration”. In their view, Asian economies flourished because they used factors of production intensively, not because of high rates of total factor productivity. High growth rates reflected high savings rates, good education, and migration of disguised-unemployed farmers to modern sectors. Following the crisis, economists have begun to look more closely at the underlying fundamentals. Hidden behind the stupendous growth of the Asian economies was weak financial supervision, which encouraged massive lending without an assessment of the profitability of the projects. Most investment was directed in unproductive projects, like real estate, construction, stock purchase and consumer loans. Eventually banks and finance companies went bankrupt as loans soured. The financial sector problems soon led to capital outflows as investors lost confidence in the economy and currency.

The first country that came under the attack was Thailand. The defense of the peg was difficult with the financial system weak and vulnerable, and interest rates could not be raised to prevent capital outflow. Speculators sold Baht short, which led to massive devaluation. The peg was defended until June 1997, after which on July 2nd, 1997, the Baht was made to float (managed). There was a 40% devaluation of Baht against the U.S. Dollar. Thereafter, Thailand sought help from the IMF and other countries. In response to this attack, Indonesia and the Philippines widened their exchange rate bands, but Indonesia moved to a free float in mid-August 1997. Soon after this move, there was a massive devaluation of Rupiah and Indonesia sought IMF help in October. This contagion effect spread later to Singapore, Korea, Taiwan and Hong Kong.

Previous episodes of currency crises tended to stem from unsustainable fiscal deficits financed by seignorage or were induced by trade-off between short-run macroeconomic flexibility and longer-term credibility. The current crisis in Asia is thought to have different characteristics from the previous episodes elsewhere—the crisis is attributed mainly to the excesses in the financial sector, which combined with

poor supervision and lax accounting standards have led to the collapse of a speculative bubble.

The main characteristics of the Asian economies include the following.

1. They all suffered from real appreciation of currencies. Since they all pegged their currencies to the US Dollar, which appreciated relative to other major currencies (especially the yen), these currencies became overvalued. All these countries gained from the appreciation of Japanese yen in 1993-95, while lost their competitive edge when Japanese yen depreciated against the US dollar in 1996.
2. Investment boom led to current account imbalances and huge foreign debt. Investment rose sharpest in the non-traded sectors (non-traded goods, real estate, speculative asset purchases).
3. The government bail-outs created “moral hazard” problems, whereby banks borrowed too much and financed even the marginal projects, which turned out to be unprofitable later.
4. Since borrowing and lending was going in investing in speculative assets, there was a bubble, which burst in 1997 and a simultaneous currency fall aggravated the debt problem as the burden increased in real terms.
5. There was a “competitive devaluation” game, as devaluation in one country decreased the competitiveness of other currencies.
6. The governments were weak, incredible and not committed to structural reforms.
7. In 1995-96, there was a drop in demand for semi-conductors, the major export of these Asian countries.
8. Economic stagnation in Japan in 1990s was another factor responsible for decrease in exports (30% of exports went to Japan).

The rest of the report is structured as follows: Section 2 briefly describes the historical and political background of Indonesia. Section 3 has some trivia about Indonesia. Section 4 discusses the pre- and post-crisis Indonesia, with the emphasis on reforms being undertaken since 1985. Section 5 lists the events that led to the crisis, and specifically discusses Indonesia as a victim of contagion from the other countries. Section 6 discusses the role of the IMF in this South-East Asian Crisis. Section 7 lists the chronology of reforms in different sectors. Section 8 presents results from estimating the Equilibrium Real Effective Exchange Rate using an Error Correction Model. Finally, in section 9, contagion from other crisis countries is estimated using Time-Varying Transitional Probability Markov Switching Model.

II: INDONESIA: History and Background

Prior to Dutch rule in the 15th and 16th centuries, Indonesia had never been unified under a single ruler. Before the 16th century, it had close commercial and cultural ties with India, from where it imported the Hindu and Buddhist beliefs (and Islam in the 13th century).

The Portuguese and the Spaniards reached Indonesia in early 16th century in search of spices. However, the first to colonize were the Dutch, who established the Dutch East India Company (Vereenigde Oostindische Compagnie, VOC) in 1602. It exerted its rule indirectly, through local rulers; it was interested only in trade and not in territorial expansion. It was only in 1799 that the Dutch state took over the interests of VOC, and started its territorial conquest, which went on into the 20th century. In the early years of the 20th century, an “ethical policy” recognized that the Dutch owed their colonial subjects a “debt of honor”, and nationalism grew within the modern educated urban intellectuals. Following the defeat of the Japanese (after the Japanese conquest of the Dutch East India in 1942), these nationalists proclaimed the Independence of Indonesia on August 17th, 1945, under the leadership of Sukarno and Hatta. The struggle with the Dutch (who wanted to re-establish their rule) went on until December 27th, 1949, when the Dutch transferred the sovereignty over the archipelago (excluding the New Guinea) to Indonesia.

The territorial boundaries have been extended three times since then. On May 1st, 1963, sovereignty was granted over Dutch New Guinea, which was officially incorporated into Indonesia in September 1969. Indonesia invaded and annexed the Portuguese colony of East Timor, which was integrated into the country in 1976. Lastly, in April 1982, international recognition was accorded to Indonesia’s claim on islands far into the seas.

On the political front, there was instability for the first 15 years after Independence. In 1950, a liberal democratic republic was established, but frequent reshuffles in cabinets, regional revolts and economic mismanagement led to massive chaos. After 1959, President Sukarno replaced the elected House of Representatives with Provisional People’s Consultative Assembly. This period, known as “guided democracy”, saw political and economic upheavals. It ended in an abortive coup d’etat in September 1965, led by group of Army officers (supported by Partai Komunis Indonesia, PKI and Chinese arms and money). This coup ended the Sukarno Era (Old Order) and in March 1966 the New Order was established when executive power of the government was handed over to Major General Suharto. He became the acting president in March 1967, and has been elected for 6 further 5-year terms in 1973, 1978, 1983, 1988, 1993 and 1998.

III: INDONESIA: TRIVIA (Source: EIU)

BASIC DATA

Land Area : 1,919,443 sq. km

Sea Area (exclusive zone) : 3,166,163 sq. km

<i>Total Area</i>	: 5,085,606 sq. km
<i>Population</i>	: 199.9 million
<i>Main Towns</i>	: Population in '000, 1990 census
	Jakarta 8,228
	Surabaya 2,484
	Bandung 2,058
	Medan 1,730
	Semarang 1,251
	Palembang 1,144
<i>Climate</i>	: Tropical
<i>Weather in Jakarta</i>	: Hottest months April-May, 24-31deg. C; coldest months
	January-February, 23-29deg. C; Wettest months
	January-February, 300mm average rainfall
<i>Languages</i>	: Indonesian (Bahasa Indonesia), as well as 250 other regional languages and dialects. English has increasingly replaced Dutch as the main second language, and is widely spoken in government and business circles.
<i>Measures</i>	: Metric System
<i>Currency</i>	: Rupiah (Rp).
<i>Time</i>	: Western Zone 7 hours ahead of GMT, Central Zone 8 hours ahead, Eastern Zone 9 hours ahead.
<i>Fiscal Year</i>	: April 1- March 31
<u>POLITICAL STRUCTURE</u>	
<i>Official name</i>	: Republic of Indonesia
<i>Form of government</i>	: Strong Presidential Government based on the state ideology of Pancasila.
<i>The Executive</i>	: Presidency is the highest executive office, with direct legislative powers and authority to appoint cabinet; the president is elected for a five-year term by the People's Consultative Assembly (Majelis Permusyawaratan Rakyat, MPR).

<i>Head of the State</i>	: The president, Bacharudding Habibie
<i>National Legislature</i>	: The 1,000-member MPR is nominally the highest authority in the state and consists of members of the House of People’s Representative (Dewan Perwakilan Rakyat, DPR) and 500 appointed members; the MPR meets every 5 years to establish the guidelines of state policy and elect the president and vice- president; the 500-member DPR must approve all laws; 425 members are elected, while 75 representing the armed forces are appointed by the president.
<i>National Elections</i> (Presidential);	: May 29 th , 1997 (DPR), March 10 th , 1998 Next elections due May 2002 (DPR), March 2003 (Presidential)
<i>National Government</i>	: Suharto stepped down from his 7 th consecutive presidential term and was replaced by his Vice-President Habibie; Golkar controls 325/500 seats in the DPR.
<i>Main Political Organizations:</i>	Majority Party- Sekretariat Bersama Golongan Karya (Golkar); Minority party- Persatuan Pembangunan (PPP; coalition of previously Muslim parties); Partai Demokrasi Indonesia (PDI; coalition of previously non-Muslim parties)

IV: INDONESIA: Pre- and Post-Crisis²

Indonesian economic reforms began in 1986, with an emphasis on reducing the dependence of the economy on the oil-sector, increasing the role of the private sector, and creating employment by encouraging the establishment of a competitive non-oil, export-oriented industrial base. The reforms from 1986-1996 included:

- i. gradual liberalization of direct investment
- ii. maintenance of competitive exchange rate
- iii. trade liberalization and tariff reforms
- iv. better monetary management
- v. financial sector reform by liberalizing external inflows, making banking sector competitive, and promoting growth of capital market

² This section draws from Johnston, et al (1997) and Country Profiles and Country Reports, EIU

The Indonesian economy was highly protected from the rest of the world around 1985. Resident individuals and juridical entities were allowed to invest abroad, while the bank and financial institutions were constrained from lending abroad. There were controls on inflows as well; direct investment inflows were limited by domestic ownership requirements; foreign investors could not purchase equity in the local stock market; there were limits on foreign borrowings.

Since then, the reforms have aimed at opening the real economy by promoting the direct investment flows and liberalizing the tariff system. Liberalization in the direct investment inflows involved expanding the fields where they were permitted, limiting equity ownership rules in certain sectors, and increasing the length of time after which a company had to revert to domestic ownership.

On the exchange rate front, Rupiah was depreciated twice in 1983 and 1986 for the reforms to work. The payments and transfers for current international transactions was liberalized. The foreign exchange market was developed and selling of swaps was liberalized. Hence, the economy was geared towards openness and faster economic growth.

These initial reforms were accompanied by reforms in the financial sector. Interest rates were liberalized and direct credit controls on banks were removed in 1983. In 1987, reforms concentrated on strengthening the capital markets; introduced new capital market instruments. The monetary authorities targeted the international reserves; they were allowed to auction money market instruments daily and *interest rates and exchange rate were market determined*.

Improving the functioning of the banking system and developing the money market was the central theme of 1988 reforms. Foreign participation was encouraged in financial sector through the licensing of new foreign banks and branches. Functioning of the capital market was improved by increasing the role of the market in raising funds for investments, increasing the maturity of money market instruments, and broadening the range of market makers.

The portfolio capital inflows were liberalized in 1989 by removing the quantitative limits on borrowing from non-residents by banks. Foreigners could invest in the stock market, up to 49% of ownership of listed stocks. Foreign direct investors were also allowed to sell foreign exchange directly to commercial banks (rather than through central bank).

As a response to these reforms, the economy overheated in 1990-91; current account deficits widened, inflation rose, so did the rate of interest. Yet, higher interest rates attracted foreign capital, mainly in the form of commercial bank borrowing which was converted into domestic currency using the swap facility; this led to an increase in growth of money supply. Fiscal policy was tightened to curtail domestic demand pressures. Nonetheless, inflation followed an up-trend.

Since these inflows were interfering with the macroeconomic management, the 1991 quantitative restrictions were re-imposed on off-shore borrowing by banks and state

enterprises. Limits were imposed on banks' open foreign exchange positions, and their swap positions as a percentage of their capital base was reduced. Yet, foreign borrowing for trade finance by private entities was encouraged.

A stable exchange rate, along with a large interest rate differential, invited large capital inflows (both direct and portfolio) in 1992-96. However, they were partially offset by the decrease in official capital inflows and the widening current account deficit. Also, the inflows were sterilized through the auctions of central bank paper and through swap operations in foreign exchange market.

Despite the mounting pressures on the Indonesian economy since 1995-96, on July 11th, 1996 the government encouraged investment for the infrastructure development by announcing a 10-year tax holiday to investors in these sectors. These concessions would apply to investment projects that would be completed within 5-7 years of obtaining a license. This was done to make the economy competitive vis-a-vis the neighboring countries, which were giving these incentives.

To give the companies an easy access to US capital markets, Bank Indonesia floated Yankee bonds on the NYSE on July 25th, 1996. The bonds earned a BBB rating from S&P and BAA3 from Moody's. It was oversubscribed by 200%, raising the total value of these instruments from \$300m to \$400m. This was done to diversify the government's financial resources and to provide a benchmark for debt instruments issued by Indonesian companies in the US.

The 1995-96 reforms emphasized the privatization of the state-owned enterprises. Telecommunication company PT Indosat was floated in the 1st quarter of 1995, while PT Telecom and mining company PT Tambang Timah followed in the 1st quarter of 1996. Now, they turned to privatizing Bank Negara Indonesia 1946 (BNI), which was the largest state-owned commercial bank. But this made the banking sector's bad debts public. To prevent any kind of panic, the governor of Bank Indonesia, Sudradjat Djwandono, made public the fact that he was considering a mandatory write-off scheme for bad debts, conditional on banks having adequate reserves to cover such debts. Bad debts amounted to 2.35% of total bank credit, and of this almost 70% was held by the state banks.

On September 11th, 1996, Bank Indonesia raised the minimum reserve requirement from 3% to 5%, which reflected a concern for over-heating, although investment and inflation were low. Then, Rupiah's trading band against the dollar was widened from 5% to 8%, to maintain the competitiveness of exports by accelerating the depreciation of Rupiah. These two policies were working at tandem, as the monetary authorities were trying to depreciate the Rupiah to encourage exports, on one hand, while tightening the monetary policy to raise the interest rates, on the other hand, so that Rupiah would appreciate.

There was a furore about the "National Car" policy, under which Suharto's youngest son got special incentives to produce cars. This was heightened when the EU, Japan and the USA lodged a complaint with the World Trade Organization (WTO) because allowing the import of cars from South Korea completely built-up, tax and duty-free

was against the WTO rules, which require that imports can not be treated differently from locally produced manufactures.

This period was one when there was growing uncertainty on the political front. The DPR elections were to be held in June 1997, and Presidential elections in March 1998. Golkar's victory in the DPR elections would strengthen Suharto's chances of being re-elected for 7th term as the president. There was an attempt to sabotage the career of Megawati Sukarnoputri by ousting her from the chairmanship of the Democratic Party (PDI), so that Suharto could be elected unopposed in the March 1998 elections. However, this triggered protests among the public and the media. The newspapers were asked by the government not to report any incidents of protests relating to Megawati and to refer to her by her married name, Megawati Taufik Kiemas, rather than her maiden name which had the name of her father in it, and which evoked memories of her father (whom people still respect). The right to hold rallies (Free-Speech Forum) and hold demonstrations was conceded by the military commander on June 21st 1996, when there was a violent clash between the military and the demonstrators. This heightened on July 27th 1996, when police in plain clothes wearing PDI T-shirts bombed the PDI headquarters and Megawati's supporters were rioted down by uniformed police, resulting in 90 injured people. This political unrest led to a fall in the stock market and Rupiah, as foreign investors began losing confidence in the government.

The beginning of 1997 saw a little bit of political stability as Suharto's re-election was seen as a forgone conclusion, but then uncertainty rose from who his running mate for the vice-president would be. Habibie was seen as Suharto's successor. This political stability brought with it the up trend in the stock market. The investor profile changed; earlier FII and ethnic Chinese business community dominated the stock market; now middle-class Indonesians increasingly sought to diversify their asset holdings by buying shares; their shares went up to 54% by October 1996 from 21% in April 1995. To popularize the stock market, the Indonesian Capital Market Society established a site on the World Wide Web (<http://www.IndoExchange.com>), making information transparent, accessible and open.

The trade balance improved over 1996 as the increase in prices of commodities and oil (\$20/b) boosted export revenues. But there was a slight increase in spending on imports, as a result of tight economic policies and the weak Yen against the US dollar, which reduced the dollar value of Indonesia's yen-denominated imports from Japan.

Since inflation had been kept at amazingly low levels, Bank Indonesia lowered interest rates on March 12th, 1997, by 50 points on its money-market certificates. This was done to refrain Rupiah from appreciating and to increase the competitiveness of exports.

However, Indonesians were growing dissatisfied with Suharto's nepotic rule, where the members of his family and friends had been given the power and the privileges. This became serious when in March 1997, the Hong-Kong based Political and Economic Risk Consultancy declared Indonesia at the bottom of the list in the survey

conducted among expatriate business executives operating in various Asian countries. This was because politically influential people could arrange matters to their own financial benefit. Now, the privatization of banks was seen with suspicion as well (which were under-priced and half of the shares went to people linked to the first family). On April 1st, 1997, the inspection of all commercial cargoes entering Indonesia was handed back to the country's customs service (which was handed to a Swiss firm in 1985 through 1991 and then to a locally established firm). This was seen as a step that would breed nothing but inefficiency, red-tapism and corruption.

On May 29th, 1997, Golkar had an unprecedented victory in the DPR elections. This ensured a smooth re-election of Suharto for his seventh term in 1998. On the economic front, there was continued inflow of foreign investment in the first half of 1997. Consequently, the central bank took steps to prevent credit growth through sterilization from sales of central bank certificates, increase in reserve requirements, and reduction in subsidized credit to private enterprises. *Indonesia withstood the initial contagion from Thailand mainly because of its strong fundamentals.* On July 7th, 1997, banks were banned from making loans to property developers for land purchases and land developments. However, on July 11th, 1997, to prevent speculation, Indonesia widened the trading band for exchange rate against US\$ to 12% from 8%. There was suspicion about the stability of the banking system and Rupiah came under the speculative pressure and was forced to float on August 14th, 1997. The immediate measures taken to combat this included limiting nonresidents' transactions in the forward market to \$5m per customer, and every bank's net open position to \$5m. The 49% limit on IPOs was also removed.

V: EVENTS LEADING TO THE CRISIS³

Indonesia faced an enormous growth in real GDP in 1995- 8.1%-- from 7.3% and 7.5% in 1993 and 1994 respectively. This was accompanied by the concomitant worries about overheating—inflation increasing to 9.4%, current account deficits increasing to 3.9% of the GDP from 1.7% in 1994, and a 41% drop in trade surplus from 1994. The government's response had been lukewarm. It followed a slight contractionary monetary policy. The central bank, Bank Indonesia (BI), raised the RRR from 2% to 3% in January 1996 and to a further 5% in April 1997; it also used moral suasion to decrease bank credit. The two motives of dampening the domestic demand and not increasing the rate of interest were at odds. To meet both the objectives, BI widened the trading band in 1995 from 2% to 3% (to 5% in June 1996 and 8% in September 1997) around daily mid-rate in the hope that the wider band would increase the risk of holding the Rupiah, and would offset the high interest rates. This effort was in vain, since capital inflows were not discouraged.

The other initiative on the part of the government was to improve the efficiency and competitiveness of the export sector. This was highly controversial, as Asri Petroleum Group (established under Suharto's son Bambang Trihatmojo) received heavy tariff support, and there were worries that this might increase the costs for downstream producers. Then, in February 1996, the National Car Deal led to a huge controversy.

³ This section draws from Radelet-Sachs (1998)

Under this program, only qualified “pioneer” firms would be exempt from sales tax and tariffs on imported components. The only firm that received these benefits was Suharto’s youngest son’s (Hutomo Tommy Mandala Putra) firm, which collaborated with a Korean firm to import cars initially and then start to manufacture them at home. This treatment was not extended to any other firm even if they demonstrated the expertise needed for another three years. Despite the AFTA trade liberalization date being moved to 2003, in December 1995, Suharto insisted on a list of exemptions on goods such as cloves, rice, wheat flour, sugar, etc which were the monopolies owned by Suharto’s family or close friends.

These government initiatives demonstrated the lack of willingness of the government to seriously address the economic problems pressing the country. This helped Indonesia in nothing else but earning the title of the “most corrupt country in Asia” in March 1997, according to a private Hong Kong survey of expatriate businessmen.

Overheating subsided in 1996, when real GDP growth slowed down to 7.8% and inflation to 6.6%. But the current account deficit remained high at 3.3% of GDP and mostly financed by short-term inflows of portfolio capital. Even BI cut rates by 0.5% in December 1996 and again in March 1997, to moderate the capital inflows, lessen debt burden on Indonesian firms, and increase exports. Yet, Indonesian firms were heavily borrowing in international capital markets. The offshore borrowing was not reported correctly, hence there was an underestimation of foreign borrowing. When the economy was well into the crisis (December 24th, 1997), a report was made public that estimated the Indonesian debt at \$200 million, against the government’s estimate of \$117 million.

*Political Risks in the Asian Countries*⁴: The main criticism of these economies was that they were politically weak. Over the period 1991-96, the political risk ratings were improving for all the Asian economies, especially for Indonesia, Korea and Thailand (Chart 1). The positive trend in rating during this period is evident from the change in political risk in Chart 2. However, the beginning of 1997 saw a decrease in political stability in all the three worst sufferers from this crisis. The biggest drop in the ratings in 1997 was for Indonesia and Thailand.

Unpredictability of the Crisis: This crisis showed no signs of predictability until all the countries were buried deep into it. The government deficits were low, capital inflows continued, credit ratings were high from all agencies, IMF reports did not show much signs of concern, and risk premia on bonds were low. There were no bells for alarm in Indonesia, at least. Traditional warning signals (growing current account deficits, overvalued exchange rates, declining exports) were ignored.

The victims faced more of a financial crisis. Financial indicators were indicating risk. But, again they were ignored since the economies had been doing so well on the

⁴ These ratings are compiled every month by the PRS Group in the International Country Risk Guide. This indicator is weighted by each component as (%): Government Stability (12), Socio-Economic Conditions (12), Investment Profile (12), Internal Conflict (12), External Conflict (12), Corruption (6), Military in Politics (6), Religion in Politics (6), Law and Order (6), Ethnic Tensions (6), Democratic Accountability (6), Bureaucracy Quality (6). The higher the indicator, the lesser the political risk; or more the political stability.

economic front (in terms of GDP growth). Short-term debts to international banks rose to high levels relative to foreign exchange reserves in Indonesia. These were indicators of concern, but not to a crisis of the magnitude in Asia. Also, these indicators showed vulnerability to crisis, but did not guarantee the onset of a crisis.

Some of the factors that added to the crisis were:

- bank closure in Thailand,
- corporate failure in Korea,
- political uncertainty in all the countries,
- contagion because of incredible governments, and
- last, but not the least, the IMF intervention (which recommended a sudden closure of financial institutions which led to a much greater panic).

*Fragility of the Banking System*⁵: The main reason for the crisis has been the failure of banking system in supervising the quality and quantity of loans that they were making. Chart 3 brings out the fragility of the banking system in Indonesia. Non-performing loans as well as problematic loans increased over the period 1992-1996. These loans were increasing even as a share of gross loans made by the banks. The weakness of the banks is evident from the high risky assets to total assets ratio (.8). The ratio of non-performing loans and impaired assets to total assets also increased over the time period 1992-96.⁶ This brings out clearly the vulnerability of the banking system, which was being ignored as the economy was performing well in terms of broad macro-economic fundamentals.

Contagion, Panic and Crisis in Indonesia: Despite Indonesia's own internal problems, which included under-supervised banks, extensive crony capitalism, corruption, monopoly power and growing short-term debt, this country seems to be the clearest case of contagion, as this country had least severe imbalances as compared to Thailand (Radelet-Sachs). The following statistics would support the above statement:

- Current account deficit at 3.5% of GDP was the lowest of Asian-5 economies;
- Export growth in 1996 at 10.4% (though down from 13% in 1995) was the second highest in the region;
- Budget had been in surplus by an average of over 1% of GDP for 4 years;
- Credit growth was at more modest level compared with other countries in the region;
- Foreign liabilities of commercial banks at 5.6% of GDP was way below the other affected economies (although the corporate foreign debts were high);

⁵ The data has been taken from BankStat CD-Rom. This data for the banking system is available on an annual basis for 110 banks in Indonesia: Commercial Banks (95), Finance Companies (2), Holding Companies (2), Investment banks (2), Merchant Banks (4), Savings Banks (1), Specialized Banks (3) and Central Bank (1). The data has a reporting imbalance [number of banks reporting is indicated in parenthesis]: 1991 (1); 1992 (56); 1993 (84); 1994 (100); 1995 (109); 1996 (97); 1997 (5). All series in Chart 2 have been constructed on a "per bank basis", under the assumption that all banks were behaving alike.

⁶ The "zeroes" for 1991 and 1997 indicates the mis-reporting of these components and also a reporting bias. Only 1 and 5 banks reported in the two years, respectively.

- No major corporate bankruptcies, and the stock market continued to rise through early 1997 until the onset of crisis in Thailand.

Indonesia was praised for widening the Rupiah band to 12%, and then floating it without wasting foreign exchange in defending the peg. Under the severe attack in August 1997, the government raised the interest rates high, which intensified the short-run pressures. The government lost its credibility when it first cancelled 150 investment projects to gain international confidence, and then a few days later reversed its decision.

Radelet-Sach felt that Indonesia had enough foreign reserves (\$20 billion) that it did not need the IMF program. But when Indonesia signed its IMF program on October 31st, 1997, the Rupiah did strengthen as a result of concerted interventions by Japan and Singapore. But this was very short-lived. Abrupt bank closures and concomitant bank runs, high interest rates, and decapitalization of banks led to a 23% depreciation of Rupiah and a 19% fall in stock market between November 3rd and December 4th, 1997. This was heightened by the closure of bank belonging to Suharto's son who publicly balked and threatened to take legal action.

The drought in December led to high food prices and food shortages. The situation was becoming increasingly difficult to manage as the import of food became expensive with the exchange rate crisis, and displaced urban day laborers could not return to rural areas to find work. Simultaneously, the fall in petroleum prices decreased Indonesia's export earnings, which further added to the pressure on exchange rate.

Uncertainty in the region grew when Korea signing its IMF-program on December 4th, 1997. The illness of Suharto, without a successor in sight, added to the panic. In January 1998, Indonesia was reneging on its structural reforms and was contemplating the adoption of a currency board, which perpetuated the negative perceptions about the country. *At this point, the crisis was both political and economic.*

In short, the crisis in Indonesia was not caused by poor economic fundamentals. The crisis was caused by foreign lending lent to private firms, instead of banks. The lenders assumed that these firms had government guarantees, which was not true. Signs of crisis did not appear until July 1997, when the stock market was rising, international credit ratings were high and international bank lending continued. Hence, in Radelet-Sachs' opinion Indonesia unnecessarily faced an economic contraction, and is a clear case of contagion leading to panic.

VI: ROLE OF THE IMF

On November 4-5th, 1996, Bank Indonesia sponsored an ASEAN Conference (with IMF) in Jakarta to explore the Macroeconomic Issues Facing ASEAN Countries. The conference participants (including the top economists from the IMF and also the IMF Managing Director, Michel Camdessus) believed that macroeconomic performance of the ASEAN countries would remain strong for the following reasons:

- Pervasive aversion to high inflation made policymakers conscious about maintaining macroeconomic stability
- All nations were focussed on maintaining low inflation and reducing current account deficits, to make the economies external shock-proof.
- Monetary policy was geared toward financial liberalization, increasing savings in both public and private sector, and strengthening the banking systems throughout the region.
- The market-oriented policies ensured the efficient use of the region's high rate of investment
- These economies were persevering with structural reforms, in particular liberalizing trade and increasing openness
- Emphasis on high rate of growth of the economies to catch up with the developed world

At the Conference, Camdessus paid a tribute to “the region's prudent fiscal policies, high domestic saving rates, and emphasis on infrastructure investment. These have produced a stable macroeconomic environment and sustained high quality growth, which also fosters human development, promotes equity, safeguard the environment, and allows enhancement of cultural values of ASEAN countries. ASEAN's role in the world economy, and in the IMF, is clearly growing.” (IMF Survey). *But at the same time, he warned that this could bring in challenges.* These nations should be concerned about sustainability of current account and soundness of domestic financial systems, as the huge capital inflows could bring in concomitant problems of higher expenditures, increased inflationary pressures, huge current account deficits, and expansion of domestic credit. He suggested that the ASEAN countries should

- Decrease reliance on foreign saving;
- Ensure that the private capital inflows take the form of long-term investment;
- Strengthen domestic banking system;
- Ensure an appropriate role for the state.

However, none of the countries paid any heed to what Camdessus was foretelling, until after they were knee deep into the crisis, like Indonesia. On November 5th, 1997, Indonesia went into a Stand-by arrangement with the IMF, when a 36-month stand-by loan of \$40 billion was approved. Out of this package, \$10.1 billion (SDR⁷ 7.3 billion) was contributed by the IMF, \$8 billion by the World Bank and the Asian Development Bank, \$5 billion and \$3 billion by Japan and U.S., respectively, as a second line of defense, \$5 billion from Indonesia's own reserves, and the rest by other

⁷ Special Drawing Rights (SDRs) consist of a valuation basket of 5 currencies (the U.S. Dollar weighted 39%, Deutsche Mark 21%, Japanese Yen 18%, French Franc 11% and U.K. Pound 11%)

governments. The Standby credit is equivalent to the 490% of Indonesia's quota of SDR 1.5 billion (\$2.1 billion) in the IMF.

Camdessus applauded Indonesia's "Impressive Economic Policy Program." The program was supposed to be implemented in three legs:

- Strong monetary and fiscal policies for adjustment and restoration of confidence in the economy;
- Restructuring the financial sector and enhancing its soundness in future;
- Significant deregulation and trade reforms to improve economic efficiency

The nine goals of the IMF programs were (Radelet-Sachs):

- Prevent outright default on foreign obligations;
- Limit the extent of currency depreciation;
- Preserve a fiscal balance;
- Limit the rise in inflation
- Rebuild foreign exchange reserves;
- Restructure and reform the banking sector;
- Remove the monopolies and otherwise reform the domestic non-financial economy;
- Preserve confidence and creditworthiness;
- Limit the decline of output.

To achieve these goals, the policy components were: (Radelet-Sachs)

- Contraction on Fiscal Policy
- Close sick and bankrupt banks. (16 commercial banks were closed in Indonesia)
- To improve the confidence in banking system, the IMF pushed the banks to meet the capital adequacy standards
- Tightening domestic credit through contractionary monetary policy to defend the fall in exchange rate.
- Full payment of foreign debt obligations, bailed out of IMF funds
- Structural changes like reducing tariffs, opening up sectors for foreign investment and reducing monopolies.

In all, three countries approached the IMF for help. Thailand got a 34-month Standby arrangement of \$17.2 billion on August 20th, 1997; Indonesia a 36-month one of \$40 billion on October 31st, 1997 and Korea a 3-year Standby of \$57 billion on December 4th, 1997. Despite these sizable loans, the IMF programs were ineffective in curing these economies; mostly because they were not implemented in their original form. Hence, **new letters of intent** were signed with Thailand, Indonesia and Korea on November 25th, 1997, December 24th, 1997 and January 15th, 1998 respectively. Currencies and stock markets continued to fall; bank closures led to financial panic; credit ratings fell.

In February 1998, Indonesia announced Comprehensive Reforms. The IMF believed that Indonesia was taking measures to eliminate structural distortions and restrictions:

- All special privileges to the National Car Program had been eliminated;
- Special funding to IPTN, aircraft manufacturer, had been rescinded;

- Restrictive marketing arrangements had been abolished;
- Domestic trade in agricultural products had been liberalized;
- BULOG monopoly was restricted only to rice.
- To maintain confidence in the economy, the government guaranteed the obligations of depositors and creditors.

The IMF blamed the contagion effects, political uncertainty and ineffective implementation of the programs by the governments to be the cause of the deteriorating situation (Stanley Fisher in IMF Survey January 26th, 1998). This was true to some extent. Korea's situation aggravated the situation in Indonesia and Thailand; Suharto's health and elections in Korea added to the uncertainty; and governments were not following the programs whole-heartedly. Indonesia is a classic example of this. The IMF proposed to do away with the monopolies. When Suharto was re-elected in March 1998, he made Mohammad Hasan as the Industry and Trade Minister, and he heads the plywood monopoly that the IMF ordered dis-banned as a condition for the \$43 billion bailout. This was evidence of renegeing on the IMF conditionalities.

However, the IMF was partially liable for the continuing deterioration. Some of the inherent problems with the IMF programs were (Radelet-Sachs (1998)):

- Abrupt closure of banks in Thailand and Indonesia increased the panic, squeezed the liquidity and made bank operations more difficult. Foreign creditors became more apprehensive and refused to rollover the loans. The IMF apparently recognized it's mistake in January; but by then the depositors and foreign lenders had already withdrawn their funds and banks had cut down on loans.
- Pushing banks to re-capitalize in a short span of time led to a severe credit crunch, distress for private firms and an increase in non-performing loans. Indonesian banks were asked to raise the capital adequacy ratio to 9% by end of 1997, and to 12% by 2001 (above the previous level of 8%).
- Insistence on using monetary policies to raise interest rates even higher (they were left high by the flight of foreign capital) was harsh economically. The profitability of the banks was decreased and this enhanced the economic downturn. The IMF assumption behind this measure was that higher rates of interest would help stabilize the currency and even lead to appreciation; and the benefits of currency stabilization would outweigh the short-run output costs. Since the currencies never appreciated, the IMF assumption is questionable.
- Unnecessary emphasis on the fiscal surplus (pushing for 1% of the GDP), especially when budget profligacy was not the source of the crisis, and contracting the economies when there were other contractionary sources already at play. The IMF again recognized it's mistake and proposed a 1% budget deficit in it's second program for Indonesia.

VII: CHRONOLOGY OF REFORMS⁸

CAPITAL MARKET REFORMS

1983: Interest rates were liberalized and are market determined

⁸ This work draws largely from Johnston, et al (1997) and EIU Country Profiles and Country Reports

1984: Introduction of Money market instruments (SBI)

1985: Introduction of standardized form of banker's acceptances (SBPUs)

1987: Simplification of listing requirement in Jakarta Stock Exchange (KSE)

- Introduction of Bearer securities
- More flexibility given to interest rates
- Bank Indonesia was given more room to regulate liquidity through daily auctions in SBIs and SBPUs.
- Introduction of Over the Counter market
- Elimination of SBPU discount ceilings
- Forceful transfer of deposits from state-owned banks to bank Indonesia by state owned enterprises.

1988: Reforms emphasized the functioning of the banking system, enhanced bank supervision, development of money market and improving the functioning of the capital market (extended the role of the market in raising funds for improvements, lengthening the maturity of money market instruments, and broadening the range of market makers)

1991: Increase in the minimum number of shares traded in a single block on the “big board” of JSE from 10,000 to 20,000, but all traders are allowed to deal in odd-lot transactions of less than 500 shares.

- Tightening of licensing requirements for traders, brokers, underwriters and investment advisors, and of disclosure requirements, with any irregularity to be reported to Capital Market Executive Agency, BAPEPAM, within three days

1992: Commercial banks allowed to issue securities through the stock exchange

- Privatization of JSE ended, with the management being transferred to PT BEJ

1993: Introduction of measures to ensure fair distribution of shares from oversubscribed issues.

- Unofficial trading in shares before their listing was declared illegal
- Ceiling on pricing of issues was imposed (Maximum: Price/Earning = 13)

1994: Ceiling on pricing of issues raised to 15.

1995: Introduction of computerized trading on JSE

- Subrabaya Stock Exchange and Over the Counter market merged to encourage participation by small investors

1996: Introduction of regulations permitting an increase in foreign ownership of mutual funds and securities companies, restricting speculative derivatives transactions and tightening disclosure requirements.

- Introduction of 6-point plan to enhance the information dissemination, improve auction techniques, facilitate trading between institutional and retail markets, reduce trading credit risk through the establishment of a Clearing and Guarantee House, develop a safe and efficient Central Securities Depository and reduce costs through book-entry settlement.

1997: Regulation on margin trading to curb speculation; requiring only securities companies with net operating capital of at least Rp5bn (\$2m) would be allowed to provide margin facilities with effect from August 1st, 1997

- Foreign companies were allowed to list their shares on Indonesian markets
- Abolishment of 49% cap on foreign ownership of Indonesian initial public offering (IPO)

BANKING REFORMS

February 1991: Improved standards and supervision; timetables were established in order to build up capital base to meet capital adequacy ratio (CAR) of 8% as recommended by Bank for International Settlement (BIS)

March 1992: New law simplifying banking system

May 1993: Modified standards to increase short-term lending; established phased deadlines for banks to abide by prescribed legal lending limits

June 1995: Introduced a new tax regulation to encourage inter-bank mergers

August 1995: Deposit protection scheme announced by Bank Indonesia to compensate depositors whose banks become solvent or are shut down by the monetary authority.

September 1995: Minimum paid-up capital requirement for banks seeking foreign-exchange license is raised from Rp50bn (\$22.2m) to Rp150bn to encourage mergers and strengthen capital bases of commercial banks.

September 1996: Minimum reserve requirement for commercial banks is raised from 3% to 5%

July 1997: temporary ban on property loans by commercial banks since half of the non-performing loans were related to property loan accounts.

VIII: ESTIMATING EQUILIBRIUM REAL EFFECTIVE EXCHANGE RATE

This section estimates the Equilibrium Level of Real Effective Exchange Rate (REER) for Indonesia to examine if the exchange rate was overvalued before the crisis hit the country. To proceed with the analysis, the fundamentals that determine the equilibrium REER are looked at. These are taken from Montiel (1997a). Then the equilibrium REER is estimated using an Error Correction Model (ECM). In this section, the variables and the estimation technique used, with intuition behind estimating this model, is described in some details.

1. Data Sources

Quarterly data covering the period from 1980:1 through 1997:4 were used to estimate the parameters of the ECM. All series were obtained from the IMF's International Financial Statistics and World Economic Outlook, and Statistik Ekonomi Keuangan Indonesia (Indonesian Financial Statistics), Bank Indonesia Publication. The REER⁹ is calculated by the IMF. LTOT is the log of terms of trade (unit price of export/unit price of import). OPEN is the proxy for openness (exports+imports/GDP). GCONGDP is the ratio of government consumption expenditures to GDP and GINVGDP is the ratio of government investment expenditures to GDP.

2. Time Series Properties of the Data

To proceed with the analysis, the time-series property of the variables that should determine the equilibrium REER was checked, prior to estimating the ECM, using the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests. The lag length for ADF test was determined by backward selection criterion (starting at 5 lags). The

⁹ An increase in REER is an appreciation of Rupiah.

truncation lag for PP test was 3 for all the series. The results from the Unit Root testing are described in the table below.

		ADF Test	PP Test
	K	Test Statistic	Test Statistic
LREER	1	-0.638606*	-0.654257*
LTOT	3	-3.115713*	-2.397927*
OPEN	4	-2.442619*	-2.559876*
GCONGDP	3	-0.151235*	-2.066636*
GINVGDP	2	-0.761226*	-2.400429*

Note: Variables are as defined above in section 1. Estimation period is 1980:1-1997:4. The value of k corresponds to the highest-order lag for which the corresponding t-statistic in the regression is significant. Asterisks * denote non-rejection of null hypothesis of a unit root at 1% significance level. Critical values are from MacKinnon. These are the results from Unit Root testing in levels; however, all series were stationary in first differences.

Since all the variables are non-stationary in levels, but stationary in their first differences (Integrated of Order 1), they all are potential candidates for the determination of equilibrium REER. Then, the Johansen Test was performed to find out if they are cointegrated. The test revealed that the above variables are cointegrated, with one cointegrating vector, a trend and a constant.

3. Estimation of an Error Correction Model (ECM)

Intuition: When some non-stationary variables share a common stochastic trend, they are said to be cointegrated. The deviation of these cointegrated variables from their long-run equilibrium value is transitory. Hence, their time paths depend on the equilibrium error. The variables LREER, GCONGDP, GINVGDP, OPEN, LTOT were found to be cointegrated with one cointegrating vector. That means there is one linear combination of the above variables that is stationary. It also suggests that long-run REER depends on the long-run factors like government consumption, government investment, openness of the economy and the terms of trade. If the actual REER deviates from its long-run value, then this error should be corrected over time. The following model was estimated:

$$\Delta y_t = DV_t + Ay_{t-1} + \sum_j b_j \Delta y_{t-j} + u_t$$

where $y = 5 \times 1$ vector containing the REER and the potential fundamentals, DV is a vector of deterministic variables, A and β are 5×5 matrices of estimated coefficients, and u is serially uncorrelated random shock. The rank of matrix A gives the number of cointegrating vectors. Since all the variables are integrated of order 1, hence they are difference stationary. Also, since they are cointegrated, the term Ay_{t-1} is stationary as well. Hence, all the terms on the LHS and the RHS are stationary. So the above equation tells us the direction in which the long-run variables should move, if there happens to be a deviation from their long-run value.

Expected Signs on the variables: Traditional Models on open economy suggest (Montiel 1997a):

- As the government consumption rises (which is equivalent to the government consumption on non-tradable), it leads to a higher price of non-tradable, and for internal balance we need a real appreciation of REER. (hence a positive sign)
- As the government investment rises (which is equivalent to the government consumption expenditure on tradable), it leads to a trade deficit. To bring the external balance in equilibrium, we need a real depreciation of REER (hence a negative sign).

- As the economy opens up, there is an external and internal imbalance which need a real depreciation to correct it (hence a negative sign)
- As the terms of trade improve, there is an increase in real wage, due to which labor from importable and non-tradable sectors move to tradable sector, which leads to a trade surplus. For external balance, we need a real appreciation of REER (hence a positive sign)

Results: The lag length of the ECM was determined by backward selection. To economize on degrees of freedom, the backward selection criterion for lag length was chosen at 4. The Likelihood Ratio Statistic was calculated and ECM(1) was found out to be the most appropriate. The results from ECM are presented in the table below.

Cointegrating Equation:

$$\text{LREER} = 3.52 * \text{GCONGDP} + 22.38 * \text{GINVGDP} + 0.69 * \text{LTOT} - 5.03 * \text{OPEN} + 0.01 * \text{TREND} - 1.35$$

t-stat (-0.99) (-3.61) (-2.88) (2.00) (-1.37)

	Coint.Eqn	D(lreer(-1))	D(gcongdp(-1))	D(ginvgdp(-1))	D(ltot(-))	D(open(-1))	R-squared
D(lreer)	-0.066*	0.354*	-1.014	0.456	0.031	1.008	0.225
D(gcongdp)	0.022*	0.041	-0.133	0.368*	0.005	0.273*	0.376
D(ginvgdp)	0.037*	0.001	-0.136	0.548*	0.021*	0.092	0.625
D(ltot)	0.223*	0.050	3.517*	-0.064	-0.152	-0.493	0.228
D(open)	0.020*	-0.092*	0.013	-0.131	0.001	-0.523*	0.395

Note: Asterisk means that these coefficients are significant.

It can be seen from the above results that GINVGDP, LTOT and OPEN are highly significant in the cointegrating equation, while GCONGDP and TREND are not. All variables have the right signs except the GINVGDP. This suggests that the government could be spending its investment expenditures on non-tradables. The trend, although insignificant in the cointegrating equation, is positive and is a proxy for total factor productivity. Hence, the factor productivity in Indonesia improved over the sample period. The negative (and significant) sign on the cointegrating equation in the REER suggests that as the equilibrium error goes down, the REER appreciates. This means that if the long-run equilibrium level of exchange rate is below the level of fundamentals, then it would rise to the level that the fundamentals suggest, and vice versa.

The Equilibrium REER was estimated from the cointegrating equation. Chart 4 shows the actual and the fitted values of cointegrating equation. It is evident that the REER for Indonesia was slightly over-valued vis-à-vis what the fundamentals would suggest at the time of the crisis last year.

IX: ECONOMETRIC EVIDENCE OF INDONESIA BEING A VICTIM OF CONTAGION

The above estimation of equilibrium REER shows that the exchange rate of Indonesia was slightly above the level that would have been supported by the fundamentals. However, in section V, it has been shown that Indonesia had some of the best

fundamentals, vis-a-vis the other countries, at the time of crisis. Hence, it is puzzling to see how it could be the most affected of all the crisis countries. Is the claim by Radelet and Sachs that “Indonesia was a victim of contagion” right? Before looking for an answer for this question, it is interesting to see some movements in exchange rates and stock markets in Indonesia as well as its neighboring countries.

Chart 5 shows the co-movement of daily nominal effective exchange rate (NEER) and stock market index for Indonesia from January 1994 through March 1998. The two series moved significantly together from July 1997 through the end of the year.

Chart 6 shows the daily movement of NEER for Indonesia, Korea and Thailand from January 1994 through March 1998. It is clear from the figure that Thailand’s NEER was the first to depreciate in April 1997, followed by Indonesia and Korea.

Chart 7 shows the daily movement in stock market indices for Indonesia, Korea and Thailand from January 1994 through March 1998. Again, it was Thailand that saw the downward movement first since mid-1996.

To see if Indonesia’s crisis could be predicted by her own activity or by her neighbor’s activity, a Fixed Transitional Probability (FTP) Markov Switching Model (MSM) and a Time Varying Transitional Probability (TVTP) MSM were estimated.¹⁰ This work is from Cerra and Saxena (1998a) and follows from the work of Eichengreen, Rose and Wyplosz (1996) (henceforth referred as ERW) and Filardo (1994). ERW argue that the incidence of speculative attacks tends to be temporally correlated; i.e. currency crises appear to pass “contagiously” from one country to another. They estimate a probit model and find that the existence of a currency crisis elsewhere in the world (whether successful or not) raises the probability of an attack on the domestic currency by 8%, even after taking account of a variety of domestic political and economic factors. (This was done for European countries). They take an index of Market Pressure Index (MPI) as:

$$EMP_{i,t} = [(a * \% \Delta e_{i,t}) + (b * \Delta(i_{i,t} - i_{G,t})) - (c(\% \Delta r_{i,t} - \% \Delta r_{G,t}))]$$

where $e_{i,t}$ is the price of German Mark in i’s currency at time t;

$i(G)$ is short German Interest;

R denotes the ratio of international reserves;

α , β and χ are the weights (standard deviations of the respective series, so that volatility in any one of the components of the EMP does not dominate the volatility in the rest of the variables)

EMP is the Excess Market Pressure

They define the crisis as :

$$Crisis_{i,t} = 1; \text{ if } S_{EMP_{i,t}} > 1.5 * (S_{EMP}) + m_{EMP} \\ = 0; \text{ otherwise}$$

where μ_{EMP} and σ_{EMP} are the sample mean and standard deviation of EMP, respectively.

¹⁰ Interested readers are referred to these readings for technical details. Here only intuitive understanding of the models estimated is provided.

However, using this Probit Model has a disadvantage that the probability of a crisis is a discrete dependent variable and the definition of a crisis has to be specified. In Cerra and Saxena (1998), an MPI is formed for Indonesia, Thailand and Korea as :

$$MPI_{i,t} = a * (\% \Delta e_{i,t}) / S_{\Delta e_{i,t}} + b * (\Delta i_{i,t}) / S_{\Delta i_{i,t}} - c * (\% \Delta r_{i,t}) / S_{\Delta r_{i,t}}$$

where e is the U.S. Dollar exchange rate (domestic currency/\$)

This index is high when there is pressure on the currency and low otherwise. The intuition is that if there is an attack on the currency either the exchange rate will depreciate, or interest rates would be raised to prevent the attack or central bank would sell foreign currency to support the exchange rate. Chart 8 shows the MPI for Indonesia, Korea and Thailand. It is clear that the MPI for all the three countries is high in 1997, indicating that they all faced speculative pressures on their respective currencies.

Cerra and Saxena (1998) estimated the probability of a crisis in Indonesia using both FTP and TVTP Markov Switching Models. The advantage of using these models is that the probability is made endogenous. The model picks up the states of high and low pressures given the data and estimates the probabilities accordingly. Chart 9 shows a simple FTP Markov Switching Model, where the probability of a crisis (high MPI) is fixed during transition states. The MPI switches in mean during the two states. The model that is estimated is the following:

$$MPI_{i,t} - \eta_{s_t} = \Phi [MPI_{i,t-1} - \eta_{s_{t-1}}] + e_t$$

$$e_t \sim iidN(0, \sigma^2)$$

$$\eta_{s_t} = (1 - s_t) \eta_0 + s_t \eta_1$$

$$\Pr(s_t = 0 / s_{t-1} = 0) = q$$

$$\Pr(s_t = 1 / s_{t-1} = 1) = p$$

where MPI has two means ($\mu(0)$ low pressure and $\mu(1)$ high pressure);

MPI follows an AR(1) process

p is the probability of being in a crisis at time t if the country had been in a crisis

at time $t-1$

q is the probability of being in a no-crisis state at time t if the country had been in a no-crisis state at time $t-1$

Chart 9 shows that Indonesia's own MPI can only pick up the crisis of 1997. Some of the other pressures on the currency during earlier periods are totally left out. Chart 10 shows the predicted MPI for Indonesia using the FTP MSM. It is evident that the prediction is not good for low pressures. To see if the market pressures in Indonesia could be explained by movements in MPIs of Thailand and Korea, the TVTP MSM was estimated. In this model, the probability of a crisis varies in the high and low

states according to the one time period lagged MPI of Thailand and Korea. The model that was estimated is as follows:

$$\begin{aligned}
 MPI_{i,t} - \eta_{s_t} &= \Phi(MPI_{i,t-1} - \eta_{s_{t-1}}) + e_t \\
 e_t &\sim iidN(0, \sigma^2) \\
 \eta_{s_t} &= (1 - s_t)\eta_0 + s_t\eta_1 \\
 \Pr(s_t = 1 / s_{t-1} = 1) &= p_t = \frac{\exp[p_0 + p_1 MPI_{j,t-1}]}{(1 + \exp[p_0 + p_1 MPI_{j,t-1}])} \\
 \Pr(s_t = 0 / s_{t-1} = 0) &= q_t = \frac{\exp[q_0 + q_1 MPI_{j,t-1}]}{(1 + \exp[q_0 + q_1 MPI_{j,t-1}])}
 \end{aligned}$$

where $MPI_{j,t-1}$ is the lagged MPI for country j , where j =Thailand and Korea; and p and q are varying over time with these MPIs. Chart 11 shows the MPI and probability of a crisis in Indonesia when the probability is a function of lagged Thai and Korean MPI. It is clear from these figures that even small pressures on currency are predicted when the neighboring countries' pressure indexes are accounted for. Chart 12 shows the predicted MPI for Indonesia using this model. The fit is evidently good. It predicts even very small pressures like the ones in 1987, 1990, 1994 and 1996. Although the results from these models should be interpreted cautiously, they still suggest a spillover of crisis from Thailand and Korea.

Next exercise was to separate the spillover effect from the worsening domestic fundamentals. The TVTP MSM was estimated again by controlling for domestic variables (domestic credit growth, net foreign assets to money supply, interest rate spread, U.S. rate of interest, trade balance, terms of trade, foreign liabilities to GDP, private claims to GDP, and political risk index). Chart 13 shows the estimated probability from this model. The pressures are predicted well. Chart 14 shows the predicted MPI for Indonesia from this model. The fit is off from the actual MPI by one or two periods. In this sense, there is a mixed evidence for the role of domestic fundamentals after controlling for the occurrence of a crisis in Thailand and Korea.

REFERENCES:

- Cerra, Valerie and Sweta C. Saxena, 1998(a), The Long and Short of Exchange Rates: Econometric Evidence from India, Unpublished Manuscript.
 ----- 1998(b), Contagious Crisis: Econometric Evidence from South-East Asia, Paper in progress.
- Corsetti, G, P. Pesenti and N. Roubini, 1998, What Caused the Asian Currency and Financial Crisis?, Unpublished Manuscript.
- Country Profile and Country Report, Indonesia, The Economist Intelligence Unit, Various Issues.
- Eichengreen, Barry, Andrew Rose and Charles Wyplosz, 1996, Contagious Currency Crises: First Tests, Scandinavian Journal of Economics, 98(4), 463-484.
- Filardo, Andrew J., 1994, Business Cycle Phases and Their Transitional Dynamics, Journal of Business and Economic Statistics, July issue, 299-308.
 IMF Survey, Various Issues.
- Indonesian Financial Statistics, Bank Indonesia Publication, Various Issues.
- International Country Risk Guide, (1997), published by the PRS Group, October 1997, Volume 18, Number 10.
- Ito, T., M. Kawai and E. Ogawa, 1997, East Asian Currency Crises in 1997: An Overview, Unpublished Manuscript.
- Johnston, R.B., S.M. Darbar, and C. Echeveria, 1997, Sequencing Capital Account Liberalization: Lessons from the Experiences in Chile, Indonesia, Korea and Thailand, IMF WP/97/157.
- Krugman, Paul, 1997-98, Various articles on his web page.
- Montiel, Peter J, 1997(a), The Theory of the Long-Run Equilibrium Exchange Rate, Working Paper, Department of Economics, Williams College.
 -----, 1997(b), Exchange Rate Policy and Macroeconomic Management in ASEAN Countries, Chapter 11 in Macroeconomic Issues Facing ASEAN Countries, Edited by John Hicklin, David Robinson and Anoop Singh, IMF Publication.
- Radelet, S. and Jeffery Sachs, 1998, The Onset of the East Asian Financial Crisis, Unpublished Manuscript.

Chart 1: Political Risk Ratings of Asian Countries

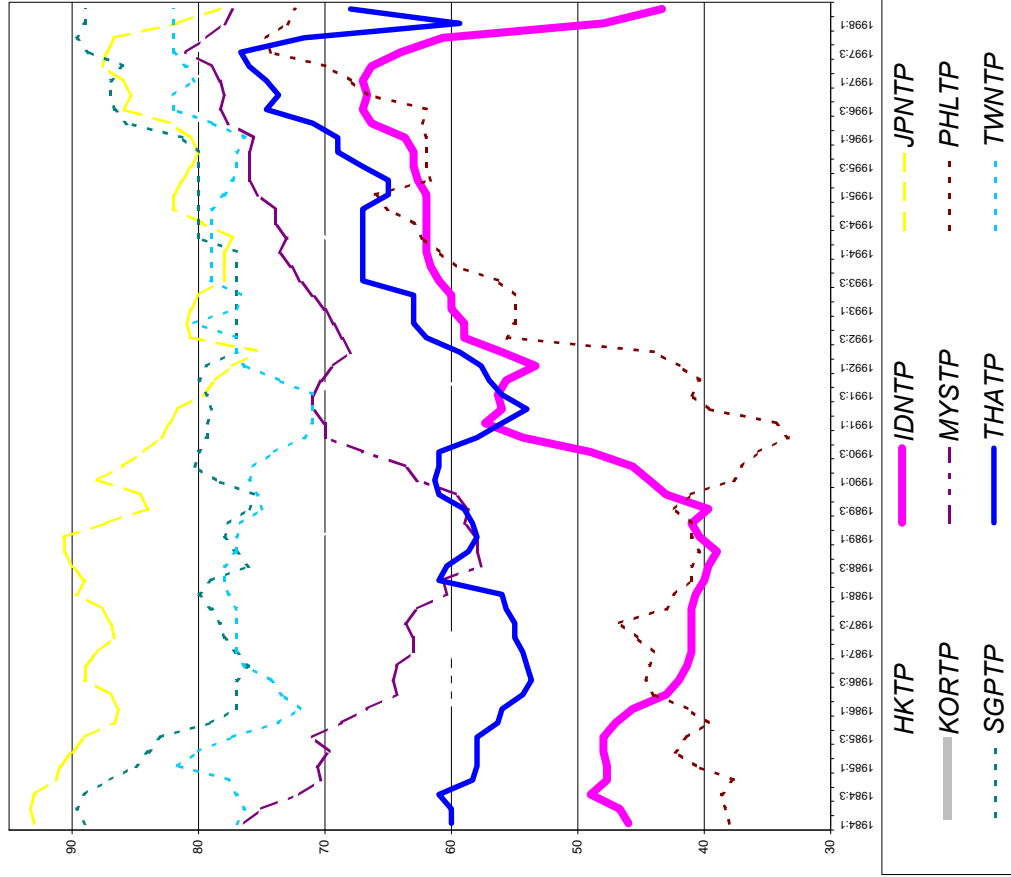


Chart 2: Change in Political Risk in Indonesia, Korea and Thailand

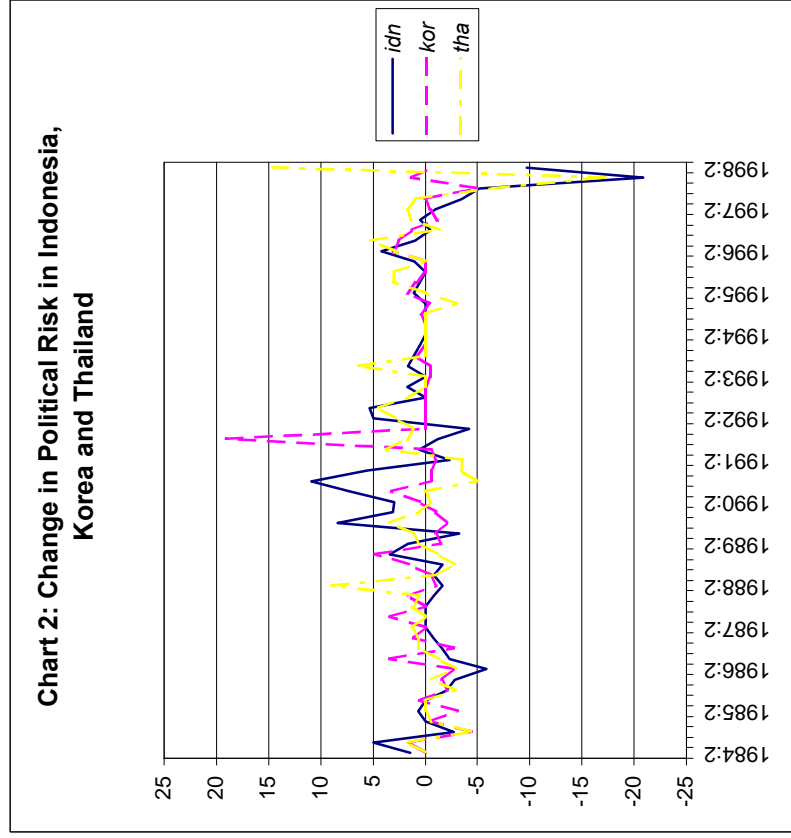


Chart 3: Fragility of Banking Sector in Indonesia

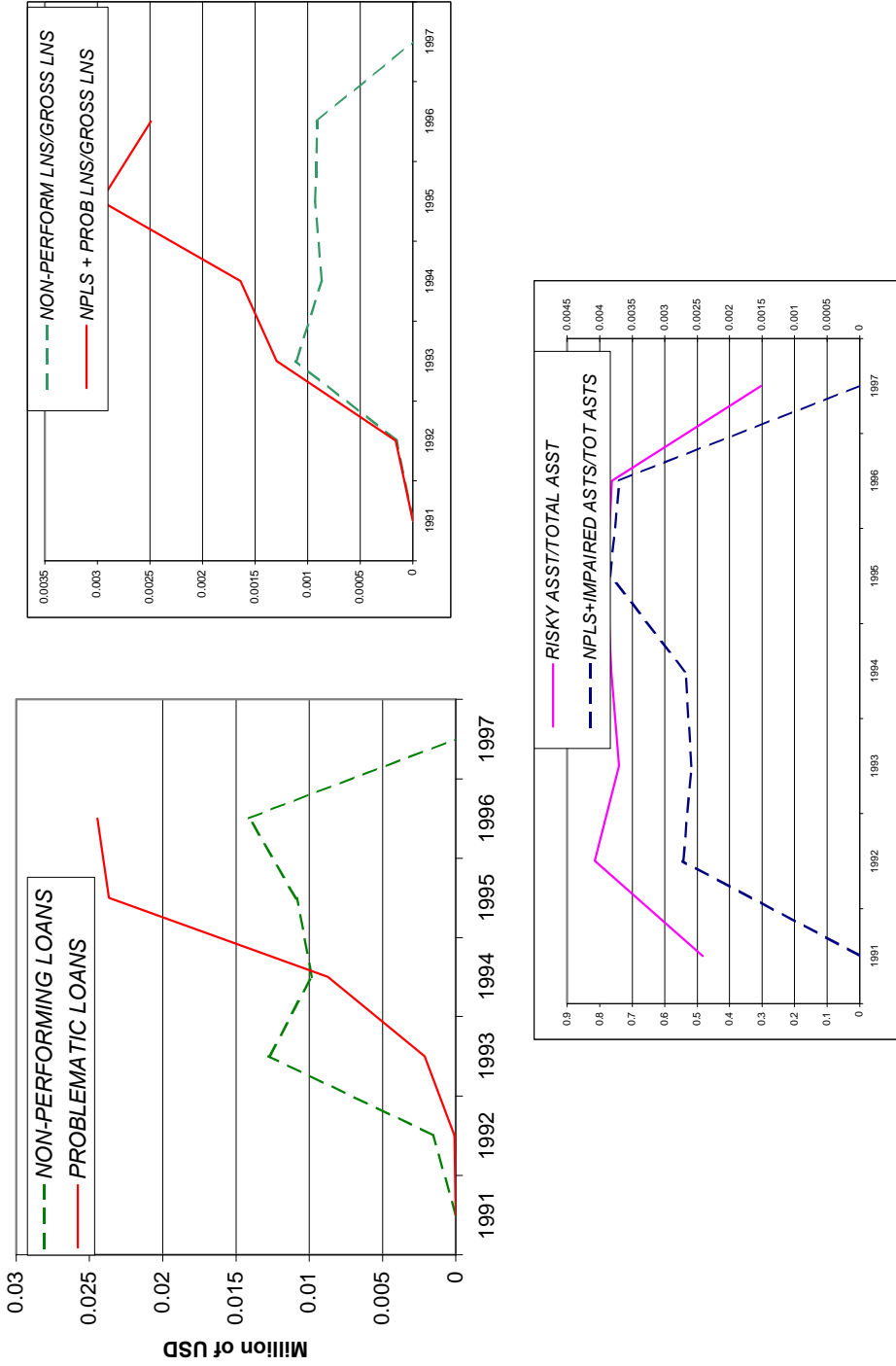


Chart 4: Actual and Fitted Values of Cointegrating Equation

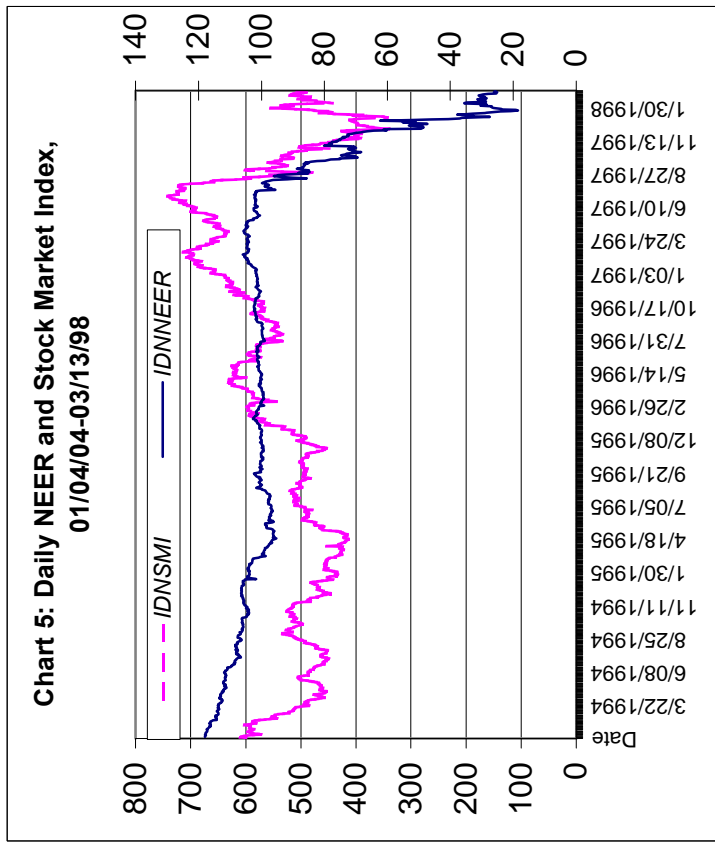
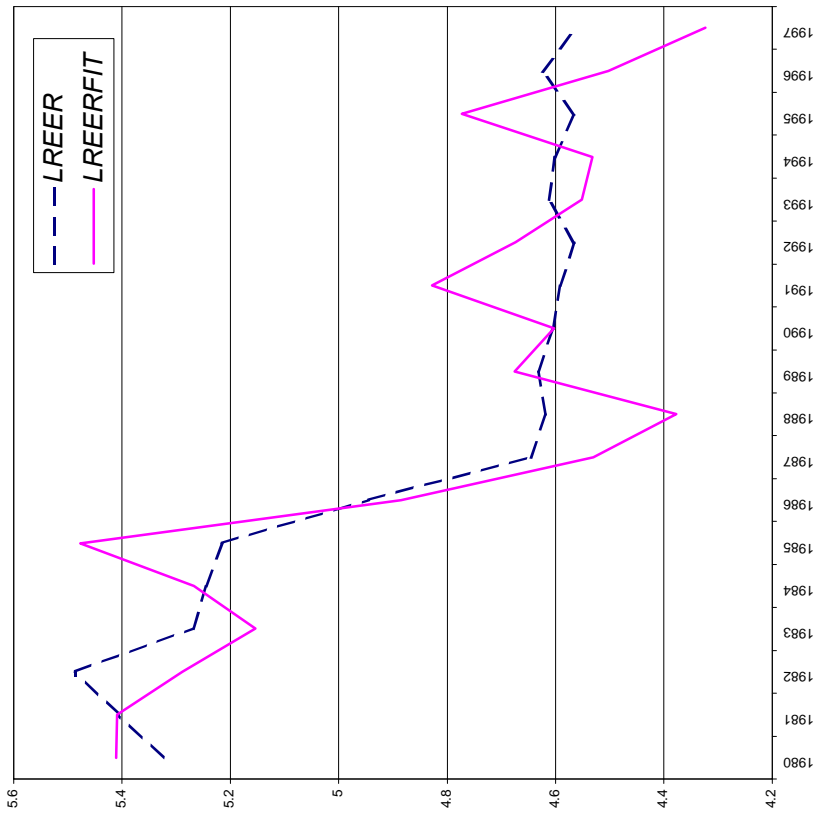


Chart 6: Daily NEER for Indonesia, Korea and Thailand, 01/06/94-03/13/98

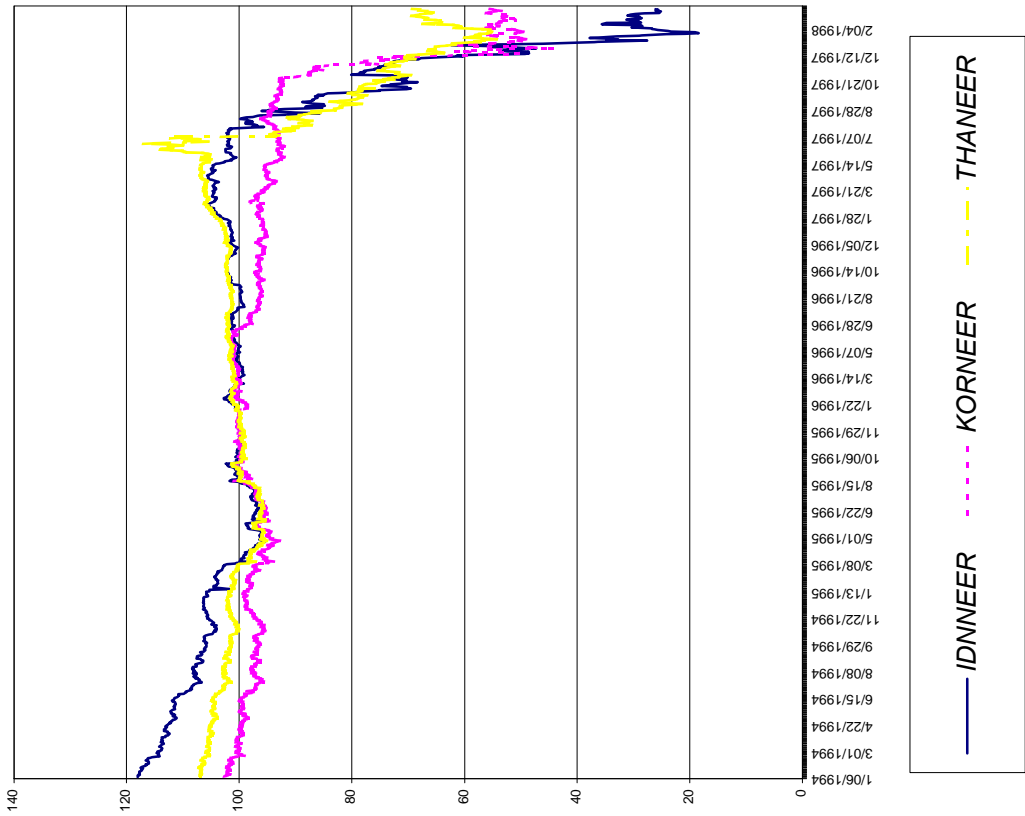


Chart 7: Daily Stock Market Index in Indonesia, Korea and Thailand, 1/4/94-3/12/98

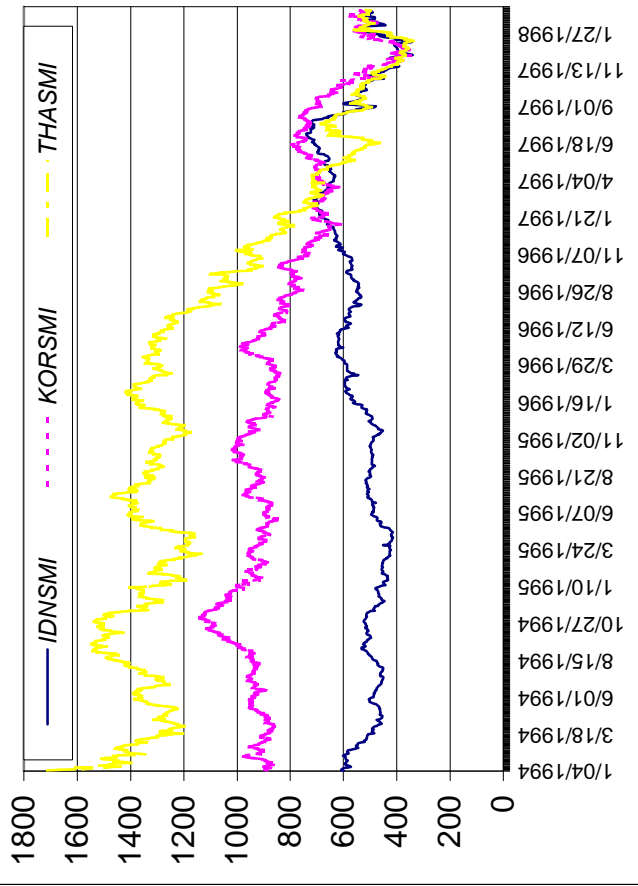


Chart 8: MPI for Indonesia, Korea and Thailand 1985:1-1998:2

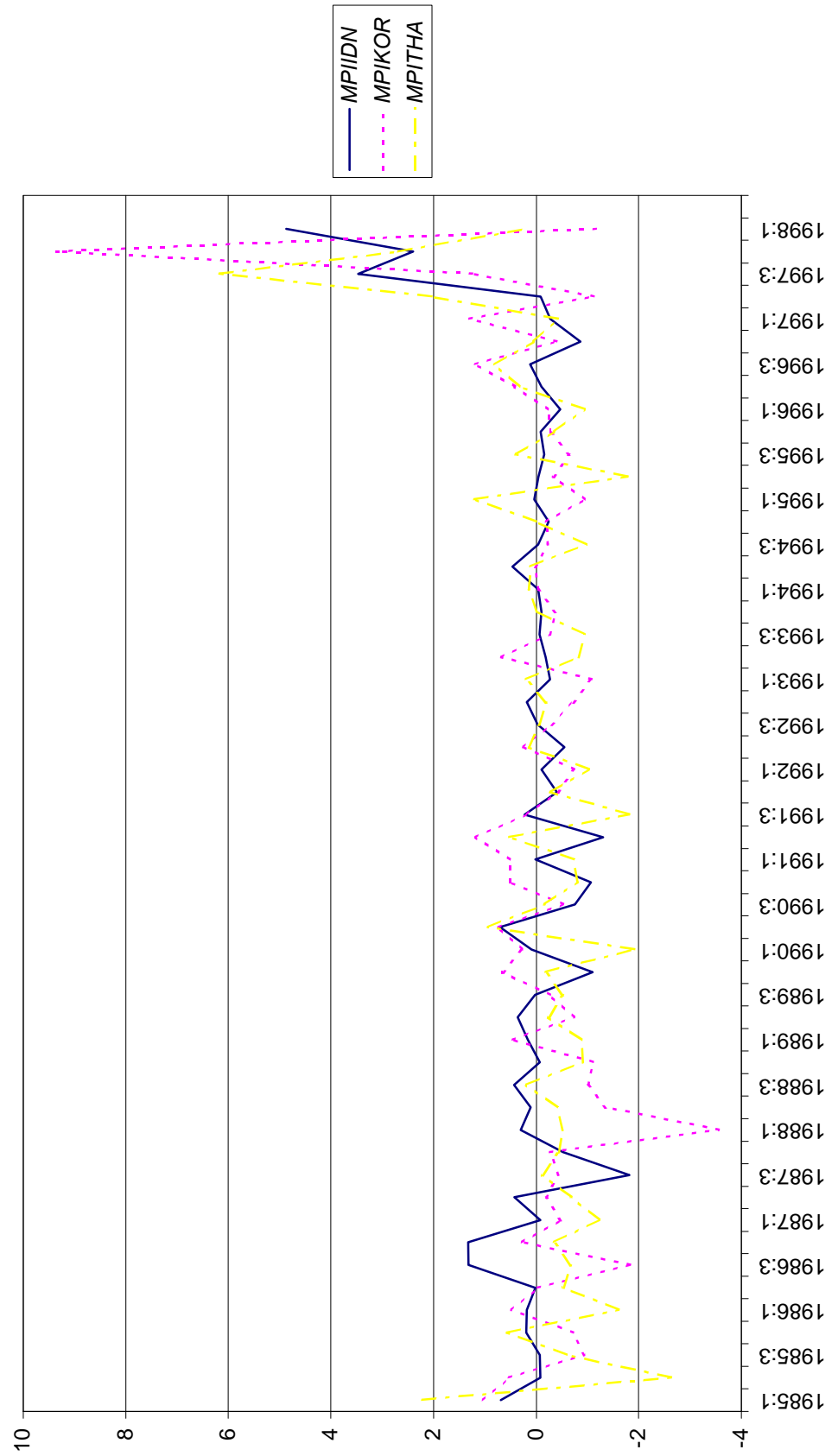


Chart 9: MPI for Indonesia and Probability of a Crisis using FTP MSM

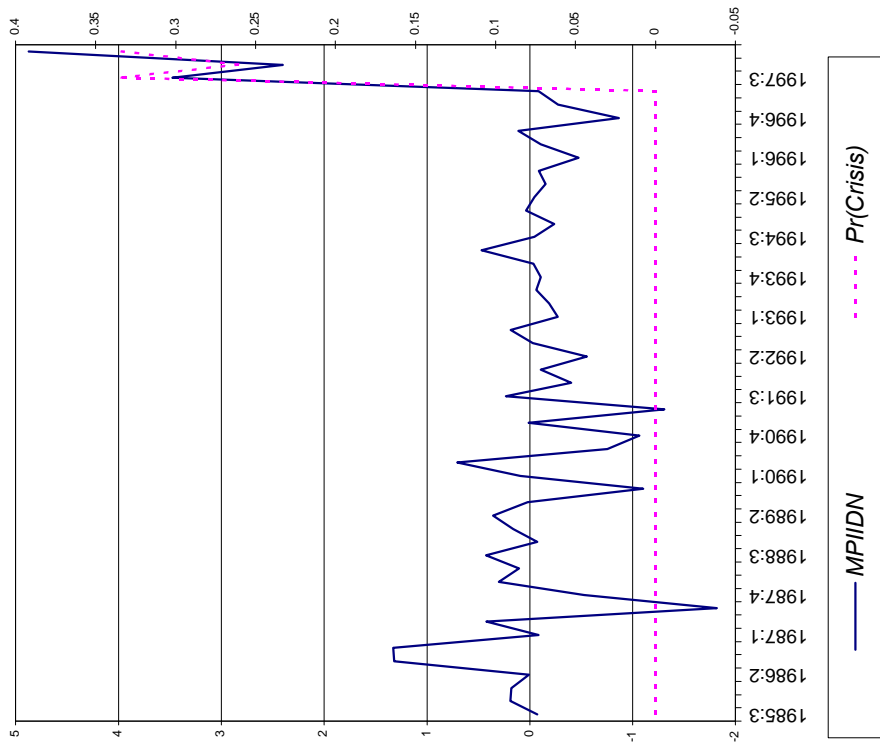


Chart 10: Actual and Predicted MPI for Indonesia using FTP MSM

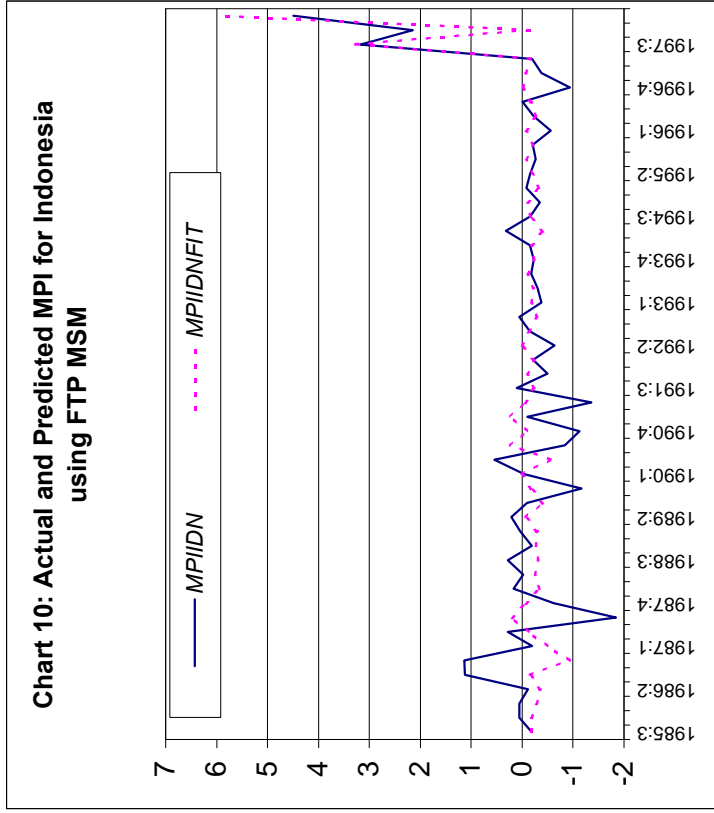


Chart 11: MPI for Indonesia and Probability of a Crisis using TVTP MSM with lagged MPI for Korea and Thailand in the probability

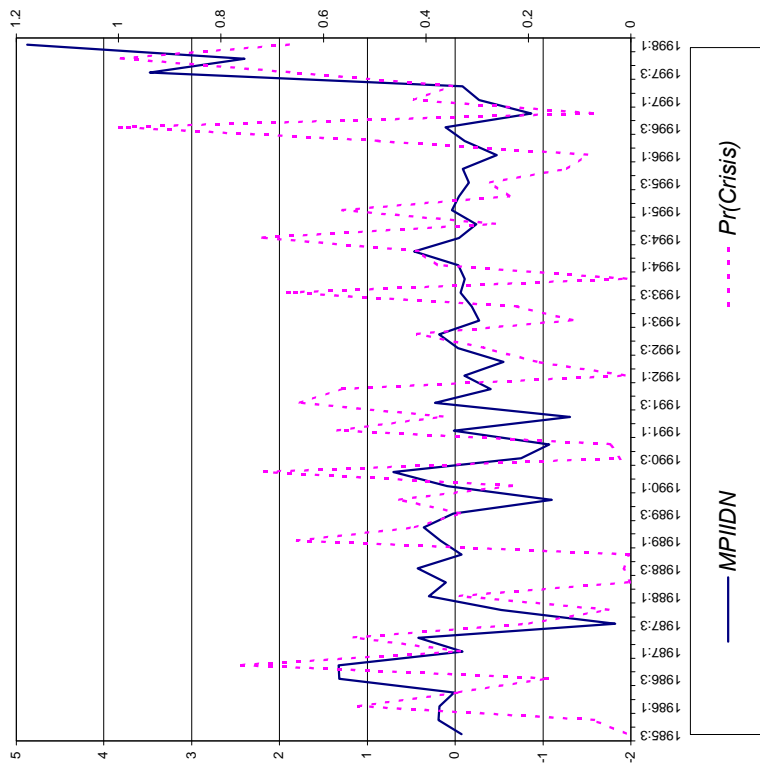


Chart 12: Actual and Predicted MPI for Indonesia using TVTP MSM with lagged MPI for Korea and Thailand in the probability

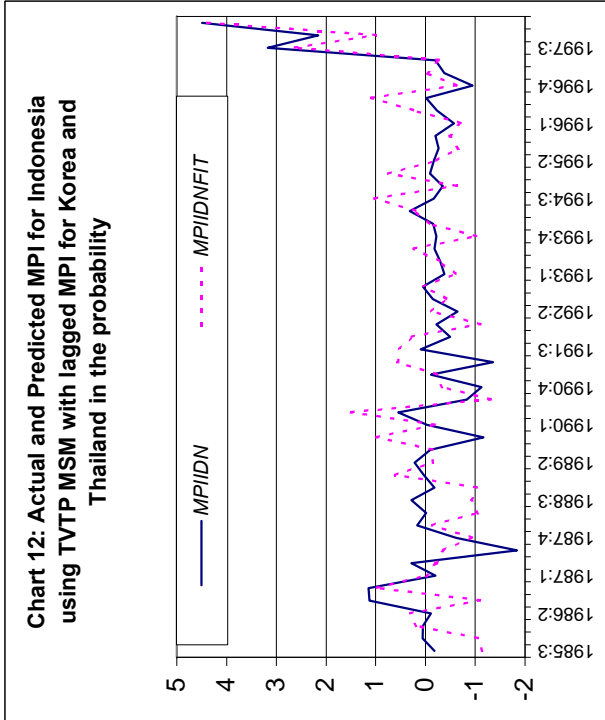


Chart 13: MPI for Indonesia and Probability of a Crisis using TVTP MSM with lagged MPI for Korea and Thailand and Domestic Variables in the Probability

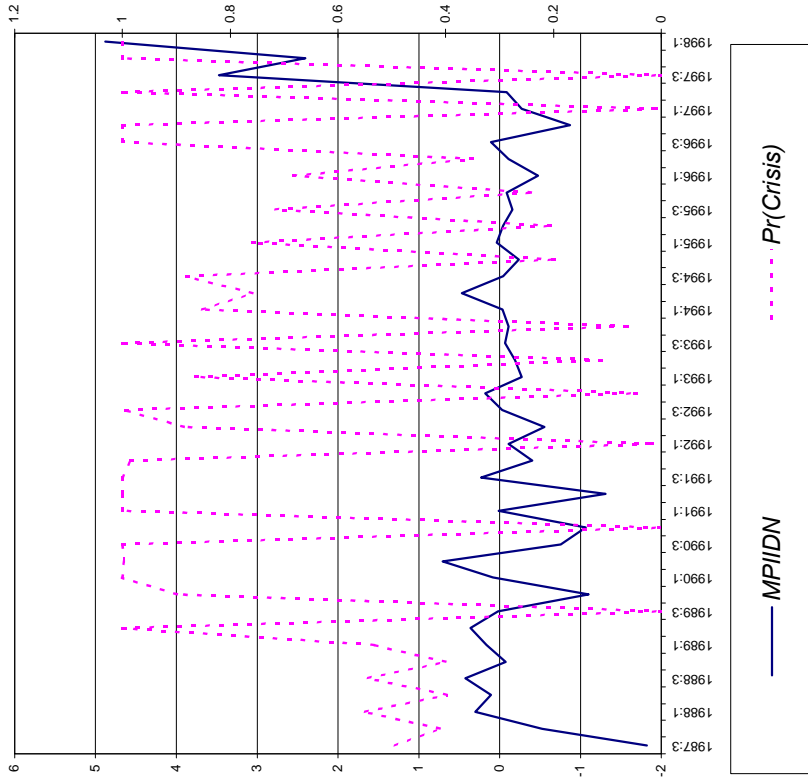
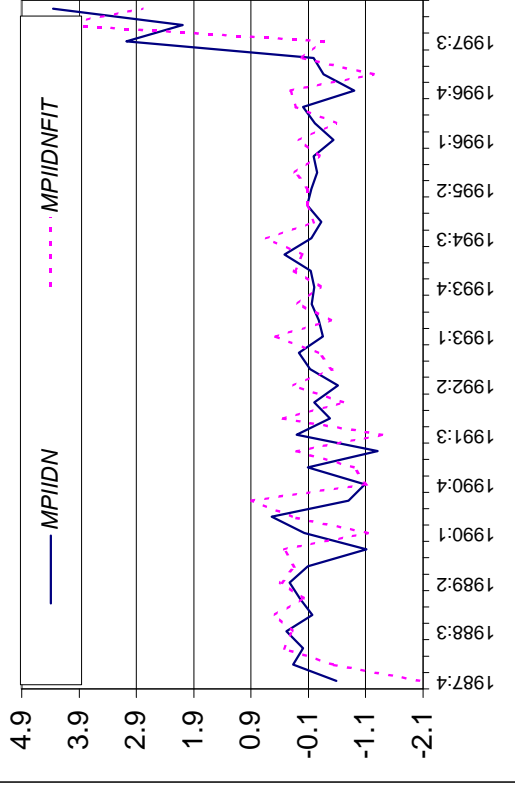


Chart 14: Actual and Predicted MPI for Indonesia using TVTP MSM with lagged MPI for Korea and Thailand and Domestic Variables in the Probability



FINANCIAL INDICATORS IN INDONESIA

(Source: Corsetti, Pesenti, Roubini, 1998 and Radelet-Sachs, 1998)

Incremental Capital Output Ratio: 1987-92: 4 1993-96: 4.9

Vacancy Rate in Jakarta : 1997: 10% 1998-9: 20%

Rental Yield in Jakarta : June 1997: 7.2%

Lending Boom Measure (1997) : 12%

Non Performing Loans (%GDP) : 17%

Banking System Exposure to Risk (%age of assets at the end of 1997):

Property Exposure : 25-30%

Collateral Valuation : 80-100%

Non-Performing Loans : 11% (forecast for 1998 is 20%)

Capital Ratio : 8-10%

Foreign Liabilities and Assets (in billions of U.S. \$):

	<u>1993</u>	<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997Q1</u>	<u>1997Q2</u>
Foreign Liabilities	37.2	41.62	48.93	56.52	57.87	60.63
Foreign Assets	12.58	10.39	11.48	13.49	12.30	10.97
Net Liabilities	24.63	31.23	37.45	43.03	45.57	49.66
Foreign Liabilities (Non-bank)	22.23	24.57	27.93	34.55	36.00	37.19
Foreign Assets (Non-bank)	3.61	2.47	2.56	2.64	2.83	2.65
Net Liabilities	18.63	22.11	25.37	31.91	33.17	34.54
Foreign Liabilities (Bank)	14.97	17.05	21.00	21.97	21.88	23.44
Foreign Assets (Bank)	8.97	7.92	8.93	10.85	9.47	8.32
Net Liabilities	6.00	9.13	12.08	11.12	12.41	15.12

Consolidated cross-border claims in all currencies and local claims in non-local currencies; Mid-1997:

Banks : 21.1%

Public Sector : 11.1%

Non-Bank Private Sector : 67.7%

Total in billion of US\$: 58.7

Ratio of Liabilities to Assets (towards BIS Banks):

<u>1993</u>	<u>1994</u>	<u>1995</u>	<u>1996</u>
2.96	4.01	4.26	4.19

Short-term Liabilities towards BIS Banks; End of 1996:

As a %age of Total Liabilities : 61%

As a %age of Foreign reserves : 181%

Contribution of Inward FDI to Current Account Financing (as a %age of Current Account):

<u>1990</u>	<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>1994</u>	<u>1995</u>
36.58	34.79	63.92	95.16	75.54	61.91

Growth of Foreign Reserves in U.S. Dollars (% growth rate); 1990-96: 144%

International Claims Held by Foreign Banks ; Distributed by Maturity and Sector (billions of dollars)

	<u>End-1995</u>	<u>End-1996</u>	<u>Mid-1997</u>
Total Outstanding	44.5	55.5	58.7
Obligation by Sector:			
Banks	8.9	11.7	12.4
Public Sector	6.7	6.9	6.5
Non-bank Private	28.8	36.8	39.7
Short-Term	27.6	34.2	34.7
Reserves	14.7	19.3	20.3
Short-term/ Reserves	1.9	1.8	1.7

International Claims Held by Foreign Banks; Distributed by Country of Origin (billion of \$)

	<u>End-1995</u>	<u>End-1996</u>	<u>Mid-1997</u>
Total Outstanding	44.5	55.5	58.7
Claims held by banks from:			
Japan	21.0	22.0	23.2
USA	2.8	5.3	4.6
Germany	3.9	5.5	5.6
All others	16.8	22.7	25.3

Market Creditworthiness; Long-Term Debt Ratings; 1996-97:¹

	Jan.15 th 1996	Dec2 nd , 1996	June 24 th , 1997	Dec.12 th , 1997
	Rating/Outlook			Rating/Outlook
Moody's Foreign				
Currency Debt	Baa3	Baa3	Baa3	Baa3
S&P's				
Foreign Currency Debt	BBB/Stable	BBB/Stable	BBB/Stable	BBB-/Negative
Dom. Currency Debt	-	A+	A+	A-/Negative

Euromoney Country Risk Rating (out of 180 countries):

<u>March 1993</u>	<u>March 1995</u>	<u>March 1997</u>	<u>Sept. 1997</u>	<u>Dec. 1997</u>
41	40	43	43	49

Overall Central Government Balance (%age of GDP):

<u>1990</u>	<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>1994</u>	<u>1995</u>	<u>1996</u>
0.4	0.4	-0.4	0.6	0.9	2.2	1.2

Real Exchange Rate Index (Trade Weighted, WPI): (increase → depreciation)

<u>12/88</u>	<u>12/89</u>	<u>12/90</u>	<u>12/91</u>	<u>12/92</u>	<u>12/93</u>	<u>12/94</u>	<u>12/95</u>	<u>12/96</u>	<u>3/97</u>	<u>9/97</u>	<u>12/97</u>
98	93	100	99	92	88	92	89	80	75	99	150

¹ Ratings from Highest to lowest: Moody's: Aaa, Aa1, Aa2, Aa3, A1, A2, A3, Baa1, Baa2, Baa3, Ba1, Ba2, Ba3

S&P's: AAA, AA+, AA, AA-, A+, A, A-, BBB+, BBB, BBB-, BB+, BB, BB-

Indonesia: Selected Macroeconomic, Financial Sector, and balance of Payments Indicators

Source: Johnston, Darbar, and Echeverria (1997): Table 10
IMF International Financial Statistics, Information Notice System, and IMF Direction of Trade Statistics, various issues

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Selected Economic Indicators												
Real GDP Growth	2.5	5.9	4.9	5.8	7.5	7.2	7.0	6.5	6.5	7.4	8.5	7.2
Inflation per annum	4.7	5.8	9.3	8.0	6.4	7.8	9.4	7.5	9.7	8.5	9.4	8.0
M2/GDP	23.9	26.9	27.2	29.6	35.0	43.3	43.7	45.8	43.4	44.9	48.3	52.5
Currency/Deposits	24.1	24.2	21.0	17.6	15.7	12.1	10.4	10.7	..	..	..	..
Fiscal Balance/GDP	-1.0	-3.5	-0.8	-3.1	-2.0	0.4	0.4	-0.4	0.6	0.9	2.3	1.2
Private Sector Credit/GDP	14.1	16.4	18.7	22.3	23.8	50.6	50.7	49.5	48.9	51.9	53.7	55.8
(Export+Import)/GDP	33.0	31.9	39.9	38.5	40.8	44.8	47.2	47.8	41.2	40.7	42.8	41.1
Current Account/GDP	-2.2	-4.9	-2.8	-1.7	-1.2	-2.8	-3.7	-2.2	-1.3	-1.6	-3.5	..
Financial Account/GDP	2.0	5.2	4.6	2.6	3.1	4.2	4.9	4.8	3.7	2.2	5.2	..
Interest and Exchange Rates												
Nominal Deposit Rate (% per annum)	18.0	15.4	16.8	17.7	18.6	17.3	23.3	19.6	14.6	12.5	16.7	17.3
Real Deposit Rate (% per annum)	13.3	9.6	7.5	9.7	12.2	9.7	13.9	12.1	4.9	4.0	7.3	9.3
Interest rate Differential	8.9	8.4	9.2	9.3	9.3	9.1	17.0	15.4	10.9	6.9	10.5	11.5
Lending/Deposit Spread	..	6.1	4.9	4.4	3.1	3.3	2.2	4.4	6.1	5.2	2.1	2.0
Official Exchange Rate per US \$ (end of period)	1125	1641	1650	1731	1797	1901	1992	2062	2110	2200	2308	2383
Real Effective Exchange Rate Index (1990=100)	185.2	142.6	104.3	101.8	103.3	100.0	98.7	96.2	100.9	99.8	96.3	101.0
Balance of Payments												
Current Account, n.i.e.	-1923	-3911	-2098	-1397	-1108	-2988	-4260	-2780	-2106	-2792	-7023	..
Financial Account, n.i.e.	1782	4177	3481	2217	2918	4495	5697	6129	5632	3839	10386	..
Direct Investment Abroad	..	..	..	..	..	..	..	..	-356	-609	-603	..
Direct Investment in Rep. Eco, n.i.e.	310	258	385	576	682	1093	1482	1777	2004	2109	4348	..
Net Direct Investment	310	258	385	576	682	1093	1482	1777	1648	1500	3745	..
Portfolio Investment Assets	..	..	..	..	..	..	..	..	..	..	..	..
Portfolio Investment Liabilities	-35	268	-88	-98	-173	-93	-12	-88	-1805	3877	4100	..
Net Portfolio Investment	-35	268	-88	-98	-173	-93	-12	-88	-1805	3877	4100	..
Other Investment Assets	..	..	..	..	..	..	..	..	..	..	..	..
Other Investment Liabilities	1507	3651	3184	1739	2409	3495	4227	4440	2179	-1538	2541	..
Net Other Investments	1507	3651	3184	1739	2409	3495	4227	4440	2179	-1538	2541	..
of which, Official Capital	1345	2886	2537	1756	2604	218	1287	770	552	137	131	..
Net Errors and Omissions	651	-1269	-753	-933	-1315	744	91	-1279	-2932	-263	-1790	..
Overall Balance	510	-1003	630	-113	495	2251	1528	2070	594	784	1573	..
Net Private Capital	739	-901	-1810	-12090	-2165	4663	3302	6789	4943	5131	10097	...

MACROECONOMIC INDICATORS IN INDONESIA
(Source: Corsetti, Pesenti and Roubini, 1998)

	1990	1991	1992	1993	1994	1995	1996
Current Account as a %age of GDP (NIA)	-4.4	-4.4	-2.46	-0.82	-1.54	-4.25	-3.41
Current Account as a %age of GDP (BOP)	-2.82	-3.65	-2.17	-1.33	-1.58	-3.47	-
Trade Balance as a %age of GDP (BOP)	1.68	0.91	1.81	1.48	0.72	-1.03	-
GDP Growth	-	6.95	6.46	6.5	7.54	8.22	7.98
Investment rate as a %age of GDP	36.15	35.5	35.87	29.48	31.06	31.93	32.07
Stock Market Price Index	417	247	274	588	469	513	637 ¹
Stock Market Price Index (Prop Sector)	-	119	66	214	140	112	143 ²
Savings rate as a %age of GDP	31.75	31.1	33.41	28.66	29.52	27.68	28.66
Government fiscal Balances (%of GDP)	0.43	0.45	-0.44	0.64	0.96	2.29	1.19
Inflation rate	-	9.4	7.59	9.6	8.53	9.43	8.03
OpennessX+M/2GDP	26.3	27.18	28.23	25.26	25.94	26.98	26.24
Exchange Rate (US\$)	1842.8	1950.3	2029.9	2087.1	2160.8	2248.6	2342.3
Real Exchange Rate	97.4	99.6	100.8	103.8	101.0	100.5	105.1
Foreign Reserves (month of import)	3.24	3.53	3.62	3.6	3.24	2.94	3.61
M1/Foreign Reserves	1.73	1.48	1.3	1.44	1.58	1.53	1.21
M2/Foreign Reserves	6.16	5.51	5.61	6.09	6.55	7.09	6.5
Bank Lending to pvt Sector(% growth)	-	17.82	12.29	25.48	22.97	22.57	21.45
Lending to pvt sector (%GDP)	49.67	50.32	49.45	48.9	51.88	53.48	55.42
Foreign Debt(%GDP)	-	68.21	68.74	56.42	54.58	53.35	-
ST debt(% total)	-	14.5	15.52	16.97	18.36	18.75	-
Debt Service/Export	-	34.3	32.6	33.6	30.7	30.9	-
ST debt/Foreign Res.	-	124.59	130.69	134.29	146.06	147.47	-
Debt service+ST debt as a % of Foreign Res	-	248.54	249.91	259.43	263.69	267.25	-

¹ 401 in 1997

² 40 in 1997

Hong Kong

Ming Chien Lo and Jeraldine Chow

I. Introduction

The turmoil among the Asian economies in 1997 has created tremendous interests from the academia, professional economists and the public. This report focuses on the economic situation of Hong Kong in 1997-98, which has some very special features among the economies in the region.

To be more specific, Hong Kong's economy has not yet suffered from any "banking" or "currency" crisis like its neighbors. For countries such as Indonesia, Malaysia, South Korea and Thailand, their troubles began with a severe depreciation in their currencies. This triggered capital outflow and bankruptcy of many financial intermediaries and firms. The currencies of these countries have long been maintained at a relatively constant rate with the US dollar until 1995. Their depreciation is a failure of the defense of the central banks in the presence of speculative attacks. Regarding to this, the authorities of the newborn Hong Kong Special Administrative Region (HKSAR, or simply SAR) of the People's Republic of China successfully supported the currency by paying the cost of having high interest rates.

Hong Kong dollar is pegged with the US dollar, at a rate of HK\$7.8 to US\$1 since October 1983. By the time of writing this report, the peg sustains (but still under pressure.) This is due to the effort and the commitment of the Hong Kong Government and the Hong Kong Monetary Authority (HKMA), the central bank of the SAR. However, the economy is expected to enter one of the most severe recessions in the post-war period.

Some economists, such as Krugman (1998) and Corsetti et al (1998), are interested to explain the Asian currency crises by models of moral hazard. As Hong Kong's financial and banking system is usually considered under decent regulation and supervision, such approaches might not be appropriate. The current problem of Hong Kong is more conformed with the self-fulfilling crisis models developed by Obstfeld (1994,1996) and Obstfeld and Rogoff (1995) in which the local monetary authority faces a tradeoff between the long term credibility in the fixed exchange rate and short term economic gain. In the case of Hong Kong, it is a choice between the *Linked Exchange Rate System* and a fast recovery from the recession via low interest rates and devaluation of Hong Kong dollar. However, the crisis predicted by the models has not occurred.

Section 2 offers some background information of the Linked Exchange Rate System. It would help to understand how the monetary authorities defend the currency peg. Section 3 summarizes the data for Hong Kong in 1997 and early 1998. It emphasizes the pains of maintaining the currency peg through high interest rates. Section 4 is a postscript on the recent development of the situation and the proposed action of the government.

II. The Background of the Linked Exchange Rate System

1. Before October, 1983

Before October 1983, Hong Kong dollar was basically under first a fixed exchange rate and then a floating rate regime. Table 1 shows the history of the this change. At the beginning of this century, Hong Kong followed China and adopted the Silver Standard since it is mainly an entrepôt between China and the rest of the world. This system was abandoned in November 1935 as the world was moving away from the Gold Standard and China the Silver Standard.

Table 1: A History of Hong Kong s Exchange Rate Regimes

Date	Exchange rate regime	Reference rate
Until Nov. 4, 1935	Silver standard	--
Dec. 6, 1935	Pegged to pound sterling	£1 to HK\$16
Nov. 23, 1967		£1 to HK\$14.55
July 6, 1972	Pegged to US dollar	US\$1 to HK\$5.65
Feb. 14, 1973		US\$1 to HK\$5.085
Nov. 25, 1974	Floating rate	--
Oct. 17, 1983	Linked Exchange Rate System	US\$1 to HK\$7.8

Source: Table from Nugée (1995), p.11.

At the same time, the Hong Kong Government established the Exchange Fund by the Currency Ordinance (later known as the Exchange Fund Ordinance). The fund is a reserve to back the issues of bank notes. In addition, the Bank Note Issue Ordinance was amended. Under the new arrangement, there were only three legal note-issuing banks--Chartered Bank (now Standard Chartered Bank), the Hongkong and Shanghai Bank Corporation (HKBC) and the Mercantile Bank of India (later taken by HKBC in 1959.) In order to issue notes, these banks needed to deposit their silver reserve with the Exchange Fund, which in return offered Certificates of Indebtedness (CIs). The silver was then sold for British pound sterling. The CIs are issued at a rate of £1 to HK\$16. In short, a currency board is adopted for the colony.

After the Japanese occupation in 1939-45, Hong Kong faced various pressures from the depreciation of the pound sterling and the collapse of the Bretton-Wood system. These forced the government to revalue Hong Kong dollar in 1967, switch to a Hong Kong/US peg in 1972 and finally allow the currency to float in 1974. Due to the strong growth rate, Hong Kong dollar appreciated a few years after the use of a floating rate regime. Using the Effective Exchange Rate Index¹ (EERI), the strength of the currency approached its peak at 115.5 in mid-March, 1977.

From that time onwards, there was a steady depreciation of Hong Kong dollars. Two factors contributed this trend: a growing trade deficit and high money supply (bank credit). EERI fell to 88.2

¹This is a weighted average index for currencies of 15 countries including China, USA, Japan, Taiwan, United Kingdom, Singapore, former West Germany, South Korea, Australia, Canada, Switzerland,

by the end of 1980. However, the problem did not reach to the critical situation until 1982-83. The British Prime Minister of the time, Mrs. Thatcher, visited Beijing in September 1982. It turned out that the Chinese Government intended not only to end the lease of the New Territories (the rented part of the colony) to the United Kingdom but also take back Hong Kong in 1997. The future of the British colony became uncertain. Talks over the sovereignty problem between the two parties, i.e. China and the United Kingdom, spread news unfavorable to the Hong Kong economy. This led to the collapse in both property and stock markets. In addition to that, the Hong Kong dollars suffered from heavy speculative attacks. The currency fell from HK\$6.1 against US\$1 by the end of August 1982 to HK\$9.6 on September 24, 1983. The economy also undergone huge capital outflow. By mid-September, the Hong Kong Government still lacked of commitment in intervening the foreign exchange market. However, on October 15, 1983, the government finally made two decisions: (i) abandon the 10% tax on deposits in Hong Kong dollar; (ii) peg Hong Kong dollar with the US dollar at HK\$7.8 to US\$1. The latter is known as the “Linked Exchange Rate System”, which is effective since October 17, 1983.

In short, as a small opened economy, the currency of Hong Kong was used to be backed by stronger currency, pound sterling at first and later, US dollar. There was only about nine years (1974-1983) in which a floating exchange rate regime was adopted. By the end of 1983, under both external (speculative attacks) and internal (political uncertainty) factors, the authorities decided a fixed exchange rate regime was more desirable. Up to the time of writing the report, this is still the faith of the government and the monetary authorities of the former British colony and now the SAR of China.

2. The Linked Exchange Rate System

The Linked Exchange Rate System is in practice a modified version of a classical currency board. A “classical” currency board, like the one adopted by Argentina in 1991, is a system where there is no place for a central bank. The current Hong Kong’s currency board, however, maintains certain functions of the HKMA as the central bank of the SAR. The rest of this subsection discusses their distinction.

In general, currency board refers to “a monetary institution that issues base money solely in exchange for foreign assets, specifically the reserve currency.” (Williamson (1995), p.2) Table 2a and 2b show the balance sheets of a currency board and a central bank respectively²:

Table 2a: Currency Board

France, Italy, Netherlands and Belgium. ERRI is 100 on December 18, 1971 as the base for this period. See Lui (1991) for details.

² Tables modified slightly from Williamson (1995), p.3.

<u>Asset</u>	<u>Liabilities</u>
Foreign Reserve	Currency in Circulation Deposits from Commercial Banks Net Worth

Table 2b: Central Bank

<u>Asset</u>	<u>Liabilities</u>
Foreign Reserve Domestic Assets	Currency in Circulation Deposits from Commercial Banks Net Worth

Under a currency board, the monetary authorities have no *right* to change money supply at its will. If the currency board wants to increase the supply of domestic currency by issuing new cash (debit the balance sheet), it must first increase its stock of the chosen reserve currency (credit the balance sheet) given certain fixed exchange rate (with or without a band) stipulated by law. In other words, the supply of home currency can increase if and only if the commercial banks submit equal valued reserve currency to the currency board. Usually, the foreign reserve held is more than the monetary base (cash in circulation plus deposits from commercial banks), so there is a net worth on the liabilities side which is equal to the excess amount of foreign reserve. The balance sheet of a central bank is very similar to that of a currency board except that the central bank is allowed to hold domestic assets such as government bonds. This is a very important distinction because, by buying or selling domestic credits, the central bank is able to perform open market operations and thus sterilized intervention of exchange rate. In fact, why some countries use a currency board instead of a central bank is to impose monetary discipline so that the government cannot buy its own debts via a central bank. Moreover, the currency board can stabilize the value of the home currency to a stronger one. This is an attractive feature for small countries. As long as people have confidence in this monetary system and the fixed exchange rate, a stable economic environment will promote trade, investment and, hence, growth.

The above form of currency board is preserved under Hong Kong's Link Exchange Rate System. However, the Hong Kong Government has increased the power of the monetary authority *as a central bank* over the recent decade. In April 1, 1993, the Hong Kong Monetary Authority (HKMA) was established to perform many of the functions of a central bank. This is in fact a merger of the Office of the Exchange Fund and the Office of the Commissioner of Banking. We will discuss the structure of Hong Kong's currency board and how HKMA is able to intervene the foreign exchange market below.

Because of the historical reason, instead of a central bank, three note-issuing banks (Standard Chartered, HKBC and now Bank of China) are allowed to issue notes. In order to do so, they have to pay the Exchange Fund (under the management of HKMA) in US dollars and receive the Certificates of Indebtedness (CIs) at the official rate HK\$7.8 to US\$1. This is similar to the monetary system before 1970's. Under this system, how is the money supply determined? Suppose firms in the export sector gain more US dollars through trade. They still need to pay their workers in HK dollar so they will use

the US dollar in exchange for the domestic currency with the licensed banks. If these banks are short in HK dollar, they can exchange for HK dollar using the US dollar in their hand with the note-issuing banks at HK\$7.8 to US\$1. If the note-issuing banks are short in HK dollars, they will use the mechanism of currency board to obtain CIs and supply more domestic currency to the economy. (For the opposite case, they will submit CIs to obtain US dollars from the reserve.)

Nevertheless, in principle, the exchange rate in the market floats. There is no law that forbids any bank to use a rate different from the official one. In fact, it is an arbitrage mechanism that helps to fix the exchange rate in the market. For instance, if the rate in the market is HK\$8 to US\$1. Banks will submit Hong Kong dollar to the note-issuing banks for US dollar at the official rate HK\$7.8. They will gain the differential 20¢ by selling the US dollar in the market. More banks will follow and thus the demand of HK dollars increase. As a result, HK dollar will appreciate and the above arbitrage process will end when the market rate goes back to the official rate. Clearly, if there is severe pressure of depreciation in the domestic currency against US dollars, the note-issuing banks have to use the CIs to exchange for US dollars with the Exchange Fund. Contagion in the market in response to the depreciation will finally lead to a huge reduction in the foreign reserve. It should also be noted that the market rate fluctuates around 7.8 rather than being fixed at that rate. The main reason is that the arbitrage opportunities are open to the licensed banks but not individuals and cooperation other than banks, including Deposit Taking Companies (DTCs).

In addition to the currency board system, some instruments/mechanisms have been introduced for market intervention. They are now in the hand of HKMA:

- ❑ Accounting Arrangements (introduced in 1988)³: under this arrangement, HKBC opened a clearing account with the Exchange Fund while it manages the Net Clearing Balance (NCB) of the rest of the banking system. The balance of the former account can only be changed by HKMA. If the NCB is greater than this balance, it indicates that the HKBC has overlent to the banking system, hence, HKMA will charge a penalty interest rate on the excess amount. Before the arrangement, HKBC is the Management Bank of the Clearing House of the Hong Kong Association of Banks. Suppose the Exchange Fund, as a customer of HKBC, borrows from the interbank market to reduce interbank liquidity, the liquidity can be restored if other customers of HKBC sell HK dollar for US dollar. This means that the effort of the Exchange Fund is contradicted by HKBC and its customers. This is avoided under the new arrangement.
- ❑ Liquidity Adjustment Facility (1992)⁴: this provides liquidity assistance for banks that have surplus or deficit in their clearing accounts. Banks that have a surplus can place the excess amount with the Exchange Fund at the LAF Bid Rate; banks that have a deficit can borrow at an LAF Offered Rate. These two rates set the floor and the ceiling of the overnight interbank interest rate.
- ❑ Exchange Fund Bills (1990) and Notes (1993): they are securities issued by the Exchange Fund; with these domestic assets, open market operations become possible.

In general, these modifications allow the authorities to counter any unfavorable market forces and maintain the stability of the system through their effect on interbank liquidity. Nevertheless, some critics believe that these modifications weaken the credibility of the Linked Exchange Rate System

³See HKMA (1995), p.114-117 for details.

because now the HKMA can be more flexible in they want to devalue Hong Kong dollar; rather, the authority should preserve the autonomy of the mechanism of the “classical” currency board.

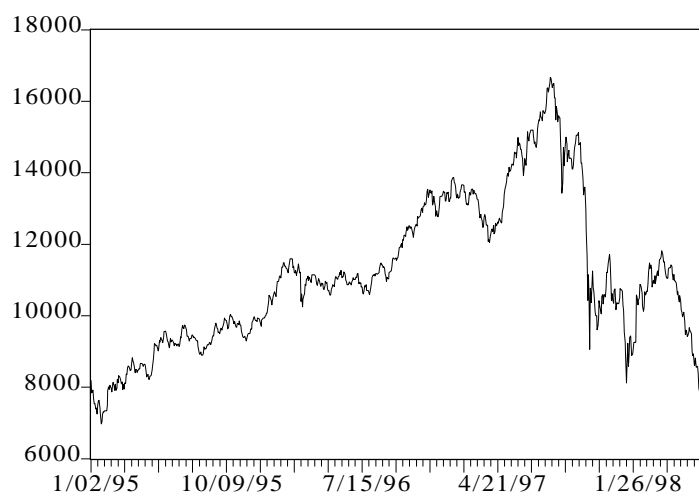
III. Speculative Attacks on Hong Kong Dollar in 1997

1. Before October, 1997

Like many of its neighbors, in the first two quarters of 1997, the economy of Hong Kong performed extremely well. As a matter of fact, even though other Asian economies began to expose their problem in the second half of the year, there was almost no sign of any down-turn for Hong Kong even in the third quarter, in spite of some speculative pressure in the summer.

Figure 1 plots the series of the Heng Seng Index from 1995 to mid-1998. It can be seen that the stock market started with a high of 13,868 on January 20 and continued a bullish run to a record high of 16,673 on August 7. This was partly due to a prosperous property market and partly due to some “handover effect” for the so-called “Red Chip” stocks.

Figure 1: Heng Seng Price Index
(daily data from January 1995 to early July 1998)



Source: Index series, Datastream

Table 3 shows the property (residential flats) price index and rental index computed by the Hong Kong Government for 1996 and 1997. There are 2-digit percentage increases of the price index in the first two quarters of 1997. These are higher than any quarters in the previous year.

Table 3: Price and Rental Index for Residential Flats

Year	Quarter	Price Index (1995=100)	% Change in the index	Rental Index (1989=100)	% Change in the index
1996	1	99	5	168	-1

⁴Same as above.

	2	107	8	169	1
	3	109	2	172	2
	4	119	9	175	2
1997	1	140	18	185	6
	2	161	15	193	4
	3	165	2	200	4
	4	155	-6	199	-1

Source: *1997 Economic Background*, p.71.

The other factor of the bullish stock market is the “Red Chip” stocks. These refer to the stocks of companies listed in Hong Kong that are controlled by powerful Mainland Chinese state entities. Because investors expected possible regulation change concerning new shares issued by these companies after Hong Kong handed over to China on July 1, 1997, there was a huge demand for these stocks. For instance, one of the companies, Beijing Enterprises sold 125 million new shares in May at HK\$12.48 (US\$1.6). The applications made were for 1,276 times more shares than those available.

For the economy as a whole, the real GDP growth and unemployment rates of the first three quarters also suggest that the economy be in a healthy condition:

Table 4: Growth and Unemployment Rates of 1997 (Percent)

Quarter	Growth rate (at 1990 price)	Unemployment rate ⁵	Inflation rate
1	5.9	2.5	6.1
2	6.8	2.4	5.7
3	6.0	2.2	6.1
4	2.7	2.5	5.5

Source: *First Quarter Economic Report 1998*.

These figures give an overall 5.3% in 1997. This is higher than 1996 (5.0%) and 1995 (3.9%).

2. After October, 1997

The scenarios in July 1997 began with the speculative attacks on other Asian currencies: first Thai baht, then Philippine peso, Malaysian ringgit, Indonesian rupiah and Singapore dollar. While the Thai and Indonesian governments seek assistance from the IMF, Philippines central bank attempted to intervene the market and the Singapore central bank allowed the currency to depreciate, Malaysian Prime Minister Mahathir Mohammed blamed international speculators such as George Soros. Hong Kong dollar remained steady, but later the HKMA admitted that US\$1 billion of the foreign reserve (by the end of July, US\$81.7 billion) had been used to defend the currency. A second attack launched in mid-August. Overnight Hong Kong Interbank Offered Rate (HIBOR) had already been raised to a

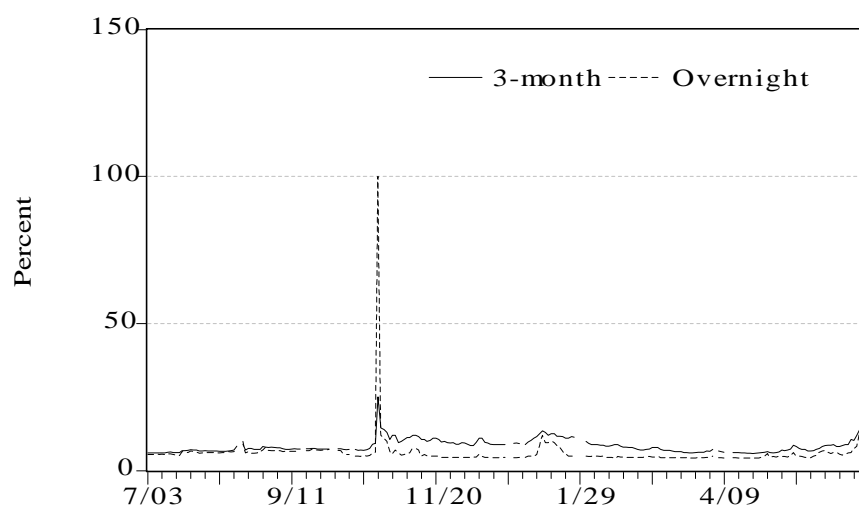
⁵Seasonally adjusted.

level above 6% after the mid-July attack. This second attack even once pushed HIBOR up to 10% on August 19 from 6.81% on the previous working day, August 15. From the summer to October, the stock market is very volatile and the Hong Kong dollar is strong but under pressure, while other currencies depreciates (or are devalued, e.g. New Taiwan dollar) against the US dollar. During this period, there was rumor that the monetary authorities would gradually and quietly loosen the peg. This was increasingly convincing when the Singapore dollar depreciates and the New Taiwan dollar devalued. On the other hand, the Hong Kong Government reassured the public that the peg would sustain and there was adequate reserve to defend from any speculative attack. By the end of August and September, the total foreign reserves were US\$85.3 billion (world 4th largest) and US\$88.1 billion (world 3rd) respectively. However, the speculative pressure on both Hong Kong and other neighboring countries finally stroke Hong Kong stock market between October 20-23. On October 23, the Heng Seng Index dropped to 10,426.3, a 23% from the previous Friday's 13,601.01. HKMA also charged a penalty interest rate and pushed overnight HIBOR up to 100% (closing high) on October 23 (at one point of the day, 280%⁶), with 12%, 11% and 10% on the next three working days. The 3-month HIBOR, a benchmark interest rate, also surged to 25% on October 23, and stays around 10% in the rest of the year. Its monthly average in December was 8.43%, while in January 1997 it was just 4.5%.

Figures 2 (overnight and 3-month HIBOR) and Tables 5-6 generalize the movement of the above variables in 1997-98:

⁶ From *1997 Economic Background*, p. 106.

Figure 2: Overnight & 3-month HIBOR
(daily data from July 1997 to Mid-June 1998)



Source: Hong Kong Monetary Authority

Table 5: Dates of Alleged Speculative Attacks and Possible HKMA Interventions

Date	Overnight HIBOR (% per annual)		3-month HIBOR (% per annual)		Heng Seng Index (7/31/1964=100)	
	On the day	Previously ⁷	On the day	Previously	On the day	Previously
7/21/97	6.38	5.13	6.75	6.19	15536.30	15570.40
8/19/97	10.00	6.81	9.00	8.25	15477.26	16096.88
10/23/97	100.00	6.25	25.00	9.25	10426.30	11637.77
1/12/98	12.00	8.50	13.50	12.50	8121.06	8894.64
6/15/98	12.50	8.25	14.00	12.00	7462.50	7915.44

Sources: HIBOR from HKMA, *Monthly Statistical Bulletin*; Heng Seng Index from *Index series, Datastream*

Table 6: Foreign Reserve and Money Supply Growth Rates in 1997

Month	End-period foreign reserve (US\$ billion)	M1 Growth (% per annual)	M3 Growth (% per annual)
July	81.7	14.9	24.7
August	85.3	13.6	21.7
September	88.1	9.2	21.6
October	91.4	5.9	14.0
November	96.5	-1.2	7.9
December	92.8	-5.1	9.9
January (98)	98.1	-13.1	6.1

Sources: Foreign reserve data from HKMA, *Quarterly Bulletin*; others from *Monthly Statistical Bulletin*.

⁷Previous working day.

From Table 5, it is likely that the HKMA used interest rate to intervene the market in order to defend the currency peg as overnight HIBOR increased drastically except in mid-July. Naturally, the corresponding impact on the stock market was negative and severe. The last two columns show the differences of the Heng Seng Index between the day of interest rate surge and the previously working day. It should be noted that on October 25, the HKMA adjusted the bid and offer LAF rates from 4.25% and 6.25% to 4% and 7% respectively to allow the interbank market to handle the increased volatility.

Nevertheless, the foreign reserve did not shrink during this period. This is very clear in Table 6. The last two columns also suggest that Hong Kong has undergone a contractionary period as the growth rate of M1 decreased and went below zero since July. It is not surprising to see the growth rate of the fourth quarter is just 2.7% (see Table 4). Unemployment rate of the same quarter, however, could not yet reflect the condition of the economy, as it is only slightly higher than the third quarter.

3. *Why were there speculative attacks?*

Given that Hong Kong has adequate foreign reserve, the government has long maintained budget surplus every year and the fundamentals of the economy (growth, unemployment and inflation rates) are sound in the first three quarters, what attracted the international speculators to target the Hong Kong dollar? In addition to these factors, unlike some other Asian countries, the financial and banking system of Hong Kong is well-regulated and well-supervised. Although a few investment banks and firms have bankrupted after October due to overinvestment, the sort of crises in Indonesia and South Korea did not occur in Hong Kong. In fact, as one of the most developed financial centers in the region, financial and banking regulations have been continuously introduced and strengthened over the past few decades, which help to avoid the problem of moral hazard. For example:

- ❑ The Protection of Investors Ordinance (1974)⁸: this prohibits firms using fraudulent, coercive and exaggerated means to induce investors of buying or selling securities. It also regulates the issue of associated documents and publications.
- ❑ The Securities Ordinance (1979)⁹: this regulates the operations of the Stock Exchange, the registration of dealers and investment advisers and trading practice. It forbids dealers to involve in transaction outside the exchange, allows investigation of malpractice's, and provides for the establishment of a Stock Exchange Compensation Fund to compensate the clients of defaulting brokers.
- ❑ The Banking Ordinance (1986)¹⁰: this ordinance (i) governs both banks and DTCs under the supervision of the Commissioner of Banking (now a part of HKMA); (ii) institutes a minimum capital to risk assets ratio requirement; (iii) imposes a new liquidity requirement and (iv) allow the commissioner to issue guide-lines for banking operations from time to time.

⁸From Edwards (1987), p.82

⁹Same as above.

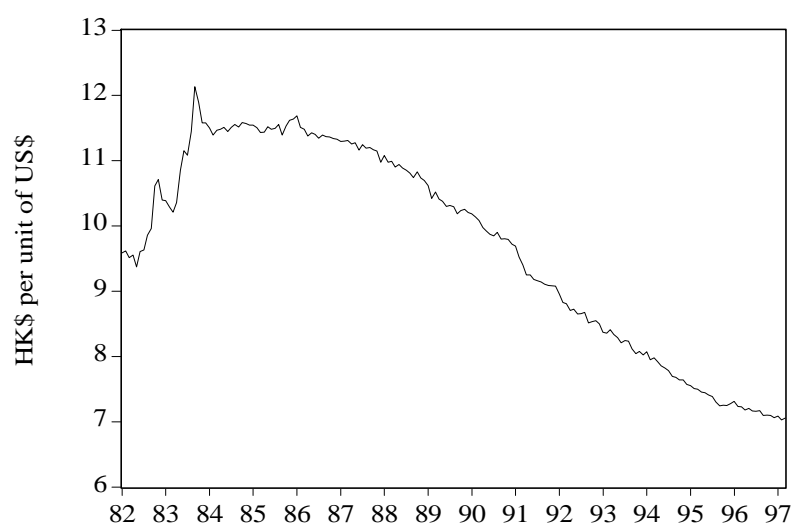
Still, there are three possible reasons for speculative attacks:

First, simple calculation of the real exchange of Hong Kong and US dollars (see Figure 3) suggests a large appreciation of Hong Kong dollars since 1983 which might reflect Hong Kong's lack of competitiveness. Yet, Hawkins and Yiu (1995) compute the Real ERRI for traded goods and shows no loss of competitiveness for traded goods sector. However, given the fact that Hong Kong has transformed into a service-based economy¹¹, the competition the SAR faces might be more in financial services and tourism, rather than in manufacturing products. Since other Asian currencies have depreciated, Hong Kong might suffer from lack of competitiveness against countries like Singapore (another financial center), Thailand and Malaysia (in tourism). Furthermore, as an important entrepôt, between China and the rest of the world, the fact that Renminbi has not been devalued also reduces China's competitiveness. This might have a negative impact on Hong Kong re-export sector. In any case, there were increasing requests and rumors for the devaluation of Hong Kong dollars to put a lift of competitiveness in 1997. This gives political pressure on the local authorities. Under such environment, speculators might perceive that their attacks are more likely to succeed.

¹⁰See Ho (1991), p.98 for details.

¹¹Only 15.5% of GDP is from industry such as mining, manufacturing, utility and construction. 84.4% comes from the service sectors such as wholesale/retail (25.4%) and financial services and real estate (24.9%). Updated information available on the Hong Kong Government official statistics web site at <http://www.info.gov.hk/censtatd/hkstat/hkstat.htm>.

Figure 3: Real Exchange Rate of HK Dollar
(Monthly Ave. Nominal Rate * (US CPI/HK CPI) from 1982 to early 1997)



Source: Nominal Exchange Rate from IMF Series, Datastream;
US and HK CPIs from National Government Series, Datastream

Second, political uncertainty also increases the probability of speculative attacks. On July 1, 1997, the former British colony was handed over to the People's Republic of China. Foreign investors might be skeptical on the independence of Hong Kong economic policy. As a matter of fact, some economists do not show confidence on this matter. Anna Schwartz (1993) thinks that "Hong Kong's experience with a currency board represents a dilution of the features that distinguished the institution. It did not maintain a fixed exchange rate between the Hong Kong dollar and sterling during the years when it was linked to sterling; it then shifted to a link to the US dollar, after which it let the exchange rate float; and it then returned to a fixed exchange rate with the US dollar. It has since introduced discretionary powers for the Exchange Fund to exercise. Limited as these powers may be currently, they strike me as a slippery slope that portends further erosion of rule-based behavior. China's willingness to maintain rule-based behavior once the island reverts to its control adds to the uncertain future of a currency board in Hong Kong." (p.176) Maurice Obstfeld and Kenneth Rogoff (1995) share Schwartz's concern, "After China takes over in 1997, it will also assume ultimate ownership of Hong Kong's foreign currency reserves. Despite its promise not to tamper with Hong Kong's economy, China would not likely want to see its dowry squandered in battling speculators. Thus, even Hong Kong's currency ultimately could fall." (p.91) Was George Soros as pessimistic (or optimistic) as these economists in 1997? (However, by the time of writing, there is little evidence of China's intervention except a promise of US\$120 billion of its foreign reserve to defend Hong Kong dollars if needed.)

Third, some people suggest that the actual target of the speculators is the stock market. If the speculators are able to give pressure to the Hong Kong dollar and the only response of the HKMA is to increase interest rate, then they can gain by short selling stocks in the market. If this is the case, the authorities should be flexible in choosing the instruments to defend the currency.

The first and the last points lead to two deeper thoughts: (i) how can we weigh the gain and loss of the currency peg under the environment of (regional) speculative attacks and (ii) can the HKMA, or a central bank in general, avoid to increase interest rate to defend the domestic currency?¹² This concerns the utility function of the local authorities and the choice of discretion and rule of monetary policy.

IV. A Postscript

The Hong Kong Government has recently announced their estimates of a -2% growth rate and 4.2% unemployment rate for the first quarter of 1998; and a recession is expected. This suggests that the full impact of the Asian crises on the real sectors have just begun to be realized. During this period, interest rates stayed high and Hong Kong dollar was under discretionary speculative attacks. In June, the further depreciation in Japanese Yen gave additional pressure. On June 22, as a result of internal political pressure, the government adopts her first budget deficit policy since 1982 in order to stimulate the economy without abandoning the currency peg. The policy turned an initial surplus estimate of HK\$10.7 billion into a deficit of HK\$21.4 billion. This rescue package (HK\$44 billion) involve:

- ❑ a suspension of land sales until March 31, 1999 in order to slow down the collapse of the property market
- ❑ a exemption of interest earned locally from profits tax
- ❑ a HK\$2 billion scheme to help small and medium firms in non-export related sector for loans
- ❑ rates rebate for the first quarter (worth HK\$3.85 billion)

Whether this expansionary fiscal policy can help to shorten the coming recession of Hong Kong is in doubt. Maybe it is just a medicine to ease the pain of maintaining the fixed exchange rate or a guarantee of the government's commitment on the currency peg.

¹²The answer for (ii) is probably a “yes”.

Reference

Corsetti, Giancarlo, Paolo Pesenti and Nouriel Roubini (1998), "What Caused the Asian Currency and Financial Crisis?", mimeo, New York University

Edwards, Anthony (ed.), *Hong Kong: a guide to the structure, development and regulation of financial services*, The Economist, 1987

Government of Hong Kong Special Administrative Region, *1997 Economic Background*, February 1998

Government of Hong Kong Special Administrative Region, *First Quarter Economic Report*, May 1998

Government of Hong Kong Special Administrative Region, *Hong Kong Monthly Digest of Statistics*, July 1997-May 1998

Government of Hong Kong Special Administrative Region, Official Information Web Site at <http://www.info.gov.hk>

Hawkins, John and Matthew Yiu (1995), "Real and Effective Exchange Rates" reprinted in *Money and Banking in Hong Kong*, edited and published by the Hong Kong Monetary Authority, 1995

Ho, Richard Yan-Ki (1991), "The Regulatory Framework of the Banking Sector" in *The Hong Kong Financial System*, edited by Richard Yan-Ki Ho, Robert Haney Scott and Kie Ann Wong, Oxford University Press, 1991

Hong Kong Monetary Authority, *Monthly Statistical Bulletin*, July 1997-May 1998

Hong Kong Monetary Authority, *Quarterly Bulletin*, August 1997-May 1998

Jao, Y. C. (1997), "Of Pegs and Boards", reprinted in Hong Kong Monetary Authority, *Quarterly Bulletin*, November 1997, p.70-72

Kydland, Finn E. and Edward Prescott (1977), "Rules Rather than Discretion: The Inconsistency of Optimal Plans", *Journal of Political Economy*, 85, p.473-491

Krugman, Paul (1979), "A Model of Balance-of-Payments Crises", *Journal of Money, Credit, and Banking*, Vol. 11, No. 3, p.311-325

Krugman, Paul (1996), "Are Currency Crises Self-fulfilling?", *NBER Macroeconomic Annual*, National Bureau of Economic Research, 1996, p. 345-378

Krugman, Paul (1998), "What happened to Asia", mimeo, MIT

Lui, Y. H. (1991), "The Foreign Exchange Market", in *The Hong Kong Financial System*, edited by Richard Yan-Ki Ho, Robert Haney Scott and Kie Ann Wong, Oxford University Press, 1991

Nugée, John (1995), "A Brief History of the Exchange Fund", reprinted in *Money and Banking in Hong Kong*, edited and published by the Hong Kong Monetary Authority, 1995

Obstfeld, Maurice (1994), "Logic of Currency Crises" reprinted in *Monetary and Fiscal Policy in an Integrated Europe* edited by Barry Eichengreen, Jeffrey Frieden and Jürgen von Hagen, Springer-Verlag, 1995

Obstfeld, Maurice (1996), "Models of Currency Crises with Self-fulfilling Features", *European Economic Review*, 40, p.1037-1047

Obstfeld, Maurice and Kenneth Rogoff (1995), “The Mirage of Fixed Exchange Rates”, *Journal of Economic Perspectives*, Vol. 9, No. 4, Fall, p.73-96

Roubini, Nouriel, Chronology at
<http://www.stern.nyu.edu/~nroubini/asia/AsiaHomepage.html>

Schwartz, Anna (1993), “Currency Boards: their past, present, and possible future role”, *Carnegie-Rochester Conference Series on Public Policy* 39, p.147-187

Scott, Robert Haney (1986), “Monetary Policy in Hong Kong” in *Hong Kong's Financial Institutions and Markets* edited by Robert Haney Scott, K.A. Wong and Yan Ki Ho, Oxford University Press, 1986

South China Morning Post, June 23, 1998 Issue

Williamson, John (1995), *What Role for Currency Boards?*, Institute for International Economics