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An Empirical Study: Evaluating the Impact of Economic, Human Resource, and Governance Factors to Foreign Direct Investment

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By

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Abstract

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The economic crisis in 2008 prompted the restructuring of the world economic and trade patterns. The global supply chain began to restructure, and international investment presented more diversified features. The COVID-19 Pandemic brings a new global economic crisis. which is likely to negatively impact many businesses that rely heavily on the Chinese market. Quarantine policies have forced people to stay at home, reducing public connectivity and leading to a slowdown in economic growth. The outbreak has also caused companies and factories to pause operations, affecting trade, travel, and consumption. International investors are increasingly concerned about economic uncertainties, which highlights the need to understand future trade potentials for foreign direct investment (FDI).This research aims to assess perceptions of the relative importance of economic, human resource and governance factors that increase attracting of FDI at the national level.

I collect panel data with 4,761 observations cross 207 countries from 1996-2018, using FDI as dependent variable (DV) and three domain vectors of independent variables (IVs): Economic, human resource and governance. In this paper, using Pooled OLS and Fixed Effect (FE), leveraging the outcome of Hausman test to support the decision of choosing Fixed Effect as the appropriate model specification to my designed framework.

The goal of this research is to explore the relationship among FDI, economic, human resource and governance factors. The result from the study demonstrates economic variables are the most crucial factor with positive impact on FDI. Next, export as one of the most influential variables cross all models, illustrates the importance of trade activities can promote foreign investment flow in global markets. Moreover, economic size is also another key factor that has a positive impact on FDI.

There are a few data limitations which prevented the ability to expand observation period and sampling nations. First, I experience minor challenges for independent variables governance and RPC data collection which lead to choose this research to focus with data from 1996 to 2018 to avoid unbalanced panel data. Second, due to data availability I am unable to include other countries that may also have positive contribution to the study. One of the countries of interest I would like to include for future extension research is Taiwan, with its high involvement in export especially in high-technology and manufacturing sectors, adding Taiwan into the model may better support us to calibrate research validity for Asian region.

Keywords: Foreign direct investment (FDI), Economic Factor, Human Resource Factor, Governance Factor, Region, Income Group

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It was a long journey to reach this achievement. Studying at CGU was the turning point in my career. I found the computational modeling is my passionate. It became part of my life and career. I am glad I chose the path I can unswerving and continue toward the end. My adviser, family, and friends are part of my journey. I can complete my Ph.D. with their support.

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Chapter 1: Introduction

COVID-19 has disrupted the global value chain creation, demand, and supply—that have threatened the survival of businesses. From 2020 through 2021, the COVID-19 pandemic sent the investment world into a frenzy; it caused the greatest disease transmitted globally and bring the global economy into a shock. The COVID-19 pandemic triggered the largest global economic crisis in more than a century (WorldBank, 2022). According to 2020 World Bank survey data, temporary unemployment was higher in 70 percent of all countries for workers who had completed only primary education. Government mandated quarantine and shutdown policies were urgent responses to stop the widespread disease, however, these measurements have negatively impact public's employment opportunities. In addition, enterprises were experiencing similar financial struggles. For instance, many smaller, family-owned businesses were forced to exit the market due to high operation costs and/or not yet equipped to provide ship to home service.

COVID-19 pandemic not only has had a significant impact on domestic economic growth but also has impacted on foreign direct investment (FDI) globally. Unprecedented macroeconomic policy supporting the decline in global FDI (Ahmed & Sarkodie, 2021) and accompanying uncertainty and economic slowdown, leading to a decrease in FDI flows across the world. Listing ways in which the COVID-19 pandemic has affected FDI.

First, decrease in FDI inflows: The pandemic has led to a significant reduction in FDI inflows globally. According to UNCTAD (United Nations Conference on Trade and Development), global foreign direct investment (FDI) collapsed in 2020, falling 42% from $1.5

trillion in 2019 to an estimated $859 billion such a low level was last seen in the 1990s and is more than 30% below the investment made during the 2008-2009 global financial crisis.

Second, Changes in investment patterns: investment pattern had significant relationship with the COVID − 19 pandemic (Rose Nirmala et al., 2022).In this situation, investors has increasing risks that might led to change their preference to seek lower risk investments.

Third, regional differences: The impact of the pandemic on FDI has varied across regions. Developed economies such as the US and Europe have seen a larger decrease in FDI inflows compared to developing economies in Asia and Africa.

Overall, the COVID-19 pandemic has had a significant impact on FDI globally, with a decrease in FDI inflows and changes in investment patterns and sectors. However, the long-term impact on FDI remains uncertain and will depend on the trajectory of the pandemic and the global economic recovery.

This paper seeks to evaluate impacts to foreign direct investment (FDI) inflow from the three linkages: economic, human resource, and governance. To help support this exploration, this study incorporates data and infographics collected from the World Bank, the Heritage Foundation on economic freedom index, and Relative Political Capacity Dataset Documentation on RPC version 2.4. It will also consider John Dunning's Eclectic Paradigm, also called Ownership, Location, Internalization (OLI) Paradigm, as a framework to understand how FDI shapes the global economy. We argue that those three domain vectors combine to influence and attract FDI. For instance, from an economic factors' perspective,

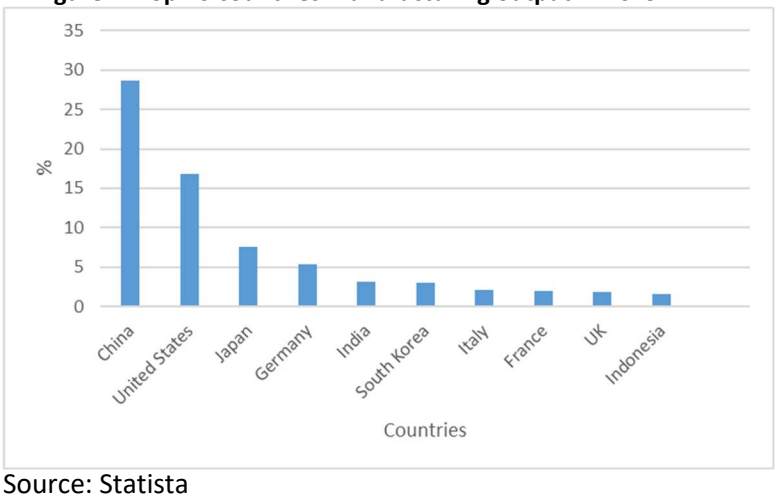
countries with higher GDP should attract more FDI. Under human resource factors, countries with a higher labor force participation rate attract higher FDI. Lastly, through the lens of governance, higher Absolute Political Extraction (APE) would attract less FDI while countries with better Regulatory Quality attract more FDI. We believe the purpose of the study is valuable because understanding how countries response to the COVID-19 pandemic influenced the three factors (economic, human resource, and governance) can help guide foreign advisors toward FDI opportunities in countries with high potentials to increase returns on investments.

Chapter 2: Literature Review

Based on the Organization for Economic Co-operation and Development (OECD), foreign direct investment (FDI) is one of cross-border economic activity, in which an investor resident in one economy establishes a lasting interest in and a significant degree of influence over an enterprise resident in another economy. In addition, FDI is a key element in international economic integration since it creates stable and long-lasting links between international economies.

The economic crisis in 2008 prompted the restructuring of the world economic and trade patterns. The global value chain began to restructure, and global industry relocation presented more diversified features (Gao et al., 2018). We are observing COVID-19 pandemic brings a global economic recession. Affecting most are international enterprises that greatly rely on the Chinese market. China held the dominant manufacturing output position since 2014. Figure 1 shows China makes up 28.7% of the total global output for manufacturing which accounted for nearly $4 trillion of the country's overall economic output in 2019.

Figure 1. Top 10 countries manufacturing output in 2019.

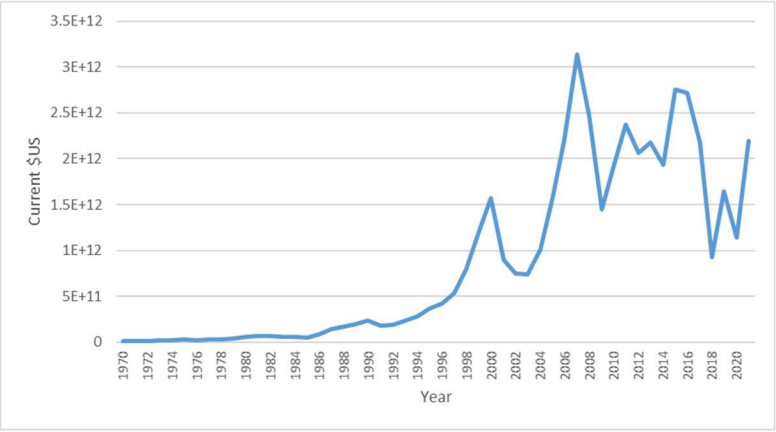


Source: Statista

China's dominant influence on global enterprises greatly affected international trade with an important influence in international trade in manufacturing. When the COVID-19 outbreak forced companies and factories to halt production which affects trade, travel, and consumption greatly undermined. In addition, China government had a strict lockdown policy to prevent disease transmission also led to decreasing economic activities and disrupt supply chain operations.

Figure 2 shows the global FDI increase since 1990. There are two high peaks in the early 2000s between 1999-2000 and 2006-2007. In 2001-2004, the subprime mortgage crisis impacted global economics and led to a great recession that mainly occurred in developed countries. This caused FDI investment to decline significantly. Another global recession was initiated by the bankruptcy of Lehman Brothers in 2008. It was the climax of the subprime mortgage crisis. In the historical context, global recession is one of the crucial influences impacted FDI decline. Nowadays, we have witnessed how the COVID-19 pandemic caused a global recession, which contributed to the global fall of FDI.

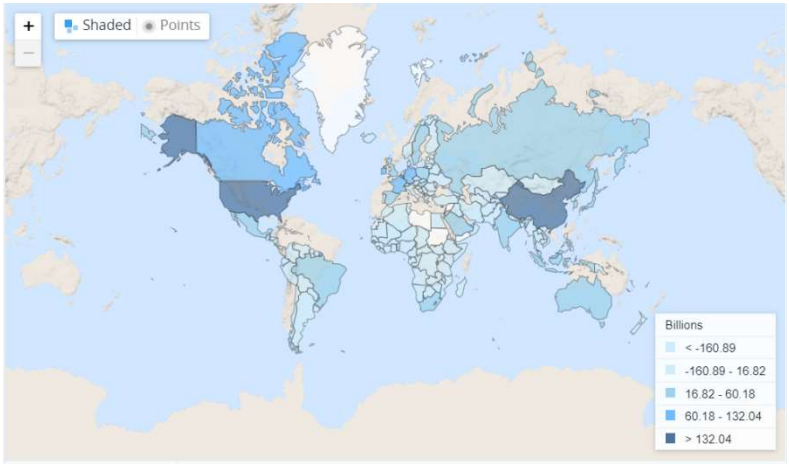
Figure 2. FDI globally trend between 1970 -2021



Source: World Bank

One factor witnessed during the COVID-19 pandemic occurred in 2021. China obtained an FDI inflow of approximately 181 billion U.S. dollars. That was an increase of around 21 percent compared to the previous year. Meanwhile, the United State FDI rose to 4.98 trillion dollars. In the last 20 years, the amount of FDI in the U.S. has more than doubled (Fig 3). In the first half of 2022, global FDI flows rebounded to USD 972 billion. Most of the increase happened during the first quarter. However, during Q2 global FDI flows dropped by 22%, compared to the previous quarter. Unsurprisingly, rising inflation, interest rate increases, and Russia's full-scale invasion of Ukraine (OECD) decreased FDI which adversely affected investments.

Figure 3. FDI Globally in 2021



Source: World Bank

As an international factory, China has cultivated a greater degree of openness to foreign investment than comparable economies with similar industrial development. Foreign direct investment has generated greater positive spillovers for China's economic development than for most other developing countries (Zheng, 2019). Figure 4 and 5 show FDI in China has increase since the early 2000s, but few declines connected to global recession. Furthermore,

with its location advantages and cheaper labor, China could continue to attract FDI. Moreover, China has continued to liberalize its environment for foreign firms which is one of the causes for China's FDI surge. The government has successively removed the so-called negative list restricting foreign investment. As a result, fewer and fewer financial sectors are off-limits to foreign firms. Most noticeably, the ability of foreign financial firms to take controlling shares in existing joint ventures or to open new fully foreign-owned firms has led to a steady increase in inbound investment flows from $17.6 billion in 2018 to $23.5 billion in 2021 (Huang & Lardy, 2022). Additional research found that China's growth is more affected by FDI, a 1% increase in FDI would result in 0.07% increase in GDP (Agrawal & Khan, 2011).

Figure 4. Registered enterprises with FDI in China Guangdong

Source: World Bank

Figure 5. FDI, net flow in China between 1979-2020

Source: World Bank

Figure 6 and 7 represent FDI in relation to Gross domestic product (GDP) exports in 207 countries from 1996-2018. The infographic shows that the U.S. has the highest GDP in exports and FDI over time. China is the country with the second-highest received FDI in the past decade. Due to lower operating costs, it has become one of the best countries in which to conduct business. Also, low manufacturing costs, a cheaper labor force, and high production quantity make China become the top economic position.

In another case, The Netherlands holds a high FDI for a non-dominant country. It is considered a vital part of the Dutch economy and despite its relatively modest GDP, the region remains one of the largest recipients and sources of FDI. An important factor in achieving strong levels of FDI is an attractive investment climate. Countries with an attractive investment climate have advantages such as physical and digital infrastructure, an educated labor force, stable government and policies, favorable tax structures, an efficient labor market, and investments in innovation and technology. Against this backdrop, the Netherlands social and economic advantages lend the country a vital edge in regards to free trade and an open market economy (Berg & Immerzeel, 2020).

Figure 6. FDI vs GDP 1996-2018

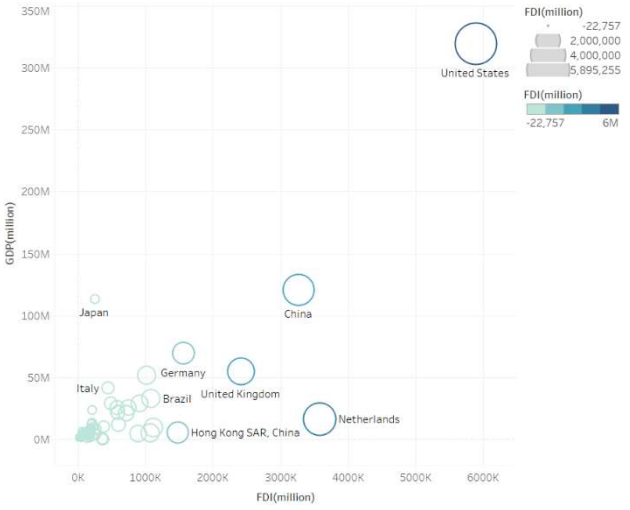
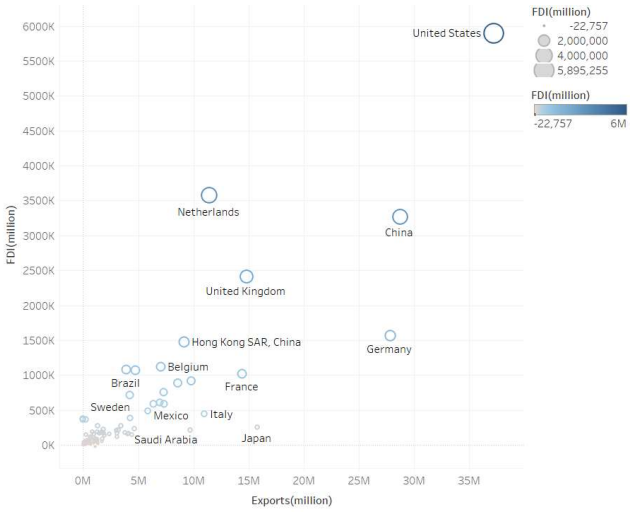


Figure 7. FDI vs Export 1996-2018

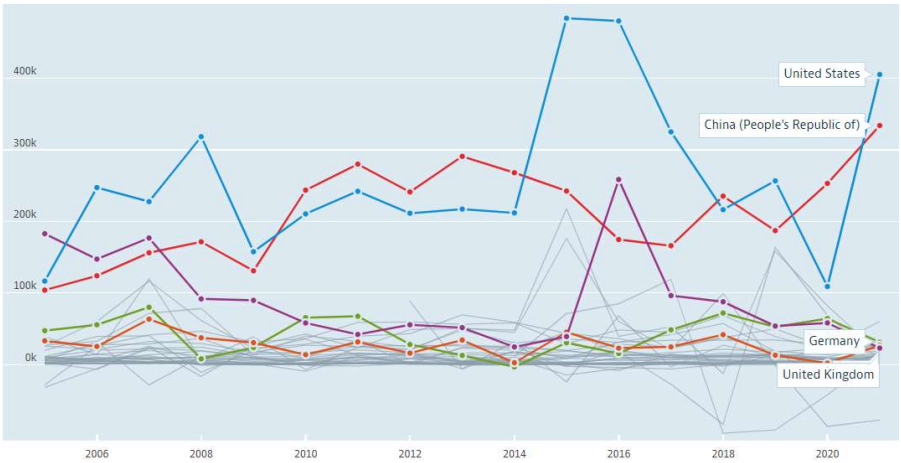


FDI is an important channel that promotes international trade through access to foreign markets and becomes an important factor to drive economic development. However, the COVID-19 pandemic had a catastrophic impact on international trade which decreased by a negative 6% globally.

The economic activity decreasing caught some enterprises' attention, and they have expressed concerns about manufacturing in China. With the outbreak originating from Wuhan, the pandemic disrupted supply chains and crippled business production across the world. This could be a sign that companies will begin to diversify their manufacturing centers across multiple countries. For example, food retailers' SCs have experienced adverse effects from the pandemic – specifically in terms of demand backlogs and delayed orders, long lead times, decreased service levels, and increased total costs (Burgos & Ivanov, 2021). In this situation, The European Union (EU), the United States (US), and India have gradually become the world's major production relocation destinations, dominated by the service industry (Fan

& Liu, 2021). Fig 8 shows The United States was the leading FDI recipient worldwide in 2022, followed by China and Brazil. It could be a sign to show international investors express their concerns and turn to action. FDI might shift to different countries due to economic status and international relations. This phenomenon might change countries' economic dominant status in the future. Under these circumstances, which countries or regions would be the next investment destination for investors to grow into is increasingly important.

Figure 8. FDI Inflow of OECD countries between 2006 -2021



Source: OECD

To further consider FDI in the context of this research, this paper explores additional economic frameworks, most specifically Ownership, Location, and Internalization and Economics, Human resource, Governance. Ownership, Location, and Internalization (OLI) Paradigm developed by John Dunning. OLI is an evaluation framework for international investors could have guided to determine what is beneficial to pursue FDI. Although, it is a good theory to help the companies to make decision for foreign investment, influence of FDI is more complicated, any analysis of determinants of FDI should not be based on a single theoretical mode(Faeth, 2009). FDI is better examined in various way and combinate multiple

factors such as economic characteristics, market size, labor resources and investment regulation. Therefore, diving into the economic, human resource and governance factors form previous studies would bring broad ideas for decisive the influence factors.

2.1 Ownership, Location, and Internalization Theory

There are vast research studies in different aspects of foreign direct investment. One of important theory, Ownership, Location, and Internalization (OLI) Paradigm or Eclectic Paradigm developed by John Dunning provides a holistic framework to identify and evaluate the significance factors influencing foreign production by enterprises and the growth of foreign production (Sharmiladevi, 2017). OLI theory is one of the most widely used frameworks in FDI research. The framework suggests that firms invest overseas based on ownership advantages (such as unique assets or capabilities), location advantages (such as market size or access to resources), and internalization advantages (such as the ability to internalize transactions to reduce costs). In other words, the OLI theory, locational attractions refer to the alternative countries or regions, for undertaking the value-adding activities of multinational enterprises (MNEs). The more the immobile, natural or created resources, which firms need to use jointly with their own competitive advantages, favor a presence in a foreign location, the more firms will choose to augment or exploit their specific advantages by engaging in FDI (Dunning, 2015). Besides the location factor, In China, lower labor costs and great market potential might be important factors attracting FDI. In addition, using an internal market to establish a network of international production might also be an important determinant for foreigners to directly invest in China (Hong & Chen, 2001).

From the past research, OLI focuses on location factor on enterprise investment location or relocation and enterprise ownership. Those theories focus on location and enterprise's relationships with market, however, FDI decisions are also influenced by industry-specific factors such as market size human resource, and governance. Therefore, I more focus on national level analysis that can help identify the drivers of FDI decisions.

2.2 Economic Variables Impact on Foreign Direct Investment

As foreign enterprises focus more on minimizing operation and transportation cost. Improvements in transport accessibility and increases in production costs accelerate the process of industrial relocation (Jiang et al., 2018). Not only location has impact investor decisions, another crucial factor as tax. If countries have high taxes rate and a high employment rate that represents push factors to increase likelihood of business relocation. In other words, a central location and low taxes that increase the attractiveness of the business location (Laamanen et al., 2012). In addition, location also determines some of services or business activities to locate since it could be carried out at lower costs and/or in better quality and opening up opportunities due to increased demand for these services (Sass, 2010)Therefore, choice of location is one of the most importation consideration for investors.

Not only location as factor to impact FDI flow. Improving labor productivity and lower cost of production that also determine the FDI flow (Lu, 2007). That is to say,geographical factors also influence FDI flow, small number of firms have significantly increased their FDI activity outside the EU compared to a counterfactual scenario. They are rather firms with permit

shortage operating in those sectors (in particular, machinery) that are supposed to be less capital-intensive and, thus, more geographically mobile (Nicolas Koch, 2016). In the Europe case, FDI had an influential role of central Europe in the European automotive production system (Pavlínek et al., 2009). Location also been factor affect FDI flow on export, in China, FDI shows a positive and significant impact on exports from the central region, its impact on the western region is found to be insignificant (Sun, 2001). In this research, I would employ FDI as an evaluation to estimate which has more potential ability attract international investment.

The traditional factors assumed to relate to FDI, such as location specific characteristics and international experience (Ito & Rose, 2002). In other word, conventional FDI location determinants like market size and development level continue to exert their positive influence (Shah & Afridi, 2015) The choice of FDI location always depends on a preliminary analysis of countries' advantages and disadvantages and their factor analysis (Vasyechko, 2021). From the economic aspect, the most common measure of the size of national economies is gross domestic product (GDP) in which a requisite index to help investor decide investment target countries. In Poland, there is a bi-directional relationship between FDI and GDP, however, the impact of GDP on attracting FDI inflows to Poland is stronger than that of FDI on GDP growth (Kosztowniak, 2016). FDI leads to increasing returns in domestic production and increases in the value-added content of FDI-related production(de Mello, 1997).Therefore, institutional quality, trade openness and infrastructure development encourage FDI flows (Mina, 2007).

Market size is one of major factors for FDI, especially for US firms. The large market size and growth of China is a key point that influences multinational enterprises' investment decisions (Shaukat Ali, 2005). From cost considerations, especially in terms of relatively low wages of relevantly skilled labor and elements reducing costs of the disintegration of production. FDI, the most important motive of investing abroad is reducing costs due to economizing on the money spent on the factor of production, which is used the most intensively by the given activity. Elements of this cost reduction are the most important(Sass, 2010).

Economic freedom is found to bear a consistently positive impact on FDI inflows (Economou, 2019). FDI is positively correlated with economic growth in the host countries, in other words, economic freedom in the host country is a positive determinant of FDI inflows (Bengoa & Sanchez-Robles, 2003). Real GDP and index of investment freedom have a positive impact on FDI at a 1% significance level and index of business freedom has a positive impact on FDI at a 10% significance level (NGUYEN, 2021). In addition, government spending and investment freedom are positively significant and have a positive impact on FDI inflow in Southern Europe (Singh & Gal, 2020).

Increased levels of FDI are positively related to future improvements in state manufacturing export performance (Leichenko & Erickson, 1997) FDI may encourage export diversification through spillover effects that is the presence of FDI in an industry may increase the export intensity of domestic firms. The empirical results for the Indian economy in the post-liberalization period show that FDI from the US has led to the diversification of India's

exports, both directly and indirectly (Banga, 2006). The critical role of FDI in China's exports may be indicated by the fact that exports by foreign affiliates in China in 1998 were US $81 billion, comprising 44% of China's total exports in that year. There is considerable evidence on the FDI export linkage in China that increased levels of FDI positively affect provincial manufacturing export performance (Zhang & Song, 2001). Moreover, increased levels of FDI are positively related to future improvements in state manufacturing export performance (Leichenko & Erickson, 1997).

2.3 Human Resource Variables Impact on Foreign Direct Investment

Population is very closely linked to the economic development of a society (Xu, 1984). In the long run there exists a long-run relationship between the growth of gross domestic production and its major determinants of the labor force, the real capital, and the real foreign direct investment. FDI has positive effect on Gross Domestic Production (Pratibha, 2013). Moreover, lower labor cost countries are attractive than high labor-cost countries, Asian firms, low labor costs are the main factor (Shaukat Ali, 2005). FDI towards advanced countries is positively associated with faster local employment growth (Stefano Federico, 2005). In the long run there exists a long-run relationship between the growth of gross domestic production and its major determinants of the labor force, the real capital, and the real foreign direct investment. Findings indicate that foreign direct investment has positive effect but small significant on Gross Domestic Production, while the labor force and capital have had the most effect on gross domestic production (Pratibha, 2013). Another empirical result found labor force and inflation have a positive influence on FDI at a 5% significance level (NGUYEN, 2021).

2.4 Governance Variables Impact on Foreign Direct Investment

Openness of the host economy and human capital, though equally important, are insignificant in terms of their possible sway on FDI inflows. The key finding is that good governance has significant impact on inward (Shah & Afridi, 2015). Governance and policy also is another factor affect FDI flow such as the Protection of property rights, government integrity, monetary freedom, and financial freedom all have a robustly positive effect on FDI (Economou, 2019). Control of corruption, political stability and government effectiveness matter for the influence of FDI on economic growth (Ajide et al., 2014). As Japanese FDI appears to be attracted to countries that have committed themselves to a transparent and stable environment regulatory environment (Kirkpatrick & Shimamoto, 2008).

Another example in Zimbabwe, Gross fixed capital formation, inflation, trade openness, corruption, political instability, poor governance, weak export competitiveness, and inconsistent government policies hinder FDI inflows to Zimbabwe. The research suggested creating a stable and hospitable investment climate that fosters export competitiveness, trade openness, and domestic capital formation. In addition, the country should adopt sound economic policies that minimize country risk, political instability, and corruption to attract adequate FDI inflows (Muzurura, 2016). Moreover, government effectiveness and the rule of law, as measurements for governance, have a positive impact on FDI flows to African countries (Gangi & Abdulrazak, 2012). Other research shows political stability, and regulatory quality have a significant impact on FDI inflows. Foreign investors are interested in political stability and regulatory quality in their choice of investment abroad (Saidi et al., 2013). Moreover, the research studies employing Social Network Analysis (SNA) show FDI has a

positive effect on trade among Belt and Road B&R countries from the network perspective and the Belt one Road policy had a positive effect on FDI on trade (Pan & Chong, 2023). And the degree of openness the government commits to in order to lure foreign capital (Shaukat Ali, 2005). From the example, the effectiveness, and stability of governance that become important elements that influence international investment. FDI has reduced the degree of international conflict and encouraged cooperation between dyads during the period of the decade of the 1990s. A 10% increase in FDI leads to on average a 3 percent decrease in conflict (Polachek et al., 2005). Considering FDI in the context of this research, this literature offers economic frameworks, most specifically Ownership, Location, and Internalization (OIL), economics, human resource, governance, which shows how those frameworks function together to influence FDI.

In economic aspect, previous studies point out FDI has a relation with GDP, GDP per capita, export, trade openness and investment freedom. Most research examined the relation in a single direction and mostly focused on FDI influence countries economic development. Moreover, in the human resource aspect, the labor force factor gets more attention. The labor force factor relation with FDI is positive, however, corresponding to labor force is the population. Therefore, population factor also considering one of human resource factor impact on FDI. Lastly, the Governance factor also is part of a critical element to influence to attract FDI. A better governance country would have positive potential for receiving more FDI. However, this study would employ Absolute Political Extraction (APE) factor and see if extractive capacity of nations how influence countries receive foreign

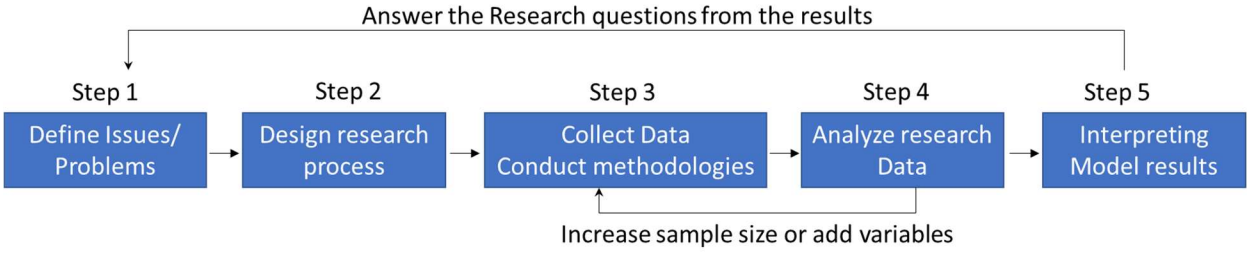
investment. Upon those factors, economic, human resource and governance would answer my research question. How those factors attract FDI at country level.

Chapter 3: Research Design

There are five steps to complete this research. The first step starts with pointing out the current issues in FDI and constructing the research question which I sought to answer. The research question is how economic, human resource and governance factors impact FDI.

Next step, from past research which helped to narrow down what are the specific factors in economic, human resource and governance are critical in this research and help to answer research question. In step 3, from the literature review, I narrow down the research scope and data collecting. In step 4, after narrowing down nine variables which I would want to test in this research from the literature review. To answer the research question, would employ panel data that includes 4,761 observations and cross 207 countries, with a period of 1996-2018. FDI as dependent variable (DV) and there are 3 domain vectors of independent variables those are Economic, human resource and governance. Exploratory Data Analysis (EDA) refers to the critical process of performing initial investigations on data to discover patterns. After understanding the data structure, applying Pooled OLS and Fixed Effect models to analyze data. Analyzing data also has chance to revisit step 3 to adjust my data based on the analysis results. Adding more variables or increasing simple size to improves the model performance. Lastly, the final step, interpreting the model results and answering my research question, the whole research design process as figure 9.

Figure 9. Research Design flow chat



3.1 Data collection

Consistent with literature review, foreign direct investment (FDI) measured as countries received investment from international investors. It is not only the channel to connect with each country economically but also showing countries' economic growth. To analyze the relation, FDI associated with economic, human resource and governance aspect, FDI selected as dependent variable (DV) and 5 factors as independent variables (IVs) and the description reference Table 1 to 4.

The research conducts conventional country-panel econometric analyses. The secondary Data cross 207 countries, period between 1996-2018 and total observation is 4,761. Those data have been collected in more consistent and reliable data sources with standardization report format and easier modeling. The majority of data is collected from the World Bank. The investment freedom index collected from the Heritage Foundation. Absolute Political Extraction (APE) data is from Relative Political Capacity Dataset Documentation, version 2.4 and last update in August 2020.

3.2 Variable Description

In this research include economic, human resource and governance vectors as independent variables. There are five variables selected as economic factors. First one, Gross domestic product (GDP) which is an evaluation for the economic development level of countries and represents the size of economy. As a success of economic growth country would attracting more FDI (Iamsiraroj & Doucouliagos, 2015). International investors also consider the size of economic; GDP variable represents economic size that is the factor influence FDI Another

economic variable is GDP per capita that also represent as economic size; according to OECD, it is an indicator of the total income generated by economic activity in a country. GDP per capita proxy used for market size has a significantly positive impact on FDI inflows (Alshamsi et al., 2015). Higher level of income that also increase consumption as there are more available resources to cover large investments as well(Diacon & Maha, 2015). Larger economic growth accompanies larger market potential, it is higher attractive FDI. Therefore, GDP and GDP per capita are included in this study and examine the relationship between FDI and economic size.

The third economic variable is exports. Exports is the value of countries' goods and services provided to the rest of the world, along with import make up international trade(World Bank Open Data). Export is a channel or a strategy to succeed in the global marketplace via international trade. There is a positive effect of FDI on unit values of exports in developing countries(Harding & Javorcik, 2012) which means foreign investment have influence on increasing export, however, there is missing another opposite direction effect. In addition, export indicates an important channel connecting the international market, higher export volume could represent larger access to the international market too. Hence, in this study use export to analyze the relation between export and FDI, especially discuss how export impact on FDI. If the country has higher export volumes it also attracts more FDI.

Another variable evidence for the international market is trade openness. As definition of trade openness that is country's exports and imports as a share of that country's GDP in percentage (World Bank Open Data). The degree of openness is measured by the actual size

of registered imports and exports of an economy (Mazumdar et al., 2019). It refers to the orientation of a country's economy in international trade, also present the country has more flexibility for foreign investors. Another variable relates to the freedom for international investment, as investment freedom index. Each country has different regulations to manage international trade. The Investment freedom index represents countries which have higher points of index that have less restrictions in foreign investment. As an economically free countries that would be no constraints on the flow of investment capital. Individual and international enterprises and investors would be allowed have more freedom to involve economic activities oversea(The Heritage Foundation), Assuming higher investment freedom index countries might receive more FDI. Upon the reason, size of economic, openness for international trade and investment, GDP, GDP per capita, exports, trade openness and investment freedom index, those variables considering as factors influence in FDI.

Not only economic factors impact on countries receiving FDI but human resources also is an critical vector affect FDI. There are many factors in the human resource domain which relate to FDI. Here only focus on population and labor force participation rate. Population growth plays an important role in overall economic growth(Peterson, 2017). Hence, population size considers the development index of countries, more population growth associates more labor force and production abilities for countries. However, the larger population doesn't mean it will automatically develop its economy. The labor force participation rate is the proportion of the population ages 15 and older. Between those age groups would be the most production resource in countries. Having labor force of sufficient

quantity that is one of key factor to attract FDI(NGUYEN, 2021). Therefore, I would include population and labor force participation rate as human resource factors.

In governance vector, I consider regulatory quality and Absolute Political Extraction (APE) that represent the governance. The ability of governments to effectively formulate and implement policies alongside an effective regulatory environment promoting private sector development that would attract more foreign investment(Ross, 2019). The above factors are from three different domains that relate to economic activities and impact FDI.

Besides economic, human resource and governance factors, this research also seeks to know if geographic location has an impact on FDI. Considering data and analysis scale, here using region represents as geography location variable. Based on World bank data, there are 7 major regions which are East Asia and Pacific, Europe and center Asia, Latin America and Caribbean, Middle East and North Africa, North America, South Asia, Sub-Saharan Africa, more detailed descriptions as Table 5. Besides, regions also use European Union as region dummy variable.

This research not only considers geography location but also Second, I would class the countries based on income. According to the World Bank Country and Lending Groups, there are 4 income groups, in the current 2023 fiscal year, low-income economies are defined as those with a Gross national income (GNI) per capita, calculated using the World Bank Atlas method. According to OECD definition, Gross national income (GNI) as gross domestic product, plus net receipts from abroad of compensation of employees, property income and net taxes less subsidies on production. GNI per capital shows the dollar value of a country's

final income in a year divided by its population. In other words, GNI per capital means the income generated by the residents of a country, whether earned in the domestic territory or abroad, that also shows the economic development level of countries. As World Bank Atlas method, there are 4 income groups, first, GNI per capita of $13,205 or more class as high-income group. GNI per capita between $4,256 and $13,205 is upper middle-income economies. Lower middle-income economies are those with a GNI per capita between $1,086 and $4,255. Last, the GNI per capita of $1,085 or less class as middle-income economies (Table 5).

Table 1. Dependent variable description

Variables	Unit	Description
Foreign direct investment (FDI)	Current US$ Millions	Foreign direct investment refers to direct investment equity flows in the reporting economy. It is the sum of equity capital, reinvestment of earnings, and other capital. Direct investment is a category of cross-border investment associated with a resident in one economy having control or a significant degree of influence on the management of an enterprise that is resident in another economy. Ownership of 10 percent or more of the ordinary shares of voting stock is the criterion for determining the existence of a direct investment relationship.
Lag FDI		Using foreign direct investment variable to lag one year.

Data Source: World Bank

Table 2. Economic Independent variable description

Variables	Unit	Description
Gross domestic product (GDP)	current US$ Millions	GDP at purchaser's prices is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources. Data are in current U.S. dollars. Dollar figures for GDP are converted from domestic currencies using single year official exchange rates. For a few countries where the official exchange rate does not reflect the rate effectively applied to actual foreign exchange transactions, an alternative conversion factor is used.
GDP per capita	current US$	GDP per capita is gross domestic product divided by midyear population. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources. Data are in current U.S. dollars.

Exports of goods and services	Current US$ Millions	Exports of goods and services represent the value of all goods and other market services provided to the rest of the world. They include the value of merchandise, freight, insurance, transport, travel, royalties, license fees, and other services, such as communication, construction, financial, information, business, personal, and government services.
Trade openness	% of GDP	Trade openness is measured as the sum of a country's exports and imports as a share of that country's GDP (in %)
Investment Freedom	0 to 100	The Index evaluates a variety of restrictions that are typically imposed on investment. Points, as indicated below, are deducted from the ideal score of 100 for each of the restrictions found in a country's investment regime. It is not necessary for a government to impose all of the listed restrictions at the maximum level to effectively eliminate investment freedom. Those few governments that impose so many restrictions that they total more than 100 points in deductions have had their scores set at zero.

Data Sources: World Bank, The Heritage Foundation

Table 3. Human resources independent variable description

Variables	Unit	Description
Labor force participation rate	% of total population ages 15+	Labor force participation rate is the proportion of the population ages 15 and older that is economically active: all people who supply labor for the production of goods and services during a specified period.
Population	Thousands	Total population is based on the de facto definition of population, which counts all residents regardless of legal status or citizenship. The values shown are midyear estimates. (Source Organization: (1) United Nations Population Division. World Population Prospects: 2022 Revision. (2) Census reports and other statistical publications from national statistical offices, (3) Eurostat: Demographic Statistics, (4) United Nations Statistical Division. Population and Vital Statistics Report (various years), (5) U.S. Census Bureau: International Database, and (6) Secretariat of the Pacific Community: Statistics and Demography Programmed.)

Data Sources: World Bank

Table 4. Governance Independent variable description

Variables	Unit	Description
Regulatory Quality	ranges from approximately -2.5 (weak) to 2.5 (strong)	Reflects perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development.
APE		Absolute Political Extraction, APE uses Stochastic Frontier Analysis to directly measure the extractive capacity of nations. APE is estimated by multiplying these two different models with life expectancy

Data Source 1: World Bank

Data Source 2: Ali Fisunoglu; Kyungkook Kang; Marina Arbetman-Rabinowitz; Jacek Kugler.(2020) Relative Political Capacity Dataset (Version 2.4)(Fisunoglu et al., 2020)

Table 5. Region and income group dummy variable description

Variables	Description
East Asia & Pacific region dummy	The country in East Asia & Pacific region is one, others region is zero(American Samoa, Australia, Brunei Darussalam, China, Fiji, Micronesia, Fed. Sts., Guam, Hong Kong SAR, China, Indonesia, Japan, Cambodia, Kiribati, Korea, Rep., Lao PDR, Marshall Islands, Myanmar, Mongolia, Northern Mariana Islands, Malaysia, New Caledonia, Nauru, New Zealand, Philippines, Palau, Papua New Guinea, Korea, Dem. People's Rep., French Polynesia, Singapore, Solomon Islands, Thailand, Timor-Leste, Tonga, Tuvalu, Vietnam, Vanuatu and Samoa
Europe & Central Asia region dummy	The country in Europe & Central Asia region is one, others region is zero (Albania, Andorra, Armenia, Austria, Azerbaijan, Bulgaria, Bosnia and Herzegovina, Belarus, Switzerland, Channel Islands, Cyprus, Czech Republic, Germany, Denmark, Spain, Estonia, Finland, France, Faroe Islands, United Kingdom, Georgia, Gibraltar, Greece, Greenland, Croatia, Hungary, Isle of Man, Ireland, Iceland, Italy, Kazakhstan, Kyrgyz Republic, Liechtenstein, Lithuania, Luxembourg, Latvia, Monaco, Moldova, North Macedonia, Montenegro, Netherlands, Norway, Poland, Portugal, Romania, Russian Federation, San Marino, Serbia, Slovak Republic, Slovenia, Sweden, Tajikistan, Turkmenistan, Turkey, Ukraine, Uzbekistan, Kosovo
Latin America & Caribbean region dummy	The country in Latin America & Caribbean region is one others region is zero (Aruba, Argentina, Antigua and Barbuda, Bahamas, Belize, Bolivia, Brazil, Barbados, Chile, Colombia, Costa Rica, Cuba, Curaçao, Cayman Islands, Dominica, Dominican Republic, Ecuador, Grenada, Guatemala, Guyana, Honduras, Haiti, Jamaica, St. Kitts and Nevis, St. Lucia, Mexico, Nicaragua, Panama, Peru, Puerto Rico, Paraguay, El Salvador, Suriname, Trinidad and Tobago, Uruguay, St. Vincent and the Grenadines, Venezuela, RB, British Virgin Islands)
Middle East & North Africa region dummy	The country in Middle East & North Africa region is one, others region is zero (United Arab Emirates, Bahrain, Djibouti, Algeria, Egypt, Arab Rep., Iran, Islamic Rep., Iraq, Israel, Jordan, Kuwait, Lebanon, Libya, Morocco, Malta, Oman, Qatar, Saudi Arabia, Syrian Arab Republic, Tunisia, Yemen, Rep.)
North America region dummy	The country in North America region is one, others region is 0(Bermuda, Canada, United States)
South Asia region dummy	The country in South Asia region is 1, others region is zero (Afghanistan, Bangladesh, Bhutan, India, Sri Lanka, Maldives, Nepal, Pakistan)
Sub Saharan Africa region dummy	The country in Sub Saharan Africa region is one, others region is zero (Angola, Burundi, Benin, Burkina Faso, Botswana, Central African Republic, Côte d'Ivoire, Cameroon, Congo, Dem. Rep., Congo, Rep., Comoros, Cabo Verde, Eritrea, Ethiopia, Gabon, Ghana, Guinea,, Gambia, Guinea-Bissau, Equatorial Guinea,, Kenya, Liberia, Lesotho, Madagascar, Mali, Mozambique, Mauritania,, Mauritius, Malawi, Namibia, Niger, Nigeria, Rwanda, Sudan, Senegal, Sierra Leone, Somalia, South Sudan, São Tomé and Principe, Eswatini, Seychelles, Chad, Togo, Tanzania, Uganda, South Africa, Zambia, Zimbabwe)
European Union dummy	The country is European Union member is one, other non- European Union country member is zero (Austria, Belgium, Bulgaria, Croatia, Republic of Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain and Sweden)

High income group dummy	High-income economies countries with a GNI per capita of $13,205 or more is one; others are zero
Upper middle income group dummy	Upper middle-income countries with a GNI per capita between $4,256 and $13,205 is one; others are zero
Lower middle income group dummy	lower middle-income economies countries with a GNI per capita between $1,086 and $4,255 is one; others are zero
Low-income group dummy	Low-income economies countries with a GNI per capita of $1,085 or less is one; others are zero

3.3 Methodology

This study utilizes panel data, which is a combination of time-series and cross-sectional data, also known as longitudinal data. This type of data observes multiple entities over time periods and is a crucial component for fixed effect regression. Time series observing the subject over time and cross-section data describe as one observation of multiple objects and corresponding variables at a specific point in time. Panel data combines both types of data into one model by observing multiple subjects periodically.

Panel data methods have been widely used in previous research on foreign direct investment (FDI). Pooled OLS model and Fixed Effects (FE) employ in trade openness and FDI inflows in Asian countries (Zaman et al., 2018). There is another research using Pooled OLS analysis political risk and FDI flows(van Wyk & Lal, 2008). Moreover, fixed effect, Pooled OLS and the FMOLS techniques apply to interactive effect of financial development FDI inflows on domestic investment in sub-Sahara Africa(Boateng et al., 2017). Pooled OLS has also been used to analysis the factors that determines the flows of FDI in the developing countries(Hossain, 2019). While, Pooled OLS, FE regression methods also have been adopted to analysis the employment effect of FDI in BRICS (Brazil, Russia, India, China, South Africa) countries (Tsaurai, 2018). In this study, the goal is to precisely define the relationship between FDI and 3 domain vectors, economic, human resource, and governance, observing how those factors affect receiving FDI. The aim of this study is to precisely define the relationship between FDI and three domain vectors: economic, human resource, and governance. The study will observe how these factors affect the receipt of FDI using panel data methods such as Pooled OLS and Fixed/Random Effects.

3.3.1 Pooled Ordinary Least Squares Regression

Pooled regression is standard ordinary least squares (OLS) regression without any cross-sectional or time effects. In other words, Pooled OLS is a simple OLS model that is performed on panel data. It ignores time and individual characteristics and focuses only on dependencies between the individuum. The error structure is simple, where are independently and identically distributed (iid) with zero mean and variance. In the traditional linear regression models (OLS) might exist heterogeneity and endogeneity, however, panel data is able to deal with that problem. In addition, Pooled OLS model is often used as the reference or baseline model for comparing the performance of other models in panel data.

The equation for the Pooled OLS model:

$$y_{it} = \alpha_1 + \sum_{j=2}^{k} \beta_j X_{jit} + \sum_{p=1}^{s} \gamma_p Z_{pi} + \delta_t + \varepsilon_{it} \qquad \text{(eq.1)}$$

Where:

$-i$: *individuals –i.e., the unite of observation.*

$-t$: *time period*

$-j$: $observed\ explanatory\ variables$

$-p$: $unobderved\ explanatory\ variables$

3.3.2 Fixed-Effects (FE) and Random Effect (RE) Regression

Fixed effect regression (FE), it assumes the characteristics of variables are constant over some variables, and I use FE model to avoid omitted variable bias. Since fixed-effects models are designed to study the causes of changes within entities.(Torres-Reyna, 2007). Simplistically, the FE model determines individual effects of unobserved, independent variables as constant

over time. FE model is more suitable for those purpose in research : if (1) time-constant unobserved heterogeneity is likely to be a problem, (2) one is not interested in societal group level differences, (3) time-varying unobserved heterogeneity is unlikely to pose a problem, and (4) the direction of the causal effect is theoretically clear(Collischon & Eberl, 2020), upon the reason, in this study apply FE model.

The equation for the Fixed-Effects model:

$$y_{it} = \beta_1 X_{it} + \alpha_j + \varepsilon_{it} \quad \text{(eq.2)}$$

Where:

$-\alpha_j : (j = 1 \dots n) is\ the\ unknow\ intercept\ for\ each\ enitity$

$-y_{it} : is\ the\ dependent\ variable(DV)\ where\ i = enity\ and\ t = time$

$-X_{it} : is\ one\ independent\ variable(IV)$

$-\beta_1 : reprsent\ the\ cofficient\ for\ the\ IV$

$-\varepsilon_{it} : is\ error\ term$

Different than FE mode, Random-Effects (RE) determine individual effects of unobserved, independent variables as random variables over time.RE model assume that the entity's error term is not correlated with the predictors which allows for time invariant variables to play a role as explanatory variables. Moreover, RE is used whenever there is reason to believe that individual characteristics have no effect on the regressors (Torres-Reyna, 2007).

To choose and fit a regression model that is suitable for panel data sets, the Hausman-test can be used to determine the difference between FE and RE model which helps to determine whether the model should use FE or RE method. The Durbin–Wu–Hausman test is also named Hausman specification test. The test evaluates the consistency of an estimator

when compared to an alternative, less efficient estimator which is already known to be consistent. RE is preferred under the null hypothesis due to higher efficiency, while under the alternative FE is at least as consistent and thus preferred.

3.4 Empirical Model Specifications

This research conducts conventional country-panel econometric analyses, the goal is finding the relationship between foreign direct investment and economic, human resource and governance. The models should allow us to express yearly FDI net flow experienced by country at different time period. In order to study the relation FDI associate with selected independent variables, the following models are developed:

The equation for Model 1:

$$FDI_{it} = \alpha_{it} + Lag\_FDI_{it} + \varepsilon_{it} \quad \text{(eq.3)}$$

Where:

$- FDI_{it}: is\ the\ dependent\ variable(DV)\ where\ i = country\ and\ t = time$

$- Lag\_FDI_{it} : is\ independent\ variable(IV)$

$- \alpha_{it}\ reprsent\ the\ cofficient\ for\ the\ IV$

$- \varepsilon_{it}\ is\ error\ term$

Model 1 discover the next year FDI net flow impact the country receiving more FDI, using the lag FDI (t+1) into the model. The model examined whether a country that had a positive net flow of FDI would continue to have positive FDI net flow in the next year, regardless of any other economic, human resource, or governance factors.

The equation for Model 2:

$$FDI_{it} = \alpha_{it} + GDP_{it} + GDP\_per\_Capita_{it} + Investment\_Freedom_{it} + Exports_{it} + Trade\_openness_{it} + Labor\_force\_\text{participation\_rate}_{it} + Population_{it} + Regulatory\_Quality_{it} + APE_{it} + \varepsilon_{it} \quad \text{(eq. 4)}$$

Where:

$-\ FDI_{it}: is\ the\ dependent\ variable(DV)\ where\ i = country\ and\ t = time$

$-X_{it}\ :\ is\ independent\ variable(IVs)$

$-\beta_{it}\ reprsent\ the\ cofficient\ for\ the\ IV$

$-\varepsilon_{it}\ is\ error\ term$

Model 2 discusses the factor impact FDI from economic, human resource and governance aspects. FDI as dependent variable, there are 9 independent variables, see the eq.4 This model examines the relation between FDI and 9 IVs, discussing whether those factors have positive or negative impact FDI net flow. Countries receiving FDI due to their economic, human resource and governance conditions and effect foreign investment.

The equation for Model 3:

$$FDI_{it} = \beta_{it} + GDP_{it} + GDP\_per\_Capita_{it} + Investment\_Freedom_{it} + Exports_{it} + Trade\_openness_{it} + Labor\_force\_\text{participation\_rate}_{it} + Population_{it} + Regulatory\_Quality_{it} + APE_{it} + Region1\_Dummy_{it} \ldots + Region7\_Dummy_{it} + \varepsilon_{it} \quad \text{(eq.5)}$$

Where:

$-\ FDI_{it}: is\ the\ dependent\ variable(DV)\ where\ i = country\ and\ t = time$

$-X_{it}\ :\ is\ independent\ variable(IVs)$

$-\beta_{it}\ reprsent\ the\ cofficient\ for\ the\ IV$

$-\varepsilon_{it}\ is\ error\ term$

Model 3 not only discuss economic, human resource and governance factors influence FDI also include region factor. The region dummy represents geographic location which could aim to discover more about how the location factor impacts FDI.

The equation for Model 4:

$$FDI_{it} = \beta_{it} + GDP_{it} + GDP\_per\_Capita_{it} + Investment\_Freedom_{it} + Exports_{it} + Trade\_openness_{it} + Labor\_force\_\text{participation\_rate}_{it} + Population_{it} + Regulatory\_Quality_{it} + APE_{it} + High\_income\_Dummy_{it} + Upper\_middle\_income\ \_Dummy_{it} + Lower\_middle\_income\_Dummy_{it} + Low\_income\_Dummy_{it} + \varepsilon_{it} \quad \text{(eq.6)}$$

Where:

$-\ FDI_{it}: is\ the\ dependent\ variable(DV)\ where\ i = country\ and\ t = time$

$-X_{it}\ : is\ independent\ variable(IVs)$

$-\beta_{it}\ reprsent\ the\ cofficient\ for\ the\ IV$

$-\varepsilon_{it}\ is\ error\ term$

In Model 4, besides the economic, human resource and governance factors include the income group countries dummy variable. As World Bank Atlas method, there are 4 income groups dummy variables, first, GNI per capita of $13,205 or more class as high-income group. GNI per capita between $4,256 and $13,205 is upper middle-income economies. Lower middle-income economies are those with a GNI per capita between $1,086 and $4,255. Last, the GNI per capita of $1,085 or less class as middle-income economies (Table 5). Including the income dummy which could discover if the economic development level of countries has impact on FDI, if low-income countries would receive more FDI. For example, developing countries have a slow rate of industrialization and low per capita income but might have more population and labor force if attract more foreign investment.

Above 4 models, discuss how economic, human resource, governance, or region and income group impact on foreign direct investment. Upon the research question, here are a few hypotheses that will be tested in this study.

Hypothesis 1: The size of economy has a positive impact to attract more foreign investment. Since FDI net flows are highly positively correlated to GDP growth. Assuming the countries have higher GDP that will have more potential to attract more FDI.

Hypothesis 2: labor force and population have positive impact to attract more FDI. Since ample population and labor force participation rate would offer suffice production labor resource and reduce the labor cost. If a country has cheaper and abundant that would attract more international business and receive more foreign investment.

Hypothesis 3: Governance has a positive influence to attract more FDI. Assuming a better governance country would receive more FDI.

Chapter: 4 Data Analysis and Discussions

4.1 Dependent Variable Data Description

Foreign direct investment net flow (FDI) is dependent variable (DV) in this research. The DV includes 207 countries, time period between 1996 to 2018 and total 4,761 observations. Figure 10 and 11 that shows FDI net flow is not normal distribution. It has been paid attention if need to apply log to make this data become distribution.

From correlation table (figure 12) demonstrates the relation between FDI and economic, human resource and governance variables. Not surprisingly, FDI net flow has positive highly correlated with GDP and exports. Foreign direct investment which highly relates and get impacted on size of economic and market size. In addition, GDP also strongly positively correlated to export. It might cause multicollinearity issues and it needs to apply VIF test (Variance Inflation Factor) to be determined. Moreover, GDP per capita is also positively correlated to regulatory quality. And investment freedom also positively correlated to regulatory quality and Absolute Political Extraction (APE). It shows the restrictions of business would have influence international investment.

Figure 10. FDI Data Descriptive table

Variable	Obs	Mean	Std. Dev.	Min	Max
fdi	4,761	7.77e+09	3.31e+10	-3.45e+11	7.34e+11

Figure 11. FDI histogram

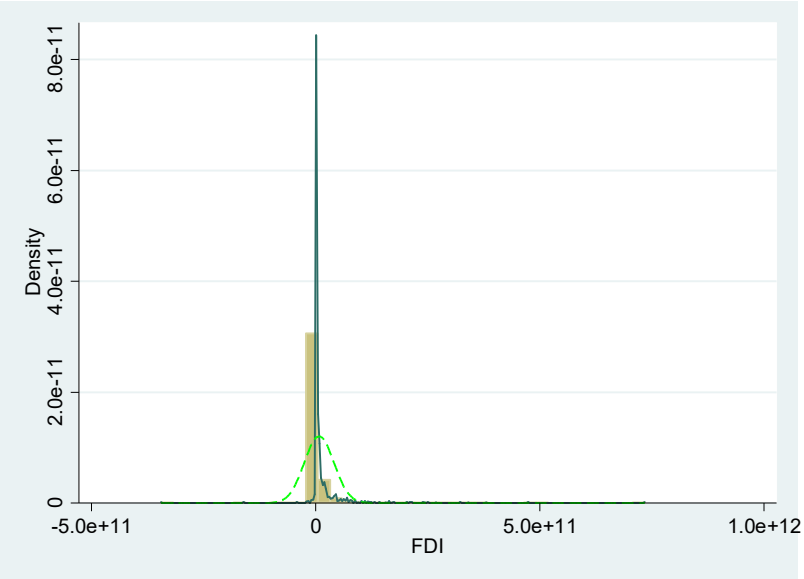


Figure 12. FDI with independent variables correlation table

	FDI	GDP	GDP_pe~a	exports	Trade_~s	Invest~m	Labor_~e	popula~n	Regula~y	APE
FDI	1.0000									
GDP	0.6847	1.0000								
GDP_per_ca~a	0.2282	0.1852	1.0000							
exports	0.7144	0.8671	0.2775	1.0000						
Trade_open~s	0.0728	-0.0751	0.1158	0.0776	1.0000					
Investment~m	0.2036	0.1572	0.1158	0.2597	0.3267	1.0000				
Labor_forc~e	0.0700	0.0711	-0.2338	0.1069	0.0785	0.3868	1.0000			
population	0.3396	0.4293	-0.0533	0.4606	-0.0979	0.0224	0.0899	1.0000		
Regulatory~y	0.2749	0.2109	0.5406	0.3398	0.2946	0.5041	-0.0546	-0.0296	1.0000	
APE	0.1551	0.1963	0.0074	0.2656	0.2015	0.5968	0.4906	0.1078	0.2226	1.0000

Figure 13 can obverse FDI net flow between 1996 to 2018 in global. Countries have darker blue color that means higher FDI net flow. Most of foreign direct investment concentrated in North American, Europe countries and China over the time. Especially, The United State (US) has highest FDI net flow and second is China. From the figure 13, line char shows China, the United State are highest FDI net flow countries, beside those two countries, Netherland also receive huge FDI during 2004 to 2008. Due to Netherlands social and economic advantages

lend the country a vital edge in regards to free trade and an open market economy (Berg & Immerzeel, 2020), however, FDI decrease after 2017. From top 10 economies in the world (Figure 14), points out China FDI net flow in continuous increase after 2014. The Unite State receives more FDI than other countries since 1996, however, there are few declining during global recessions. After 2014 China obtained more FDI than the United States. China's Belt and road initiative start 2013 that increases international business corporate with other countries also bring more investment opportunities for China. Another example, The United Kingdom (UK) gained FDI inflow during 1996 to 2009, yet FDI net flow decreasing after 2016 and FDI net flow become negative in 2018. The decreasing happened during Brexit period, and The United Kingdom exited European Union (EU) in 2019, during this period, Germany and French FDI net flow increase. It shows international investment switch destination due to Brexit.

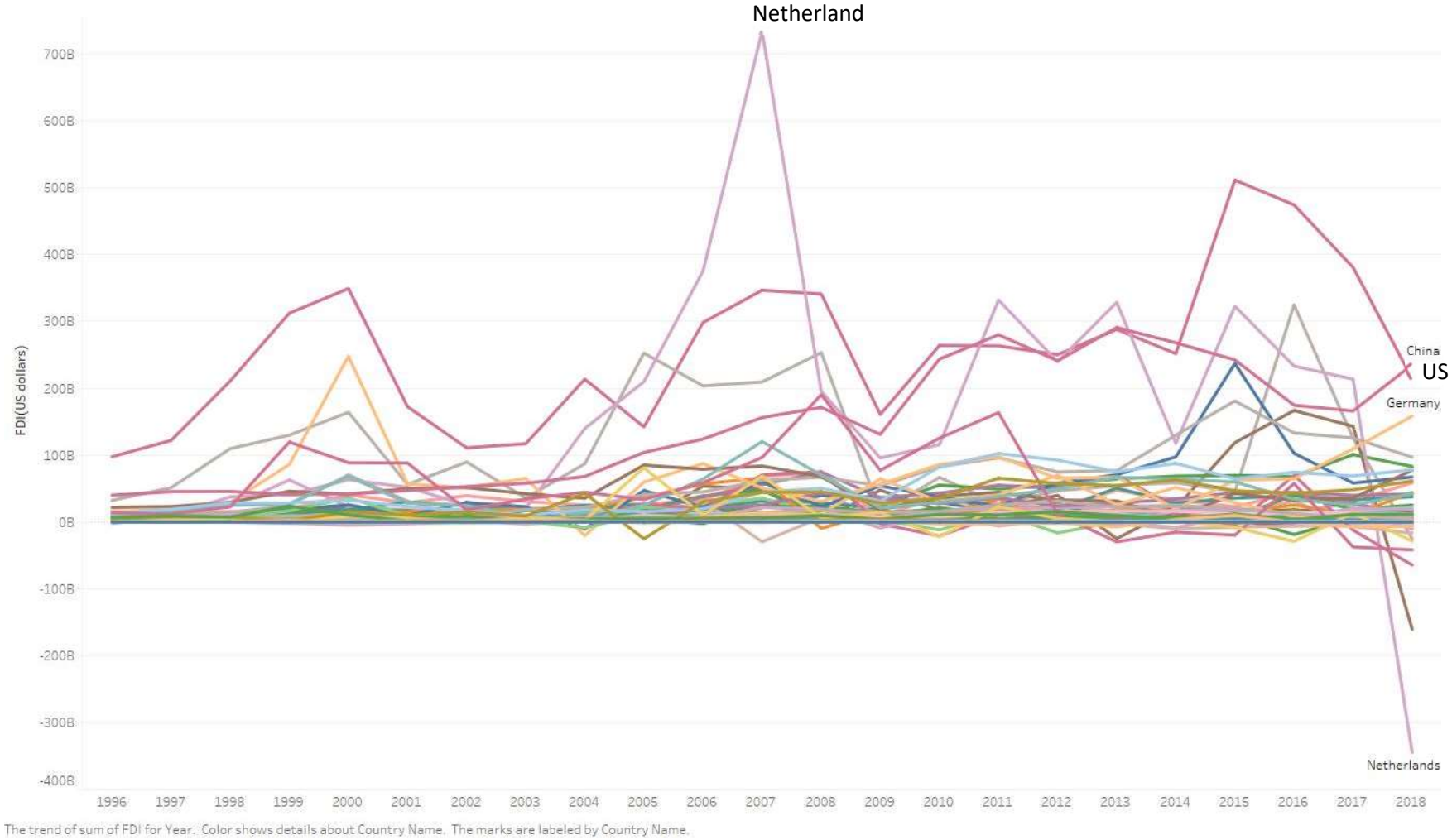
Figure 13. FDI net flow during 1996-2018

Map based on Longitude (generated) and Latitude (generated). Color shows sum of FDI. The marks are labeled by Country Name. Details are shown for Country Name.

FDI

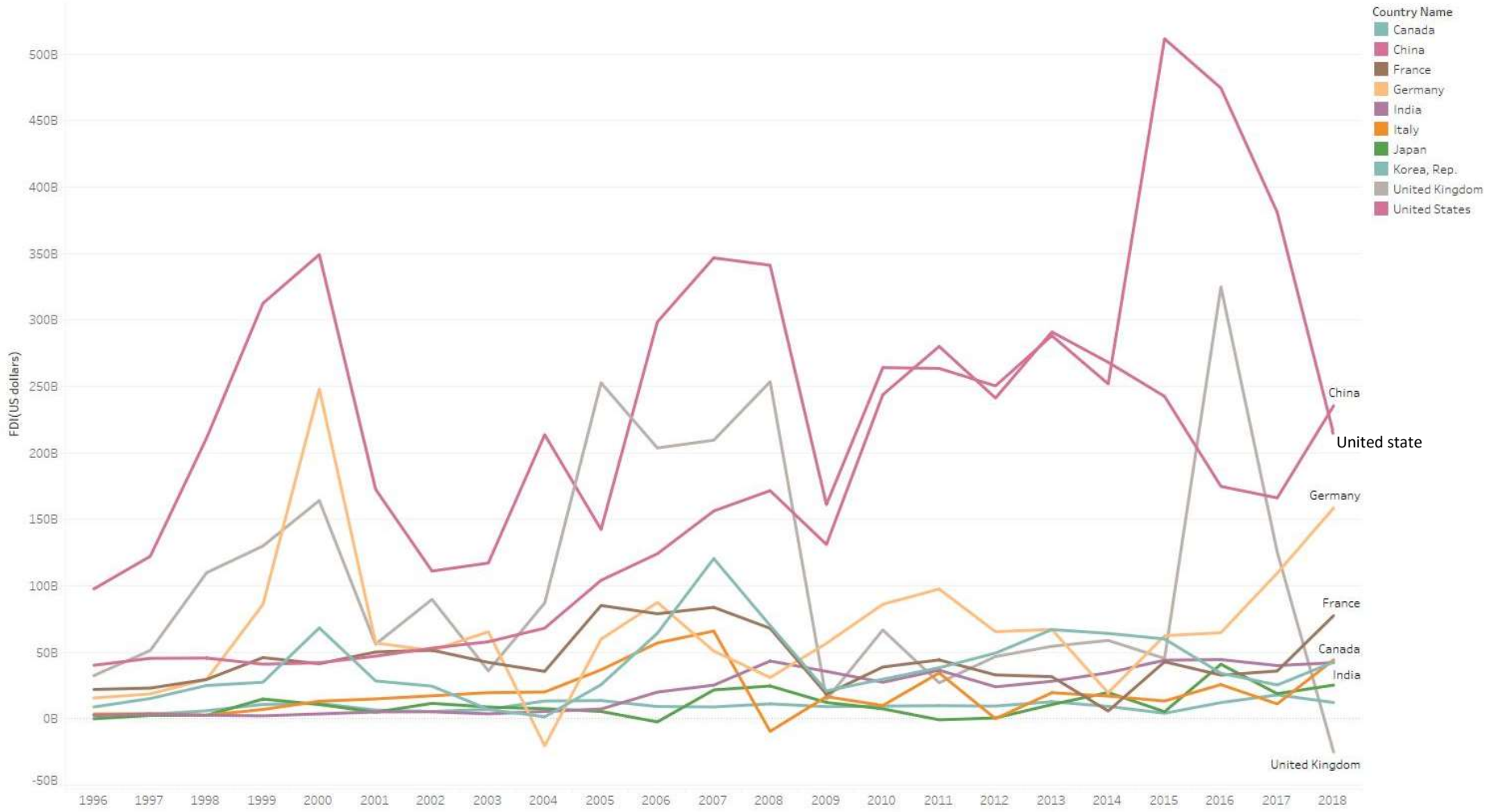
-22,757,467,000 6T

Figure 14. FDI net flow by countries during 1996-2018



The trend of sum of FDI for Year. Color shows details about Country Name. The marks are labeled by Country Name.

Figure **15. FDI net flow top 10 Economies during 1996-2018**



4.2 Economic Variables Data Description

The five economic independent variables (IVs) including GDP, GDP per capita, Export, trade openness, and investment freedom across 207 countries from 1996 to 2018, with a total of 4,761 observations. The distribution of GDP, GDP per capita, Export, and trade openness is right-skewed and may require data transformation (.Figure 15 and 16). A correlation table (Figure 17) shows that FDI net flow is highly correlated with GDP and exports. Additionally, there is a high correlation between GDP and exports which may lead to multicollinearity issues that require a VIF test.

Figure 16. Economic variables data descriptive table

Variable	Obs	Mean	Std. Dev.	Min	Max
GDP	4,760	2.68e+11	1.21e+12	0	2.05e+13
GDP_per_ca~a	4,761	12925.95	21891.48	0	203266.9
exports	4,761	7.27e+10	2.19e+11	0	2.66e+12
Trade_open~s	4,761	73.56258	58.08713	0	442.62
Investment~m	4,761	41.47658	28.92042	0	95

Figure 17. Economic variables histogram

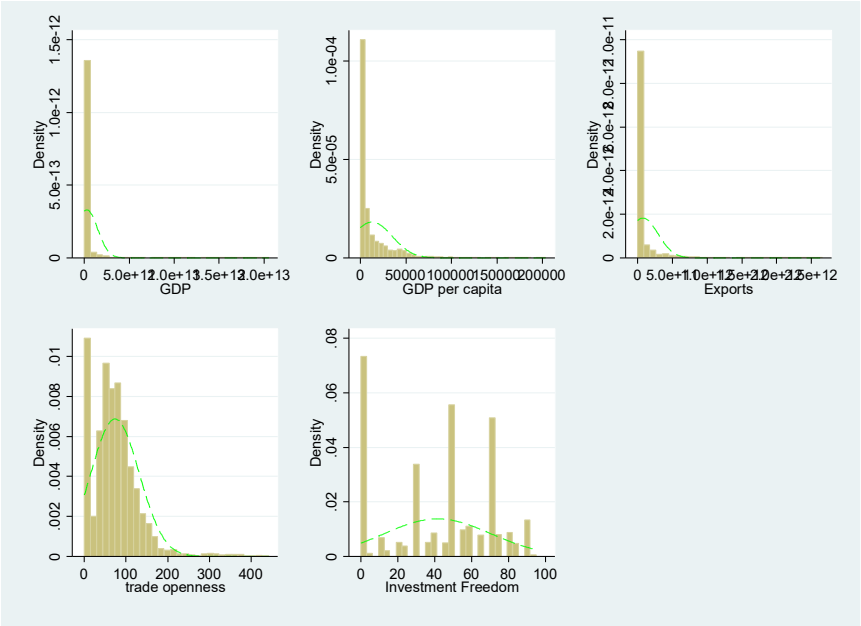


Figure 18. Economic variables correlation table

	FDI	GDP	GDP_pe~a	exports	Trade_~s	Invest~m
FDI	1.0000					
GDP	0.6847	1.0000				
GDP_per_ca~a	0.2282	0.1852	1.0000			
exports	0.7144	0.8671	0.2775	1.0000		
Trade_open~s	0.0728	-0.0751	0.1158	0.0776	1.0000	
Investment~m	0.2036	0.1572	0.1158	0.2597	0.3267	1.0000

From 1996 to 2018, the United States had the highest GDP, while European countries also had higher GDP compared to other regions (as shown in Figure 19). Figure 20, it can be seen that China's GDP has been rapidly growing since 2007. This increase in GDP indicates that China's economic market is expanding quickly and has a lot of potential for foreign investment. Japan also has a higher GDP compared to other Asian countries, but its economic growth has slowed down and is not significant. Other countries such as Germany and the United Kingdom are also experiencing a similar trend, with their economic growth moving towards stability.

Figure 19. GDP during 1996-2018

Figure 20. GDP by countries during 1996-2018

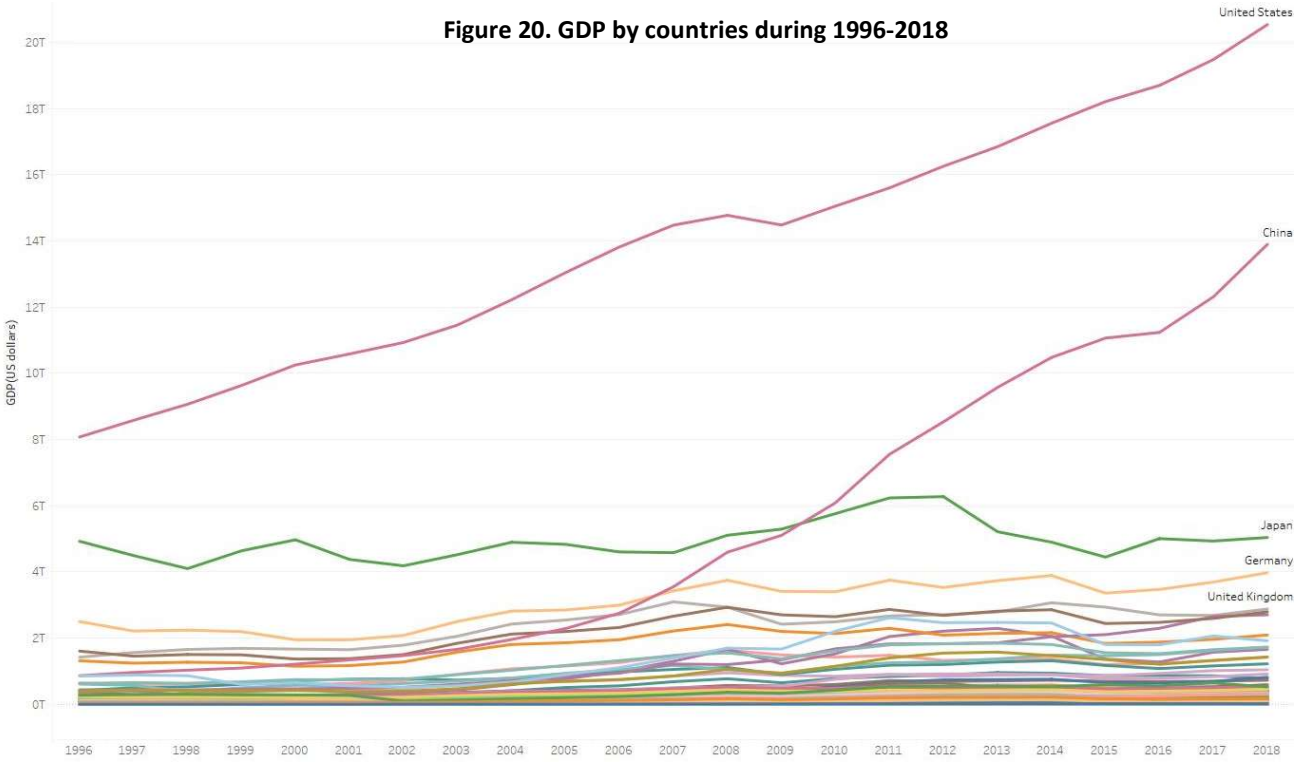


Figure 21 illustrates that countries with higher GDP per capita are mainly located in North America, specifically the United States and Canada. European countries also form a cluster, with Luxembourg being the smallest country but the richest with a per capita GDP of almost $120,000 US dollars (as shown in Figure 22). Norway and Sweden also have consistently high GDP per capita. Singapore is the highest GDP per capita country. Due to political stability, low corruption rates and transparent public institutions(EDB) Singapore has stable economic development in Asia-Pacific region.

Figure 21. GDP per capita during 1996-2018

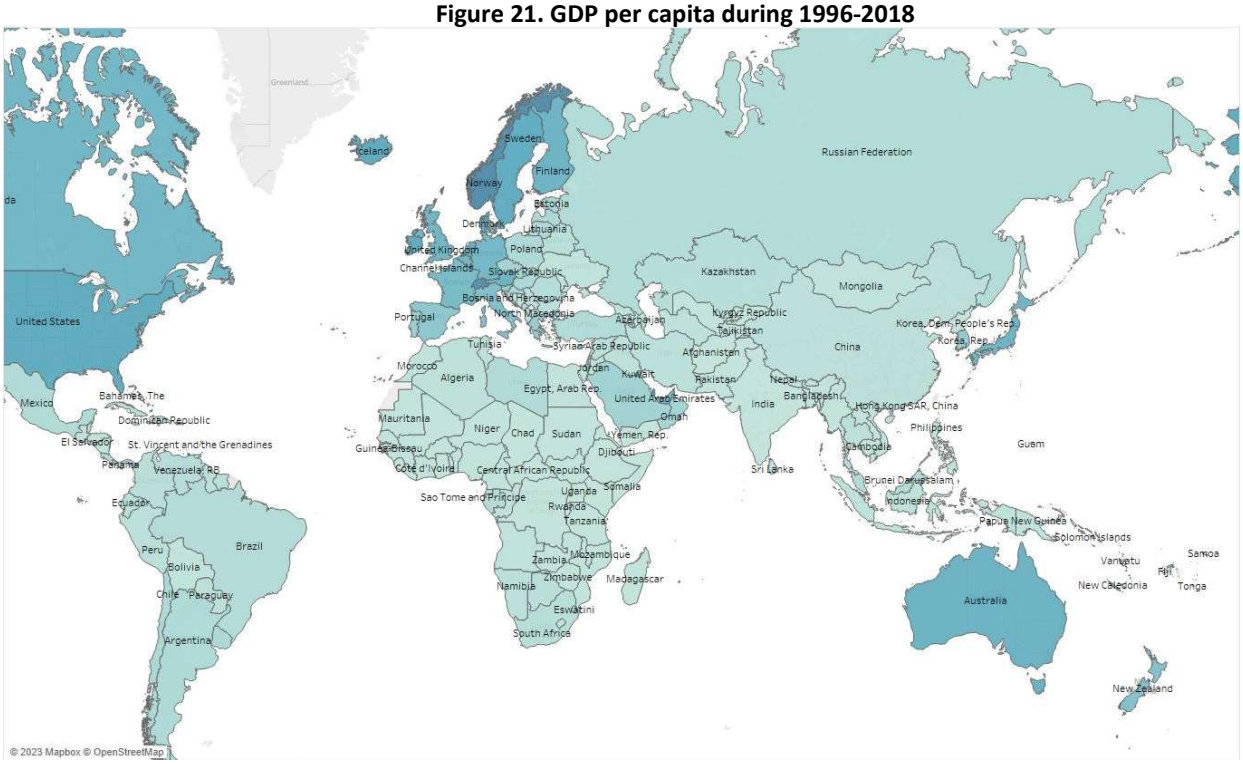
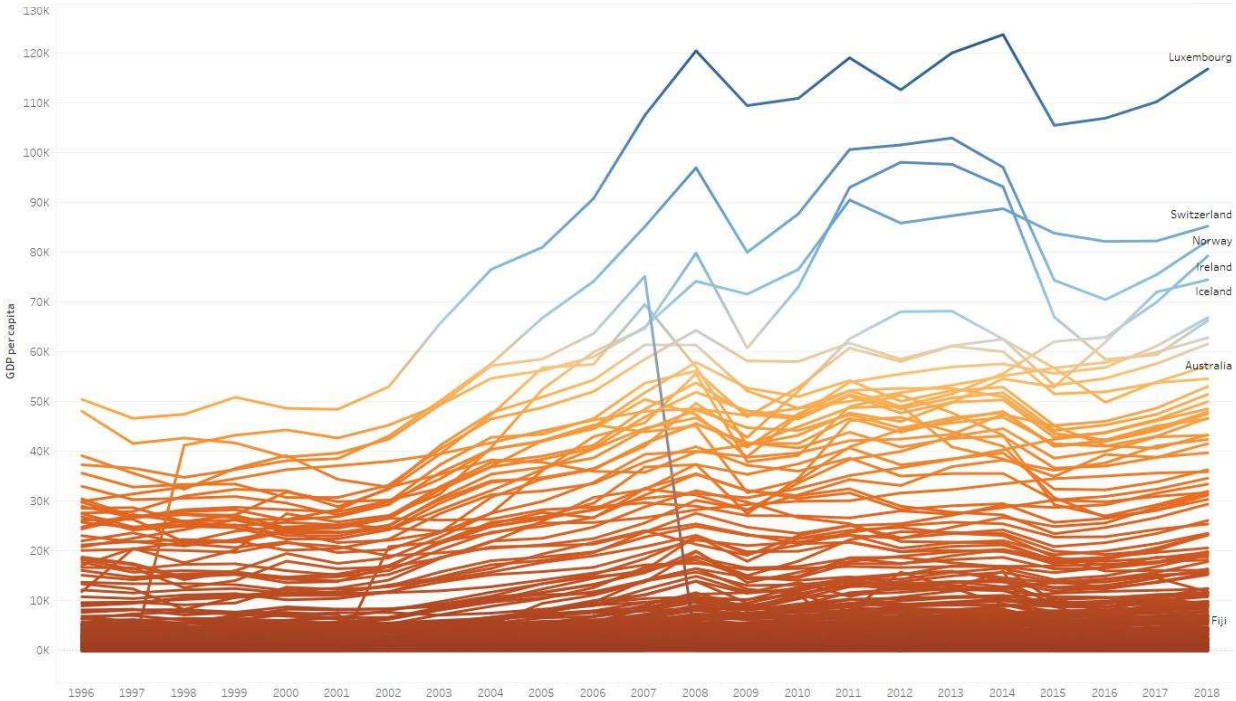


Fig22. GDP per capita by countries during 1996-2018



China has become the largest export country Since 2009 (figure 23) with special economic zones (SEZs) playing a key role in the country's economic boom and the growth of exports. Within SEZs, China offered tax incentives to foreign investors(JAHN, 2021). Japan is the second-largest export country in Asia, followed by Hong Kong and South Korea. The United States is the second-largest export country globally, with Canada, Mexico, and China being its largest trading partners. European countries such as Germany, Netherlands, Italy, and France are also among the top ten export countries in the world.

Trade openness refers to the degree of international trade in a country's economy, measured by the sum of its exports and imports as a percentage of GDP. Hong Kong and Luxembourg are the most open economies to international trade globally, while Singapore and Vietnam are the highest trade openness countries in Asia. Djibouti is an Eastern African country with high external trade openness due to its free trade regime and free-trade zone (figure 24).

Based on the Heritage Foundation, there is no restriction on the flow of investment capital in an economically free country is important for international investment to be able to move freely across borders without any restrictions. Figure 25 depicts the North American region as the United States, while European countries, particularly Luxembourg, are among the top ten countries with high investment freedom. In comparison to Europe and America, China, Russia, and African countries have lower levels of investment freedom.

Figure 23. Exports by countries during 1996-2018

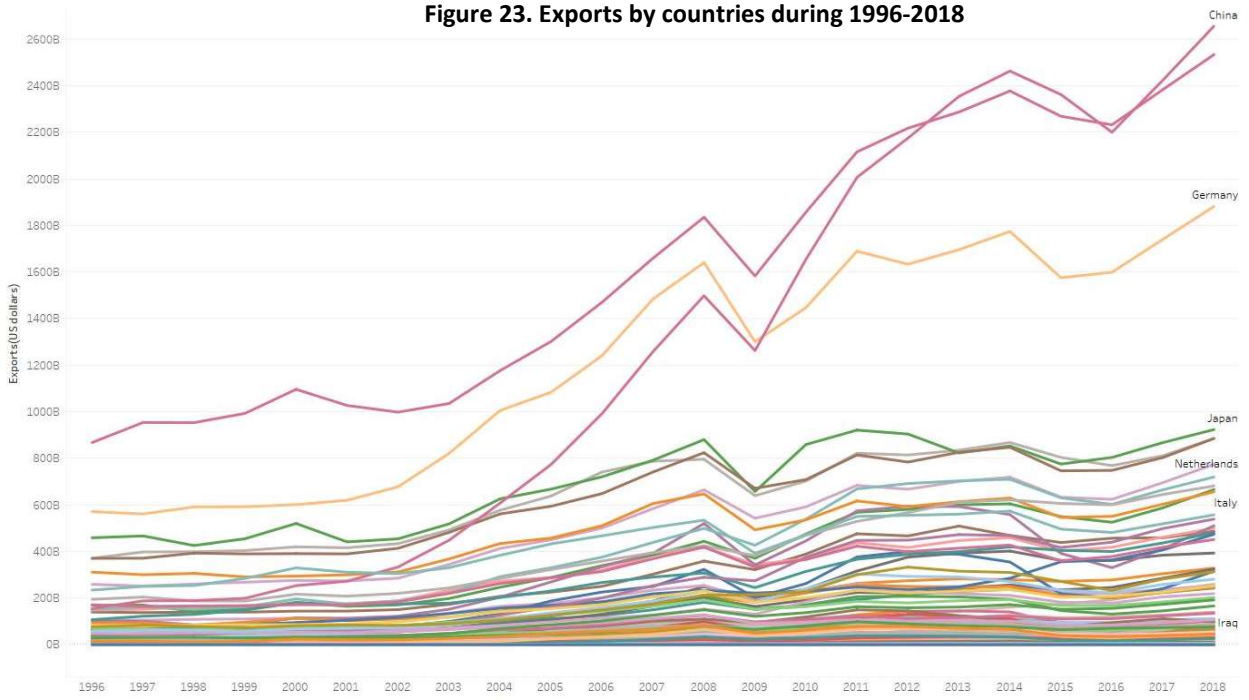


Figure 24. Trade openness by countries during 1996-2018

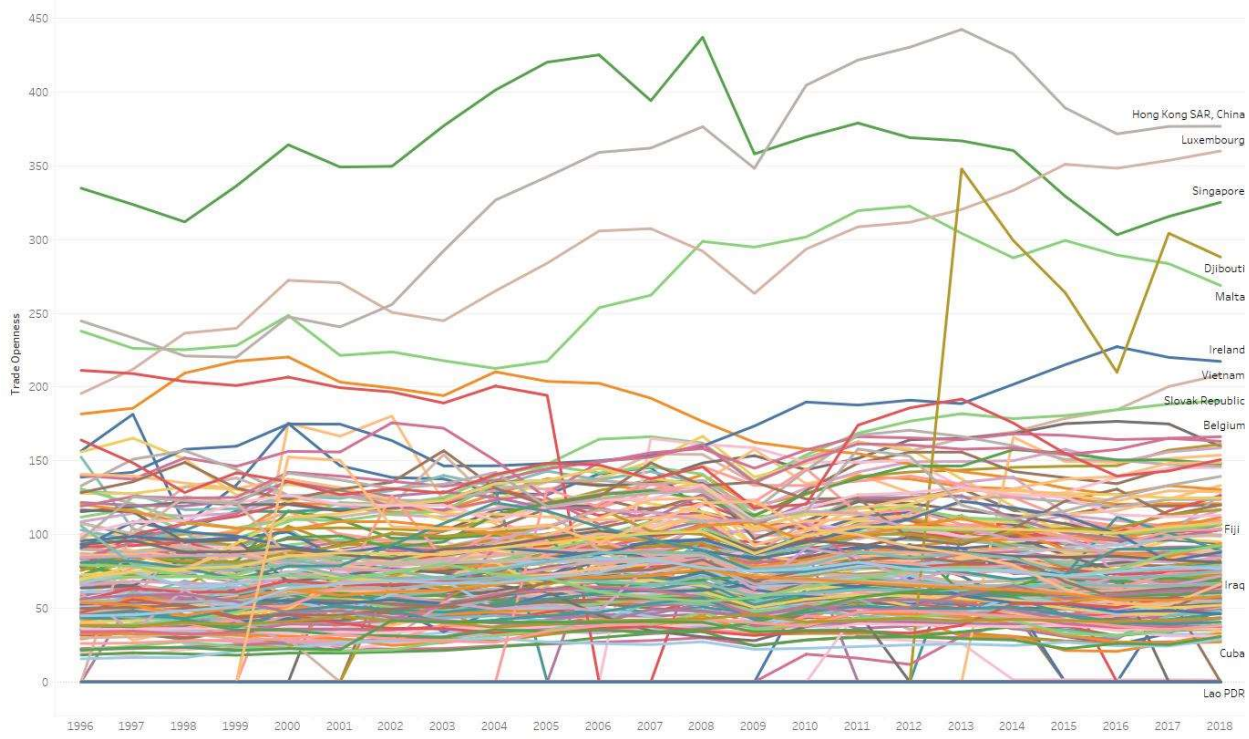
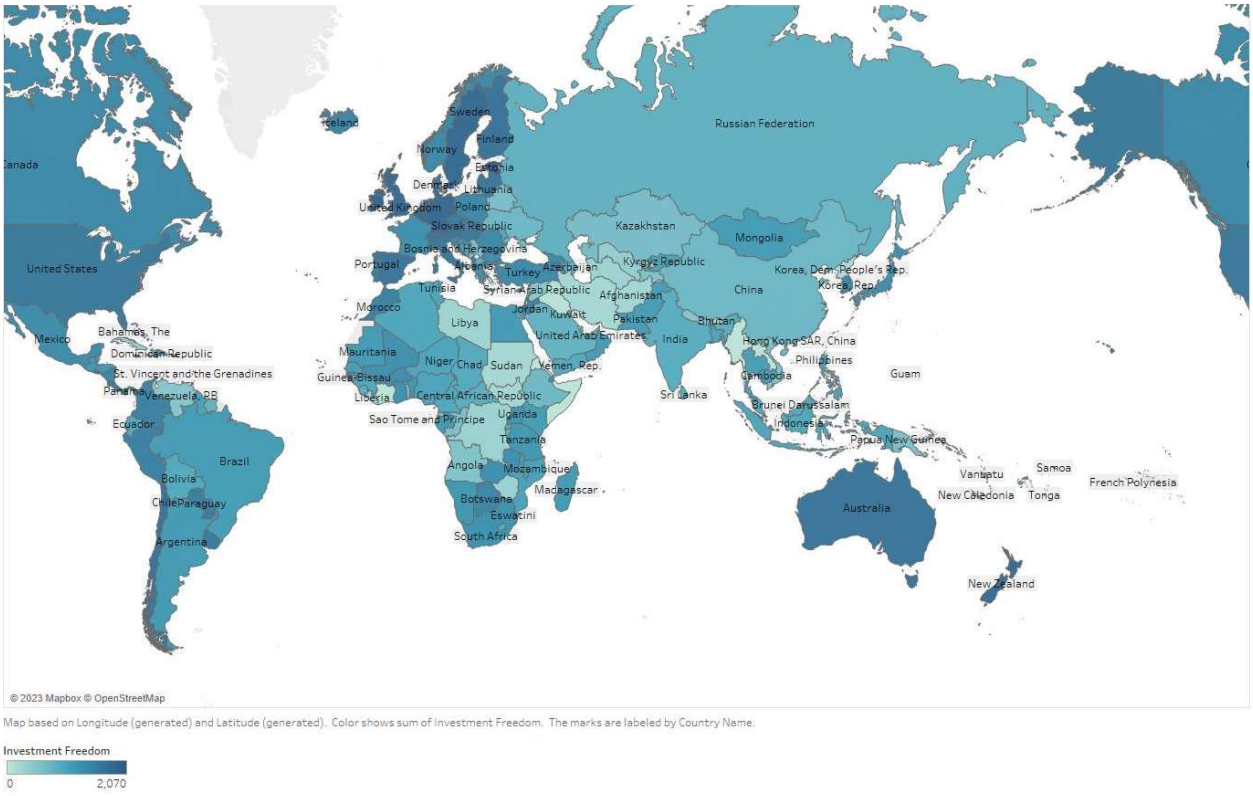


Figure 25. Investment freedom by countries during 1996-2018



Map based on Longitude (generated) and Latitude (generated). Color shows sum of Investment Freedom. The marks are labeled by Country Name.

Investment Freedom

0 2,070

The scatter plot matrix (shown in Figure 26) indicates that there is a positive correlation between GDP and exports. This is further supported by the correlation table (figure 18), which shows a strong correlation between the two variables. Furthermore, when examining the FDI data, it is apparent that there is an outlier. Upon closer inspection of figure 27, it can be seen that the Netherlands had the highest net flow of FDI between 2006 and 2007, however experienced a significant decrease in 2018.

Figure 26. Economic variables scatter plot matrix

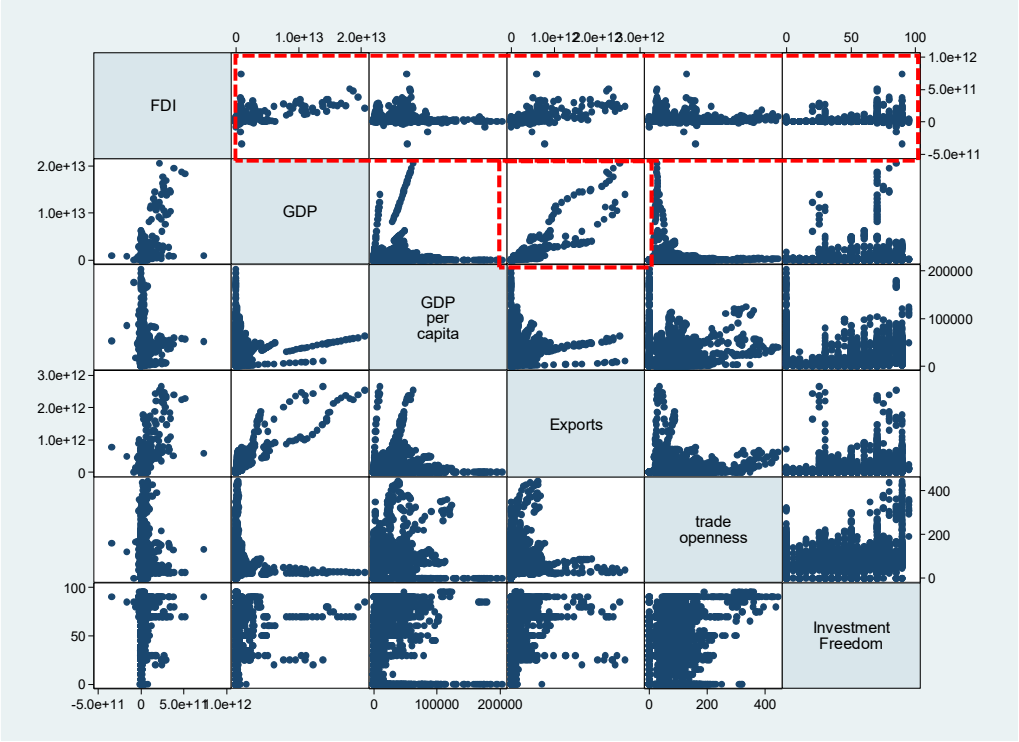
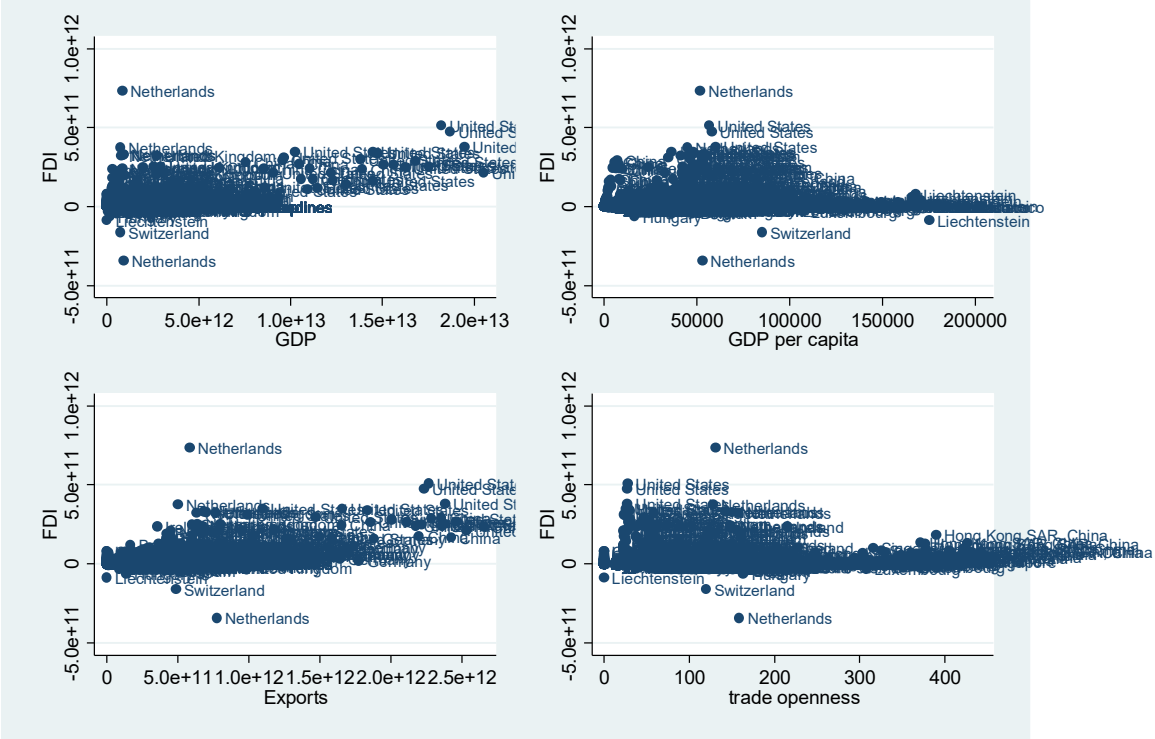


Figure 27. Economic variables scatter plot matrix by variables



According to Figure 28, the United States had the highest GDP and largest FDI net flow over time, while China had a higher FDI net flow but not a high GDP over time. Japan had a higher GDP but lower FDI net flow and did not attract foreign investment as much as China due to its lack of a cheap labor force and dominance in exports. European countries such as the United Kingdom, Germany, France, and Italy had higher GDP but smaller FDI net flows compared to the United States and China. However, the Netherlands had a large FDI net flow from 2006 to 2007, giving it a higher position than other EU countries.

Figure 29 shows that the United States had the highest FDI net flow and high GDP per capita. European countries such as Luxembourg, Norway, the United Kingdom, Germany, and the Netherlands had higher GDPs per capita but not high FDI net flows. Hong Kong had a higher GDP per capita than China but not a significantly large GDP.

Figure 30 displays FDI with trade openness. Singapore and Hong Kong had higher trade openness degrees but lower FDI net flows. China had a higher FDI net flow but lower trade openness. Japan had lower FDI net flow and trade openness but well governance and regulatory quality that led to its dominant economic status in the world. European countries such as Luxembourg had higher trade openness but lower FDI inflow. The United Kingdom, Germany, and France had higher FDI net flows but lower trade openness. The United States had the highest FDI net flow but lower trade openness.

Lastly, Figure 31 shows the relation between GDP and exports. The United States had a higher GDP and was one of the top ten largest export countries in the world. China became a dominant export country in the world with rapid economic growth leading to its higher GDP

over time. Japan was another high GDP country, but its exports were not as significant as China's. Germany had a higher GDP and exports over time in the European countries. The United Kingdom and France had similar positions, with higher GDP but exports not as great as the US or China.

Figure 28. FDI vs GDP scatter plot

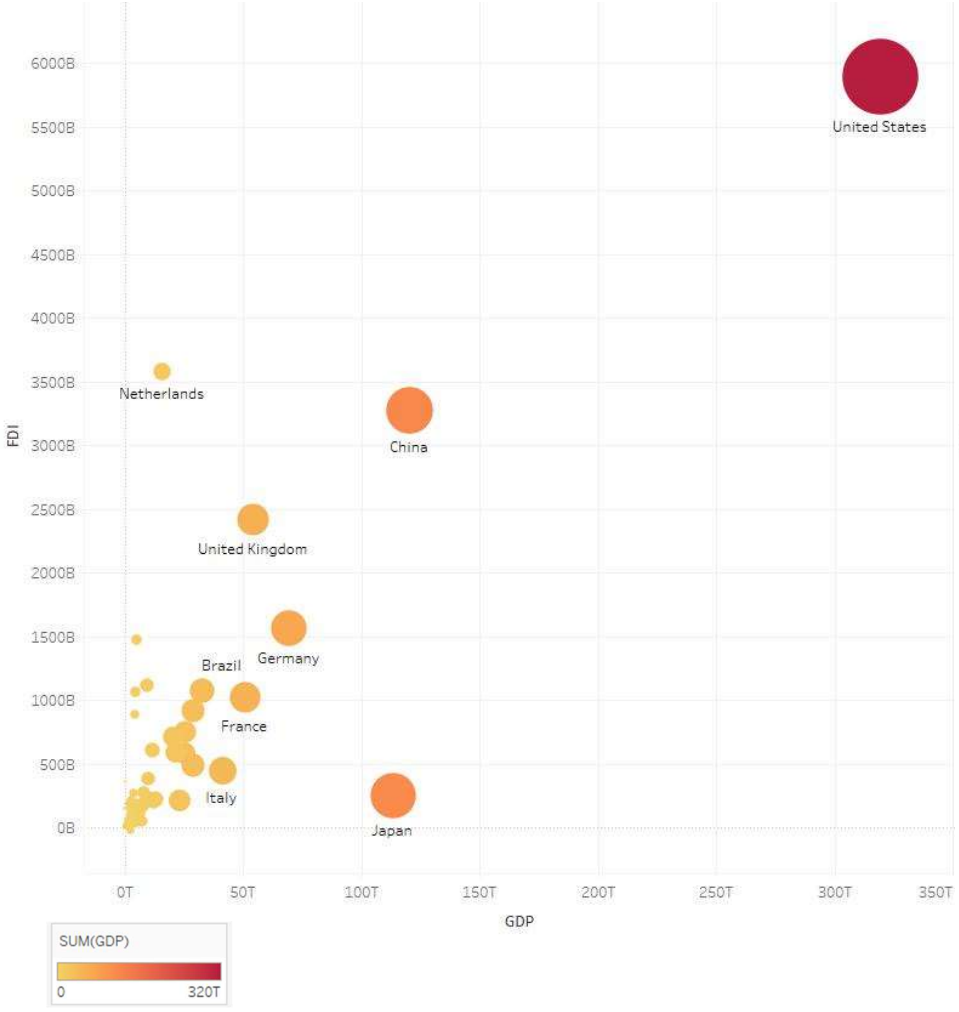


Figure 29.FDI vs GDP per capita scatter plot

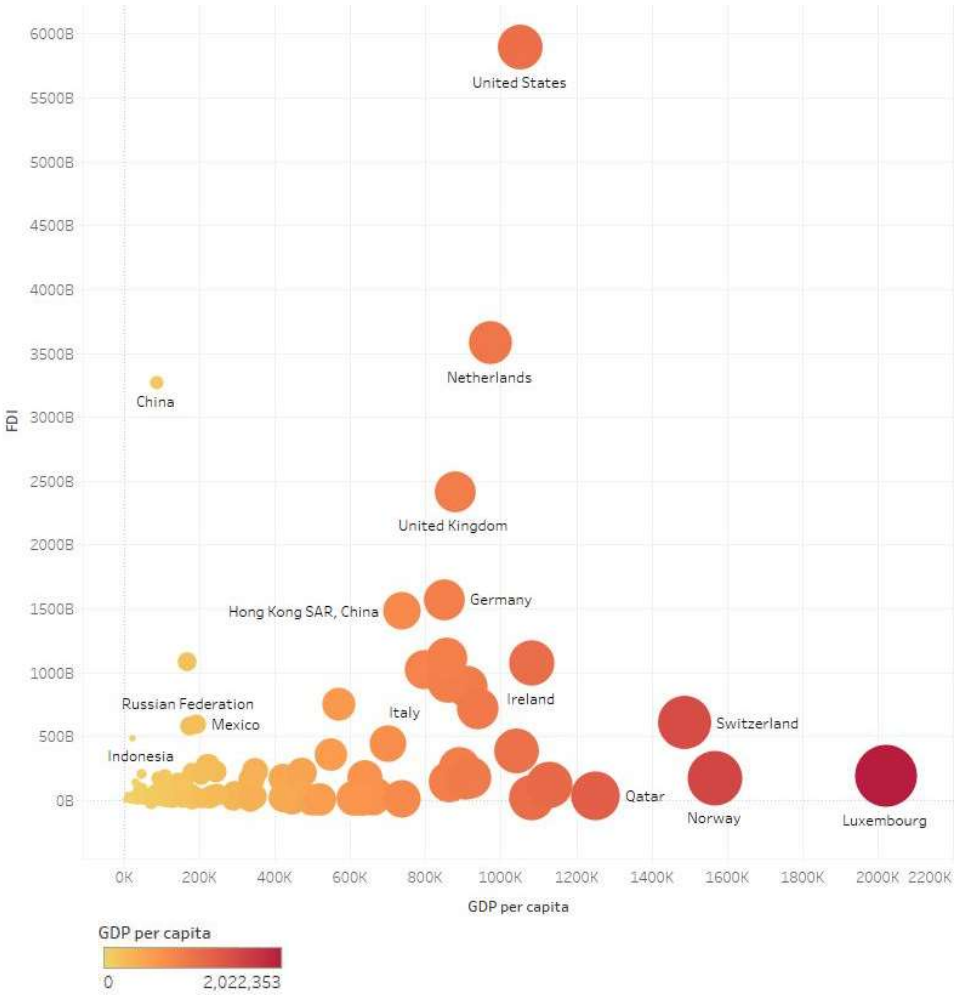


Figure 30. FDI vs trade openness scatter plot

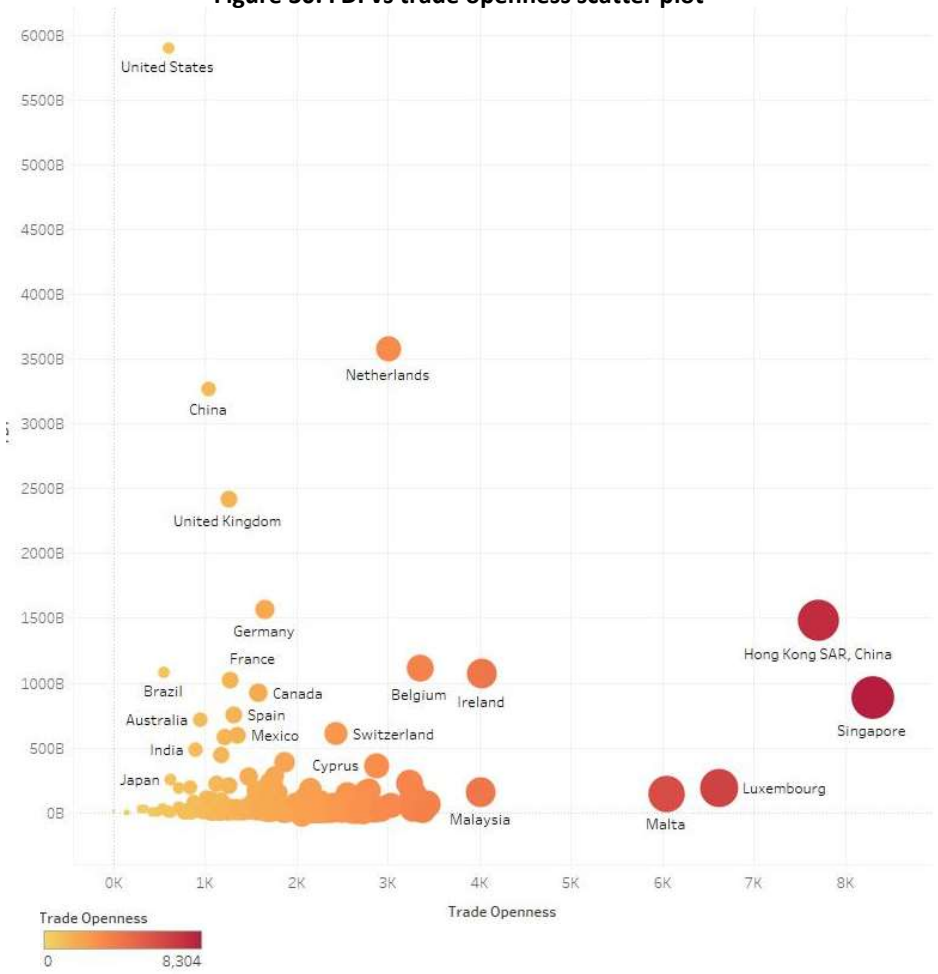
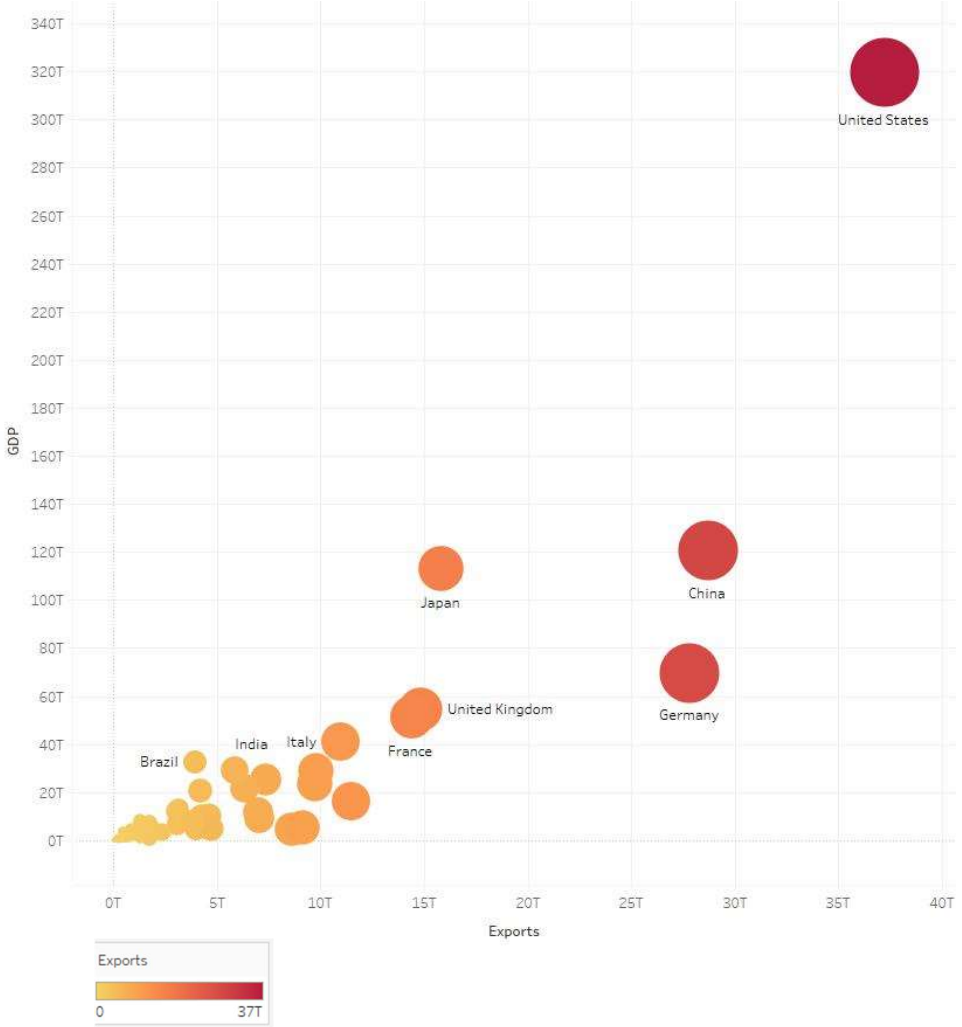


Figure 31. GDP vs Export scatter plot



4.3 Human Resource Variables Data Description

Considering quantity of the size, there are two factors that I considered which are the labor force participation rate and population. These factors are analyzed across 207 countries between 1996 and 2018, resulting in a total of 4,761 observations. Figures 32 and 33 indicate that both the labor force participation rate and population were not normal distributions. The labor force participation rate is skewed to the left while the population is skewed to the right. It may be necessary to transform the data if required. Figure 34 presents a correlation table that shows the relationship between FDI and human resource variables. The graph indicates that FDI net flow was not correlated with the labor force participation rate. However, FDI net flow is positively correlated with population, but not significantly so.

Figure 32. Human resource variables data descriptive table

Variable	Obs	Mean	Std. Dev.	Min	Max
Labor_forc~e	4,761	54.70012	22.33947	0	88.35
population	4,761	3.21e+07	1.27e+08	0	1.40e+09

Figure 33. Human resource variables histogram

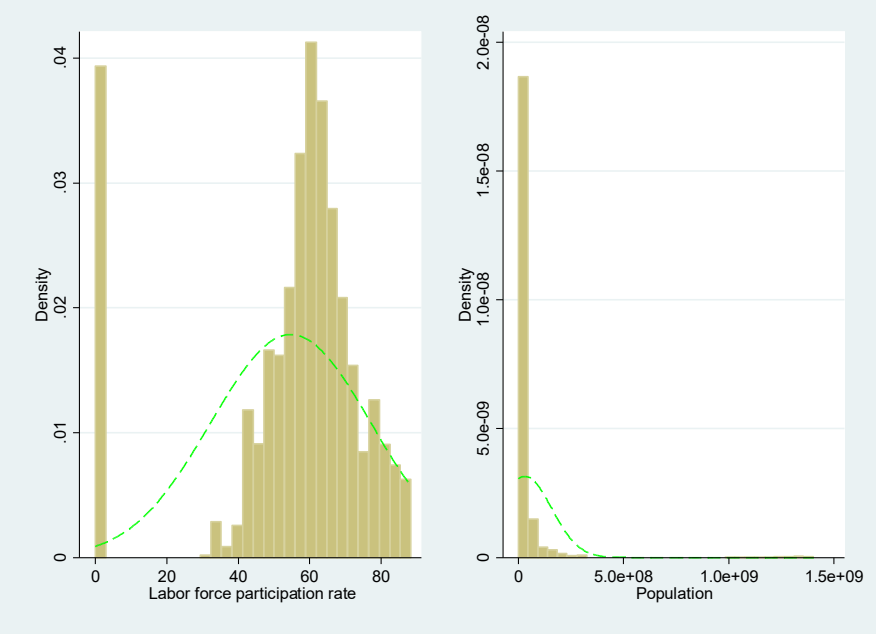


Figure 34. Human resource variables correlation table

	FDI	Labor_~e	popula~n
FDI	1.0000		
Labor_forc~e	0.0700	1.0000	
population	0.3395	0.0898	1.0000

In Figure 35, a scatter plot matrix was used to display the relationship between FDI net flow, labor force participation rate, and population. The scatter plot matrix did not show any positive or negative correlation between these variables, but it did reveal two distinct clusters that require further investigation. Figure 36 provides more detailed information on these clusters. The plot of FDI net flow with labor participation rate showed a few outliers, which were caused by the Netherlands having a higher FDI net flow between 2006 and 2007 and a significant decrease in FDI net flow after 2018. Additionally, missing data in Liechtenstein and Congo, Dem. Rep. also contributed to the outliers. The population variable had two prominent clusters, China and India, which are the two most populous countries in the world. These clusters stood out from the other countries in the scatter plot matrix.

Figure 35. Human resource variables scatter plot matrix

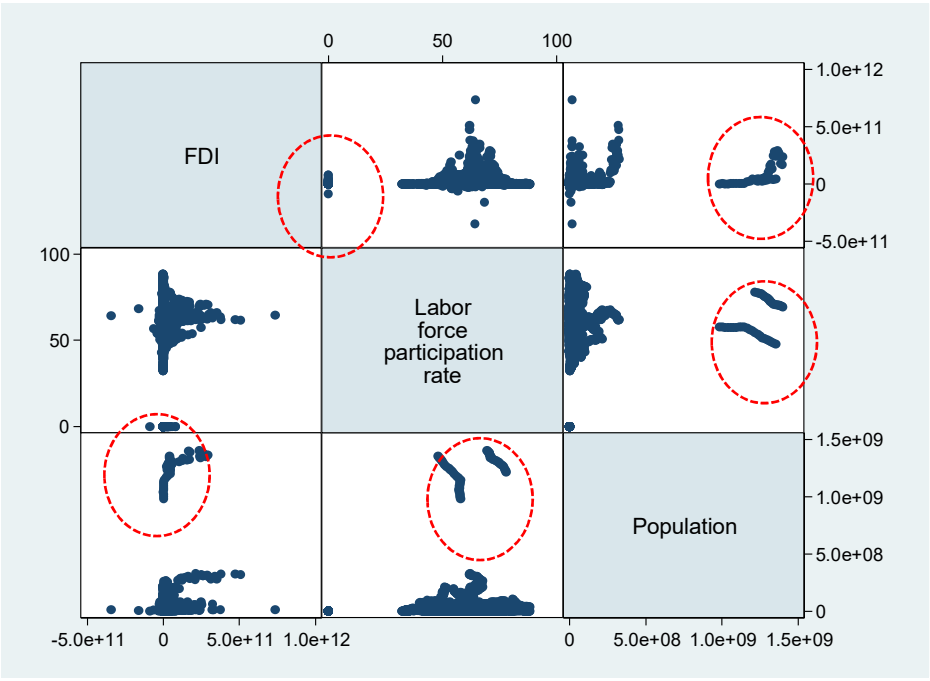
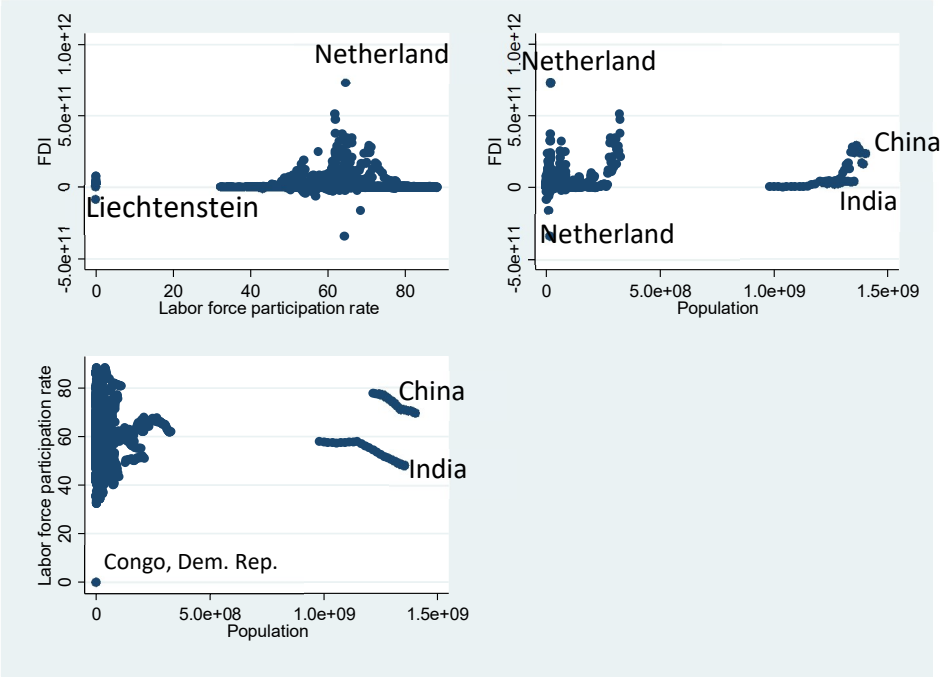


Figure 36. Human resource variables scatter plot matrix by variables



Figures 37 and 38 depict the population of various countries from 1996 to 2018. China had the largest population in the world, with around 1.4 billion people in 2018. However, its population growth rate had started to slow down since 2020. India was the second-largest country in terms of population, with about 1.3 billion people in 2018. Its growth rate was positive and higher than China's after 2018. The United States was the third-largest country, with a population of 326.8 million in 2018. Its population size remains stagnant due to factors such as expensive living costs and extended life expectancy. Other countries with high populations such as Indonesia, Mexico, and Russia had better labor force sources.

From a labor force participation rate perspective, African countries had a higher rate between 1996 to 2018 (Figure 39). The high rate of labor force growth, which is driven by past and current high fertility (Louise Fox, 2021). Asian countries such as China also have a higher labor force participation rate due to their abundant population and labor force. The large labor force in China and India provides cheaper labor, which was an essential factor in attracting foreign direct investment (FDI). However, African countries economic development and transformation did not provide enough wage employment opportunities to catch up with the growing labor force(Louise Fox, 2021).

Figure 37. Population during 1996-2018

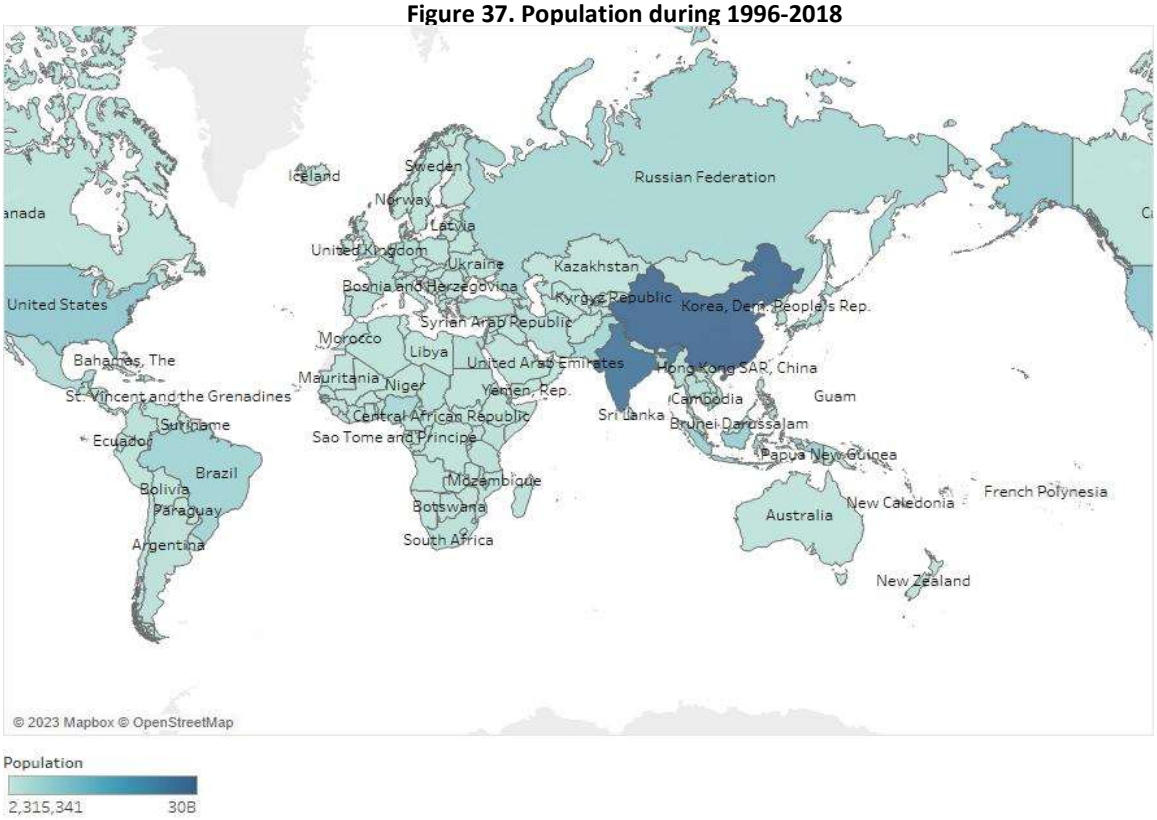


Figure 38. Population by countries during 1996-2018

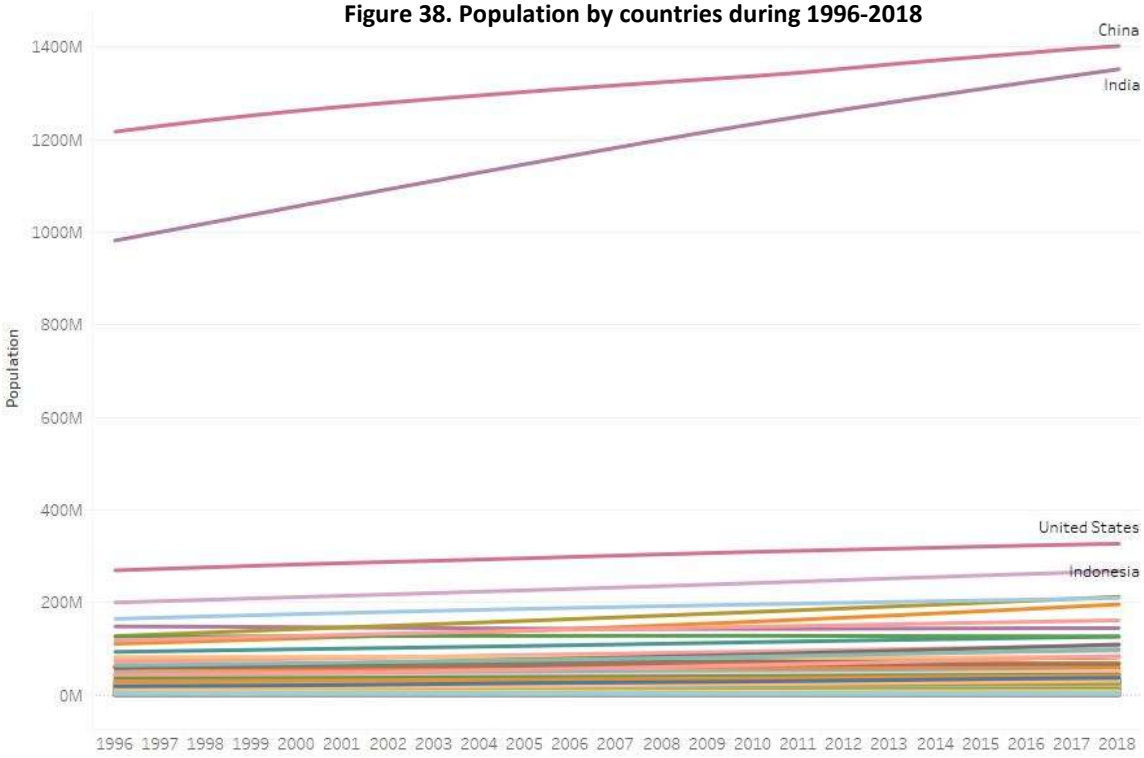


Figure 39. Labor force participation rate during 1996-2018

Figure 40 displays the net flow of foreign direct investment (FDI) and population from 1996 to 2018. China had the largest population and received a higher FDI net flow compared to other countries. India had the second-largest population but a lower FDI net flow. Indonesia was among the top ten countries with the largest population, but its FDI net flow was exceptionally low. The United States had a higher FDI net flow and a large population, while European countries like the United Kingdom and Germany had higher FDI net flows but smaller populations due to their high GDP.

Figure 41 shows the relationship between FDI net flow and labor force participation rate over time. The United States had a higher FDI net flow and labor force participation rate over time, while European countries like the Netherlands, United Kingdom, Germany, and Spain

had high FDI net flows and labor force participation rates. Asian countries like China and Hong Kong also had higher FDI net flows and labor force participation rates. However, Thailand's FDI net flow was low despite having a higher labor force participation rate, while Qatar had the highest labor force participation rate but a very low FDI net flow.

Figure 42 indicates that India, despite being the second-largest country in terms of population, did not have a high average labor force participation rate compared to other Asian countries. China, with its larger population, had a higher labor force participation rate. Vietnam had a higher labor force participation rate but a smaller population, while Indonesia had both a larger population and a higher labor force participation rate.

Figure 40. FDI vs population scatter plot

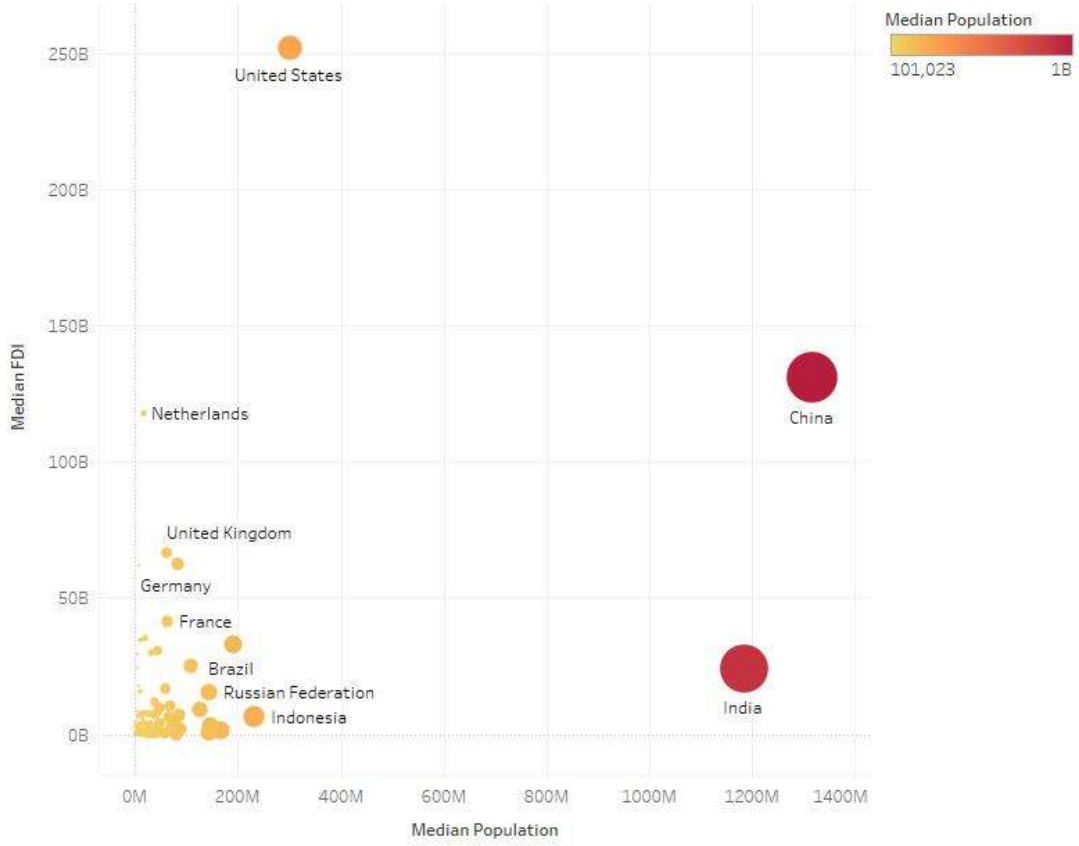


Figure 41. FDI vs Labor force participation rate scatter plot

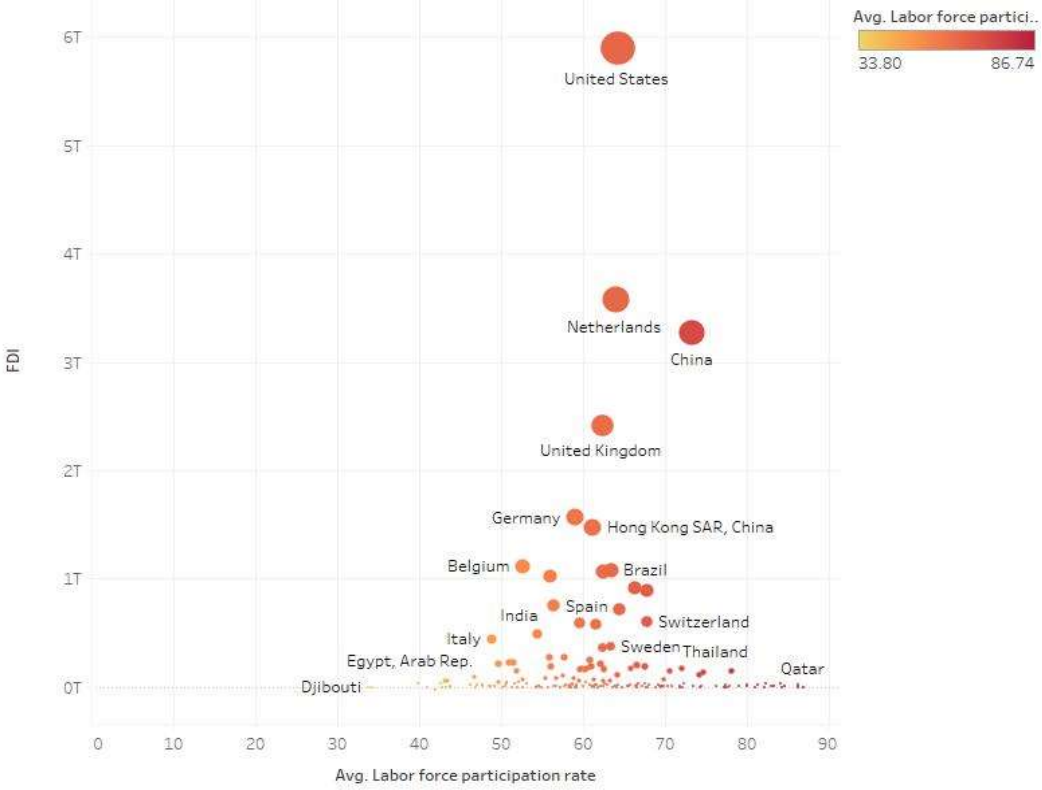
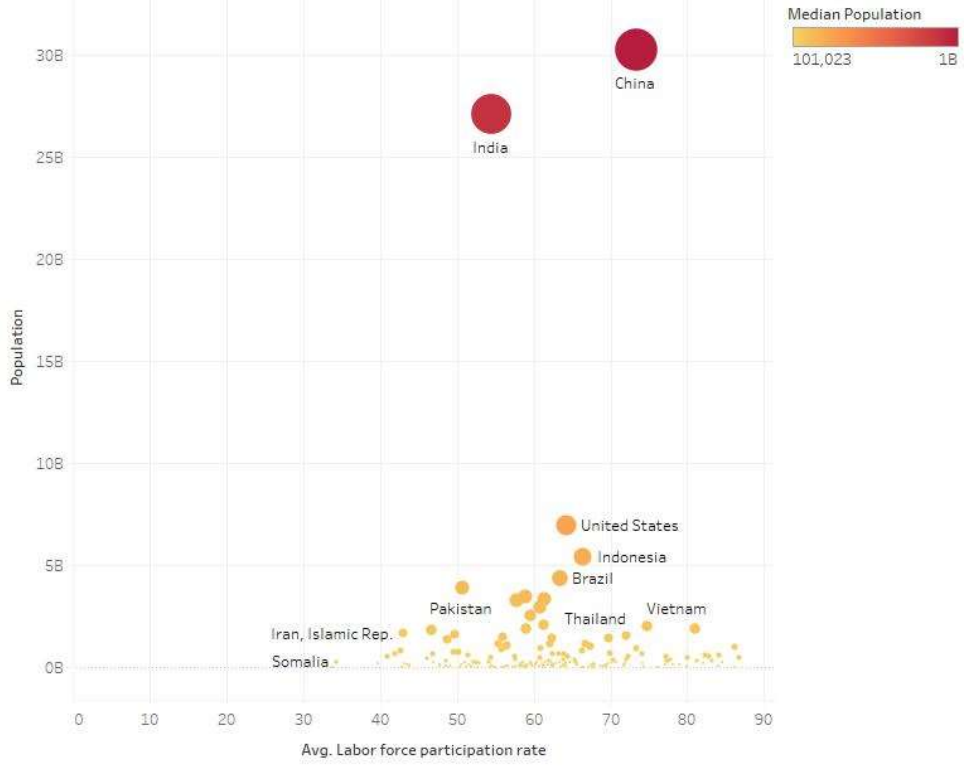


Figure 42. Population vs Labor force participation rate scatter plot



4.4 Governance Variables Data Description

In this research, the impact of foreign direct investment (FDI) is intricately linked to governance, which is considered a crucial factor. The study uses regulatory quality and Absolute Political Extraction (APE) as independent variables to represent governance. The research covers 207 countries between 1996 and 2018, with a total of 4,761 observations. Figures 43 and 44 indicate that regulatory quality and APE were not normally distributed. Although they were close to the normal distribution, some missing values caused many data points to center around zero. Figure 45 presented a correlation table that showed the relationship between FDI and governance variables. The graphic revealed that FDI net flow was positively correlated with regulatory quality and APE, but the correlation was not strong.

Figure 43. Governance variables data descriptive table

Variable	Obs	Mean	Std. Dev.	Min	Max
Regulatory~y	4,761	-.0291639	.8876595	-2.645041	2.260543
APE	4,761	.4387836	.259169	0	.8991089

Figure 44. Governance variables histogram

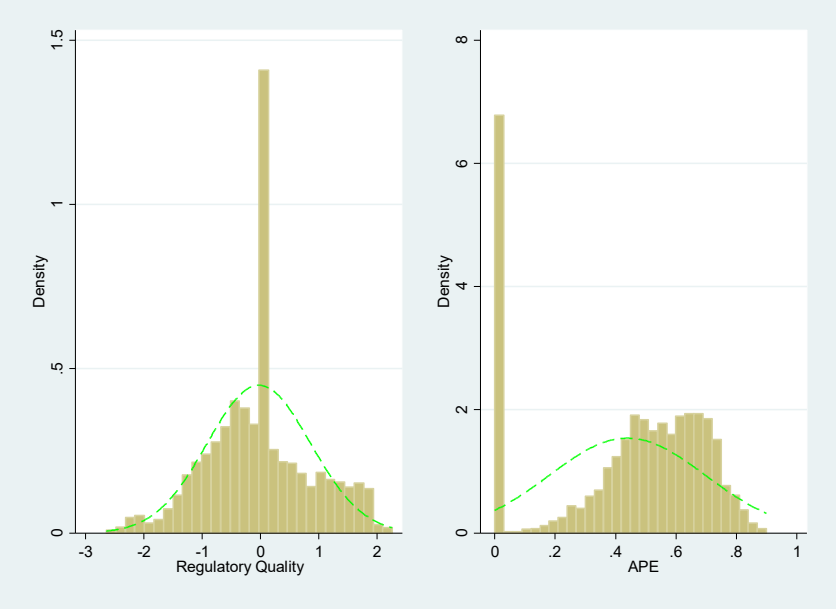


Figure 45. Governance variables correlation table

	FDI	Regula~y	APE
FDI	1.0000		
Regulatory~y	0.2749	1.0000	
APE	0.1551	0.2226	1.0000

A scatter plot matrix, shown in Figure 46, displays the relationship between FDI net flow, regulatory quality, and APE. The scatter plot matrix indicates that there was no positive or negative correlation between these variables. However, there are some outliers that require further investigation. Figure 47 provides more detailed information. The plot of FDI net flow with regulatory quality revealed a few outliers. These outliers were due to the fact the Netherlands had a higher FDI net flow between 2006 and 2007, but there was a significant decrease in FDI net flow after 2018. In the case of regulatory quality with APE, there were two clusters. One cluster was closer to 0 and includes Hong Kong and North Korea. Hong Kong had higher regulatory quality, while North Korea had lower regulatory quality.

Figure 46. Governance variables scatter plot matrix

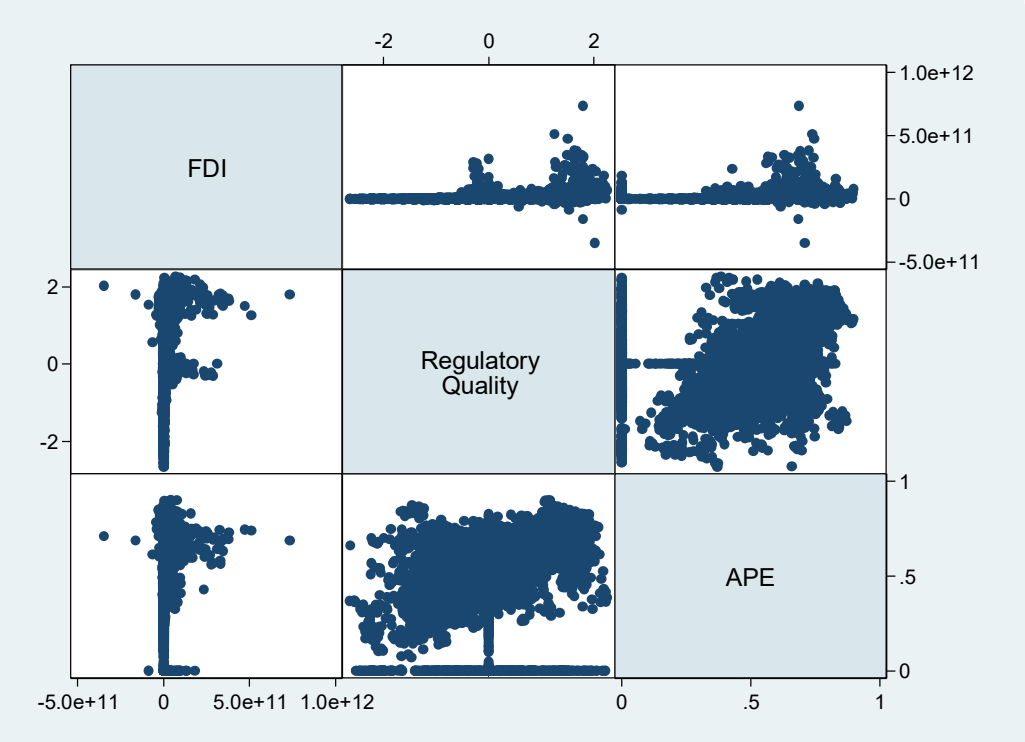


Figure 47. Governance variables scatter plot matrix by variables

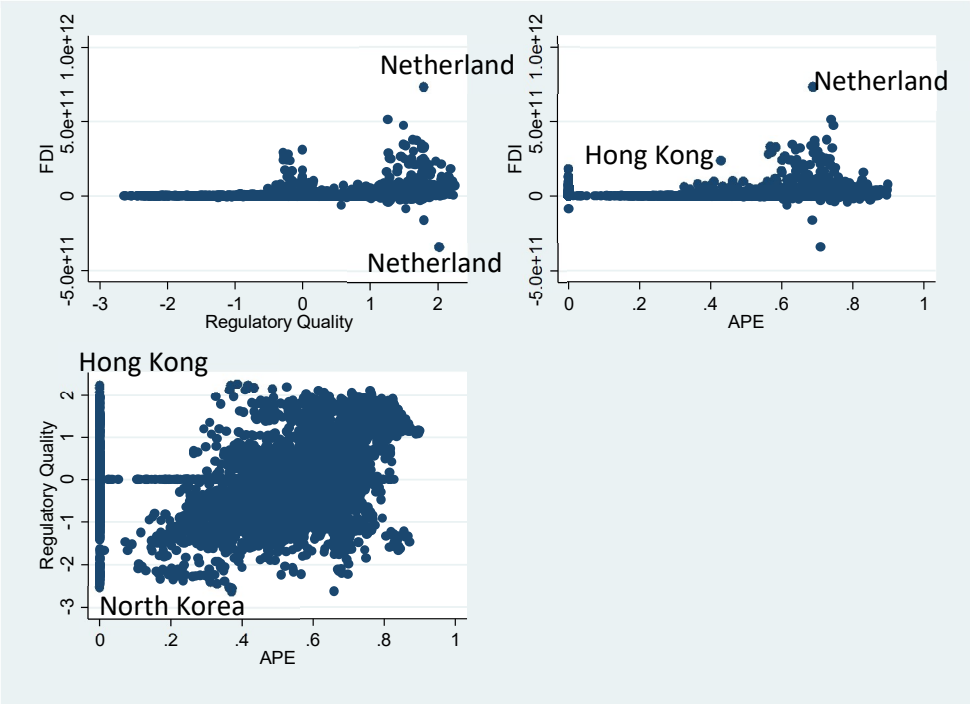
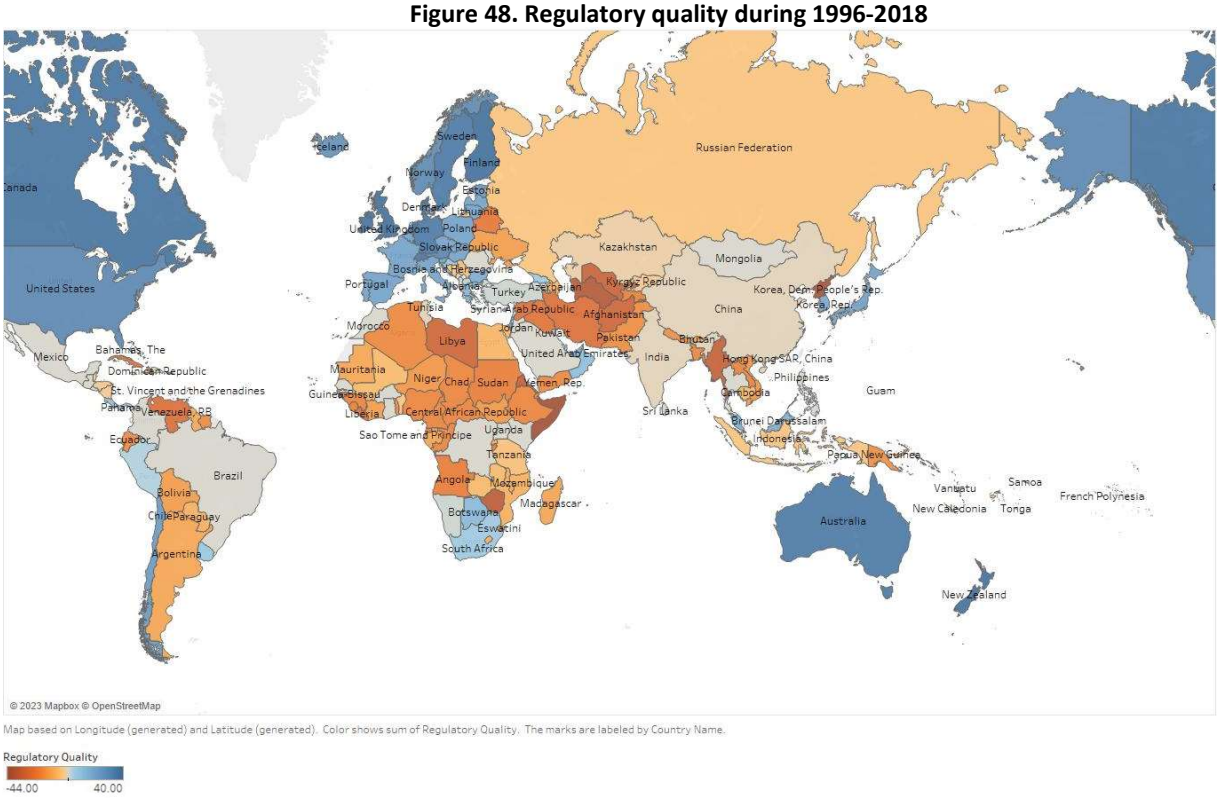


Figure 48 illustrates the quality of regulations across the world from 1996 to 2018. The color blue indicates better regulatory quality, with North American and European countries having higher regulatory quality. African countries, except for South Africa, had very low regulatory quality. Socialist countries such as China, Venezuela, Russia, and Cuba also had lower regulatory quality due to their government's higher level of control. North Korea, Turkmenistan, Afghanistan, and Sudan had lower APE (figure 49), indicating that developed countries had better governance while developing countries had lower governance with an elevated level of government control. Figure 50 shows the relationship between FDI and APE. The United States had higher FDI net flow and APE, as did European countries such as the United Kingdom, Germany, and France. China had a higher FDI net flow but lower APE. Hong

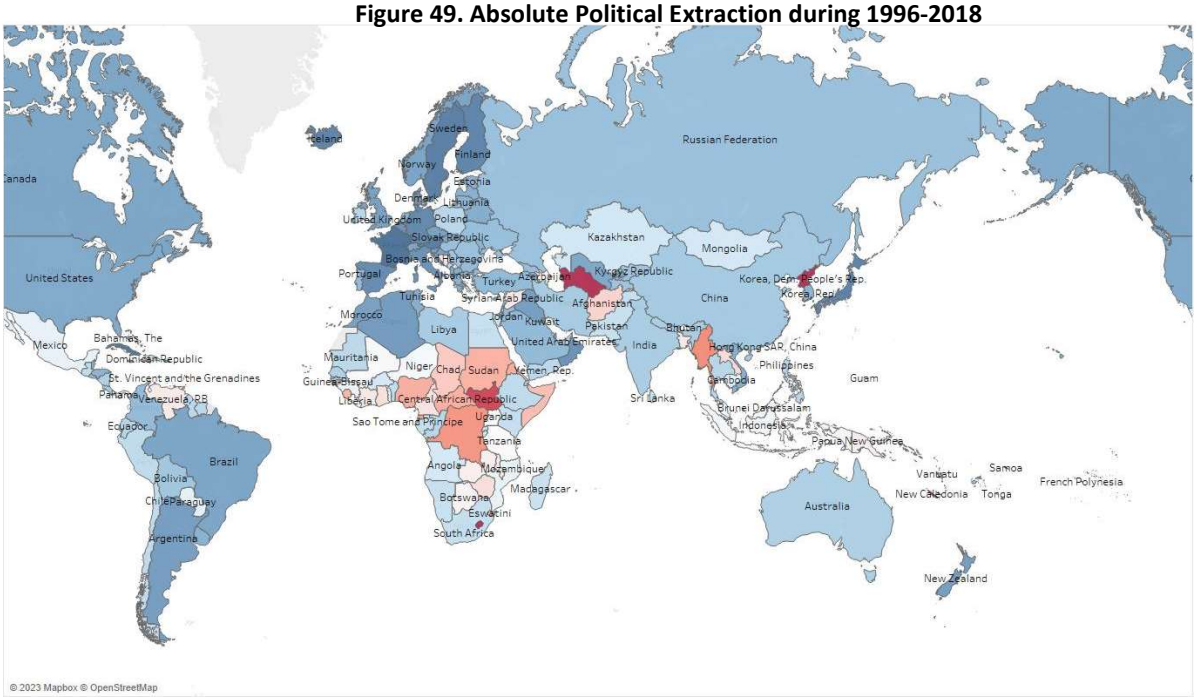
Kong had a high FDI net flow but an APE of zero, while North Korea had a lower FDI net flow and an APE of 0. Therefore, these countries' APE was around zero and became one cluster.

Figure 48. Regulatory quality during 1996-2018



Map based on Longitude (generated) and Latitude (generated). Color shows sum of Regulatory Quality. The marks are labeled by Country Name.

Figure 49. Absolute Political Extraction during 1996-2018



Map based on Longitude (generated) and Latitude (generated). Color shows sum of Ape1. The marks are labeled by Country Name. Details are shown for Country Name.

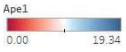
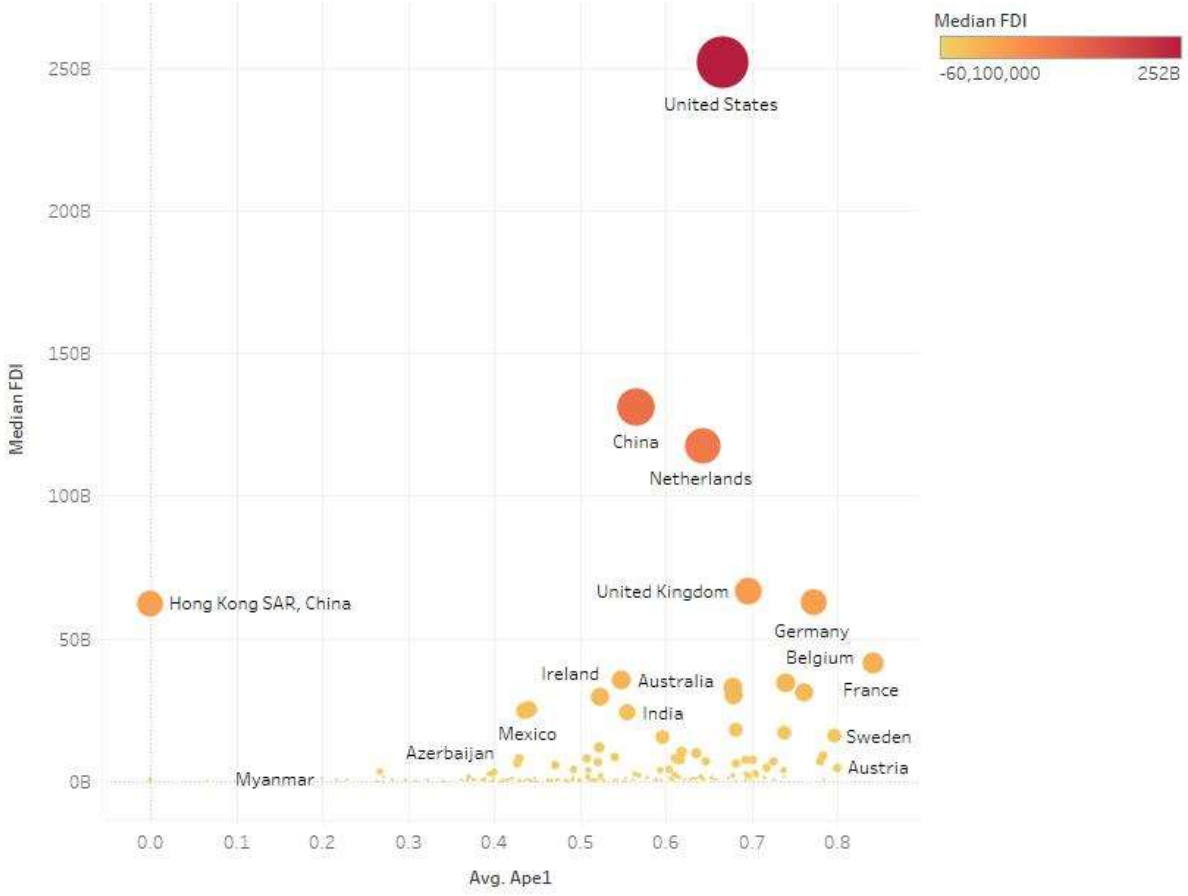


Figure 50.FDI vs Absolute Political Extraction scatter plot



Chapter 5: Discussion

Initially, this study used pooled OLS to estimate models 1 to 4 (found in Tables 6 and 7), and then switched to fixed effects (Table 8). The Hausman test favored fixed effects over random effects estimations. Model 3 investigates the regional dummy variables, while Model 4 includes the income group dummy variables. The results for the pooled OLS model report standard beta coefficients. Table 9 shows the Pooled OLS results by region, and Table 10 shows the Pooled OLS regression results by income group. Additionally, the VIF test for multicollinearity is reported in Tables 6 and 7. Using FE modeling techniques allows for variation in country characteristics and controls for unobserved effects, possible endogeneity, unobserved heterogeneity, and non-strictly exogenous explanatory variables. Therefore, the absence of unit root tests and co-integration tests does not bias any obtained results(Okafor et al., 2015).

5.1 Pooled OLS Regression Results- region dummy variable

Table 6 displays three models, namely models 1 to 3. The performance of the models is quite similar, and the VIF test indicates that there is no issue of multicollinearity. Across models 2 and 3, GDP, GDP per capita, export, trade openness, investment freedom, population, labor force participation rate, and APE are statistically significant. However, regulatory quality is not statistically significant in Model 3. Model 3 includes region dummy variables that account for geographic location factors. It reveals that trade openness, labor force participation rate, and population have a greater impact on FDI net flow in Model 3. Nevertheless, the addition of region dummy variables does not significantly enhance the explanatory power of the model, indicating that region is not a crucial factor affecting FDI net flow.

GDP has the most impact factor to increase FDI in model 2. It has a positive impact on FDI, a million US dollars GDP associate with 0.313 million US dollars increase. It shows GDP has directly relation with FDI which match the other research in Poland. There is bi-directional relationships between FDI and GDP and the impact of GDP on attracting FDI inflows (Kosztowniak, 2016). As GDP present market size, the countries have the persist economic growth that also will receive more foreign investment. FDI net flows seem to be affected significantly by conventional determinant as GDP per capita (Zaman et al., 2018). there is a strong positive relationship between the FDI inflows and the GDP per and a positive effect on the economic growth(Hakizimana, 2015). There is direct connection between the FDI volume and economic growth rates (PELINESCU & RADULESCU, 2009). As GDP and GDP per capita growth that mean expend the mean expend market size which led to receive more foreign investment. International investors also prefer to invest in a having the potential to increase business place. FDI. And Increased levels of FDI positively affect manufacturing export performance(Zhang & Song, 2001). In this study, however, from the global standing, giving different direction connection to FDI. Export is the most influence factor on FDI in model 2, a million of export associate with increase 0.412 million. Since export has positive impact on increasing FDI which influences trade openness also has positive effect on FDI too. As the definition of trade openness measured as the sum of a country's exports and imports as a share of that country's GDP in percentage. A percentage of GDP in trade openness is associated with an increase of 0.0524 million of FDI. Furthermore, investment freedom also has a positive effect on FDI.

Not only economic factors have positive impact on FDI ,population and labor force participation rate also have positive impact on FDI which match another research result, the current and future age structure of the nation has significant effect on current international capital flows(Narciso, 2010). Growing population supports large quantity of labor force. As cheaper labor is an attractive factor for international investors, population and labor force participation rate seem to be essential factors to attract more FDI. As corporate governance and institutional quality are important attractors of FDI (Fazio & Chiara Talamo, 2008).

In model 2, regulatory quality has a positive significant impact on FDI that reflects the government to the formulation and implement sound policies and regulations that permit and promote private sector development is also a key factor to attract more FDI. Another governance indicator, APE, has a negative impact on FDI. Even though regulatory quality have attractive for FDI, political stability has similar effect(Asiedu, 2006). Aa a totalitarian regime has larger control on policy that would be one of the considerations for international investors. If the political has higher involve business that might have restrict and hazard for the investors. Overall, from the model evident economic human resource and governance factors are associated with increased FDI.

Model 3 based on model 2 then including region dummy variables. The overall explained power in model 3 is 0.67. After adding region dummy variables only North American and EU dummy variables are statistic significant and Regulatory Quality becomes statistic insignificant also other variables also less influence on FDI. In the other word, include in region dummy variables are not improve model performance, it shows region is not critical

factor to attract FDI. Nevertheless, some of economic factors still positive statistically significant but the coefficient is less than model 2 such as GDP, GDP per capita which mean adding region factor, the economic factor not the same as alone, there are factor more important in region aspect. Population and labor force participation rate increase in model which bring forward including region variables, population and labor force become more critical, especially North America region and European Union region are positive statistically significant.

The last one is nested model which includes all variables in model 4. It has 0.67 explainable power. Compared to model 3 since model 4 includes lag FDI variable it has increase more explainable power. In model 4, GDP, exports, trade openness, population and governance variables have statistically significant impact on FDI.

The conclusion form this section:

First, GDP, export, and trade openness are statistically significant and positive influences on FDI cross models 2 to 4. It shows the size of the economy has a positive impact to attract more foreign investment. In addition, the country that has more international trade and is more open to the international market would also receive more FDI.

Second, population and labor force participation rates are a statistically significant and positive influence on FDI. It shows suffice production labor resources are one of the key factors to attract more FDI.

Lastly, the governance factor, APE is statistically significant and negative on FDI cross models 2 to 4. It points out that better governance and Efficient governments are able to meet or exceed their expected extractive capabilities; inefficient governments fail to reach their expected extraction levels (Sentia, 2007).

Table 6. Poled OLS Model results output table included regions dummy variables

FDI	(1) M1: Lag FDI	(2) M2: Pooled OLS	(3) M3: Regions Dummy	(4) M4: Regions +FDI Lag
GDP		0.313***	0.279***	0.129***
		(0.0209)	(0.0230)	(0.0203)
GDP per Capita		0.0369***	0.0256**	-0.00304
		(0.0125)	(0.0127)	(0.0111)
Exports		0.412***	0.431***	0.167***
		(0.0227)	(0.0234)	(0.0211)
Trade Openness		0.0524***	0.0639***	0.0283***
		(0.0110)	(0.0113)	(0.00996)
Investment Freedom		0.0456***	0.0291*	0.00276
		(0.0148)	(0.0152)	(0.0135)
Labor force participation rate		0.0275**	0.0364***	0.0181
		(0.0122)	(0.0125)	(0.0110)
Population		0.0289**	0.0406***	0.0306***
		(0.0116)	(0.0121)	(0.0107)
Regulatory Quality		0.0303**	0.0237	0.0253*
		(0.0144)	(0.0150)	(0.0133)
APE		-0.0770***	-0.0895***	-0.0370***
		(0.0133)	(0.0146)	(0.0128)
East Asia Pacific Dummy			-0.119***	-0.0458*
			(0.0308)	(0.0271)
Latin America Dummy			0.0287	0.0129
			(0.0294)	(0.0258)
Middle East &North Africa Dummy			-0.0308	-0.00881
			(0.0370)	(0.0324)
North America Dummy			0.386***	0.217**
			(0.100)	(0.0883)
South Asia Dummy			-0.0406	-0.0360
			(0.0554)	(0.0487)
EU Dummy			0.0792**	0.0414
			(0.0386)	(0.0339)
Lag FDI	0.821***			0.576***
	(0.00927)			(0.0133)
Constant	0.00401	0.000108	0.00480	0.00296
	(0.00917)	(0.00987)	(0.0162)	(0.0142)
Observations	4,554	4,760	4,760	4,553
R^2	0.632	0.537	0.542	0.676
Root MSE	0.61899	0.6811	0.6785	0.58251
AIC	8556.863	9862.212	9831.798	8016.895
Mean VIF	-	2.40	2.15	2.22

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1
All variables are standardized and Beta coefficients.

5.2 Pooled OLS Regression results- income group dummy variable

Model 3 based on model 2 then includes income group dummy variables. The overall explained power in model 3 is 0.53. Adding income group dummy variables are not improve model performance, it shows income group is not a critical factor to attract FDI.

Model 4 is a nested model which includes all variables. It has 0.67 explainable power. Compared to model 3 since model 4 includes lag FDI variable it has to increase more explainable power. In model 4, GDP, exports, trade openness, population, and governance variables have a statistically significant impact on FDI. The result shows income groups have statistically significant impact on FDI, the especially low-income group has a higher impact than upper-middle and lower-middle-income groups. During post COVID-19 period, the pandemic has had an inverse effect on foreign direct investment in low- and middle-foreign investment-receiving countries (Koçak & Barış-Tüzemen, 2022). However, model 4 shows export still has the most influential variable on FDI in this model. GDP has the same impact, GDP per Capita, trade openness, and Regulatory Quality have slightly increased, compared to Model 2. There are differences, between models 3 and 4. Coefficients of population and labor force participation rate are decreasing when the model includes income group dummy variables. FDI will more likely focus on regional areas rather than on an expansion through the country, the size of middle age cohort promotes FDI (AKIN, 2009). It shows economic factors have more affected in income group, and human resource has more influence in the region aspects.

The conclusion from models 2 to 4:

First, GDP, export, and trade openness are statistically significant and positive influences on FDI cross models 2 to 4. It also proves the size of the economy has a positive impact to attract more foreign investment.

Second, the population is consistent with statistically significant and positive influence on FDI cross models 2 to 4. It also proves abundant labor resources and production ability is one key factor to attract more FDI.

Lastly, the governance factor, APE is statistically significant and negative on FDI cross models 2 to 4. It points out that better governance and Efficient governments are also important factors to attract more FDI.

Table 7. Pooled OLS Model results output table -included income groups

FDI	(1) M1: Lag FDI	(2) M2: Pooled OLS	(3) M4: Income Group Dummy	(4) M5:Income group +Lag FDI
GDP		0.313***	0.313***	0.147***
		(0.0209)	(0.0209)	(0.0185)
GDP per Capita		0.0369***	0.0477***	0.00507
		(0.0125)	(0.0135)	(0.0118)
Exports		0.412***	0.414***	0.157***
		(0.0227)	(0.0228)	(0.0205)
Trade Openness		0.0524***	0.0554***	0.0254***
		(0.0110)	(0.0111)	(0.00975)
Investment Freedom		0.0456***	0.0416***	0.00829
		(0.0148)	(0.0149)	(0.0131)
Labor force participation rate		0.0275**	0.0206	0.0117
		(0.0122)	(0.0130)	(0.0114)
Population		0.0289**	0.0276**	0.0239**
		(0.0116)	(0.0117)	(0.0102)
Regulatory Quality		0.0303**	0.0490***	0.0339**
		(0.0144)	(0.0168)	(0.0147)
APE		-0.0770***	-0.0734***	-0.0300**
		(0.0133)	(0.0135)	(0.0119)
Upper Middle-Income Dummy			0.0678**	0.0182
			(0.0330)	(0.0290)
Lower Middle-Income Dummy			0.0629*	0.0107
			(0.0376)	(0.0330)
Low Income Dummy			0.107**	0.0334
			(0.0461)	(0.0404)
Lag FDI	0.821***			0.580***
	(0.00927)			(0.0133)
Constant	0.00401	0.000108	-0.0487**	-0.00901
	(0.00917)	(0.00987)	(0.0240)	(0.0211)
Observations	4,554	4,760	4,760	4,553
R^2	0.632	0.537	0.538	0.675
Root MSE	0.61899	0.6811	0.68088	.58305
AIC	8556.863	9862.212	9862.109	8022.383
Mean VIF		2.40	2.76	2.600

Standard errors in parentheses

All variables are standardized and Beta coefficients.

*** p<0.01, ** p<0.05, * p<0.1

5.3 Fixed Effects Regression results

The fixed effects model is favored over the random effects model by the Hausman test.

Hausman test result:

Test: Ho: difference in coefficients not systematic

$$chi2(9) = (b-B)'[(V_b - V_B)\text{^}(-1)](b-B) = 20.94$$

Prob>chi2 = 0.0129

Under the current specification, the initial hypothesis that the individual-level effects are adequately modeled by a random-effects model is resoundingly rejected. In other words, I can reject null hypotheses which are not suitable for random effects. Therefore, using FE regression according to Hausman test.

There are 2models in Table 8, the first one, using lag FDI in FE regression. The result shows, lag FDI also statistically significant and positive impact on FDI. In FE model, economic factors have statistically significant influence increase FDI such as GDP, GDP per Capita and exports. It points out, economic market size is most effect impact FDI increasing in FE model.

Table 8. FE Model results output table

	(1)	(2)	(3)
FDI	M1:Lag_FDI	M2: FE	M3: Lag FDI
GDP		0.210***	0.0963*
		(0.0544)	(0.0548)
GDP per Capita		0.0725***	0.0221
		(0.0243)	(0.0243)
Exports		0.393***	0.222***
		(0.0433)	(0.0440)
Trade Openness		0.00713	0.00387
		(0.0195)	(0.0193)
Investment Freedom		-0.0135	-0.0241
		(0.0201)	(0.0201)
Labor force participation rate		-0.0265	-0.0594
		(0.0997)	(0.0999)
Population		0.0312	0.100
		(0.131)	(0.135)
Regulatory Quality		0.0197	0.0329
		(0.0208)	(0.0205)
APE		-0.00722	-0.00536
		(0.0295)	(0.0295)
Lag FDI	0.480***		0.377***
	(0.0147)		(0.0162)
Constant	0.00566	9.27e-05	0.00356
	(0.00858)	(0.00859)	(0.00841)
Observations	4,554	4,760	4,553
R-squared	0.197	0.155	0.232
Number of id	207	207	207

Standard errors in parentheses
All variables are standardized.
*** p<0.01, ** p<0.05, * p<0.1

5.4 Pooled OLS Regression results- by regions

Model 1 is a world sample, the mode explained power is 0.68. In model 1, economic, human resource and governance factors are statistically significant and impact FDI.

Second is East Asia & Pacific region model, its explained power is 0.854. Countries of East Asia & Pacific region as China, Hong Kong, East Timor, Fiji, Indonesia, Japan, Kiribati, Laos, and Malaysia. Most East Asia & Pacific region countries are developing countries. Model 2 shows the size of economy still statistically significant impact on FDI, and openness with international trade is also important such as China being the top 3 manufacturing export country in the world. However, GDP is a negative factor to reduce FDI net flow. Population and labor force also are statistically significant to attract FDI since East Asia & Pacific region is about 60% of the world's population. China instead, has a cheaper labor force that attracts large international business investments. However, age, education, communist-party membership, and marital status are significantly associated with participation in the labor force and employment opportunities (Liu, 2012). Even though APE is statistically significant but does not positively increase FDI. Not all countries in this region are fully open to investment in free markets, the government still has more control over the investment environment.

In the Europe Central Asia region model, its explained power is 0.246. The result shows that GDP is statistically significant decrease in FDI net flow. However, GDP per capita is positive and attracts more FDI net flow. Most European countries are highly developed and GDP and GDP per capita are higher than the World average, meaning it has higher potential

consumption ability. Moreover, the labor force has a statistically significant impact on FDI. Although regulatory quality positively attracts FDI, APE negatively impacts FDI, such as Russia's more highly controlled government which might bring higher risk and uncertainty for international investment.

Model 4 Latin America Caribbean region, the model explains power is 0.399. GDP has a statistically significant impact on FDI which points out the size economy is the key factor to attract FDI in the Latin America region. Nevertheless, export and trade openness are statistically significant and reduce FDI since the Latin America region is not the manufacturing export country in the world. Moreover, regulatory quality is statistically significant and increases FDI.

Model 5 is the Middle East & North Africa region, and there is 0.365 explained in the model. GDP, export, and trade openness are statistically significant impacts on FDI. However, the labor force is statistically significant but has a negative impact on FDI. Since low productivity in education, high youth unemployment, and long waiting times between (Salehi-Isfahani, 2012) cause problems in the labor force participation rate.

Model 6 is in the North American region and Model 7 is South Asia region, both models explain power is over 80%, but not a lot of variables are statistically significant. Mean VIF is higher than 10, especially GDP, exports, APE, population, and investment freedom are highly correlated to each other which led to multicollinearity. However, GDP, population, and APE are variables in this research therefore not remove those variables. In model 6 APE is a statistically significant impact on FDI which means better governance would attract more FDI

in the North American region. Economic factors are statistically significant for FDI which are FDP and export which shows the size of the economy is the key factor to attract in North Asia region.

Last, model 8 shows sub–the Saharan Africa region, the overall model explains power is 0.39. in model 8, economic and governance factors are key factors to attract more FDI in Sub-Saharan Africa.

Table 9. Pooled OLS results by regions output table

FDI	(1) M1:World	(2) M2:East Asia Pacific	(3) M3:Europe&Central Asia	(4) M4:Latin America Caribbean	(5) M5:Middle East North Africa	(6) M6:North America	(7) M7:South Asia	(8) M8:Sub Saharan Africa
GDP	0.147***	-0.205***	0.0195	0.607***	0.0141	-0.893	-0.0715	0.226***
	(0.0185)	(0.0319)	(0.0797)	(0.0475)	(0.0614)	(0.770)	(0.154)	(0.0688)
GDP_per_capita	0.00249	0.0278*	-0.00769	0.116***	-0.0291	0.0481	0.00161	-0.00106
	(0.0108)	(0.0157)	(0.0273)	(0.0165)	(0.0475)	(0.129)	(0.0239)	(0.0296)
Exports	0.157***	0.392***	0.162**	-0.0887***	0.0700	0.642	0.446***	0.0310
	(0.0204)	(0.0417)	(0.0746)	(0.0272)	(0.0568)	(0.448)	(0.131)	(0.0603)
Trade_openness	0.0240**	0.0113	0.0158	-0.0267*	-0.00608	-0.0234	0.00280	0.0339
	(0.00960)	(0.0136)	(0.0281)	(0.0137)	(0.0292)	(0.0872)	(0.0231)	(0.0262)
Investment_Freedom	0.00951	-0.00235	0.00761	0.0287	-0.00983	-0.473*	-0.00528	-0.0243
	(0.0131)	(0.0144)	(0.0434)	(0.0206)	(0.0348)	(0.266)	(0.0217)	(0.0273)
Labor_Force	0.0139	0.00985	0.0490	-0.0219	-0.0185	-0.727	-0.00498	0.0162
	(0.0107)	(0.0159)	(0.0388)	(0.0199)	(0.0450)	(0.560)	(0.0256)	(0.0262)
Population	0.0238**	0.121***	0.0161	-0.0207	0.0243	0.947**	0.0634	0.0199
	(0.0101)	(0.0175)	(0.0342)	(0.0331)	(0.0363)	(0.437)	(0.0451)	(0.0299)
Regulatory_Quality	0.0291**	-0.00384	0.0664*	0.0419**	0.107**	0.0315	0.000126	0.0140
	(0.0127)	(0.0172)	(0.0347)	(0.0181)	(0.0437)	(0.0602)	(0.0208)	(0.0249)
APE	-0.0314***	-0.0393***	-0.0733*	0.0205	0.0184	1.106**	0.00548	0.0377
	(0.0117)	(0.0143)	(0.0445)	(0.0203)	(0.0268)	(0.537)	(0.0252)	(0.0235)
Lag_FDI	0.580***	0.700***	0.539***	0.438***	0.811***	0.360***	0.583***	0.569***
	(0.0133)	(0.0244)	(0.0269)	(0.0296)	(0.0316)	(0.131)	(0.0697)	(0.0275)
Constant	0.00318	0.00615	-0.00152	0.00622	0.0223	0.0112	0.0171	0.0148
	(0.00864)	(0.0154)	(0.0217)	(0.0129)	(0.0246)	(0.0501)	(0.0187)	(0.0207)
Observations	4,553	770	1,276	770	440	66	176	1,056
R-squared	0.675	0.931	0.428	0.878	0.750	0.865	0.945	0.570
Root MSE	0.58292	0.27033	0.77446	0.35634	0.51538	0.40478	0.24728	0.67139
AIC	8017.287	181.5991	2979.816	606.9939	676.2171	85.01256	73.37591	2166.31
Mean VIF	2.48	5.30	4.72	4.29	3.07	68.5	15.03	3.40

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1. All variables are standardized and Beta coefficients

5.5 Pooled OLS Regression results- by income group

GDP is statistically significant and positive influence on FDI cross model 1 to 5. It shows the size of the economy is a key factor in attracting more FDI. Here, especially in lower-income countries, GDP is the most influential factor to attract more FDI.

In the high-income group, model 2, the overall model explains power is 0.46. in model 2, economic factors are still important factors that impact on FDI, especially GDP. However, high-income countries do not have a continuously growing population, and labor force cost is higher than developing countries. The governance variable, APE, is statistically significant but negative influence on FDI, Saudi Arabia, and Singapore are highly government control countries that might not attract FDI as much.

In model 3, the model overall explained 0.909. GDP and GDP per capita are statistically significant and increase FDI. It also points out that the size of the economy is also a key factor for upper-middle income to attract FDI net flow. Moreover, the population also has a positive increase in FDI net flow. Such as China, a huge population and cheaper labor force attract more international investment.

In lower-income group countries, model 4, the overall explanation is 0.84. first, GDP till statistically significant and positively attract FDI, however, GDP per capita is a negative impact on FDI that mean, even lower middle-income group countries have economic market potential but might not have high consumption level such as India. Even though some lower-middle-income countries have growing populations, the labor force quality might not match the job market conditions.

Lastly, model 5 refers to lower income group countries, economic factors are still important to FDI, especially economic market. The governance factor, APE is also statistically significant and increase FDI which means, better governance would increase the opportunity to attract more FDI.

Table 10. Pooled OLS results by income group output table

FDI	(1) M1: World	(2) M2: High Income	(3) M3: Upper Middle income	(4) M4: Lower Middle income	(5) M5: Lower income
GDP	0.147***	0.144**	-0.00503	0.0824*	0.331***
	(0.0185)	(0.0707)	(0.0317)	(0.0440)	(0.104)
GDP_per_capita	0.00249	-0.00389	0.00852	-0.0250**	-0.802***
	(0.0108)	(0.0181)	(0.00740)	(0.0114)	(0.122)
Exports	0.157***	0.117***	0.285***	0.291***	0.564***
	(0.0204)	(0.0351)	(0.0338)	(0.0362)	(0.0906)
Trade_openness	0.0240**	0.0235	-0.0168**	0.0167	0.0530*
	(0.00960)	(0.0193)	(0.00757)	(0.0105)	(0.0274)
Investment_Freedom	0.00951	0.0397	0.00357	0.00228	-0.0207
	(0.0131)	(0.0324)	(0.00974)	(0.0116)	(0.0328)
Labor_Force	0.0139	0.0168	-0.00362	0.00414	-0.0123
	(0.0107)	(0.0253)	(0.00907)	(0.0104)	(0.0267)
Population	0.0238**	0.0358	0.113***	0.0312	0.00877
	(0.0101)	(0.0693)	(0.0134)	(0.0205)	(0.0249)
Regulatory_Quality	0.0291**	0.0575**	0.00238	0.0135	0.00498
	(0.0127)	(0.0226)	(0.00809)	(0.0109)	(0.0288)
APE	-0.0314***	-0.0856***	0.00790	-0.000643	0.0856***
	(0.0117)	(0.0302)	(0.00896)	(0.0108)	(0.0301)
Lag_FDI	0.580***	0.563***	0.631***	0.611***	0.702***
	(0.0133)	(0.0234)	(0.0231)	(0.0240)	(0.0291)
Constant	0.00318	0.00271	0.00840	0.0143	0.0185
	(0.00864)	(0.0162)	(0.00701)	(0.00957)	(0.0241)
Observations	4,553	1,540	1,210	1,187	594
R-squared	0.675	0.613	0.944	0.897	0.678
Root MSE	0.58292	0.63634	0.24351	0.32895	0.58619
AIC	8017.287	2989.073	26.31931	739.9482	1062.075
Mean VIF	2.48	5.94	6.85	5.54	7.13

Standard errors in parentheses

All variables are standardized and Beta coefficients.

*** p<0.01, ** p<0.05, * p<0.1

Chapter 6: Conclusions

6.1Findings

The aim of this study is to investigate how economic, human resource and governance factors are related to foreign direct investment (FDI). The results indicate that economic factors have the greatest impact on FDI, with GDP and exports being the most influential variables across all models. These findings support the hypothesis that a larger or growing economy is more likely to attract foreign investment. Furthermore, countries that are heavily involved in international trade and have strong connections with the global market tend to receive more FDI and experience positive FDI net flow.

Attracting more foreign direct investment (FDI) is not solely dependent on economic factors, but also on population and labor force participation rates. This supports the second hypothesis. A larger population can provide a greater quantity of available labor, which is attractive to international investors seeking cheaper labor. Therefore, population and labor force participation rates are crucial factors in attracting more FDI.

Furthermore, the outcomes indicate that good governance has a favorable impact on the net flow of foreign direct investment (FDI). This discovery confirms the third hypothesis that the effectiveness of public administration is consistently and statistically significant in all models, despite the fact that regulatory quality is not statistically significant in all models. It demonstrates that improved governance would entice more global investment and affect the net flow of FDI.

The East Asia & Pacific region has a higher number of developing countries. The size of the economy plays a crucial role in influencing the net flow of foreign direct investment, and openness with international trade is also important Additionally, the population and labor force have a statistically significant impact on FDI net flow since the East Asia & Pacific region is about 60% of the world's population.

In the Europe and Central Asia regions, there has been a notable reduction in the net flow of foreign direct investment (FDI) in relation to the Gross Domestic Product (GDP). However, when considering GDP per capita, there is a positive correlation with FDI net flow. This is likely due to the high level of development and consumption potential in most European countries, where GDP and GDP per capita are above the global average. The labor force also plays a significant role in attracting FDI. Although regulatory quality positively attracts FDI, APE negatively impacts FDI net flow.

GDP has a significant effect on Foreign Direct Investment in the American Caribbean region model. This finding confirms the hypothesis that a larger economy is more attractive to FDI. However, the study also found that export and trade openness have a negative impact on FDI, as Latin America is not a major manufacturing export country. The quality of regulations is identified as a crucial factor that can increase the net flow of FDI.

In the model for the Middle East and North Africa region, factors such as GDP, exports, and trade openness have a significant impact on FDI. However, the labor force also has a significant impact but it is negative. This is because there are more people in the labor force than there are job opportunities available, which is not conducive to attracting FDI.

In North America, the size of the economy is the main factor that attracts foreign direct investment (FDI), as evidenced by the statistical significance of factors such as GDP and exports. Meanwhile, in Sub-Saharan Africa, both economic and governance factors play a crucial role in attracting more FDI.

From the income group models aspect, the Pooled OLS regressions results confirmed that GDP is a statistically significant and positive influence on FDI net flow across all income group models. The results support my hypothesis, the size of the economy is an important factor to attract more FDI. Especially GDP is the most influential factor to increase FDI. In net flow in lower-income countries. In addition, exports is another economic variable and have a statistically significant and positive influence on FDI net flow. The population is only statistically significant in upper-middle-income group countries. A growing and abundant population would support larger labor for upper-middle-income group countries which is an important factor to attract international investment. APE has a negative impact on FDI net flow in high-income group countries and it is a positive influence on lower-income group countries. Good governance countries would attract more foreign investment however if the governance has higher control and restriction that is favorable investment surrounding for business.

6.2 Obstacle and Limitation

This research has some restrictions in terms of data collection. The time frame used for this study is from 1996 to 2018, although data from as early as 1960 was available. However, governance data was not accessible until 1996, and RPC data was only available between 1960 and 2018. To ensure a balanced panel data format, the decision was made to gather complete data from 1996 to 2018.

Additionally, there is a lack of data in certain countries such as Afghanistan, North Korea, Kosovo, and Liberia. This absence of data could result in problems such as decreased accuracy of statistical models and potentially skewed estimates.

Finally, it is not possible for me to provide complete coverage of all countries around the world, for example, Taiwan. Despite its significant impact on global high-tech manufacturing, however, political issues prevent Taiwan from being a member of many international organizations involved. under this circumstance, much of the data related to Taiwan has not been collected, which could result in underestimating the potential for development in the Asian region.

6.3 Further research

This research employs traditional econometrics analysis in panel country data. This study explores a more insightful view and discusses the relationship between FDI and economic, human resource, and governance factors. The study also includes models specific to different regions and income groups, providing a diverse range of perspectives.

The conventional method of econometrics analysis examines the bigger picture of macroeconomics. It involves studying the correlation between foreign direct investment and various factors such as economic conditions, human resources, and governance. However, this approach does not account for the impact of individual-level factors on macroeconomics. For instance, it does not consider how the investment behavior of individual international investors affects the inflow of foreign direct investment to a country or how their network relationships influence foreign investment decisions. These individual behaviors and network relations cannot be captured by the traditional regression model.

Computational modeling is a useful method for studying how individual behavior affects the larger system, and there are several popular technologies available. System dynamic modeling provides a comprehensive view of the system, while agent-based modeling takes a bottom-up approach to understanding how individual behavior impacts society as a whole. In the post-COVID-19 era, agent-based modeling can be particularly useful for studying how individuals respond to economic recession. For future research, both system dynamic and agent-based modeling can provide valuable insights into this topic.

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