Macroeconomic Fragility, Short-term Capital Flows, and Financial Risk*

Lesson from the Asian Financial Crisis and Implication for China

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Macroeconomic Fragility, Short-term Capital Flows, and Financial Risk: Lesson from the Asian Financial Crisis and Implication for China

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Abstract

In the last more than ten years, researchers all over the world have tried to specify the causes of Asian financial crisis in 1997. One important cause of the crisis that well accepted is the macroeconomic condition. In this paper, we try to examine the macroeconomic condition in those countries around the crisis, and specify the lessons. Also, we try to analyze the implication of these lessons for China.

In the aspect of macroeconomic, there're three main lessons from the financial crisis. The first one is the importance to maintain a balance between internal balance and external balance. The second lesson is the balance in interest rate and growth rate among different economies. The differentials in interest rate and growth rate will undoubtedly encourage capital inflow, and more attention should be paid. The third one is the vulnerable of small economy in globalization. In the case of China, not all the lessons mean. The potential risk in China's market lies mainly in domestic rather than external. The most important thing for China is to increase consumption, reduce the saving-investment gap, and calm down the market. However, from the aspect of monetary policies, further room for tightening market is very limited. This is one of the system risks China is faced with. There're also two other system risk including imperfection of interest rate instrument and inefficiency of domestic financial market. All these system risk increased the fragility of China's financial market.

In the final part of this paper, we pointed out very briefly the possible solution for the over-heating in China in the short, middle, and long term. We also point out possible ways to stabilize China economy.

Key Words: Short-term Capital, Financial Risk, Macroeconomic Condition

I. Introduction

In 2007, we have just passed the 10th anniversary of East Asian financial crisis. During the last 10 year, many discussions focused on the facts and causes of the crisis in 1997. Some of them stand the test of time, and some not. One of the arguments not be so attractive now is about "Crony Capitalism", it doesn't make sense any more. However, for most of the arguments during this discussion, they still make sense.

In all the arguments, the most famous one is the double mismatches. Because most of the countries in crisis borrowed in US dollar and lent to domestic projects in local currency, in the same time, they borrowed mostly in shot term loans but lent it to long-term domestic projects. These caused currency mismatch and maturity mismatch, and made the banking sector vulnerable. This formed the background for crisis.

The second factor is the banking system weakness. According to Turner (2007), the Asian crisis was caused by the combination of banking system weakness, poor macroeconomic policies, and a massive shock. He also pointed out the main common elements of bank weakness including poor risk management, lax supervisory oversight, unsatisfactory governance of state-owned banks, and inadequate non-performing loans (NPL), and others.

Another factor is the interest rate differentials and Carry Trade. During 1995 and 1998, the interest rate gap between U.S. and Japan is about 5 percent. Most of the East Asian countries also maintained the interest rate level much higher than Japan. These drove speculators loan from Japan and invest in East Asian countries, and made profit from so-called Carry Trade. After the crisis, many researchers criticize the abnormal high interest in South-East Asia. During the crisis, IMF also appropriates the policy of maintaining high interest rate. However, until now, researchers still have not reached agreement in the issue of the interest rate. IMF (1999, 2003) regard high short-term interest rate as necessity to stop currency falls, but Stiglitz (2002) thinks high interest rate will worsen the situation because Asian banks and enterprises had balance-sheet vulnerability.

Structural problem is not so popular but very important factor. Some people hold the view that the deep cause of Asian financial crisis is the structural weakness of the developing economies in East Asia. As long as these weaknesses remain, similar crises can occur in the future. Problem is, what kinds of structural problems are there? According to different views before, they include banking problem, corporate sector problem, the unhealthy relationship between government and big business, and real sector productivity and competitiveness problem, and so on. Actually, they try to put all East Asian economies' weakness in the basket of "structural problems". In all the structural problems mentioned before, I think the export dependence and export concentration is the most vital one. Because of high saving ratio, most of East Asian countries have a trade surplus, and the economic growth of these countries depend too much on the net export. What worse, most of the countries concentrated their export in some specific industry, like IT sector. Undoubtedly, potential risk of this structural problem needs further discussion, and we'll discuss it later.

Meanwhile, most officials and policy-makers emphasized the attack of international

hedge fund and other kinds of short-term capital. However, researchers seldom pay much attention to such critique. Anyway, the crisis does remind us the vulnerability of a small economy in globalization. As capital movement accelerated in the recent decades, global capital market become more and more liquid, and this put small open economy in a disadvantage situation. For most of the South East Asian countries, this is specially the case. The more open they are, the more vulnerable they will be. That is why some researchers appeal for common bond market and risk-sharing common reserve in Asia.

Before the last round of discussion come to any conclusion and agreement, the new round began. Recently, the discussion resurged at the 10^{th} anniversary. This time we got more facts and did more analysis from all the way, including IMF's role (Ito, 2007), banking sector (Turner, 2007), institutional issue (Steinherr, 2007), and country cases (Kim, 2006; Sussangkarn, 2007; Hill, 2007; Lee, 2007). Further more, discussions review the situation and reassess the risk this time. Most of problems discussed now still the old one, what we try to think out now is whether we're better off from the old wrong thing or not.

Undoubtedly, short-term capital plays an important, though no so decent role during the collapse of financial system in East Asian financial crisis. This is repeatedly emphasized by the officials and monetary authority. And in most of the researches, macroeconomic vulnerability is hotly discussed. However, *fly will never sting the egg without any chink*. We need to consider the short-term capital movement and macroeconomic vulnerability in a same framework. In this case, there're still some problems unvisited for the East Asian financial crisis. So, I will try to identify the following questions in my analysis: under what case, or what kind of macroeconomic vulnerability will encourage the attack of short-term capital. Also, we'll try to draw lessons from this aspect for the crisis happened 10 years ago, and analyze the implication for China's current situation.

II. Basic Framework for Analysis

As specified above, I will focus on the relationship between macroeconomic condition and financial vulnerability. The basic logic in this analysis is: maintaining a balance in internal and external balance is vital for healthy economy. Macroeconomic condition characteristic of imbalance will because fragile, and cause short term capital to attack or move in.

Here, I'd like to give a brief introduction of the basic framework for analysis. The framework is relatively simple, but gives a clear implication between the macroeconomic condition and financial vulnerability.

The first item of the framework is the accounting function between saving, investment, export, and import:

$$S - I = X - M \qquad (1)$$

S, I, X , and M here indicate saving, investment, export, and import.

According to this formula, the condition of BOP (Balance of Payment) is related to

the situation of domestic saving and investment. For countries who invested more than they had, they will have a trade deficit in the BOP. This is just the case of Southeast Asian countries.

Usually, the foreign reserve is regarded as one of the most important indicator for economic health. However, the foreign reserve is consisted of assets and liabilities. It has only accounting implication. That means, the economy can accumulated a huge number of foreign reserve even it keeps trade deficit. So even you're heavily in debt, you will be ok in the BOP balance if you can borrow more. According to the accounting relationship between variables in balance of payment and international position, we have following relationship between foreign reserve, current account balance, and capital account balance:

$$R_t = \int_0^T (CA_t + CCA_t + FA_t)dt \qquad (2)$$

Here R_t, CA_t, CCA_t and FA_t means foreign reserve, current account, capital account and financial account at time t. (All in percentage of GDP) We can simplify it as:

$$\Delta R_t = CA_t + CCA_t + FA_t \qquad (3)$$

In (3), we can see it clearly that the economy can maintain a considerable foreign reserve if the capital inflow in capital account is larger than the deficit in current account. However, this kind of "balance" is real imbalance. This kind of balance is very vulnerable because the deficit in current account will cause investor losing their confidence and withdrawing. Once withdrawing happened, the so-called balance will turn out to be nothing. During the crisis in 1997, this happened in most of the countries.

On the other side, if there's a surplus in current account because of saving is larger than investment. Countries should have a deficit in capital account. Otherwise, "twin surplus" will cause domestic liquidity to accumulate quickly. This is also caused by imbalance between internal and external balance. The situation in China is just the same.

According to this framework, it's very important to keep the economy healthy through balance between internal balance and external balance. Here "internal balance" means the balance between saving and investment, and that of export and import afterward. However, "external balance" means the Balance of Payment, especial the structure of current account and capital account in BOP.

III. Lesson from Asian Financial Crisis in 1997: the Aspects of Macroeconomic Condition

As mentioned above, in this part, we'll analyze what kind of macroeconomic condition make economies vulnerable, and cause attack. According to the 1997 financial crisis, the problem in different countries differed much. However, most of the economies fell in crisis have some common characteristics like vulnerable balance

of payment condition, interest rate differentials, and face the same outer economic environment. In the same time, that crisis also shows the system risk of small economy in global capital market.

Vulnerable and deteriorated Current Account condition

During most of the years in 1980s and 1990s, countries including Indonesia, Korea, Malaysia, and Thailand kept a current account deficit. The condition was improved during 1986-1990 for Korea and Malaysia. But the trends disappeared and the current account deficit keeps expanding. Situation in Malaysia and Thailand is worst in all of these countries, the ration between current account deficit and GDP reached 5 to 9 percent between 1990 and 1995. (See Figure 1)

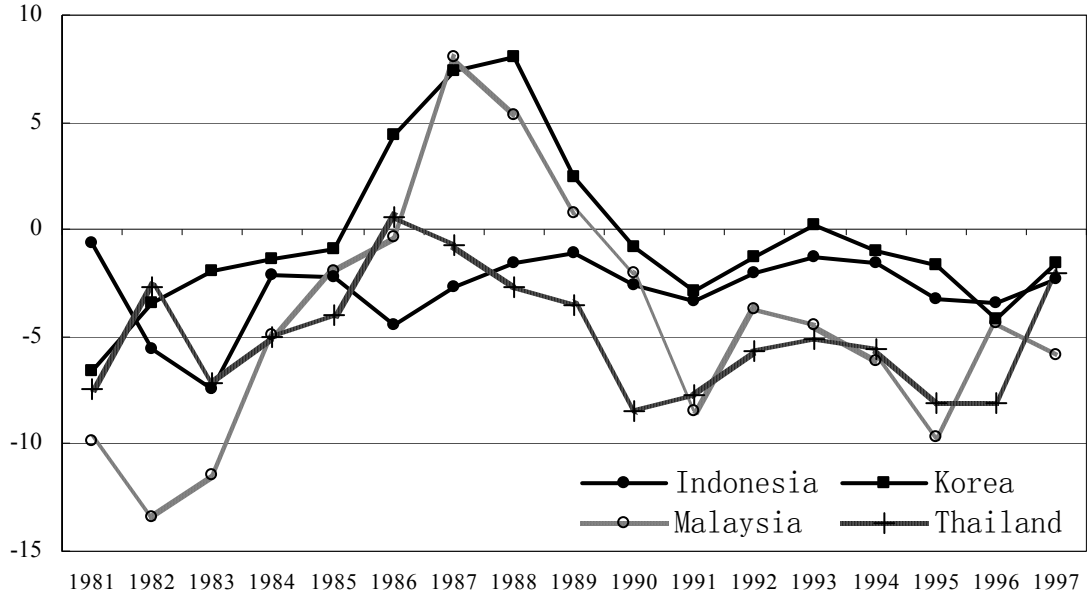

Figure 1 Ratio between current account deficit and GDP in selected East Asian countries, in percentage
Source: IMF, International Financial Statistics, 2007 March.

Undoubtedly, the more current account deficit one country accumulated, the more risky external imbalance is there. For those countries fell in crisis, they maintained the current account deficit and balanced BOP (Balance of Payment) in the same time successfully. They can make it mainly because the surplus from financial account compensated the deficit in current account. As long as the exports in these countries still grow, the investor who provided a surplus in financial account will keep their confidence.

However, in 1995 and 1996, the growth rate of export seemed to slow down gradually or suddenly in Malaysia, Korea, and Thailand. Between 1994 and 1995, the growth rate of export in Malaysia and Thailand had a small decrease from 34.52 to 30.33, and 36.91 to 23.19 percent annually. In 1996, things worsen. The exports decreased from two-digit growth to one-digit suddenly, the growth rate even fell

below zero in Korea. (See Table 1)

Table 1 Change Rate of Export in selected East Asian countries, 1994-98

	Indonesia	Malaysia	Korea	Thailand
1994	49.01	34.52	34.59	36.91
1995	18.14	30.33	41.39	23.19
1996	28.65	3.18	-7.85	3.84
1997	-9.37	-2.77	-2.96	8.57
1998	-10.34	-5.84	-6.54	-5.73

Source: United Nation Commodity Trade Database.

Because of the deterioration in exports, the ratio between current account balance and GDP decreased from -5.6 to -8.1 in Thailand, -6.1 to -9.7 in Malaysia, and -1.7 to -4.2 in Korea.

It's said that the Southeast Asian countries and Korea export less because China export more, or the IT industry have moved from Southeast Asia to China, Which has been the main export of Southeast Asian countries for a long time. Actually, this seems not true. The blaming is only half right, that is, the Southeast countries concentrated in IT products export, especially in Malaysia, Korea, and Thailand. However the fault is not in China, but in IT industry business cycle.

Table 2 IT product export's share and growth in selected economies, in percentage

	Malaysia		Korea		Thailand		Growth		
	Share	Growth	Share	Growth	Share	Growth	China	Japan	World
1994	38.30	24.86	28.05	16.75	17.39	21.71	45.54	14.80	36.15
1995	39.82	25.38	30.45	30.26	17.17	24.77	34.62	16.49	27.88
1996	38.70	6.15	27.05	3.72	18.08	-1.35	6.17	-12.29	3.97
1997	37.43	0.53	25.01	4.96	18.75	4.68	21.74	-0.61	10.83
1998	37.88	-6.95	24.05	-2.83	19.22	-8.06	9.77	-8.98	0.38

Note: "IT product" here contains the commodities under chapter 85 of Harmonized System 2002. "Share" and "Growth" means IT product's share in total export and the growth rate of IT product export specifically, all in percentage.
The total export is based on SITC R.3 because there's no aggregation data for total export under Harmonized System in COMTRADE.

Source: United Nation Commodities Trade Database.

According to statistics (see table 2), the problem East Asian countries met during the end of 1990s is characteristic of industry transformation. Undoubtedly, China's IT industry expanded fast just like other East Asian countries, however, we can not get the conclusion that East Asian countries' export decreased because of China. In 1995, the trend of expansion in world IT products export has slowed down from 36.15% to 27.88%. What's more, the growth rate decreased dramatically from 27.88% to 3.97%, and almost all countries including Malaysia, Korea, Thailand, China and Japan can

not escape from the slowdown of IT industry, exports of IT products in these countries decreased simultaneously. World total IT products export decelerates from two-digit growth to less than 5 percent annually.

Imbalance of domestic saving and investment

Another way to explain the condition of current account then is through the famous accounting formulation (1). To simplify it, we use the ratio between saving, investment, export, import and GDP here. Actually, fiscal deficit is also a important factor in this formulation, we hesitate to discussed the fiscal situation here because there's almost no change in the fiscal situation between 1996-1997 in those countries.

In this case, an unchanging current account deficit means a gap between saving and investment in the same time. It reflects another side of macroeconomic fragility in those countries fall in crisis. (See Figure 2 and Table 3)

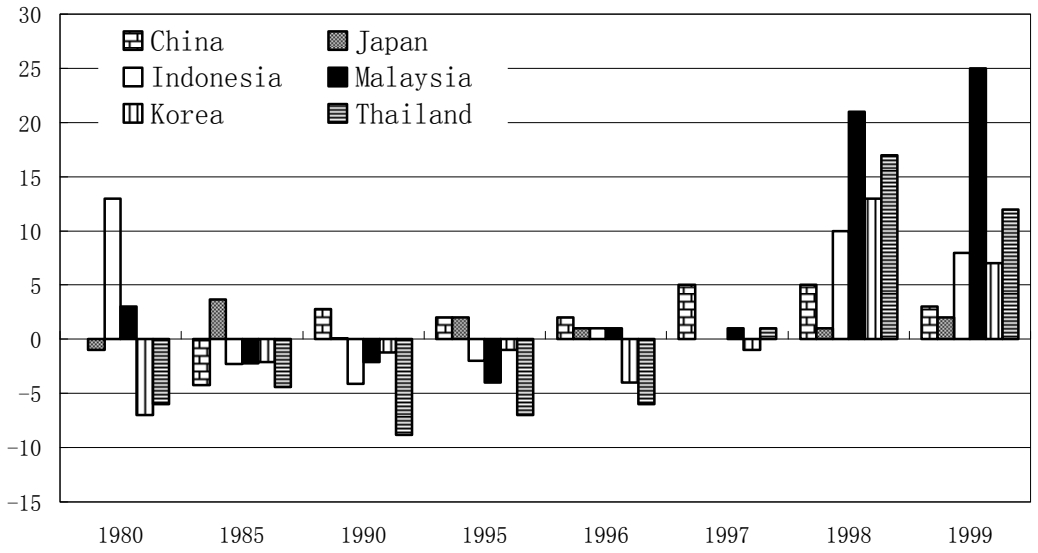

Figure 2 Gap between saving and investment 1980-1999, in percentage of GDP
Source: World Bank, World Development Indicators, vary years.

Table 3 Investment ratio and gap between saving ratio and investment ratio in selected Asian Economies, in percentage

	China		Japan		Indonesia		Malaysia		Korea		Thailand	
	Gap	I. Ratio	Gap	I. Ratio	Gap	I. Ratio	Gap	I. Ratio	Gap	I. Ratio	Gap	I. Ratio
1980	0	35.0	-1.0	32.0	13.0	24.0	3.0	30.0	-7.0	32.0	-6.0	29.0
1985	-4.2	38.5	3.7	28.0	-2.3	23.1	-2.2	27.6	-2.1	33.0	-4.4	27.5
1990	2.8	35.2	0.1	33.5	-4.1	29.5	-2.1	31.4	-1.2	37.6	-8.8	42.0
1995	2.0	40.0	2.0	29.0	-2.0	38.0	-4.0	41.0	-1.0	37.0	-7.0	43.0
1996	2.0	42.0	1.0	29.0	1.0	32.0	1.0	41.0	-4.0	38.0	-6.0	41.0
1997	5.0	38.0	0	30.0	0	31.0	1.0	43.0	-1.0	35.0	1.0	35.0
1998	5.0	38.0	1.0	29.0	10.0	14.0	21.0	27.0	13.0	21.0	17.0	25.0
1999	3.0	37.0	2.0	26.0	8.0	24.0	25.0	22.0	7.0	27.0	12.0	21.0

Note: here, “Gap” means saving ratio minus investment ratio, and “I. Ratio” means Investment Ratio.
Source: World Bank, World Development Indicators, vary years.

Asian countries like Japan and China is always famous for high saving, high investment, and high growth in the history or currently. However, these two countries seldom invested more than they have. After China's open and reform in 1978, China's investment ratio went higher than saving ratio only in eight years. During most of the other time, the investment ratio keeps 2 to 5 percent lower than saving ratio, some time saving ratio is near 8 percent higher than investment ratio.

Between high saving, low consumption, high growth and low saving, high consumption, high growth, it’s hard to judge which one is better. However, if you keep investing much more than you have saved, you must be cautious. Before the crisis, the investment-saving gaps in Malaysia, Korea, and Thailand keep under zero for a long time. In the case of Thailand, the gap varied between 4 percent and 9 percent (See Table 3 and Figure 3).

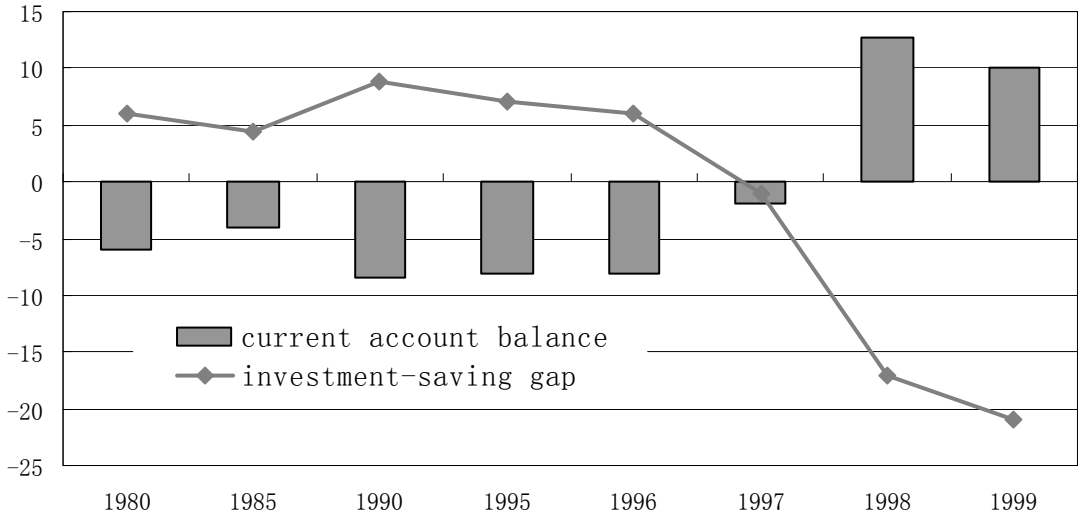

Figure 3 Current account balance and investment-saving gap in Thailand 1980-1999, in percentage of GDP
Source: IMF, International Financial Statistics, March 2007; World Bank, World Development Indicators, vary years.

Undoubtedly, there’s another more complicated story behind the investment-saving gap and current account deficit in these countries. Anyway, I’d like to stop here this time and not go so far to analyze the driving factors for high investment ratio during the high growth era, so-called take-off period of Southeast Asian countries.

Fragile Balance between current account and capital account

For the story above, the confused side is that they have been keeping a current account deficit for so long. What’s more, they seems keep it with a balance in Balance

of Payment. The answer for this puzzle is the capital account surplus. Behind the so called BOP balance, there's a fragile balance between current account and capital account (See Formula 2 and 3).

Considering the case of Korea, the foreign exchange reserve kept increasing before 1996 even the current account deficit is more than 4 percent of GDP. It's clear that Korea can do this mainly because there's a financial account surplus above 4 percent of GDP. However, once the capital inflows withdraw, it will be a disaster for foreign exchange reserve, just like what happened in Korea at 1997.

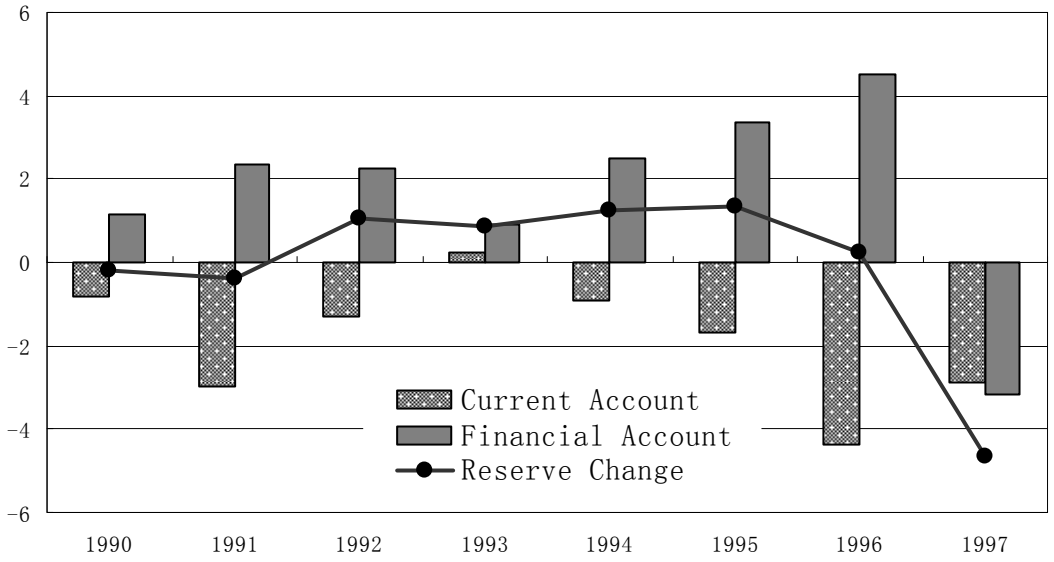

Figure 4 Current account, financial account, and foreign exchange reserve change in Korea 1990-1997, in percentage of GDP
Source: IMF, International Financial Statistics, 2007 March.

It's easy to understand that countries like Thailand, Indonesia and Korea can maintain a balance in BOP as soon as there're surplus in capital account and financial account. However this kind of balance is somehow risky, especially under certain condition:

Firstly, the capital inflows in forms of capital account or financial account surplus is mainly supported by the current account condition in confidence. Once the current account balance shows the possibility of deterioration, the confidence for more capital inflows will disappear, and causes withdrawal afterward. This is exactly what happened in Southeast Asian countries and Korea that time, as we have discussed it in the former section.

In the case of Korea, some people thought the crisis began in the end period of 1997, it's quite reasonable to draw this conclusion based on the foreign exchange reserve condition. However, I'd like to say the crisis began at the beginning of 1997. In the first quarter, capital inflow through financial account to Korea decreased about 21.1% compared with the last spring, and in the following seasons, it kept decreasing at 31.7% and 63.6%. In the winter of 1997, there's a sudden withdrawal of more than 20

billion U.S. dollar from Korea, almost the total inflow in 1996. What happened in Korea, Thailand, and Indonesia showed the interactive between current account and financial account. In the same time, it disclosed the fragility in so-called balance of a current account deficit and financial account surplus.

Table 4 Structure of total liability accumulation under international investment position in Thailand 1995-1999, in percentage of total liability accumulation

	1995	1996	1997	1998	1999
Direct Investment	4.9	4.4	4.3	6.2	7.2
Portfolio Investment	6.6	8.7	8.9	10.0	10.4
Other Investment	88.5	86.9	86.7	83.8	82.4
Monetary Authority	0	0	6.5	10.7	13.5
Central Government	3.1	2.8	3.4	4.5	7.5
Banks	41.0	38.1	35.6	26.7	18.4
Other Sectors	44.4	46.1	41.2	41.9	43.1

Note: the percentage is share that each item's change takes in total liability change.
Source: IMF, International Financial Statistics, 2007 March.

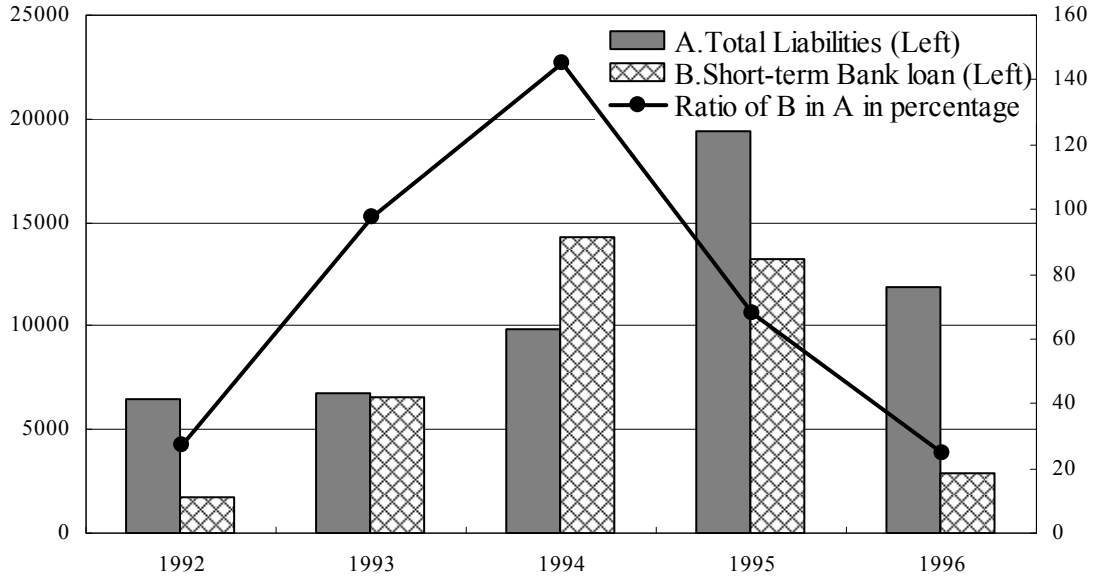

Figure 5 Short-term bank loan and total liabilities under the item of "Other Investment" of international investment position in Thailand 1992-1996, in million US dollar and Percentage.
Source: IMF, Balance of Payment Statistics, 1998, Page 578.

Secondly, the maturity structure of capital inflows is also very important for the BOP security. Because of data unavailable, we cannot get the structure before 1995. According to statistics after 1995, the percentage of direct investment in total liability accumulation decreased slowly between 1995 and 1997. In the same time, the percentage of portfolio investment increased from 6.6 percent to 8.9 percent in two years. (See Table 4)

Meanwhile, the percentage of other investment accounted about 90 percentage of all liability, and more than half of it is short-term loan of banking sector. In 1992, the share of short-term bank loan account for 27 percent of total liability under "other investment". After that, it increased dramatically in 1993 and 1994, and reached the historical high level of 145 percent in 1994. (See Figure 5) It is discussed frequently that the interest differentials caused domestic bank to lend from oversea (especially Japan) and loan domestically, in the next section, we'll discuss this issue also.

Under these structures of BOP and maturity, uncertainty and risk is easy to understand. Sudden withdrawal will happen whenever the investors lose confidence in BOP security, and a shortening maturity make withdrawal more possible to happen.

Growth rate divergence and scissors differentials of interest rate

In the last three section of this part, we discussed the issue from the side of host countries. It's mainly the story of demand side, in the following two section, we'll focus on the supply side, that is, why there's such a huge short-term capital? In this case, we have to consider the macroeconomic condition of other countries, and world financial market situation.

In the end of 1980s and the beginning of 1990s, Japan's real estate and stock market crashed. After the burst of asset market, Japan economy entered so-called "lost decade" with stagnation and deflation for more than ten years. Because of the deflation and other factors like overburden of treasury bonds, Bank of Japan implemented the monetary policy to activate economy at extreme level. In the same time, Southeast Asian countries and Korea enjoyed the high growth during that time. As a result, Asia area entered the era of "growth divergence" at the beginning of 1990s, as my own opinion, this is the fundamental regional background for the financial crisis in 1997.

During 1992-1996, the growth rate in Japan is about 1-2 percent, the highest level in 1996 is only 2.7 percent. In Malaysia, Thailand, and Indonesia, the growth rate if around 6-10 percent during the same period. According to Harrod-Domar model, growth rate is determined by saving ratio and capital productivity. Because Harrod-Domar model is a model of closed economy, so the saving ratio is equal to investment ratio. Until now, it's hard to say which one does the East Asian countries depends on more between investment ratio and capital productivity, this is the focus of the argument between Krugman and other economist.

Anyhow, we can find the investment ratio is really very high in Southeast Asia countries and Korea during that high growth period, and most of them bought investment from other countries in the form of short-term bank loan. (See Table 3)

Table 5 Growth divergence in Asia 1988-1997, in percentage

	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
Indonesia	5.8	7.5	7.2	7.0	6.5	6.5	7.5	8.2	7.8	4.7
Korea	10.6	6.7	9.2	9.4	5.9	6.1	8.5	9.2	7.0	4.7
Malaysia	9.9	9.1	9.0	9.5	8.9	9.9	9.2	9.8	10.0	7.3
Thailand	13.3	12.2	11.2	8.6	8.1	8.3	9.0	9.2	5.9	-1.4

Japan	6.8	5.3	5.2	3.4	1.0	0.2	1.1	2.0	2.7	1.6

Note: all data in real term, for Indonesia, Korea, Malaysia, and Thailand, 2000=100; for Japan, it's the real GDP growth rate after deflated.
Sources: IMF, International Financial Statistics, 2007 March; Japan, Statistics Bureau, Ministry of Internal Affairs and Communications.

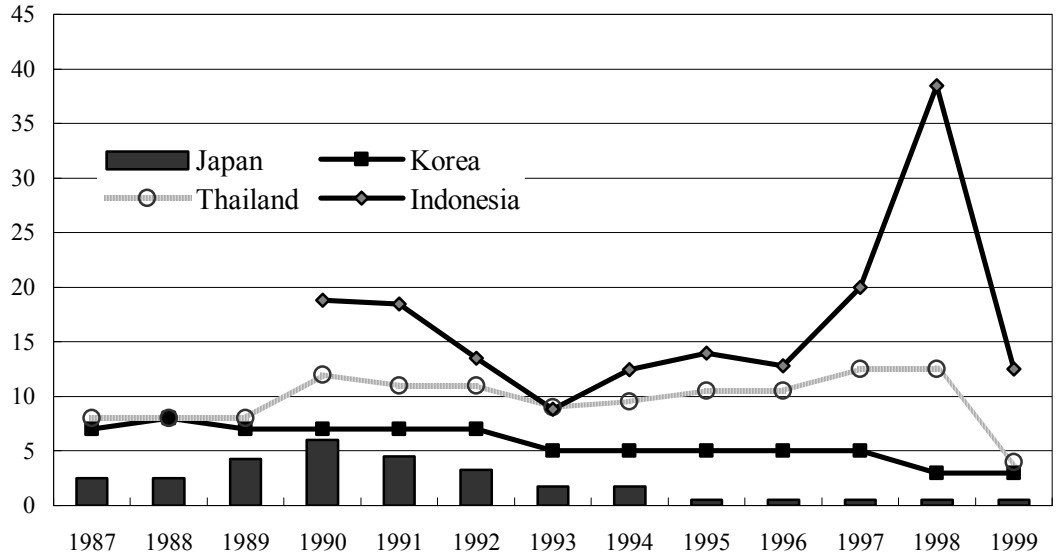

Figure 6 Scissors differential of discount rate in Japan, Korea, Thailand, and Indonesia 1987-1999, in percentage annually
Source: IMF, International Financial Statistics, 2007 March.

Accompanying with the growth rate, there's also a scissors differential of interest rate. Just before the financial crisis, Bank of Japan has adjusted the discount rate for several times, from 3.25 to 1.75 in 1993, and from 1.75 to 0.5 in 1995. In the same time, discount rate in Indonesia and Thailand increased quickly from 1993 to 1998, and reached the scaring level as 38.44 and 12.5 in 1997. The dramatic change in discount rate is driven by two factors: the first factor is the demand for money increased because of over-heating investment domestically. The second factor is high inflation in these countries, the CPI increased at a speed of around 10 percent and 5 percent annually in Indonesia and Thailand during 1994-1997.

Considering the situation of Asian financial market, the growth divergence and scissors differential of interest rate is enough to attract more and more money flow into Southeast Asia and Korea. Before the crisis happened, it seemed to be a virtuous cycle: you invest more, and you have a higher growth, with the higher growth, the huge demand for capital input will continue. However, once short-term capital inflow and abnormal high interest rate enter this cycle, things changed. Most of the investment demanded for economic growth is long-term capital. The economic growth is not sustainable if you fund the investment by short-term capital with high interest rate.

Small economy vs. financial giant in Globalization

It is widely accepted that the macroeconomic situation of Malaysia is not so bad in policy makers and researchers. In the analysis above, we also saw the problem of Malaysia is not so severe. There's an old saying in China as *Fire in the Castle Gate Hurts the Fishes in the Moat*, this maybe can describe the situation of Malaysia then to some extent. The crisis spread to Malaysia showed a dilemma in Globalization: the conflict between small economy and the increase in liquidity and global capital.

Table 6 Comparison hedge fund assets and Malaysia economy 1996

Hedge Fund	GDP	FX Reserve	Hedge Fund/GDP	Hedge Fund/Reserve	Reserve/GDP
Billion USD	Billion USD	Billion USD	Percentage	Percentage	Percentage
51.1	100.7	26.2	50.7	195.0	26.0

Source: BIS, BIS Quarterly Review, March 2005, Page 61; IMF, International Financial Statistics, March 2007.

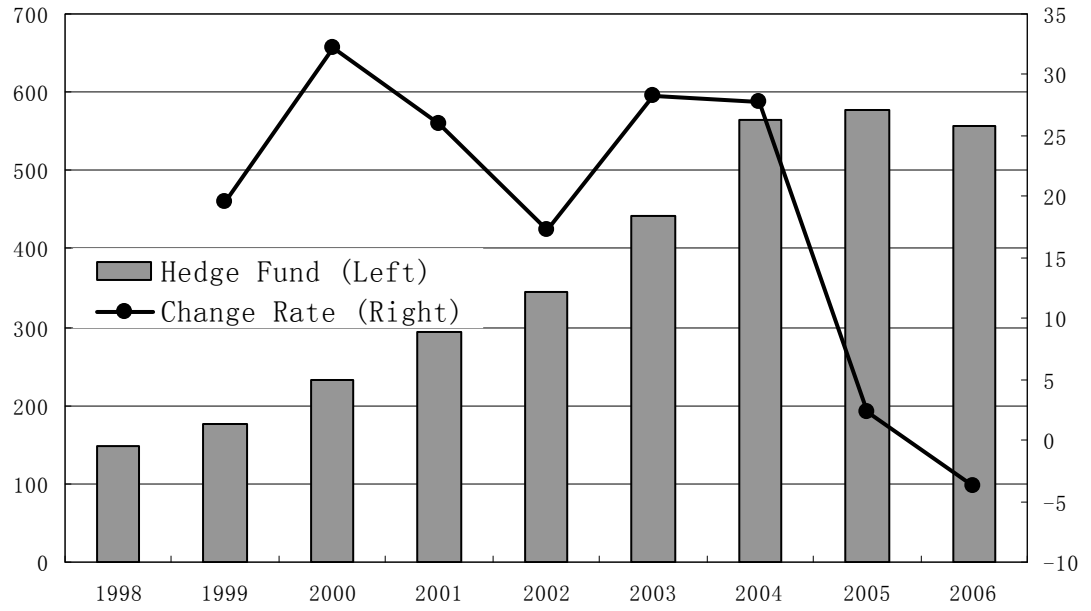

Figure 7 Assets managed by Hedge Fund and change rate 1998-2006, in billion US dollar and percentage annually

Note: the data here is a little bit different from table 6 because of difference in simulation methods.

Source: BIS, 77th Annual Report, 1 April 2006 – 31 March 2007, Page 123.

According to a calculation by BIS, the total capital managed by hedge fund in 1996 is about 51.1 billion US dollar. However, the GDP and foreign exchange reserve of Malaysia in 1996 is only 100.7 and 26.2 billion US dollar. (See Table 6) We can get two simple impressions from this data: firstly, the foreign exchange reserve in Malaysia is not small at all comparing to its economic scale, and is possible to counter some kind of attack. Secondly, faced with such a huge amount of hedge fund capital, a small economy like Malaysia is impossible to calm down the financial market at its own capability.

Some economist suggested establishing a common reserve and developing regional bond market in Asia partly because of this reason. We can hardly feel satisfied with the development in this area after more than ten years passed from the Asian financial crisis. Capital under hedge fund growth much faster than the world economy, we can only say thing is worsening based on this fact. (See Table 7)

I'd like to complete this section of analysis with a short review here: the financial crisis in 1997 is caused by many kinds of factors. In this paper, we focus on the macroeconomic condition mainly. Even though we have narrowed the topic, we still find it more complicated than imagined. The regional and global environment that time provide huge amount of short-term capital which is more than enough, and the fragility of domestic macroeconomic encouraged it to attack because the possibility of success is quite high under that circumstance. People being sick because of outside virus and absence of immunity sometime, this also happen to economy frequently.

IV. Short-term Capital Inflows in China: Some Stylized Facts

We'll discuss the short-term capital inflows in China and related macroeconomic policies in this and next part. I'd like to focus on the macroeconomic policies again in consistence with the last part, and this doesn't mean China's problems in banking sector and supervisory are not so severe at all.

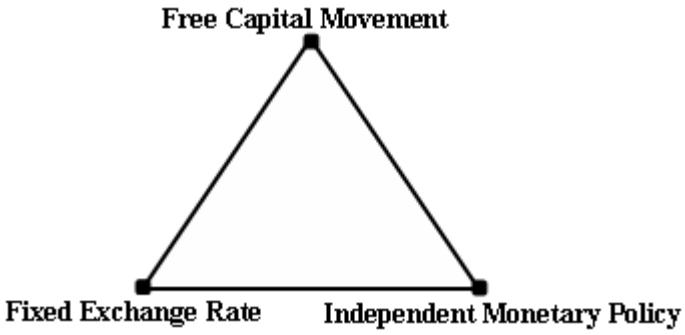

Figure 8 Mundell impossible trinity

According to the Mundell impossible trinity, country is impossible to have all three of the policies at the same time: a fixed exchange rate, free capital movement, and an independent monetary policy. The case of Asian financial crisis somehow verified it.

In comparison with Southeast Asia countries and Korea, the biggest difference in China maybe is that China still tries to control the capital movement, especially the inflows, through capital control, and maintain a slow currency appreciation in the same time.

It's difficult to value China's capital control measures and judge its efficiency with absence of proper statistics. However, we still like to give some simplified impression of China's situation in short-term capital inflows. We will try to describe it in the following aspects: the margin, the accessing path, and impact on market of short-term capital inflow.

The possible profit for short-term capital inflows

After Asian financial crisis, speculators and financial attack became popular, and

more and more people know words like *Hedge Fund*. In China's case, the short-term money is working more as profit-hunter than speculators. Short-term money tries to access China's market mainly because of profit. However, because of imperfect condition of China's securities market and real estate market, it's quite possible that some oversea investors and speculators will try to manipulate the market and make profit from it. In this case, short-term capital will turn into speculating money. we'll discuss the impact of this kind of transformation later.

Currently, the most possible destination of short-term capital is stock market, real estate market, and bank. For each of these destinations, the possible profit rates are different: for capital inflow into bank, the possible profit rate is combination of Chinese Yuan appreciation and the interest rate differential. The profit rate for capital in China's stock market is the combination of Chinese Yuan appreciation and change rate of stock market index approximately, minus the cost of fund. We use the central bank discount rate to indicate the later. For capital in China's real estate, the possible profit rate of short-term capital is Chinese Yuan appreciation rate plus price change in real estate market, and minus the cost of fund. The details for calculation are show in the following formula:

$$\pi_t = \begin{cases} \dot{h} + \dot{f}_t - r_{wt} \cdots\cdots\cdots\cdots (4.1) \\ r_{dt} + \dot{f}_t - r_{wt} \cdots\cdots\cdots\cdots (4.2) \\ \dot{s}_t + \dot{f}_t - r_{wt} \cdots\cdots\cdots\cdots (4.3) \end{cases} \qquad (4)$$

Here, π means possible profit rate of short-term capital;

$\dot{h}$, the changing speed of house price;

$\dot{f}$, the appreciation (or devaluation) speed of exchange rate;

r, interest rate, r_w and r_d mean world and domestic interest rate;

$\dot{s}$, the change rate of stock index, that is, the margin of stock market.

Table 7 Background of market performance for short-term capital inflow in China 2005-2007, in percentage annually

For: Capital from U.S.	**2005**	**2006**	**2007**
RMB Appreciation to Dollar	5.76	3.35	6.9
Discount Rate in U.S.	3.15	5.16	6.25
Discount Rate Difference	0.18	-1.83	-2.92
Stock Market Index Change Rate	-13.12	130.16	97.25
Real Estate Market Price Change	7.6	5.5	6.7
For Capital from Japan	**2005**	**2006**	**2007**
RMB Appreciation to Yen	14.47	4.7	2.44
Discount Rate in Japan	0.1	0.1	0.4

Discount Rate Difference	3.23	3.23	2.93
Stock Market Index Change Rate	-13.12	130.16	97.25
Real Estate Market Price Change	7.6	5.5	6.7

Note: the stock market index change rate is calculated based on high composite index of Shanghai A-share, end of period; the price change of real estate market in 2007 is the average value of January-September.

Source: PBOC, Monthly Monetary Statistics; SAFE, Exchange Rate Database; NBS, China Statistics Yearbook; IMF, International Financial Statistics.

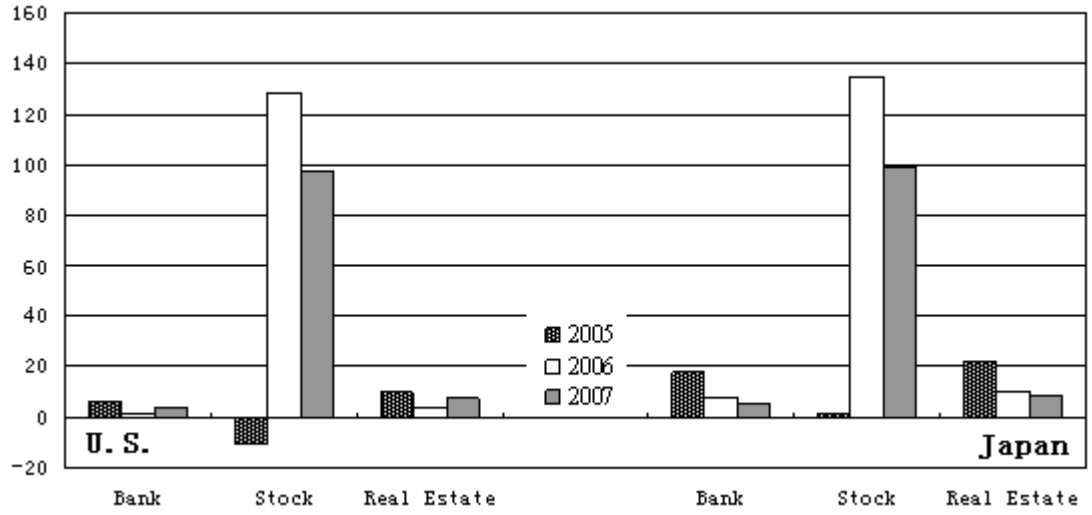

Figure 9 Possible profit rate for short-term capital from U.S. and Japan to China's banking sector, stock market, and real estate market.

Source: same as table 7, calculated by author.

According to formula 4, we calculated the possible profit rate for short-term capital inflows in China as above. (See Table 7 and Figure 9) We calculated the possible profit rate for short-term capital from Japan and U.S. separately. The results seemed to be quite breath-taking. According to figure 9, the profit came mainly from real estate price increase and Chinese Yuan appreciation in 2005. However, in 2006 and 2007, thing changed dramatically. In these two years, the profit came from stock market mainly. The profit rate in these two years reached an astonishing level at about 100 percent because of over-heating in stock market.

Undoubtedly, this situation will encourage more and more short-term capital try to enter China. Problem is why such a overheating happened in stock market and housing market, and what's the role of short-term capital? In the next part, we will discuss it from the aspect of macroeconomic policies.

The accessing paths of short-term capital

Short-term capital is generally forbidden to enter China's securities market now because of capital control. In recent years, after the introduction of QFII (Qualified Foreign Institute Investor), a small amount of capital is allowed to enter the securities

market. Currently, there're mainly two ways for short-term capital to enter China:

Firstly, QFII is the formal and legal one. QFII is introduced in December 1st, 2002. The total quota for QFII before July 2005 is 4 billion U.S. dollar. The government added 6 billion U.S. dollar after July 2005. It's said by officials in China Securities Regulatory Commission that the total quota for QFII will increased to 30 billion U.S. dollar at the end of 2007.

However, even 30 billion of QFII is relatively too small comparing with the unexplained foreign exchange reserve accumulation, the later represents the short-term capital inflow underground to some extent. In 2007, the total unexplained foreign exchange reserve increase is about 126 billion U.S. dollar, and the Quota for QFII is only less than one quarter of it. (See Table 8)

Table 8 Unexplained foreign exchange reserve increase in China 2003-2007, in 0.1 billion U.S. dollar

	2003	2004	2005	2006	2007
Unexplained Forex Reserve increase	378	1107	347	5	1259

Source: MOFCOM, statistics of trade and FDI; SAFE, statistics of foreign exchange reserve, by author's calculation.

Also, there're some informal, and some time illegal ways to access China. The topic of informal and illegal access of short-term capital has been hotly discussed recently and didn't reach any conclusion. During these years, the authorities seldom publish any statement or statistics on this issue. However, according to a report by Dai (2007), there're at least three informal or illegal ways to access China's stock market by short-term capital.

The first one is FDI, China has a capital requirement for those who want to establish a company. The capital requirement for registration sometime is more than the investment needed in the business prepare, the gap between required capital and first stage investment can be transferred to some securities company and entered the stock market.

The second one is through underground bank, which act in an underground exchange market and provide service for those who want their money to enter China. Because some Chinese also want their money to flow outside, they have supply of Chinese Yuan and demand for foreign currency. On the contrary, the foreign speculators have a demand for Chinese Yuan and provide foreign exchange. The underground bank can balance in demand and supply and make a profit.

The third way is in trade. Because of the inspection in customs, the short-term capital managers usually do it through commodity price. This is seldom used because it's regarded as the most complicated and costly one.

The impact of short-term capital on market

Before going to the details, we'd like to give a brief explanation of the data here. In China, there's no statistics for short-term capital, so it's impossible for us to analyze the impact of short-term capital on market directly. To get the data of short-term

capital, we use the following formula here:

$$SC_t = \Delta R_t - CA_t - CCA_t - FA_t \qquad (5)$$

Here, SC_t means short-term capital inflows at time t. The meaning of R_t, CA_t, CCA_t and FA_t is same as formula (2) and (3). We have noted that SC_t here can represent the real amount of short-term capital flows only approximately, for accurate term, we have to consider the QFII, IPO remitting back, and other factors. However, this is still the best choice we can have currently.

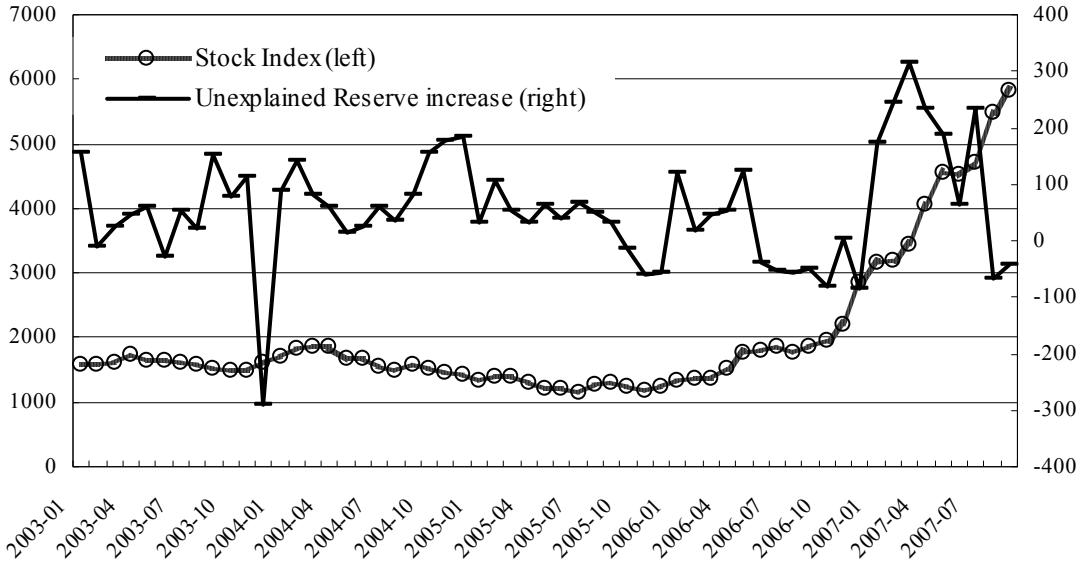

Figure 10 Unexplained reserve increase and stock market index in China January 2003-July 2007, in 0.1 billion U.S. dollar and index monthly
Source: PBOC, Monthly Monetary Statistics; SAFE, Exchange Rate Database; NBS, China Statistics Yearbook; IMF, International Financial Statistics.

Figure 10 described the relationship between short-term capital flows and stock market performance. To analyze the impact of short-term capital on stock market, there're two fundamental questions we have to answer: firstly, is there any relationship between short-term capital inflows and stock market index? The second question is whether short-term capital inflows drove the domestic market? Or just on the contrary? To answer these two questions, we employed two coefficients, the correlation coefficient, and granger test. China's stock market rose quickly than normal after 2006. To specify the effect of short-term capital in this period, we use two type of sample, one from January 2003 to September 2007, the other from January 2006 to July 2007. (See Table 9)

Table 9 Relationship between unexplained reserve and stock market index

	Sample	F Statistics	Corr. Coe. / possibility
Stock – Reserve	2003:01-2007:09	-	0.19484
Not (stock→reserve)	2003:01-2007:09	1.01089	0.31926
Not (reserve→stock)	2003:01-2007:09	0.02644	0.87146
Stock – Reserve	2006:01-2007:07	-	0.60963
Not (stock→reserve)	2006:01-2007:07	2.61724	0.12525
Not (reserve→stock)	2006:01-2007.07	0.46103	0.50685

Note: "stock - reserve" means correlation coefficient between stock market index and unexplained reserve. "Not (stock→reserve)" means the possibility of "stock market index is not granger cause unexplained reserve", the lag for granger test here is 1.
Source: simulated by Eviews.

The results of correlation coefficient and granger test show the criticism for stock manipulation of short-term capital not so reliable. According to table 9, the relationship between short-term capital and stock performance is not so obvious. During over-heating period of stock market, the relationship enforced apparently. However, it's the stock over-heating that appeal more short-term capital. In table 7, we have calculated the possible margin for short-term capital, the overheating in stock market provided a huge opportunity for hot money. In this case, more attention should be paid to domestic factors that support such over-heating.

V. Macroeconomic Situation, Capital Inflows, and Financial Risk: the Case of China

The Asian financial crisis left many lessons for the world. Researchers and policy markers all over the world have try to specify it from all the way. As discussed before, from the aspect of macroeconomic, the most important lesson maybe lies in the following points: firstly it's the relationship between internal balance and external balance. A long period of internal imbalance may cause serious external balance, and fall in crisis some time in the final. Secondly it's the general condition of global economy and financial market. World integrated more and more under globalization, it increased the system risk of world economy. However, the ability of handling this kind of risk seems far from enough.

In China, the short-term capital does threaten the stability of macroeconomic and financial market. It's the domestic market condition that appealed the short-term capital according to analysis. Based on this result, the most important thing is to improve the macroeconomic condition. In this part, we'll try to figure out the imperfect side of China's macroeconomic condition, and indicate why this kind of imperfection may cause risk in certain case.

Low consumption, high saving and high investment

China has well-known high saving rate and investment rate, which all rooted in the low consumption. After the open and reform, China entered a high growth period of

about 30 years, during this time, both GDP and consumption increased quickly. Problem is the consumption couldn't catch up the GDP growth in most of the year, in the 28 years between 1978 and 2006, years when the consumption increased slower than GDP count for 18 years, about 64.3 percent. In some year, the gap between GDP and consumption growth is astonishing. This situation caused the consumption ratio to decrease gradually. In 1978, the consumption ratio is 62.1 percent. It decreased to 49.9 percent in 2006, about 12.2 percent down in 28 years. (See Figure 11)

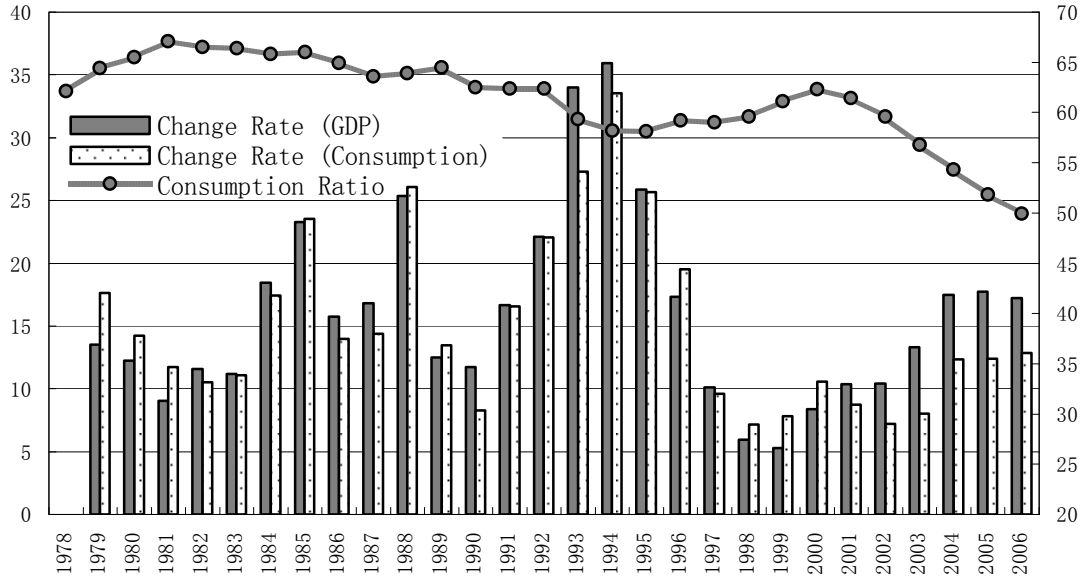

Figure 11 Change rate of GDP and consumption, and consumption ratio in China 1978-2006, in percentage
Source: NBS, China Statistics Yearbook, 2007.

Table 10 Composition of consumption for urban household 1995-2006, in percentage of total consumption

	1995	2000	2006
Medicine and Heath Service	3.11	6.36	7.14
Education, Culture, and Entertainment	8.83	12.56	13.83
Resident Related	7.07	10.01	10.4

Source: NBS, China Statistics Yearbook, 1996, 2001, 2007.

The high saving and low consumption in China is caused by many factors complicatedly. As for the household saving, the main reason is preparation for future consumption. Because the social safety network is not so well, people have to save for future unanticipated expenditure including medicine and health service, education for next generation, and resident related one. In recent year, the share of this kind of expenditure in total expenditure is expanded gradually. This is the main reason why household saving is so high. (See Table 10)

No matter good or not, China has a high investment ratio in the same time, it may be good for a high saving countries. But there's still some gap between the saving ratio

and investment ratio as indicated in table 3. This gap is related to China's net export. What's more, China attracted huge amount of foreign direct investment even with a high saving ratio. This problem is mainly caused by the financial efficiency in China, and it complicated China's situation also. We will discuss it in the section about China's system risk.

Exchange rate: between export (growth) and reserve excess

In the case of Thailand, Indonesia, and Korea, low exchange reserve caused the troubles. On the other side of this coin, it's the problem of too much reserve. Before the crisis, the Southeast Asian countries and Korea try to undervalue the currency to encourage export. Currently, the situation in China is a little bit similar. China maintains the gradual appreciation worrying about the export. Export have played a important role in China's employment and economic growth after the open and reform, slowdown of export will have a negative impact on economic growth undoubtedly, it may even stagnate the economic growth also.

For China, the problem is, we accumulated a huge amount of foreign exchange reserve through current and capital account surplus. On the other hand, we don't have enough capital outflows because of many factors including low industrial competition, shortage of financial talents, and other. This means new foreign exchange reserve accumulation is putting more and more water in an already full bowl.

Table 11 Foreign exchange reserve accumulation and M2 in China, 2002-2007, in 100 million Chinese Yuan and percentage

	2002	2003	2004	2005	2006	2007
A. FOREX Reserve	2864.07	4032.51	6099.32	8188.72	10663.44	15282.49
B. M2	185007	221222.8	254107.0	298755.7	345603.6	403401.3
C. □FOREX Reserve	n.a.	1168.44	2066.81	2089.4	2474.72	4619.05
D. □M2	n.a.	36215.8	32884.2	44648.7	46847.9	57797.7
Percentage of A/B	1.55	1.82	2.4	2.74	3.09	3.79
Percentage of C/D	n.a.	3.23	6.29	4.68	5.28	7.99

Source: PBOC, Statistics of Monetary Monthly; SAFE, Statistics of FOREX reserve.

If we regard the saving minus net export as the domestic source of domestic liquidity, there're at least two external source of excessive liquidity, those are net export which we have describe in the paragraph above, and the FDI inflows. Though the external source of excessive liquidity is not so important, it could deteriorate the situation to some extent. (See Table 11)

Interest rate: between banking sector and asset bubble

When China's stock market showed the possibility of over-heating, the government tried to calm down it through tight monetary policy. In 2006 and 2007, the People's Bank of China adjusted the interest rate twice and 6 times. The last time PBOC increased the interest is September 15th, 2007. After that, PBOC used the instrument of reserve ratio more and more. The monetary authority used reserve ratio frequently

after 2006, it raised the reserve ratio from 8 percent to 14.5 percent in 13 times between 2006 and 2007. After September, PBOC raised the reserve ratio at least 4 times, but never tries the interest rate instrument any more.

This means the monetary authority make the reserve ratio as the most important instrument and orientation. Possible reason behind this policy orientation adjustment is the room for further increase in interest rate is more and more narrow.

Table 12 The foreign exchange and commercial banks' fund uses 2003-2007, in 0.1 billion Chinese Yuan and percentage

	2003	2004	2005	2006	2007
Central Bank Bonds (New Issue)	7227	15072	27882	36500	26320
A. Central Bank Bonds (Stock)	3377	9742	20662	30300	39000
B. Position for Foreign exchange Purchase	34847	52593	71211	98980	125736
C. Reserve Ratio (Adjusted)	6.0	6.4	6.6	8.3	10.6
D. Funds Uses of Commercial Banks	241632	281145	326980	365168	437260
E. Percentage of [(A+B)/D + C]	21.8	28.6	34.7	43.7	48.3
F. Nonperforming Loans	13.2	9.8	6.2	6.0	n.a.
Percentage of E+F	35	38.4	40.9	49.7	n.a.

Note: the statistics of central bank bonds in 2003 started from April 22nd, in 2007 ended in September. Statistics of C and D item are the end of period.
The reserve ratio is adjusted according to the share of saving in total asset of commercial banks.

Source: PBOC, Monetary Policy Implementing Report, Monthly Financial Operation Bulletin, vary version; PBOC, Monetary Statistics, vary versions; IMF, Global Financial Stability Report, September 2006.

In total funds uses of commercial banks, there're at least three kind of assets with low profit. The first one is central bank bonds which return is only about 3 percent. In recent decade, PBOC issued more and more central bank bonds to sterilize the excessive liquidity. Recent sterilization is mainly used to deal with the excessive liquidity from current and capital account surplus. The second one is position for foreign exchange purchase. It's difficult for the commercial banks to get high return from this kind of position because there's some limitation in usage of this position. The last one is required reserve in central bank.

Recently, the share of above three assets accounted more and more in commercial banks' balance sheet. Between 2003 and 2007, total share of them increased from merely 21.8 percent to 48.3 percent. Under this condition, further increase of interest rate will press more and more pressure for commercial bank, and the usage of reserve ratio will exhausted in a very near future. This indicates another dilemma for the monetary authority in China, if they raise the interest rate or reserve ratio further, the commercial bank will become more and more difficult in operation. On the contrary, without any action, more and more household saving will flow into the security market and housing market and blow the asset bubble because of negative real interest

rate. This is the condition without considering the nonperforming loans, thing will be worse if taking it into account.

System risk in China's macroeconomic

The most critical thing in China's macroeconomic is the system risk, the capacity of dealing with the risk in case of any crisis happen. This remained the biggest challenge for the authority:

The first system risk is on monetary policies. As we analyzed above, in the basket of monetary instrument, exchange rate and interest rate is corned because of dilemmas in policy making. According to international experience, monetary policy is the most efficient one in countering asset bubble. In China's case, exchange rate and interest rate seems to be cornered, the reserve ratio have raised to extreme level, further room for tightening the market is really limited. Under this condition, the system risk increased.

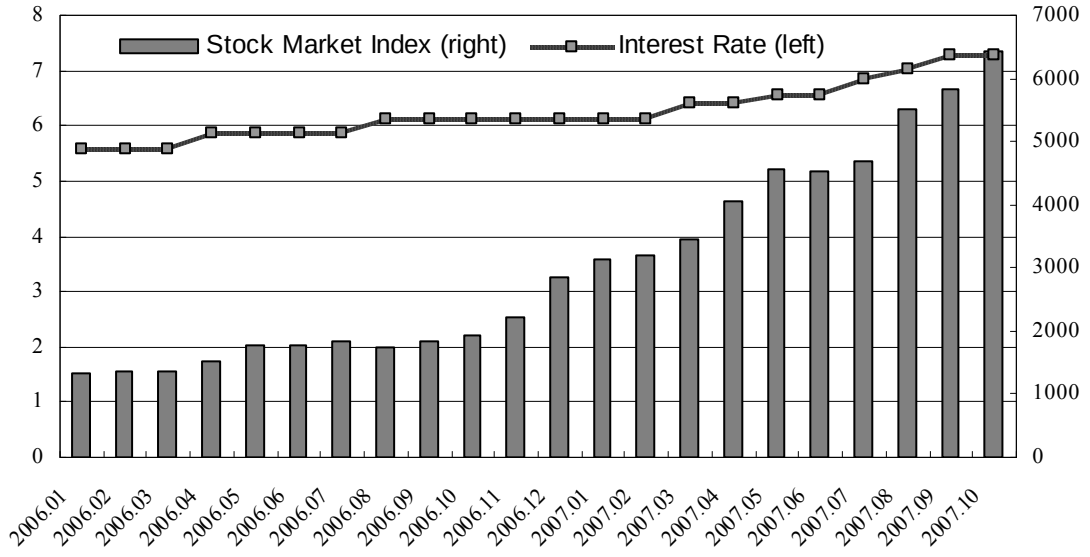

Figure 12 Interest rate adjustment and stock market performance in China, January 2006- October 2007, in percentage and index

Note: interest rate here is the fundamental loan rate for 1-year maturity loan, end of period. Stock index is the high index of Shanghai stock market.

Source: PBOC, Monetary Statistics Monthly.

The second one is about the efficiency of interest rate instrument. During the bubble era of Japan, BOJ decided to implement tight monetary policy, and it worked well in calming down the market. Both stock market and land market calmed down with the discount rate raising. However, situation in China is quite different and surprising. PBOC (People's Bank of China) raised the interest twice in 2006 and six times in 2007, but the stock market seemed not reacted. This is partly caused by the negative real interest rate, but certainly has strong relationship with the inefficiency of monetary policy in the same time. (See Figure 12)

The third system risk in China's macroeconomic is the inefficiency of financial market. China has high saving ratio and high investment ratio, and has a surplus saving in the same time. However, China borrows huge amount of foreign investment in the form of FDI. The foreign investment is needed to promote export in the 1980s, and expanded because of tax preferential and other policy favor. In macroeconomic aspect, it turns out to be the inefficiency of domestic financial market. The inefficiency causes domestic financial market is unable to turn the surplus saving into investment. There's some obstacle between supply of surplus saving and demand for investment. To solve this problem, China has to utilize the global market to allocate surplus saving from other countries to China.

Finally, in case of global macroeconomic environment, China is faced with the similar situation as Southeast Asian countries. Same to bubble burst in Japan, this time we have the subprime mortgage crisis in U.S., which also puts more risk for China. The first impact is some money will flow out from U.S. to emerging countries including China. This will deepen the risk in China's asset market. The second possible impact is in interest differential. After the crisis appeared, FED cut the federal interest rate gradually, the decrease in U.S. interest and increase in China's interest rate is possible to form bigger room for speculating.

VI. Concluding Remarks

In the last more than ten years, researchers all over the world have tried to specify the causes of Asian financial crisis in 1997. Many researches have been done in the aspect of banking sector, speculators, and monetary regulation. One important cause of the crisis well accepted is the macroeconomic condition. In this paper, we try to examine the macroeconomic condition in those countries around the crisis.

In the aspect of macroeconomic, there're three main lessons from the financial crisis. The first one is the importance to maintain a balance between internal balance and external balance. The main relationship between internal economy and external system is the accounting equality between saving-investment gap and the net export. In Southeast Asia and Korea's case, negative saving-investment caused net import for too long. The countries have been successfully to maintain the BOP in good condition through a surplus in financial account. However, when the export no longer grew, and the maturity of capital inflows shortened, the risk of BOP security increased. The second lesson is the balance in interest rate and growth rate among different economies. The differentials in interest rate and growth rate will undoubtedly encourage capital inflow, and more attention should be paid. The third one is the vulnerable of small economy in globalization.

In the case of China, not all the lessons mean. The potential risk in China's market lies mainly in domestic rather than external. The most important thing for China is to reduce the saving-investment gap, and calm down the market. However, from the aspect of monetary, further room for tightening market is very limited. This is one of the system risk China is faced with. There're also two other system risk including imperfection of interest rate instrument and inefficiency of domestic financial market.

In this case, possible solution for the over-heating should seek in other way beside monetary policies:

In the short term, the most import target is preventing speculating and calming down the market. Strict capital control is still needed to stabilize the economy. Over-heating will attract hot money from all over the world. The subprime mortgage crisis will also push huge amount of capital flowing out from U.S. to emerging countries, and China is also very possible to be one of the destinations for this capital outflow. In this case, strict capital control is still necessary. Another efficient way to prevent speculating is through floating of Chinese Yuan. The exchange rate of Chinese Yuan is still strongly related to U.S. dollar, and this give room for speculating. It's possible for Chinese Yuan to peg to a currency basket. The authority can allow it to float at larger space and narrow the room for speculating.

In the middle term, absorbing the excessive liquidity becomes the most important task. It's strongly suggested by economists in China to do it through Chinese Yuan appreciation and encouraging capital outflow. In plus, I think it possible to combine the monetary policy with industrial policy. China can use the excessive exchange reserve to buy key technology for the private-owned company. It's needed to establish certain plan for industry development and specify the critical technology we needed.

In the long term, China has to dealing with the problem of high saving and investment. The most necessary and effective way is increasing domestic consumption. To increase consumption, the government should invest more fiscal money to enforce the social security network, and reduce the uncertainty of the whole economy. Another way to encourage consumption is encourage the market competition and break down the regional bloc. Also, it's important to develop domestic financial market absorbing the liquidity, and establish efficient market-oriented mechanism for financial resource allocation.

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