Determining factors of foreign direct investment in Emerging Market Asia: A panel data analysis (2005-2020)

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ABSTRACT

Foreign Direct Investment (FDI) is recognized as a major force that integrates developing countries into the world economy and is expected to be a key factor in driving sustainable and balanced economic growth. Emerging Market Asia countries are the host countries that receive the highest inflows of Foreign Direct Investment (FDI) compared to other emerging market countries. Even in crisis conditions, emerging market countries, especially the Asian region, are still the destination for investment because of their resilience to crisis shocks. In analyzing the determinants of Foreign Direct Investment (FDI), the variables used are Market Size, Trade Openness, Interest Rates, Control of Corruption, Education Levels and Telecommunication Infrastructure. The analytical method used is the Fixed Effect Model (FEM) Data Panel. The results of the study show that market size, corruption control and telecommunications infrastructure have a positive and significant effect on foreign direct investment inflows. The Education Level variable was found to have a negative effect on FDI inflows. While the variables of Trade Openness and Interest Rates have no significant effect. The implications of this research are that host country governments need to create an investment-friendly environment with transparent bureaucratic conditions to increase the trust of foreign investors. Additionally, governments also need to provide facilities that can support the private sector in creating productive investments, such as by improving GDP performance and enhancing infrastructure quality.

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Keywords
Foreign direct investment (FDI)
Asian emerging markets
Panel data
Fixed effect model (FEM)

Introduction

A country's development program is not enough if it only relies on financing from domestic finance, for this reason, the government needs capital from abroad to meet the country's development needs. Foreign capital flows have become the main source of investment in various countries. Most countries choose foreign investment inflows to be attractive capital flows due to their stable nature, low volatility, and long-term commitment in the host country as well as their
significant impact on economic growth through the effect of technology transfer (Sawalha et al., 2016). Foreign Direct Investment (FDI) flows can impact the economy by providing opportunities to improve the level of the service sector (i.e. telecommunications, banking and finance, transportation), wholesale and retail trade, business and legal services. The entry of foreign direct investment will bring technology, innovation, increase capital, create jobs which will reduce unemployment, and improve the quality of human resources so investment is considered important in accelerating economic growth in developing countries (Niarachma et al, 2021; Nairobi & Amelia, 2022).

Foreign Direct Investment (FDI) has grown rapidly throughout the world, especially in emerging market countries. Emerging markets continue to make efforts to increase their attractiveness to foreign investors to absorb more capital flows, especially FDI inflows. Based on UNCTAD data, in 2010 there was a shift in FDI inflows to developing countries and emerging markets that exceeded inflows to developed countries (UNCTAD, 2019; Kudina & Pitelis, 2014).

![Figure 1. Foreign Direct Investment in Emerging Market](image)

Source: UNCTAD (2019)

Figure 1 shows that Global Investment Trends Monitor report shows that global FDI increased by 36% in 2015. Developing Asian countries are the region receiving the largest FDI, namely more than half of Global FDI. Developing Asia's FDI grew by 4% in 2018 to USD 512 billion (UNCTAD, 2019), even as global FDI flows fell 13% due to tax reforms that discouraged outbound FDI from the United States (UNCTAD, 2019). Developing Asia remains the largest recipient of FDI globally (40% of all flows), with the United States, China, and Japan remaining the top investors in the region through green field projects and cross-border acquisitions (UNCTAD, 2019). During the crisis caused by the Covid-19 pandemic which was experienced by all countries in the world, FDI flows to developed countries fell 58 percent to $312 billion, while FDI flows to developing countries decreased but not significantly. Developing countries only experienced a decline of 8 percent to
$663 billion. Even FDI flows to China rose 6 percent to $149 billion, mainly due to resilient economic growth, investment facilitation efforts, and continued investment liberalization. Developing Asia recorded an increase of 4 percent to $535 billion in 2020 (UNCTAD, 2021).

Despite the economic and financial crises, developing countries outperformed other economies mainly due to their sustainability and resilience even during periods of crisis. Emerging market Asia is a region that is the largest recipient of FDI compared to emerging markets in other regions. FDI inflows to Asian emerging market countries tend to continue to grow every year. In 2020, emerging market Asia received FDI inflows of $499 billion or around 79% of the total FDI inflows of emerging markets. Seeing the growth of FDI inflows into emerging market countries, researchers are interested in examining what factors determine foreign investors in deciding on emerging market countries as host countries for FDI. Several previous studies examine the determinants of FDI flows to a country. The research results of Tambunan (2015) mention several factors that determine the investment climate in a country, not only regarding inefficient government bureaucracy, inadequate infrastructure, policy instability, corruption, low access to finance, and tax regulations but also influenced by economic stability as reflected in stable currency exchange rates, inflation, interest rates, and economic growth. This factor is one of the considerations for foreign and domestic investors when investing.

Hoang (2012) states that the higher the level of trade openness in a country, the trade barriers in that country will decrease. Low interest rates are also an attraction for investors in choosing a destination country for Foreign Direct Investment (FDI). According to Moosa (2002) interest rates can be used as a reflection of the cost of capital needed by investors when they want to use or borrow funds from banking institutions in the host country to finance their activities. Meanwhile Faria & Mauro (2004) revealed that corruption can hinder domestic investment and foreign investment (FDI). Foreign investors are not interested in conducting FDI in countries with high corruption rates because corruption creates inefficiencies in investors' operational activities. So investors choose countries with good corruption control. Education can also be a factor that influences investor decisions. An educated workforce can be attractive to host countries to increase FDI inflows. Especially companies that require certain skill criteria. Then the availability of good quality infrastructure in a country will also more easily stimulate the inflow of FDI. Infrastructure in the form of transportation facilities such as ports and ships that have international standards is an important factor for investors to consider. Because these factors will facilitate the flow of distribution and sales of the company's products. In addition to transportation facilities, telecommunications infrastructure is also needed to support communication links between the host country and the country of origin of the FDI, and also to support communication in the production, distribution, and sale of products.
Research related to the determinants of foreign direct investment in emerging market countries conducted by Yilmaz & Löschnigg (2019) found that there is a positive and significant relationship between market size, growth potential, natural resources, real effective exchange rate, financial development, and FDI stock on FDI inflows into developing countries. Then inflation has a significant negative effect in determining FDI inflows, while trade openness, infrastructure, government consumption, and urban population are not significant. The study findings show that market size is the main driver of FDI inflows into the country's economy. Other research related to the determinants of foreign direct investment inflows in developing countries conducted by Kumari & Sharma (2017) found that the results of FDI inflows were determined by market size, trade openness, and human capital. These three variables have a positive and significant relationship with FDI inflows.

Xaypanya et al (2015) conducted similar research and found that inflation, telephone lines, and trade ratios significantly determine FDI inflows in ASEAN3 countries, and in ASEAN5 they found the influence of GDP and telephone lines on FDI which is in accordance with the research hypothesis. On the other hand, this research also found results that were contrary to the hypothesis, namely on the variables of inflation rate and degree of trade openness in ASEAN5 countries. It was found that with higher inflation rates and lower levels of openness, foreign investors are still interested in investing more in the region. Subasat & Bellos (2020) conducted research using six governance indicators to analyze what factors play a role in attracting net inflows of foreign direct investment (FDI) to emerging market countries. The research results provide evidence that Voice and Accountability, Political stability and absence of violence, Quality of regulations, and Control of corruption have a statistically significant positive effect on FDI. Government effectiveness and Rule of law were found to be significantly negatively related to FDI. In addition, the research further examines the macroeconomic determinants that impact FDI. It was found that trade openness, developed infrastructure as well as the amount of natural resource rents as a percentage of GDP create desirable business conditions for multinational companies to invest. Based on the background of the problem described and the various results of different determinant variables in previous research, the author considers that there is a need for further research into the factors that can influence foreign direct investment in emerging Asian market countries by referring to several developing foreign direct investment theories. The determinant variables chosen to be examined in this research include Market Size, Trade Openness, Interest Rates, Corruption Control, Education Level, and Cellular Telecommunications Infrastructure. To clarify the research results, researchers chose countries that are included in emerging Asian markets according to the MSCI index. The contribution of the study to the literature to explore the determinant variables on foreign direct investment based on panel data in emerging Asian market countries because Emerging
Market Asia countries are the host countries that receive the highest inflows of foreign direct investment.

**Method**

This research was conducted to identify the determinants of Foreign Direct Investment (FDI) inflows in Asian emerging market countries using panel data from 2005-2020. The countries that were sampled in this study were selected based on market classification data published by MSCI for 2021, so the selected Asian emerging market countries were China, India, Indonesia, Korea, Malaysia, the Philippines and Thailand. The independent variables used include market size as a proxy for real GDP, trade openness as a proxy for export and import ratios, interest rates, corruption control, mean years of schooling as a proxy for the level of education, and cell phone subscriptions as a proxy for telecommunications infrastructure. The data sources used come from books, related journals and published documents from the UNCTAD (United Nations Conference on Trade and Development), the World Bank, UNDP (United Nations Development Program) and the Global Competitiveness Index Report.

The analytical method used is panel data analysis. According to Gujarati (2004) the use of panel data has several advantages, one of which is being able to account for heterogeneity (explicitly) in the presence of specific individual variables, because unobserved individual effects can bias the estimation. Then the combination of time series and cross section data makes panel data able to provide estimation results that are more informative, varied, collinearity between variables is smaller, has a higher degree of freedom, and a more efficient model. The model in this research was developed from a model built by Kumari & Sharma (2017) with modifications by adding the variables Corruption Control and Education Level. Research and development and inflation variables are not included in the model in this study. The econometric equations are constructed as follows:

\[
FDI_{it} = \beta_0 + \beta_1 MKT_{it} + \beta_2 OPEN_{it} + \beta_3 IR_{it} + \beta_4 COC_{it} + \beta_5 EDU_{it} + \beta_6 INFRA_{it} + \epsilon_{it}
\]

Where \( FDI \) is the Foreign Direct Investment (in Million US$); \( MKT \) is the Market Size is measured using real GDP in Million US$; \( OPEN \) is the Trade Openness is measured using trade ratio in percent; \( IR \) is the interest rate (percent); \( COC \) is the corruption control measured on a nominal scale of -2.5 to 2.5; \( EDU \) is the mean years of schooling (units of years); \( INFRA \) is the mobile cellular subscription (in units per 100 people); \( \beta_0 \) is the constanta; \( \beta_1, \ldots, \beta_6 \) is the coefficient regression of panel data; \( i \) for cross-section; \( t \) for time-series and \( \epsilon_{it} \) is the error term. Best model for panel data conduct by the chow test and hausman test (Gujarati, 2004). The Chow test was used to determine the best model between the Common Effect Model (CEM) and the Fixed Effect Model (FEM) and the
Hausman test was conducted to determine the best model between the Random Effect Model (REM) and the Fixed Effect Model (FEM).

**Results and Discussion**

Emerging markets in Asia are the largest recipients of FDI inflows when compared to emerging markets in other regions. FDI inflows tend to continue to increase every year. The countries selected in this study consisted of China, India, Indonesia, Korea, Malaysia, the Philippines and Thailand. Figure 2 shows that China is the country with the highest FDI receipts compared to selected Asian emerging market countries, namely India, Indonesia, Korea, Malaysia, the Philippines, and Thailand. Based on the UNCTAD Report, China was recorded as the largest recipient of Foreign Direct Investment (FDI) in 2020. Amid the crisis conditions due to the Coronavirus which spread throughout the world throughout the year, the Chinese economy managed to attract FDI inflows of US$ 163 billion.

![Figure 2. Inflows of Foreign Direct Investment (US$) from Selected Countries](image)

Source: UNCTAD (2021)

The second country receiving the most FDI is India. India has risen to become one of the top ten countries globally in terms of Foreign Direct Investment (FDI) receipts. The UNCTAD report revealed that India received $59.64 billion of FDI inflows in 2020. FDI inflows to India in 2020 have increased by 19 percent from the previous year, indicating that India's FDI is in good shape. The crisis that emerged during the Covid-19 pandemic has impacted several companies relocating to other countries. Indonesia is one of the countries that has succeeded in attracting investors to relocate. Based on the BKPM (2020) there were 7 foreign companies originating from the United States, Japan, Taiwan, and South Korea relocating their businesses to Indonesia. The total investment value of the 7 companies reaches USD 850 million with potential employment of up to...
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300,000 people. This is a form of successful facilitation and negotiation efforts carried out by the Investment Coordinating Board (BKPM).

To analyze the determinants of FDI in seven Asian Emerging Market countries, this study uses six dependent variables, namely Market Size, Trade Openness, Interest Rates, Corruption Control, Education Level, and Telecommunication Infrastructure. Selection of the best panel data regression model is done by testing using the Chow Test and Hausman Test. The Chow test was used to determine the best model between the Common Effect Model (CEM) and the Fixed Effect Model (FEM), which model is better used in this study. Meanwhile, the Hausman test was conducted to determine the best model between the Random Effect Model (REM) and the Fixed Effect Model (FEM). The following are the results of the two tests that have been carried out.

| Table 1. Best Model Selection Estimation Results |
|-----------------|-----------------|-----------------|-----------------|
| Chow Test        | Statistics       | d.f             | Prob            |
| Cross-Section Chi-Square | 84.663029       | 6.0000          | 0.0000          |
| Hausman Test     | Statistics       | d.f             | Prob            |
| Cross-Section Random | 111.827392      | 6.0000          | 0.0000          |

Source: data processed

Table 1 on the Chow test, it was found that the F-statistical value (18.637) was greater than the F table (2.19) and the p-value was smaller than the significance value (α) of 0.05. So the resulting decision is H0 rejected. With a significance level of 5 percent, it is concluded that there is at least one intercept among the other 6 intercepts whose value is not the same, so the Fixed Effect Model (FEM) is better to use than the Common Effect Model (CEM). Furthermore, the Hausman test gives the result that the value of the W statistic (111.827) is greater than the value of $X_2$ table (12.592) and the p-value is smaller than the significance value (α) of 0.05. The resulting decision is H0 rejected. From the results of this test it was found that with a significance level of 5 percent it can be concluded that the Fixed Effect Model (FEM) is better than the Random Effect Model (REM). Thus the Fixed Effect Model (FEM) is the best panel data model that can be used based on the Chow and Hausman test results.

Table 2 the regression analysis shows that the value of Adjusted R-Square is 0.845135 or 84.51%. This shows that the ability of the independent variable in giving effect to the dependent variable is 15.49%. While the remaining 15.49% is influenced by other variables outside the regression model. The value of Prob(F-statistic) is 0.0000 which is smaller than the significance level of $= 0.05$. It shows that the independent variables simultaneously or together have a significant effect on Foreign Direct Investment. The estimation results show that market size, corruption control, and telecommunications infrastructure have a positive and significant effect on FDI at 5 percent level of significance. The level of education found results that did not match the hypothesis, namely that there was a negative effect between the level of education on FDI. While Trade Openness and Interest Rates show insignificant results.
**Table 2. Result of Fixed Effect Model (FEM)**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Coefficient</th>
<th>Diagnostic Tools</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>28849.22</td>
<td>Adj R-Squared 0.826</td>
</tr>
<tr>
<td>MRKT</td>
<td>0.009</td>
<td>F-stat 45.022***</td>
</tr>
<tr>
<td>OPEN</td>
<td>37.939</td>
<td></td>
</tr>
<tr>
<td>IR</td>
<td>-42.063</td>
<td></td>
</tr>
<tr>
<td>COC</td>
<td>4878.847</td>
<td></td>
</tr>
<tr>
<td>EDU</td>
<td>-1518.059</td>
<td></td>
</tr>
<tr>
<td>INFRA</td>
<td>42.828</td>
<td></td>
</tr>
</tbody>
</table>

|                |                  | Noted: *, **, *** significance at level 10%, 5% and 1% respectively |

The market size has a positive and significant effect on FDI at 5 percent level of significance, the results show that every one unit increase in market size (million US$) will increase 9,715 US$ FDI (assuming ceteris paribus). Based on these results, it can be concluded that there is a positive effect of market size on FDI. The findings are in accordance with the hypothesis in this study and also in accordance with Dunning's eclectic theory or commonly referred to as the OLI Paradigm. Based on the OLI paradigm (Ownership, Localization, and Internalization paradigm), one of the advantages which is main factors in determining who will become the host country for transnational company activities is location advantage. Among the advantages of location advantage, one of them is the economic advantage, which consists of market size, quantitative and qualitative factors of production, transportation costs, and telecommunications. Similar findings were found in research conducted by Kumari & Sharma (2017) which found a positive effect of market size on FDI inflows in developing countries. Aprianto et al (2020) also found that GDP (Market Size) is a significant factor influencing FDI inflows to low-income countries.

The Influence of Control of corruption on FDI was found to be positive and significant at 5 percent level of significance. A positive sign on the coefficient indicates a positive influence, meaning that the better the corruption control in a country, the more investor confidence will increase and investment in that country will increase. The coefficient of 4878.847 means that when there is an increase in one corruption control unit (scale -2.5 – 2.5) it will increase US$ 4,878.84 million or US$ 4.87 billion of FDI. These findings are in accordance with the theory of Institutional FDI Fitness on the fourth pillar, namely the government. In the fourth pillar of the Institutional FDI Fitness theory it is explained that the role of a country's political power plays a large role in determining FDI. Government conformity requires the application of protective regulations to
Dunning’s eclectic theory states that one aspect of concern in terms of location advantage is infrastructure. This is important because infrastructure facilitates product distribution. The intended infrastructure can be in the form of various facilities such as communication services, road networks, energy sources, and various other infrastructure facilities that encourage easy product distribution. The estimation results show that Telecommunication Infrastructure has a positive effect on FDI inflows in Asian Emerging Market Countries and significant at 5 percent level of significance. The positive sign on the coefficient indicates that the better the telecommunications infrastructure of a country, the more attractive FDI inflows will be to that country. The coefficient of 42.82824 means that when there is an increase in one unit of infrastructure (per 100 people) it will increase FDI inflows by US$42.82 million. Grace (2019) reveals that Infrastructure is one of the important determinants that have a positive influence on FDI inflows to ASEAN-9 and ASEAN-7 countries. Host countries with high-quality infrastructure are attractive to investors who want to minimize production costs by increasing efficiency so as to maximize returns on investment (Yilmaz & Löschnigg, 2019).

A negative effect was found on the level of education on FDI inflows. These findings are not in accordance with the hypothesis and theory which states that there is a positive influence between the level of education on FDI inflows in Emerging Market Asian Countries. The level of education is related to the quality of human capital in a country. Grace (2019) revealed that in the case of developing countries such as ASEAN countries, the higher the education of a workforce, the higher the salary that must be paid to the workforce. So production costs become higher which can reduce the return on investment (ROI). A lower return on investment (ROI) will make investors less interested and can affect FDI inflows to be lower. So the level of education has a negative effect on FDI inflows in ASEAN. Miningou & Tapsoba (2017) state that the number of school years does not always have a positive effect on FDI. However, the efficiency of the level of education used in the labor market is important for attracting FDI. So that educational efficiency is needed which can improve the ability of the workforce related to the labor market. Increasing school tenure and the efficiency of the education system can play an important role in attracting FDI. Then trade openness
was found to have no significant effect on FDI inflows in Asian Emerging Market countries. Similar findings are found in the research of Sasana & Fathoni (2019) who found that trade openness has no significant effect on FDI. Rathnayaka & Malsha (2022) also found trade openness to have no significant effect on FDI in the short term. These results can occur because trade openness cannot immediately have a direct effect on FDI, but must be accompanied by increased policies that can support sectors that play a role in international trade. Interest rates also have no significant effect on FDI inflows in Emerging Market Asia countries. Nonetheless, the negative sign on the coefficient is in line with the Marginal Efficiency of Investment theory which reveals that the higher the interest rate, the lower the investment in the country. Similar results were found in research by Sasana & Fathoni (2019) which revealed that interest rates had no significant effect on FDI.

**Conclusion**

This study seeks to analyze the main determinants that influence FDI inflows in emerging market Asian countries using a balanced panel data set in 2005-2020. Therefore, this study examines 6 emerging market countries throughout Asia based on the Morgan Stanley Capital Index (MSCI) categories. The analysis results show that market size, corruption control, and telecommunications infrastructure have a positive and significant effect on FDI. Market size has a significant effect in a positive direction on Foreign Direct Investment. This explains that FDI entering Asian emerging market countries selected in this study is FDI with a market search motive, so that the larger the market size, the more likely multinational companies (MNCs) invest in FDI projects to approach the market. Corruption control is the variable that has the greatest influence on FDI inflows. Telecommunication Infrastructure has a positive and significant on FDI inflows. The level of education that has a negative effect on FDI in selected Asian Emerging Market countries causes low wages for labor and this is still the target of foreign investors, compared to skilled workers with better levels of education but higher wages. If education is getting better, the quality of human resources should be getting better and productivity will be increasing. Trade openness and interest rates in this study have no significant effect on FDI in Asian emerging market countries.

This study has implications for policy makers, company leaders and investors. The government must create an investment-friendly environment by supporting the private sector to mobilize domestic resources for productive investment, bureaucratic conditions must be transparent on all macroeconomic issues, fight corruption in all economic sectors and must increase the trust of the outside world to invest in the country, and encourage increased host country's GDP performance in order to increase investor confidence through increasing domestic productivity. In addition, infrastructure development also needs to be continuously improved in order to increase company productivity and attract more investors. This research has several limitations. There is a lack of data.
on key determinants such as data on the education level of the workforce, labor costs, natural resources, the effectiveness of the rule of law and political conditions in a country. Then this research also found results that were not in line with other research, namely the education level variable which was found to have a negative relationship with FDI inflows. Although these findings are in line with several other studies. Future research may look more deeply into the influence of education level on FDI inflows. In addition, future research is expected to be able to observe the effect of determinants other than those used in this study on each country and to determine which determinants play the most important role in attracting FDI.

References


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