Global Financial Crises:  
A Comparative Study of East Asia and India

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ABSTRACT

In the summer of 1997, the Thai currency lost half of its value. This led to the collapse of the Thai economy and signaled the onset of the East Asian Financial Crisis. In the six months that followed, the Indonesian Rupiah lost 75% of its value, the South Korean won lost 50% of its value, and the Malaysian Ringgit lost 40% of its value. Yet some neighboring countries, including India, remained relatively unaffected by the crisis that devastated the rest of the region. While a large number of studies have explored the causes and consequences of the crisis, relatively little analysis has been devoted to the question of why some countries remained insulated from the crisis. The purpose of this paper is to shed light on this issue and to draw some policy recommendations by comparing the East Asian economies with the Indian economy.

Our study analyzes the role liberalization policies and exchange rate regimes have on crises. We find that while both full capital account convertibility and pegged exchange rate policies can have positive effects on developing economies, the combination of the two increases speculation, making an economy more susceptible to herd behavior and the contagious spread of a crisis. This leads us to conclude that India’s floating exchange rate regime and tighter financial regulation helped insulate the country from the East Asian Financial Crisis.

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I. Introduction

While the 1997 Asian Financial Crisis devastated most of the region’s economies, India’s economy escaped the crisis relatively unscathed.\(^7\) Compared to the 40% to 70% deprecations that Asian currencies experience during the crisis, the 15% depreciation that the Indian rupee underwent had minimal residual effects (see fig.1). It will cost the Asian nations an estimated US$25-35 billion – equivalent to 20% of regional GDP – to return to their pre-crisis levels of GDP (Ariff 2000 p. 28). In contrast, India’s GDP continued to grow throughout the crises (see fig. 2). Clearly India had a much better experience during the crisis. By identifying the different structures of the East Asian and the Indian economies and by analyzing the implications of these differences, this study illustrates why India was unaffected by the crises that devastated East Asia.

East Asian Macroeconomic Health

Unlike many economies that are susceptible to crises, most East Asian economies were not suffering from poor macroeconomic performance. Growth rates of GDP were exceptionally high and most deficits were manageable. In addition, low inflation and high savings rates were prominent characteristics in most East Asian economies (Stiglitz 1998).

However, current account deficits as a percentage of GDP were growing. As a general rule, a ratio above 5% calls for concern and many East Asian countries had higher ratios (Roubini 1998a p. 7). Additionally productivity growth in these countries can be attributed to increases in both capital and the labor force, rather than to gains from multifactor productivity, or MFP (Roubini 1998b). According to economic theory, labor productivity can only increase

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\(^7\) See Appendix A for a chronology of the Asian Currency Crisis.
so much without such MFP gains. Therefore the high growth rates seemed destined to end. Furthermore, the pegged exchange rate regimes used in many East Asian countries are theoretically linked to misalignments and unstable reactions to foreign crises. The 1990s also saw substantial growth in trade as a percentage of GDP (see fig. 3) and in intra-regional trade. In 1997, 44% of the region’s trade was with other East Asian countries (see fig. 4). However these factors alone fail to explain how these booming economies fell into a crisis of such staggering magnitude.

**Indian Macroeconomic Health**

Although India has yet to be ranked among the world’s wealthiest countries, history proves that the economy has matured. During the early 1990s, India experienced low inflation, relatively high savings rates, and an overall budget surplus (see fig. 5), while achieving moderate per capita GDP growth and maintaining current account deficits below the crucial 5% mark. Unlike most East Asian countries, India utilized a managed-floating regime to determine exchange rates. While this type of regime may be subject to more fluctuations in exchange rates, proponents claim the rates are better aligned to current economic conditions and fare better in the face of increased currency speculation. Trade as a percentage of GDP was much lower in India than East Asia, and did not increase significantly through the 1990s (see fig. 3). Additionally, most of Indian trade was with well-developed economies. In 1996, The USA, UK, Germany and Japan were the four largest trading partners of India accounting for 38.2% of exports and 28.1% of imports (Indian Ministry of Finance 1997).

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8 “The Region” includes the ASEAN nations (Indonesia, Malaysia, the Philippines, Singapore, Thailand, Vietnam, and Brunei) as well as Korea and Japan. Calculations are done by the authors.
Theories on the Crisis

While economists have not yet reached a consensus as to what triggered the crisis, two main theories have emerged. These two views are the bad policy theory and the financial panic theory. Since each theory points to a distinct set of variables as the source of the crisis, identifying the relevant theory can provide important policy recommendations.

The bad policy theory is based upon the intense financial liberalization and the dramatic increase in credit (Chang 1999) that occurred before the East Asian crisis, and was evident as well in other similar crises. This theory identifies moral hazard and the inability of a government to recognize and respond to signs of a pending crisis. In contrast to the bad policy theory, the financial panic theory is rooted in the weakness of the financial system – specifically in the concepts of systemic risk and coordination failure. This theory identifies coordination failure – the rational domino effect leading to a loss of confidence – as the cause of the East Asian crisis. One should be careful in viewing the two theories as mutually exclusive, as it seems entirely possible that the East Asian Crisis began as a result of financial panic and was exacerbated by the poor economic policies adopted by East Asian governments and the problems associated with moral hazard.

An important factor in the spread of crises is contagion. The primary definition of contagion is the “transmission of shocks to other countries, or cross-country correlation, beyond any fundamental link among the countries and beyond common shocks” (World Bank 2000a). This transmission may be through real trade linkage or herd behavior.

This study examines the role that financial and trade liberalization, as well as exchange rate regime choice, played in the transmission of the East Asian crisis. Through an analysis of key distinctions in these areas, this paper offers an explanation for India’s continued economic
growth during the crisis. Section II scrutinizes the differences in liberalization policies implemented by East Asia and India. Both trade and finance policies are studied. Section III investigates the role of existing exchange rate regimes in spreading the crisis. Finally, Section IV reviews the prominent distinctions between the East Asian economies and the Indian economy, which allowed India to avoid falling into crisis. Additionally, suggestions are included on a prudent combination of liberalization and exchange rate regime policies.

II. Financial and Trade Liberalization

At the time of the crisis, the East Asian economies were both more integrated into the world economy and more prosperous than India. Ariffattributes this prosperity to East Asia’s “active promotion of correct economic, fiscal and financial policy responses to market demands for liberal policies (Ariff 2000 p. xii).” Both trade and financial liberalization policy focused on increasing competition, globalizing financial and industrial markets, and creating institutions that were needed to facilitate the flow of capital. At the time of the crisis, East Asia had enacted a broad range of financial and trade liberalization policies, but lacked the enforcement of regulations that monitored these changes. In contrast, India enacted limited liberalization policies accompanied by stricter regulations. These two distinct paths to liberalization led to important differences in both intra-regional and inter-regional linkages, affecting the relative performance of East Asia and India during the crisis.

Financial Liberalization and the Banking Sector

The fundamental job of the banking sector in an economy is to allocate capital efficiently. “To achieve this, capital is supposed to be invested in the sectors that are expected
to have high returns and [to] be withdrawn from sectors with poor prospects (Bhaduri and Guha-Khasnobis 2000 p. 334).” This efficient allocation, dependent upon competition in the banking sector, can be disrupted by government planning. Increased competition, along with implicit guarantees of bailouts, creates a greater risk of moral hazard.⁹ This can lead to speculative investment causing an increase in asset prices. To protect against speculative investment, a country can mandate that a certain percentage of each investment must be retained as reserves.

As part of its financial liberalization, East Asia fostered competition by privatizing national banks and by easing restrictions on the entry of foreign banks. Following liberalization, the percentage of state-owned banks decreased to 13% in Korea, 8% in Malaysia, and 7% in Thailand (Goldstein and Turner 1996).⁹ To regulate the emerging private banking sector, East Asian nations implemented capital adequacy ratios.¹¹ Although mandated, these ratios were not typically enforced, as seen in Malaysia and Thailand (Ariff 2000). This lack of enforcement, coupled with the implicit guarantee of an IMF bailout, led to increased speculative investment. This was displayed in Thailand’s real estate market which accounted for 28% of all bank lending, approximately twice the normal rate, by June 1997 (Ariff 2000 p. 45). Most of these loans became “non-performing” when the speculative bubble in Thailand’s equity markets burst (see Appendix A).

At the time of the crisis, India was at a different stage in the liberalization process. In contrast to East Asia, 87% of India’s banking sector was state owned prior to the crisis (Goldstein and Turner 1996). India also implemented capital adequacy ratios as was done in

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⁹ See Appendix A for an explanation of Moral Hazard.
¹⁰ This excludes Indonesia, which had 48% state ownership in the banking industry.
¹¹ Capital Adequacy requirements are bank reserves set aside as a precaution against the failure of a loan or investment. (Ariff 2000). They were typically 8% in most East Asian nations.
East Asia. The important difference is that unlike East Asia, India was committed to the enforcement of these regulations (Ariff 2000). In 1992, India increased supervision standards for bad debt provisioning and for risk weighting exposure to risky loans. While India suffered from investing in non-performing sectors as a result of wide state-ownership of banks, it did not experience the lending boom that occurred in East Asia.

Financial Liberalization and Capital Flows

While the goal of financial liberalization is to increase capital flows, the composition of these inflows is important to the stability of a country’s financial sector. Foreign direct investment (FDI) is the most stable form of inflow, as it requires a long-term commitment of resources. In contrast, portfolio investment is less stable as it is highly liquid and therefore can be quickly withdrawn from a country. Just as important as the composition of capital inflows is the degree to which financial and physical assets can move across borders (Rodrik 1999). Greater capital account convertibility – a high degree of mobility of these assets – increases the country’s vulnerability to speculation. Full capital account convertibility allows investors to trade foreign currency as an investment. The speculative foreign exchange transactions in the forward market can create a self-fulfilling currency crisis.\(^\text{12,13}\)

Gross capital flows to the East Asian countries increased by an average 53.62% in the years 1990 to 1996 (World Bank 2000b). Leading up to the crisis, capital inflows – specifically portfolio investment – were playing an increasing role in economic growth (see figs. 6 and 7).

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\(^\text{12}\) The practice of foreign exchange trading is necessary for international trade to occur, yet less than twenty percent of all foreign exchange transactions in 1995 were done for non-financial businesses (Goldstein and Turner 1996 p. 224).

\(^\text{13}\) A forward market is where currency transactions are based on estimated future values. As of 1998, over 60% of foreign exchange transaction occurred in the forward market (Goldstein and Turner 1996 p. 224).
These portfolio inflows provided an infusion of capital, yet proved to be unstable during the onset of the crisis (see fig. 7). The instability of portfolio investment is highlighted by the fact that foreign direct investment to East Asia remained essentially unchanged throughout the crisis (Furman and Stiglitz 1998). Moreover, the outflows of portfolio investment would not have been as devastating without the full capital account convertibility seen in East Asia (see Appendix A).

While gross capital flows to India increased by 383.62% from 1990 to 1996 (World Bank 2000b), these inflows constituted a much smaller percentage of India’s economy compared to East Asia (see figs. 6 and 7). Despite partial liberalization of the capital account forced by the IMF in 1994, India did not allow its currency to be as easily convertible. Among other restrictions, the Reserve Bank of India restricted the volume of currency that can be converted. Although this type of regulation may have hindered India’s growth, it also may have saved the economy from falling into crisis (Stiglitz 1998).

Financial Liberalization and the Debt/Equity Markets

Financial markets provide a means for corporations to raise the capital they need to operate. Additionally, financial assets are used as collateral for loans. Fluctuations in the market value of assets are mirrored by fluctuations in the corporation’s stake in their loans. As asset values decrease, the incentive to engage in morally hazardous behavior increases. Risky behavior leads to an increase of non-performing loans. Thus it is clear how the stability of the economy is dependent on the stability of financial markets. These markets function best when there is perfect information on market conditions and companies. As the depth of financial markets increases, the information relayed by the price of securities improves.

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14 See Appendix A for an explanation of moral hazard.
In East Asia, the stock markets were well developed but young. While organizations such as the Thai Rating and Information Service and the Bond Dealers Club were established to improve market transparency and performance, imperfect information continued to pervade the market. In fact, many investors now point to these organizations as a cause for continued overvaluation of debt in the market. This lack of perfect information led investors to question the collective financial standing of the East Asian markets, as they were unable to differentiate between countries. This weakness was widely unnoticed until the burst of the real estate market bubble in Thailand. By the end of 1998 the Bangkok Stock Exchange lost 77% of its value, severely decreasing the value of collateral on loans to Thai companies (Ariff 2000).

While Indian markets had yet to realize the same level of development as the East Asian markets, the Indian government had begun significant liberalization reforms. In 1992, the Controller of Capital Issues (CCI), which imposed strict conditions on firms trying to raise funds through the stock market, was abolished (Bhaduri and Guha-Khasnobis 2000 p. 335). Along with this, India strengthened the supervisory capacity of the capital market regulator, the Securities and Exchange Board of India, and “broke up the one mutual fund company, allowing the entry of many more” (Ariff 2000 p. 333). While these changes had a positive effect on the financial markets, there was still limited foreign inflow of capital due to a lack of depth in the financial markets. This is best illustrated by the Development Financial Institutions (DFI), which continued to monopolize lending in the debt market at the time of the crisis.

**Trade Liberalization and Real Trade Linkages**

Trade liberalization structures an economy for outward orientation by decreasing barriers to trade and increasing competition in the real sector of an economy. The barriers
include tariffs and currency conversion restrictions. Real trade linkages connect economies through direct trade and through indirect trade of similar goods to tertiary markets. These real trade linkages can cause investors to associate the same level of risk among a group of different economies.

As part of East Asia’s liberalization, the ASEAN nations, including Malaysia, Indonesia and Thailand, formed the Asian Free Trade Agreement (AFTA) to have very minimal restrictions on trade by 2002 and no import duties by 2010. This ambitious plan, started in 1993, had increased trade within the East Asian nations at a rate of 11.4% per year from 1993-1999. As mentioned earlier, at the time of the crisis, inter-regional trade was approximately 42% of the region’s total trade. As of 1993, the third-market competition between East Asian countries was also very strong. Malaysia and Korea both exported approximately 35% of their electronics exports to the US in electronic components such as computer hard disk drives. Thailand and Korea both exported over 30% of their electronics exports to the US in the form of electronic data processing or computer devices and peripherals (Ernst and Guerrieri 1997). These strong intra and inter-regional trade linkages between the East Asian economies led some investors to implicitly link the East Asian in investment decisions (Roubini 1998c p.14). This explains both the real linkages and the herd effect causes of the contagion seen in East Asia during the crisis. As India made up 1.9% of the gross trade of the ASEAN nations in 1997, one would not expect these linkages to affect India (see fig.4).

At the time of the crisis, the Indian real sector was progressing towards liberalization with policies intact, but with a large public industrial complex. In accordance with the IMF intervention after the 1991 currency crisis, current account convertibility was introduced, resulting in increased trade. Finally between 1992 and 1994, India’s government removed a
reservation list of sectors in which foreign entry was limited or restricted and began to privatize these public companies. To foster competition in the real sector in 1993, the Indian government created export-processing zones where foreign firms could enter and exercise 100% ownership. However, outside of these zones, barriers to foreign ownership still exist. India’s lack of global integration decreased the vulnerability to the crisis that any linkages would bring.

Although both East Asia and India were undergoing financial and trade liberalization, the economies were at two distinct stages of development when the crisis erupted. These differences left East Asia vulnerable to a speculative crisis while India remained insulated from the fluctuations of capital flows. Along with the differences in financial liberalization, the different real trade linkages of the two economies helps explain why India was not subject to the contagious spread of the crisis.

III. Exchange Rate Regimes Under Crises

As global financial markets continue to liberalize, the choice of an appropriate exchange rate regime plays an increasingly important role in economic stability. For an exchange rate regime to be beneficial, it must complement the specific monetary and fiscal policies implemented in an economy. While both East Asia and India were becoming more globally integrated, they adopted very dissimilar exchange rate determination systems. These two systems – the pegged rate popular in East Asia and a managed floating rate used in India – offer very different benefits and suffer from very distinct disadvantages. Before examining how the regimes affected East Asia and India as the crisis developed, the theory behind both regimes will be reviewed first.
General Theory of Both Regimes

A pegged exchange rate system ties the domestic currency to a foreign currency at a given ratio; as the foreign currency rises or falls, the domestic currency must follow. A central bank may utilize a currency peg for a variety of reasons, including the implied commitment to anti-inflationary policies that is commonly attributed to more fixed rate regimes. A weaker economy may also adopt (or peg to) a more established foreign currency because monetary authorities are unable to supply a stable domestic currency. However, since the currencies are tied irrespective of distinct economic conditions, shocks affecting only one of the economies may cause misalignments in the exchange rate. Moreover, maintaining pegs in the face of increased speculation may prove to be quite costly (Grabel 2000). With the notable exception of Singapore, the majority of East Asian economies pegged their currencies to the US dollar.

A typical example of a managed floating rate system allows a domestic currency to float within a targeted band against a basket of foreign currencies. The central bank chooses both the band as well as the basket of currencies. Critics claim that exchange rates are more volatile under floating rate regimes than under more fixed rate systems. Nevertheless, the fluctuations within the targeted band may not constitute misalignments, as the currency is moving parallel to the conditions of the economy. Therefore floating currencies fare better than pegged currencies under external crises. Additionally, the adjustment mechanism of floating rates insulates a currency from speculative attacks. India utilizes a managed float to determine exchange rates. When the rate fluctuates too closely to the bounds of the band, the Reserve Bank of India (RBI) may modify the band.
Exchange Rate Regimes and Foreign Reserves

To maintain a currency peg, a country must back up every unit of domestic currency with an equivalent value of foreign currency (held as reserves), based on the current exchange rate. As a domestic currency faces increased speculation, foreign investors abandon the market, taking foreign currency with them. Thus large amounts of the domestic currency are dumped while foreign reserves are depleted. If foreign reserves fall enough that the current exchange rate becomes no longer sustainable, the central bank must forfeit the current rate and devalue the domestic currency to a maintainable level. This forced depreciation is costly in two important ways: foreign reserves are at drastically low levels and the devaluation is contrary to the stability associated with fixed exchange rate regimes.

As a result of liberalization policies, capital inflows into East Asia resulted in growth of foreign reserves. Between 1990 and 1996, reserve levels increased by well over 100% in most East Asian countries (see fig. 8a). However, these large increases in foreign reserves were not enough to counteract the depletion caused by capital outflows during the crisis. On average, foreign reserves fell approximately 31% in 1997 from prior year levels in East Asian countries; in Korea foreign reserves dropped by over 40% (see fig. 8a). Eventually the pegs were deemed unsustainable and the currencies were allowed to depreciate. Indonesia experienced the most dramatic depreciation, falling below 20% of its 1996 value (see fig. 1).

While foreign reserves in East Asia were diminishing, India’s reserves were protected by stricter capital controls and its choice of exchange rate regime (see figure 8a). Instead of depleting foreign reserves to preserve a peg, the central bank can simply adjust the target band or the basket of currencies. This perhaps is best illustrated by Singapore’s performance under a
managed float. Although foreign reserves did in fact decrease in 1997 from prior year levels, the drop of less than 8% does not compare to the regional average. Considering that sufficient foreign reserves are necessary for maintaining investor confidence, the favorable impact that flexible rate regimes have on reserves helps minimize the effects of herd behavior during a crisis.

**Exchange Rate Regimes and the Banking Sector**

Just as exchange rate regime choice affects foreign reserves, it also affects banking. As increased speculation forces the depreciation of a currency, foreign-denominated debt becomes harder to repay as more domestic currency is required to satisfy the loans. Investors then become unable to repay their loans. This leaves banks with insufficient capital to meet their short-term debt obligations. Banks contract their lending and bankruptcy rates rise. This undermines the economic stability associated with a pegged rate regime.

An increase in non-performing loans was in fact experienced in East Asia in the years preceding the crisis (Mishkin 1999). After the currencies were allowed to depreciate, these foreign-denominated debts became even more burdensome, leading to more bad loans. Additionally, the contraction in bank lending was also seen in the years leading up to the crisis, best illustrated by the 62% contraction during 1997 in Korea (see fig. 9). Increasingly, the financial standing of many East Asian banks was in jeopardy.

Although the Indian currency was consistently depreciating in the mid-1990s, the depreciation was neither sudden nor drastic (see fig. 1). This stability negates the commonly cited criticism that floating exchange rate regimes are susceptible to greater rate fluctuations. Bank loans denominated in foreign currency were not changing dramatically in value as they
were in East Asia. Accordingly, India did not suffer from as high a rate of non-performing loans as did East Asia (see fig. 10). Other evidence that a pegged rate regime exacerbated the crisis can be seen in the low depreciation of the Singapore currency, which did not fall below 80% of its 1996 rate (see fig. 11).

**Exchange Rate Regimes and the Financial Sector**

Just as the depreciation of a domestic currency has a detrimental effect on the banking lending, it can have a devastating impact on capital movements as well. As the domestic currency depreciates, domestic capital investments decrease in foreign-denominated value. Therefore, foreign investors will abandon the market, greatly increasing the volume of capital outflows. This in turn floods the market with domestic currency, leading to further currency depreciation. Clearly this process becomes a vicious – and economically detrimental – cycle.

After substantial capital inflows prior to the crisis, 1997 saw the dramatic outflow of capital throughout East Asia (see fig. 12). As uncertainty regarding the future value of East Asian currencies increased, the desirability of capital investments in the region decreased. The capital outflows flooded the markets with domestic currency, which further accounts for the continued depreciation of East Asian currencies until 1998.

The comparatively predictable behavior of India’s exchange rates provided investors with a greater sense of security about future investments. Contrary to the situation in East Asia, India benefited from a 24% increase in private capital flows in 1997 (see fig. 12). This suggests that investors did not consider India to be part of the risky market of the East Asian economies, explaining why the effects of contagion were not felt in India.
It appears that the forced depreciation and the uncertainty surrounding the East Asian currencies – a signal of financial instability in economies preferring fixed rate regimes – led to increases in capital outflows. Overall the nature of the pegged rate regime, in times of crisis, can weaken the financial sector.

**Exchange Rate Regimes and Trade**

Fluctuations in exchange rates affect international trade flows by altering the relative prices of goods and services between countries. As a domestic currency appreciates relative to the currencies of its trading partners, domestic goods effectively become more expensive than foreign goods. In other words, domestic goods become less competitive in the world market. This change in terms of trade has dual repercussions for the domestic trade balance. As the price of domestic goods increases relative to imported foreign goods, the consumption of imported goods will likely increase. Conversely, the consumption of domestic goods abroad (exports) will decrease for the same reason. The simultaneous increase in imports and decrease in exports work together to worsen the trade balance. Clearly, a depreciation of the exchange rate will produce an opposite, more favorable scenario.

In East Asia, the varying effects of the pegged rate regime were witnessed during the 1990s. In the early 1990s the US dollar depreciated, thereby depreciating the majority of East Asian currencies. This depreciation made their goods more competitive in the world market and was a likely contributor towards the high growth rates of GDP witnessed during this time. On the other hand, the appreciation of the US dollar in 1995 led to a loss of competitiveness among East Asian countries and an increase in current account deficits (Roubini 1998a). The weakening of macroeconomic fundamentals, although not solely responsible for the crisis,
likely exacerbated the situation. Since the East Asian countries traded similar goods with the same trading partners, their simultaneous currency depreciations beginning in 1997 failed to make their goods more competitive. Rather the currencies had to continue depreciating to compete in order for the countries to compete against one another (Roubini 1998b p. 15-16). It is easy to see how real trade linkages and currency depreciations provided a foundation for the contagion effect throughout the region.

It is hard to say whether India’s managed floating rate regime spared their currency from increased speculation. As explained in Section II, India was not nearly as liberalized as East Asia and was not a likely target for the crisis. Therefore it is impossible to study the effects of its exchange rate regime in avoiding the crisis. Rather it may be more useful to study Singapore’s reaction to the crisis, as the two economies utilized very similar exchange rate systems. In particular, by comparing Singapore to Hong Kong, some conclusions may be drawn.

Economic history has witnessed Singapore and Hong Kong following similar paths. Nicknamed the “Twin Cities”, the two had one significant difference in their macroeconomic structures: exchange rate regime choice. Singapore allows its currency to float within a target band, while Hong Kong pegs its currency to the U.S. dollar. In the aftermath of the crisis, Singapore has fared better than Hong Kong (Pempel 1999 p. 232). Pempel believes that Singapore gained this upper hand due to the adaptability of its exchange rate regime.

Pegging a domestic currency to a foreign one can result in increased competitiveness and an improved balance of trade. However this same system can decrease competitiveness and worsen the trade balance. The uncertainty inherent in pegging a domestic currency to a currency of a dissimilar economy cannot be ignored.
It appears that the pegged exchange rate regimes throughout East Asia exacerbated the crisis by exploiting the poor regulation of the region’s financial liberalization policies. The maintenance of these pegs proved to be costly in the face of increased currency speculation. The inevitable depreciation and depletion of foreign reserves that followed increased the number of non-performing loans, led to large volumes of capital outflows, worsening the trade balance, all signaling financial instability. These factors created a cycle of further depreciations, responsible for the devastating nature of the crisis.

IV. Conclusion

Through this comparative analysis of the East Asian and Indian economies, we identify fundamental policies that may affect a country’s vulnerability to a financial crisis. When the East Asian Crisis began in July 1997, East Asia and India were at different stages in the liberalization process. While both the East Asian and Indian governments passed regulatory policies to accompany liberalization, the East Asian countries failed to enforce the regulations. This, in combination with the inappropriate choice of exchange rate regime, left the East Asian economies open to severe instability. In contrast, India’s combination of regulated liberalization and prudent exchange rate regime choice insulated its economy from the crisis. This paper bridges the gap in the literature by explaining why some countries remained insulated from the crisis.

Several lessons have emerged from our analysis of the East Asian financial crisis. While competitive markets are necessary to efficiently allocate capital, the competition encourages morally hazardous behavior. To counteract this phenomenon, developing countries must enforce policies designed to regulate the markets. An equally important lesson is that while
both full capital account convertibility and pegged exchange rate policies can have positive effects on a developing economy, the combination of the two increases speculation. This makes an economy more vulnerable to herd behavior and the contagious spread of a crisis.

The results of this study call for further research on the topics of financial liberalization and exchange rate regime choice. Specifically, how does the sequence of liberalization policy affect financial stability? Can an appropriate sequence of liberalization insulate a developing economy from speculative attacks? Additionally, a comparison between Singapore and the other East Asian nations might illustrate the benefits of a managed floating exchange rate regime during periods of financial crisis.
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Appendix A
Chronology of the Asian Currency Crisis

Authors’ Note: While this chronology contains references supporting the ideas expressed in this paper (denoted by italics), the chronology of events is an edited version of Nouriel Roubini’s “A Chronology of the Crisis: 1997” and “A Chronology of the Crisis: 1998 (January-March)” at http://www.stern.nyu.edu/globalmacro/asian_crisis/basic_readings.html

1997
January - Hanbo Steel, a large Korean chaebol, collapses under $6bn in debts - first bankruptcy of a leading Korean conglomerate in a decade.

February 5 - Somprasong is first Thai Company to miss payments on foreign debt.

March 10 - The Thai government says it will buy $3.9bn in bad property debt from financial institutions but re-negs on this promise

March 28 - The Malaysian central bank restricts loans to property and stocks to head off a crisis.

March - Sammi Steel, a Korean conglomerate fails, provoking fears of a corporate debt crisis.

*Early May- Japanese officials, concerned about the decline of the yen, hinted that they might raise interest rates. The threat never materialized, but it proved to be one of the first signs of the Asian crisis. The Japanese threat shifted the decisions of global investors, who immediately began to sell Southeast Asian currencies, setting off a tumble not only in the currencies but in the local stock markets as well (First evidence of contagion-herd behavior).

May 14-15, 1997 - Thailand's baht currency is hit by a massive attack by speculators who decided Thailand's slowing economy and political instability meant it was time to sell. Thailand and Singapore jointly intervene to defend the baht.

May 23 - Moves to save Finance One, Thailand's largest finance company, fail.

June 30 - Thai Prime Minister Chavalit Yonchaiyudh assures the nation in a televised address there will be no devaluation of the bath (using reserves to support the baht).

July - Korea's third largest car-maker Kia suffers credit crunch and asks for emergency loans.

*July 2 - The Bank of Thailand announces a managed float of the baht and calls on the International Monetary Fund for "technical assistance." The announcement effectively devalues the baht by about 15-20 percent. This is a trigger for the East Asian crisis.

July 8 - Malaysia's central bank, Bank Negara, has to intervene aggressively to defend the ringgit. The intervention works sending the currency to a high of 2.5100/10 after a low of
2.5240/50.

July 11 - The Philippine central bank says in a statement it will allow the peso to move in a wider range against the dollar. In Indonesia, the rupiah is starting to be affected. In a surprise move, Jakarta widens its rupiah trading band to 12 from eight percent.

July 14 - The Malaysian central bank abandons the defense of the ringitt.

July 17 - The Singapore monetary authority allows the depreciation of the S$.

Aug. 14 - Indonesia abolishes its system of managing the exchange rate through the use of a band and allows it to float. The rupiah plummets to 2,755.

Aug 15 - Speculators attack Hong Kong dollar; overnight interest rates up 150 basis points from previous day to 8%.

Oct. 1 - Mahathir repeats his siren call for tighter regulation, or a total ban, on forex trading. The currency falls four percent in less than two hours to a low of 3.4080.

Oct. 14 - Thailand announces a package to strengthen its financial sector.

Nov 17 - South Korea abandoned its defense of the battered won, sending the currency smashing through the psychological 1,000/dollar level. The sudden weakening of the won sent stocks plunging by more than 4 percent and put renewed pressure on money market interest rates.

Nov 18 - The uncertainty surrounding Korea has, as expected, pressured all regional currencies. Hardest hit have been the Thai baht (down 3.5% since last Friday), the Philippine peso (2.9%), and the Malaysian ringgit (2.8%). The New Taiwan Dollar has weakened by 1.7%, the Indonesian rupiah by 1.0%, and the Singaporean dollar by 0.5%. These currencies are likely to continue to weaken until Korea requests IMF assistance. (Evidence of herd behavior or domino effect).

Nov 20 - South Korea unveils “self-rescue” package in which it asked Japan to help persuade its banks to roll over maturing short-term loans to South Korea. The package also allowed its currency to fluctuate by up to 10% per day. The previous limit was 2.5%. Officials hoped that would boost investors' appetite for the won.

Nov 21 - South Korea, buckling under the pressure of a slumping currency and crumbling investor confidence, said it would seek a rescue package from the International Monetary Fund.

Dec 5 - Malaysia imposes tough reforms to reduce its balance of payments deficit.

1998

Jan 8 - Frantic selling shredded Indonesia's financial markets on Thursday, highlighting a sweeping lack of confidence in the country's economic management and contributing to a sell-off on most other Asian markets. The meltdown in Indonesia, which has heightened gloom
across a region once brimming with unbridled optimism, showed no sign of abating

Jan 12 - The failure of Peregrine Investments Holdings Ltd., a big Hong Kong investment bank, toppled stocks in the territory. Once Asia's most powerful home-grown investment-banking house, its capital was depleted in large part by investments it made in Indonesia. Other concerns about Hong Kong surfaced as inter-bank interest rates climbed sharply to 12%, up from 7.5% late on Friday.

Jan 29 -

1. South Korea's government and global creditors agreed to exchange about $24 billion of the Asian nation's short-term debt for government-guaranteed loans in a deal expected to end Korea's liquidity crisis. Under the deal, negotiated by 13 leading international banks, Korean banks can exchange their short-term non-trade credits for new loans with maturities of one, two or three years. These loans will be guaranteed by the Republic of Korea and will bear a floating interest rate of 2.25 percent, 2.5 percent and 2.75 percent over the six-month London interbank offered rate (LIBOR).

2. South Korea closed a third of its 30 merchant banks because it felt their capital was insufficient compared with their assets. A new state agency will take over the assets and debts of the failed banks and manage and sell assets to pay creditors. The merchant banks, specializing in short-term corporate lending, have been at the center of Korea's financial crisis.

February 2 - Asian markets roared into the Year of the Tiger with evidence that foreign confidence in the region was returning. Stock and currency markets firmed and volumes soared as longer-term, value-oriented funds flooded back into Asia from Europe. Shorter-term portfolio flows from the United States followed along. Currencies were also stronger, firming or consolidating at higher levels as confidence seemed to reappear. A crisis of confidence over Asian economies has been blamed for the region's six-month market pounding, but on Monday, that sense of crisis seemed to ebb a little.
The Problem of Moral Hazard

Moral hazard can be illustrated using a highly simplified example, in which there exists a class of owners of financial intermediaries ("Ministers' nephews") who are able to borrow money at the safe interest rate - because lenders perceive them as being backed by an implicit government guarantee - and invest that money in risky assets.

For the sake of simplicity, the moral hazard involved in this situation is pushed to an extreme by assuming that:

- the owners of intermediaries are not obliged to put any of their own capital at risk;
- there are many Minsters' nephews, competing to buy risky assets.

In such a worst-case scenario for moral hazard, the owner of an intermediary will view investing in an asset as profitable if there is any state of nature in which that asset yields a return greater than the safe interest rate. At the same time, competition among intermediaries will eliminate any economic profits. The result must therefore be that the prices of assets are driven to their "Pangloss values": what they would be worth based, not on the expected outcome, but what would happen if we lived in the best of all possible worlds.
Selected Liberalization Policies

Korea

Financial

1970’s - Allowed Foreign Banks to enter.
   - Strict branching limits placed on foreign banks…could not expand.

1980 - The peg with US $ abandoned in favor of a managed exchange rate.

1980’s - Commercial Banks, mostly owned by government, dominated domestic financial transactions.
   - Specialized Banks also owned by govt’ helped funnel money to priority areas.
   - Reforms in late 80’s licensed NBFI’s to provide credit to other sectors.
   - (85-89) Because of the effects of policy loans that affected the banks throughout early 80’s, non-performing loans shot up to 10.5% in 85-86. To reduce this, BOK gave low-interest loans to banks and subsidized, leading to inflation and a real estate boom.

1988 - Foreign borrowing for capital materials liberalized.

1989 - Laws to control major shareholders of corporations—limited to 2.5% of companies.

1980-90 - Reforms were directed toward the domestic economy.
   - Huge increases in value and # of issues of both corporate and treasury bonds.
   - “Depth of the market increased from 6.9% of GDP (in 1980) to 35% in 1996.”
   - Corporate bond market grew at a rate of 27% per annum.

1990 - Major switch to ‘market exchange rate’ based on the previous day’s average rate.

1991 - Portfolio investment allowed.

1992 - Stock Exchange allows limited foreign investment.

1996 - Capital Account freed for the first time.

Trade

1984-88 - Major import liberalization.
   - Tariffs reduced (average fell from 24% to 18%, by ‘88, 7%).
Malaysia

Financial
1958 - Allowed foreign banking with local incorporation.

1960 - Stock trading begins (Equity market established).

1970 - Establishment of merchant banks.

1975 - Directed credit 20% in loans, 10% in agriculture-loans, 25% in manufacturing loans, 10% in housing loans.

1976 - Banks control interest rates.

1985 - Bonds introduced to finance housing credit market.

1986 - Cooperative banks fail, central bank rescues them and passes laws to bring them under banking supervision.
   - Real-sector reforms to permit greater ownership by foreign companies

1990 - Capital Market reforms; eased entry barriers to brokers, foreign share ownership limit increased to 49% (high volatility in share market).

1993 - Two-tier banking regulation set up: decreases number of banks, finance companies and merchant banks to 18, with 2% higher capital adequacy requirement (not fully implemented or sufficient guarantees of safety).
   - Limit currency swaps to US $2 mil, $5 mil for non-traded foreign exchange transactions.

Trade

1989-1996 - Tariff reduction on 600 items (AFTA initiative).

1975 - Domestic credit directed at bumiputra activities.

1975-79 - Wide privatization of economy.
Thailand

Financial
1974 - Stock Exchange created.

1987 - Foreign investor board established to allow foreign trading of stocks.

1992 - Bangkok International Banking Facilities established to improve efficiency of domestic financial sector by increasing exposure to more advanced financial markets reduced corporate income tax, exemption from withholding tax, business tax and stamp duties.

   - Requirements eased for Bank branch openings.

1993 - First Credit rating agency Thailand Rating and Information Society.

1994 - Bond Dealer’s Club to function as secondary market for debt instruments.

1995 - Over-the-counter market.

Phases of exchange liberalization
1990 - Commercial banks could conduct foreign exchange transactions without BOT approval.

1991 - Residents could open up foreign currency accounts while non-residents were allowed to open local currency accounts. Exporters could also make payments from and receive foreign currency into these accounts for trade purposes.

1994 - Reforms facilitating trade and investment

Trade
1990 - All Current account transactions liberalized and restrictions on capital movement reduced.


1992 - Ceilings on interest rate for savings deposit removed.
Indonesia

Financial
1967 - Legalized trade in foreign exchange through foreign bourse.

    - Local banks can trade foreign exchange.

1971 - Central bank takes over foreign exchange transaction.

1982-83 - Banking reforms introduced, easing entry of non-state banks and non-bank financial institutions to mobilize savings and expand credits to support non-oil based expansion.

1987-88 - Capital Market Reforms to ease listing requirements, lift price limits, entry of more brokers and ease foreign share ownership to 49%.

1983-90 - Large exodus of money from public to private banks.

1992 - Privatized stock market.

1991 - To cap surge in private borrowing, committee formed to control foreign borrowing by private-sector firms.

1992 - Privatization of market.

Trade
1970 - Foreign investment laws to ease entry of foreign capital, tech and skill, especially for primary sector cap-intensive activities.
    - Major policy to direct credit to preferred firms to create industrial capacity.

1978 - Reduced directed credits.

1982 - Tariff reduction.
India

Financial
1992-94 - Mutual fund monopoly broken up.
   - Statutory liquidity ratio reduced from high 25% to 2.5%, total reserve reduced to
     10% by capital adequacy ratios of minimum 4% by March ‘93 and 8% by March ’96.
   - Supervisory capacity of regulator (SEBI) strengthened to reform the capital market.
   - Foreign ownership restrictions relaxed a little.
   - Prudential norms improved by supervision standards for bad debt provisioning and
     for risk-weighting exposure to risky loans.

1993 - Foreign exchange restrictions on individuals and producers slowly relaxed.
   - Capital accounts were liberalized. THERE ARE STILL CONTROLS ON CAPITAL
     ACCOUNTS OF THE NON-EXPORTING DOMESTIC FIRMS.

1994 - Currency free-floated.
   - Capital controls on producers removed.

Trade
1991 - Restrictions on many imports, such as gold were removed.

1993-94 - More import restrictions were removed in 1993-94.
   - Restrictions for currency convertibility on producers were removed in March 1993.
   - July 1994, the currency became completely convertible satisfying IMF Article 8.

1991-97 - Reservation list abolished.
   - FDI in all industries except “negative list” of seven industries is permitted.
   - Automatic approval for 51% foreign ownership in high priority sectors is now
     permitted.
   - A Foreign Investment Promotion Board has been established to expedite and follow
     up such investments.
Appendix B
Figure 1

Comparative Monthly Avg. Exchange Rates: Relative to U.S. Dollar

Exchange rates indexed at 100% on July 1, 1995

Figure 2

<table>
<thead>
<tr>
<th>Country</th>
<th>GDP Growth (annual %)</th>
</tr>
</thead>
<tbody>
<tr>
<td>India</td>
<td>8.03</td>
</tr>
<tr>
<td>Indonesia</td>
<td>8.23</td>
</tr>
<tr>
<td>Korea, Rep.</td>
<td>8.92</td>
</tr>
<tr>
<td>Malaysia</td>
<td>9.46</td>
</tr>
<tr>
<td>Thailand</td>
<td>8.9</td>
</tr>
</tbody>
</table>

Source: World Development Indicators - web database
Figure 3

<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>India</td>
<td>18.26</td>
<td>24.26</td>
<td>27.08</td>
</tr>
<tr>
<td>Indonesia</td>
<td>49.87</td>
<td>50.33</td>
<td>56.19</td>
</tr>
<tr>
<td>Korea, Rep.</td>
<td>60.09</td>
<td>60.95</td>
<td>76.96</td>
</tr>
<tr>
<td>Malaysia</td>
<td>150.62</td>
<td>184.30</td>
<td>187.09</td>
</tr>
<tr>
<td>Thailand</td>
<td>75.78</td>
<td>81.97</td>
<td>93.38</td>
</tr>
</tbody>
</table>

Source: World Development Indicators - 1999 CD
*Trade is the sum of exports and imports of goods and services measured as a share of gross domestic product.

Figure 4

<table>
<thead>
<tr>
<th>Country</th>
<th>ASEAN's Export to</th>
<th>ASEAN's Import from</th>
<th>Total Trade</th>
</tr>
</thead>
<tbody>
<tr>
<td>EU</td>
<td>46,076</td>
<td>46,067</td>
<td>(390)</td>
</tr>
<tr>
<td>US</td>
<td>52,515</td>
<td>70,034</td>
<td>17,519</td>
</tr>
<tr>
<td>AUSTRALIA</td>
<td>6,100</td>
<td>6,418</td>
<td>312</td>
</tr>
<tr>
<td>NEW ZEALAND</td>
<td>512</td>
<td>773</td>
<td>(261)</td>
</tr>
<tr>
<td>CANADA</td>
<td>1,888</td>
<td>1,949</td>
<td>(61)</td>
</tr>
<tr>
<td>JAPAN</td>
<td>43,150</td>
<td>42,008</td>
<td>(1,141)</td>
</tr>
<tr>
<td>PEOPLE REP. OF C</td>
<td>18,045</td>
<td>29,237</td>
<td>11,192</td>
</tr>
<tr>
<td>RUSSIA</td>
<td>3,169</td>
<td>876</td>
<td>(2,293)</td>
</tr>
<tr>
<td>INDIA</td>
<td>3,722</td>
<td>4,473</td>
<td>750</td>
</tr>
<tr>
<td>ROK</td>
<td>9,446</td>
<td>10,678</td>
<td>1,221</td>
</tr>
</tbody>
</table>

Intra-ASEAN: 82,419.8 96,251.9 3,832.1 67,193.4 67,693.4 464.0 149,559.2 153,855.3 4,296.0

Note: ASEAN (exclude Laos, and Myanmar)
Source: ASEAN Secretariat
<http://www.aseansec.org/stat/extra97a.gif>
Figure 5

<table>
<thead>
<tr>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Inflation</td>
<td>8.97</td>
<td>13.87</td>
<td>11.79</td>
<td>6.36</td>
<td>10.21</td>
<td>10.22</td>
<td>8.98</td>
<td>7.16</td>
</tr>
<tr>
<td>Gross national savings</td>
<td>21.99</td>
<td>22.20</td>
<td>22.43</td>
<td>20.70</td>
<td>23.90</td>
<td>25.37</td>
<td>23.92</td>
<td>22.57</td>
</tr>
<tr>
<td>Overall budget deficit</td>
<td>-8.12</td>
<td>-5.81</td>
<td>-5.65</td>
<td>-7.47</td>
<td>-5.89</td>
<td>-5.35</td>
<td>-5.19</td>
<td>-4.86</td>
</tr>
</tbody>
</table>

Source: World Development Indicators - 1999 CD

Inflation - consumer prices (annual %)  
Gross National Savings - including NCTR (% of GNP)  
Overall Budget Deficit, including grants (% of GDP)

*Note: A negative deficit = a surplus

Figure 6

![Portfolio Investment as a % of GNP](image)

Source: World Bank Development Indicators 1999 CD.

Figure 7

<table>
<thead>
<tr>
<th></th>
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<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>India</td>
<td>0.73%</td>
<td>0.60%</td>
<td>0.77%</td>
<td>1.77%</td>
<td>2.33%</td>
<td>1.49%</td>
<td>1.88%</td>
</tr>
<tr>
<td>Indonesia</td>
<td>2.45%</td>
<td>2.40%</td>
<td>2.95%</td>
<td>0.64%</td>
<td>4.32%</td>
<td>5.99%</td>
<td>7.68%</td>
</tr>
<tr>
<td>Korea, Rep.</td>
<td>0.33%</td>
<td>1.60%</td>
<td>2.07%</td>
<td>2.28%</td>
<td>4.25%</td>
<td>2.46%</td>
<td>4.36%</td>
</tr>
<tr>
<td>Malaysia</td>
<td>1.39%</td>
<td>6.97%</td>
<td>9.46%</td>
<td>16.15%</td>
<td>11.12%</td>
<td>12.16%</td>
<td>14.21%</td>
</tr>
<tr>
<td>Thailand</td>
<td>4.00%</td>
<td>4.19%</td>
<td>3.37%</td>
<td>5.43%</td>
<td>2.93%</td>
<td>6.09%</td>
<td>7.85%</td>
</tr>
</tbody>
</table>

Source: Worldbank WDI CD 1999
Figure 8a

<table>
<thead>
<tr>
<th>% Change in Foreign Reserves</th>
<th>1990-1996</th>
<th>1996-1997</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indonesia</td>
<td>139.18%</td>
<td>-3.12%</td>
</tr>
<tr>
<td>Korea</td>
<td>127.51%</td>
<td>-36.21%</td>
</tr>
<tr>
<td>Malaysia</td>
<td>171.92%</td>
<td>-17.90%</td>
</tr>
<tr>
<td>Thailand</td>
<td>178.91%</td>
<td>-25.97%</td>
</tr>
</tbody>
</table>

Source: Calculated from data in fig 8b

Figure 8b

| International Reserves (millions SDRS) of Selected East Asian Countries |
|-----------------------------|---------|---------|---------|---------|---------|---------|---------|---------|
| Indonesia                   | 5351.92 | 6581.02 | 7707.52 | 8308.15 | 8419.44 | 9330.43 | 12800.9 | 12401.9 |
| Korea                       | 10409.3 | 9589.55 | 12462.6 | 17574.3 | 21994.6 | 23681.9 | 15107.5 |         |
| Malaysia                    | 6938.48 | 7692.27 | 12612.8 | 17498.4 | 18866.8 | 15489.5 |         |         |
| Thailand                    | 9438.9  | 12332.8 | 14892.9 | 17903.7 | 20179.2 | 24292.6 | 26326   | 19489.6 |

Source: IMF International Financial Statistics 2000 CD

Figure 9

<table>
<thead>
<tr>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Korea</td>
<td>7.00%</td>
<td>5.00%</td>
<td>-3.00%</td>
<td>-62.00%</td>
<td>13.00%</td>
</tr>
<tr>
<td>Malaysia</td>
<td>90.00%</td>
<td>44.00%</td>
<td>67.00%</td>
<td>37.00%</td>
<td>-49.00%</td>
</tr>
<tr>
<td>Thailand</td>
<td>53.00%</td>
<td>-38.00%</td>
<td>-27.00%</td>
<td>19.00%</td>
<td>-21.00%</td>
</tr>
</tbody>
</table>

Source: Calculated from IFS CD data

Figure 10

1997 Non-Performing Asset of Banks

Source: IMF IFS CD 2000
**Figure 11**

*Monthly Avg. Exchange Rates: Singapore Dollar Index rel. to U.S. Dollar*

*Source: PACIFIC Exchange Rate Service - http://pacific.commerce.ubc.ca/xr/plot.html*

*Exchange rates indexed at 100% on July 1, 1995*

**Figure 12**

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>India</td>
<td>42.11%</td>
<td>-30.97%</td>
<td>35.47%</td>
<td>24.40%</td>
</tr>
<tr>
<td>Indonesia</td>
<td>631.57%</td>
<td>48.78%</td>
<td>40.29%</td>
<td>-32.81%</td>
</tr>
<tr>
<td>Korea, Rep.</td>
<td>102.25%</td>
<td>-37.02%</td>
<td>89.00%</td>
<td>-37.94%</td>
</tr>
<tr>
<td>Malaysia</td>
<td>-24.89%</td>
<td>19.44%</td>
<td>26.75%</td>
<td>-27.28%</td>
</tr>
<tr>
<td>Thailand</td>
<td>-41.21%</td>
<td>126.29%</td>
<td>35.23%</td>
<td>-74.61%</td>
</tr>
<tr>
<td>Philippines</td>
<td>18.39%</td>
<td>11.41%</td>
<td>15.76%</td>
<td>-16.53%</td>
</tr>
</tbody>
</table>

*Source: Worldbank WDI CD 1999*