

The Effect of Institutional Factors on Inward FDI in Asian Developing Countries

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Abstract

The inflow of FDI has received remarkable attention in the form of a source of financing and capital generation, especially in developing countries. The study focuses on the impact of institutional factors on the inflow of FDI in Asian developing countries. Based on the empirical findings, institutional factors such as government effectiveness, regulatory quality, control of corruption, and rule of law and macroeconomic indicators such as trade openness, inflation, GDP and exchange rate have a positive significance on the inflow of FDI. However, the combination effect of the institution and economic factors are slightly different while some interactions are positively related and others are negatively connected. Based on this, institutional or economic factors alone are not enough to examine the determinants of FDI. Both of these factors need to be good enough to attract FDI inflow. Since developing countries can have governance challenges, policymakers from Asian developing countries have to pay attention to both factors to generate economic growth with the FDI inflows.

Keywords: Inward, FDI, Developing, Asia Institutional Factors

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Introduction

A commonly regarded strategy for a nation's economic progress is foreign direct investment (FDI). Indeed, compared to rich economies, its significance is greater in developing nations since they need more foreign capital to operate in domestic economic conditions. (Mahembe & Odhiambo, 2014). FDI creates financial and economic profit for both host and home countries with an increase in foreign exchange, capital expansion, technological support, and a competitive market environment (Assuncao et al., 2011). The theory of FDI cannot be generalized although there are many available supporting factors with an individual firm. Originally, FDI emerged from the business actions of multinational companies (MNCs) with the concept of globalization after the Second World War (Pravin, 2012).

According to the World Investment Report 2022, Global FDI flows improved from \$1 trillion to \$1.58 trillion in 2021, a 64% rise over the level in the first year of the pandemic. FDI flows recovered largely in all regions in 2021 with a significant increase in developing regions. The inflow of FDI to developing Asia rose by 19 percent to get a new record of \$619 billion which is driven mainly by East and South-East Asia regions. FDI inflow will still be a crucial origin of external finance for developing countries and additional cross-border capital flows. Although there were continuous COVID-19 waves in developing Asia, FDI in developing countries increased for three years to an all-time high of \$619 billion, marking the strength of the region. It is the biggest recipient region of FDI globally with 40 percent of inflow internationally (UNCTAD, 2022).

The inflow of FDI relies on many factors. At first, foreign investors are willing to invest through FDI since they can have better control over the operations and assets of the firm. Later, the trend shifted and they wanted to invest in a country with good infrastructure, economic stability, sufficient human capital, and liberalized markets to reap the profits from FDI (Bengoia & Robles, 2003). FDI cannot deny the importance of institutions due to multiple reasons why quality matters to attract overseas investments. Institutional quality can improve property rights and the rule of law which are crucial to becoming a country with better economic prospects that are attractive to overseas investors (Rodrik et al., 2004; Acemoglu et al., 2005).

According to North (1990), good institutions have an impact on economic engagements through different channels, including by reducing the costs of transactions, production, and

manufacturing. Markets with weak institutions, however, require more time and resources to monitor. International investors are reluctant to make investments in such a dangerous and unfavorable climate. On the other hand, a risk-free environment is advantageous for the host country, and good institutions also promote the effective use of FDI. Based on this, this paper will explore the connection between FDI and institution quality in Asian developing countries and how can host country institutional factors help to boost the inflow of FDI with empirical analysis.

Since there is still a need for a systematic study to find out the important determinants of inward FDI in developing countries, especially in Asia, the study aims to emphasize host country domestic factors. The objective of this paper is to examine the effect of institutional factors on the inflow of FDI in Asian developing countries. While measuring the relationship between inward FDI and institutional quality, macroeconomic factors will be considered in how the different host country characteristics can lead to different levels of FDI inflow. The research is important because it will measure the connection between the inflow of FDI and institutional factors of 44 developing Asian countries for the period between 1996 and 2021. As Asia, especially Asian developing economies, is a big market with high potential, it is an attractive destination for inflows of FDI. Thus, it is crucial to explore the significant determinants of inward FDI to get benefit from foreign capital inflows in these countries.

Although there is a larger number of works of literature on measuring the determinants of FDI inflows relating to institutional macroeconomic factors, the studies are mixed on the choice of country, timeframe, the scope of the study, availability of data, and methodology. The paper differs from the previous literature by employing methodology, scope of the country, time period, and different sets of FDI determinants. The study contributes to the existing literature by examining institutional factors on inflows of FDI with other important economic factors in developing Asia economies. It adds to the previous literature by delivering a more regional analysis of the linkage between institutional factors and inflows of FDI. Specifically, it will test how different institutions and macroeconomic factors affect the inward FDI in developing Asian countries.

Apart from a single-country study, there have been previous papers that oversee FDI in a panel framework. In this regard, the paper will deliver a large set of data, especially for developing Asia economies with institutional variables and some macroeconomic variables as the control factor to analyze the specific determinant for FDI inflow. The data set includes 44 Asian developing countries over the period between 1996-2021. Since FDI is looking for

emerging and developing markets with high potential for growth, these countries are eventually beneficial for their markets. From this research, governments from this region can know the strengths and weaknesses of their domestic factors. It can also help to analyze which country is ahead of others in terms of FDI inflow. Moreover, multinational enterprises can explore the potential good market if they want to do FDI in these countries.

Literature Review

Theoretical Framework

Although it is largely confirmed that FDI can promote economic growth in a positive way, a general consensus has not been found among economists about the determinants of FDI. The previous studies on international business and economics have researched a lot about the determinants of inward FDI in the past two decades and admitted the applicability of the host countries' institutions, in terms of "the structures of instituted and embedded social rules which guide social interactions" (Hodgson, 2006). Many works of literature have emphasized how institutional quality can influence the inflow of FDI (Tokunaga & Iwasaki, 2017; Bailey, 2018; Mondolo, 2019). According to Dunning's electric OLI paradigm, national governments are keen to amend their policy or institutions to hold MNCs as their presence in the global economy is improving. This method holds that the likelihood that domestic governments will take such action is a positive way of the number of unique ownership-specific advantages that MNCs possess as well as their capacity to gather or supplement these assets with local assets and expertise. (Verbeke et al., 2008; Dunning, 2000).

FDI is one of the most crucial sources of external resource flows into developing countries throughout the years as a meaningful part of capital inflow into the host countries (Falki, 2009). It is also a major factor in economic expansion during the time of shortage of domestic savings (Ali & Hussain, 2017). FDI plays a critical role, particularly in developing countries, and is regarded as a driving force of economic growth and development. External capital from foreign nations can help to lessen the gap between national savings and capital needs by improving market access, rising skill levels in the host countries, and providing good governance and technology transfer (Abbes et al., 2015).

As the determinants of FDI are mixed, some literature has found that political risk, infrastructure, investment environment, corruption, and regulatory framework in the recipient countries are regarded as insignificant determinants of FDI. Wheeler and Mody (1992) observed that administrative efficiency and political risks are not significant in influencing FDI. However, political instability, protests, and constitutional changes in government can significantly determine the inward FDI (Root & Ahmed, 1979; Schneider & Bruno, 1985). Some other institutional factors which can influence inward FDI are bureaucracy, corruption, and ease of doing business. When the barriers of FDI inflows can be removed, an economy can develop its respective absorptive capacity to maximize profit with positive growth effects (Gaurav, 2015).

Asiedu (2002), Du et al (2008), Kesternich and Schnitzer (2010), Daniele and Marani (2011), Aziz and Mishra (2016), Hayakawa et al (2013), and Shah et al (2016) stated that weak institutional quality can be a barrier to the inflow of FDI as it can be regarded as a threat to investment. Thus, countries that want to attract foreign capital should be equipped with attractive institutional environments regarding property rights, market efficiency, and political stability. Huang (2003) stated that weak institutional factors hinder the supply of local entrepreneurship while good quality institutions can promote local entrepreneurship. Partly FDI is decided by the strength and weaknesses of the domestic business environment in recipient countries. Thus, controlling governance and macroeconomic factors in a country is important to increase the climate of FDI inflows.

Globerman and Shapiro (2002) emphasized the association between FDI inflows and governance structure and found that good governance is more critical for developing and transitioning economies compared to others. With the observations from Asia, the Caribbean, and Latin America regions, Gani (2007) said that rule of law, control of corruption, government effectiveness, regulatory quality, and political stability have all positive relationships with FDI. Countries with high regulation standards have more chances to get less benefit from FDI inflows. Thus, in the first place, the government has to improve the internal regulatory quality in the country before trying to get an advantage from the openness of foreign capital (Busse & Groizard, 2008).

Effective institutions are regarded as a system to reduce unnecessary costs of transactions. In this setting, efficiency means the capability to make the lowest transaction costs which mostly include logistic and operation costs, information about doing business, the costs of production, and monitoring risk. These costs may increase because of inefficient

protection of property rights, extensive corruption, the lack of a proper regulation system, weak incentive structures, and underdeveloped financial markets (Dunning, 2004).

The six institutional factors can positively influence the host country's ability to attract more inward FDI as follows:

- **Voice and accountability:** accountable for creating a suitable investment situation that is free from future violations of the right of international investors. They are responsible for creating a risk-free economic environment for domestic and foreign investors (Inter-American Development Bank, 2001).

- **Political stability and absence of violence:** the two factors are important to make sure FDI projects and MNCs' activities in the recipient economies (Inter-American Development Bank, 2001). Political stability shows the level of political risk in the investment environment. There is a significant positive relationship between political stability and inward FDI can be found (Schnider & Frey, 1985; Wei, 2000).

- **Government effectiveness:** facilitates the activities of overseas investors by reducing complicated procedures and heavy bureaucracy which takes longer time to complete. It expresses the quality of civil and public service. It shows the level of independence can be obtained from political intervention (Inter-American Development Bank, 2001; OECD, 2002).

- **Regulatory quality:** stimulates the inflow of foreign investments by reducing unfriendly market policies such as government intervention, price control, and restrictions on capital movement. It reflects the ability of government to implement and regulate sound policies to foster economic growth. (Fazio & Talamo, 2008)

- **Rule of law:** encourages current decision-making to make the highest value of assets in the long-term as the rule of law plays a critical role in protecting future returns. It can reduce market-unfriendly economic policies and reduce uncertain risks (Hoff & Stiglitz, 2005).

- **Control of corruption:** corruption can be regarded as a type of taxation. It can change and decrease the types of FDI inflow (Dunning, 1993). It can also cause inefficient long-term situations because of uncertainty and leads to an unpredictable rate of return (Sabir & Khan, 2018).

Empirical Literature

Masron and Nor (2013) observed that institutional quality with the use of some variables such as the rule of law, corruption, and regulatory quality control is a crucial factor in attracting FDI in the ASEAN region between 2002 to 2010. Tun et al (2012) examined sample data from 77 developing countries from the time period between 1981 and 2005. They found that countries that have more reliable institutional quality are able to attract more foreign investment as it can guarantee to reduce uncertainty and the cost of business operation. Mottaleb (2008) examined the influencing factors that can determine FDI inflow and empirically tested the correlation between inward FDI and economic growth by using panel data from 60 low-income and lower-middle-income countries. The author observed that countries with larger GDPs can provide a good business environment with the support of required infrastructures such as the Internet which are crucial to attract FDI.

Meon and Sekkat (2007) used two-stage least squares regressions for 96 countries between 1990-2000 and proved that voice and accountability can have a positive effect on the FDI to GDP ratio significantly. Ourvashi (2012) stated that all governance indicators have the positive influence on the level of inward FDI. The author used OLS estimation for 45 developing countries in Asian, African, and Latin American regions over the period between 1996-2005. Sedik (2012) used panel data analysis, multiple linear regressions and OLS methods for MENA countries between 1990-2010. He observed that government effectiveness has a significant positive relationship with FDI inflows while voice and accountability have a negative effect.

Sahoo (2006) examined the data for five South Asian nations and emphasized the significance of economic factors for FDI flows into the country. He used the panel co-integration technique to look at the long-term connection between economic factors and FDI inflows and found that market size, infrastructure index, trade openness, and labor force growth rate were important determinants. Wernick et al. (2009) estimated how FDI flows into the 64 rising nations in relation to institutional quality. A positive environment is produced by high institutional quality, which is considered to be the key draw. When compared to those nations with weak governments, FDI inflows occurred.

Research Methodology

Conceptual Framework

According to the "Eclectic or OLI paradigm theory" published by Dunning in 1988, FDI decisions about foreign investments depend on the factors listed below. The term "OLI" denotes ownership, location, and internationalization requirements as appropriate (Dunning, 1988). He widens the meaning of locational advantage by including institutional considerations in addition to economic factors. He states that international investors favor places with favorable institutional and economic infrastructure. Therefore, judgments made by foreign investors are dependent on the rate of return based on reliable institutions and other macroeconomic factors.

Recent economic literature has shown how an institutional approach has changed MNCs' behavior on FDI in the host country. The institutional setting in which MNCs operate is extremely complicated and contradictory (Henisz & Delios, 2001; Lu, 2002). North (1990) claimed that the institutional environment of the host nation contains norms and practices, processes, and procedures that are important to MNCs. The government is said to have a significant role in MNCs' success by implementing stable political and economic conditions, contract enforcement, a competent workforce, and reliable infrastructure at both the macro and micro levels.

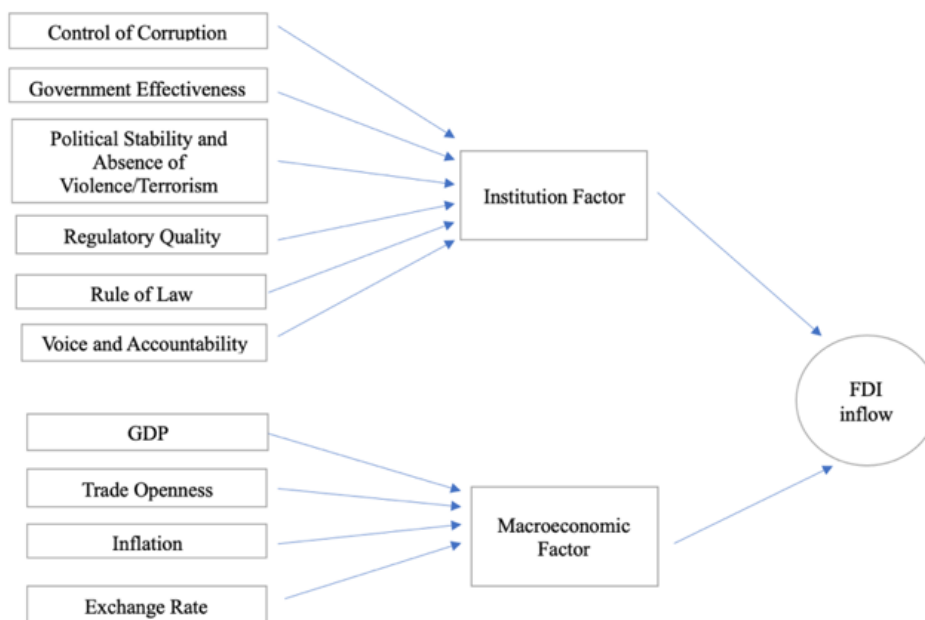


Figure 1: Author's own proposed research model: institutional and macroeconomic factors of FDI inflow

Model Specification

According to North’s institutional theory and Dunning’s eclectic paradigm theory, inward FDI depends on efficiency-seeking, market size, natural and human resources, and the institutional quality of the host country. Algebraically, the relationship can be written as

$$FDI_{it} = f(inst_{it}, macro_{it}) \tag{1}$$

where FDI is the inflow of foreign direct investment, inst is six institution factors, and macro is macroeconomic factors commonly used in the determinants of foreign direct investment literature. Subscripts i and t denote country and year (i = 1, 2, ..., 44; t = 1, 2, ..., 25).

In specific terms, Eq1 is stated as

$$FDI_{it} = f(CCR_{it}, GOV_{it}, POL_{it}, REG_{it}, ROL_{it}, VAA_{it}, GDP_{it}, OPEN_{it}, INFL_{it}, EXR_{it}) \tag{2}$$

Equation 2 describes the details of the institution and macroeconomic factors where CCR denotes control of corruption, GOV is government effectiveness, POL is political stability and absence of violence/terrorism, REG is regulatory quality, ROL is rule of law, VAA is voice and accountability, GDP is GDP in US dollar in natural log form, OPEN is trade openness, INFL is inflation, and EXR is the official exchange rate.

$$\ln(y)_{it} = \alpha + \beta inst_{it} + \epsilon_{it} \tag{3}$$

where y denotes the inflow of FDI in US dollars and ϵ is the error term.

$$\ln(y)_{it} = \alpha + \beta inst_{it} + \gamma macro_{it} + \epsilon_{it} \tag{4}$$

In order to measure the effect of institutions and macroeconomic factors on foreign direct investment inflows, an interactive term is included in Model 5

$$[\ln(y)]_{it} = \alpha + \beta [inst]_{it} + \gamma [macro]_{it} + \pi ([macro]_{it} * [inst]_{it}) + \epsilon_{it}(5)$$

where inst*macro is the interactive term that plays a mediating role as the determinant of FDI. Higher values of institutional indicators demonstrate strong institutions while lower values of institutional indicators describe weak institutions. From Eq. 3 and 4, the priori expectations of the variables are as follows; β and γ are expected to positively affect economic growth if the institutional quality is strong, while the reverse is expected for weak institutions. Regarding the interactive term (π), a negative sign suggests that a weak institutional and macroeconomic framework can reduce FDI inflow. However, a positive sign recommends that strong institution together with favorable economic factors promotes FDI inflows. Nonetheless, an insignificant effect of the interactive term (π) implies that other economic factors do not play a moderating role in the relationship.

Table 1: Explanation of the variables

| Explanatory variable | Indicators | Symbol | Measurement | Type of Variable | Expected sign | Data source |
|----------------------|----------------------------------|--------|----------------------------------|---------------------|---------------|------------------------------|
| Dependent variable | Foreign direct investment inflow | FDI | In current US\$ with yearly data | Continuous variable | NA | World Development Indicators |

Table 1: Explanation of the variables (Continue)

| Explanatory variable | Indicators | Symbol | Measurement | Type of Variable | Expected sign | Data source |
|---|---|--------|-------------|---------------------|---------------|---------------------------------|
| Institution factors (Estimate gives the country's score on the aggregate indicator, in units of a standard normal distribution, i.e. ranging from approximately -2.5 to 2.5) | Control of corruption: Estimates | CCR | Yearly data | Continuous variable | + | Worldwide Governance Indicators |
| | Government effectiveness: Estimates | GOV | Yearly data | Continuous variable | + | |
| | Political stability and absence of violence/terrorism: Estimates | POL | Yearly data | Continuous variable | + | |
| | Regulatory quality: Estimates | REG | Yearly data | Continuous variable | + | |
| | Rule of Law: Estimates | ROL | Yearly data | Continuous variable | + | |
| Voice and Accountability | | VAA | Yearly data | Continuous variable | + | |

Table 1: Explanation of the variables (Continue)

| Explanatory variable | Indicators | Symbol | Measurement | Type of Variable | Expected sign | Data source |
|---|-------------------------------------|---|--|---------------------|---------------|------------------------------|
| Macroeconomic factor as control variable | GDP (current US billion \$) | GDP | In current US\$ with yearly data | Continuous variable | + | World Development Indicators |
| | Trade openness (trade as % of GDP) | OPEN | sum of exports and imports of goods and services measured as a share of GDP with yearly data | Continuous variable | + | |
| | Inflation, consumer price (annual%) | INFL | the yearly percentage change in the cost to the average consumer of acquiring a basket of goods and services that may be fixed or changed at specified intervals | Continuous variable | + | |
| Official exchange rate (LCU per US\$, period average) | EXR_L | the rate decided in the legally sanctioned exchange market. It is calculated as an yearly average based on monthly averages (local currency units relative to the U.S. dollar). | Continuous variable | + | | |

Note. Author’s own designed table for explanatory variables

Data

The sample includes 44 developing countries in Asia (see Table 2 for the full list) over 25 years, from 1996 to 2021. The developing countries in Asia can be split into three sub-regions according to the World Economic Situation and Prospects (WESP) Report: East Asia, South Asia, and Western Asia. The classification of the data was written by the Economic Analysis and Policy Division (EAPD) of the Department of Economic and Social Affairs of the United Nations Secretariat (UN DESA). Although there are 46 developing countries, the State of Palestine and Taiwan, Province of China are excluded from this analysis due to the lack of data.

Table 2: List of developing countries in Asia

| East Asia | South Asia | Western Asia |
|---------------------------------------|----------------------------|----------------------|
| Brunei Darussalam | Afghanistan | Bahrain |
| Cambodia | Bangladesh | Iraq |
| China | Bhutan | Israel |
| Democratic People’s Republic of Korea | India | Jordan |
| Fiji | Iran (Islamic Republic of) | Kuwait |
| Hong Kong SAR | Maldives | Lebanon |
| Indonesia | Nepal | Oman |
| Kiribati | Pakistan | Qatar |
| Laos People’s Democratic Republic | Sri Lanka | Saudi Arabia |
| Malaysia | | Syrian Arab Republic |
| Mongolia | | Turkey |
| Myanmar | | Yemen |
| Papua New Guinea | | |
| Philippines | | |
| Republic of Korea | | |
| Samoa | | |
| Singapore | | |
| Solomon Islands | | |
| Thailand | | |
| Timor-Leste | | |
| Vanuatu | | |
| Vietnam | | |

Note. From World Economic Situation and Prospects 2022, by United Nations, 2022, New York

Table 3: Summary statistics

| Variable | Obs | Mean | Std. Dev. | Min | Max |
|----------|-------|----------|-----------|-----------|----------|
| ln_FDI | 1,028 | 20.35874 | 2.790991 | 11.89 | 26.53441 |
| CCR | 1,004 | -0.21247 | 0.855591 | -1.78192 | 2.301146 |
| GOV | 994 | -0.12437 | 0.893818 | -2.34856 | 2.426029 |
| POL | 1,006 | -0.31503 | 1.093224 | -3.18035 | 1.61567 |
| REG | 994 | -0.24137 | 0.923573 | -2.52669 | 2.255347 |
| ROL | 1,012 | -0.17317 | 0.849949 | -2.09017 | 1.870237 |
| VAA | 1,012 | -0.55772 | 0.806995 | -2.3134 | 1.175147 |
| ln_GDP | 1,103 | 24.25082 | 2.453163 | 17.96025 | 30.50459 |
| OPEN | 996 | 99.83004 | 69.94441 | 0.026889 | 442.62 |
| INFL | 1,037 | 6.211215 | 11.06435 | -16.11732 | 154.7561 |
| EXR | 1,111 | 1479.24 | 4609.718 | .0814049 | 42000 |

Institutional quality measures

To measure the quality of institutions, six indicators from the Worldwide Governance Indicators (WGI), produced by Aart Kraay and Daniel Kaufmann will be used. The data is available at the World Bank Group (<https://databank.worldbank.org/source/worldwide-governance-indicators>). These are largely accepted and frequently used indicators as a broad definition of governance. Kaufmann et al (2011) pinpoint governance as the traditions and frameworks through which power is exercised in a nation. This includes: (1) the mechanism by which governments are chosen, (2) the ability of the government to carry out sound policies in effective ways, and (3) the respect of citizens and the State for the institutions that oversee social and economic transaction levels. The six WGI indicators range approximately from -2.5 (the lowest quality) to +2.5 (the highest quality) and are available for most countries around the world. They are related to the following complimentary governance measurements:

- Voice and accountability: reflect outlooks on the level to which people can choose their own government, as well as on issues like freedom of speech, freedom of association, and access to the free press and media;

- Political stability and absence of violence/terrorism: relating to the risk that the government may be unstable or overthrown through violent or unconstitutional means, consititng terrorism and politically motivated violence;

- Government effectiveness: collecting overviews on the credibility of the government's adherence to such policies, the credibility of public services, the civil service's performance and the level of its independence from political stress, and the quality of policy formulation and implementation;
- Regulatory quality: regarding opinions of the government's ability to perform and carry out sensible rules and laws that support the growth of the private sector and market-oriented strategies;
- Rule of law: reflects opinions on how much agents believe in and follow the laws of society, namely how properly contracts are enforced, how well property rights are protected, how effectively the police and the courts work, and how likely it is that crimes and violent acts will occur;
- Control of corruption: Public perceptions of how much public power is used for personal benefit, including both minor and major incidences of corruption, and the "capture" of the State by elites and private interests as well.

According to previous empirical results, market size and potential by the level of GDP and GDP growth rate can affect the inward FDI significantly. Market growth has a particular effect on the overuse of economies of scale and the efficient use of domestic resources (Nunnenkamp & Spatz, 2002; Wheeler & Mody, 1992). Market size proxied with GDP is an important determinant of FDI. Foreign investors can consider their destination based on the size of the market which can have the benefit of sales in the recipient country. Many scholars proved the importance of the domestic market condition. The host country's economic situation can be determined based on the macroeconomic stability (Hattari et al., 2008; Khondoker et al., 2010; Rojid et al., 2009; Schneider & Frey, 1985; Tajul & Hussin, 2010; Wheeler & Mody, 1992). Real GDP has been used as a factor to measure the market size in some research to point out the purchasing power affecting higher returns of investment and as a proxy to invite larger overseas investments. Thus, it is accepted to have a positive relationship between market size and FDI (Goyal, 2022). Countries with large GDPs, high growth rates, and business-friendly conditions are supporting factors to attract more FDI in successful ways (Khondoker et al., 2010).

The economic openness of the country can represent the degree of economic integration of the host country in the global economy. When there is economic openness, trade restrictions for goods in the host country have steadily reduced. It is an advantage for

oversea investors to have the comparative advantage in the host country to export back to home country with extended exports to the other parts of the world (Tajul & Hussin, 2010). Trade is regarded as one of the macroeconomic determinants of FDI. If a country has a trade surplus, it shows a healthy and dynamic economy with export potential as a crucial factor to attract FDI (Apostu et al., 2022). Since countries with more trade openness can attract more FDI, trade openness can have a positive relationship with FDI. In the previous literature, the amount of trade in GDP has been utilized to measure trade openness (Aw & Tang, 2009; Leitão & Faustino, 2010).

The effect of inflation and exchange rate on FDI inflow is important as a macroeconomic or policy variable in measuring the impact institutional quality on the flow of foreign investment (Asamoah et al., 2016; Barrell & Pain, 1996). Inflation can indicate domestic economic tensions, the balance of payment, and the ability of the central bank and government to have control over the money supply (Buchanan et al., 2012; Schneider & Frey, 1985). When there is a stable economy, uncertainty of investment environment will be reduced and the economic environment of the country will be improved. Inflation and the FDI inflows have significant negative correlation since high inflation limits FDI inflows (Schneider & Frey, 1985). Inflation reflects domestic economic tension and the role of central bank to control balance of budget and money supply (Buchanan et al., 2012). According to the authors, high inflation rate can lower the inflow of FDI (Schneider & Frey, 1985; Buchanan et al., 2012).

The exchange rate can reflect price competition. A higher exchange rate means the currency of the recipient country depreciates against the foreign currency compared. It represents an enhancement in the competitiveness of exported goods. The relationship between exchange rates and FDI inflows is positive significantly in the ASEAN countries (Mamadou, 2002). The exchange rate plays a critical role in imports and exports in terms of trade and business transactions. The exchange rate is the official exchange rate of the local currency with respect to the US dollar. It can influence FDI inflows by attracting the value of the cost of domestic currency for acquiring an asset abroad. Currency exchange rate changes can directly impact the profit return of foreign assets and reduce investment conditions and international capital inflows (Yang et al., 2013).

Econometric Analysis

Panel data estimation has an advantage over cross-section and time-series when used for all obtainable evidence that cannot be measured in time-series or cross-section (Baltagi & Kao, 2000). It engages an analysis of the dynamic behavior of parameters (Gujarati et al., 2012). It is widely used in the past and has the potential to grow widely in the future (Krishnakumar & Ronchetti, 2000). It uses polling of variables on a cross-section of companies, sectors, countries, regions, and so on over a period of time. It is utilized to control for the dynamic behavior of parameters and individual heterogeneity issues. It can ensure more suitable results with better degrees of freedom, efficiency, and variability (De Kock, 2007). Panel data analysis is particularly used for multiple sites over a period of defined time periodically.

There are many different types of panel analysis models. Among them, ordinary least squares (OLS) regression, fixed effects models, and random effects models are the most common ones. However, they can have the problem of autocorrelation and heteroskedasticity (Yaffee, 2003). OLS regression is commonly used as a baseline estimation in many FDI-related research. Although it is a useful benchmark, it can have an endogeneity problem and be biased by time-invariant differences between countries (Darren et al., 2017). The problem with using OLS estimates is that measurement and endogeneity problems can lead to inconsistent simple OLS estimates which makes it challenging to draw meaningful conclusions about the causal effect (Vinod & Russell, 2015).

Fixed effects regression (FE) is used to fix unobserved time-variant heterogeneity between countries (Darren et al., 2017). One of the benefits of using the fixed effects model is that it can solve the unobserved heterogeneity (Sheytanova, 2015). The random effect (RE) model measures panel data where interference variables have the potential to be interconnected between individuals and between time. It can also help to reduce heteroscedasticity (Zulfikar, 2018). Fixed effects will be used to address omitted variable bias and endogeneity issues while random effects will allow for unobserved heterogeneity which is randomly distributed across variables (Benassy-Quere et al., 2007; Duade & Stein, 2007).

Many authors applied IV estimation methods in their analysis since it is used to have better outcome results (Buchanan et al., 2012; Daude & Stein, 2007). While using IV estimates, there can be a problem in that many datasets conventional IVs are unavailable or often denounced for not having a satisfying answer for exclusion restriction (Vinod & Russell, 2015). Since governance indicators can be endogenous depending on the types of origin, an instrument variable (IV) estimation can be used to solve endogeneity with given suitable

instruments. The instrumental variable will be used to address inconsistent estimators missing data and endogeneity problems (Benassy-Quere et al.,2007; Duade & Stein, 2007).

Empirical Results

To examine the effect of institutional factors on inward FDI in Asian developing countries, fixed effects, random effects, and instrument variable regression are used in this study. In this panel data analysis, the Hausman selection test is used to decide whether the fixed or random effects are more appropriate. It can examine the presence of endogeneity in the panel model (Zulfikar, 2018). Since the fixed effect is consistent and efficient based on the assumption of the test, it will be used to analyze the regression results. The fixed effect technique for panel data is used to deal with two prevalent problems such as unobserved heterogeneity and autocorrelation. It can decrease bias by controlling for unobserved variables, including entity-fixed effects.

Fixed effects and instrument variable regression were run making FDI inflow a dependent variable and institutional and macro-economic determinants as independent variables. P-values are used to evaluate the statistical significance of the estimated coefficients. When the p-value is less than 0.01, it is regarded as statistically significant at a high level, meaning that the coefficient is different from zero significantly. It is considered that the result is statistically significant at a moderate level when the p-value is less than 0.05. It indicates that the probability of getting an extreme result under the null hypothesis is lower than 5%. When the p-value is lower than 0.1, it is defined as statistically significant at a relatively lower level.

Table 4: Regression results with fixed effects

Table 4.1: using each institutional factor and macroeconomic factors in a single equation

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---------------------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| VARIABLES | ln_FDI | ln_FDI | ln_FDI | ln_FDI | ln_FDI | ln_FDI |
| CCR | -0.537** (0.262) | | | | | |
| ln_GDP | 1.225*** (0.107) | 1.228*** (0.114) | 1.215*** (0.112) | 1.199*** (0.116) | 1.228*** (0.108) | 1.223*** (0.112) |
| OPEN | 0.00960*** (0.00241) | 0.00914*** (0.00235) | 0.00988*** (0.00267) | 0.00900*** (0.00233) | 0.00976*** (0.00252) | 0.00954*** (0.00254) |
| INFL | -0.00403 (0.00387) | -0.00352 (0.00397) | -0.00233 (0.00388) | -0.00214 (0.00390) | -0.00356 (0.00371) | -0.00287 (0.00369) |
| EXR_L | -1.02e-06 (1.52e-05) | 5.11e-06 (1.50e-05) | 6.98e-06 (1.53e-05) | 4.39e-06 (1.52e-05) | 5.56e-06 (1.50e-05) | 4.44e-06 (1.57e-05) |
| GOV | | -0.183 (0.200) | | | | |
| POL | | | 0.199 (0.145) | | | |
| REG | | | | 0.153 (0.281) | | |
| ROL | | | | | -0.415* (0.228) | |
| VAA | | | | | | 0.0790 (0.238) |
| Constant | -10.36*** (2.650) | -10.37*** (2.838) | -10.10*** (2.780) | -9.655*** (2.877) | -10.45*** (2.668) | -10.27*** (2.787) |
| Observations | 781 | 772 | 781 | 772 | 781 | 781 |
| R-squared | 0.460 | 0.447 | 0.454 | 0.446 | 0.456 | 0.451 |
| Number of countryid | 42 | 42 | 42 | 42 | 42 | 42 |
| Robust standard errors in parentheses | | | | | | |
| *** p<0.01, ** p<0.05, * p<0.1 | | | | | | |

The table above shows the regression results using each institutional factor separately with macroeconomic factors in a single equation. According to the results, control of corruption and the rule of law have a significant negative relationship at 95% and 90% respectively. It means that large corruption and weak rule of law can decrease FDI inflows. The result is different from the findings of Mumtaz (2017), which said that different types of corruptions can be reduced with good institution factors. Macroeconomic factors such as GDP and trade openness have a positive correlation and are statistically significant at 99% with FDI inflows. This result is in line with the findings of Shah (2017), Pravin (2012), Bhavan et al., (2011), Leitao & Faustino (2010), Asiedu (2012), Sabir (2019) and Lv et al., (2010).

Table 4.2: using interactive terms as independent variables in a single equation

| | (1) | (2) | (3) | (4) | (5) | (6) |
|-----------|---------------------------|-------------------------|----------------------|--------|--------|--------|
| VARIABLES | ln_FDI | ln_FDI | ln_FDI | ln_FDI | ln_FDI | ln_FDI |
| CCRGDP | -0.0216 (0.0245) | | | | | |
| CCROP | 0.000592 (0.00296) | | | | | |
| CCRIN | 0.0138** (0.00515) | | | | | |
| CCREX | -2.26e-05** (1.03e-05) | | | | | |
| GOVGDP | | 0.0357** (0.0163) | | | | |
| GOVOP | | 0.000519 (0.00179) | | | | |
| GOVIN | | 0.00680 (0.00418) | | | | |
| GOVEX | | -7.17e-09 (3.78e-05) | | | | |
| POLGDP | | | -0.00230 (0.0145) | | | |
| POLOP | | | 0.00143 (0.00182) | | | |
| POLIN | | | 0.0101** | | | |

Table 4.2: using interactive terms as independent variables in a single equation (Continue)

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---------------------------------------|----------|----------|------------|------------|------------|------------|
| | | | (0.00416) | | | |
| POLEX | | | -1.10e-05 | | | |
| | | | (1.39e-05) | | | |
| REGGDP | | | | 0.0266 | | |
| | | | | (0.0193) | | |
| REGOP | | | | 0.00112 | | |
| | | | | (0.00247) | | |
| REGIN | | | | 0.00924* | | |
| | | | | (0.00522) | | |
| REGEX | | | | -1.88e-05 | | |
| | | | | (1.14e-05) | | |
| ROLGDP | | | | | -0.0223 | |
| | | | | | (0.0223) | |
| ROLOP | | | | | 0.00370** | |
| | | | | | (0.00172) | |
| ROLIN | | | | | 0.0103*** | |
| | | | | | (0.00356) | |
| ROLEX | | | | | -1.08e-05 | |
| | | | | | (3.84e-05) | |
| VAAGDP | | | | | | -0.0290 |
| | | | | | | (0.0223) |
| VAAOP | | | | | | -0.000289 |
| | | | | | | (0.00358) |
| VAAIN | | | | | | 0.0127** |
| | | | | | | (0.00558) |
| VAAEX | | | | | | -1.01e-05 |
| | | | | | | (3.70e-05) |
| Constant | 20.79*** | 20.81*** | 20.83*** | 20.88*** | 20.73*** | 20.52*** |
| | (0.116) | (0.0735) | (0.106) | (0.0965) | (0.0759) | (0.188) |
| Observations | 781 | 772 | 781 | 772 | 781 | 781 |
| R-squared | 0.020 | 0.046 | 0.016 | 0.029 | 0.015 | 0.026 |
| Number of countryid | 42 | 42 | 42 | 42 | 42 | 42 |
| Robust standard errors in parentheses | | | | | | |
| *** p<0.01, ** p<0.05, * p<0.1 | | | | | | |

The table above shows the regression results using interactive terms to understand the combination effect of institution and macroeconomic factors. Regarding the interaction between the institution and macroeconomic factors, the interaction of inflation with control of corruption, political stability, and voice and accountability has a significant positive relationship at 95% while it is significant at 90% with regulatory quality. It supports the findings of Pravin (2012) as voice and accountability, inflation, market size and trade openness have a positive significant effect on FDI inflows. That describes that the high level of these institutional factors coupled with stable inflation can enlarge the amount of FDI inflows. The combination effect of control of corruption and exchange rate is negatively correlated with FDI at 95%. When both corruption and exchange rate are weak, these can be a barrier for the inflow of FDI. The interaction of government effectiveness and GDP, and rule of law and trade openness have a positive significant relationship at 95% respectively. Thus, good governance with high GDP and good rule of law with trade openness can improve FDI inflows.

Table 5: Regression results with instrument variable estimation

| | (1) | (2) | (3) | (4) | (5) | (6) |
|-----------|------------------------|---------------------------|------------------------|---------------------------|--------------------------|-----------------------|
| VARIABLES | ln_FDI | ln_FDI | ln_FDI | ln_FDI | ln_FDI | ln_FDI |
| OPEN | -0.665* (0.396) | -0.102*** (0.0120) | 0.177*** (0.0299) | -0.0991*** (0.0109) | -0.400** (0.159) | 3.861 (16.99) |
| CCR | 41.82* (24.57) | | | | | |
| INFL | -0.0849 (0.147) | 0.00670 (0.0240) | 0.00800 (0.0412) | 0.00216 (0.0220) | -0.0856 (0.0980) | 4.384 (19.44) |
| EXR_L | 0.00116* (0.000694) | 0.000151*** (4.50e-05) | 0.000101 (7.47e-05) | 0.000293*** (4.57e-05) | 0.000610** (0.000272) | 0.000537 (0.00296) |
| GOV | | 7.377*** (0.745) | | | | |
| POL | | | -6.962*** (1.155) | | | |
| REG | | | | 7.610*** (0.706) | | |
| ROL | | | | | 23.59*** (9.131) | |

Table 5: Regression results with instrument variable estimation (Continue)

| | (1) | (2) | (3) | (4) | (5) | (6) |
|--------------------------------|--------------------|---------------------|------------------|---------------------|---------------------|-------------------|
| VAA | | | | | | -47.33 (206.4) |
| Constant | 90.19** (41.30) | 30.66*** (1.222) | 1.044 (3.374) | 31.04*** (1.163) | 61.54*** (16.22) | -423.5 (1,954) |
| Observations | 781 | 772 | 781 | 772 | 781 | 781 |
| Standard errors in parentheses | | | | | | |
| *** p<0.01, ** p<0.05, * p<0.1 | | | | | | |

The table shows the results from instrument variable (IV) regression using the 2SLS (two-stage least squares) method. This is used to solve the endogeneity problem which occurs when the independent variable is correlated with the error term and can bias the standard regression results. OPEN (trade openness), used as an instrumented variable is endogenous and instrument variable is GDP. The independent variables are CCR, GOV, POL, REG, ROL, VAA, INFL and EXR_L. The instrumental variables are used to solve potential endogeneity issues and get consistent answers to the coefficients.

The table above shows IV regression results using each institutional factor separately in a single equation. Considering the control of corruption, it is positively related to FDI inflow. It is consistent with the results of Mumtaz (2017). In that equation, an exchange rate also has a positive interaction (Jadhav, 2012; Goyal, 2022; Hailu, 2010; Pravin, 2012; Abdelbagi et al., 2016; Shankar, 2016; Somnath, 2017) while trade openness has a negative correlation. All are significant at a 90% confidence interval. The government effectiveness, trade openness, and exchange rate (Goyal, 2022; Mamadou, 2002; Michael, 2016), have significant interaction with FDI at 99%. While FDI's interaction with government effectiveness and exchange rate is positive, it has a negative correlation with trade openness. When examining the effect of political stability, it is negatively related with FDI inflow. That states that less political right can reduce FDI inflow (Barro, 2013; Godinez & Liu, 2015). However, trade openness has a positive correlation with FDI. Both results are significant at 99% level. For regulatory quality and rule of law, both have positive interaction with FDI at 99% level (Daude & Stein, 2007, Azam et al., 2012, Kohler, 2010; Buchanan et al., 2012). By using these two institution factors, exchange rate is positively correlated and trade openness is negatively connected with FDI inflows respectively.

Conclusion

The study measures institutional indicators with macroeconomic factors of FDI in a more generic way to explain the determinants of FDI in Asian developing countries. The results show that institutional indicator alone is insufficient when examining the determinants of FDI. The combination effect of both institutional and economic factors is crucial to creating a strong business environment. Among the institutional factors, control of corruption, government effectiveness, regulatory quality, rule of law, and political stability indicated significant results. Since political stability has a significant negative result, the other institutional factors have a positive result. That means that political instability in the country can be a form of external risk for investors and can hinder the amount of FDI coming in. Regarding other institutional measures, there should be less corruption with good regulatory quality, rule of law, and government effectiveness to show that the country has an effective governance system to promote an effective business environment. For developing countries, it is challenging to have a high level of institution quality for all indicators. Thus, it is crucial to emphasize more important determinants while attracting FDI into the country.

While looking at the combination effect, among the macroeconomic factors, inflation has more significant results with many of the institutional factors such as control of corruption, political stability, regulatory and voice, and accountability. Moreover, the interaction of government effectiveness and GDP, and the rule of law and trade openness demonstrated positive results. It means that both of these factors have to be strong to be a favorable host country for FDI. As the exchange rate measured together with control of corruption shows a negative result, the country should take into account that a weak exchange rate and large corruption cannot be a good environment to invite international investors.

To be an effective host country with a large FDI inflow, Asian developing countries should strengthen the required institutions and macroeconomic factors mentioned above in the paper. Policymakers should consider the formation of strong institutional and economic factors that attract FDI to generate a good economic environment. With the lack of economic stability or good institutions, a country cannot be a desirable destination for the inflow of FDI. Thus, it is crucial for policymakers to consider both of these factors while attracting FDI into the country or region.

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