Determinants of Foreign Direct Investment: A panel data analysis of the MINT countries

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Abstract

One of the most visible signs of the globalization of the world economy is the increase of Foreign Direct Investment (FDI) inflows across countries. This past decade the trend of FDI has shifted from developed countries to emerging economies, which is most notably in the BRICS countries. However, as BRICS reputation has been damaged these past years due to its weak growth outlook in the early 2010s, investors are shifting to the new economic grouping acronym, the MINT (Mexico, Indonesia, Nigeria and Turkey) countries for better future prospects of FDI destination. Since the MINT countries have emerged as a popular destination of FDI, it is necessary to investigate what are the key factors that make these four countries attractive as FDI destinations. Hence, this paper analyzes what are the determinants of inward FDI into the MINT countries during the time period from 1990 to 2014. To be able to answer the research question and demonstrate the effect of the seven independent variables (market size, economic instability, natural resources availability, infrastructure facilities, trade openness, institutional stability and political stability) on FDI as a dependent variable, the study uses a panel data analysis. The data is based on secondary data, which is collected from the World Bank dataset. The empirical finding from the study illustrates that market size, economic instability, infrastructure facilities, trade openness, institutional stability, and political stability are significant as determinants FDI inflows to the MINT countries, meanwhile, natural resources availability appears to be an insignificant determinant of FDI inflows to the MINT countries.

Keywords: Foreign Direct Investment, FDI, emerging economies, developing countries, MINT countries, determinants of FDI inflow, panel data analysis
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Abbreviations

BRICS  Brazil, Russia, India, China, and South Africa
FDI    Foreign Direct Investment
GDP    Gross Domestic Product
GLS    Generalized Least Square
INFLA  Inflation variable
INFRA  Infrastructure facilities variable
INSTI  Institutional stability variable
LSDV   Least-Squares Dummy variable
MINT   Mexico, Indonesia, Nigeria, and Turkey
MNE    Multinational enterprise
NATRES Natural resources availability variable
OLI    Ownership, Location, Internalization
OLS    Ordinary Least Square
POLIT  Political stability variable
TRADE  Trade openness variable
TSCS   Time-series cross-sectional
UNCTAD United Nations Conference on Trade and Development
1. Introduction

Foreign Direct Investment (FDI) has grown at a phenomenal rate since 1980s and the trend of FDI has shifted from developed countries to developing countries during these past two decades. Developing countries have become increasingly attractive investment destinations as they offer more potential growth and investment returns. The rapid growth of FDI has put the foundation of international expansion for multinational enterprises. The host countries, in particular developing countries, have also received even greater benefits of FDI as an important source of external finance, resources and capital formation, transfer of production, technology, skills, innovation, managerial practices and knowledge. The spillover effects for developing countries are not only beneficial to enhance its economic growth, but also in broader aspects. Therefore, the world market for FDI has become more competitive within developing countries (Mallampally & Sauvant, 1999).

Now forget about the BRICS (Brazil, Russia, India, China and South Africa) countries that were once much admired by international investors as the global emerging market frontiers for their potential economic development and investment returns (Bremmer, 2015). Instead, focus on “the new kids on the bloc”- the “MINT” (Elliott, 2014). More than just a flavor that bites, Mexico, Indonesia, Nigeria and Turkey (MINT) countries are forecasted to be the next economic powerhouses according to economists (Wright, 2014; Elliott, 2014; Zaidi, 2016). The emerging-nation grouping acronym was originally coined by investment firm Fidelity in 2011. However, it was popularized by the economist Jim O’Neill of Goldman Sachs (Boesler, 2013), who is also best known for the concept of the “BRICS” countries (O’Neill, 2001).

Since the term was coined in 2001, it was projected that the BRICS countries would dominate growth in emerging markets and become the future leading economic powers (Boesler, 2013). Nonetheless, the years from 2007 to 2009 saw how the subprime mortgage crisis in the US brought down the world’s financial system creating a global crisis. During the past five years, global recession, Eurozone crisis, lower commodity prices and the recently strong American dollar sparked an uncertainty of the future economies of the BRICS countries. According to Elliott (2014), among the BRICS countries, only China has lived up to the initial growth

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1“Bloc” is defined as “a group of people, political parties or countries who have formed an alliance with common goals or interests” (Oxford Dictionary, 2016).
expectation. Even so, China’s economy has been grinding into a lower gear, growing in 2014 at its slowest and reaching its first single-digit (7.4 %) economic growth in a quarter-century and signs of weaker stock market performance are on the rise. India suffers from a high inflation and high current account deficit. Brazil’s economy is contracting by 4 % in 2015 and is in deep recession. The plunge of oil and gas prices and political instability have taken its toll on Russia’s economy, contracting by 3.5 % in 2015 (Bremmer, 2015; O’Neill, 2014a; Elliott, 2014). In addition, a report by the Bank for International Settlements also found that Brazil and China might soon face serious banking strains, as reflected by steep credit-to-GDP ratio that would potentially drag these countries into a banking crisis or even worse (Soergel, 2015). Gloomy forecasts for BRICS countries have international investors shift their focus away from BRICS to other emerging economies, most notably the MINT countries as they are projected to be the “new” next leading emerging market with better potential growth and investment returns (O’Neill, 2014a). Figure 1 presents the comparison of FDI growth trend between BRICS and MINT countries during these past fifteen years.

![Aggregate Annual FDI Inflows Growth Trend](image)

**Figure 1: Aggregate Annual FDI Inflows Growth Trend**

*Notes: The figure illustrates the aggregate annual FDI inflows to BRICS and MINT countries from 2000 to 2014. The horizontal axis shows the years and the vertical axis demonstrates the growth trend in positive and negative percentage.*

After the 2007-2009 financial crisis, BRICS countries lose the momentum in attracting inward FDI, which can be seen in Figure 1, whereas it is visible that FDI inflow growths into the MINT
countries in the early years of 2010s has increased at a faster rate in comparison to pre-2007 financial crisis. Since the new trend of the MINT countries have emerged as the next leading emerging economic markets as destination of FDI, there is a need to further analyze what factors play a role in this new trend. Therefore, the aim of this study is to identify the determinants of inward FDI in the MINT countries during the time period of the last twenty-five years from 1990 to 2014.

While a large number of studies investigate different emerging markets and economic grouping acronyms, most significantly BRICS, limited research has been conducted on the MINT countries. Thus, the significance of our study is to fill the gap of the existing economic literature by extending the studies of the FDI determinants within the setting of the MINT countries as this economic acronym grouping is still considered new. With the aim, its findings and practical implications may be beneficial for both government and policy makers of the MINT countries in developing their policies and regulations in order to sustain further their attractiveness as FDI destinations and achieve their potential to become the next leading emerging economies as projected. Furthermore, this study contributes to theoretical and empirical FDI studies by not only representing economic factors, which have always been the focus of existing studies, but also taking into account political and institutional factors. In addition, panel data analysis is applied for the methodology of the study. This approach is chosen because of the nature of the time-series cross-sectional (TSCS) data used in this study in favor of accurately explaining the trend and estimating further how selected factors affect this trend. Further, the empirical findings of this study will provide a better understanding for investors in opting FDI decisions within these four countries. Therefore, the main research question for this paper is:

“What are the determinants of FDI in the MINT countries?”

To be able to address the main question, the following sub question needs to be answered:

“How do economic, institutional, and political factors affect FDI inflows to the MINT countries?”

Looking at the previous studies on FDI inflows, there is no general agreement among economists on the determinants of FDI, as they may vary depending on country- and firm-specific factors. However, it is widely accepted in economic studies that economic growth and
investment are interconnected (Anderson, 1990; Khan and Reinhart, 1990; Blomstrom et al, 1996). Furthermore, neo-classical and Marxist economists suggest that gross domestic investment contributes to economic growth (Anwer and Sampath, 1999). Investment – whether public or private, and/or domestic or foreign - is significantly higher for those countries with greater economic growth, which is measured as annual percentage change of Gross Domestic Product (GDP) (World Bank, 1999). According to Karbalaei and Ho (2013), the majority of economic studies is focused on economic factors as the FDI determinants, for example, the significance of macroeconomic stability and performance, inflation rate, market size and trade (Faisal et al, 2005; Rogoff and Reinhart, 2003; Sankaran, 2015). Only few studies, even though they have been increasing during these past years, put importance on additional factors other than economic ones. It has been found out that institutional environment, political stability, regulatory and laws are the main determinants of FDI in a research by Kamaly (2002), Edwards (1990), and Dupasquier & Osakwe (2005).

This study is structured in the following sections: Section 2 will be theoretical background, which will include the background development of FDI, FDI theories and literature review of previous studies of FDI determinants. Specification of variables and hypotheses development, which will explain the variables selected in this study along with the expected signs and results. Further, research methodology in Section 3 will illustrate where the data is taken from and what method the study uses. Then, Section 4 will discuss and analyze the empirical results. Finally, conclusion and implications of the study are presented in Section 5.

2. Theoretical Background

To be able to understand and answer the research question “What are the determinants of FDI in the MINT countries?” this section will first describe the development of FDI in emerging markets and the trend of FDI in the MINT countries. Further, it will be followed by a discussion on how FDI theories have emerged and developed. Afterwards, the eclectic ownership, location and internalization (OLI) paradigm, along with United Nations Conference on Trade and Development (UNCTAD) framework of FDI determinants will be explained. Further, this section will present findings of FDI determinants from previous existing studies. Finally, specification and hypotheses development of this study will be demonstrated.
2.1 Development of FDI in the MINT countries

According to Anwer and Sampath (1999), in the early 1970s, trade restrictions and capital control policies were enacted in many developing countries for fear of political and economic repercussions, in order to protect domestic industries and prevent them from being dominated by foreign influences. This resulted in the restriction of foreign investments, most notably FDI. FDI is defined to be an international flow of capital that provides a parent firm or multinational enterprises (MNEs) with control over foreign affiliates (Lily et al, 2014; UNCTAD, 2013). Moreover, FDI is widely recognized to bring mutual benefits to foreign companies and host countries. FDI benefits foreign businesses by improving their access to new market channels and cheaper production in terms of labor, resources, technology, skills and financing. As a result, FDI has also brought spillover effects to host countries such as creating more job opportunities, providing sources of new technologies, capital, products, management skills, and knowledge (Blomstrom et al, 1996; Ranjan and Agrawal, 2011).

A decade later, many developing countries began to reform its policies on trade restriction and capital control to promote their countries as destinations for foreign investment, in contrast to where once it was heavily regulated. Government started to provide tax incentives, rebates on custom duties and change of investment policies to attract foreign investment (Elfakhani and Mulama, 2011). Elfakhani and Mulama (2011) further explained that beside the trade liberalization and capital control deregulation, the debt crisis in 1980s limited the option of using private financing and government bilateral financing for many countries to obtain capital for development. As a result, late 1980s saw the emergence of FDI (Anwer and Sampath, 1999). However, during the earlier years, FDI was much concentrated on developed countries. Not until the 1990s, the trend of FDI inflow shifted to developing countries (Karbalaei and Ho, 2013). In developing countries, the early trend of FDI took the form of investment in extractive, mining and agricultural industries to meet local demands for particular goods and services, including infrastructure such as telephone and electricity, which later further developed to export-oriented projects (Elfakhani and Mulama, 2011).

The increase of inward FDI across countries is one the most visible signs of the world’s economy globalization over the past twenty years. The world’s FDI inflow has increased from US$ 207 billion in 1990 to US$ 1,244 billion in 2010 (Forsgren, 2013). Wadhwa and Sudahkara
(2011) stated that the developing countries’ share of the world’s total FDI inflow increased from 15% in the early 1990s to almost 50% in the early 2010s. In these recent years, this increase of FDI is due to several factors, including technological advancements, market and financial system integrations, open market and investment regulations (Chawla and Rohra, 2015). As a result, the landscape of the world has experienced a massive economic change. Several emerging economies have acquired important roles in the world economy as producers of goods and services (Ranjan and Agrawal, 2011). The BRICS countries captured international investors’ attention in the early years of the millennium for its economic growth and investment opportunities (O’Neill, 2001). However, since the early years of this decade, it started to lose its momentum and has been facing economic slowdown. Weaker future growth and opportunities in the BRICS countries is worrying global investors and prompting them to look for the next big thing in other potential emerging markets (O’Neill, 2014a).

The MINT term, coined in 2011, has been gaining popularity as they are the new economies to watch out for according to global economists (O’Neill, 2014a). The four MINT countries have common characteristics, which make them attractive for investors around the world, such as (1) large population with considerable youthful workforce, which raises expectations as they are digitally-aware generations and able to make positive changes for their countries in this globalized world, (2) strategic geographical placement such as Mexico being next door to the US, Indonesia being in the middle of South East Asia, Turkey being at the edge of the Eurozone as well as the bridge to the Middle East and Asia, and Nigeria’s power is growing in Africa, (3) huge future economic growth as it is predicted by World Bank (Matsangou, 2015; Elliott, 2014).

At microeconomic level, research by WealthInsight shows that the MINT countries are projected to have the largest percentage increases of new millionaires in 2014: Indonesia by 22%, Nigeria 10%, Turkey 8.5% and Mexico 7% (Estevez, 2014). According to World Bank (2014), given the consistent economic growth they have today, it is forecasted that Mexico and Indonesia are potentially to be listed in the top 10 largest economies in the world, whereas Turkey and Nigeria in the top 20 by 2050 (O’Neill, 2014b). These projections, along with MINT’s large number of young population and strategic locations, have put this new grouping acronym of emerging markets as the new sought-after investment destination, in particular FDI (Boesler, 2013; Elliott, 2014). In addition, a report by World Bank (2014) confirms global
investors shift to the MINT countries as destinations for foreign direct investment within developing countries based on their geographical regions. Mexico receives the highest total FDI inflow in Central America, whereas Indonesia is the largest FDI recipient in the Southeast Asia region, Nigeria in Africa, and Turkey in Western Asia. Figure 2 presents the historical data of inward FDI to the MINT countries during these past two decades. Although with significant decline during 2007-2009 financial crises, the figure shows some signs of recovery and the increase of inward FDI is back on track.

![Inward Foreign Direct Investment of the MINT countries](image)

**Figure 2: Inward Foreign Direct Investment of the MINT countries**

*Notes: This figure shows net inflow of Foreign Direct Investment to the MINT countries during the time period from 1990 to 2013. The horizontal axis demonstrates the years and the vertical axis illustrates the amount of Foreign Direct Investment in billion US$.*

As the MINT countries have emerged as the next big thing for FDI destination, there is a need to investigate further what factors makes them attractive as FDI destinations, which serves as the objective of the study. Hence, FDI theories and its development presented below will be the theoretical foundation of the hypotheses development and empirical findings in this study.

### 2.2 Theories of FDI

With increased globalization over the last decades, the significance of the MNEs as global business actors along with their investments in particular FDI decisions has increased (Forsgren, 2013). Historically, there are several theories and concepts behind MNEs and FDIs, which have continuously emerged and developed from economic theory, international trade
theory, neo-classical trade theory, market imperfection theory, internalization theory and eclectic theory.

Early international trade approach, which was first developed by Adam Smith in 1776, argues that trade between two countries would be valuable if each country only focuses on product production making producing efficaciously. Ricardo in 1817 further suggested that by doing so, national industry productivity will increase and each country will export their produce surpluses and import those they do not produce (Osorio, 2008). Based on the early economic theory, which has been the basis and has contributed to the development of international trade theory, Lenin (1977) explained the main characteristic of trade liberalization and capitalism is free competition that includes export of capital (Osorio, 2008). Hirsch (1976) developed international trade theory, which suggested that serving a foreign market can be a strategy for profit-maximizing companies and can be conducted through export and/or local manufacture as a result of direct investment (Chawla and Rohra, 2015). Kojima in his study in 1985 further suggested that inability of firms to compete efficiently in home countries prompts them to invest in foreign markets due to three factors: resources, labor, and market orientation (Chawla and Rohra, 2015).

The neo-classical trade theory, which is built upon Heckscher-Ohlin model, explains the reason of trade opportunities and capital flows between two countries due to different factors of endowments. This theory uses two factors of endowments, which are capital and labor. It implies that a country with abundant capital would export the capital intensive good or move the capital to foreign markets with higher return on capital (Wadhwa and Sudahkara, 2011). Countries that have many workers specialize to produce one good that requires labor and otherwise, produce a good that requires capital. According to this theory, it suggests that countries that are involved get a higher standard of living through the specialization in production and trade (Feenestra and Taylor, 2014). Therefore, MNEs invest abroad because they want to take advantage of earning higher returns and/or lower their production costs. However, these first trade theories fail to consider transportation costs. Krugman (1993) later pointed out and stated that the best location for firms to operate is where there is large market with high demand, availability of resources and low transportation costs.
As the previous theories, which are based on perfect competition markets, are considered inadequate to explain international trade and capital movement, the market imperfection theory emerged (Osorio, 2008). Kindleberger (1969) first introduced the concept of MNE as big firms with large market power. Later on this was complemented by Buckley and Casson (1976) suggesting that MNEs are enterprises which own and control activities in different countries. In order to explain the phenomena of FDI, the concept of monopolistic advantage was used whereby MNEs have a benefit in foreign countries as a result of market imperfection, management expertise, existence of internal and external economies of scale (Wadhwa and Sudahkara, 2011).

Although it was published in 1977, it was already in the 1960s when the theory of FDI was established by Stephen Hymer (Forsgren, 2013). First, by further complementing the previous study of market imperfection theory by Kindleberger, Hymer suggested that firms look for larger market opportunities and make their investment decision in foreign countries based on a strategy that takes into account certain advantages such as ownership advantages, product differentiation, low production costs, government incentives and better transportation facilities. It also implies that the firms can utilize the resources that the foreign firms cannot obtain in their home countries (Forsgren, 2013; Morgan and Katsikeas, 1997). Furthermore, Hymer stated that firms have several different strategies to operate internationally. Firms may conduct a joint venture with a host country firm, license its operation to a host country firm, or operate by itself by establishing a subsidiary in the foreign country, which is believed to be fundamental of FDI studies (Osorio, 2008). The main thought of Hymer’s theory was an attempt to explain the reason of abroad investment decisions made by a firm since foreign investments may carry higher risks and costs in terms of economical, institutional and cultural barriers. Hymer (1960) concluded that a firm must possess a firm-specific advantage that is large enough to reduce or outweigh the disadvantage of carrying on activities of foreign investment in the host country, including brand name, managerial skills, bargaining or political power and technology.

Further, Buckley and Casson (1976) introduced the internalization theory to further contribute to the theories of FDI. The internalization theory offers another explanation why firms are willing to invest abroad. This theory was based on three assumptions, such as (1) firms can maximize their profits when there is market imperfection, (2) intermediate products under
market imperfection creates internal markets, which involves common ownership and control of activities that are linked with the market, (3) MNEs are generated when the internalization of markets take place across national borders (Henisz, 2003; Chawla and Rohra, 2015). The authors mentioned the decision for firms to internalize depends on firm-specific factors (specific skills and knowledge), industry-specific factors (type of product, market structure, economies of scale), region-specific factors (distance and culture difference) and nation-specific factors (political and financial situation) (Wadhwa and Sudakara, 2011). Rugman (1981) further complemented the internalization theory by suggesting FDI emerges as MNEs replace external markets with more efficient internal ones in order to prevent disadvantages such as time lags, transaction costs, bargaining and buyer uncertainties, and other externalities in the markets (Elfakhani and Mulama, 2011).

Dunning (1977) proposed the eclectic theory of FDI. Dunning’s eclectic theory is also known as OLI (ownership, location, internalization) paradigm that makes a major contribution to economic literature as it brings together previous traditional trade and internalization theories of FDI (Chawla and Rohra, 2015). As Dunning further argued that low labor costs, resource availability and a big market alone are not enough for a country to be an attractive FDI destination (Osorio, 2008). Therefore, these three specific advantages must be possessed by firms to reduce or outweigh the costs and risks of operating internationally in order to be able to succeed.

Ownership (O) advantage refers to assets that firms have, including technology, patents, innovation, and firm-specific advantages such as brand and reputation, human capital and management skills (Ayadi, 2014). Location (L) advantage refers to a competitive advantage related to social and cultural advantages (distance and cultural differences), economic advantages including market size, production factors, business costs, lower risk and political advantages including legal environment, taxes, government incentives and trade barriers (Ayadi, 2014). Internalization (I) advantage refers to the advantage that the firms obtain by retaining internally specific information and/or assets such as knowledge and technology know-how. Therefore, still able to gain control over the foreign business conduct in comparison to licensing, which firms would be exposed to lose control over (Ayadi, 2014).
2.2.1 The eclectic OLI paradigm

According to Dunning (1993) there are four types of investment motivations of FDI. They are resource-seeking, market-seeking, efficiency-seeking and strategic asset-seeking. These motivations are all built upon the OLI paradigm, which presents why (Ownership advantage), where (Location advantage) and how (Internalization advantage) an MNE is more likely to invest abroad (Franco et al., 2008).

Firstly, the aim behind a firm with (1) resource-seeking FDI is to invest in the foreign market as they want to take advantage of the different kind of resources e.g. natural resources and/or raw materials that are not available in the home market or at lower prices (Dunning 1993; Franco et al., 2008). A firm with (2) market-seeking FDI will exploit new markets in the host country. This implies that a firm builds similar production facilities in the foreign market to satisfy and meet the local suppliers and customers’ demand. Other factors that drive a firm under market-seeking FDI is also market size, market growth of the host country, exclusion of competitors in the new market, product adaption to local needs or tastes, and cost-saving of serving a foreign market from distance (Dunning, 1994; Franco et al., 2008). (3) The efficiency-seeking FDI is considered to happen when a firm wants to reduce its operational costs e.g. reducing labor costs in the emerging countries, or any other advantages that lower business costs such as sufficient facilities (Franco et al., 2008). Finally, the last motive of FDI is (4) strategic asset-seeking, which implies that a firm invests in a foreign market to gain intangible assets such as knowledge or competencies that do not exist within the firm, brand name or R&D capacities (Franco et al., 2008; Atterby and Brilkman, 2011).

2.2.2 UNCTAD framework of FDI

Although during these recent years the majority of economic literature focuses on the three advantages eclectic paradigm of FDI, a research by Lundan and Dunning (2010) adds one more factor, which is known as institutional factor (Chawla and Rohra, 2015). Francis et al. (2005) explained that firms operate in complex environments, which are full of uncertainties; thus, firms’ investment decisions are not based solely on firm-specific factors, but also institutional forces, in which the companies operate or are affected, namely regulations and laws. Assuncao et al (2011) also cited political stability as one of the institutional factors in determining FDI inflow to a host country (Chawla and Rohra, 2015). Another important factor worth noting is
corruption as previous studies found lower level of corruption leads to better institutional quality of a host country, which in turn, stimulates and attracts FDI (Chawla and Rohra, 2015).

Based on its FDI researches and surveys, UNCTAD releases a World Investment Report annually since 1991 to inform about the latest trend in FDI and its development in both developed and developing countries. In order to be able to make annual reports, UNCTAD developed their own framework of FDI determinants, which is demonstrated in the following table below. UNCTAD (2002) classifies five determinant variables of inward FDI, which are (1) policy variables, (2) business variables, (3) market-related economic determinants, (4) resource-related economic determinants and (5) efficiency-related economic determinants (Chawla and Rohra, 2015).

Table 1: UNCTAD’s Classification of FDI determinants

<table>
<thead>
<tr>
<th>Determinants/Variables</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Policy Variables</td>
<td>Tax policy, trade policy, macroeconomic policy, privatization policy</td>
</tr>
<tr>
<td>Business Variables</td>
<td>Investment incentives</td>
</tr>
<tr>
<td>Market-related Economic Determinants</td>
<td>Market size, market growth</td>
</tr>
<tr>
<td>Resource-related Economic Determinants</td>
<td>Natural resources, raw materials, technology, labor availability</td>
</tr>
<tr>
<td>Efficiency-related Economic Determinants</td>
<td>Infrastructure of communication and transportation, labor productivity</td>
</tr>
</tbody>
</table>

Notes: UNCTAD’s classification of FDI determinants are on the left hand side and examples of each determinant/variable on the right hand side. Source: (UNCTAD, 2002) in (Chawla and Rohra, 2015).

Based on aforementioned theoretical literature review, there are various factors that are found to be the determinants of FDI. Therefore, it is essential to assess the key factors that determine FDI inflows to host countries and their expected outcome based on previous researches before empirical analysis is conducted in this study.
2.3 Previous empirical studies of FDI determinants

The topic of the determinants of FDI has received extensive attention of many economists in this past decade ever since the rising trend of FDI in developing countries as of late 1990s (Karbalaei and Ho, 2013). There have been several earlier studies that have investigated the variables that affect FDI inflows to a host country within different settings, individual country and multiple countries including regional-based unions and politic-economic groupings such as European Union (EU), Association of South East Asia Nations (ASEAN), North American Free Trade Agreement (NAFTA), G20, and BRICS. Consequently, in this following section, previous researches concerning the determinants of FDI inflows will be reviewed and are chosen for the reason that they are in the setting of emerging economies, in particular, BRICS and MINT, both as the whole group or intra-countries separately.

Akpan et al. (2014) studied the determinants of FDI inflows in the BRICS countries and the MINT countries, using data of eleven years from 2001 to 2011. The indicators that were determined in the paper were GDP, natural resources in term of percentage of GDP, infrastructure, inflation, trade, and institutional quality. The researchers used a pooled time-series analysis with three different samples to estimate the model: first BRICS countries only, then MINT countries only and afterwards BRICS countries and MINT countries combined. The findings of this study showed that GDP is a significant determinant of FDI for both, BRICS and MINT countries. Also, infrastructure and trade openness are important determinants for both these grouping acronyms. Besides this, inflation demonstrated a positive and insignificant coefficient. This may imply that a higher inflation rate can attract more FDI into the BRICS countries and the MINT countries. However, natural resources and institutional quality are insignificant determinants of FDI into the BRICS countries and the MINT countries, which imply that FDI decisions by MNEs do not rely heavily on these two determinants in the host country.

Vijayakumar et al. (2010) conducted a panel data study to examine the factors that determine FDI inflows to BRICS countries using an annual dataset from the time period of 1975 to 2007. The chosen variables were market size, economic instability and growth prospects, labor costs, infrastructure facilities, trade openness, currency value and gross capital formation. To be able to execute the study, they used panel analysis, which included the fixed effects model and the
random effects model. The results of this study demonstrated that market size, labor costs and currency value are statistically significant at the 1 percent significance level. Market size and infrastructure had a positive sign and labor costs had a negative sign. Furthermore, the currency value showed a serious negative relationship with FDI. This result can be interpreted as to be able to attract FDI in BRICS countries and the currency value needs to be stable.

Jadhav (2012) examined the role of economic, institutional and political factors that is attracting FDI in the BRICS countries. In order to examine the determinants of FDI in the BRICS countries, the writer used panel data from the time period 2000 to 2009. The selected variables for this study were market size, natural resources, policy, institutional and political risk. Inflation rate and trade openness indicators were included in the policy variable. The institutional risk variable in this study consists of control of corruption, rule of law, voice and accountability indicators. The political risk variable contains political stability and no violence, government effectiveness and regulatory quality. To be able to test this empirically, a panel unit-root test, and multiple regressions were applied. The outcomes from this study showed that market size, trade openness, rule of law, natural resource availability, voice and accountability are statistically significant. However, market size and trade openness have a positive effect on FDI inflows while natural resource availability, voice and accountability have a negative effect on FDI inflows in the BRICS countries.

One of the earlier studies concerning the determinants of FDI inflow in Nigeria was executed by Obadan (1982). The variables that were selected for this study were market size, market growth, tariff barriers, raw materials, and natural resources. The researchers used annual data from 1962 to 1974. To be able to test this empirically, a multiple regression technique was applied. The results of the study indicated that the market size and tariff barrier showed a positive sign and are statistically significant at the 1 percent significance level.

Emmanuel (2013) investigated the effect of FDI in Nigeria. The selected macroeconomic factors in this study were GDP, inflation and exchange rate during the time period from 1986 to 2011. To be able to analyze the relationship between FDI as a dependent variable and exchange rate, GDP and inflation as independent variables, ordinary least square (OLS) regression and multiple regression analysis were used. The empirical findings of this study
indicated that GDP and exchange rate had a negative correlation to FDI. However, inflation showed a positive correlation to FDI.

Pillai and Rao (2013) investigated various determinants of FDI inflows to India. The time period for this study was from 2000 to 2010. The researchers identified twelve potential determinants of inward FDI. These were market size, import, foreign exchange (forex), exchange rate, export, inflation, stock index, business confidence index, GDP growth rate, trade openness, industrial index and trade balance. The study illustrated that import, export, trade balance and forex had the major influence on the FDI inflows in India.

Erdal and Tatoglu (2002) examined the factors that may determine FDI inflows to the Turkish economy during the period of 1980 to 1998. To be able to test the selected variables, which were market size, trade openness, inflation, exchange rate, interest rate and infrastructure in this study, the researcher used a co-integration regression analysis. The empirical results of this study presented that market size and trade openness are two variables that play important roles in attracting FDI inflows to Turkey.

Asiedu (2002) in his study found out that higher returns on investment and better infrastructure positively affect FDI into the non-Sub Saharan African countries but not to the Sub-Saharan African countries. There is also a discrepancy of the effect of increased trade openness between non-Sub Saharan and Sub-Saharan African countries.

To sum up, the previous studies have analyzed different choices of explanatory variables, although some suggest that market size, infrastructure, and trade openness are generally accepted as determinants of FDI (Akpan et al, 2014). Karbalaei and Ho (2013) and Faisal et al (2005) mention that although based on various variables, they suggest that macroeconomic factors are the main determinants to attract FDI into a host country. In addition, few variables namely natural resources availability may vary in result. The different empirical findings of the study of Asiedu and of other previous studies confirm the possibility of key determinants of inward FDI into host countries or regions but may vary from one to the other (Athukorala, 2009; Akpan et al, 2014). Hence, as firms operate in complex and completely uncertain environments, the firms’ investment decisions are not based solely on firm-specific factors, but also
institutional forces, in which the companies operate or are affected (Francis et al, 2015). This study will not only focus on economic factors, but also on political and institutional factors in order to answer the main research question “What are the determinants of FDI in the MINT countries?” with the sub question of “How do economic, institutional, and political factors affect FDI inflows to the MINT countries?”. Therefore, as an extension of previous studies by Vijayakumar et al (2010), Jadhav (2012), Akpan et al (2014) and based on UNCTAD framework, this paper will analyze the effect of market size, economic instability, natural resource availability, infrastructure facilities, trade openness, institutional stability, and political stability on FDI inflows to the MINT countries from 1990 to 2014.

2.4 Specification of variables and hypotheses development

Based on the theories and previous studies that were discussed above, the selected dependent and explanatory variables of this study as potential determinants of FDI inflows to the MINT countries are as follows:

1. Market size (X1)
   
The market size variable is measured by the host country’s GDP. In this case, the indicator is GDP at market price, which is expressed in billion US$. This is also in accordance to UNCTAD framework that GDP is used as a proxy for the market-related economic determinant (Akpan et al, 2014). Dunning (1994) and Forsgren (2013) stated that firms look for larger market opportunities that market-seeking FDI motive is based on market size of the host country, and Vijayakumar et al. (2010) argues that a country with larger market size and faster growth tends to obtain a higher amount of FDI inflows than its smaller counterparts. Therefore, the expected sign is positive between market size and FDI inflow; thus, the first empirical hypothesis for this study is:

H1: Market size positively affects FDI inflows to the MINT countries.

2. Economic instability (X2)

   Measuring economic stability is achieved using the inflation indicator. Inflation rate gives investors a picture of potential risk in the respective foreign markets. A high inflation rate implies the inability of government and central bank to balance its budget and monitor monetary policy (Elfakhani and Mulama, 2011). Thus, investors would
rather invest in countries with a stable economy than countries with a volatile economy (Vijayakumar et al., 2010). It is expected that high inflation rate inhibits FDI inflows (Akpan et al, 2014). In this study, the inflation indicator is the consumer price index, which is expressed in the annual percentage of a country. Therefore, the second empirical hypothesis for this study is:

**H2: Economic instability negatively affects FDI inflows to the MINT countries.**

3. **Natural resources availability (X3)**
   The natural resources availability variable is measured by the percentage of natural resources to GDP, which is also in accordance to UNCTAD framework as a proxy of natural-related economic determinants (Akpan et al, 2014). Based on Dunning’s eclectic OLI paradigm, FDI decisions are based on resource-seeking objectives for firms to use resources in the host country that do not exist in the home country; thus, it is assumed for the third empirical hypothesis for this study:

**H3: Natural resources availability positively affects FDI inflows to the MINT countries.**

4. **Infrastructure facilities (X4)**
   Vijayakumar et al (2010) mentioned that infrastructure is an important factor to attract inward FDI. The infrastructure facilities can be measured in various ways such as telecommunication, transportation and electricity. In this study, the indicator of infrastructure facilities is measured by the number of mobile phones per 100 people, which is in accordance to UNCTAD framework as a proxy of efficiency-related economic determinants (Akpan et al, 2014; Asiedu, 2002). Hymer suggested firms make their investment decisions to take advantage of e.g. lower business costs associated with infrastructure such as transportation and telecommunication. Further, Asiedu (2002) found out that there is a positive relationship between mobile subscription and FDI inflow. Thus, the expected fourth empirical hypothesis for this study is:

**H4: Infrastructure facilities positively affects FDI inflows to the MINT countries.**

5. **Trade openness (X5)**
   The indicator of trade openness is obtained from the ratio of total trade (export and import) to GDP, which is in accordance to UNCTAD framework as a proxy of policy
variable (Vijayakumar et al, 2010). According to previous study by Dunning (1994) it was suggested that the greater the trade openness in the host country, the higher is the likelihood to receive larger amounts of FDI. Consequently, the fifth empirical hypothesis for this study is:

**H5: Trade openness positively affects FDI inflows to the MINT countries.**

6. **Institutional stability (X6)**

According to Akpan et al (2014), the institutional stability variable consists of different indicators. In this study, the indicator of institutional stability is measured by control of corruption, which is obtained from World Bank survey with value ranging from +2.5 to -2.5, implying the more positive the value, the better general public perception of how corruption is tackled or prevented in the respective country. In relation to the study from Jadhav (2012) corruption has negative effects on FDI inflow. Therefore, the sixth empirical hypothesis for this study is:

**H6: Institutional stability positively affects FDI inflows to the MINT countries.**

7. **Political stability (X7)**

The decision whether to invest or not in a particular country depends on the political stability situation in that country (Jadhav, 2012). This variable is measured by political stability/no violence indicator, which is obtained from World Bank survey with value ranging from +2.5 to -2.5, implying the more positive the value, the better general public perception of the stability of political situation in the respective country, implying limited to none possibility of terrorism, violence and government being overthrown. According to Akpan et al (2014), it is found that host countries with higher political stability are more attractive as FDI destinations for investors. Therefore, the expected seventh empirical hypothesis for this study is:

**H7: Political stability positively affects FDI inflows to the MINT countries.**

8. **FDI (Y)**

According to Akpan et al (2014), FDI is measured by net inflows of FDI in billion US$.
In addition to aforementioned seven explanatory variables and one dependent variable, it is also included additional explanatory variables as dummy variables. Dummy variables, which in this case are control variables, are included to represent and capture the differences in value or attributes among different observed objects, groups, or categories. In this case, countries and years are included as dummy variables in order to capture the existing differences, if any, among the countries within MINT and also in correspondent to the time horizon of twenty five years within this study. Thus, this will be helpful for the model to able to provide a more efficient estimation and information of each variables and results.

The following table illustrates a summary of selected independent variables, measurements and their expected sign in this study.

**Table 2: The potential determinant variables of FDI inflows**

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>Measurements</th>
<th>Expected Sign</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market size (X1)</td>
<td>GDP in billion US$</td>
<td>+</td>
</tr>
<tr>
<td>Economic instability (X2)</td>
<td>Inflation rate</td>
<td>-</td>
</tr>
<tr>
<td>Natural resources availability (X3)</td>
<td>Percentage of natural resources to GDP</td>
<td>+</td>
</tr>
<tr>
<td>Infrastructure facilities (X4)</td>
<td>Mobile subscription per 100 people</td>
<td>+</td>
</tr>
<tr>
<td>Trade openness (X5)</td>
<td>Ratio of total trade (export and import) to GDP</td>
<td>+</td>
</tr>
<tr>
<td>Institutional stability (X6)</td>
<td>Control of Corruption</td>
<td>+</td>
</tr>
<tr>
<td>Political stability (X7)</td>
<td>Political Stability/No violence or terrorism</td>
<td>+</td>
</tr>
</tbody>
</table>

**Notes:** The independent variables are the seven variables analyzed in this study. Measurements explain how each variable is measured and followed by the expected sign for each variables in its hypothesis. Source: (World Development Indicators, World Bank 2016; World Governance Indicators, World Bank 2016).

The following figure summarizes independent and dependent variables along with each hypothesis, which will be examined in order to answer the research question in this study.
Figure 3: Theoretical Framework

Notes: The figure illustrates the theoretical framework of the study, which includes each independent variables (denoted by “X”) and dependent variable (denoted by “Y”) with each hypothesis to be statistically tested, along with its expected sign whether it affects FDI positively or negatively.

3. Research Methodology

This section will focus on the research methodology of this study. First, it will outline the research design of this study, which will be followed by a description of the data collection method. Further, the data analysis method will be presented, which will include the regression assumption testing, descriptive statistics, and panel data analysis. Then, the research model of this study will be introduced. The research model gives an explanation on how all variables formulate the research model with the abbreviation of each variable that will be used in the model. Finally, the limitations of this study will be presented.
3.1 Research design

To be able to answer the main research question “What are the determinants of FDI in the MINT countries?” with the sub question of “How do economic, institutional, and political factors affect FDI inflows to the MINT countries?”, this study has eight research purposes. First research purpose (P-1) describes the statistical conditions of the seven independent variables and FDI in the MINT countries. Research purpose two to eight (P-2 to P-8) further analyzes how the seven variables (potential determinants) affect FDI inflows to the MINT countries.

The type of research design in this study is identified as descriptive and associative or explanatory. Descriptive research is conducted to describe the general statistical conditions of each variable (Saunders et al., 2012) for research purpose one (P-1). Associative or explanatory research is conducted to explain why or how the phenomenon being studied is happening by analyzing the influence of independent variables on dependent variables (Saunders et al., 2012). Thus, explanatory research for research purpose two to eight (P-2 to P-8) aims to analyze and explain the effect of FDI determinants (independent variables) on FDI (dependent variable) inflows to the MINT countries.

According to Saunders et al. (2012), population is the whole unit of measurement as the object of research. In this research, the whole population of the MINT countries (Mexico, Indonesia, Nigeria and Turkey) is being studied. Therefore, unit analysis in this study is a group, which consists of four of the MINT countries. Time horizon is longitudinal or panel data. Longitudinal or panel data consists of multi-dimensional data with repeated measurement over a period of time; thus, combining elements of time-series and cross-sectional (TSCS) data. The study of the panel data is conducted by collecting data with repeated measurement of an object over a certain and limited period of time (Saunders et al., 2012). In this case, it is from 1990 to 2014. Therefore, the following research design, which is summarized in Table 3 is expected to answer the research question of this study.
## Table 3: Research Design

<table>
<thead>
<tr>
<th>Research Purpose</th>
<th>Type of Research</th>
<th>Unit Analysis</th>
<th>Time Horizon</th>
</tr>
</thead>
<tbody>
<tr>
<td>P-1</td>
<td>Descriptive</td>
<td>Group</td>
<td>Longitudinal (panel data)</td>
</tr>
<tr>
<td>P-2</td>
<td>Associative (Explanatory)</td>
<td>Group</td>
<td>Longitudinal (panel data)</td>
</tr>
<tr>
<td>P-3</td>
<td>Associative (Explanatory)</td>
<td>Group</td>
<td>Longitudinal (panel data)</td>
</tr>
<tr>
<td>P-4</td>
<td>Associative (Explanatory)</td>
<td>Group</td>
<td>Longitudinal (panel data)</td>
</tr>
<tr>
<td>P-5</td>
<td>Associative (Explanatory)</td>
<td>Group</td>
<td>Longitudinal (panel data)</td>
</tr>
<tr>
<td>P-6</td>
<td>Associative (Explanatory)</td>
<td>Group</td>
<td>Longitudinal (panel data)</td>
</tr>
<tr>
<td>P-7</td>
<td>Associative (Explanatory)</td>
<td>Group</td>
<td>Longitudinal (panel data)</td>
</tr>
<tr>
<td>P-8</td>
<td>Associative (Explanatory)</td>
<td>Group</td>
<td>Longitudinal (panel data)</td>
</tr>
</tbody>
</table>

**Notes:** A comprehensive table, along with the description below, explains the research design in this study. The research purpose is first to describe statistical conditions of the seven variables and FDI, and then to analyze the influence of the seven independent variables on FDI. The type of research explains the research design for each variable, which is descriptive for the first row and the rest is associative. The unit analysis is based on a group. The time horizon is longitudinal or panel data. Source: (Writer, 2016).
Description:
P-1: To describe general statistical conditions of market size, economic instability, natural resources availability, infrastructure facilities, trade openness, institutional stability, political stability, and FDI in the MINT countries
P-2: To analyze how market size affects FDI inflows to the MINT countries
P-3: To analyze how economic instability affects FDI inflows to the MINT countries
P-4: To analyze how natural resources availability affects FDI inflows to the MINT countries
P-5: To analyze how infrastructure facilities affects FDI inflows to the MINT countries
P-6: To analyze how trade openness affects FDI inflows to the MINT countries
P-7: To analyze how institutional stability affects FDI inflows to the MINT countries
P-8: To analyze how political stability affects FDI inflows to the MINT countries

3.2 Data collection method
In this research, the type and source of data used are quantitative and secondary data for all variables as market size, economic instability, natural resources availability, infrastructure facilities, trade openness, institutional stability, political stability and FDI. The variables in this study are obtained from existing information and gathered from the World Bank database for the time period of the study from 1990 to 2014. The data for variables as market size, economic instability, natural resources availability, infrastructure facilities, trade openness and FDI are obtained from the World Development Indicators of the World Bank that is illustrated in Table 4, whereas the data for the variables of institutional stability and political stability are obtained from the World Governance Indicators of the World Bank, which is also shown in Table 4.
<table>
<thead>
<tr>
<th>Data</th>
<th>Type and Source of Data</th>
<th>Research Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>P-1  P-2  P-3  P-4  P-5  P-6  P-7  P-8</td>
</tr>
<tr>
<td>FDI (Y)</td>
<td>Quantitative – Secondary data (World Bank)</td>
<td>√    √    √    √    √    √    √    √</td>
</tr>
<tr>
<td>Market size (X1)</td>
<td>Quantitative – Secondary data (World Bank)</td>
<td>√    √</td>
</tr>
<tr>
<td>Economic instability (X2)</td>
<td>Quantitative – Secondary data (World Bank)</td>
<td>√    √</td>
</tr>
<tr>
<td>Natural resources availability (X3)</td>
<td>Quantitative – Secondary data (World Bank)</td>
<td>√    √</td>
</tr>
<tr>
<td>Infrastructure facilities (X4)</td>
<td>Quantitative – Secondary data (World Bank)</td>
<td>√    √</td>
</tr>
<tr>
<td>Trade openness (X5)</td>
<td>Quantitative – Secondary data (World Bank)</td>
<td>√    √</td>
</tr>
<tr>
<td>Institutional stability (X6)</td>
<td>Quantitative – Secondary data (World Bank)</td>
<td>√    √</td>
</tr>
<tr>
<td>Political stability (X7)</td>
<td>Quantitative – Secondary data (World Bank)</td>
<td>√    √</td>
</tr>
</tbody>
</table>

Notes: The column data are all variables in this study. The type and source of data explains where the data is taken from. The research purpose shows the variable that is used and analyzed in accordance to its research purpose. Source: (Writer: 2016)
3.3 Data analysis method
In this study, EViews software is used to perform data analysis. Analysis method for each research purpose is based on data from the World Bank database for all variables in this study, which are as follows:

<table>
<thead>
<tr>
<th>Research Purpose</th>
<th>Analysis Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>P-1</td>
<td>Descriptive Statistics</td>
</tr>
<tr>
<td>P-2</td>
<td>Panel Data Analysis</td>
</tr>
<tr>
<td>P-3</td>
<td>Panel Data Analysis</td>
</tr>
<tr>
<td>P-4</td>
<td>Panel Data Analysis</td>
</tr>
<tr>
<td>P-5</td>
<td>Panel Data Analysis</td>
</tr>
<tr>
<td>P-6</td>
<td>Panel Data Analysis</td>
</tr>
<tr>
<td>P-7</td>
<td>Panel Data Analysis</td>
</tr>
<tr>
<td>P-8</td>
<td>Panel Data Analysis</td>
</tr>
</tbody>
</table>

*Notes: Each research purpose along with its analysis method in this study.*

*Source: (Writer, 2016)*

3.3.1 Regression assumptions testing
Before further analyzing the effect of seven explanatory variables on FDI (dependent variable), based on research purpose two to eight (P-2 to P-8), it is also necessary to perform regression assumptions testing due to the fact that violations of these assumptions may lead to inaccurate results. Stock and Watson (2015) state linear regression assumptions testing is not necessarily to be conducted within panel data analysis because one of benefits of panel data analysis is coping better with the issue coming from violations of regression assumptions. Another reason is also due to the different characteristics of panel data in comparison to pooled or time series data, and the small number of sample size, particularly in this study, that small size sample may not have sufficient power to detect assumption violations even if they are present. Although the regression assumptions testing may be omitted for those reasons, but it is still necessary to carry out the regression assumptions testing to ensure accuracy and reliability of the results of panel data analysis in this study.
The test for violations of regression assumptions consists of (1) normality to test whether data observation is within normal distribution, (2) heteroscedasticity, which refers to a situation where variances of the residuals of a model are not equal, (3) autocorrelation, which refers to a situation where residuals of a model are not independent of each other, and (4) multicollinearity, which refers to a problem where two or more independent variables in the model are highly correlated with each other. If that is the case, one of the highly correlated variables must be removed from the model (Saunders et al, 2012).

### 3.3.2 Descriptive statistics

According to Saunders et al (2012), there are two categories of statistics, namely descriptive statistics and inferential statistics. Descriptive statistics is the discipline of quantitatively describing the main features of a collection of data. In this research, descriptive statistic is conducted to give descriptive conditions of market size, economic instability, natural resources availability, infrastructure facilities, trade openness, institutional stability, political stability, and FDI in the MINT countries, using the value of mean, maximum, minimum and standard deviation for the first research purpose (P-1).

Inferential statistics is the discipline of drawing conclusions from data that is subject to data being observed (Saunders et al, 2012). In simple terms, inferential statistics is a derived statistical analysis and consists of hypotheses to be tested, which based on research purpose two to eight (P-2 to P-8) in this study. This is conducted with panel data analysis, which is explained below.

### 3.3.3 Panel data analysis

To be able to answer the main research question: “What are the determinants of FDI in the MINT countries?” along with the sub question of “How do economic, institutional, and political factors affect FDI inflows to the MINT countries?”, the effect of the seven explanatory variables on FDI within the MINT countries will be analyzed. In order to do so, the combination of time-series and cross-sectional data is used, in which the data of seven explanatory variables and one dependent variable are collected repeatedly within MINT economic grouping (unit analysis) over a time period of twenty five years (time horizon). As the type of data in this study is longitudinal or panel data, panel data analysis is conducted for research purpose two to research purpose eight (P-2 to P-8).
Stock and Watson (2015) state panel data analysis is the most effective analytical method to handle panel data set, which consists of data for n different entities observed at T different time periods, which illustrates as follows:

\[(X_{it} Y_{it}), \ i = 1, \ldots n \text{ and } t = 1, \ldots T\]  \hspace{1cm} (1)

A simple linear panel data model with one explanatory variable looks therefore as follows:

\[Y_{it} = \alpha + \beta X_{it} + u_{it}\]  \hspace{1cm} (2)

In this study, the data for n = 4 entities (countries), where each entity is observed in T = 25 years of time period that is from 1990 to 2014, providing a total of 100 observations. Further, if the dataset has all its observations complete, the panel data is called balanced data. Otherwise, it is called unbalanced panel data (Asterious and Hall, 2006; Stock and Watson, 2015). The dataset in this study demonstrates an unbalanced panel data as there are missing data in political and institutional stability variables.

According to Hsiao (2000), panel data analysis has several benefits such as increasing reliability regardless of given sample size, boosting degree of freedom, coping with multicollinearity among independent variables, reducing the effects of variable bias even with unbalanced panel data, and providing more complex analysis in comparison to stand-alone time-series or cross-sectional data analysis. Panel data analysis does not only capture the behavior of the variables, but also provides a more efficient estimation and information of the variables (Greene, 2012; Hsiao, 2000). Further, it also allows greater flexibility in modeling differences in behavior across individuals within a group compared to ordinary least square (OLS) regression analysis. However, heterogeneity and selection bias may occur if the panel data analysis model is not chosen correctly (Greene, 2012; Gujarati and Porter, 2009; Hsiao, 2000).

There are three important models for panel data analysis, which are (1) pooled OLS regression, (2) fixed effects model, and (3) random effects model.
The first model is the pooled OLS regression model, which is also known as common constant model, represents a dataset where there is no difference among the data matrices of the cross-sectional dimension, treating each object within a group as similar or one unit (Asterious and Hall, 2006; Gujarti and Porter, 2009). The pooled OLS regression model is formulated as follows:

\[ Y_{it} = \beta_0 + \beta_1 X_{it} + \beta_2 Z_{it} + u_{it} \]  

(3)

where: \( i \) is the entities and \( t \) is the time period. If the pooled OLS regression model is used in this study, all 100 observations are pooled together and treated as if there is no difference between the estimated cross-sections (countries), based on the assumption that the dataset is a priori homogenous (Asterious and Hall, 2006). However, this could only be applied for studies where differences among individual or object within the investigated group are ignored, which is not the case in this study. Even though this study examines the countries within the context of MINT economic grouping, there may be country-specific factors that play a role within this study, which implies that difference among countries within the MINT countries should be taken into account as dummy variables. Thus, the pooled OLS regression model is an inappropriate method for this panel data analysis study.

The second model is the fixed effects model, which is also known as least-squares dummy variables (LSDV) model, is a panel data analysis, where each entity controls variables that are constant over time but differ across entities (Stock and Watson, 2015). Furthermore, the model allows for different constants for each group, which allows a dummy variable to be included in the group. The fixed effects model is denoted as:

\[ Y_{it} = \beta_0 + \beta_1 X_{it} + \beta_2 Z_i + u_{it} \]  

(4)

The third model of panel data analysis is the random effects model, which is a panel data analysis model that handles the constants for each section as random parameters and not as fixed (Asterious and Hall, 2006; Greene, 2012). Therefore, the variability of the constant from each section is from the following model:

\[ \alpha_i = \alpha + \nu_i \]  

(5)
where: $v_i$ is a zero mean standard random variable (Asterious and Hall, 2006). Consequently, the random effects follow the following formula:

$$Y_{it} = (\alpha + v_i) + \beta_1 X_{1it} + \beta_2 X_{2it} + \ldots + \beta_k X_{kit} + u_{it}$$  \hspace{1cm} (6)

$$Y_{it} = \alpha + \beta_1 X_{1it} + \beta_2 X_{2it} + \ldots + \beta_k X_{kit} + (v_i + u_{it})$$  \hspace{1cm} (7)

The advantage of the random effects model is that there are fewer restrictions to estimate in comparison to the fixed effects model. It also reduces inconsistency and biases in favor of coping better with dataset even with missing values (unbalanced data set). The random effects model also permits additional explanatory variables that have equal value for all observations within a group, in other words, the model allows using dummies (Asterious and Hall, 2006). On the other hand, the disadvantage of the random effects model is that a specific hypothesis needs to be made about the distribution of the random element as well as if the unobserved group-specific effects are related to the explanatory variable, which might lead to biased and inconsistent estimates (Asterious and Hall, 2006).

As it is previously decided that the first model, the pooled OLS model, is not chosen for this study. Consequently, the panel data analysis for this study will be between the other two models, fixed effects and random effects model. Asterious and Hall (2006) state that the use of fixed effects and random effects model needs to take into account the difference between them. The differences between fixed and random effects are that the fixed effects model accepts that each entity or object differs in its intercept term, while the random effects model accepts that each entity or object differs in its error term (Vijayakumar et al., 2010). Furthermore, in theories, the fixed effects model is preferred to be used for balanced panel data, whereas if the panel data is unbalanced, the random effects model is more appropriate. In choosing the most appropriate panel data analysis between fixed effects and random effects model, a Hausman test is a prerequisite for the exogeneity of the unobserved error component.

The Hausman (1978) specification test is based on the awareness that under the null hypothesis of no correlation, both OLS in the fixed effects model and Generalized Least Square (GLS) in the random effects model are consistent but OLS is inefficient. In other words, individual effects are uncorrelated with the other regression in the model, which indicates that the random effects model is appropriate. Under the alternative hypothesis, OLS is consistent but GLS is not
efficient, which implies fixed effects model is appropriate (Asterious and Hall, 2006). A more
detailed explanation is that the Hausman test assumes that there are two estimators’ $\beta_0$ and $\beta_1$.
Hausman (1978) also included the two hypothesis-testing procedures. This implies that under
$H_0$ both $\beta_0$ and $\beta_1$ are consistent, but $\beta_0$ is inefficient. Under $H_1$, the estimator $\beta_0$ is consistent
and efficient. However, $\beta_1$ is inefficient (Asterious and Hall, 2006). The hypothesis for
Hausman specification test is formulated as:
$H_0 = $ Random effects model is appropriate (p-value > $\alpha$)
$H_1 = $ Fixed effects model is appropriate (p-value < $\alpha$)

$$H = (\beta_{FE} - \beta_{RE}) [\text{Var}(\beta_{FE}) - \text{Var}(\beta_{RE})]^{-1} (\beta_{FE} - \beta_{RE}) \sim X_{2(k)}^2$$

(8)

The selection between fixed effects and random effects model for this study, along with
Hausman specification test, will be conducted and explained further later (Section 4.3).

In the statistical analysis, a significance test must be conducted within a significance level,
symbolized as $\alpha$, with the value of 10 % (0.1), 5 % (0.05), 1 % (0.01) and 0.1 % (0.001). If a
significance test gives a lower p-value than the significance level $\alpha$, then the null hypothesis is
rejected, which is known as statistically significant (Saunders et al, 2012). As the significance
level within studies are based upon choice for this study the chosen level of significance is at 5
percent as it is the most common level of significance for researches (Stock and Watson, 2015).

### 3.4 Research model

Based on the panel data analysis method, which has been explained above, the effect of the
seven independent variables (market size, economic instability, natural resources availability,
infrastructure facilities, trade openness, institutional stability, political stability) on the
dependent variable (FDI) in the MINT countries is investigated and a research or equation
model is constructed, which is based on the panel data analysis model. The research or equation
model for this study is as follows:

$$\text{FDI}_{i,t} = \alpha + \beta_1 \text{GDP}_{i,t} + \beta_2 \text{INFLA}_{i,t} + \beta_3 \text{NATRES}_{i,t} + \beta_4 \text{INFRA}_{i,t} + \beta_5 \text{TRADE}_{i,t} + \beta_6 \text{INSTI}_{i,t} + \beta_7 \text{POLIT}_{i,t} + \varepsilon_{i,t}$$

(9)

where: FDI$_{i,t}$ is the Foreign Direct Investment in net inflows US$ for country i at time period t,
$\alpha$ is a constant, GDP is the Gross Domestic Product per capita in current US$ for country i at
time period t, INFLA is the Inflation Rate for customer prices in annual percent for country i at time period t, NATRES is the total natural resources rents in percent of Gross Domestic Product for country i at time period t, INFRA is the mobile cellular subscription per 100 people for country i at time period t, TRADE is the trade in percent of Gross Domestic Product for country i at time period t, INSTI is the control for corruption for country i at time period t, POLIT is the political stability and absence of violence or terrorism for country i at time period t and $\epsilon_{i,t}$ is the error term at time period t.

### 3.5 Limitations

This study has to take into account that there are some limitations. First of all, as the focus of this study is within the setting of the four MINT countries, there might be a limitation on number of observations for statistical testing. Small number of sample size may not have sufficient power to accurately detect violations in regression assumptions testing, and also for analysis since the more observations included within a study, the bigger the chance to fully explain a phenomenon that is being studied.

There are also missing data for two variables, political and institutional stability, which may generate variable biases in statistical testing. However, this limitation is mitigated as one of the advantages of panel data analysis used in this study is to cope better with unbalanced data as previously explained (see: Section 3.3.2).

Although researchers do their best to determine and analyze the determinants of FDI inflows to the MINT countries, this study mainly focuses on economic, political, and institutional factors ranging from market, resources, efficiency, policy, based on the measurements applied from a combination of existing framework and previous studies. Therefore, there might be other variable measurements and other factors, which have been overlooked in this study that potentially play role as key determinants of FDI inflows to the MINT countries.

Lastly, this study only examines in the context of grouping acronym the MINT countries, instead of each country separately. In addition, some are skeptical about economic groupings as they are only considered as a bloc of different countries in buzzword trends (Haddon, 2011).
4. Empirical Results and Discussion

This part will demonstrate the empirical findings of the study. The first part will discuss the regression assumption testing. Further, it will describe and discuss the results from the descriptive statistics of the variables in this study. Afterwards, the results from the panel data analysis will be provided. The panel data analysis is performed in the statistical program EViews.

4.1 Results of regression assumptions testing

Before looking further into descriptive statistics and panel data analysis, regression assumptions test is necessary to be conducted in order to ensure the accuracy and reliability of the panel data model and its analysis. First, normality test is performed through Jarque-Bera and its p-value. Jarque-Bera is a test based on the fact that skewness and kurtosis of normal distribution equal to zero (see: Appendix 1). From the table, it shows that Jarque-Bera value and p-value for normality test are consequently 13,66194 and 0,10801, which both are significant at 5%. This result implies that we cannot reject, but to accept null hypothesis, which the data is normally distributed.

The second assumption is to test whether there is heteroscedasticity problem within the model. This is conducted through Glejser test, which from the table shows that all variables in the model are significant at 5% (see: Appendix 2). This implies that there is no heteroscedasticity problem among the variables in the model.

Autocorrelation assumption test is performed through Durbin-Watson test (see: Appendix 3). From the table, Durbin-Watson value is 1,533, which does not exceed the rule-of-thumb value limit of 2. This implies that it does not violate regression assumption of autocorrelation among variables.

Lastly, variance inflation factor (VIF) is measured in order to check whether multicollinearity exists among variables within this model (see: Appendix 4). High value of VIF, usually above 5, indicates that there is multicollinearity between variables. Looking at the result from the table, it shows that VIF value for all variables in this model do not exceed the maximum value of 5. This supports the assumption that multicollinearity problem does not exist among all variables in this model. After all regression assumptions testing are performed and explained.
above, it is concluded that the research model in this study does not violate any of fundamental regression assumptions; thus, ensures its accuracy and reliability.

4.2 Results of descriptive statistics

In order to answer research purpose 1 (P-1), we present the descriptive statistics for MINT countries in the following Table 6. Due to missing values from the World Bank database, the issue of unbalanced dataset may arise, where each variable has the complete of 100 observations, except institutional stability (INSTI) and political stability (POLIT). The selected panel data analysis may be beneficial to address this issue as it has been further discussed on limitation of this study (Section 3.5).

We observe from the following table that net FDI inflows to MINT countries between 1990 and 2014 range from the maximum and minimum of US$ 44.88 billion and US$ -4.55 billion respectively with an average of US$ 8.66 billion and standard deviation of US$ 9.59 billion. Further, GDP has a range from US$ 15.78 billion to US$ 1294.68 billion with values of mean and standard deviation being US$ 415.57 billion and US$ 338.96 billion respectively. Trade openness (TRADE) has the lowest standard deviation value of 0.1771 along with variables of institutional stability (INSTI) and political stability (POLIT). Moreover, the infrastructure facilities (INFRA) variable has the highest standard deviation of 37.16 with a range value from minimum 0 to maximum 128.78 mobile subscriptions per 100 people. The inflation (INFLA) variable also indicates a high standard deviation of 23.89, which indicates the inflation fluctuation in MINT countries in the time period of 1990 to 2014. The inflation rate reached up to 106.26 % in 1994 in Turkey and at the lowest of 3.4 % in 2011 in Mexico. NATRES has a standard deviation of 16.146 as the various conditions of natural resources availability within the MINT countries as Mexico, Indonesia and Nigeria are considered as countries with plentiful natural resources (3 % to 73 % of GDP), whereas this is not the case with Turkey and its natural resource ranges from 0.22 % to 0.81 % of its GDP (Elliott, 2014).
Table 6: Descriptive statistics result

<table>
<thead>
<tr>
<th>MINT countries</th>
<th>FDI (in US$ billion)</th>
<th>GDP (in US$ billion)</th>
<th>INFLA</th>
<th>INFRA</th>
<th>INSTI</th>
<th>NATRES</th>
<th>POLIT</th>
<th>TRADE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>8.6648</td>
<td>415.5769</td>
<td>20.63291</td>
<td>32.17385</td>
<td>-0.589066</td>
<td>14.0013</td>
<td>-1.127221</td>
<td>0.5522</td>
</tr>
<tr>
<td>Median</td>
<td>4.86589</td>
<td>294.4369</td>
<td>9.719659</td>
<td>13.43436</td>
<td>-0.579898</td>
<td>8.700055</td>
<td>-0.961103</td>
<td>0.5321</td>
</tr>
<tr>
<td>Maximum</td>
<td>44.88584</td>
<td>1294.6897</td>
<td>106.2627</td>
<td>128.7844</td>
<td>0.167224</td>
<td>73.48844</td>
<td>-0.097696</td>
<td>1.2958</td>
</tr>
<tr>
<td>Minimum</td>
<td>-4.55035</td>
<td>15.78900</td>
<td>3.40738</td>
<td>0</td>
<td>-1.333275</td>
<td>0.227687</td>
<td>-2.193606</td>
<td>0.2102</td>
</tr>
<tr>
<td>Std. Dev</td>
<td>9.59161</td>
<td>338.9606</td>
<td>23.8907</td>
<td>37.15761</td>
<td>0.435564</td>
<td>16.14688</td>
<td>0.578573</td>
<td>0.1771</td>
</tr>
<tr>
<td>Observations</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>64</td>
<td>100</td>
<td>64</td>
<td>100</td>
</tr>
</tbody>
</table>

Notes: The row at the top shows the dependent and independent variables in this study and the left column demonstrates the different measurement of descriptive statistics. The bottom row illustrates how many observations this study has, which shows unbalanced panel data with its limitation previously discussed in Section 3.5.

4.3 Results of panel data analysis

For research purpose two to eight (P-2 to P-8), panel data analysis is conducted in order to test each hypothesis in this study. As it has been previously discussed in methodology section, before further looking into panel data analysis, we need to carry out the Hausman specification test to be able to choose the most appropriate panel data analysis model, which is between the random effects and fixed effects model. Appendix 5 demonstrates the result of the Hausman specification test from EViews. It shows that the p-value is 1.00, which is bigger than 0.05 (5% significance level). Consequently, this implies that the null hypothesis is accepted. Thus, the random effects model is the most appropriate panel data analysis method in this study.

The random effects model is now chosen in order to test our data under different specific-country characteristic estimations, in which the panel data consists of four countries within the MINT countries with the time span of twenty five years from 1990 to 2014. We miss several observations due to incomplete data from the World Bank database, otherwise the total number of observations is 100. The results of panel data analysis with random effects model are summarized in Table 7 below.
Table 7: Random effects model

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>10.08823959</td>
<td>0.203959582</td>
<td>49.46195458</td>
<td>0.0000000</td>
</tr>
<tr>
<td>GDP</td>
<td>3.35E-03</td>
<td>1.38E-05</td>
<td>2.421009859</td>
<td>0.0171765</td>
</tr>
<tr>
<td>INFLA</td>
<td>-0.02545264</td>
<td>0.003471698</td>
<td>-7.331467058</td>
<td>0.0000000</td>
</tr>
<tr>
<td>NATRES</td>
<td>-0.005150818</td>
<td>0.003192445</td>
<td>-1.613439631</td>
<td>0.1096222</td>
</tr>
<tr>
<td>INFRA</td>
<td>0.05792885</td>
<td>0.000776204</td>
<td>7.463097527</td>
<td>0.0000000</td>
</tr>
<tr>
<td>TRADE</td>
<td>0.011154652</td>
<td>0.003020612</td>
<td>3.692844748</td>
<td>0.0003525</td>
</tr>
<tr>
<td>INSTI</td>
<td>0.335467829</td>
<td>0.122404691</td>
<td>2.740645203</td>
<td>0.0071975</td>
</tr>
<tr>
<td>POLIT</td>
<td>0.134076104</td>
<td>0.056511867</td>
<td>2.372530075</td>
<td>0.0194696</td>
</tr>
</tbody>
</table>

| Adjusted R-squared | 0.694007 |
| Prob (F-statistic) | 0.000000 |

Notes: The left column shows the different variables that are included in the study and the top illustrates the results of panel data analysis with each measurement values. The columns at the bottom present the adjusted R-squared and F-statistic of the random effects model.

Table 7 demonstrates that p-value of GDP is 0.017, which implies that GDP is significant at 5 percent level of significance as the determinant of FDI inflow is based on research purpose two (P-2) and hypothesis one (H1). The coefficient of GDP shows a positive sign as expected in this study and if the GDP of MINT countries increases by US$ 1 billion, FDI inflows to the countries will rise by US$ 3,347 million. This implies that GDP or in other words the market size plays an important role of FDI inflows to the MINT countries, which is aligned with Hymer, Dunning’s eclectic OLI paradigm theory and UNCTAD framework that firms look for larger market opportunities when opting for FDI decisions (market-seeking FDI motive), in particular to serve and meet the demand of large population within the MINT countries. This also confirms findings by Akpan et al (2014), Vijayakumar et al (2010), Jadhav (2012), Obadan (1982), Erdal and Tatoglu (2002), and Barrell and Pain (1997) using panel data analysis that suggest national GDP as positive and significant determinant on attracting foreign investment (Agiomirgianakis et al, 2004).
The sign of the coefficient of INFLA (inflation rate) is negative and significant, as expected based on research purpose three (P-3) and hypothesis two (H2). This implies that inflation rates, as the measurement of economic instability, discourage or have an inverse effect on inward FDI in the MINT countries. However, if the inflation rate is increased by 1 %, consequently, inward FDI will decline by 0.02 %. Therefore, countries with lower inflation rate will be considered to be stable economically; thus, more desirable for foreign investors and more likely to be preferred as FDI destinations. This confirms Emmanuel (2013) finding and further extends a study by Vijayakumar et al (2010), instead of the currency value stability; the inflation rate is used as measurement of economic instability, which also confirms countries with more stable economies are more likely to attract FDI.

This study expected the coefficient sign of natural resources availability (NATRES) to be positive based on research purpose four (P-4) and hypothesis three (H3). However, the result yields a negative sign and the p-value of 0.1096 is insignificant at 5 percent level of significance. This indicates that the natural resources availability does not only have inverse relation on FDI, but it also plays a less important role when MNEs take FDI decisions in the MINT countries. This finding contradicts the theory of Dunning’s eclectic OLI paradigm and UNCTAD framework as resource-seeking FDI motive. However, this confirms studies by Akpan et al (2014) and Jadhav (2012) that natural resources are an insignificant determinant; thus, inward FDI into the MINT countries is driven by a market-seeking purpose for its market size and market growth opportunities, instead of resource-seeking purpose.

Further, the sign of the coefficient of the infrastructure facilities (INFRA) is positive and significant, as expected in research purpose five (P-5) and hypothesis four (H4). The result demonstrates that for 1 % increase of mobile subscription per 100 people in the MINT countries, a boost of US$ 5.79 million of FDI inflow will occur. This implies the importance of well-developed infrastructure in reducing costs and/or increasing effectiveness and efficiency in order to stimulate FDI into these countries that agrees with the UNCTAD framework and theory by Hymer. Earlier studies by Vijayakumar et al (2010), Asiedu (2002) and Wheeler and Moody (1992) also state the evidence that infrastructure is a significant FDI determinant (Khachoo and Khan, 2012).
The coefficient of trade openness (TRADE) is positive and significant at 5% significance level, which is in line with the priori expectation based on research purpose six (P-6) and hypothesis five (H5). With an increase of US$ 1 billion in total of export and import to GDP will result in the increase of US$ 11,15 million of inward FDI to the MINT countries. This implies that the higher the degree of openness, in which countries operate in trade, the more likely they are able to attract FDI, which confirms OLI paradigm theory and UNCTAD framework, as well as further extends the studies by Akpan et al (2014), Jadhav (2012), Pillai and Rao (2013), Erdal and Tatoglu (2002), Agiomirgianakis et al (2004), Pfaffermayr (1994), Garibaldi et al (2001) and Campos and Coricelli (2002) that confirm trade openness of a country influences FDI inflows positively (Khachoo and Khan, 2012).

Furthermore, the coefficient of institutional stability (INSTI), which is measured by control of corruption shows a positive sign and significant. This was expected according to research purpose seven (P-7) and hypothesis six (H6). With the assumption of ceteris paribus, if institutional stability increases by one point, inward FDI will increase by US$ 335,46 million. This implies the importance of institutional stability, in particular control of corruption, to encourage FDI inflows to the MINT countries. Political stability (POLIT) demonstrates a positive and significant result, indicating the more stable the political environment in the country, a higher chance exists for the MNEs to invest in the MINT countries than considering potential violence and terrorism in a country, which extends findings by Jadhav (2012) and Akpan et al (2014) within the setting of MINT countries.

In addition, Table 7 also shows the adjusted R-squared value from the random effect model with FDI as the dependent variable with seven independent variables. An R-squared value indicates how well data fit within a statistical model (Stock and Watson, 2015). The higher value of R-squared demonstrates the higher probability that the explanatory variables in the model can explain the variation in the dependent variable (Ranjan & Agrawal, 2011). In this study, the R-squared value is 0.694007. The model explains 69.4% variation of FDI inflows to the MINT countries, whereas the remaining 30.6% of inward FDI into the MINT countries is influenced by other variables, which are not included in this study. This finding shows similar result to previous studies, which this study is based on, that the R-squared value is consistent within the range of 60% to 90% even though R-squared value cannot be generalized and
compared head-to-head with other research as different research may have different objectives and there is no rule of thumb of an acceptable R-squared value.

Table 8: Summary of empirical findings result

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>Measurements</th>
<th>Expected Sign</th>
<th>Result Sign</th>
<th>Statistical Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market size (X1)</td>
<td>GDP in billion US$</td>
<td>+</td>
<td>+</td>
<td>Significant</td>
</tr>
<tr>
<td>Economic instability (X2)</td>
<td>Inflation rate</td>
<td>-</td>
<td>-</td>
<td>Significant</td>
</tr>
<tr>
<td>Natural resources availability (X3)</td>
<td>Percentage of natural resources to GDP</td>
<td>+</td>
<td>-</td>
<td>Not Significant</td>
</tr>
<tr>
<td>Infrastructure facilities (X4)</td>
<td>Mobile subscription per 100 people</td>
<td>+</td>
<td>+</td>
<td>Significant</td>
</tr>
<tr>
<td>Trade openness (X5)</td>
<td>Ratio of total trade(export and import) to GDP</td>
<td>+</td>
<td>+</td>
<td>Significant</td>
</tr>
<tr>
<td>Institutional stability (X6)</td>
<td>Control of Corruption</td>
<td>+</td>
<td>+</td>
<td>Significant</td>
</tr>
<tr>
<td>Political stability (X7)</td>
<td>Political Stability/ No violence or terrorism</td>
<td>+</td>
<td>+</td>
<td>Significant</td>
</tr>
</tbody>
</table>

Notes: The independent variables are the seven variables analyzed in this study. Measurements explain how each variable is measured and followed by the expected sign, which refers to each variable in its hypothesis. The result sign applies to the results from each variable based on the empirical findings in this study. Statistical significance illustrates the results from each variable, if they were significant or not. Source: (World Development Indicators, World Bank 2016; World Governance Indicators, World Bank 2016; Writer, 2016).

To sum up, Table 8 demonstrates a summary of the empirical findings in this study, which answer the research question: “What are the determinants of FDI in the MINT countries?” with the sub question of “How do economic, institutional, and political factors affect FDI
inflows to the MINT countries?”. The table illustrates that market size, economic instability, infrastructure facilities, trade openness, institutional stability, and political stability are significant determinants of FDI inflows to MINT countries. However, the natural resources availability is insignificant as determinant of inward FDI into the MINT countries.

5. Conclusion, Implications, and Suggestions

This part will summarize the study of this paper, and also provide implications based on the empirical findings and suggestions for future research.

5.1 Summary

The term of MINT countries, consists of Mexico, Indonesia, Nigeria and Turkey, has become a popular economic grouping acronym during this past year. Over the next few years, the MINT countries are predicted to be the next leading emerging market of the world’s economy and to be the next top 20 world’s largest economies in the next 30 years according to the World Bank (2014). As this new grouping acronym has potentially a better growth outlook in the world’s economy in the near future and the weak forecast for the BRICS countries, these four countries have now caught economics and investors’ attention. The MINT countries are considered to become more desirable, to be preferred as FDI destinations in the recent year, which enables them to attract a fast-growing inward FDI. As the term MINT is a recent new grouping acronym, there has been limited research regarding the topic on the determinants of FDI in the MINT countries. Therefore, this paper attempts to identify what are the determinants of FDI in the MINT countries during the time period of 1990 to 2014, in order for the MINT countries to be able to develop, maintain and attract even larger FDI inflows. The selected variables that are included in this study are not only focused on macroeconomic factors such as market size, economic instability, natural resources availability, infrastructure facilities, trade openness, but also the factors of institutional stability and political stability.

The empirical results in this study depict that the GDP, total of mobile subscription, total export and import to GDP, control of corruption, control of violence and terrorism are statistically significant and have positive effects on FDI inflows to the MINT countries. Furthermore, inflation rate and natural resources availability negatively affect inward FDI, whereas inflation
rate is found to be statistically significant but natural resources availability is insignificant. This implies that a lower inflation rate will boost inward FDI.

Interestingly, the study does not only reveal that the variable of natural resources availability is not significant, but it also shows a negative sign, on contrary to the priori expectation. This implies that it does not have much importance to the FDI inflows to the MINT countries. The finding is contradictory to some of the theories such as resource-seeking FDI of eclectic OLI paradigm and of UNCTAD framework as well as to previous empirical studies from Sankaran (2015) and Azam and Lukman (2010) that found natural resources availability is a significant key determinant of FDI inflows yet this also further confirms and extends the findings by Jadhav (2012) and Akpan et al (2014) within the MINT countries setting. This is possibly due to the previous existing studies that are much focused on BRICS countries, which all are dominant global commodities and raw material suppliers in comparison to the varying condition of natural resources availability in the MINT countries as Mexico, Indonesia and Nigeria who are considered commodity producers of natural resources, whereas Turkey is not (Elliott, 2014). Therefore, FDI inflow decisions into the MINT countries are not based on the availability of natural resources, rather on market-seeking and efficiency-seeking motives in accordance to the eclectic OLI paradigm theory and UNCTAD framework. Due to the selection of and focused on the variable of natural resources availability as resource-related determinant among other different potential measurements as resource-seeking FDI motive, for example, availability of raw materials, technology and labor as mentioned by UNCTAD framework may contribute as another reason that it is an insignificant determinant of FDI inflows in this study.

As a conclusion summarized in Figure 4 below, this study finds that (1) market size, infrastructure facilities, trade openness, political stability, and institutional stability are significant and positively affect FDI inflows to the MINT countries, (2) economic instability is significant and negatively affect FDI inflows to the MINT countries, (3) natural resources availability is insignificant and negatively affect FDI inflows to the MINT countries.
Figure 4: Framework of Empirical Results

Notes: The figure illustrates the summary of empirical results of the study with independent and dependent variables with each hypothesis and the result sign whether it affects FDI positively or negatively. The black box signifies that the respective independent variables are significant as determinants of FDI inflows to the MINT countries, whereas red box signifies that it is not a significant determinant of FDI inflows to the MINT countries.

5.2 Theoretical implications

The empirical findings above provide theoretical contribution within the studies of FDI determinants. As the majority of previous studies put much focus on BRICS countries, this study extends the findings of previous literature to another set of emerging markets, the MINT countries, which may imply that studies on FDI of other emerging economies and acronym groupings may exhibit similar theoretical findings. It is supported by the fact that although with different range of measurements, the findings support that market size, economic instability, infrastructure facilities and trade openness as significant FDI determinants. It also further confirms that a market-seeking purpose is more likely to be FDI motives to the BRICS, MINT
countries and possibly to other emerging markets as firms are looking for opportunities to tap into larger market size and growth.

This study also attempts to add two additional factors (institutional and political stability), apart from economic factors, which are the focus of the existing studies. The results show that the institutional and political stability factors are both significant determinants. This further extends theoretical framework of FDI determinants, in particular within MINT countries, and also implies that in attracting FDI inflows to the MINT countries and possibly other emerging economies that there are not only economic factors that are important to consider, but also the institutional and political factors in both theoretical and practical policy implications. This is due to the fact that MNEs operate in a complex business world and that firms FDI decisions are not solely based on economic factors.

5.3 Practical implications
Apart from the aforementioned theoretical contribution, the findings of the study also present practical implications for the government and policy makers in the MINT countries (and/or other emerging economies) who are able to obtain a more comprehensive understanding that market size, economic instability, infrastructure facilities, trade openness, institutional and political stability are key determinants when MNEs are looking at the opportunities to invest in Mexico, Indonesia, Nigeria and Turkey. However, the result also implies that MNEs do not place much emphasis on the natural resource factor when opting FDI decisions within these four countries.

Hence, policy makers in the MINT countries are suggested to maintain low level of inflation through monetary, fiscal and exchange policy as investors would rather prefer to invest in countries with a stable economy than into countries with a volatile economy (Vijayakumar et al., 2010). Furthermore, it is also suggested to develop better infrastructure facilities, including telecommunication, electricity and transportation as it lowers the business costs in favor of efficiency and productivity to attract more FDI (Asiedu, 2002). It has been suggested to policy makers in the MINT countries to encourage trade openness internationally since greater trade openness in a country, raises the chances of receiving a larger amount of FDI (Dunning, 1994). However, this can be achieved through fewer strict policies of export and import, and lesser
bureaucratic business procedures in favor of further improving simplicity of doing business. In 2014, Mexico was placed 42nd, Indonesia 120th, Nigeria 170th and Turkey 55th in the world’s ease of doing business index (World Bank, 2014). Furthermore, FDI decisions also place enormous importance on political and institutional stability. Therefore, the MINT countries should be able to tackle violence and terrorism through counter-terrorism laws. The Global Terrorism Index 2015 shows that all four countries are listed in the top 40 countries in the world with high impact and potential of terrorism, Nigeria occupying place number three (Institute for Economics and Peace, 2015). Furthermore, the MINT countries are ranked low in the corruption perception index, which implies these four countries are perceived as corrupted. The corruption perception index shows that, among MINT countries, Turkey being at the highest place, number 66 while Nigeria being at the lowest place, number 136 in the world (Transparency International, 2015). Therefore, the MINT countries must be able to tackle the control of corruption through anti-corruption and anti-bribery policies that lead to a more stable institutional and political environment. Aside from policy makers, the empirical findings of this study may give MNEs a better understanding of FDI and its potential determinants when they make FDI decisions in the MINT countries.

As a summary, the aforementioned practical implications may be useful for economic, political, and institutional policy framework for FDI within MINT countries regarding policies and laws on functioning and structures of market, monetary, fiscal, trade, tax, business conduct, counter-terrorism and violence, anti-bribery and anti-corruption, investment incentive, and investment in infrastructure development.

Finally, the results of this study may not only be beneficial to the MINT countries by thoroughly planning, managing and reviewing their policies and regulations in developing and sustaining their attractiveness as FDI destinations. Besides also minimizing the impact of future financial crisis, if any, and preventing them to lose momentum as the BRICS did due to the 2007-2009 global financial crisis, which in turn to grow continuously and consistently to be the next leading economies as projected by the World Bank.
5.4 Suggestions for future research

Regardless of the limited previous studies within the setting of MINT countries and limited observation for data analysis, this study attempts to identify key determinants of FDI inflows to the MINT countries, which may offer a potential empirical framework for future studies on FDI.

Since the MINT countries are estimated to attract large inflows of FDI in the future, one suggestion for future studies related to the MINT countries is to emphasis the use of other determinants, which are overlooked in this study, for example financial variables such as stock index, gross capital formation, currency value and stability, foreign exchange rate, interest rate, and other economic, institutional and political variables such as market growth, growth prospect, labor market, risk factors, regulatory quality, and corporate governance. It is also suggested for further studies to take into account various types of measurement of selected variables of FDI determinants as mentioned in the UNCTAD framework, various theories, and existing studies.

Earlier studies have focused heavily on the determinants of FDI inflows in the BRICS countries. The potential to investigate other existing emerging markets and/or economic grouping acronyms (G7, E7, NAFTA, ASEAN, Four Asian Tigers, Next Eleven to name a few of the grouping acronyms) exists and even for future new economic group acronyms, if any. Furthermore, it is possible to focus on the key determinants of FDI inflows of one specific country and specific industries in order to get a better understanding and more accurate findings of FDI in general, and in particular about the differences of determinants, which may exist within sectors or industries to attract FDI in a host country.
References


US Firms”, *Journal of International Economics*, vol. 33, pp.57-76.


Appendices

Appendix 1 – Normality Test

<table>
<thead>
<tr>
<th>Normality Test</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Jarque-Bera</td>
<td>13.66194</td>
</tr>
<tr>
<td>Probability</td>
<td>0.10801</td>
</tr>
</tbody>
</table>

Notes: The table illustrates the result of normality test. The value of Jarque-Bera and its p-value are 13.66194 and 0.10801, which both are significant at 5%. This implies that the data is normally distributed.

Appendix 2 – Heteroscedasticity Test

<table>
<thead>
<tr>
<th>Heteroscedasticity Test</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable</td>
<td>Prob. (Glejser Test)</td>
</tr>
<tr>
<td>GDP</td>
<td>0.601</td>
</tr>
<tr>
<td>INFLA</td>
<td>0.6306</td>
</tr>
<tr>
<td>NATRES</td>
<td>0.0862</td>
</tr>
<tr>
<td>INFRA</td>
<td>0.0536</td>
</tr>
<tr>
<td>TRADE</td>
<td>0.0646</td>
</tr>
<tr>
<td>INSTI</td>
<td>0.769</td>
</tr>
<tr>
<td>POLIT</td>
<td>0.1357</td>
</tr>
</tbody>
</table>

Notes: The table demonstrates the result of heteroscedasticity test through Glejser test. The result shows that the p-value from Glejser test of each variables in this research model are all significant at 5%. This implies that there is no heteroscedasticity problem among variables in the research model.

Appendix 3 – Autocorrelation Test

<table>
<thead>
<tr>
<th>Autocorrelation Test</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Durbin-Watson stat.</td>
<td>1.533754</td>
</tr>
</tbody>
</table>

Notes: The table shows the value of autocorrelation test through Durbin-Watson test is 1.533754, which does not exceed the rule-of-thumb value limit of 2. This implies that it does not violate regression assumption of autocorrelation.
Appendix 4 – Multicollinearity Test

<table>
<thead>
<tr>
<th>Variable</th>
<th>VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP</td>
<td>3.124</td>
</tr>
<tr>
<td>INFLA</td>
<td>1.412</td>
</tr>
<tr>
<td>INFRA</td>
<td>1.723</td>
</tr>
<tr>
<td>NATRES</td>
<td>1.689</td>
</tr>
<tr>
<td>TRADE</td>
<td>3.851</td>
</tr>
<tr>
<td>INSTI</td>
<td>1.066</td>
</tr>
<tr>
<td>POLIT</td>
<td>1.816</td>
</tr>
</tbody>
</table>

Notes: The table presents the result of multicollinearity test through VIF values. All of VIF values of each variables do not exceed the maximum value of 5, implying that multicollinearity problem is not found among variables in this model.

Appendix 5 – Hausman specification test

<table>
<thead>
<tr>
<th>Test summary</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cross-section random</td>
<td>1.00</td>
</tr>
</tbody>
</table>

Notes: The table shows the result of Hausman specification test in order to choose which panel data model is appropriate between random effects and fixed effects model. The p-value of 1.00 shows that it is significant at 5%, implying that null hypothesis cannot be rejected. Thus, it is accepted that random effects model is appropriate.