

THE ASIAN FINANCIAL CRISIS AND WARNING INDICATORS – THEN AND NOW

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This paper presents data on the financial crisis in East Asia that started in Thailand in July 1997 and then spread to other emerging Asian economies and the rest of the world, and the warning indicators that were used to predict that crisis. The causes of the current financial and economic crisis in Asia are then examined as well as the reason that the same indicators could not predict the current Asian crisis. Basically, Asian economies introduced significant structural changes after the 1997–1998 crisis, which prevented a crisis similar to the one that afflicted them in 1997–1998. The current financial crisis in Asia was imported from abroad and resulted from a contagion from the financial and economic crisis in the United States and other advanced nations when they sharply cut their imports and reduced their capital exports to Asian countries and other emerging market economies.

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I. INTRODUCTION

The world is now in the midst of the deepest financial and economic crisis since the Great Depression of 1929. The crisis started in the U.S. sub-prime mortgage market in 2006, it spread to the entire U.S. financial system in 2007, and from there it spread to the U.S. real economy and the rest of the world in 2008. This is the first global financial crisis of the 21st century.

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The paper begins by presenting data on the financial crisis in East Asia that started in Thailand in July 1997 and the warning indicators that were used to predict that crisis. Then the paper examines the causes of the current financial and economic crisis in Asia and why the same indicators could not predict the current crisis.

II. THE 1997 FINANCIAL CRISIS IN EAST ASIA

The 1997 financial crisis in East Asia started with the devaluation of the Thai Baht on July 2nd 1997.¹ At the time, few anticipated that the crisis would become so deep, widespread, and long lasting. By fall 1997, the crisis had spread to Korea, Indonesia, Malaysia, and the Philippines.² Although Singapore, Hong Kong, and Taiwan did not collapse, they were also deeply affected.³ With more regulated financial and economic systems, China and India were less affected.⁴ In summer 1998, the crisis spread to Russia, which suffered a complete financial, economic, and political collapse – and from there it infected Latin America, and in particular Brazil.⁵ A financial collapse of Brazil was probably averted in fall 1998 only as a result of the large IMF loan to Brazil.⁶ Calm returned in 1999 and the recovery from the crisis was generally complete by the year 2000.⁷

Tables 1 and 2 provide evidence of the 1997-98 financial crisis in East Asia. Table 1 shows the negative or sharp decline in the rate of growth of real GDP while Table 2 shows the

¹ Dominick Salvatore, *Could the Financial Crisis in East Asia Have Been Predicted?* 21 J. OF POL'Y MODELING 341, 341 (1999).

² Derrick Reagle & Dominick Salvatore, *Forecasting Financial Crisis in Emerging Market Economies*, 11 OPEN ECON. REV. 247, 247 (2000).

³ *Id.*

⁴ *Id.* at 255.

⁵ *Id.*

⁶ Nouriel Roubini & Brad Setser, BAILOUT OR BAIL-INS? RESPONDING TO FINANCIAL CRISES IN EMERGING ECONOMIES 9 (Peter G. Peterson Inst. for Int'l Econ. ed., 2004).

⁷ Reagle & Salvatore, *supra* note 2, at 255.

decline in stock markets and the currency depreciations in 1997-98. From the tables, we see that the crisis was most serious and deep in Thailand, Korea, Indonesia, Malaysia and the Philippines. Hong Kong SAR, Singapore, and Taiwan PC were much less affected (although Hong Kong suffered a shared decline in real GDP in 1998), and even less so China and India. The crisis in these last five economies resulted mostly from contagion from the former five countries rather than from internal economic and financial mismanagement and excesses (as was the case for Thailand, Korea, Indonesia, Malaysia and the Philippines).⁸

Table 1
Growth of Real GDP, 1995-1998

REGION/COUNTRY	1995	1996	1997	1998
Asia				
Thailand	8.8	5.5	-1.3	-9.4
Korea	8.9	6.8	5.0	-5.8
Indonesia	8.2	8.0	4.7	-13.7
Malaysia	9.4	8.6	7.7	-6.7
Philippines	4.7	5.8	5.2	-0.5
Hong Kong SAR	3.9	4.5	5.3	-5.1
Singapore	8.2	7.5	9.0	0.3
Taiwan (PC)	6.0	5.7	6.8	4.9
China	10.5	9.6	8.8	7.8
India	8.0	7.4	5.5	5.8
Africa	3.0	5.9	3.1	3.4
Central/Eastern Europe	1.6	1.6	3.0	2.2
CIS (Russia)	-4.4	1.6	2.5	2.2
Middle East	3.7	4.7	4.5	3.2
Western Hemisphere	1.5	3.6	5.3	2.2
Advanced Economies	2.6	3.2	3.2	2.2
WORLD	3.8	4.3	4.2	2.5

*=Forecast.

Source: Int'l Monetary Fund [IMF], *World Economic Outlook* (Oct. 1999).

⁸ Salvatore, *supra* note 1, at 283.

Table 2
Percentage Change in Stock Prices and Currency Depreciation
in Asian Economies, 1997-1998

ECONOMY	% CHANGE IN STOCK PRICES IN U.S. DOLLARS, 1 MAY 1997 TO 1 MAY 1998	PERCENTAGE DEPRECIATION OF LOCAL CURRENCY WITH RESPECT TO U.S. DOLLAR, 22 APRIL 1997 TO 22 APRIL 1998
Thailand	-55.6	51.1
Korea	-54.9	54.3
Indonesia	-76.7	229.1
Malaysia	-62.5	51.4
Philippines	-44.3	45.2
Hong Kong SAR	-26.2	0.4
Singapore	-30.0	10.3
Taiwan (PC)	-16.7	20.3
China	N/A	11.2
India	N/A	0.4

N/A = not available.

Source: IMF, *World Economic Outlook*, Ch. II (Oct. 1999) and IMF, *International Financial Statistics* (June 1998-99).

III. THE WARNING INDICATORS OF THE 1997 FINANCIAL CRISIS IN EAST ASIA

From 1996 to 1999 a large number of studies were published that tried to identify various macroeconomic and financial indicators that might have predicted the crisis, and many more were published afterwards.⁹ A very large number of indicators were tried, but only a few fundamental ones work best and predicted or could have predicted the 1997 East Asian crisis.¹⁰ In this paper we want to go back to these fundamental warning indicators to see if they could have predicted the current Asian financial crisis. These warning indicators are: (1) the current account deficit as a percentage of GDP; (2) the long-term debt as a percentage of GDP; (3) the short-term debt as a percentage of GDP; (4) the current account minus foreign direct investments as a percentage of GDP; (5) the debt service in relation to the nation's exports, and (6) the number of months of imports that the nation can finance with its international reserves. Let us briefly examine each of these warning indicators and define approximate critical values for each.

(1) The first fundamental warning indicator is the current account deficit. A current account deficit larger than 4-5 percent of GDP is generally regarded as unsustainable and can lead to turmoil in foreign exchange markets, devaluation of the nation's currency, and general

⁹ See Reberto Chang & Andres Velasco, *Financial Crises In Emerging Markets: A Canonical Model* (Fed. Res. Bank, Working Paper No. 98-10, 1998); Giancarlo Corsetti, Paolo Pesenti & Nouriel Roubini, *What Caused the Asian Currency and Financial Crisis? Part I A Macroeconomic Overview* (Nat'l Bureau of Econ. Research, Working Paper No. 6833, 1998); Jeffrey A. Frankel & Andrew K. Rose, *Currency Crashes In Emerging Markets: Empirical Indicators* (Nat'l Bureau of Econ. Research, Working Paper No. 5437, 1996); IMF, *World Economic Outlook* (Oct. 1999); Graciela L. Kamiski, *Currency and Banking Crises: The Early Warning of Distress*, (Board of Governors of Fed. Res. Sys., Int'l Fin. Discussion Papers No. 629, 1998); Graciela Kaminski, Saul Lizondo & Carmen M. Reinhart, *Leading Indicators of Currency Crises* IMF Western Hemisphere Department (1997); and more recently, Swati R. Ghosh & Atishi R. Ghosh, *Structural Vulnerabilities and Currency Crises*, 50 IMF STAFF PAPER 481 (2003), Marcelle Chauvet & Fang Dong, *Leading Indicators of Country Risk and Currency Crises: The Asian Experience*, 89 FED. RESERVE BANK OF ATLANTA ECON. REV. 25 (2004) (noting articles that analyzed macroeconomic and financial indicators in predicting the financial crisis).

¹⁰ Reagle & Salvatore, *supra* note 2, at 247. See also Derrick Reagle & Dominick Salvatore, *Robustness of Forecasting Financial Crises In Emerging Market Economies with Data Revisions – A Note*, 16 OPEN ECON. REV. 209 (2005).

financial and economic crisis.¹¹ In 1996, the current account deficit as a percentage of GDP was 7.9 for Thailand, 4.9 for Malaysia, 4.8 for Korea, 4.7 for the Philippines, and 3.3 for Indonesia.¹² For the major Asian countries less affected by the 1997 crisis, Hong Kong and India had current accounts deficits as a percentage of GDP of 3.9 and 1.6, respectively, while Singapore, Taiwan, and China had current accounts surpluses (respectively, of 13.9, 10.9, and 0.9 as a percentage of GDP).¹³ Thus, the current account deficit in 1996 correctly signaled a crisis to come in four out of the five East Asian countries (Thailand, Korea, Malaysia and the Philippines) that in fact fell into crisis the following year (i.e., in 1997). The exception was Indonesia.¹⁴ These warning indicators also correctly signaled *no* crisis in the other countries that in fact did not fall into crisis in 1997 (Hong Kong, Singapore, Taiwan, China, and India).¹⁵

(2) The second warning indicator is the size of the nation's total foreign debt as a percentage of the nation's GDP. Experience indicates that any value above 30 percent or so can spell future trouble if the nation is unable to service and eventually repay the debt.¹⁶ The size of this indicator was 59.7 percent for Indonesia, 50.3 percent for Thailand, 47.3 percent for the Philippines, and 42.1 percent for Malaysia, and 32.1 percent for Korea.¹⁷ Hong Kong and Singapore had no external debt in 1996.¹⁸ There is no data for Taiwan, but it very likely also had no external debt in 1996, while the external debt as a percentage of GDP was only 15.8 for China

¹¹ Salvatore, *supra* note 1, at 343.

¹² *Id.*

¹³ *Id.*

¹⁴ *See id.* (showing Indonesia's account deficit to be under 4 percent, which partly explains why Indonesia did not experience an economic crisis).

¹⁵ IMF, *International Financial Statistics* (1998), Ch. IV; World Bank, *Global Development Finance* (1998), Ch. 2.

¹⁶ *Id.*; Reagle & Salvatore, *supra* note 2, at 248.

¹⁷ *Id.*

¹⁸ Giancarlo Corsetti, Paolo Pesenti & Nouriel Roubini, *What Caused the Asian Currency and Financial Crisis? Part I: A Macroeconomic Overview*, 32 (Nat'l Bureau of Econ. Research, Working Paper No. 6833, 1998).

and 22.5 for India.¹⁹ Thus, this indicator correctly indicated in 1996 the possibility of financial and economic crisis in the five East Asian countries that actually fell into crisis in 1997, and also correctly indicated *no* crisis for those economies that did not face the crisis.

(3) The third indicator is the percentage of the short-term debt to GDP. Experience also shows that any value for this indicator above 8-10 percent can easily lead a country to financial difficulty because of the ease and speed with which this type of foreign capital can be withdrawn from the nation.²⁰ In 1996, this percentage was 27.7 for Malaysia, 20.8 in Thailand, 14.9 in Indonesia, 10.3 in Korea, and 9.1 in the Philippines, but zero for Hong Kong and Singapore (and very likely for Taiwan) and only 7.5 for India but 19.7 for China.²¹ Thus, this indicator also signaled in 1996 potential troubles down the road for the five East Asian countries that did fall into crisis in 1997. Only for China did this indicator predict a crisis that did not come.

(4) The fourth fundamental warning indicator of a potential financial crisis is the current account minus foreign direct investments as a percentage of GDP. A negative value for this indicator measures the portion of the nation's current account (as a percentage of the nation's GDP) financed by portfolio investment or "hot money" inflows.²² These can just as easily and quickly flow out and plunge the nation into a financial crisis. Past experience shows that any value of this indicator in excess of negative 2 or 3 percent of GDP (the current account deficit minus the FDI inflow as a percentage of GDP) can lead to future trouble for the nation.²³ The value for these indicators in 1996 was -21.7 for Korea, -5.6 for Thailand, -3.1 for the

¹⁹ *Id.*

²⁰ Reagle & Salvatore, *supra* note 2, at 249. *E.g.*, Graciela Kaminsky, Saul Lazondo, & Carmen M. Reinhart, *Leading Indicators of Currency Crisis* 4, 41 (IMF Working Paper No. 79, 1997) (explaining the general methodology and efficacy of indicators that signal crises).

²¹ *Id.*

²² Dominick Salvatore, *Capital Flows, Current Account Deficits, and Financial Crises in Emerging Market Economies*, 12 INT'L TRADE J. 4, 12 (1998).

²³ Reagle & Salvatore, *supra* note 2, at 249.

Philippines, but +0.7 for Malaysia and +3.0 for Indonesia, as well as +0.7 for India, +23.6 for Singapore, and +51.1 for China.²⁴ This means that in 1996 this indicator correctly predicted the crisis in three (Korea, Thailand, and the Philippines) of the five East Asian countries that actually faced a crisis in 1997. It also correctly predicted *no* crisis for the other Asian economies (Singapore, China, and India; no data was available for Hong Kong and Taiwan) that in fact did not face the crisis.

(5) The fifth indicator is the debt service on the foreign debt of the nation as a percentage of the nation's export earnings. The larger the proportion of the nation's export earnings needed to service its foreign debt, the more precarious is the position of the nation since there are many other development claims on its foreign earnings.²⁵ For example, in the years before the 1997 Asian crisis, Thai and Malaysian banks had borrowed heavily in dollars on the inter-bank market and were unable to repay when the crisis erupted.²⁶ There are no clear-cut figures for the value of this indicator signaling possible financial difficulties for the nation. The value of this indicator in 1994 when Mexico got into trouble in 1995 was 28.1 percent.²⁷ Only Indonesia had a higher value for this indicator in 1996 (36.8 percent).²⁸ The other four East Asian countries that fell into crisis in 1997 had much lower values in 1996, so that this indicator, by itself, could not have been taken as a sign of potential future financial problems for these nations. The value of this indicator was zero for Korea, Hong Kong and Singapore, 8.2 for Malaysia, 11.5 for Thailand, 13.7 for the Philippines, 24.1 for India, and 32.3 for China.²⁹ No data was available for Taiwan.

²⁴ *Id.*

²⁵ *Id.*

²⁶ *Id.*

²⁷ *Id.*

²⁸ *Id.*

²⁹ *Id.*

(6) The last warning indicator of potential financial crisis in an emerging market is the average number of months of imports the nation could finance with the international reserves at its disposal. This indicator is particularly relevant under a fixed exchange rate regime. A value smaller than 3 or 4 can be regarded as dangerously low and a clear warning signal of possible future financial problems.³⁰ Of the five East Asian countries that actually faced a crisis in 1997, only the Philippines had a lower value for this indicator in 1996 (2.8 percent).³¹ In 1996, Indonesia had a value of this indicator of 4.4, Thailand 7.0, Malaysia 7.2, and Korea 14.6.³² The value of this indicator was 3.9 for Hong Kong, 4.4 for India, 11.9 for Singapore, and 12.8 for China.³³ Thus, this indicator predicted a crisis only in Indonesia and maybe Hong Kong. No data was available to Taiwan.

Table 3 summarizes the performance of each indicator in 1996. It incorrectly predicted the crises that actually occurred in five East Asian countries (Thailand, Korea, Indonesia, Malaysia, and the Philippines) in 1997 while correctly predicting the other major Asian economies (Hong Kong, Singapore, China, and India) that avoided a serious crisis. As we can see from the table, the total external debt as a percentage of GDP (EDT/GDP) indicator (2) performed perfectly (being correct 9 out of nine times); the current account (CA/GDP) indicator (1) and the short-term external debt (EDS/GDP) indicator (3) performed almost as well (being correct 8 out of nine times), while the remaining three warning indicators (((CA-FDI)/GDP), DS/X, and RES/M) did not perform as well (being correct, 6, 3, and 4 times, respectively). All in all, we can say that the warning indicators (especially the first three) performed reasonably

³⁰ *Id.*

³¹ IMF, *International Financial Statistics* (2008).

³² *Id.*

³³ *Id.*

well in correctly predicting a crisis in those countries where the crisis did actually occur, while at the same time correctly predicting no crisis in those countries that did not face a serious crisis.

Table 3

Warning Indicators in 1996 that Correctly Predicted the 1997 Asian Financial Crisis and Those that Correctly Predicted no Crisis

CORRECTLY PREDICTED CRISIS	(1) CA/GDP	(2) EDT/GDP	(3) EDS/GDP	(4) (CA-FDI)/GDP	(5) DS/X	(6) RES/M
Thailand	√	√	√	√	x	x
Korea	√	√	√	√	x	x
Indonesia	x	√	√	x	√	x
Malaysia	√	√	√	x	x	x
Philippines	√	√	√	√	x	√
Total	4	5	5	3	1	1
CORRECTLY NOT PREDICTED CRISIS						
Hong Kong SAR	√	√	√	N/A	√	x
Singapore	√	√	√	√	√	√
China	√	√	x	√	x	√
India	√	√	√	√	x	√
Total	4	4	3	3	2	3
Overall Total	8	9	8	6	3	4

Legend: GDP=Gross Domestic Product; CA=Current Account; EDT=Total External Debt; EDS=Short-Term External Debt; FDI=Foreign Direct Investments; RES=International Reserves; DS=Debt Service Payments; X=Exports of Goods and Services of the Nation in the Year; M=Imports of Goods and Services (average monthly value); N/A = not available; x = wrong prediction.

Source: IMF, *International Financial Statistics* (June 1998-99), World Bank, *World Bank Report* (1998) and World Bank, *World Development Indicators* (1998).

It is crucial to note is that the efforts to identify a much larger number of more refined and esoteric early warning indicators of potential future financial crises in emerging market

economies generally proved to be futile and unnecessary. All that their efforts provided was a large number of additional but *crisis-specific indicators* of little general value and usefulness. Furthermore, the six warning indicators presented and used above are very easy to measure and broad enough to encompass many other indicators and less general ones.

For example, a great deal of effort is made to measure the degree by which an emerging market currency might be overvalued. But many emerging market economies deliberately keep their exchange rate overvalued so as to attract foreign capital as the counterpart of the current account deficit. Thus, measuring the degree of possible overvaluation of the nation's currency does not provide the type of market information that is being sought. It is only if the overvaluation is so large as to result in an unsustainable current account deficit that the nation may get into difficulty. But this is exactly what our first or current account deficit as a fundamental warning indicator tells us.

To be sure, no one can predict a crisis or its timing with certainty. The above warning indicators (especially the first three), however, do seem to provide rough but useful early signals that a nation is heading for a crisis. Some economists³⁴ use two additional warning indicators as predictors for financial crises in Latin America. These are the rate of savings of the nation as a percentage of GDP and the budget deficit as a percentage of GDP. A rate of national savings too low in relation to the investment opportunities and needs of an emerging economy can attract enough capital from abroad to fill the shortfall. Too large a capital inflow, however, can lead to trouble if it then is quickly withdrawn at the first sign of trouble in the nation. This is precisely what happened in Mexico in 1994, which led to the 1995 crisis in the nation. Similarly a budget

³⁴ See Salvatore, *supra* 21 (highlighting Salvatore's work that includes two additional factors, the rate of savings of the nation and budget deficit, in analyzing the financial crisis).

deficit much larger than 3-4 percent of GDP can also lead to excessive borrowing abroad and a crisis. This is in fact what got Brazil in deep trouble in 1998.³⁵

But inadequate savings and excessive and unsustainable budget deficits were not the cause of the 1997-98 crisis in East Asia. In fact, Asian countries (especially China and except for the Philippines and India) generally save more than enough for their internal investment needs and export a great deal of capital. Similarly, Asian countries do not have excessive budget deficits and some have even surpluses. Therefore, savings and budget deficits did not need to be used as fundamental warning indicators of possible crisis for Asian countries – the countries of interest in this paper.

IV. THE 2008 FINANCIAL CRISIS

The recent global financial crisis was evidenced, among other things, by the sharp decline in growth rates in 2008 and negative growth rates in 2009 in most countries and regions of the world.³⁶ Thailand, Korea, and Malaysia faced negative growth in 2009, but Hong Kong, Singapore and Taiwan fared even worse with growth rates, respectively of -4.5, 10.0, and -7.5.³⁷ Although both China's and India's growth rates were lower in 2009 than in 2008, they remained relatively high.³⁸ Table 5 shows that stock markets declined more or less by the same percentages in 2009 as in 1998, but the currencies of most Asian economies did not depreciate as much (with the Hong Kong dollar, the Singapore dollar, and the Chinese yuan actually appreciating in 2009).³⁹

³⁵ See Salvatore, *supra* 1, at 346.

³⁶ IMF, *World Economic Outlook* at 71-75 (Apr. 2009).

³⁷ *Id.*

³⁸ *Id.*

³⁹ *Id.*

Table 4
Growth of Real GDP, 2006-2009

REGION/COUNTRY	2006	2007	2008	2009*
Asia				
Thailand	5.2	4.9	2.6	-3.5
Korea	5.2	5.1	2.2	-1.0
Indonesia	5.5	6.3	6.1	4.0
Malaysia	5.8	6.2	4.6	-3.6
Philippines	5.3	7.1	3.8	1.0
Hong Kong SAR	7.0	6.4	2.4	-3.6
Singapore	8.4	7.8	1.1	-3.3
Taiwan (PC)	4.8	5.7	0.1	-4.1
China	11.6	13.0	9.0	8.5
India	9.8	9.4	7.3	5.4
Africa	6.1	6.3	5.2	1.7
Central/Eastern Europe	6.6	5.5	3.0	-5.0
CIS (Russia)	8.4	8.6	5.5	-6.7
Middle East	5.8	6.2	5.4	2.0
Western Hemisphere	5.7	5.7	4.2	-2.5
Advanced Economies	3.0	2.7	0.6	-3.4
WORLD	5.1	5.2	3.0	-1.1

*=Forecast.

Source: IMF, *World Economic Outlook* (Oct. 2009).

Table 5
Percentage Decline in Stock Prices and Currency Depreciation
in Asian Economies, January 1 to January 31, 2008

ECONOMY	% CHANGE IN STOCK PRICES IN U.S. DOLLARS	PERCENTAGE DEPRECIATION OF LOCAL CURRENCY WITH RESPECT TO U.S. DOLLAR
Thailand	-47.6	3.5
Korea	-40.7	23.7
Indonesia	-50.6	16.3
Malaysia	-39.4	4.8
Philippines	-48.3	14.7
Hong Kong SAR	-48.3	-0.7
Singapore	-49.2	-0.1
Taiwan (PC)	-46.0	N/A
China	-65.4	-6.4
India	-52.4	22.9

N/A = not available. Negative exchange rate changes refer to appreciations.

Source: IMF, *World Economic Outlook* Ch. II (Oct. 1999) and IMF, *International Financial Statistics* (June 2008-09).

V. WARNING INDICATORS AND THE 2008 FINANCIAL CRISIS IN ASIA

Table 6 shows the growth of real GDP from 2006 to 2009 (2009 forecasted) for the individual Asian countries of interest, as well as other groups of countries, and for the world as a whole. We saw in Section 3 that a current account deficit as a percentage of GDP (CA/GDP) in excess of 4-5 percent is one warning indicator that a crisis may be imminent. From Table 6, we see that all countries, except India, had a surplus in the current account and CA/GDP was only -1.0 for India.⁴⁰ Thus, according to this indicator, no crisis was imminent in any of the 11 Asian countries shown in the table.

⁴⁰ *Id.*; World Bank, *World Bank Report* (2009); World Bank, *World Development Indicators* (2009).

Table 6

Warning Indicators in 2007 of the 2008-9 Financial Crisis in Asian Countries

ECONOMY	(1) CA/GDP	(2) EDT/GDP	(3) EDS/GDP	(4) (CA-FDI)/GDP	(5) DS/X	(6) RES/M
Thailand	5.7	25.7	8.8*	10.3	8.1	13.6
Korea	0.6	0.0	0.0	0.8	0.0	36.1
Indonesia	2.4	32.5*	8.1*	4.0	10.5	9.1
Malaysia	15.4	28.8	8.2*	20.0	4.6	13.9
Philippines	4.9	45.7*	4.9	6.0	13.7	5.4
Hong Kong SAR	12.3	0.0	0.0	25.0	0.0	4.5
Singapore	23.5	0.0	0.0	38.4	0.0	27.2
Taiwan PC	8.6	N/A	N/A	N/A	N/A	N/A
China	11.0	11.7	3.7	53.8	10.0	86.2
India	-1.0	18.8	6.4	0.9	2.2	23.5

Legend: GDP=Gross Domestic Product; CA=Current Account; EDT=Total External Debt; EDS=Short-Term External Debt; FDI=Foreign Direct Investments; RES=International Reserves; DS=Debt Service Payments; X=Exports of Goods and Services of the Nation in the Year; M=Imports of Goods and Services (average monthly value); N/A = not available; * = Indicators predicting the possibility of a future crisis.

Source: IMF, *International Financial Statistics* (2009) and World Bank, *World Bank Report* (2009) and World Bank, *World Development Indicators* (2009).

We also saw in Section 3 that a value of total external debt as a percentage of GDP (EDT/GDP) above 30 percent can spell future trouble if the nation is unable to service and eventually repay the debt. From Table 6, out of the ten Asian countries, only Indonesia and the Philippines scored above 30. The third indicator is the percentage of the short-term debt to GDP. Experience showed that any value for this indicator above 8-10 percent could easily lead a country to financial difficulty because of the ease and speed with which this type of foreign capital can be withdrawn from the nation.⁴¹ This third warning indicator predicted a crisis only for Indonesia and Malaysia (but only in a borderline way).

⁴¹ *Id.*

The fourth warning indicator is the current account minus foreign direct investment as a percentage of GDP or $(CA-FDI)/GDP$. If more than 2 or 3 percent of a current account deficit is not covered by an inflow of foreign direct investment, the country may face a future financial crisis. However, we see from Table 6 that, contrary to the situation in 1996 when most Asian countries had large current account deficits, in 2007 all economies (except India) had large current account surpluses (so that no FDI inflows were needed to cover CA deficits). For India, the FDI inflows exceeded the current account deficit. Since this indicator was positive for all Asian countries in Table 6, none of them seem to face a future financial crisis.

From Table 6, we see that the fifth indicator (the debt service on the foreign debt of the nation as a percentage of the nation's export earnings or DS/X) did not exceed 28.1 percent (reached in Mexico in 1994 that correctly predicted that the Mexicans were in no danger of a crisis) in any of the countries in Table 6. Thus, according to this indicator Asian countries did seem to face the danger of a subsequent crisis.

Finally, the sixth warning indicator (the average number of months of imports that the nation could finance with the international reserves at its disposal or RES/M) exceeded 3 or 4 for all Asian countries in Table 6. This also indicates that there is no danger of a future financial crisis in these countries.

VI. STRUCTURAL CHANGES, WARNING INDICATORS, AND THE CURRENT ECONOMIC CRISIS IN ASIA

From the above, it seems that Asian countries should not have fallen into a crisis in 2008 and 2009. But they did. This, however, does not mean that the warning indicators are not useful. As we have seen in Section 3 above, our warning indicators did a remarkably good job at predicting the crisis in those Asian countries that did in face a crisis in 1997-98, while at the same time (and for the most part) correctly predicting no crisis in those Asian economies that did not face the crisis in 1997-98. But our warning indicators are useful in predicting a crisis of domestic or internal origin—that is, when the nation faces serious structural problems, such as excessive and unsustainable trade deficits, over-borrowing (especially of financial capital) and other financial excess.

The current Asian crisis, however, has an entirely different origin. It resulted when advanced nations got into trouble and faced deep recession and as a result sharply cut their imports from and their capital exports to emerging markets.⁴² Contagion, not internal structural imbalances, caused Asian economies to also face the current crisis. Most Asian economies seem to have learned the hard lesson from the 1997-98 crisis and restructured their economies to avoid excessive trade deficits, over-borrowing (especially of short-term volatile financial capital) and other financial excesses, and sharply reduced their carry-on trade.⁴³ These were not the causes of the present Asian crisis. As a repercussion of and contagion from the crisis in advanced

⁴² IMF, *supra* note 35.

⁴³ The carry-on trade refers to the situation where the nation's financiers and investors borrow short-term funds in foreign currencies, such as dollars and yen, at the prevailing low interest rates abroad, and then invest those funds in the real estate and other long-term investment at huge profits. If, however, the domestic currency depreciates as a result of excessive and unsustainable trade deficits and borrowing, the investors are unable to repay their foreign loans denominated in foreign currencies, banks fail or stop lending, what started out as a financial crisis becomes a crisis of the real estate sector, dragging the economy into recession. This is in fact an important cause of the 1997-8 East Asian crisis.

countries, the crisis currently facing Asian economies is both much less severe than in 1997-98 and less severe than the crisis currently facing advanced economies countries.⁴⁴

Table 7 shows the sharp reduction in the exports of Asian economies from the first quarter of 2008 to the first quarter of 2009 and the reduction in portfolio investment inflows into Asian Economies from 2007 to 2008 (more recent data were not available when this paper was written). “Portfolio investments” refer to the foreign purchase of equity and debt securities of Asian economies, with negative values referring to reductions in portfolio investments inflows.

The table shows the huge percentage reductions in the exports of Asian economies (except for China, which experienced a small increase), resulting mostly from the recession in advanced countries. This also led to the sharp reduction in the growth rates of Asian economies – the contagion – in 2008. The imports of Asian countries also declined as a result of their reduced growth and so their current account did not deteriorate as much as otherwise and remained mostly positive. The other source of contagion was the reduced outflow of portfolio investments to Asian economies and other emerging markets from advanced countries when they fell into deep crisis.⁴⁵

Table 7

Change in Exports and Portfolio Investments in Asian Economies in 2008

ECONOMY	% DECLINE IN EXPORTS I-2008 TO I-2009	CHANGE IN PORTFOLIO INVESTMENT INFLOWS AS % OF GDP FROM 2007 TO 2008
Thailand	-17.1	-2.6
Korea	-33.1	-7.1
Indonesia	-44.6	-1.6
Malaysia	-24.8	N/A

⁴⁴ IMF, *supra* note 35, at 73.

⁴⁵ *Id.* at 73.

Philippines	-14.5*	-5.2
Hong Kong SAR	-27.4	-45.2
Singapore	-37.8	-1.8
Taiwan (PC)	N/A	N/A
China	4.2	-0.3
India	-5.6	-0.2

*=IV-2007 to IV-2008.

Source: IMF, *International Financial Statistics* (2009).

The negative trade effect on Asian economies, however, was much stronger than the portfolio investment effect, except for Hong Kong.⁴⁶

VII. CONCLUSIONS

This paper presented data on the 1997-98 financial crisis in East Asia and the warning indicators that were used to predict that crisis. Then this paper examined the causes of the current financial and economic crisis in Asia and why the same indicators could not predict the current crisis. Essentially, Asian economies introduced basic structural reforms in their economic systems after the 1997-98 crisis and this prevented the recurrence of a *similar* crisis in their economies. The paper showed that the current crisis was entirely of foreign origin and resulted primarily from the sharp reduction in the imports of advanced countries from emerging markets, as well as capital exports from the former to the latter, when advanced countries fell into a deep crisis in 2008. In short, warning indicators are useful in predicting crises resulting from domestic or internal causes, such as unsustainable trade deficits, excessive borrowing, and other financial excesses (which were in fact the cause of the financial crisis in East Asia in 1997-98) and not when the crisis is caused by contagion from abroad. World economic leaders are

⁴⁶ IMF, *International Financial Statistics* (2009). See Table 7 (contrasting change in portfolio investment inflows as a percentage of GDP in the select Asian economies from 2007 to 2008 with percentage decline in total exports of the same economies between 2008 and 2009, though it is unobvious from relative percentages what the comparative “net effect” of each might be in dollar terms on an actual economy).

now meeting to see how to reform the financial sector in advanced countries and the architecture of the entire world economic system to prevent similar global crises in the future and to restart rapid growth in the world economy.

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Table 1

Growth of Real GDP, 1995-1998

REGION/COUNTRY	1995	1996	1997	1998
Asia				
Thailand	8.8	5.5	-1.3	-9.4
Korea	8.9	6.8	5.0	-5.8
Indonesia	8.2	8.0	4.7	-13.7
Malaysia	9.4	8.6	7.7	-6.7
Philippines	4.7	5.8	5.2	-0.5
Hong Kong SAR	3.9	4.5	5.3	-5.1
Singapore	8.2	7.5	9.0	0.3
Taiwan (PC)	6.0	5.7	6.8	4.9
China	10.5	9.6	8.8	7.8
India	8.0	7.4	5.5	5.8
Africa	3.0	5.9	3.1	3.4
Central/Eastern Europe	1.6	1.6	3.0	2.2
CIS (Russia)	-4.4	1.6	2.5	2.2
Middle East	3.7	4.7	4.5	3.2
Western Hemisphere	1.5	3.6	5.3	2.2
Advanced Economies	2.6	3.2	3.2	2.2
WORLD	3.8	4.3	4.2	2.5

*=Forecast.

Source: Int'l Monetary Fund [IMF], *World Economic Outlook* (Oct. 1999).

Table 2

**Percentage Change in Stock Prices and Currency Depreciation
in Asian Economies, 1997-1998**

ECONOMY	% CHANGE IN STOCK PRICES IN U.S. DOLLARS, 1 MAY 1997 TO 1 MAY 1998	PERCENTAGE DEPRECIATION OF LOCAL CURRENCY WITH RESPECT TO U.S. DOLLAR, 22 APRIL 1997 TO 22 APRIL 1998
Thailand	-55.6	51.1
Korea	-54.9	54.3
Indonesia	-76.7	229.1
Malaysia	-62.5	51.4
Philippines	-44.3	45.2
Hong Kong SAR	-26.2	0.4
Singapore	-30.0	10.3
Taiwan (PC)	-16.7	20.3
China	N/A	11.2
India	N/A	0.4

N/A = not available.

Source: IMF, *World Economic Outlook*, Ch. II (Oct. 1999) and IMF, *International Financial Statistics* (June 1998-99).

Table 3

**Warning Indicators in 1996 that Correctly Predicted the 1997 Asian Financial Crisis
and Those that Correctly Predicted no Crisis**

CORRECTLY PREDICTED CRISIS	(1) CA/GDP	(2) EDT/GDP	(3) EDS/GDP	(4) (CA-FDI)/GDP	(5) DS/X	(6) RES/M
Thailand	√	√	√	√	x	x
Korea	√	√	√	√	x	x
Indonesia	x	√	√	x	√	x
Malaysia	√	√	√	x	x	x
Philippines	√	√	√	√	x	√
Total	4	5	5	3	1	1
CORRECTLY NOT PREDICTED CRISIS						
Hong Kong SAR	√	√	√	N/A	√	x
Singapore	√	√	√	√	√	√
China	√	√	x	√	x	√
India	√	√	√	√	x	√
Total	4	4	3	3	2	3
Overall Total	8	9	8	6	3	4

Legend: GDP=Gross Domestic Product; CA=Current Account; EDT=Total External Debt; EDS=Short-Term External Debt; FDI=Foreign Direct Investments; RES=International Reserves; DS=Debt Service Payments; X=Exports of Goods and Services of the Nation in the Year; M=Imports of Goods and Services (average monthly value); N/A = not available; x = wrong prediction.

Source: IMF, *International Financial Statistics* (June 1998-99), World Bank, *World Bank Report* (1998) and World Bank, *World Development Indicators* (1998).

Table 4
Growth of Real GDP, 2006-2009

REGION/COUNTRY	2006	2007	2008	2009*
Asia				
Thailand	5.2	4.9	2.6	-3.5
Korea	5.2	5.1	2.2	-1.0
Indonesia	5.5	6.3	6.1	4.0
Malaysia	5.8	6.2	4.6	-3.6
Philippines	5.3	7.1	3.8	1.0
Hong Kong SAR	7.0	6.4	2.4	-3.6
Singapore	8.4	7.8	1.1	-3.3
Taiwan (PC)	4.8	5.7	0.1	-4.1
China	11.6	13.0	9.0	8.5
India	9.8	9.4	7.3	5.4
Africa	6.1	6.3	5.2	1.7
Central/Eastern Europe	6.6	5.5	3.0	-5.0
CIS (Russia)	8.4	8.6	5.5	-6.7
Middle East	5.8	6.2	5.4	2.0
Western Hemisphere	5.7	5.7	4.2	-2.5
Advanced Economies	3.0	2.7	0.6	-3.4
WORLD	5.1	5.2	3.0	-1.1

*=Forecast.

Source: IMF, *World Economic Outlook* (Oct. 2009)

Table 5

**Percentage Decline in Stock Prices and Currency Depreciation
in Asian Economies, January 1 to January 31, 2008**

ECONOMY	% CHANGE IN STOCK PRICES IN U.S. DOLLARS	PERCENTAGE DEPRECIATION OF LOCAL CURRENCY WITH RESPECT TO U.S. DOLLAR
Thailand	-47.6	3.5
Korea	-40.7	23.7
Indonesia	-50.6	16.3
Malaysia	-39.4	4.8
Philippines	-48.3	14.7
Hong Kong SAR	-48.3	-0.7
Singapore	-49.2	-0.1
Taiwan (PC)	-46.0	N/A
China	-65.4	-6.4
India	-52.4	22.9

N/A = not available. Negative exchange rate changes refer to appreciations.

Source: IMF, *World Economic Outlook* Ch. II (Oct. 1999) and IMF, *International Financial Statistics* (June 2008-09).

Table 6

Warning Indicators in 2007 of the 2008-9 Financial Crisis in Asian Countries

ECONOMY	(1) CA/GDP	(2) EDT/GDP	(3) EDS/GDP	(4) (CA-FDI)/GDP	(5) DS/X	(6) RES/M
Thailand	5.7	25.7	8.8*	10.3	8.1	13.6
Korea	0.6	0.0	0.0	0.8	0.0	36.1
Indonesia	2.4	32.5*	8.1*	4.0	10.5	9.1
Malaysia	15.4	28.8	8.2*	20.0	4.6	13.9
Philippines	4.9	45.7*	4.9	6.0	13.7	5.4
Hong Kong SAR	12.3	0.0	0.0	25.0	0.0	4.5
Singapore	23.5	0.0	0.0	38.4	0.0	27.2
Taiwan PC	8.6	N/A	N/A	N/a	N/A	N/A
China	11.0	11.7	3.7	53.8	10.0	86.2
India	-1.0	18.8	6.4	0.9	2.2	23.5

Legend: GDP=Gross Domestic Product; CA=Current Account; EDT=Total External Debt; EDS=Short-Term External Debt; FDI=Foreign Direct Investments; RES=International Reserves; DS=Debt Service Payments; X=Exports of Goods and Services of the Nation in the Year; M=Imports of Goods and Services (average monthly value); N/A = not available; * = Indicators predicting the possibility of a future crisis.

Source: IMF, *International Financial Statistics* (2009) and World Bank, *World Bank Report* (2009) and World Bank, *World Development Indicators* (2009).

Table 7

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Malaysia	-24.8	N/A
Philippines	-14.5*	-5.2
Hong Kong SAR	-27.4	-45.2
Singapore	-37.8	-1.8
Taiwan (PC)	N/A	N/A
China	4.2	-0.3
India	-5.6	-0.2

*=IV-2007 to IV-2008.

Source: IMF, *International Financial Statistics* (2009).

