THE PERFORMANCE OF EAST ASIAN MARKETS UPON THE 2008 GLOBAL FINANCIAL TSUNAMI: CURRENCY CRISIS AND BANKING CRISIS

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ABSTRACT

The 2008 Global Financial Tsunami severely impacted global economies including the East Asian markets. Coming on the heels of the prolonged 1997 Asian Financial Crisis, economists are keenly interested to compare and contrast these two financial crises. An analysis of foreign exchange and money market pressure indexes indicates that the impact of the 2008 Global Financial Tsunami was far less severe than the 1997 Asian Financial Crisis. Therefore, we anticipate a speedy recovery in East Asian markets. Furthermore, speculative attacks were also less significant during the 2008 Global Financial Tsunami. It is obvious that the nature of the most recent Financial Tsunami was different from that of the Asian Financial Crisis. Our results provide a reference for nations which are going through a financial crisis.

Keywords: 2008 Global Financial Tsunami, Asian financial crisis, currency crisis, banking crisis, Index of Foreign Exchange Market Pressure, Index of Money Market Pressure
INTRODUCTION

Since the US sub-prime mortgage crisis erupted in 2007, subsequent effects have been spreading out in the US and European financial systems. According to Reinhart and Rogoff (2008), the 2007 U.S. sub-prime crisis had its roots in falling U.S. housing prices, which have in turn led to higher default levels, particularly among less credit-worthy borrowers. In September 2008, the bankruptcy of Lehman Brothers triggered the collapse of the global financial market. A series of financial crises took place around the world, which eventually led to the 2008 Global Financial Tsunami a crisis on a scale not seen since the Great Depression. The effects were so dramatic that no one was left unscathed. Many signs indicate that the far-reaching effects brought on by the current international financial market and the close connection between international economic systems may have caused the 2008 Global Financial Tsunami.

According to Fischer (2003) and Kose et al. (2003), globalization enabled the global economic entities to closely connect with each other, not to mention the fact that the financial systems were the center of the economic environment. With the trend of globalization, inflows and outflows of funds create capital movement risks which influence not only a single country or its neighboring area but also the entire world. The 2008 Global Financial Tsunami also highlighted the fact that most East Asian countries which are export oriented and rely on external trade to a great extent are even more vulnerable to international trade and economic changes. East Asian countries with similar economic characteristics underwent a financial crisis in the latter half of 1997. Therefore, it is worth exploring the impacts of the 2008 Global Financial Tsunami on East Asian countries and making comparisons with the 1997 Asian Financial Crisis.

In the theoretical literature of international finance, various models have tried to explain the occurrence of financial crises. The first generation crisis model suggested that the occurrence of currency crises originated from excessive expansion of domestic credit and public debt. As foreign reserves dwindled, the fixed exchange rate system was eventually given up (refer to Krugman, 1979; Flood & Garber, 1984; Obstfeld, 1984; Wyplosz, 1986; Buitert, 1987; Willman, 1988; Djajic, 1989; Goldberg, 1994; Lai,
The second-generation crisis model (see, for instance, Obstfeld, 1986, 1994, 1996, 1997; Drazen & Masson, 1994; Dornbusch et al., 1995; Ozkan & Sutherland, 1995; Krugman, 1996; Bensaid & Jeanne, 1997; Tsaur & Chang, 1999) argues that there is a surge in the domestic interest rate before a crisis, and that the strong investor pessimism can cause a capital outflow which leads to the collapse of the exchange rate system. Moreover, Krugman (1999) developed a third generation model, which suggests that international illiquidity in a country’s financial system precipitates the collapse of the exchange rate. When authorities don’t have enough foreign reserves, the financial system is highly vulnerable to speculative attacks (Chong et. al., 2008, p.1).

Empirically, a lot of studies tried to determine the timing and factors associated with various currency crises (Eichengreen et al., 1995, 1996a, 1996b; Frankel & Rose, 1996; Sachs et al., 1996; Hutchison & McDill, 1999; Kaminsky & Reinhart, 1999; von Hagen & Ho, 2007; Chong et al., 2008 etc.). The papers written by Eichengreen et al. (1995; 1996a, 1996b), Sachs et al. (1996), and Kaminsky & Reinhart (1999) show that speculative attacks on foreign exchange markets can be followed through exchange market pressure indexes. Currency crises usually occur when there is excessive market pressure induced by extraordinary speculative attacks.

As described in Hutchison & Noy (2005, p.736), banking problems are usually difficult to identify empirically because of data limitations. The potential for a bank run is not directly observable. Traditionally, banking-sector distress was often identified by “event” methods (for example, Caprio & Klingebiel, 1996; Demirguc-Kunt & Detragiache, 1998; Kaminsky & Reinhart, 1999; Bordo & Schwarz, 2000; Bordo et al., 2001; Hutchison & Noy, 2005). The beginning of a banking crisis is marked by bank runs, withdrawals, and subsequent government intervention. However, many drawbacks still exist in using the event method as a way to determine the timing of the bank run (details seen Kaminsky & Reinhart, 1999, p.476; Hutchison & Noy, 2005, p.736-737; von Hagen & Ho, 2007, p.1038-39). As a result, von Hagen & Ho (2007) indicates that it is practicable to judge the timing and evaluate liquidity difficulties by using money market pressure indexes constructed by charting variations in the reserves to bank deposit ratio and real interest rates. When there is extreme value in an index, a banking
crisis is likely to be brought on by speculative attacks.

Papers which discuss currency and banking crises simultaneously often apply the event method to analyze the occurrence of currency crises. However, it may result in an unpredictable bias and a lack of quantification. Based on the shortcomings mentioned above, this paper refers to Eichengreen et al. (1995, 1996a, 1996b), Sachs et al. (1996), Kaminsky & Reinhart (1999) and von Hagen & Ho (2007) to reconstruct foreign exchange and money market pressure indexes for East Asian countries which faced the financial crisis (a total of 8 countries including Japan). Then we set up a threshold value for foreign exchange and the index of market pressure which indicates if a currency crisis or a banking crisis may occur. It is useful to locate the time points for the occurrences of financial crises and make a comparison between the 1997 Asian Financial Crisis and the 2008 Global Financial Tsunami.

Finally, we comprehensively review the implications, strength of impacts and national policies reflected in these two crises, indirectly proving that the economic collapse in Thailand was the origin of the 1997 Asian Financial Crisis. Furthermore, the duration of the 2008 Global Financial Tsunami was much shorter than that of the 1997 Asian Financial Crisis. Due to the limited deterioration of the real economy and negative effects caused by the 2008 Global Financial Tsunami in East Asia, it is appropriate to infer that these countries will gradually revive in a shorter period of time.

**METHOD**

The International Monetary Fund (IMF) in 1998 defined four types of financial crisis: (1) currency crisis, e.g. the 1995 Mexican Meltdown; (2) banking crisis, e.g. 1998 Japanese banking crisis; (3) foreign debt crisis, e.g. the 1980 Latin American foreign debt crisis; and (4) systematic financial crisis: two out of the above three types of crisis concurrently occur and interact with each other (which is also called a twin-crisis), e.g. the 1997 Asian Financial Crisis and the 1998 Russian Financial Crisis.

Literature mainly focuses on currency and banking crises since type 3 and 4 are the causes or concurrences of the first two types. Bordo et al. (2001) define a currency
crisis as a forced change in parity, abandonment of a pegged exchange rate, or an international rescue. A banking crisis is defined as a period of financial distress that is severe enough to result in the erosion of most or all of the capital in the banking system.

Owing to the enormous impacts of a financial crisis, it is of great importance to establish related reference indexes to help recognize if there is an occurrence of a crisis and accurately measure the degree of pressure reflected in the market while facing the crisis. Through such an index, we can clearly present the financial market pressure during the 2008 Global Financial Tsunami and discuss the responsive policies adopted by different countries.

Index of Foreign Exchange Market Pressure

When a government encounters the threat of a currency crisis, three responsive policies are usually adopted. First, attempt to maintain currency values by selling foreign reserves. Second, increase domestic interest rates to attract capital inflow or reduce capital outflow. Third, let exchange rate depreciation occur. Therefore, past literature used to apply the weighted average method to variables of foreign reserves, interest rates and exchange rates in order to establish indexes. Such indexes are called index of foreign exchange market pressure and are used to measure the pressure born by the foreign exchange market in a given period upon a currency crisis (such as Sachs et al., 1996; Eichengreen et al., 1995, 1996a, 1996b; Glick & Rose, 1999; Kaminsky & Reinhart, 1999; Chen & Chang, 2002). The index of foreign exchange market pressure refers to the reactions in policy making while a monetary authority is facing a currency crisis. In other words, this index is able to determine if the currency is affected from the perspective of dramatic depreciation of exchange rates and to help evaluate the potential pressure born by the foreign exchange market.

Referring to Eichengreen et al. (1995, 1996a, 1996b) and Chen & Chang (2002), the index of foreign exchange market pressure could be set as follows:

$$INDF_t = \frac{\Delta S_t \%}{a \cdot \hat{\sigma}_{\Delta S, \%}} + \frac{\Delta i_t}{a \cdot \hat{\sigma}_{\Delta i, \%}} - \frac{\Delta FR_t \%}{a \cdot \hat{\sigma}_{\Delta FR, \%}}$$

(1)
In equation (1), $t$ stands for time. $\text{INDF}$ stands for the index of foreign exchange market pressure. $S$, $i$ and $FR$ represent nominal exchange rate, nominal interest rate and foreign reserves, respectively. $\Delta$ is difference factor. Therefore, $\Delta S\%$, $\Delta i$, and $\Delta FR\%$ denote the percentage changes of nominal exchange rates, nominal interest rates and foreign reserves. $\hat{\sigma}_{\Delta S\%}$, $\hat{\sigma}_{\Delta i}$ and $\hat{\sigma}_{\Delta FR\%}$ stand for the long-term sample standard deviation of $\Delta S\%$, $\Delta i$ and $\Delta FR\%$, respectively. $a$ is the sum of the reciprocals of long-term sample standard deviation, that is, $(1/\hat{\sigma}_{\Delta S\%} + 1/\hat{\sigma}_{\Delta i} + 1/\hat{\sigma}_{\Delta FR\%})$. The purpose of taking the reciprocals of long-term sample standard deviation as a part of weight is to avoid excessive control over the index of foreign exchange market pressure due to dramatic changes of certain variables during a short period of time. In other words, it aims at averaging the changes of variables. The weight of each variable equals to the reciprocal of its long-term sample standard deviation divided by $a$. It aims at standardizing the weights of all variables. Therefore, the unit of the index of foreign exchange market pressure is the percentage which symbolizes the weight percentage of policies dealing with a currency crisis. The higher the index of foreign exchange market pressure is, the greater the depreciation of exchange rate is during such a period or the interest rate increases significantly or foreign reserves decreases massively. Thus, the potential pressure of the foreign exchange market is greater.

However, it is found that many countries followed the measure taken by the U.S. by lowering interest rates while observing the conditions of the 2008 Global Financial Tsunami. Such a measure was the opposite of increasing interest rates when facing a currency crisis. In theory, increasing capital inflow or decreasing outflow should be based on the relative difference between domestic and foreign interest rates (when domestic interest rates are higher than foreign interest rates, capital inflow will increase or outflow will decrease). Therefore, the establishment of the index of traditional foreign exchange market pressure (as in equation (1)) sustains when foreign interest rates remain unchanged. However, the pressure born by the foreign exchange market
cannot be comprehensively reflected when foreign interest rates change. Due to these reasons, we modified equation (1) to the following:

$$
INDF_i = \frac{\Delta S_i \%}{\hat{\sigma}_{\Delta S_i \%}} + \frac{\Delta (i_i - i_i^*)}{\hat{\sigma}_{\Delta(i_i - i_i^*)}} - \frac{\Delta FR_i \%}{\hat{\sigma}_{\Delta FR_i \%}},
$$

(2)

The variables in equation (2) are the same as in equation (1), where $i^*$ stands for foreign interest rate. Therefore, $i_i - i^*$ is the relative interest spread between the domestic and foreign interest rates (in this paper, the interest spread between the countries and the US is used). $\hat{\sigma}_{\Delta(i_i - i_i^*)}$ stands for the long-term sample SD of $i_i - i^*$. The difference between equation (2) and equation (1) comes from the changes of interest spread between domestic and foreign interest rates so as to measure foreign exchange market pressure. $\Delta(i_i - i_i^*) > 0$ denotes increasing capital inflow or decreasing capital outflow by strengthening the incentives for attracting capital investment made in the related countries and thus it presents the potential foreign exchange market pressure. Similarly, $b$ is defined as the sum of the reciprocals of sample standard derivation of all variables in order to standardize the weight of each variable. In this case, even though many countries followed the US to lower their interest rates during the 2008 Global Financial Tsunami, it was still possible to determine their responsive measures on interest rates against the currency crisis as long as they had positive interest spread compared with the interest rates in the US.

**Index of Money Market Pressure**

As indicated in the previous section, past literature focus on the index of foreign exchange market pressure and paid little attention to the index of banking pressure. Banking problems are usually difficult to identify empirically because of data limitations. Traditionally, banking-sector distress was often identified by “event” methods. The beginning of a banking crisis is marked by bank runs, withdrawals, and subsequent government intervention (see, for example, Kaminsky & Reinhart, 1999; Hutchison & Noy, 2005). Now the index of money market pressure proposed by von
Hagen & Ho (2007) is widely applied. They define a banking crisis as a situation in which excessive demands on liquidity exists in the money market. When this happens, the central bank, being the lender of last resort, has two policies: First, it enhances short-term interest rates (the inter-bank lending rate) to offset the excessive demand for reserves (i.e. price adjustment) by the banking system. Thus the total supply of banking reserves remains unchanged. Second, the central bank increases banking reserves through public market operations or the discount window to shift funds into the banking system (i.e. amount adjustment). In this case the short-term interest rate stays at the same level. However, these two policies will lead to a rapid increase in short-term interest rates and/or a significant rise in the demand for banking reserves. At this moment, the money market pressure would immediately increase, causing a banking crisis.

As a result, two major variables, short-term interest rates and banking reserves, should be taken into account while measuring the money market pressure. By referring to the method proposed by von Hagen & Ho (2007), the index of money market pressure is established as follows:

\[
IMP_t = \frac{\Delta \lambda_t}{c \cdot \sigma_{\Delta \lambda_t}} + \frac{\Delta r_t}{c \cdot \sigma_{\Delta r_t}}.
\]  

(3)

In equation (3), \(IMP\) denotes the index of money market pressure. \(\lambda\) stands for the percentage of borrowed reserves to total deposits. \(r\) denotes short-term real interest rate. \(\Delta\) represents differential factor. \(\sigma_{\Delta \lambda}\) and \(\sigma_{\Delta r}\) are the long-term sample standard derivation of \(\Delta \lambda\) and \(\Delta r\) respectively. \(c\) denotes the sum of the reciprocals of the standard derivation of the above two variables. The purpose of doing so is to standardize the weight of each variable for the convenience of exploring the average specific weight of a policy at different time points. When the index of money market pressure rises, it shows that the borrowed reserves increase significantly, the total deposits decrease dramatically or the short-term interest rates increase massively; or the three conditions co-exist at the same time during a given period. Such conditions reflect
high potential pressure in the banking system at that moment.

Data Description

The data are monthly and the whole sample covers the period from January 1988 to January 2009. The eight East Asian countries, Japan, Taiwan, Korea, Singapore, Malaysia, Philippines, Thailand and Indonesia, are the sample countries. More details are included in Data Appendix.

One thing worth mentioning is that when we looked at the relevant literature in the past, we found that Hong Kong was often used as the case study when regional financial crises occurred. In other words, as one of the most important financial centers in Asia, Hong Kong’s currency was under speculative attack during the 2007 Asia Financial Crisis. However, given the data limitation, the author did not specifically choose Hong Kong for discussion in this article while studying the impacts of the 2008 Global Financial Tsunami on East Asian markets. Because most of the discussions about banking crises in the literature are based on events, there might be some errors. Therefore, based on an indicator used by von Hagen and HO (2007) to measure currency market pressure and real data, we tried to determine the problems in the banking systems. The reserve-deposit indicator is a ratio measuring the percentage of the money that all banks borrow from the Central Bank against the overall saving deposits. (It assumes that the Central Bank is the only supplier of liquidity). In the IMF-IFS, Hong Kong did not publish the ratio (line 26g), thus making it impossible for us to calculate reserve-deposit ration. In addition, the information about the overall saving deposits is also limited. (line 24, 25, and 26c). Therefore, in order to study the financial crisis in the context of testing pressures within the foreign exchange and currency markets, we try to overlook the case of Hong Kong in this article.

OCCURRENCE OF FINANCIAL CRISIS

In the previous section, we described the method for measuring financial market pressure. Now, we have to determine if a financial crisis occurs. According to the definitions proposed by Eichengreen et al. (1995, 1996a, 1996b), Frankel & Rose (1996)
and Sachs et al. (1996), a currency crisis occurs when an extreme value for the foreign exchange market pressure index appears followed by speculative attacks in the foreign exchange market. Therefore, this paper defines the occurrence of a currency crisis as when the index of foreign exchange market pressure is greater than the mean plus 2 times standard derivation. That is:

\[ \text{If } \text{INDF}_t > \mu_{\text{INDF}} + 2 \cdot \hat{\sigma}_{\text{INDF}}, \text{ then a currency crisis occurs.} \]
\[ \text{If not, then no currency crisis occurs.} \]

Where, \( \mu_{\text{INDF}} \) and \( \hat{\sigma}_{\text{INDF}} \) respectively denotes the sample mean and standard derivation of the index of foreign exchange market pressure. In other words, a threshold value is defined here. As long as the index of foreign exchange market pressure in a country is greater than the threshold value, extremely high pressure occurs in the foreign exchange market (higher speculative attacks appear). Therefore, a currency crisis occurs. However, it is worth realizing that such a method can only be used to determine the time point of a crisis occurrence (the crisis occurs at the first time point upon which \( \text{INDF}_t \) is larger than the threshold value in a given continuous period) and the time point the strongest impact occurs and its pressure. This method is unable to measure the period of the crisis.

In Figure 1, the index of foreign exchange market pressure of the eight East Asian countries in each period is shown. The dotted line is the threshold value which determines if a currency crisis occurs. First, in the late 1980s and in the early 1990s, several currency crises occurred in Japan and Taiwan (these two countries experienced periods with indexes higher than threshold values). Malaysia and Thailand were almost in crisis. The above mentioned crises might be affected by Japanese asset bubbles or the contagious effect brought on by the EMS crisis and the Mexican Tequila Crisis in the early 1990s. During the periods of the occurrence of the Asian Financial Crisis (around late 1997 to 1998), we found that currency crises occurred in all eight of the East Asian countries. With the exception of Japan and Taiwan, the indexes of foreign exchange market pressure in the East Asian countries were much higher than their threshold values.
Moreover, four countries (Korea, Singapore, Indonesia and Malaysia) experienced currency crises based on the observation of the impact brought on by the 2008 Global Financial Tsunami. The pressure on foreign exchange markets in the other countries also increased. The conditions in Japan and Taiwan were pretty close to the level of currency crisis. The above phenomena explained how the 2008 Global Financial Tsunami influenced the foreign exchange markets in East Asia to a certain extent. Meanwhile, it was not hard to tell that the number of countries and the level of crisis pressure caused by the 2008 Global Financial Tsunami was far lower than the negative impacts caused by the 1997 Asian Financial Crisis. The reason may be that 2008 Global Financial Tsunami was an external effect in nature. It was not the same as the 1997 Asian Financial Crisis which originated within the East Asian countries. Therefore, the crisis impacts on the East Asian countries were stronger during the 1997 Asian Financial Crisis. Another reason may be that those East Asian countries had built up a more complete and comprehensive financial institutions and adopted appropriate policies to deal with crises after the occurrence of the 1997 Asian Financial Crisis.

Next, we utilized the above method to explore whether a banking crisis had occurred. It was hypothesized that the index of money market pressure with an extreme value leads to difficulties in short-term liquidity in the banking system followed by a banking crisis. We define the occurrence of a banking crisis as follows:

\[
\text{If } IMP_t > \mu_{IMP} + 2 \cdot \hat{\sigma}_{IMP}, \text{ then a banking crisis occurs.}
\]

\[
\text{If not, then no banking crisis occurs.}
\]

Where, \( \mu_{IMP} \) and \( \hat{\sigma}_{IMP} \) denote the sample mean and standard derivation of the index of money market pressure, respectively. As long as the index of money market pressure in a country was higher than the threshold value, it was defined that the related country experienced a banking crisis.
FIGURE 1 Indexes of the foreign exchange market pressure (solid line) in the 8 East Asian countries and threshold values (dotted line) indicating currency crisis

In Figure 2, the index of money market pressure in the 8 East Asian countries is shown. The dotted line indicates the threshold value that determined the occurrence of a banking crisis. It was found that most countries in East Asia experienced banking crises (except Taiwan) during the 1997 Asian Financial Crisis. However, no countries experienced a banking crisis due to the 2008 Global Financial Tsunami. The money market pressure in those East Asian countries was not high. Such phenomena indirectly explained that less impact was caused by the 2008 Global Financial Tsunami on financing in the banking system in East Asia. Maybe the impact of the 2008 Global Financial Tsunami was similar to that of a shock to real economic activities.
Taking a look at Figure 1 and Figure 2, it is clearly found that Japan and Taiwan experienced frequent currency and banking crises in the early 1990s while other East Asian countries did not. The reason was that apparent financial asset bubbles occurred in the above three countries at the same time. Take Japan as an example. The 1985 Plaza Accord decided to depreciate the US dollars against major currencies (particularly the Japanese Yen). After that, the exchange rate of Japanese Yen to US dollars significantly appreciated. Within 3 months, the exchange rate of Japanese Yen to US dollars rose from 232 to 123, for an appreciation rate of nearly 50%. Under the anticipation of continuous appreciation of Japanese Yen, global hot money flooded into
Japan. On the other hand, the central bank in Japan continued lowering its official discount rate from 5% to 2.5% so as to soften the impact of the significant appreciation of the Japanese Yen on the real economy. Consequently, market liquidity dramatically increased accompanying excessive hot money. The inflow of hot money and lower interest rates contributed to capital overflow in the financial market. Investors directed their money to various financial assets and real estate for pursuing even higher returns. As a result, the prices of real estate and stocks continued going up. As investors invested their capital in speculative financial transactions, the price of financial assets gradually greatly surpassed their real values. Thus, asset bubbles were formed. It was in 1989 when the central bank of Japan decided to adopt a contractionary monetary policy to dissipate the economic bubbles in Japan. The sudden rise of interest rates forced hot money to withdraw from the Japanese financial market. The real estate market and stock market collapsed at the same time. The burst of the asset bubbles were formally announced. Unfortunately, the U.S. experienced an economic recession in 1990 and 1991, which further encumbered the economic activities in Japan. Non-performing loans in financial institutions substantially increased. Financial intermediaries could no longer function well. The economies went fully into recession. Eventually, a twin crisis which included both a banking and currency crisis formed, influencing some East Asian countries.

Finally, after making comparisons on the occurrence of the currency and banking crises between the 1997 Asian Financial Crisis and the 2008 Global Financial Tsunami, it was not hard to find that the 1997 Asian Financial Crisis was classified as a twin crisis in which banking and currency crises interacted with each other while the effects of the 2008 Global Financial Tsunami were limited to currency crises in some countries. In other words, the 1997 Asian Financial Crisis, being impacted by the twin crisis, had created wide and deep shocks to the real economy. The results showed that the 2008 Global Financial Tsunami was not as serious as the 1997 Asian Financial Crisis past. Therefore, it is suggested that the impacts of the 2008 Global Financial Tsunami on the real economy in the future may not lead to a recession as serious as that brought on by the 1997 Asian Financial Crisis. As a result, the economic systems may recover within
In Figure 3, the numbers out of the 8 East Asian countries experiencing banking and currency crises from 1988 to 2008 were shown. Before the 1997 Asian Financial Crisis, the occurrence of crises were more frequent. The crisis occurred only several times from the 1997 Asian Financial Crisis to the 2008 Global Financial Tsunami. Maybe such a change indirectly supported the facts that the financial structure in the East Asian countries has gradually improved and their experience in dealing with the threat brought on by a crisis has become better.

FIGURE 3 1988-2008 statistics in relating to financial crisis experienced by the 8 East Asian countries

COMPARISONS BETWEEN 2008 GLOBAL FINANCIAL TSUNAMI AND 1997 ASIAN FINANCIAL CRISIS

The 2008 Global Financial Tsunami as well as the 1997 Asian Financial Crisis has had large-scale impacts on East Asia. This section is going to make comparisons between these two crises by reviewing the impact levels and measures taken by the countries involved.
Table 1 shows the crisis starting points, maximum crisis pressure points and maximum pressure values which are represented as percentages in the countries affected by the 1997 Asian Financial Crisis and the 2008 Global Financial Tsunami. The figures in the parentheses are the threshold values of the index of market pressure presented. As defined earlier, a crisis occurs in a country when the index of pressure is greater than the threshold value; otherwise, no sign of crisis appears. Panel A displays the results of currency crisis in East Asian countries. Take Taiwan for example. A currency crisis occurred in 1997M08 and had a peak in 1997M11 (with a pressure value at 2.283) under the 1997 Asian Financial Crisis. No currency crisis occurred in Taiwan during the 2008 Global Financial Tsunami. In Japan, a currency crisis occurred and reached to a maximum value of 0.896 in 1998M04 while no currency crisis happened in the latter crisis. Panel B refers to the results of a banking crisis. As it can been seen very clearly, only Taiwan did not experience a banking crisis during the 1997 Asian Financial Crisis. Evidence further shows that the countries on the list did not experience a banking crisis under the 2008 Global Financial Tsunami.

According to Table 1, some conclusions can be made:

(1) Thailand was the first country to experience a financial crisis (currency and banking crises occurred in 1997M02) during the 1997 Asian Financial Crisis. This result can indirectly explain the argument that the 1997 Asian Financial Crisis originated from the collapse of the economic system in Thailand.

(2) The 2008 Global Financial Tsunami did not have a significant impact on the banking systems in East Asia. By making comparisons in currency crisis, we found that the countries with a currency crisis, such as Korea, Singapore, Indonesia and Malaysia, faced much less pressure than in the 1997 Asian Financial Crisis. The results suggest that the global crisis in 2008 had little impact on East Asian markets.

(3) Once the crisis occurred, the index shows that the period before it reached the maximum value usually lasted for half a month in the 1997 Asian Financial Crisis. Compared to the 2008 Global Financial Tsunami, the starting point of a currency crisis was also the point under the maximum pressure. In other words, the influential period of the 2008 Global Financial Tsunami was not as long as that of the previous one. Naturally, negative interfering effects of the 2008 Global
Financial Tsunami on real economic activities were limited. Therefore, we suggest that the economy may gradually recover during a short period of time (compared with the 1997 Asian Financial Crisis or the countries in Europe and America).

TABLE 1 Comparisons in the impacts on the 8 East Asian countries between the 1997 Asian Financial Crisis and 2008 Global Financial Tsunami

A. Currency Crisis

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<tr>
<td></td>
<td>Starting point</td>
<td>Maximum Pressure point</td>
</tr>
<tr>
<td>Japan(.754)</td>
<td>1998M04</td>
<td>1998M04</td>
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<tr>
<td>Korea(2.992)</td>
<td>1997M11</td>
<td>1997M12</td>
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<tr>
<td>Taiwan(1.759)</td>
<td>1997M08</td>
<td>1997M11</td>
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<tr>
<td>Singapore(1.293)</td>
<td>1997M10</td>
<td>1997M12</td>
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<tr>
<td>Indonesia(6.326)</td>
<td>1997M08</td>
<td>1997M08</td>
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<tr>
<td>Malaysia(1.769)</td>
<td>1997M05</td>
<td>1997M07</td>
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<tr>
<td>Philippines(4.527)</td>
<td>1997M07</td>
<td>1997M10</td>
</tr>
<tr>
<td>Thailand(2.699)</td>
<td>1997M02</td>
<td>1997M07</td>
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B. Banking Crisis

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<tr>
<td></td>
<td>Starting point</td>
<td>Maximum Pressure point</td>
</tr>
<tr>
<td>Japan(.551)</td>
<td>1997M05</td>
<td>1997M11</td>
</tr>
<tr>
<td>Korea(1.954)</td>
<td>1997M12</td>
<td>1997M12</td>
</tr>
<tr>
<td>Taiwan(.615)</td>
<td>no banking crisis occurred</td>
<td>no banking crisis occurred</td>
</tr>
<tr>
<td>Singapore(1.200)</td>
<td>1997M12</td>
<td>1997M12</td>
</tr>
<tr>
<td>Indonesia(3.038)</td>
<td>1997M08</td>
<td>1997M08</td>
</tr>
<tr>
<td>Malaysia(1.317)</td>
<td>1997M07</td>
<td>1997M07</td>
</tr>
<tr>
<td>Philippines(.955)</td>
<td>1997M10</td>
<td>1997M10</td>
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<tr>
<td>Thailand(1.275)</td>
<td>1997M02</td>
<td>1997M09</td>
</tr>
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Notes:
1. The unit in the table is percentage. The figures in the parentheses are the threshold values of the index of market pressure in the countries concerned.
2. The data is given by month. The period covers 1988M01-2009M01.

(4) The countries (e.g., Korea and Indonesia) with a large-scale currency crisis during the 1997 Asian Financial Crisis also experienced a currency crisis during the 2008 Global Financial Tsunami. It was argued that these countries were more vulnerable to speculative attacks due to their speculative anticipation, which indirectly led to a
currency crisis.

(5) The performance of Thailand was obviously better than many other countries during the 2008 Global Financial Tsunami. It may be because Thailand learned lessons from the 1997 Asian Financial Crisis and made major reforms to currency and financial policies since then.

Next, for further exploring and comparing the measures taken by the East Asian countries upon the occurrences of financial crises during different periods, Table 2 shows the percentage of each policy conducted under the maximum pressure in the 1997 Asian Financial Crisis and the 2008 Global Financial Tsunami, respectively. Panel A and B show the results of currency and banking crises, respectively. Korea, for example, faced the currency crisis to a maximum degree in 1997M12. Its index of foreign exchange market pressure is 15.199. The depreciation of the exchange rate reached 7.678 (which accounted for 50.50% of the policies). The changes in domestic and foreign interest rate differences came to 4.817 (which accounted for 31.70% of the policies). The result may imply that when speculative attacks occur in Korea, its government generally relied on the policy of depreciation of the exchange rate rather than interest rate policy. When Korea faced the banking crisis at its peak (1997M12), it took the measure of directly shifting funds to the banking system (which accounted for 75.10% of the policies).

According to the results shown in Table 2, several important findings are concluded:

(1) Taiwan generally implemented the policy of full currency depreciation while facing the currency crisis during the 1997 Asian Financial Crisis. The reverse fluctuation in interest rate differences against that in the U.S. and the increase in foreign reserves were also policies adopted to release the pressure imposed on the foreign exchange market (reducing foreign exchange pressure by 0.024 and 0.092, respectively). As to other countries, depreciation of the exchange rate, increase of interest rate differences and the release of foreign reserves were simultaneously conducted to eliminate abnormal excessive demands in foreign exchange.
### TABLE 2 Relative proportion of each policy taken by the East Asian countries during the peak of the financial crises

#### A. Currency Crisis

<table>
<thead>
<tr>
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<tbody>
<tr>
<td></td>
<td>Maximum Pressure point</td>
<td>( INDF_i )</td>
</tr>
<tr>
<td>Japan</td>
<td>1998M04</td>
<td>0.896</td>
</tr>
<tr>
<td>Korea</td>
<td>1997M12</td>
<td>15.199</td>
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<tr>
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<td>1997M11</td>
<td>2.283</td>
</tr>
<tr>
<td>Singapore</td>
<td>1997M12</td>
<td>3.890</td>
</tr>
<tr>
<td>Indonesia</td>
<td>1997M08</td>
<td>22.007</td>
</tr>
<tr>
<td>Malaysia</td>
<td>1997M07</td>
<td>5.325</td>
</tr>
<tr>
<td>Philippines</td>
<td>1997M10</td>
<td>10.213</td>
</tr>
<tr>
<td>Thailand</td>
<td>1997M07</td>
<td>7.917</td>
</tr>
</tbody>
</table>

Average policy proportion: 34.11% 36.16% 27.04% 41.93% 11.50% 46.55%

#### B. Banking Crisis

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<tbody>
<tr>
<td></td>
<td>Maximum Pressure point</td>
<td>( IMP_i )</td>
</tr>
<tr>
<td>Japan</td>
<td>1997M11</td>
<td>.780</td>
</tr>
<tr>
<td>Korea</td>
<td>1997M12</td>
<td>10.838</td>
</tr>
<tr>
<td>Singapore</td>
<td>1997M12</td>
<td>2.798</td>
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<tr>
<td>Indonesia</td>
<td>1997M08</td>
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<tr>
<td>Malaysia</td>
<td>1997M07</td>
<td>2.787</td>
</tr>
<tr>
<td>Philippines</td>
<td>1997M10</td>
<td>1.486</td>
</tr>
<tr>
<td>Thailand</td>
<td>1997M09</td>
<td>2.619</td>
</tr>
</tbody>
</table>

Average policy proportion: 36.96% 63.04%

Notes:
1. The unit for the numbers in the table is %. The figures in parentheses are the percentage of each policy accounted for the index of market pressure.
2. The numbers in the table refer to the countries with financial crisis during the 1997 Asian Financial Crisis and the 2008 Global Financial Tsunami.

(2) Each country relied on different policies when dealing with different types of crises.

Take a look at the countries which experienced banking crises during the 1997 Asian Financial Crisis. Indonesia, Philippines and Thailand mainly increased real interest rates (which accounted for 91.60%, 99.30% and 95.30%, respectively, of their policies). However, Korea and Malaysia took the measure of directly shifting funds to the banking systems (which accounted for 75.10% and 89.20% of their policies). The differences in policies adopted were also found in the countries (included Korea, Singapore, Indonesia and Malaysia) which experienced currency crises during the 1997 Asian Financial Crisis and the 2008 Global Financial Tsunami. These countries adjusted the interest rates to deal with the financial problems in the 1997 Asian Financial Crisis. During that time, the highest and lowest proportions of this policy are 78.9% and 31.7% in Indonesia and Korea,
respectively. However, the proportions of each country to adopt interest rate adjustment policy are all less than one percent during the 2008 Global Financial Tsunami (except for Malaysia). Governments in contrast preferred currency depreciation and foreign reserve release, which explained over 90 percent and at least 70 percent of the policies implemented during this period.

(3) On average, the East Asian countries focused on interest rate policy to combat currency crisis during the financial crisis (which on average accounted for 36.16% of their policies). However, the three policies shared a similar proportion. While facing the 2008 Global Financial Tsunami, the policies of depreciation of exchange rates and release of foreign reserve were adopted (which accounted for 41.93% and 46.55% of their policies, respectively). Such differences may be related to the policy of lowering interest rates (to keep a positive interest rate difference) by the 8 East Asian countries following the U.S. starting from mid and late 2008.

The results presented above mainly aim at pointing out the implications, impact level and measures taken in relevant to these two large-scale regional financial crises. Through the comparisons by period and by country, we believe that the influential period of the 2008 Global Financial Tsunami was shorter than that of the 1997 Asian Financial Crisis. Table 3, which presents the data of the relevant economic fundamentals in the 1997 Asian Financial Crisis and 2008 Global Financial Tsunami provides the evidence. In Table 3, FR denotes foreign reserves; M2 is the broad money supply; GDP is the gross domestic product; IM denotes imports; CA is the balance of the current account; ED denotes external debt; GDS denotes gross domestic savings (percentage of GDP); BLR and BA are banking liquid reserves and banking assets, respectively.

Krugman (1999) suggested that international illiquidity in a country’s financial system is the main cause of financial crises. A financial system is internationally illiquid if its short-term obligations exceed the amount of foreign currency to which it can have access at short notice (Chong et. al., 2008, p.1). If authorities don’t have enough foreign reserves, the financial system is highly vulnerable to speculative attacks (McKinnon & Pill, 1997; Miller, 2000; Bird & Rajan, 2003; Aizenman & Lee, 2007;
In light of this, column 1-4 in panel A and B of Table 3 present the indicators related to the foreign reserves, namely, the percentage of foreign reserves to M2 (FR/M2), the percentage of foreign reserves to GDP (FR/GDP), the foreign reserves to imports ratio (FR/IM) and the percentage of external debt to foreign reserves in turn. In addition, column 5-6 in panel A and B summarize the macroeconomic fundamentals, column 7 measures the solvency of banks, namely, the percentage of current account to GDP (CA/GDP) and the percentage of gross domestic savings (GDS) and the percentage of banking liquid reserves to banking assets, respectively.

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</thead>
<tbody>
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<td>4.44</td>
<td>0.61</td>
<td>NA</td>
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<td>0.93</td>
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<td>7.15</td>
<td>-2.43</td>
<td>35.37</td>
<td>1.91</td>
</tr>
<tr>
<td>Taiwan</td>
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<td>30.47</td>
<td>0.68</td>
<td>0.37</td>
<td>3.86</td>
<td>27.02</td>
<td>12.15</td>
</tr>
<tr>
<td>Singapore</td>
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<td>79.87</td>
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<td>0.17</td>
<td>-7.32</td>
<td>51.46</td>
<td>3.53</td>
</tr>
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<td>7.43</td>
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<td>31.48</td>
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<td>Malaysia</td>
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<td>2.27</td>
<td>-1.44</td>
<td>43.89</td>
<td>12.86</td>
</tr>
<tr>
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<td>6.95</td>
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<td>14.44</td>
<td>7.44</td>
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<tr>
<td>Thailand</td>
<td>24.35</td>
<td>19.83</td>
<td>0.49</td>
<td>4.19</td>
<td>-6.71</td>
<td>35.08</td>
<td>2.15</td>
</tr>
</tbody>
</table>

**Table 3 The Economic Fundamentals before Financial Crises**

**A. 1997 Asian Financial Crisis**

<table>
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</thead>
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<td>20.83</td>
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<td>1.32</td>
<td>27.7</td>
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<tr>
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<td>0.55</td>
<td>30.17</td>
<td>3.03</td>
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<tr>
<td>Taiwan</td>
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<td>70.64</td>
<td>1.25</td>
<td>0.31</td>
<td>5.47</td>
<td>28.65</td>
<td>17.03</td>
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<tr>
<td>Singapore</td>
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<td>97.08</td>
<td>0.59</td>
<td>0.15</td>
<td>18.52</td>
<td>49.96</td>
<td>2.73</td>
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<tr>
<td>Indonesia</td>
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<td>11.24</td>
<td>0.5</td>
<td>3.13</td>
<td>5.4</td>
<td>28.94</td>
<td>11.92</td>
</tr>
<tr>
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<td>0.62</td>
<td>0.83</td>
<td>18.3</td>
<td>42.2</td>
<td>3.22</td>
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<tr>
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<td>19.28</td>
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<td>2</td>
<td>-5.8</td>
<td>13.41</td>
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<tr>
<td>Thailand</td>
<td>32.54</td>
<td>35.29</td>
<td>0.57</td>
<td>0.6</td>
<td>1.24</td>
<td>35.76</td>
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</tbody>
</table>

**B. 2008 Global Financial Tsunami**

<table>
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<tbody>
<tr>
<td>Japan</td>
<td>10.32</td>
<td>20.83</td>
<td>1.46</td>
<td>2.21</td>
<td>1.32</td>
<td>27.7</td>
<td>2.36</td>
</tr>
<tr>
<td>Korea</td>
<td>37.23</td>
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<tr>
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<td>1.25</td>
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<td>5.47</td>
<td>28.65</td>
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<tr>
<td>Singapore</td>
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<td>97.08</td>
<td>0.59</td>
<td>0.15</td>
<td>18.52</td>
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<tr>
<td>Indonesia</td>
<td>28.22</td>
<td>11.24</td>
<td>0.5</td>
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<td>5.4</td>
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<tr>
<td>Malaysia</td>
<td>44.33</td>
<td>49.3</td>
<td>0.62</td>
<td>0.83</td>
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<td>42.2</td>
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<tr>
<td>Philippines</td>
<td>34.34</td>
<td>19.28</td>
<td>0.48</td>
<td>2</td>
<td>-5.8</td>
<td>13.41</td>
<td>15.87</td>
</tr>
<tr>
<td>Thailand</td>
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<td>35.29</td>
<td>0.57</td>
<td>0.6</td>
<td>1.24</td>
<td>35.76</td>
<td>2.68</td>
</tr>
</tbody>
</table>

**Notes:**
1. Variables are defined as follow: FR denotes foreign exchange reserves; M2 is the broad money supply; GDP is gross domestic product; IM denotes imports; CA is the balance of the current account. These variables are transferred into million dollars and provided by IFS. Furthermore, ED denotes external debt; GDS denotes gross domestic savings (percentage of GDP); BLR and BA are banking liquid reserves and banking assets, respectively. In addition to Taiwan’s variables from Financial Statistics Monthly Republic of China (Taiwan), the other variables are provided by World Development Indicators (WDI online). Fundamentals that reported by column 1-3 and 5 of panel A and B are three-year average before and crises occur, the unit is % (the unit of column 3 is ratio). Column 4 and 6-7 of panel A and B are the percentage of the year that crises occur.

2. The data is given by year.

Compare column 1-3 in panel A and B, the higher value of the indicators, the more the international liquidity. Also, the higher values of Column 4 in panel A and B imply more international illiquidity. It’s obvious that these Asian Countries (besides...
Singapore) were more international liquidity before the 2008 Global Financial Tsunami than before the 1997 Asian Financial Crisis (For example, in Taiwan, FR/M2 is 18.62 before 1997 and 33.58 before 2008. FR/GDP is 30.47 before1997 and 70.64 before 2008. FR/IM is 0.68 before1997 and 1.25 before 2008. ED/FR is 0.37 before 1997 and 0.31 before 2008). Both column 5 and 6 in panel A and B present the indicators on our measures of macroeconomic fundamentals. The negative values in column 5 represent current account deficit, otherwise, the positive ones represent current account surplus.

It’s not difficult to find that most of the countries’ current accounts have improved before the 2008 Financial Tsunami (five countries experienced current account deficit in 1997 and only one country did in 2008). Column 6 reports the gross domestic savings (percentage of GDP), but there were not significantly differences between the 1997 Asian Financial Crisis and the 2008 Financial Tsunami. Column 7 in panel A and B denotes BLR/BA, which can be applied to measure the ability of the banking system to deal with the risk of bank runs. Compare with column 7 in panel A and B, it can be found that the solvency of bank before 2008 of most Asian Countries are better than before 1997 (including Japan, Korea, Taiwan, Indonesia, the Philippines and Thailand).

Generally speaking, the results presented by Table 1-3, we can observe the differences between these two large-scale regional financial crises. Through the comparisons by period, by economic fundamental and by country, the information stated in a different direction is provided as reference.

**CONCLUSIONS**

According to the currency and banking crises defined by the modified index of foreign exchange and money market pressure in this paper, it is found that the eight East Asian countries faced the occurrence of currency crisis when the Asian Financial crisis happened in 1997-98. However, only four out of the eight countries (Korea, Singapore, Indonesia and Malaysia) faced currency crises in the 2008 Global Financial Tsunami while the other four countries (Japan, Taiwan, the Philippines and Thailand) did not. When the Asian Financial Crisis occurred in 1997, Taiwan was the only
country which did not have a banking crisis. However, these eight East Asian countries did not have banking crises during the 2008 Global Financial Tsunami. Therefore, it is obvious that the nature of the 2008 Global Financial Tsunami is different from that of the 1997 Asian Financial Crisis. The impacts fell on the foreign exchange markets instead of the money markets.

In addition to the difference of crisis nature mentioned above, it is also found that seven out of the eight East Asian countries (except Taiwan) concurrently had currency and banking crisis simultaneously while facing the 1997 Asian Financial Crisis, which is so called a twin-crisis. In general, a twin-crisis occurring in an economic entity can bring impacts far more serious than those brought by a single crisis, as Kaminsky & Reinhart (1999) call “vicious circles”. The 2008 Global Financial Tsunami only caused currency crises in four countries instead of banking crises in all the eight East Asian countries. Therefore, the impacts of the 2008 Global Financial Tsunami on the 8 East Asian countries are significantly less than those of the 1997 Asian Financial Crisis. It may be explained by the origin of the crisis: the 1997 Asian Financial Crisis originated in Thailand in East Asia and the 2008 Global Financial Tsunami started in the U.S. Different sources created different contagion pathways and further led to different contagion effects.

Furthermore, the East Asian countries hit by the 1997 Asian Financial Crisis still presented greater foreign exchange market pressure while facing the 2008 Global Financial Tsunami. The reason may be that the international speculators anticipated that the currency in these countries might be hit again. Speculators formed their predictions based on past experience showing that these countries were more vulnerable to currency crises. Then, they took the advantage of opportunity to profit through arbitrage. When such sentiment was stronger, these countries easily became the objects of speculative attacks. Thus, greater pressure was indirectly created on the foreign exchange markets.

Based on the index of money market pressure, the 2008 Global Financial Tsunami brought less dramatic influences on the supply of short-term financing capital in the banking system of East Asian markets. This is because the 1997 Asian Financial Crisis
was caused by currency crisis in Thailand and spread to other Eastern Asian countries through the contagion effect. Banks in these countries had difficulties in management due to the liability positions being created by dramatic currency devaluation during that period. Compare to the crisis in 2008, Eastern Asian countries were affected by global disorder in the financial markets which came from the liquidity problems of speculators who faced the banking crisis in the U.S. (Goldfajn & Valdes, 1995). What was different was that the banking systems in Asia were in much better shape than before and therefore there was no currency crisis this time. Another reason may be that a deposit insurance system had been provided since the 1997 Asian Financial Crisis. The depositors were not worried about the payment ability of banks. Therefore, depositors didn’t create bank runs on the slightest fear of bank insolvency. The capital resources of the banking system didn’t experience greater changes. Meanwhile, the nature of the 2008 Global Financial Tsunami was the economic recession in the U.S., so the effects brought on by it on East Asian countries were mainly on the real term (e.g. net exports, etc.). Only slight pressure was thus placed on the credit market.

As mentioned above, if we compare the East Asian markets with the European and American markets, the East Asian markets which were severely hit in 1997 were not seriously shocked by the 2008 Global Financial Tsunami. In addition, while certain banks in major economic entities in Europe and America were on the verge of bankruptcy, short-term financing was little affected in the East Asian banking systems. This may be due to improvements in the financial systems and actions taken to deal with the crisis after 1997. Furthermore, the 2008 Global Financial Tsunami had less impact on the eight East Asian countries. As a result, it is predicted that they will experience an upturn sooner and stronger than in America and the European countries. Further study in the future is expected to prove the above point of view.
REFERENCES


DATA APPENDIX

The data are monthly and the whole sample covers the period from 1988M01 to 2009M01. The eight East Asian countries, Japan, Taiwan, Korea, Singapore, Malaysia, Philippines, Thailand and Indonesia, are the sample countries.

(1) Exchange rate

The exchange rate is defined as the price of one U.S. dollar in terms of each different country’s domestic currency. Taiwan’s data are from AREMOS except 2008M12 to 2009M01 which are from the Directorate General of Budget, Accounting and Statistics (DGBAS). Data sources for the rest countries are from the IMF, *International Financial Statistics* (IFS line rf). Figure A-1 shows that East Asian countries studied in this paper experienced severe currency devaluations during both the 1997 Asian Financial Crisis and the 2008 Global Financial Tsunami with the exception of Japan. It also can be seen that East Asian countries’ currency values fluctuated more during the previous crisis.

![graph](image-url)

**FIGURE A-1** The exchange rate process in the 8 Asian countries
(2) Interest rate

The interest rates are the inter-bank lending rates and the differences are computed between each country and the U.S. Interest rates in Taiwan are from AREMOS except 2008M12-2009M01 which are from the DGBAS. Data sources for the rest countries are from the IMF, *International Financial Statistics* (IFS line 60b). Figure A-2 presents the interest rate differences between each East Asian country and the U.S., in which we can see that interest rates in Japan and Singapore are, most of the time, lower than those in the U.S. during the sample period. It is observed that the interest rate differences, except in Japan, are larger during the 1997 Asian Financial Crisis (if the interest rate difference is negative then it would tend toward zero) because of the attempt to ease the impact of the currency crisis. Similarly, the interest rate differences increased during the 2008 Global Financial Tsunami but not as severely as during the 1997 Asian Financial Crisis.

FIGURE A-2 The difference of interest rate process in the 8 Asian countries
(3) Foreign exchange reserve

The foreign exchange reserves are total reserves minus gold reserves. Taiwan’s data are from AREMOS except 2008M12 to 2009M01 which are from the DGBAS. Data sources for the rest countries are from the IMF, *International Financial Statistics* (IFS line 1L.d). Figure A-3 depicts the foreign exchange reserves in the eight East Asian countries, in which we can see that they all steadily increased. However, during some certain periods, these lines moved downward. During the 2008 Global Financial Tsunami, the foreign exchange reserves in Korea, Malaysia and Indonesia all declined sharply.

![Graph showing foreign exchange reserves in 8 Asian countries](image)

*FIGURE A-3 The foreign reserves process in the 8 Asian countries*
(4) Reserve-deposit ratio

In order to calculate the reserve-deposit ratio, we assume total reserves include demand deposits, time and saving deposits and foreign liabilities. Reserve-deposit is replaced by credit from Monetary Authorities. Taiwan’s data are from AREMOS. Others are from the IMF, *International Financial Statistics* (IFS line 24, 25, 26c and 26g. The data on credit from Monetary Authorities in Singapore are from the website of Singapore Central Bank.) Figure A-4 shows reserve-deposit ratios in eight East Asian countries. It can be seen that these lines go up substantially during the bank runs in which the depositors withdrew large amount or banks raised the amount of credit from Monetary Authorities. However, that did not seem to happen in these bank systems during the 2008 Global Financial Tsunami, which may be the result of the deposit insurance policy.

![Graph showing reserve-deposit ratios in 8 Asian countries](image)

**FIGURE A-4 The Lending-deposit rate ratio process in the 8 Asian countries**
(5) Real interest rate

The real interest rate is the difference between the nominal interest rate and the inflation rate. The nominal interest rate is the inter-bank lending rate. The inflation rate is the first derivative on the natural log of the Consumer Price Index (CPI). Taiwan’s CPI is from AREMOS except 2008M12-2009M01 which is from the DGBAS. Data sources for the rest of the countries are from the IMF, *International Financial Statistics*. Figure A-5 shows that the real interest rates of the eight East Asian countries. It can be seen that the real interest rates fluctuated before the 1997 Asian Financial Crisis.

![Graph showing real interest rates](image)

FIGURE A-5 The real interest rate process in the 8 Asian countries
Biographical Sketch

Kuo-Wei Chou is currently an Assistant Professor at Fo Guang University in Taiwan. He earned his M. S. degree and Ph.D. degree in Economics at National Taiwan University. His current research interests include macroeconomics, international finance, monetary economics and institutional economics.

Meng-Dao Wu is currently a Senior Assistant Research Fellow of the Financial & Monetary Division at National Policy Foundation in Taiwan. He earned his M. S. degree and Ph.D. degree in Economics at National Taipei University. His current research interests include macroeconomics, international finance and cross-strait financial cooperation.

Po-Chun Lin is currently a Ph.D. student of the Graduate School of International Business at National Chengchi University in Taiwan. She earned her M. S. degree in Economics at National Chengchi University. Her current research interests include international finance and monetary economics.
東亞八國在 2008 年全球性金融海嘯的表現

周國偉*
佛光大學經濟學系助理教授

吳孟道
國家政策研究基金會財金組高級助理研究員

林柏君
政治大學國際經營與貿易學系博士生

中文摘要

2008 年全球性金融海嘯嚴重衝擊全球經濟，東亞市場亦不能倖免。由於東亞國家曾歷經 1997 年亞洲金融風暴的洗禮，故比較並探索這兩次金融危機的差異，仍是經濟學家所關心的議題。我們透過外匯市場及貨幣市場壓力指標的分析，發現 2008 年全球性金融海嘯對東亞各國金融市場的投機性炒作程度遠低於 1997 年的亞洲金融風暴，而對經濟體系的衝擊程度亦然。明顯地，近期金融海嘯的性質異於過去的亞洲金融風暴。最後，本文的結果也將提供各國遭逢金融危機時的參考策略及展望。

關鍵詞：2008 全球性金融海嘯、亞洲金融危機、通貨危機、銀行危機、外匯市場壓力指標、貨幣市場壓力指標。

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