# The East Asia Crisis – Fundamental Indicators and the Need for Bailout Intervention

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The East Asia Crisis that began in 1997 was unique in its ability to cripple countries that had previously enjoyed years of unprecedented economic success. This paper provides a brief review of the East Asia Crisis and explores differences between countries that required bailouts and those that did not. The results show that the countries that required bailouts were characterized by greater current account deficits, higher levels of domestic credit to the private sector, lower export shares of GDP, and more volatile debt composition than those less affected. Meanwhile, the groups were similar in their export growth and inflation rates. These findings could inform policy measures aimed at preventing and managing future financial crises.

## 1. Introduction

The East Asia Crisis began on July 2, 1997 with the devaluation of the Thai baht and quickly spread to neighboring countries. The East Asian countries had experienced years of robust economic growth leading up to the crisis, leading many economists and policy makers to try and identify the causes of the crisis. Potential explanations of the crisis include weak fundamentals, investor panic and improper policy responses, weaknesses in the financial sector, or some combination of the above. In this paper, I assess the importance of economic fundamentals as a cause of the crisis by comparing current account balances, domestic credit to the private sector, exports, inflation, debt levels and capital flows between the countries that required bailouts and those that did not.

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## *Relevant Literature*

Numerous theoretical and empirical papers have been published trying to understand how financial crises unfold. Some of the plausible theories that have emerged analyze business cycles and imperfections in the credit market, flaws in exchange rate regimes, and information asymmetries as possible root causes of these crises. On the other hand, empirical studies have analyzed the relationship between economic fundamentals and financial crises, the timing of speculative runs on currency, and the spread of contagion.

The existing literature has argued that in most crises, it is possible to find a set of fundamentals that could explain which countries would be most affected and to what extent. Kaminsky, Lizondo, and Reinhart (1998) construct an index of warning indicators consisting of exports, GDP, real exchange rate deviations, inflation and several other variables and analyze the extent to which the index predicts a currency crisis (1). Sachs, Tornell and Velasco (1996) present a model in which real exchange rate appreciation, lending booms and low reserves explain why some emerging markets were hit by crises following the peso devaluation in 1995 while others were not (2). Other literature has linked financial crises to fundamentals within the financial sector in particular. For examples of this, see Calvo (1995) and Velasco (1987) (3,4).

The literature on the East Asia Crisis in particular shows that the countries most severely affected ran larger current account deficits, showed greater exchange rate volatility and had higher indicators of financial and real instability. For example, see Corsetti, Pesenti, and Roubini (1998) (5). Other researchers have blamed the international organizations who pushed the East Asian economies towards rapid financial deregulation, leading to large capital inflows that quickly reversed upon the devaluation of the Thai baht. For examples, see Dissanaike and Markar (2009) and Austin (2009)(6,7). Finally, another explanation for the crisis is that trade linkages and in particular export policies are a determining factor in the magnitude of currency crises and played a key role in the East Asia Crisis. For example, see Khan (2018) (8).

The main contribution of this paper is to the literature that studies the role of fundamentals in financial crises. I provide a summary of the similarities and differences between 11 East Asian economies in several fundamental variables in order to differentiate which fundamentals may have been relevant in determining the severity of the East Asia Crisis. I also use a different methodological approach in which I compare countries that required IMF bailouts with those that did not, lending additional support to the literature arguing that large current account deficits and excessive credit levels make countries susceptible to crises. The second main contribution of this paper is to the literature analyzing the effect of exports and trade on the crisis. The data in this paper

raise doubt on the relevance of export levels during the East Asia Crisis, despite the significant decrease in exports following the reversal of the Plaza Accord. The data shows that the countries requiring bailouts had lower reductions in their export revenues on average, suggesting that export levels alone likely did not cause this crisis. Rather, it may have been the interaction between debt and export levels that proved relevant, and future research should analyze the mechanism through which the two interact in order to guide more effective policy design.

The rest of the paper is organized as follows. Section 2 discusses the methodology. Section 3 lays out a brief overview of the build up to the crisis. Section 4 presents the data on fundamentals. I conclude in section 5.


## 2. Methodology

The sample used in this paper includes the 10 members of the Association of Southeast Asian Nations (ASEAN) and South Korea. Although there are multiple metrics to determine how severely a country is hurt by a financial crisis, for the purposes of this paper the sample was split into two groups: countries that required IMF bailout packages (Thailand, South Korea, Philippines, and Indonesia (TIKP)) and those that did not (Brunei, Cambodia, Laos, Malaysia, Myanmar, Singapore and Vietnam (non-TIKP)). This is a similar empirical approach to that used in *Rebooting the Eurozone: Agreeing a Crisis Narrative*, a policy research paper analyzing the Eurozone Crisis from the Center for Economic Policy Research.

The two groups are comparable for two reasons. First, by the beginning of the crisis, Indonesia, Malaysia, Singapore, the Philippines, Thailand, Brunei, Vietnam, Laos and Myanmar were all part of the ASEAN. Part of the ASEAN's mission was to facilitate economic growth and increase collaboration between the countries on agriculture, industry, and trade (8). As part of this economic union, the countries shared common economic policies. Second, the countries in the two groups had similar savings rates, GDP growth rates, and exchange rate regimes leading up to the crisis (see appendix and (9)). With the exception of the Philippines which operated an independently floating exchange rate, all other countries in the sample used a managed float or direct peg system.

All data used in this paper were collected from three sources – the World Bank Online Database, Penn World Table, and the Bloomberg Terminal. In section 3, I use stock price data collected from the Bloomberg Terminal while all growth-accounting data was collected from the Penn World table. The data in section 4 on fundamentals were taken from the World Bank's *World Development Indicators* database. In this section, I look at the current account balance,

domestic credit to the private sector, export levels, inflation, short-term debt, and foreign direct investment in the sample countries and plot a non-weighted average for the two groups between 1990 and 1997 for each variable.

## 3. Buildup to the Crisis

Beginning in the 1960s, the East Asian countries experienced tremendous economic growth. A World Bank Report from 1993 credited much of this growth to low taxes, improved government institutions, and export-oriented policies. Four countries in particular - Hong Kong, Singapore, South Korea, and Taiwan - became known as the "Four Asian Tigers" due to their exceptional growth rates (over 7% per year), rapid industrialization, and their eventual development into high-income economies in the 21st century (10).

Meanwhile, the East Asian countries saw a significant increase in capital inflows. One such type of capital flow, foreign direct investment (FDI), occurs whenever a firm or investor from one country establishes a business or acquires an existing entity in a foreign nation. In the second half of the 20th century, firms began to invest in the region, contributing to the rapid economic growth. The following figure illustrates net foreign direct investment (FDI) inflows to the East Asian economies, which soared 3,000% between 1970 and 1990.
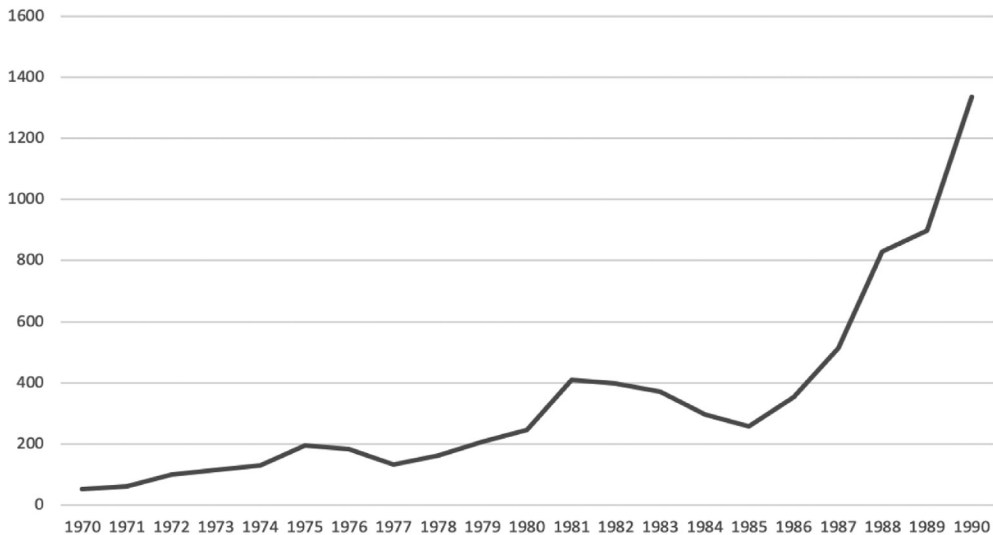


**Figure 1:** Foreign Direct Investment, ASEAN Member Nations and South Korea (current USD, millions)
(Source: World Development Indicators, the World Bank Group)

A natural next question is, how much of the growth in real GDP in East Asia over this time period could be accounted for by growth in the capital stock? To answer this question, I conducted growth-accounting using a Cobb-Douglas production function with constant returns to scale of the form $F(K,L) = AK^{\alpha}L^{1-\alpha}$, where A is a parameter representing technology, K stands for capital, L stands for labor, and alpha represents capital's share of income. Taking natural logs and subtracting, the production function can be rewritten in terms of growth rates:

$$\gamma_{Y,t} = \gamma_{A,t} + \alpha\gamma_{K,t} + (1-\alpha)\gamma_{L,t}$$

where gamma represents the corresponding growth rate in year t. The growth in labor was approximated by the growth in population and the growth in technology was approximated by the growth in total factor productivity (tfp). The results for the ASEAN nations and G7 nations are shown below.

| Thailand | Indonesia | Korea | Philippines | Singapore | Malaysia | Laos |
|---|---|---|---|---|---|---|
| 117.75% | 46.74% | 50.69% | 84.81% | 97.88% | 87.83% | 63.48% |

Capital Contribution to Output, G7 Nations (1980–1997)

| United States | United Kingdom | Germany | France | Italy | Japan | Canada |
|---|---|---|---|---|---|---|
| 30.09% | 51.26% | 29.51% | 20.89% | 61.02% | 49.25% | 43.28% |

(All data collected from Penn World Tables)
*Note: Full tables can be found in the Tables section*

**Figure 2:** Capital Contribution to Output, ASEAN Nations (1980–1997)

As Figure 2 shows, capital contributed more to output in the ASEAN nations than in the G7 nations between 1980 and 1997. Capital was much more important to these countries' growth than in the G7 nations, and this is one potential explanation of why the subsequent reversal of capital flows led to such a severe contraction. In Singapore almost 100% of the growth in real GDP could be explained by growth in the capital stock. In Thailand, the capital stock grew even *faster* than real GDP.

Although this analysis only factors in real capital, East Asia was also experiencing large inflows of financial capital. Domestic credit and stock markets boomed: in the 10 years leading up to the crisis, the Indonesian stock market as

measured by the JCI index rose 682%, while the Philippines and Malaysian indices rose 321% and 198% respectively. Thailand and South Korea showed more modest growth of 94% and 34% respectively (stock price data collected from the Bloomberg Terminal).

These countries enjoyed tremendous success during the second half of the 20th century, but the reversal of the Plaza Accord in 1995 brought financial difficulties to the Asian economies (11). The United States agreed to let the US dollar appreciate against the yen and Deutsche mark, which made German and Japanese exports more competitive with Asian exports (11). Furthermore, the stronger dollar made it difficult for Asian economies to borrow in dollars, and it became increasingly difficult for them to subsidize their industries (11). Foreign reserves were being depleted, and investors questioned whether these countries could support their currency pegs. On May 14, 1997, there was a large speculative attack on the Thai baht. Prime Minister Chavalit Yongchaiyudh promised he would not devalue the baht, but Thailand eventually ran out of reserves and was forced to float the baht on July 2 (11). This marked the beginning of the East Asia Crisis, as capital flight ensued and contagion spread throughout the region.

A natural question in policy circles is whether the outcome of the crisis could have been predicted. The next section explores this question by comparing the countries most severely affected by the crisis with those more mildly affected and seeing if there are common economic fundamentals among them.

## 4. Fundamentals

### *Current Account Balance*

The current account is a measure of a country's trade balance plus its net income and transfer payments from abroad. The current account also measures net capital flows and reflects whether a country is a net borrower or net saver. A current account deficit means a country is a net borrower while a surplus indicates it is a net lender. Figure 3 shows the average current account balance of the TIKP and non-TIKP nations in the years leading up to the crisis.

The graph shows that, on average, the TIKP nations ran greater current account deficits compared with non-TIKP nations in the decade before the crisis, but the two groups converged as the crisis hit. Non-TIKP nations saw large inflows of capital beginning in 1992, and both groups experienced sudden stops when the capital flows reversed in 1996. As the graph indicates, the contraction was more severe for the TIKP countries (2%) compared with non-TIKP countries (~0.5%).
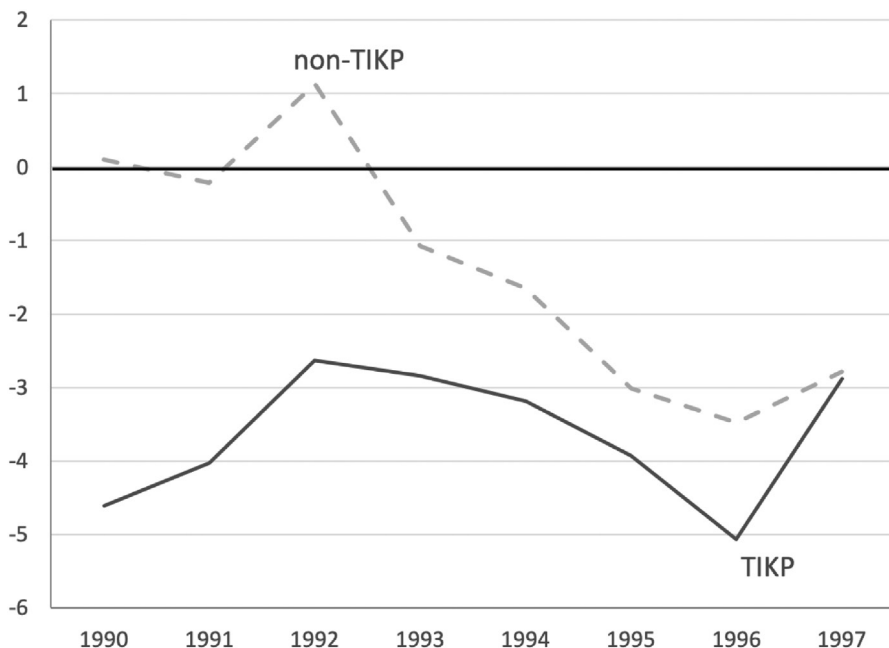
**Figure 3:** Current Account Balance (% of GDP)
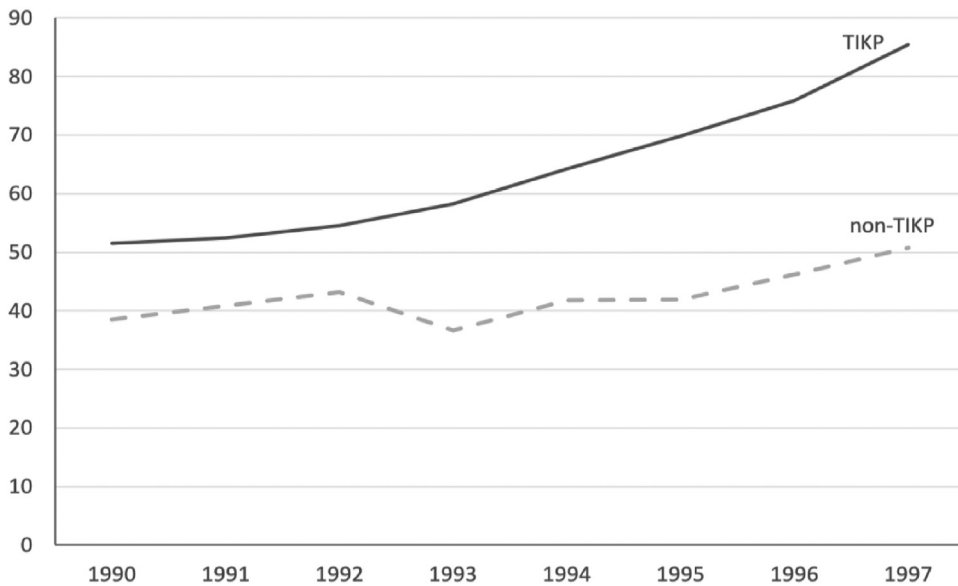(*Source*: World Development Indicators, the World Bank Group)

## *Domestic Credit to Private Sector*

High GDP growth rates often accompany credit booms. Large expansions in credit facilitate spending and thereby increase GDP, especially if credit is used to finance investment in productive assets. However, credit may also lead to high debt levels and can adversely affect the economy if directed towards less productive resources. Credit booms generally accompany the expansionary phase of business cycles, with rising GDP, rising inflation and falling unemployment. Contractions in credit tend to accompany the contractionary phase of business cycles, with declining GDP and increasing unemployment. Figure 4 looks at domestic credit to the private sector as a share of GDP for the two groups. The TIKP countries saw their private sectors borrowing more, with a larger expansion in credit.

## *Exports*

Some economists propose that the export-oriented policies mentioned earlier were to blame for the crisis (for example, see (12)). The US dollar depreciated after

**Figure 4:** Domestic Credit to Private Sector (% of GDP)
(*Source*: World Development Indicators, the World Bank Group)

the reversal of the Plaza Accord in 1995, which suddenly made East Asian exports more expensive and less competitive in global markets. According to this view, the subsequent collapse in export revenues was one cause of the coming crisis.

As can be seen in figure 5, the TIKP and non-TIKP nations had similar trends in export growth. Both groups experienced a marked decline in their export growth in 1995, but the TIKP nations saw an increase in their export growth in the year leading up to the crisis while the non-TIKP nations saw their export growth fall further. Figure 6 plots exports as a share of GDP for the two groups and shows that exports in the non-TIKP group accounted for almost twice as much of GDP as in the TIKP group. Even though in the non-TIKP group export growth fell further and exports contributed more to GDP, it was the TIKP nations that required bailouts. Thus, the data suggest that export levels alone were not to blame for the crisis; an interesting follow-up question would be to analyze the interaction between a collapse in exports and existing debt levels – it is plausible that a collapse in exports has a more detrimental impact on economies with high debt burdens.

### Inflation

Inflation was relatively well managed in the ASEAN countries before the crisis. Laos was the only country with a hyperinflation episode, with an annual inflation

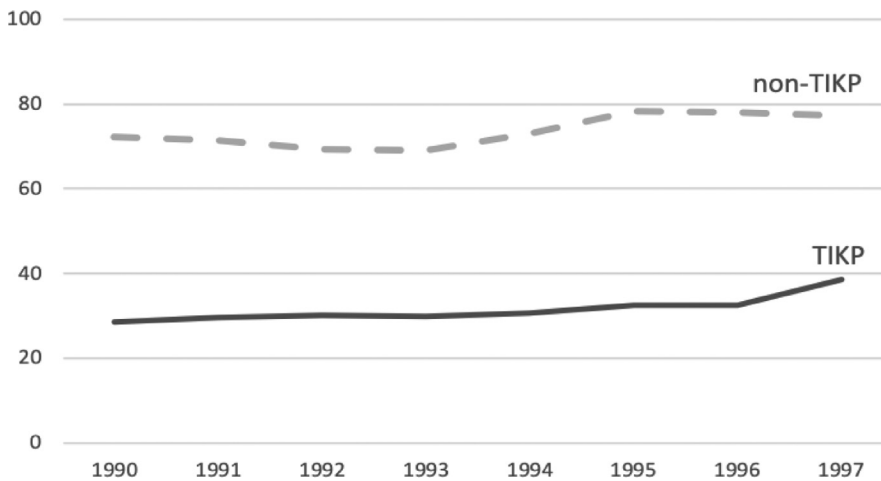**Figure 5:** Export Growth (annual %)



**Figure 6:** Exports (% of GDP)
(*Source*: World Development Indicators, the World Bank Group)

rate of 61% in 1989. However by 1993, its inflation rate dropped to 6%, and the average inflation rate from 1990–1997 for the Asian economies excluding Laos was 7.5%. Overall, Figure 7 shows no significant difference in the average inflation levels between the two groups from 1990–1996, but the two groups diverged
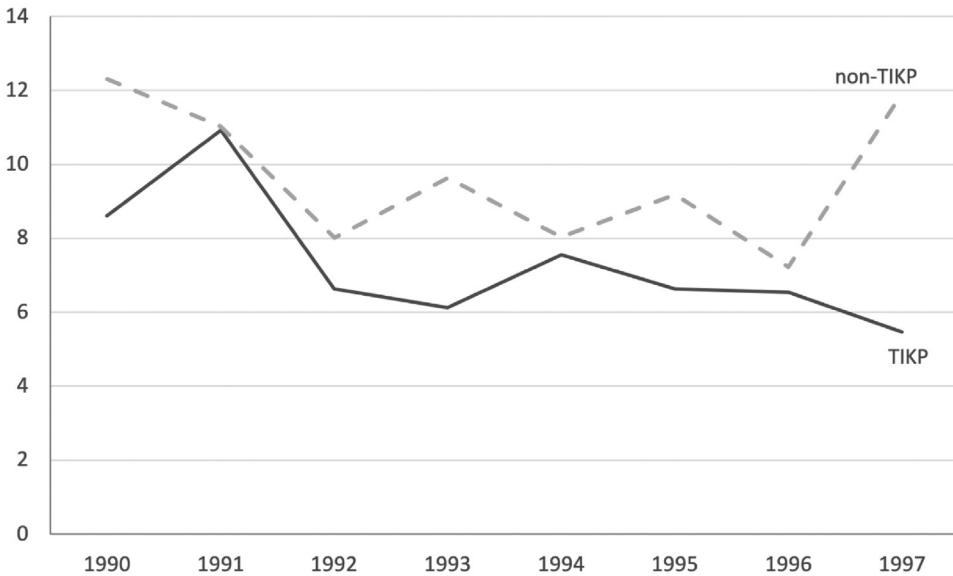
**Figure 7:** Inflation (annual %)
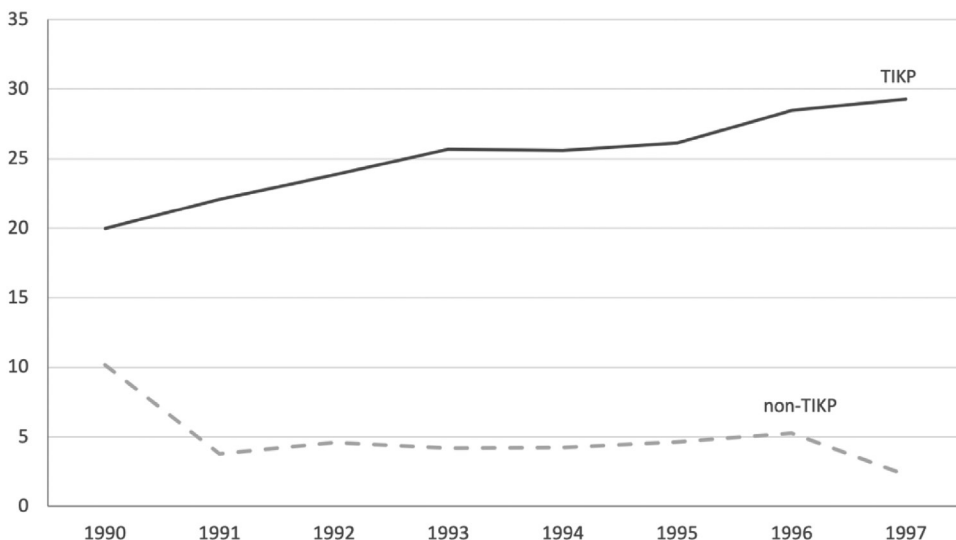(*Source*: World Development Indicators, the World Bank Group)

immediately before the crisis. A closer look at the data reveals that in 1997, Laos and Myanmar saw their inflation rates nearly double, while inflation in the other non-TIKP countries remained roughly constant.

## Debt

Debt is an important aspect of any crisis episode because even if a financial crisis is not a debt crisis at its core, it may quickly develop into one. During a sudden stop episode, countries desperate to borrow have to face higher interest rates. Higher interest payments on short-term obligations may be hard to meet, and lenders may be unwilling to rollover the debt. Faced with liquidity issues, banks must turn to a lender of last resort – usually their central bank. As the crisis unfolds, the government often buys out the debts of private banks. This is the famous "doom loop", and in this way, sudden stop crises may develop into debt crises (13).

Figure 8 looks at short-term debt in the East Asian economies in the period leading up to the crisis.

Since 1980, the debt stocks of the TIKP nations had much higher proportions of short-term debt on average than the non-TIKP nations. When the crisis hit in 1997, the TIKP group had six times more short-term debt relative to total debt than the other Asian economies had.

**Figure 8:** Short-Term Debt (% of External Debt Stock)
(*Source*: World Development Indicators, the World Bank Group)

The data seems to lend support to the traditional view among policy circles that short-term debt makes countries particularly susceptible to financial crises. However, some of the academic literature has argued that this is a case of reverse causality – financial institutions that want to provide liquidity to borrowers with poor credit ratings must borrow short-term, and it is the decreasing credit worthiness of debtors rather than the short-term maturity structure of debt that causes susceptibility to crises (for example, see Diamond and Rajan (2000)). I refrain from offering a causal relationship between short-term debt and the trajectory of the TIKP nations, and merely document the empirical relationship.

### Foreign Direct Investment

As documented earlier, the Asian economies saw an explosion in FDI in the second half of the 20th century. Despite rapid FDI growth being common to the whole region, there were still notable differences in the composition of capital flows for the two groups. On average, the TIKP nations had much lower levels of net FDI inflows between 1990 and 1997 than the non-TIKP nations.

FDI is considered to be a longer-term, more stable form of capital flow as compared with other forms of capital. Since the TIKP nations had larger current account deficits but smaller inflows of FDI, capital flowing into the TIKP nations was likely more short-term and volatile in nature. The data also seems to be consistent with the view that short-term, volatile capital increases the fragility
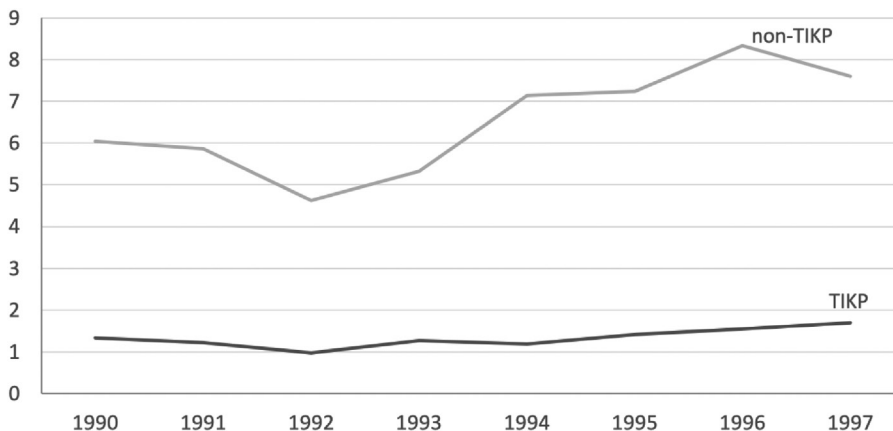
**Figure 9:** Foreign Direct Investment, Net Inflows (% of GDP)
(*Source*: World Development Indicators, the World Bank Group)

of a country's financial sectors and makes them more susceptible to a crisis. As explained previously, I merely document the relationship between volatile capital flows and the TIKP group membership and refrain from making any causal statements.

## 5. Conclusion

This paper provided a brief review of the East Asia Crisis and showed that a large part of economic growth in the Asian economies during the second half of the 20th century may be associated with growth in the capital stock. The paper then evaluated differences in several fundamental indicators (current account balance, domestic credit to the private sector, export levels, inflation, debt composition and FDI) between countries that required bailouts (Thailand, Indonesia, South Korea, and the Philippines) and countries that did not (Brunei, Cambodia, Laos, Malaysia, Myanmar, Singapore and Vietnam). The results show that the countries that were bailed out borrowed more, as evidenced by higher current account deficits and larger levels of domestic credit. Moreover, their aggregate debt stocks had a higher share of short-term debt, and their capital flows were more short-term and volatile in nature.

The data in this paper also raise new questions about the effects of trade policy in financial crises. The countries that experienced the largest collapses in export revenues and in which exports made up the largest proportion of GDP were not the countries that required bailouts, however they did have lower debt

levels. This suggests that perhaps the effect of international trade on a country during a financial crisis depends on other fundamentals, such as debt levels. This mechanism should be analyzed in future research so that policymakers can more effectively anticipate the economic impacts of trade reductions. Finally, inflation rates between the two groups were similar.

One potential limitation of this analysis is the lack of consistent economic reporting across these countries during the 1980's and 1990's. Several countries did not have full detailed data over this time period, and consistent detailed data would have allowed for a more accurate analysis. Furthermore, future research should evaluate whether these findings still apply if the sample is divided according to other metrics – the main alternative being contraction in GDP. Finally, future policy work should continue analyzing the extent to which economic fundamentals predict financial crises with the aim of developing policy tools to prevent or mitigate crises in the future.

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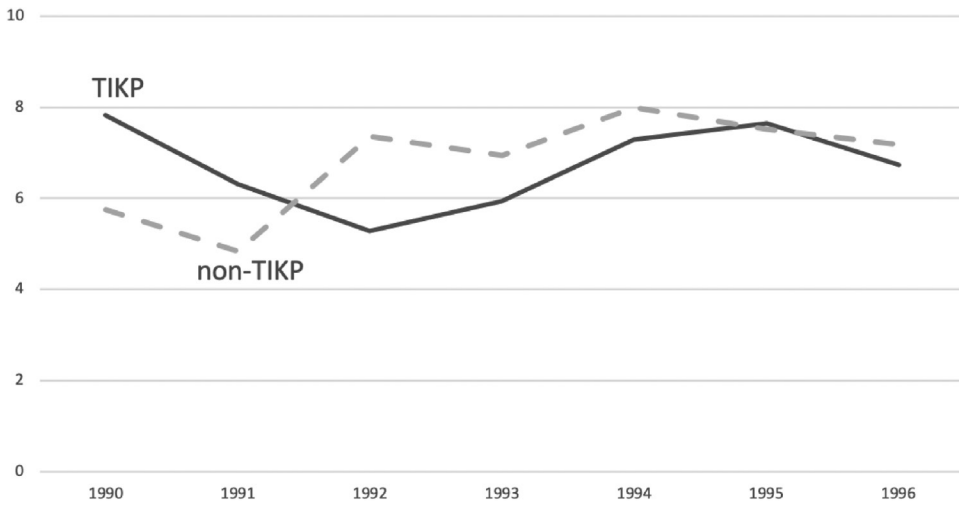
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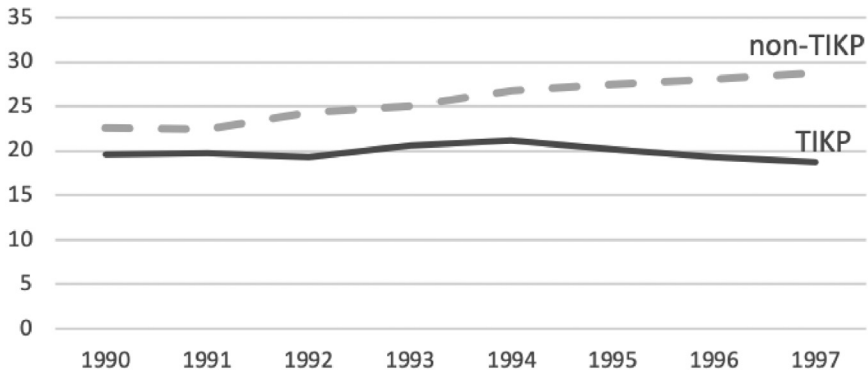
## *Acknowledgments*

# Appendix

*GDP Growth Rates*



*Savings Rates*

## Tables

|  | Thailand | Indonesia | Korea | Philippines | Singapore | Malaysia | Laos |
|---|---|---|---|---|---|---|---|
| $\gamma_{Y,t}$ | 6.95% | 6.35% | 10.51% | 5.23% | 4.56% | 6.72% | 7.08% |
| $\gamma_{A,t}$ | 0.206% | 0.539% | 2.27% | −1.5% | 0.309% | .094% | −5.43% |
| $\gamma_{K,t}$ | 14.11% | 5.35% | 12.56% | 7.89% | 7.98% | 8.49% | 7.76% |
| $\gamma_{L,t}$ | 1.48% | 1.89% | 1.15% | 2.57% | 2.46% | 2.66% | 2.62% |
| $\alpha$ | 58.07% | 55.52% | 42.39% | 56.18% | 55.95% | 69.50% | 57.90% |
| Total Capital Contribution | 117.75% | 46.74% | 50.69% | 84.81% | 97.88% | 87.83% | 63.48% |

**Table 1:** *Solow Model Data – Asian Economies*

|  | United States | United Kingdom | Germany | France | Italy | Japan | Canada |
|---|---|---|---|---|---|---|---|
| $\gamma_{Y,t}$ | 3.39% | 2.62% | 2.87% | 1.97% | 2.54% | 3.09% | 3.04% |
| $\gamma_{A,t}$ | 0.87% | −0.10% | 1.19% | −0.03% | −0.98% | 0.13% | −0.47% |
| $\gamma_{K,t}$ | 2.64% | 3.04% | 2.55% | 1.17% | 3.55% | 3.79% | 4.23% |
| $\gamma_{L,t}$ | 1.02% | 0.23% | 0.21% | 0.52% | 0.07% | 0.41% | 1.14% |
| $\alpha$ | 38.67% | 44.30% | 33.15% | 35.35% | 43.69% | 40.16% | 31.07% |
| Total Capital Contribution | 30.09% | 51.26% | 29.51% | 20.89% | 61.02% | 49.25% | 43.28% |

**Table 2:** *Solow Model Data – G7 Nations*