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The Global Financial Crisis and Economic Growth: An Analysis of the East Asian Economies

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Abstract

Along with more its integrated economy in middle globalization era, crisis finances that occur in a country can with easy spread to countries other and become a global financial disaster in period time which short. On incident sort of this, very strong economic fundamentals important for maintain something country from effect crisis which "infectious". As proof, because it is fundamental economy Which fragile And lack of credibility government, East Asian economies can attacked with easy by crisis on year 1997 so market confidence is deteriorating. however , Asia This East has Study Lots from incident on year 1997 is so it can be prove its resilience in face crisis finance global that hit in 2008 with increase fundamentals the economy as well as credibility para policy makers. This paper started with theory about growth economy And crisis finance. Furthermore, empirically test so far where crisis finance on year 1997 And 2008 affected Asian economies East with use data panel econometrics. The evidence shows that, though second crisis has give impact bad on economy East Asia, crisis wave 2008 relatively No more critical than crisis year 1997. Finally, study this also provides an explanation more carry on about how economy Asia East has succeeded in minimizing the impact of the crisis global on year 2008.

Keywords: Global Financial Crisis, East Asian Economy, Economic Growth, Financial Markets, Securities Random

Introduction

Since the era of globalization, financial crises have become more frequent than before. One of the main reasons is advances in information technology, which, to a certain extent, amplified the crisis wave and accelerated its spread to other regions or countries. Another reason is the rapid development of the financial sector. One example is the emergence of International Financial Integration (IFI). In this case it is explained that IFI refers to "the extent

to which an economy does not restrict cross-border transactions". Therefore, due to an integrated financial system, the emergence of domestic financial disturbances in one country can cause a domino effect by disrupting other integrated economies leading to global financial chaos.(D. Lee, 2023)

In the last two decades, at least two major financial crises have occurred, namely the 1997 East Asian Financial Crisis and the 2008 Global Financial Crisis. If the crisis in 1997 was caused by a lack of government transparency and credibility that led to structural and policy distortions, the economic turmoil of 2008 was mainly triggered by rapid innovation in financial products such as securitization practices and "credit default swaps". This was exacerbated by property speculation and inaccurate credit ratings. In both cases, the development of the crisis spread to other continents and in a short time, became a global crisis due to the contagion effect of a globally integrated financial system and the rapid spread of information.(Nzama et al., 2023)

Although the sources of crises may vary, the consequences of a financial crisis are always linked to macroeconomic indicators, particularly economic growth. For example, during the East Asian crisis, East Asia's economic growth fell from the fastest growing region in the world to a region where several member countries recorded negative income growth in 1998 such as Indonesia, Malaysia, Singapore, South Korea, the Philippines and Thailand. Furthermore, Indonesia, Thailand and South Korea must request a bailout loan program from the International Monetary Fund (IMF). On the other hand, during the 2008 crisis, although the source of the crisis was caused by the collapse of international financial institutions in the west, especially in the United States and Britain, several East Asian countries such as Malaysia, Singapore and Thailand were also dragged into the crisis by experiencing a large financial burden. Nevertheless, statistics show that the impact of the crisis in 2008 on East Asian countries was not as bad as in 1997. In addition, these countries managed to recover quickly. In this regard, many argue that East Asian countries have learned a lot in 1997 and managed to withstand the crisis in 2008 through strengthened economic fundamentals.(Nguyen, 2023)

In view of this fact, it becomes increasingly important to formally examine the causes and consequences *vis-a-vis* the financial crisis, especially in the context of the East Asian region. Therefore, the aim of this study is to measure the impact of each financial crisis on economic growth in East Asian countries. Furthermore, it is also important to analyze how the East Asian economies succeeded in minimizing the impact of the 2008 Global Financial Crisis. Until now, although there has been a lot of literature analyzing the impact of the 1997 East Asian Financial Crisis, most of this research uses Lloyd and MacLaren's qualitative approach. In addition, due to its recent occurrence, studies examining the consequences of the 2008 Global Financial Crisis are also limited. Therefore, this paper aims to fill the gap in the literature by introducing a quantitative methodology and comparing the consequences of the two crises in East Asian economies. The rest of the paper is organized as follows: Section 2 provides an overview of related theories on economic growth and financial crises, Section 3 provides a methodology for measuring the impact of both financial crises on growth using econometric modeling, Section 4 presents empirical evidence and further discussion, and Section 6 concludes the paper.(Peruffo et al., 2023)

Literature Review

Growth Theory

Since the aim of this paper is to examine the impact of the financial crisis on economic growth, it is necessary to first describe the factors of growth from a theoretical perspective. As such, this section introduces some theories of economic growth that can be applied for methodological purposes. According to the neoclassical view, growth is supported by capital accumulation at a diminishing rate in the long term. As a consequence, the country will achieve its *"steady-state"* in the long run, namely stagnant economic growth. One implication of this growth model is that underdeveloped countries with open economies can eventually catch up with developed countries as capital flows from developed to underdeveloped countries thereby offering higher returns on investment, resulting in economic convergence.(Maris & Holmes, 2023)

On the other hand, the so-called *"new growth theory"* contradicts this theory by stating that countries do not always experience *a "steady-state"* in the long term. For example, a study by Lucas that considers human capital as an endogenous variable of economic growth shows that there is no "diminishing return" on the combination of the accumulation of human capital and capital goods. In other words there is growth in the long run. This *"constant returns to cale"* result is due to the positive externality effect of knowledge, which affects the output of each firm in the economy. Another theory was put forward by Romer, who emphasized the importance of science and technology as an engine of economic growth. He argues that there are "spillovers" of capital created by firms, which, in turn, create knowledge. Knowledge triggers positive externalities and will prevent shrinkage of growth in the long term.(Grigoryev & Maykhrovitch, 2023)

In application, human resources and knowledge "spillovers" can be acquired through FDI and, to some extent, trade. Within the scope of developing countries, Yao and Wei argue that FDI can act as a means of transferring factors from developed to developing countries because FDI accelerates the pace of "General Purpose Technology" (GPT) and introduces advanced technology and knowledge that is not available in developing countries. -developing countries. Thus, developing countries will utilize these factors as assets in order to increase economic growth. It should be emphasized that some literature shows that FDI can distribute knowledge and knowledge efficiently to a country only if the country fulfills several conditions For example, a hypothesis by Bhagwati suggests that trade policy plays an important role in determining the effectiveness of FDI in distributing positive externalities in a country. In this case, he argues that countries with an export orientation can capture the "spillovers" effect of FDI more efficiently and, thus , will have a higher growth rate.(Saif-Alyousfi, 2023)

In summary, this section shows that, based on neo-classical growth theory, initial income is an important growth factor because countries with relatively low initial income will grow faster and catch up with countries with higher initial income. Furthermore, it also shows that capital accumulation acts as an engine of growth in the short term. Meanwhile, new growth theories state that variables such as FDI and trade are also important in creating sustainable

economic growth in the long term by creating positive externalities through knowledge transfer. Therefore, for methodological purposes, these variables are considered as the main determinants of growth. Before proceeding to the methodology, this paper will first investigate the typology of financial crises in the following section.(Rao et al., 2023)

Financial Crisis Typology

The Reserve Bank of Australia defines a stable financial system as a system in which any transfer of funds from lenders to borrowers is properly accommodated by financial intermediaries, markets and market structures. Therefore, financial instability is a condition in which the collapse of the financial system due to disrupting these activities and triggering a financial crisis. Truly a systemic risk. General Purpose Technologies are technologies that have an impact on the national economy as a whole, such as computers and automobiles that are always attached to every financial system, which according to Davis is closely related to the wealth and health of financial institutions. In other cases, market liquidity failures and damage to market infrastructure can also initiate risks.(Burdekin & Nguyen, 2023)

In his paper, Davis also outlines several theoretical frameworks that explain financial instability, which include: 1) the theory of debt and financial fragility, 2) the theory of disaster myopia, and 3) the theory of bank runs. The debt and financial fragility theory argues that the economy follows cycles consisting of periods of positive and negative growth. With economic progress, debt and risk-taking activities increase. This creates an asset bubble which will lead to negative growth. Meanwhile, the disaster myopia theory shows that financial instability can be caused by the competitive behavior of financial institutions which leads to a condition where the credibility of the borrower is ignored and the risk is reduced. On the other hand, the theory of bank runs describes conditions in which panicked investors sell their assets or withdraw their funds for fear that economic conditions will worsen. As a consequence, this will result in a sudden drop in asset prices and a liquidity crunch.(Ma & Lv, 2023)

To their extent, these three theories can explain the 1997 East Asian Financial Crisis. Financial deregulation with insufficient regulatory oversight led to asset bubbles which resulted in negative economic growth in East Asian economies. Meanwhile, rapid expansion can also cause a credit crisis because credit is channeled haphazardly to insolvent debtors in order to increase profitability. Last but not least, when investors realized that the situation had gone bad, they withdrew their funds, which led to a large capital outflow.(Matsuo et al., 2023)

In addition to these basic theories, some literature suggests that financial instability can also be caused by the role of international capital flows through international transmission, such as trade patterns, exchange rate pressures and foreign investment, which cause "contagious *effects".* For example, the Global Financial Crisis that occurred in 2008 was actually triggered by the *"subprime mortgage" crisis* that started in the United States. Although the crisis in the US can be explained by the above theories, its spread to other regions, including the East Asia region, was caused by the contagion effect of the *"subprime mortgage"* crisis.(Tori et al., 2023)

Research methods

This section presents a research methodology for examining the impact of the 1998 and 2008 financial crises on the East Asian economies. This paper collects data sets from the World Bank's World Development Indicators (WDI) for the period 1990-2010. It contains various macroeconomic variables from selected East Asian economies, including the ASEAN-5 (Indonesia, Malaysia, Philippines, Singapore and Thailand) and other East Asian economies such as China, Japan and South Korea.

In order to examine the relationship between economic growth and financial crises, this paper needs to develop the determinants of growth first. Following previous studies (eg see Barro, 2001, Chongvilaivan, 2010), growth is determined as a function of initial income, capital expenditure, investment, and trade. Then, this reference growth model is added to the crisis dummy. As a result, this paper defines the empirical framework as follows:

$$Growth_{it} = \beta_0 + \beta_1 Income_{it} + \beta_2 Capital_{it} + \beta_3 FDI_{it} + \beta_4 Trade_{it} + \beta_5 Crisis_{it} + \varepsilon$$

Where i, i = 1, 2, …, N, and t, t = 1, 2, …, T, denotes economy i in time period t, respectively.

The dependent variable, Growth, is the GDP per capita growth rate. The first explanatory variable, Income, is the logarithmic form of per capita GDP. Furthermore, Capital is gross fixed capital formation as a percentage of GDP, which is included in order to see the level of productivity of a particular country. The reason is, a higher share of capital accumulation leads to higher levels of productivity, thereby increasing income growth. FDI is net foreign direct investment as a percentage of GDP. To some extent, the role of FDI in contributing to growth can be similar to that of capital but is not limited to it. The reason is that FDI also facilitates externalities and spillover effects, which further increase the productivity efficiency of local firms. Trade represents the openness of international trade, as measured by the ratio of exports and imports to GDP. Points out that this variable represents the impact of the global financial crisis on the economy with respect to commodity markets. Finally, the crisis dummy variable is included in the model. This dummy has a value of one during periods of crisis, such as the 1998 East Asian Financial Crisis and the 2008 Global Financial Crisis, and zero otherwise. For more details on variables, please see Appendix 1.

From this model, revenue is expected to have a negative sign. This rationale is based on Swan Solow's neo-classical model, which shows that economies with lower income levels grow faster and catch up with economies with higher income levels, resulting in income convergence (eg, see Solow, 1956). Conversely, capital and FDI are estimated to have a positive relationship with growth. While the neo-classical Solow-Swan model states that all types of capital have the same role in contributing to economic growth, the "new growth theory" states otherwise. As mentioned earlier, through FDI, these externalities can be transferred from industrialized to developing countries as an important asset for promoting further economic growth (for example, see Yao and Wei, 2007). For this reason, this paper estimates that the FDI coefficient will be larger compared to capital because it has a bigger role in contributing to economic growth.

The relationship between trade openness and income growth can be more complex and depends on whether international trade leads to trade creation or trade diversion. The first occurs when international trade increases the well-being of members of a trade alliance without compromising non-members. Conversely, the second occurs when trade alliances are formed at the expense of non-members and thus welfare decreases. In this case, the relationship between trade openness and income growth depends on which effect has a stronger effect.

Finally, the coefficient of the crisis dummy is estimated to be negative because it is intuitive. However, the coefficient of the 1998 East Asian Financial Crisis is expected to be larger than the 2008 Global Financial Crisis because, as previously mentioned, East Asian countries had stronger fundamentals and better resilience during the 2008 Global Financial Crisis.

Due to the nature of the panel data, this paper uses the fixed effects and random effects methods for estimation purposes. By using fixed effects, the model controls for unobserved heterogeneity by assuming that each country has its own effect that can affect the dependent variable. In this model, the heterogeneity of each country is captured by the intercept and associated with the independent variables. Thus, the nature of the fixed effects prevents heterogeneous bias in the estimation and thus this model always gives consistent results. The existence of fixed effects can be tested by conducting an F-test. Fixed effects are significant when significant zeros are rejected. Another model is the random effects model which assumes that variations across countries are random and are not correlated with the independent variables. Unlike the fixed effects model, the existence of random effects can be tested using the Breusch-Pagan Lagrange Multiplier test.

Results and Discussion

This section presents the estimation results from equation (1). However, before proceeding to the results, it is necessary to justify the stationary of the variables included in the model. As previously indicated, this study uses a data set that covers a long period, namely 21 years. So some variables may contain a unit root. If a uni root is present, these variables become non-stationary and render traditional estimation methods (OLS) unusable as they may generate spurious regressions. In this case, tests for cointegration are required for non-stationary variables.

There are several unit root panel tests that can be performed such as Hadri, Levin, and Lin Chu and Im, Pesaran and Shin. This paper uses Levin, Lin and Chu to examine the presence of unit roots in variables. The results show that the stationery of these variables is zero so that the existence of a unit root is significantly rejected at the 5% level for all variables (Appendix 4). Therefore there is no need to carry out a cointegration test. Thus, Equation (1) can be estimated using the fixed effects and random effects models.

In addition, due to the nature of the data, serial correlation and/or *heteroscedasticity* may arise, which can lead to inconsistent and biased estimation results. Therefore, this paper

corrects this problem by treating each country as a cluster to estimate the true standard error with the Huber/White cluster-robust covariance estimator in all regressions.

Reference Growth Regression

The first column of Table 1 shows the results of the fixed effects estimation, while the second column shows the results of the random effects estimation. Overall, the results are consistent with economic theory and expectations. The first explanatory variable, income, is not significant in the first column, but is significant at 1% in the second column with a negative coefficient.

Furthermore, capital is significant in both columns, although the coefficient is larger in random effects. Overall, although the magnitude is relatively higher, these results are consistent with previous studies. Therefore, this proves that higher capital accumulation leads to higher productivity and increases income growth. In addition, FDI is also significant at 1% and positively correlated with income growth in both regressions. In the fixed effects model, as expected, the FDI coefficient is greater than capital, which is also consistent with previous research. However, contrary to the results in the fixed effects model, the random effects model shows that the capital coefficient is slightly higher than FDI.(Gao, 2023)

Finally, trade has a negative sign and is only significant for random effects. The weak evidence of a relationship between trade openness and income growth may point to the existence of trade creation and diversion. If the effect of trade diversion in a region is greater than its creation, trade openness will not result in an increase in output.

Table 1.

Variable	Fixed effects	Random
Constant	-14,575 (6,982)	-1,206 (2,158)
Income	3,098 (2,141)	-1.274*** (0,417)
Capital	0.216** (0,068)	0.310*** (0,050)
FDI	0.417*** (0,100)	0.202*** (0,054)
Trading	-0.084 (0,069)	-0.009** (0,022)
F test	44.65	
LM test		0.22
R2 inside –	0.24	
R^2 in between	0.05	
R^2 Overall	0.11	
Number of obs.	168	168
Number of	8	8

***, ** and * are significant at the 1%, 5% and 10% levels respectively and the error at

The F test on fixed effects rejects a clear zero value, equating the correlation between the explanatory variables and the heterogeneous effect on the error. In other words, the estimation of these fixed effects provides a clear and consistent estimator. In contrast, the Breusch-Pagan Lagrange Multiplier test used for random effects is not significant at the 10% level and fails to reject the absence of equal individual effects. This shows that there are no random effects. As a result, the estimation of random effects is biased and inconsistent.("Short Guides to Static Panel Data Regression Model Estimator," 2023)

Economic Growth and Financial Crisis

Furthermore, the discussion in this paper continues to the impact of the financial crisis on economic growth in East Asian economies. As shown in the methodology, this paper uses the crisis dummy method to measure the impact of the financial crisis on the economies in East Asia. The first crisis dummy was carried out in the 1997 East Asian Financial Crisis. In this case, even though the crisis occurred in 1997, the dummy variable uses a value of one in 1997-1998 taking into account the lagging effect of the crisis. The second dummy crisis was implemented in the 2008 Global Financial Crisis. Due to the lagging effect, artificial crises were also applied when the crisis occurred and in subsequent years, for example 2008-2009.(V. Lee & Viale, 2023)

Table 2 shows the reference growth model developed by including the crisis dummy. In the first two columns, the model is developed with the 1997 East Asian Financial Crisis. In general, the relationship between the determinants of growth and income growth is consistent with the initial standard regression. Furthermore, as predicted, the crisis dummy plays a significant role in both models with relatively the same value. Based on estimates, below ceteris paribus, the existence of the East Asian Financial Crisis caused the East Asian economies to experience negative income growth, around 6%.(Harrison et al., 2023)

Once again, this paper examines which of these estimation methods provides a better estimate by looking at the F test (for fixed effects) and the LM test (for random effects). In line with the output of the reference regression, the F test significantly rejects zero at the 1% level, whereas the LM test fails to reject zero at the 10% level. Thus, in the East Asian Financial Crisis, the estimation of fixed effects is a better model because the estimator is consistent and clear in it.

Table 2.

Variable	Fixed effects	Random effects	Fixed effects	Random
Constant	-7,970 (6,816)	-0.435 (1.921)	-24,975** (10.310)	-1,071 (2,104)
Income	0.621 (1.957)	-1.359*** (0.422)	6,491* (3.270)	-1.223*** (0.405)
Capital	0.295*** (0.051)	0.311*** (0.037)	0.180* (0.085)	0.307*** (0.054)
FDI	0.428*** (0.060)	0.210*** (0.042)	0.328** (0.104)	0.171*** (0.041)

Trading	0.018 (0.049)	0.001 (0.017)	-0.119 (0.079)	0.004 (0.028)
Asian Crisis	-5,944*** (1.385)	-5,988*** (1.304)	-	-
Global Crisis	-	-	-3.014** (0.945)	-2.128** (0.879)
F test	219.49		89.48	
LM test		0.00		0.21
R2 inside –	0.47		0.296	
R^2 in between	0.40		0.016	
R^2 Overall	0.42		0.020	
Number of obs	168	168	168	168
Number of	8	8	8	8
***, ** and * are significant at the 1%, 5%, and 10% levels and the errors at the cluster-robust standard are shown in brackets				

The last two columns show the reference growth model for the 2008 Global Financial Crisis. Surprisingly, the fixed effects model shows that the value of income increases if the model is used for the 2008 crisis, this shows that countries with higher incomes tend to grow faster even though the signs are very weak (eg only significant at the 10% confidence level). One possible explanation is that countries with relatively high incomes, especially Singapore, managed to achieve income growth above 10% after the crisis even though the growth that occurred was negative growth during the crisis, while countries with relatively low incomes such as Indonesia only achieve stable growth even though these countries were able to avoid negative growth when the crisis occurred.(Batuman et al., 2022)

In contrast, other variables, such as capital, FDI and trade, do not make a significant difference from the previous estimate. Finally, the Global Financial Crisis dummy is significant at the 5% level in both regressions even though the impact of the crisis is higher in the fixed effects model. Moreover, the results of this model are also consistent with the expectations of this paper, for example the 2008 Global Financial Crisis had a smaller adverse impact of income growth on East Asian economies.(Rod Erfani & Vasigh, 2018)

Further Discussion and Analysis

Apart from the coefficients for income and trade, the estimation results in this model are in line with expectations and are consistent with previous studies. The purpose of this section is to present a discussion and follow-up analysis of the estimation results. First, the income coefficient in the reference model and the model that has been added to the 1997 East Asian Crisis dummy shows insignificant results with signs that are not in line with expectations. However, the estimation results from the model developed by the 2008 Global Financial Crisis dummy are significant at the 10% level and are the same as the previous case. These results indicate that the growth model used in this paper slightly supports Solow's non-classical growth theory, especially with regard to economic convergence.(Amato et al., 2023)

Second, the estimated coefficients for capital are all significant and positive as expected. This shows that capital accumulation has a positive effect on economic growth. However, the

estimation results for FDI, which are more significant than the estimation results for capital, indicate that there is a transfer of knowledge from more advanced economies to less developed economies through FDI. These results support studies conducted by Lim and Yao and Wei, which state that FDI supports externalities and indirect effects that will increase the efficiency of the productivity of local firms. Thus, this will support economic growth.(Fourné et al., 2023)

Third, the estimated coefficients for trade are all insignificant and show signs to the contrary. This suggests that this model presents insufficient signs for us to draw conclusions regarding the correlation between trade openness and income growth. Even so, these results show that the data used in this paper supports a study conducted by Chongvilaivan, where his paper proposes that trade variables are not significant as a result of trade creation and trade diversion. Therefore, the effect of trade on income growth depends on whether the welfare of trading alliance members increases at the expense of non-members or not.(Heo & Choi, 2023)

Finally, although the two estimation results for the crisis dummy show a negative sign, the 1997 East Asian Crisis dummy shows a higher value than the 2008 Global Financial Crisis dummy. This is in line with expectations because the 1997 East Asian Crisis occurred in the East Asia region and was the result of causes -the internal causes of the region, including: 1) lack of policy credibility and 2) inadequate financial infrastructure, which coincided with financial deregulation. The first reason, as stated, is because this crisis was initially driven by the misuse of state intervention and ineffective industrial policies in the region. Whereas the second cause, financial deregulation, inadequate financial infrastructure, and weak banking supervision encourage risky investments without adequate risk assessment resulting in credit bubbles and collapse in the financial sector. These key economic factors highlight “financial weakness” as a major issue in East Asian economies, which led to the 1997 crisis and hit the region's economies very badly (see Appendix 5 for statistics on macroeconomic variables during the two financial crises). Furthermore, the crisis deepened due to the expansion in the real sector, which hit borrowers' businesses and huge capital flows.(Benita, 2023)

On the other hand, the crisis in 2008 resulted in a smaller impact on the region's economy because the region only experienced the "contagious effect" of the crisis which actually came from advanced economies. To some extent, these results support this paper, which suggests that divergence may be related to externalities in the 2008 global financial crisis. The crisis also places much emphasis on the multidimensional reforms that followed the 1997 East Asian Financial Crisis. More specifically, Goldstein and Xie show that large foreign ownership, improved financial structure, high contribution from regional trade, and rational "countercyclical" monetary and fiscal policies will help the region to deal with the negative impact of the crisis.(Chen et al., 2023)

Conclusion

The world financial system, supported by developments in information technology, has strengthened financial integration between countries in the world. In addition to its usefulness in these circumstances, financial integration has also made financial crises spread more easily

and more quickly and damaged connected economies. For this reason, the study of financial crises has become more important than ever. In this case, the aim of this study is to better understand the causes and effects of the current financial crisis by providing a comprehensive analysis to avoid its occurrence, or at least minimize the impact of a future financial crisis.

This study has revealed important findings regarding the main impact of the financial crisis on East Asian economies. First, this study has investigated the impact of the 1997 East Asian Financial Crisis and the 2008 Global Financial Crisis using a quantitative approach, for example, panel regression. The results show that although the two crises had reversed effects on the economies in the region, East Asian economies had been stronger during the 2008 crisis than the 1997 crisis. Externalities of the crisis, most economies in East Asia have learned lessons after the 1997 East Asian Financial Crisis by strengthening economic fundamentals, supported by better government credibility and accountability.

Concerted efforts to restructure the banking and financial sectors by East Asian governments after the 1997 East Asian Financial Crisis have increased resilience to economic crises. Better oversight of the sector contributed to the reform, as opposed to previous periods of deregulation and suspension and the amalgamation of financially troubled institutions. Capital is also involved to help with liquidity problems. In addition to reforms in the banking and financial sectors, higher requirements for corporate transparency are also needed to increase credibility in the private sector. Together, these reforms have strengthened the economic fundamentals of East Asian countries. Another important thing that has improved the readiness of East Asian countries in facing the 2008 Global Financial Crisis is the increase in foreign exchange, which helps the government in maintaining economic conditions during the crisis.

Despite the findings, the scope of this study is limited to country-level data and analysis. Therefore, further studies should focus more on analysis at the industry level and should be facilitated by the availability of data at the industry level to examine the sensitivity of each industry in anticipating a financial crisis. In addition, the estimation results in this study can be improved by adding an interaction variable between artificial crises and other independent variables and introducing GMM estimates in estimating the model to obtain simultaneous equations in the model.

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Attachment

Attachment 1. Description Variable

Variable	Description
Growth	percentage level growth annual from GDP per capita based on mark eye local money Which constant. GDP per capita is product domestic gross shared amount population on mid year. GDP on price buyer is amount from mark gross plus all producer
Income	GDP per capita is product domestic shared amount population on mid year. GDP on price buyer is amount from mark gross plus whole producer economy in region the plus tax product And reduced subsidy Which No put in mark product. Mark This
Modal	Formation capital gross (was investment gross domestic) consists from expenditure in addition to from asset economy certain plus change clean on levels inventory (inventory). Asset still (fixed assets) including repair land (fence, moat, channel water, etc), plant, machine, And purchase tool And material; And
FDI	*Foreign direct investment* is income clean from investment For obtain management interest Which eternal (10 percent or more from voting share) in something which company operate in
Openness Trading	Ratio between export And import to GDP (Showed in % GDP).
Crisis	Variable artificial For show happening crisis (is Crisis Finance 1997 or Crisis Finance Global 2008). Variable This take mark

Appendix 2.					
Variable	Obs.	Means	SD	Min	Max
Capital Income Growth	357	2,843	3,567	14,287	13,605
FDI	357	3,864	0.644	2,486	4,610
Trade Openness	357	24,875	7,465	11,367	48,243

Appendix 3.				
				Openness
Income	1,000			
Capital	0.166			
FDI	0.291	1.000		

Attachment 4.			
Variable	t-star	Mark t	Mark p.s
Capital Income Growth	8,871	4,869	0.000
FDI	7,941	2,717	0.003

Appendix 5. Foreign exchange reserves from several East Asian countries (in millions)

Appendix 5.3. Inflation Rates in Asian Economies, 1997-1998		
	inflation	
	1997	1998
China	2.8	-0.8
Indonesia	6.2	58.4
Japan	1.8	0 . 7

Malaysia	2.7	5 . 3
Philippines	5.6	9 . 3
Singapore	2	-0.3
South Korea	4.4	7 . 5
Thailand	5.6	8 . 0

Source: World Bank's World Development Indicator

Attachment 5.4.Asia East Four: indicator macroeconomics, 1990-1999

	Level Unemployment					Savings I GDP				
	1990	1996	1997	1998	1999	1990-	1996	1997	1998	1999
Indonesia	na	4.1	4.6	5.5	6.3	31	26.2	26.4	26.1	23.7
Malaysia	6	2.5	2.4	3.2	3	36.6	37.1	37.3	39.6	38
Rep. of Korea	2.4	3	2.6	6.8	6.3	35.6	33.7	33.3	33.8	33.5
Thailand	4.9	1.1	0.9	3.5	4.1	34.4	33	32.5	34.9	31
	investment I GDP					(Saving-Investment) I GDP				
	1990-	1996	1997	1998	1999	1990-	1996	1997	1998	1999
Indonesia	31.3	29.6	28.7	22.1	19.3	-0.3	-3.4	-2.3	4	4.4
Malaysia	37.5	42.5	43.1	26.8	22.3	-0.9	-5.4	-5.8	12.8	15.7
Rep. of Korea	36.8	36.8	35.1	29.8	28	-1.2	-3.1	-1.8	4.1	5.5
Thailand	41	41.1	33.3	22.2	21	-5.6	-8.1	-0.9	12.8	10
	Ratio addition modal-output									
	1987-	1990-	1993-	1997	1998	1999				
Indonesia	4	3.9	4.4	1.7	0.4	1.8				
Malaysia	3.6	4.4	5	3.9	28.2	4.3				
Rep. of Korea	3.5	5.1	5.1	4.2	-15.1	3.2				
Thailand	2.9	4.6	5.2	12.9	-11.5	14.5				
	Balance fiscal I GDP									
	1990-	1996	1997	1998	1999					
Indonesia	0.2	1.4	1.3	-2.6	-3.4					
Malaysia	-0.4	0.7	2.4	-1.8	-3.2					
Rep. of Korea	0.2	0.5	-1.4	-4.2	-2.9					
Thailand	3.2	2.4	-0.9	-3.4	-3					

Source: Radelet and Sachs (1998: table 11); ADB (1999); Bank of Thailand, Banks Indonesia, Bank of Korea, Bank Country Malaysia, quoted from Jomo