Coping with the Asian Financial Crisis: The Taiwan Experience

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Taiwan was affected by the 1997 Asian financial crisis, although, fortunately for Taiwan, the degree of fluctuation in the exchange and interest rates was less than most of other crisis-hit countries in Asia.

The better performance of Taiwan, in the wake of the crisis, can be attributed to various factors, including those linked with the macroeconomic, financial, and real sectors. Economic and financial stability have been made the priority goals of the government. Since the 1950s, Taiwan has followed a suitable sequence in undertaking economic reform, and has often enjoyed a trade surplus and excess savings. This paper takes such factors into account in its analysis of how Taiwan managed to cope with Asian financial crisis so effectively. Other areas which come in for scrutiny in this regard include Taiwan's abundant foreign reserves and low foreign debt, strong financial regulations, the industrial structure based on small- and medium-sized enterprises and how this facilitated the economy's flexible reaction to the crisis, and industrial upgrading and technology promotion and how this helps explain Taiwan's economic robustness.

Although Taiwan has performed well during the Asian financial crisis so far, there will still be many more challenges to face in the future. These future challenges are discussed, too. Finally, some policy recommendations are put forward. (*JEL* Classifications: E50, F30)

I. Introduction

The 1997-8 Southeast Asian financial crisis not only caused financial turmoil in the countries of Southeast Asia, but also spread to Taiwan, causing exchange rates, interest rates and share

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prices to fluctuate violently. Although Taiwan suffered from the financial turmoil of 1997-8, the impact on Taiwan's financial markets was comparatively small compared to other Southeast Asian countries and South Korea.

In Taiwan, the exchange rate, stock price index, and interest rates have been fluctuating to some extent since mid-1997, creating instability in the financial environment. However, the impact of the financial crisis on Taiwan was not as serious as on other Southeast Asian countries. The reasons for this can be attributed to macroeconomic, real sector and financial sector factors.

During the management of policies to solve the financial crisis, several issues were deemed controversial, such as the role of the Central Bank, the speed of reform adjustment, the tradeoff between stability and efficiency, and the combination of exchange rate policy and interest rate policy. All of these issues deserve discussion. In addition, the Asian development model has changed in the wake of the current crisis, which is worth comparing with the Latin American financial crisis and Mexican financial crises.

In Section II, this paper analyzes the experience of Taiwan during the 1997-8 financial crisis. Section III evaluates the monetary policy and macroeconomic policy related to the financial crisis. Section IV examines several problematic issues in executing macroeconomic and monetary policies. The last section serves as the conclusion.

II. Taiwan's Experience of the Asian Financial Crisis

Before the financial crisis took hold in Taiwan, the stock price index had climbed abnormally. In the first half of 1997, share prices in Taiwan had been climbing steadily, rising from 7,135 points at the end of January to 9,890 points at the end of August. The stock market was thus already abnormally high. During the financial crisis, the exchange rate, interest rate and stock price index fluctuated violently. The crisis was a great shock to the government, the finance sector and the general public. However, as the Asian financial turmoil deepened, and as world stock prices in general fell, together with a shortage of funds resulting from the Central Bank's foreign exchange intervention, Taiwan stock prices declined significantly from the end of August. Nevertheless, as the East Asian financial crisis gradually subsided, New York stock prices

TABLE 1
MACROECONOMIC INDICATORS

unit: NT$ million; %

Year	ΔY	ΔP	$(X-M)$	$(S-I)$
1971-75	9.02	16.02	-3823.4	2237.6
1976-80	10.64	10.78	158828.4	108297.4
1981-85	6.76	4.1	788875.4	653674.6
1986-90	9.14	2.2	1920727	2030628.4
1991-95	6.64	3.7	1020906.4	909441
1981	6.2	16.3	51123	23172
1982	3.6	3.0	128164	91831
1983	8.4	1.4	191518	182989
1984	10.6	-0.02	333836	281116
1985	5.0	-0.02	421172	372833
1986	11.6	0.7	590011	624540
1987	12.7	0.5	593737	605233
1988	7.8	1.3	308703	411269
1989	8.2	4.4	362080	329622
1990	5.4	4.1	330980	299822
1991	7.6	3.6	350013	328411
1992	6.8	4.4	230902	209909
1993	6.3	2.9	204286	181035
1994	6.5	4.1	194360	163151
1995	6.0	3.7	206727	134675
1996	5.7	3.1	361505	286222
1997	6.8	0.9	205591	209433

Note: ΔY=Average annual growth rates of real GDP, ΔP=Consumer price inflation rate, X=Exports, M=Imports, S=Savings, I=Captial formation.

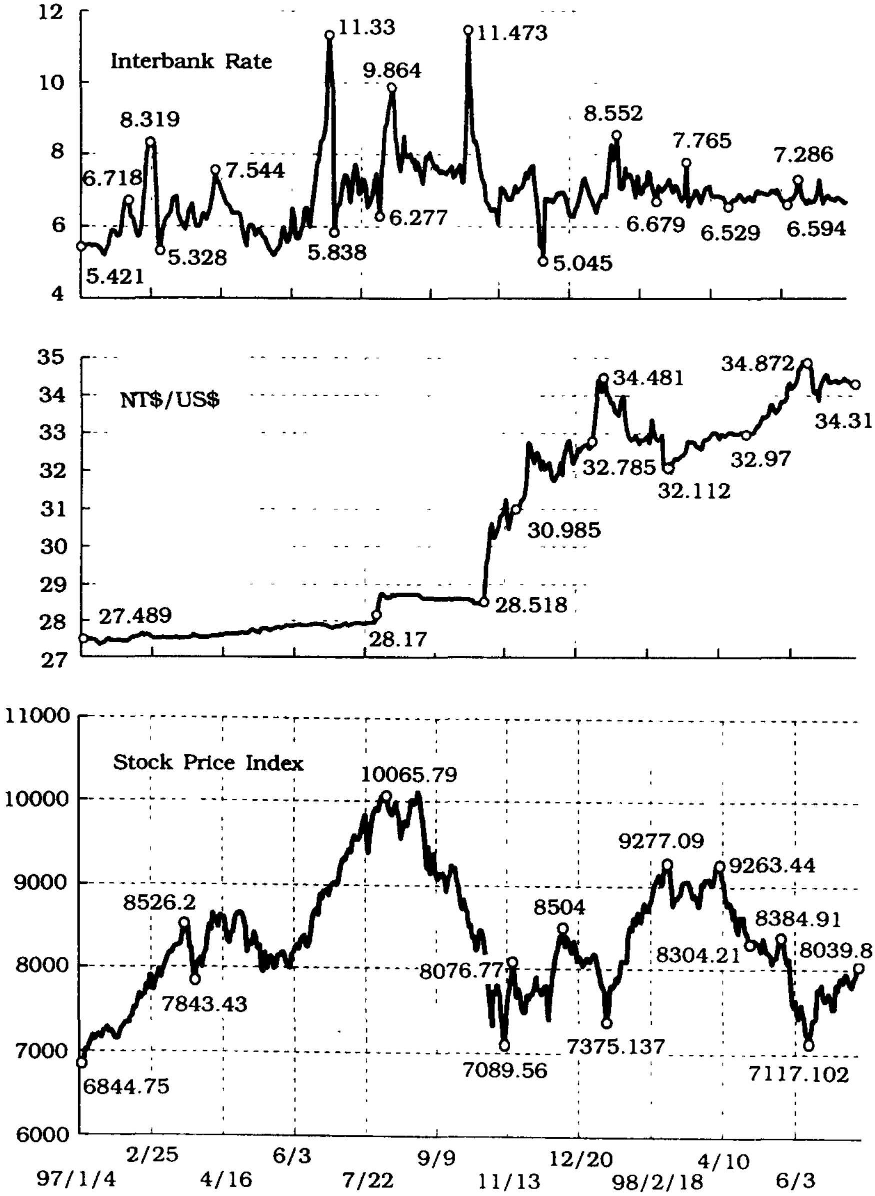
Sources: ΔY, ΔP: Council for Economic Planning and Development Republic of China, Taiwan Statistical Data Book 1997.

$(X-M)$: Inspectorate-General of Customs, Ministry of Finance, R.O.C. Council for Economic Planning and Development Republic of China, Taiwan Statistical Data Book 1997.

(S−I): Directorate-General of Budget, Accounting and Statistics, R.O.C., Statistical Abstract of National Income, Taiwan Area, Republic of China, 1951-1997, Mar. 1997. Council for Economic Planning and Development Republic of China, Taiwan Statistical Data Book 1997.

recovered, and with the shortage of funds resolved, local stocks priced up again starting in December.

The exchange rate policy changed in different stages in order to accommodate in the economic environment change. When the financial crisis in Southeast Asia occurred, the exchange rate for the New Taiwan Dollar (NT$) fell rapidly from NT$27.9 to the US dollar at the end of July to NT$28.7. The Central Bank tried to protect the New Taiwan Dollar to prevent the exchange rate from falling below 28.7. The Central Bank allowed the NT$ exchange rate to be fully determined by market forces beginning July 29 for three successive days. The NT$ responded by depreciating to a lower level which, to the Central Bank's judgment, was easy to defend. In early August, the Central Bank also raised both the rediscount rate and the interest rate on accommodations against secured loans to assist the stabilization of the NT$. In the following two-and-a-half months, the Central Bank intensively intervened in the foreign exchange market, and also allowed market interest rates to rise to a certain extent, from 7.7% in October 1 of 1997 to 11.473% in October 7 of 1997. The method used was to keep selling off US dollar foreign exchange reserves and to buy in NT dollars. This led to a capital squeeze in Taiwan, with the stock market being bled dry. Share prices had been looking set to fall anyway, and various factors in combination sent them crashing. Although the Central Bank adopted the policy of lowering bank reserve rates as a powerful weapon against capital squeeze, it had no effect. The Central Bank spent more than US$7 billion on intervention. Thus, when the public began to sell NT dollars and buy US dollars in large quantities, the Central Bank was forced to change its tack. The depreciation expectation of both business and individuals intensified. They increased their purchases of US dollars. Having spent billions of US dollars on intervention, the Central Bank finally realized that Taiwan could not successfully resist international speculative attacks solely by her own efforts. Therefore, in order to avoid adverse impacts on the real sector and other financial markets arising from foreign exchange intervention, the Central Bank, on October 17, allowed the NT dollar exchange rate to be determined mainly by market forces. Fortunately the financial markets eventually stabilized. Since then, Taiwan's financial system has been sensitive to changes in the international environment, with the Central Bank intervening in the market occasionally when



Source: The Central Bank of China, R.O.C.

FIGURE 1

THE INTEREST RATE, THE EXCHANGE RATE, AND THE STOCK PRICE

TABLE 2

EXCHANGE RATE AND STOCK PRICE CHANGES IN ASIAN COUNTRIES

Country	Exchange Rates			Stock Indexes			Total
	Currency/US$		% (1)	Indexes		% (2)	% (1)+(2)
	30-Jun -97	30-Jun -98		30-Jun -97	30-Jun -98		
Taiwan	27.812	34.351	-19.04	9030.28	7548.81	-16.41	-35.44
Korea	888.00	1373.00	-35.32	745.40	297.88	-60.04	-95.36
Singapore	1.4305	1.6865	-15.18	1987.95	1066.66	-46.34	-61.52
Hong Kong	7.7470	7.7470	0.00	15196.79	8543.10	-43.78	-43.78
Thailand	24.70	42.20	-41.47	527.28	267.33	-49.30	-90.77
Philippines	26.376	41.700	-36.75	2809.21	1760.13	-37.34	-74.09
Malaysia	2.5245	4.1300	-38.87	1077.30	455.64	-57.71	-96.58
Indonesia	2432	14800	-83.57	724.556	445.920	-38.46	-122.02
Japan	114.600	138.750	-17.41	20604.96	15830.27	-23.17	-40.58

Source: The Central Bank of China, R.O.C. Also refer to Shea (1998).

there was "unjustifiable" depreciation of the NT$. In 1998, the depreciation of Korean won and Japanese yen affected the value of the NT$ showing that people are very sensitive to change in the economic environment and appear less confident about financial stability.

During the period of intensive intervention on the exchange rate, from August to October 1997, the Central Bank maintained the interbank call-loan interest rate at a relatively high level. It reached a peak of only 11 percent in early October, a level much lower than those recorded in other Asian countries. To sterilize its foreign exchange market intervention, the Central Bank also lowered required reserve ratios on two occasions in September and on October 16, one day before it relaxed foreign exchange intervention. The shortage of funds was soon resolved, so that the call-loan interest rate gradually declined and stabilized. The stock price index went up and down in different stages.

The degree of fluctuation in the exchange rates and stock indexes between June 1997 and June 1998 is shown in Table 2. The exchange rate depreciated 19.04% and the stock price index dropped 16.41%. Adding the two figures, we obtain -35.44%. Comparing Taiwan with other countries, we find that most of Asian countries suffered more than Taiwan.

III. An Evaluation of the Macroeconomic and Monetary Policy of Taiwan

Despite these adverse impacts, the Taiwan economy still grew at a rate of 6.7 percent in 1997, the highest annual growth rate of the last five years. Judging from the above impacts, the Taiwan economy suffered much less than most of the Southeast Asian countries attacked by international speculators. There were several factors contributing to such stability.

We can classify these factors into three sides: macroeconomic side, real sector side and financial sector side.

A. Macroeconomic Side

a) Equilibrium in the structure of the macroeconomy

According to the macroeconomic national income identity, a country's trade deficit (where imports exceed exports) is equal to the total of the budget deficit (where public expenditure exceeds tax revenue) and private sector excessive investment (where investment exceeds savings).

$$(M-X)=(G-T)+(I-S)$$

where M: imports, X: exports, G: government expenditure, T: tax, I: investment, and S: savings.

When a country has a trade deficit, this is bound to be the result either of a budget deficit or of excessive investment. When a trade deficit continues for a long period, and the domestic budget deficit and excessive investment cannot be controlled, the country will find itself reliant on increasing quantities of foreign loans. However, if most of this foreign investment and foreign debt is in the form of short-term investment and short-term debt, then as soon as it is withdrawn every sector of the economy, including the financial sector, is liable to lose equilibrium, economic activity will be disturbed, and a further wave of panic and capital flight will be sparked off, creating serious pressure for devaluation of the currency.

For many years, Thailand, Malaysia, Indonesia, South Korea and other countries in the region had maintained high rates of economic growth. However, accompanying this growth were many problems with structural imbalance. Because the economy was growing so fast, companies in the countries concerned generally held over-optimistic expectations of the state of the economic and market growth. The result of their excessive expansion was that debt levels rose. The overheated economy led to "bubble" development in the stock market and real estate sector. The serious loss of equilibrium between supply and demand eventually led to the collapse of both the stock market and real estate market, with many investors suffering loss. Once this kind of bubble economy has developed, it can cause an extremely serious threat to the economy.

Taiwan has maintained a trade surplus for decades. The saving ratio is higher than the investment ratio. The sound fiscal budget system lasted for 30 years till 15 years ago. Although a fiscal deficit has appeared in recent years, it has not hurt the trade surplus situation. The above phenomena formed the economic foundation in Taiwan. Taiwan does not have to rely on foreign capital to accommodate its private and government investment. In addition, its strong reserves help to decrease the impact of financial crises in Taiwan.

b) A development strategy combining growth with stability

Taiwan's economic development model has been one combining high economic growth rates with the maintenance of price stability; this is one of the main reasons why Taiwan has been included in the ranks of the "four little dragons" and praised for its economic miracle. Advances in technology have permitted increases in productivity and competitiveness; industrial upgrading and the transformation of the industrial structure have been markedly successful. This has laid the foundation for Taiwan's economic development.

c) A correct sequence of economic and financial reform

Many economists have pointed out that, during the process of economic reform, the right sequence must be used for economic liberalization. The main points that need to be considered are as follows (see McKinnon 1992; Kuo 1990):

(1) The creation of a sound financial and tax system must take priority over financial liberalization.

Before implementing financial liberalization, a country must first strengthen its financial, taxation and budgeting structure, to prevent an imbalance in financial expenditure leading to an excessive supply of money, hurting the attainment of currency stability.

(2) The creation of a sound domestic financial system should take priority over opening financial markets to international capital.

Having a sound domestic financial system must take priority over integration into the international finance system. Once a sound domestic financial system has been created it will assist in raising competitiveness, and prevent exchange rates from falling with inflation.

(3) The liberalization of current accounts should take priority over the liberalization of capital accounts.

Efforts should first be made to eliminate export and import trade barrier restrictions. Once this has been achieved, capital accounts can be open. The free movement of capital in and out of the country should be permitted only when interest rates for domestic loans have been liberalized, prices are stable, and exchange rates are not going down in concern with prices. If liberalization of capital accounts is implemented too early, this may lead to unnecessary currency speculation and the accumulation of foreign debts.

Generally speaking, Taiwan followed the above sequence in its history. In the 1960s and 1970s Taiwan maintained financial stability. The domestic financial system had originally been carefully controlled by the government, but in the late 1980s the pace of financial liberalization was speeded up, although the pace of internationalization remained slow. As far as current accounts are concerned, in the 1980s Taiwan began to lower tariffs, which did have a significant effect on eliminating trade barriers. Clearly, overall, Taiwan did not significantly violate any of the above precepts. However, currently Taiwan is running a budget deficit, and the internationalization of financial markets is underway; this is a process which must not be undertaken lightly.

d) The financial turmoil broke out at a good time for Taiwan.

Taiwan had been affected by asset inflation during the second half of the 1980s, and the economic bubble burst in 1990. After several years of readjustment, domestic stock prices gradually stabilized, while the real estate market has not yet fully recovered. Having learned some lessons from this last economic shock, domestic investors behaved more rationally when stock prices rose and then fell in 1997. If Taiwan still had an economic bubble in 1997, the Asian financial crisis would have had a much more severe impact on Taiwan.

e) The creation of a competitive mood

Businesses in Taiwan, especially small- and medium-sized enterprises (SMEs), have faced a competitive environment for decades. The government has not provided much support to help SME development. In addition, the privatization of state-owned enterprises was enacted in 1950s and 1990s. A liberalized real sector forms the basis of industries which can fight challenges from home and abroad.

B. Real Sector Side

a) Productivity

Some arguments mention that the economic growth in Asian countries can be attributed mostly to the factor accumulation, instead of the factor productivity. This argument is considered as one factor for explaining the financial crisis.

The productivity of Taiwan is comparatively better than other Asian countries. Collins and Bosworth (1996) examine the total factor productivity among Asian countries as shown in Table 3. The item factor productivity in 1984-94 shows that Singapore has the highest figure, and Taiwan the second highest. These two countries are the only two countries with a decent performance during the 1997-8 financial crises.

Taiwan has an advantage in technology and high-quality manpower. When one looks at the rankings produced by the IMD institute in Lausanne for 1997, one can see that Taiwan has a significant advantage over Malaysia, Thailand, the Philippines and South Korea in terms of both technology and manpower quality.

b) Flexibility and adaptability in the economic system to changing conditions

Medium and small businesses have played a very significant role in the course of Taiwan's economic development. They have proved to be extremely capable and tenacious in adapting to changes in both the domestic and international economic environment, in marked contrast to South Korea, whose industrial structure dominated by

TABLE 3

SOURCES OF GROWTH IN EAST ASIA, BY COUNTRY AND PERIOD

Country and period	Growth of output per worker	Contribution by component		
		Physical capital per worker[a]	Education per worker[b]	Total factor productivity[c]
Indonesia				
1960-94	3.4	2.1	0.5	0.8
1960-73	2.5	0.9	0.5	1.1
1973-94	4.0	2.8	0.5	0.7
1973-84	4.3	3.3	0.5	0.5
1984-94	3.7	2.3	0.5	0.9
Korea				
1960-94	5.7	3.3	0.8	1.5
1960-73	5.6	3.2	0.9	1.4
1973-94	5.8	3.4	0.7	1.6
1973-84	5.3	3.4	0.8	1.1
1984-94	6.2	3.3	0.6	2.1
Malaysia				
1960-94	3.8	2.3	0.5	0.9
1960-73	4.0	2.4	0.5	1.0
1973-94	3.7	2.3	0.5	0.9
1973-84	3.6	2.7	0.5	0.4
1984-94	3.8	1.8	0.5	1.4
Philippines				
1960-94	1.3	1.2	0.5	-0.4
1960-73	2.5	1.3	0.6	0.7
1973-94	0.5	1.1	0.5	-1.1
1973-84	1.2	2.0	0.6	-1.3
1984-94	-0.3	0.2	0.4	-0.9
Singapore				
1960-94	5.4	3.4	0.4	1.5
1960-73	5.9	4.6	0.4	0.9
1973-94	5.1	2.7	0.4	2.0
1973-84	4.3	3.1	0.5	1.0
1984-94	6.0	2.3	0.6	3.1
Thailand				
1960-94	5.0	2.7	0.4	-1.8
1960-73	4.8	3.2	0.1	1.4
1973-94	5.2	2.3	0.6	2.1
1973-84	3.6	2.0	0.5	1.1
1984-94	6.9	2.6	0.8	3.3
Taiwan				
1960-94	5.8	3.1	0.6	2.0
1960-73	6.8	3.9	0.5	2.2
1973-94	5.2	2.7	0.7	1.8
1973-84	4.9	3.0	0.9	0.9
1984-94	5.6	2.3	0.5	2.8

Notes: a: The contribution of physical capital per worker is its growth rate multiplied by the capital's production share ($\alpha = 0.35$).

b: The contribution of education per worker is the growth rate of the labor quality index (H) multiplied by labor's production share($1 - \alpha = 0.65$).

c: The contribution of TFP is the difference between the growth rate of output per worker and the summed contributions of physical capital per worker and education per worker.

Source: Collins and Bosworth (1996) table 6.

large corporations has proved incapable of adjusting to change. This adaptability explains why Taiwan's industry has weathered the crisis so well. Clearly the creation of a suitable environment for industrial investment and development is more effective than concentrating on providing support for selected large conglomerates.

C. Financial Sector

a) Large foreign exchange reserves and little foreign debt

Taiwan has always had extensive foreign exchange reserves; the country's US$80 billion−90 billion worth of reserves make it well able to beat off attacks by foreign exchange speculators. At the same time, Taiwan's public sector foreign debt amounts to only around US$100 million, far less than those countries that were more seriously affected by the crisis.

As of the end of 1997, Taiwan's foreign exchange stood at US$83.5 billion, while public external debt amounted to mere US$108 million. Private external debt was also estimated to be about US$7.5 billion only.

b) A relatively sound financial system, with a far lower bad loans level than the worst affected countries

Although Taiwan's financial system is far from perfect, and the system of financial supervision in particular leaves much to be desired, nevertheless the steady pace at which liberalization has been implemented and the careful control of bad loans allowed the system to continue operating normally during the crisis.

Because of prudent regulation and the traditionally conservative attitude toward local bank loans, the past due loans ratio of domestic banks declined from 4.07 percent in March 1997 to 3.82 percent by the end of December 1997.

c) A stock market with a relatively low proportion of foreign capital

Taiwan's government has always placed controls on the proportion of total stock exchange value that could be accounted for by foreign investment. Currently, foreign investment makes up an extremely low percentage of total stock exchange value (3.68 % in July 1998). The government, however, has set new regulations as follows: as of January 7 of 1998, the ceiling ratio of individual overseas capital over the total capital of each invested company was raised from 10% to 15%; while the ceiling ratio of total overseas capital over the total capital of each invested company was raised from 25% to 30%. Having a far lower level of foreign investment than the stock markets of the worst affected countries spared Taiwan the worst effects of the withdrawal of foreign capital.

d) The financial authorities had adopted an orderly and gradual approach in liberalizing capital movement.

An orderly and gradual approach to relax controls over flows of foreign capital reduced the adverse impacts of capital movement on the exchange rate, money supply, stock market, and financial stability. The legal restrictions on international capital outflow are as follows: as of October 9, 1992, the investment ceiling for an individual and a company was set at US$5 million. On January 1, 1994, ceiling for a company was increased to US$10 million. On January 1, 1996, US$20 million, and on January 1, 1997, US$50 million. The process of liberalizing capital movement has, as we can see, been slow and gradual.

e) The Central Bank reacted to the crisis flexibly.

As explained above, the Central Bank had tried for about three months to defend the NT dollar exchange rate, but had not insisted on the defense of an improper exchange rate. It eventually let the market determine the exchange rate, when defending the rate became a seemingly impossible mission. Further, during that period of foreign exchange intervention, the Central Bank allowed short-term interest rates to rise to a certain extent, but also filled up the gap of fund supply through open market operations and the lowering of required reserve ratios, so that market interest rates did not rise so much to disturb extensively the real sector and stock market as well as other financial markets.

IV. Problematic Issues

The financial crisis caught the attention of the public, and some relevant topics have been discussed widely and deserve further analysis.

A. The Role of Intervention by the Central Bank

Following the outbreak of the Southeast Asian financial crisis in 1997, Taiwan's currency was under steady pressure to devaluate.

Initially, the Central Bank announced confidently in August that it would protect the NT dollar, but by the middle of October it had changed its mind and decided to let the exchange rate be decided by the market. With the exchange rate continuing to fall and the Central Bank subject to criticism from all quarters, arguments began as to whether the Bank should have intervened at all.

The question of whether the Central Bank should intervene in exchange rates is fundamentally one of the kinds of foreign exchange systems chosen. Where intervention is taken to an extreme, this is a fixed exchange rate system. If the Central Bank does not intervene at all, this is a "pure floating exchange rate system". Normally an "impure floating exchange rate system" is employed, i.e. there is partial Central Bank intervention.

There are a variety of opinions as to whether a Central Bank should intervene. M. Friedman has always been a supporter of the floating exchange rate system, and is opposed to government intervention. However, he has said that if the government does insist on intervening, it should first evaluate the probability of success, and try to analyze the advantages and disadvantages of intervention (see Edison 1993).

We can see from the above that there are both positive and negative views of the effectiveness of Central Bank intervention; there is no real consensus on this point. In reality, the reason why people tend to have their doubts about Central Bank intervention is because Central Banks are not always capable of intervening effectively.

Although governments worldwide intervene in exchange rates, the effects of this intervention vary considerably. A considerable amount of research has been carried out on this topic; some examples are provided below for reference.

Edison (1993) points out that the results of research carried out on the advantages and disadvantages of government intervention have varied a great deal. However, the majority of researchers have come to the conclusion that Central Bank intervention has more advantages than disadvantages.

An article by Catherine (1996) shows that the effects of intervention in different periods varied. For the period from January 1985 to February 1987 there was no clear evidence of Central Bank intervention in exchange rate fluctuations. For the period from February 1987 to December 1989, there was no clear evidence of

Central Bank intervention to decrease the exchange rate fluctuation. For the period from January 1990 to December 1991, although the majority of the data suggests that the Central Bank did not intervene significantly, the bank did intervene at some points to lower the exchange rate fluctuation. The Greene (1983a, b, c) study on government intervention in the USA in the 1970s showed that intervention was effective immediately after the policy had been announced, but that short-term efficacy then gradually weakened. Marston (1988) believes that the effect of wholesale intervention on nominal exchange rates is very slight; such intervention is only effective for a short period immediately after a major change in fiscal policy has been announced. Goodhart and Hesse (1991) believe that the short term and long term results of intervention differ. In the short term, intervention may cause problems, but in the long term it is more likely to be beneficial. Baillie and Humpage (1992) employed German and American data to discover that Central Bank intervention does not help to lower the degree of interest rate fluctuation. Mundaca (1990) looks at the experience of Norway. He views the factors leading to intervention as internal variables, and discovers that Central Banks make use of different methods of intervention depending on whether the currency is strong or weak. Catte, Galli and Rebecchini (1992) investigated the daily US dollar/German mark and US dollar/Japanese yen exchange rates for a period of seven and a half years, a period during which there were nineteen cases of intervention. They found that all of these cases of intervention were effective; half of them succeeded in temporarily stabilizing the US dollar, while another half significantly altered the direction in which exchange rates were moving.

Taking into consideration all of the above, we can see that the effectiveness of Central Bank intervention varies significantly according to the time, method and environment within which the intervention is conducted. Although Central Banks may not always be able to influence exchange rates, nevertheless, the Central Bank of every country will feel that it has a responsibility to stabilize the financial environment, and that it cannot just sit idly by and watch exchange rates fluctuate violently. The problem lies not with the theory of intervention, but rather with the question of whether or not the methods used are suitable.

If the Central Bank does wish to intervene in the foreign exchange market, we suggest such intervention should be based on the following four principles:

(1) The Bank should not violate the exchange rate trends which reflect real trade sector activities.
(2) Before intervening, the Bank should first evaluate how likely it is that the intervention will be successful, and whether it will succeed in overcoming market expectations.
(3) Government intervention should be viewed as only a short-term measure; it should not be used as a long-term method.
(4) The government needs to have a sound grasp of market information.

B. *Tradeoff of Stability and Efficiency*

Financial stability is always pursued by the government. Crockett (1997) explains why financial stability is a goal of public policy. The financial market has different characteristics from those of other commercial and service industries. The market failure problem and the exogeneity phenomenon will be more important than other kinds of markets. Stiglitz (1993) proposes seven market failures in financial markets as follows:

(1) Monitoring as a public good;
(2) Externalities of monitoring, selection and lending within and across markets;
(3) Externalities of financial disruption;
(4) Missing and incomplete markets;
(5) Imperfect competition;
(6) Pareto inefficiency of competitive markets; and,
(7) Uninformed investors.

Since the market failure problem of financial markets is more serious than that of other markets, the government usually adopts financial restrictions to maintain its stability. Unfortunately, these measures might sacrifice financial efficiency. Therefore, lots of arguments deal with the direction of financial reform. How to reach the optimal point is a tough task. How to achieve a good combination of financial efficiency and stability is currently a popular topic for discussion.

The experience of the shutdown of NDF (non-delivery forward) is a good example. The Central Bank closed NDF on 25 March 1998. Consequently, stock prices fell and the exchange rate depreciated sharply. The depreciation of the Japanese Yen also contributed to the NT dollar depreciation, though many people blamed the Central Bank. The Central Bank claims NDF is too speculative to maintain normal operations, especially during the threat of the financial crisis. In any case, the question of how to catch up with the optimal point has always been a controversial one. However, this policy is criticized as anti-liberalization policy. The suitability of this policy is quite controversial.

C. The Speed of Financial Reform

Caprio, Atiyas, and Hanson (1994) believe that the speed of financial reform should vary in accordance with the state of the economy. When the economy is healthy, the pace of reform can be speeded up, it is easier for adjustments to be made to the financial structure, and financial reform is more likely to prove effective. When the economy is not healthy, the pace of reform should be slowed down to avoid placing excess pressure on the financial structure and prevent the creation of an unstable financial environment. Before promoting financial liberalization, the government should first try to predict what problems may be created and what reconstruction work may be required after liberalization has been implemented; the government should plan comprehensively, so that it does not end up frantically trying to close the floodgates after they have been opened.

Financial liberalization and internationalization are an inevitable world trend which are also being pursued in Taiwan. The key issues at the heart of financial liberalization and internationalization are the question of when to undertake them, and the speed of their implementation.

No matter how much financial liberalization has been executed, it is agreed that prudential regulation is necessary in any stage of financial development in order to maintain financial stability.

D. The Combination of Exchange Rate Policy and Interest Rate Policy

Stability in the exchange rate and interest rate is desired by every nation. However, in order to stabilize the exchange rate, which is attacked by continuous capital outflow, the Central Bank cannot but sell foreign reserves and buy the domestic currency. As a result, a tight monetary environment is formed and domestic interest rates rise sharply. Usually, the increase in interest rates has a negative influence on investment.

Different businesses have different expectations of the monetary environment. Some businessmen complain of the high cost of capital. Some businessmen ask for stability of exchange rates. For the Central Bank, it is not easy to stabilize the exchange rate and interest rates at the same time. This is a dilemma for the monetary authorities. Restructuring of capital structure of firms will decrease the influence of the financial crisis.

This problem could partly be solved if local businessmen relied more on long-term capital instead of short-term capital. In this case, short-term interest rate fluctuation will have less impact on the cost of capital for industries.

V. Conclusions

The 1997-8 financial crisis in Asia damaged Taiwan to some extent. However, Taiwan suffered comparatively less than other Southeast Asian countries. The degree of fluctuation in the exchange rate and stock price index in Taiwan was not so large as in other countries.

Since the Asian financial crisis began, there has hardly been a country in East Asia that has not been affected by it. Although the effects of the crisis on Taiwan have not been as severe as those experienced by other countries, Taiwan should still take advantage of the opportunity that has been presented to it to turn the crisis into a turning point, and should consider carefully what effects the crisis will have on Taiwan's economy and what steps should be taken in future to prevent a reoccurrence. In facing the future challenges, we suggest that Taiwan should consider the following recommendations.

a) Economic development policy
  a. Giving priority to economic stability when determining policy objectives
  b. Continuing promotion of economic liberalization, internationalization and systemization
  c. Emphasis on balanced development in each sector of the

macroeconomy
d. Greater involvement in international economic cooperation
e. Prevention of the occurrence of a bubble economy
f. The importance of implementing reform in the correct sequence

b) Monetary and financial policy
a. Careful planning of the positioning of the regional financial center
b. An increase in the Central Bank's ability to respond to changes in the environment, with careful timing of Central Bank intervention in the foreign exchange market
c. Equal emphasis on financial liberalization, internationalization and regulation
d. Creation of sound financial markets and improvement of the corporate financial structure
e. Control of accurate financial data, and effective use of the financial supervision system

c) Trade and investment policy
a. Industrial policy
(1) A strengthening of the comparative advantage of Taiwan's industry
(2) Avoidance of the potential danger to the economy posed by excessive investment
b. Maintain sound fiscal policy
c. Strengthen Taiwan's competitive advantage in exports

In the light of the points noted above concerning the Asian financial crisis, there are some areas which deserve our consideration:

a) The challenge to the asian model of economic development
The East Asian economic miracle had for long attracted considerable attention worldwide, and in particular the rapid development of Japan and the "four little dragons". Some scholars used the "flying goose formation" metaphor to describe the form taken by economic development in Asia, with Japan as the leading goose in the formation, followed by the four little dragons (Taiwan, South Korea, Singapore and Hong Kong), followed in turn by the Southeast Asian nations (Thailand, the Philippines, Malaysia and Indonesia). However, in 1994 Stanford University professor Paul Krugman issued a warning that the Asian economic miracle was the result of intensive accumulation of labor and capital, rather

than being the result of the accumulation of technology. This new theory of Asian development sparked off a series of debates; later, the outbreak of the 1997 Asian financial crisis created a serious challenge to the "Asian development model".

The eurocurrency system is scheduled to be implemented at the beginning of 1999. And it is also expected to become a threat to Asian development. It seems the globe trade, investment, and economic model may change, too.

b) Comparison of the Asian financial crisis with the Latin American and Mexican financial crises

The recent Asian financial crisis did not take exactly the same course as the 1982 Latin American debt crisis or the 1994 Mexican financial crisis. The 1982 debt crisis occurred because Mexico was unable to repay its huge foreign debts, with the result that international financial institutions stopped lending to Latin America; the whole of Latin America found itself in difficulties in consequence. In 1994, the Mexican peso had been overvalued for an extended period; as a result, Mexico's trade deficit increased, and a sudden announcement that the peso would be devalued destroyed market confidence.

If one compares the condition of the countries affected by the Latin American and Asian crises, one can see similarities, such as the common factor of trade account deficits, but also differences, owing to the differing domestic economic structures of the countries concerned. A trade deficit is usually accompanied by a budget deficit or excessive private sector investment. The main cause of the crises in Latin America was the government budget deficit. In other words, income and expenditure in the public sector were out of balance; the government's tax revenue was inadequate to meet the needs of public expenditure. In the Asian nations, on the other hand, the main cause of the problem was excessive private sector investment, leading to a loss of equilibrium in the private sector, with savings inadequate to meet the needs of investment. This deficit led to the accumulation of foreign debt.

While there was clearly a difference here in whether the cause of these crisis lay in the public or private sector, if one thinks about it more closely, excessive expansion in the private sector is also linked with government policy. Clearly, the soundness or otherwise of government policy is a crucial factor.

Since the Asian financial crisis is still real, without showing any significant signs of passing away, Taiwan should continue to be cautious about this event. All the Asian countries have been trying to find a good cooperation policy in order to solve this crisis.

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