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Determinants of Foreign Direct Investment: A Panel Data Analysis of the 24 Emerging Countries

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Abstract:
The world economy has witnessed a boost of Foreign Direct Investment (FDI) inflows across different countries which are the most visible sign of globalization. FDI has grown at an exceptional rate since 1980s. It is evident from the past decade that the trend of FDI has shifted from developed countries to emerging economies. Investors are shifting to the emerging countries as they offer more potential growth and investment returns. Since these countries have emerged as an attractive destination of FDI, it is necessary to investigate the key determining factors that make these countries lucrative as FDI destinations. Hence, this study explores the factors determining FDI inflows into the emerging countries during the time frame from 1992 to 2016. This study identifies a set of potential explanatory variables which include market size, trade openness, availability of natural resources, economic instability, infrastructure facilities, labor force, and financial development level. A fixed effect model is employed on the panel data set that incorporates data from 24 emerging countries. Here, secondary data is used to analyze the variables which are collected from the World Bank dataset. The empirical findings of this study demonstrate that market size, trade openness, availability of natural resources, economic instability, infrastructure facilities, and financial development level are potential determinants of FDI inflows to the emerging countries, whereas, labor force appears to be an insignificant determinant of inward FDI to the emerging countries.

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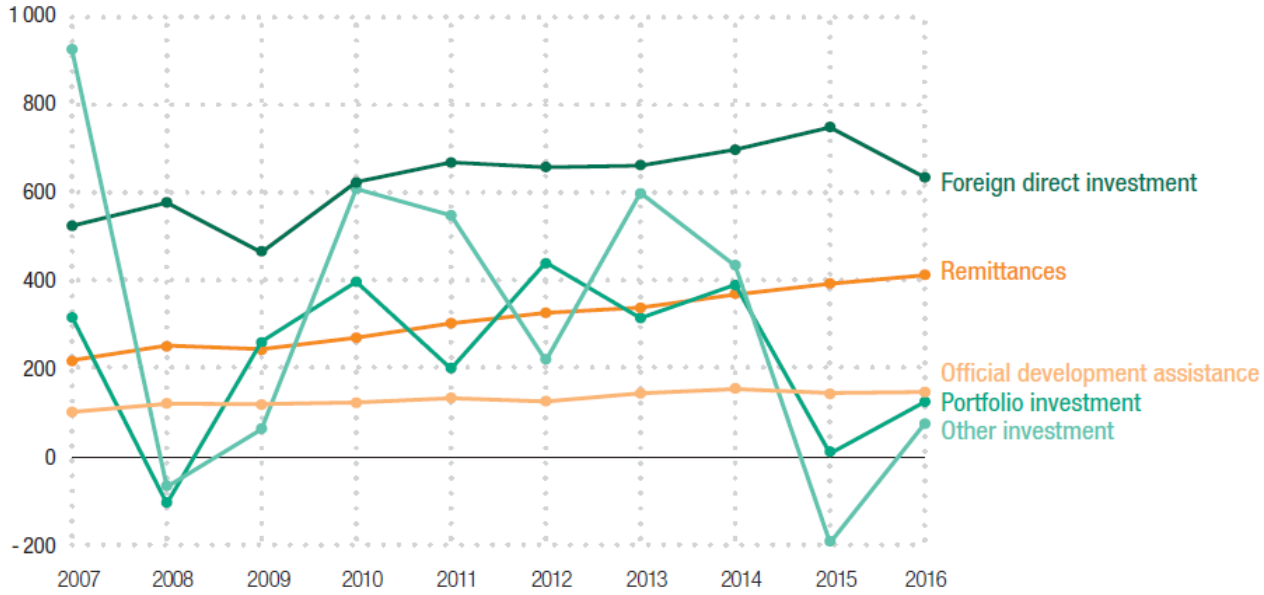
1. Introduction

Trade has always been the heart of an economy and in the context of globalization it reaches to the international level. In this aspect, the role of Foreign Direct Investment (FDI) is very crucial. Over the past 20 years the world economy witnessed enormous increase in FDI flows across countries which are surely a tangible evidence of globalization. However, according to UNCTAD, Foreign Direct Investment (FDI) is defined as an investment involving a long-term relationship and reflecting a lasting interest and control by a resident entity in one economy (foreign direct investor or parent enterprise) in an enterprise resident in an economy other than that of the foreign direct investor (FDI enterprise or affiliate enterprise or foreign affiliate). This investment entails initial transaction between the two entities as well as all subsequent transactions between them and among foreign affiliates. Foreign Direct Investment (FDI) has grown at an exceptional rate since 1980s and the trend of FDI flows has transferred from developed countries to emerging countries during these past two decades. The amount of average FDI inflows to these countries nearly doubled between 1980-1985 and 1985-1990. Moreover, starting in 1990, the developing countries witnessed a rise in the share of FDI flows while it decreased to developed ones. The share of FDI inflows to developing countries increased from 37% to 57.7% during 1994-2014. This shift in the distribution of FDI raises the question of significant driving forces behind this change.

It is obvious that foreign direct investment (FDI) is a vital element of an open and effective international economic system and a major catalyst to development. In fact, for many developing countries, investment from abroad plays a significant role especially at the early stage of economic development. In this early stage as they have relative abundance in labor force and natural resources and shortage of infrastructure and human capital, they tend to attract investment mainly in primary resources. As country develops, it offers more advantages such as better financial and political regulations. It eventually results the shift of production away from primary products and traditional manufacturing to more progressive industries. Statistics show that natural resources accounted for about 23% of the world FDI stock in 1970, as compared to 31% in services. The scenario changed by 1990 when only 11% of the world FDI stock was in natural resources and 50% of it was in services. Moreover, during the period of 1990-2002, 7% of the FDI stock in developing countries was invested in natural resources, while the share of FDI in services increased from 47% to 55% of the total stock of FDI. This evidence depicts that FDI flows to developing countries from 1990 to present have shifted towards service and knowledge- capital intensive industries.

At present, these emerging countries are being considered as attractive investment destinations as they offer more potential growth and investment returns. In 2016, more than 40 percent of the nearly $1.75 trillion of global FDI flows was directed to developing countries. Developing countries, have received 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. Conceivably, these benefits are well-known to the emerging countries, since most of them are competing with each other to attract FDI by liberalizing their policy regimes and offering a number of incentive packages, such as trade liberalization, tax rebate, establishment of special economic zones and incentive packages to the foreign investors.

Figure 1: External development finance to developing economies, 2007-2015 (Billions of dollars)



Source: UNCTAD, Global Investment Report 2017

Emerging markets, also known as emerging economies or developing countries, are broadly defined as nations in the process of rapid growth potential and industrialization. MSCI (Morgan Stanley Capital International) Emerging Market Index lists 24 countries including Brazil, Chile, China, Colombia, Czech Republic, Egypt, Greece, Hungary, India, Indonesia, Korea, Malaysia, Mexico, Morocco, Qatar, Peru, Philippines, Poland, Russia, South Africa, South Korea, Taiwan, Thailand, Turkey, and United Arab Emirates which is the subject matter of this paper. Investments in emerging markets have been on the rebound in the past 18 months rising to a new level despite the dollar and oil prices fluctuation, and look likely to continue their upward trend in the years to come. In this context, present study is intended to determine the underlying factors that affect the inflow of FDI to these 24 emerging countries in a globalization framework, using panel data covering the period from 1992 to 2016.

2. Literature Review

There are a number of earlier studies on FDI that have made some major contributions to the finance and management or even the economic literature since the 1960s. In the past 20 years, FDI has increased rapidly since more and more MNEs tend to explore every single opportunity to invest overseas. Now, FDI has become a significant source of economic growth in both developing and developed countries. That's the reason many countries now a days have taken a number of measures to attract foreign direct investment. In this section, a brief empirical literature will be reviewed which investigates the determinants of FDI decisions across different economies. Hussain and Kimuli (2012) conducted a study to explore the factors that determine FDI inflows to developing countries. In this study, they considered 57 low income and lower middle income countries from the year 2000 to 2009. The selected variables for this study were market size, inflation rate, tariff rate, education (higher secondary enrollment rate), and broad money supply to GDP ratio. The paper used instrumental variable technique to avoid the bias inherent in OLS estimation. The result of this study demonstrated that market size is the most significant determinant of the foreign direct investment. Moreover, global integration, availability of skilled labor force also

encourages FDI in these countries. On the contrary, financial institution doesn't affect the decision of FDI as it is not statistically significant. Masca and Demirhan (2008) studied the determinants of FDI inflows based on a sample of cross sectional data on 38 developing countries over the period of 2000-2004. The variables that were examined in the paper were market size, economic stability, wage, infrastructure, degree of openness, composite risk, and tax rate. The findings of this study depicted that market size, better infrastructure, trade openness, tax rate and economic stability have positive and significant effect on FDI. On the other hand, wage is an insignificant determinant and it implies that a low wage is not necessarily a crucial factor for FDI. Nunnenkamp (2002) investigated the effect of FDI based on the data from 28 developing countries between the years of 1987-2000. In order to conduct the investigation, the researcher categorized FDI determinants as traditional and non-traditional. The variables that were considered as traditional include population, GDP, administrative bottlenecks, barriers to market entry, and risk factors. By contrast, non-traditional variables include complementary factors of production, education period, cost factors, and barriers to foreign trade. Correlation analysis method was used to test the selected variables. The empirical findings of this study demonstrated that traditional market-related determinants are still dominant factors that affect FDI distribution. However, non-traditional determinants such as cost factors, complementary factors of production and openness to trade, didn't become more important with proceeding globalization though it depicted the expected correlation with FDI. Ranjan and Agarwal (2011) examined the factors that may determine FDI inflows in Brazil, Russia Federation, India and China; collectively known as BRIC countries. To capture the dynamic behavior of parameters, panel data estimation was employed that included annual frequency data of 35 years ranging from 1975 to 2009. The outcome of this study showed that other than total labor force and gross capital formation, all other factors including market size, trade openness, labor cost, infrastructure facilities, economic stability and growth prospects, seemed to be the potential determinants of FDI inflows in BRIC countries. Pillai and Rao (2013) explored the determinants of inward FDI in India during the period of 2000 to 2010. The study identified twelve potential macroeconomic determinants including 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. To conduct the study, factor analysis and elasticity analysis were employed. The study illustrated that the transnational attributes such as import, export, trade balance and FOREX reserve had the major influence on the inward FDI in India. Aytekin (2017) examined the determinants of FDI in countries enlisted in the MSCI emerging markets index for the period of 2002-2014. The study implemented GMM method and it included the variables like GDP growth, corporate income tax rate, inflation rate, population growth, unemployment, waged and salaried workers, trade openness and KMM variables (voice and accountability, political stability and absence of violence, governance effectiveness, regulatory quality, rule of law and control of corruption). The study concluded that management quality variables, voice and accountability, regulatory quality, rule of law and control of corruption have significant relationship with FDI. Moreover, among the economic variables, the lagged values of FDI and GDP growth have a positive effect on FDI while population and unemployment have negative effect. Erdal and Tatoglu (2002) studied the location-related determinants of FDI inflows to the Turkish economy during the time period of 1980 to 1998. The researchers used co-integration regression analysis tool to test the selected variables that included market size, trade openness, inflation, exchange rate, interest rate and infrastructure. The empirical evidence from this study showed that Turkey offers several location advantages to foreign investors in terms of market size, infrastructure,

openness of the economy and market attractiveness, while the lack of exchange rate and economic stability has hindered its efforts to attract much higher volume of FDI. Parashar (2015) conducted a study on the determining factors of foreign direct investment (FDI) inflow in both China and India, two big developing countries in Asia, and the investigated time frame of the study was 1980 to 2013. To examine the determinants of FDI, the researcher used liner regression analysis of time series data for 34 years. The chosen macroeconomic variables of the study were market size, infrastructure, the opportunity cost for investors, trade openness, growth rate, policy changes and inflation. The results of the study revealed that market size is an important factor for both countries. Moreover, in the case of China, the most important factor which affects FDI inflow is the lower wage rates, while for India policy reforms that took place in 1991 onwards play a crucial role. The study suggests that to attract more FDI, India should work on its policy reform. Akpan et al. (2014) employed panel data analysis to explore the factors that determine FDI inflows in Brazil, Russia, India, China, and South Africa (BRICS) and Mexico, Indonesia, Nigeria, and Turkey (MINT) using data of eleven years from 2001 – 2011. The study observed that market size, infrastructure and trade openness are significant determinants of FDI for both BRICS and MINT countries, while availability of natural resources and institutional quality play insignificant role in attracting FDI.

A vast literature is available on the determinants of FDI in developed countries, while that on developing countries is relatively handful. Furthermore, literature on the developing countries is confined to only small group of countries or specific regions. In particular, there is scant literature on the FDI determinants based on MSCI emerging markets index. Moreover, previous papers that consider MSCI emerging markets index didn't give any significant aggregate information about the determinants of inward FDI. In this regard this paper will focus on the aggregate empirical analysis of the determinants of FDI in countries enlisted in the MSCI emerging markets index.

3. Potential variables determining FDI inflows

Based on the above discussed theories and earlier studies, this paper reckons a set of potential determinant variables that influence FDI inflows to the emerging countries including market size, economic stability and growth prospects, infrastructure facilities, trade openness, availability of natural resources, financial development level and labor factor.

a. *Market size (X1)*

Market size is one of the most significant determinants of inward FDI. Generally, market size is measured by Gross Domestic Product (GDP), GDP per capita and the population of middle income group in an economy. In this study, the indicator is GDP at market price expressed in billion US$. According to UNCTAD framework, GDP is considered as the market-seeking motivation for overseas investment. However, it's the common trend that countries with larger consumer market always guarantee more potential of consumption and thus more opportunity for trade. These countries have faster growth potential and tend to obtain a higher amount of FDI inflows than that of countries with smaller consumer market (Vijayakumar et al, 2010). Therefore, it is expected that market size would influence FDI inflows positively. Thus, the first empirical hypothesis of this study is:

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

b. *Economic instability (X2)*

In this study inflation rate is taken as proxy for the level of economic instability. Here, this indicator is measured by the consumer price index that reflects the annual percentage of a country. Generally, investors always try to invest in countries with more stable economies that possess a lesser degree of uncertainty. Thus a country with a stable macroeconomic condition will tend to receive more FDI inflows than a volatile country (Vijayakumar et al, 2010). On the contrary, high inflation rate hinders FDI inflows. So, the second empirical hypothesis of this study is:

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

c. *Trade openness (X3)*

Trade openness is defined as the ratio of the sum of exports and imports of goods and services to total GDP at the current price. If the trade openness in the host country is greater, investors can easily approach that market. Generally, trade openness positively influences export-oriented FDI inflows into an economy. Thus, it is expected that trade openness to be a positive and significant determinant of inward FDI. Therefore, the third empirical hypothesis of this subject matter is:

H3: Trade openness positively affects FDI inflows to the emerging countries.

d. *Infrastructure facilities (X4)*

Infrastructure is a proxy of efficiency-related economic determinants and considered as a classical variable in studying FDI. Infrastructure is an inevitable thing for doing business that includes power and electricity, transportation and telecommunication facilities and institutional development. A country with poor infrastructural facilities is not favored by foreign investors since it increases both production and transportation costs and reduces efficiency. Therefore, it can't be denied that quality infrastructure positively influences FDI flows. There are many proxies through which infrastructure facilities can be measured including electric power consumption, mobile cellular subscriptions per 100 people, electric power transmission and distribution losses, internet users etc. Among these indicators, this study considers electric power transmission and distribution losses (% of output) the most important since this indicator tends to has less missing data compare to others. Here, the fourth empirical hypothesis of this study is:

H4: Infrastructure facilities positively affect FDI inflows to the emerging countries.

e. *Availability of natural resources (X5)*

The variable natural resources availability works as a proxy of resource related economic determinants. Many emerging countries are considered to be a lucrative destination for resource-seeking investors due to their abundance in natural resources. This study used fuel exports (% of merchandise exports) as a proxy for natural resources. It is expected that there is a positive relationship between natural resources availability and FDI inflows. Therefore, the fifth empirical hypothesis of this paper is:

H5: Availability of natural resources positively affects FDI inflows to the emerging countries.

f. *Labor force (X6)*

For developing countries large and cheap labor force is considered as a significant location advantage. This variable influences investors to locate their production processes in the host country to take advantage of cheap and available labor. The proxies commonly used for labor force include labor force participation rate, labor force growth, population stock, and

population growth. This study is going to use labor force participation rate, total (% of total population ages 15+) for this measure. Therefore, the expected sign is positive between labor force and FDI inflow. Thus, in this case the sixth empirical hypothesis is:
H6: Labor force positively affects FDI inflows to the emerging countries.

g. *Financial development level (X7)*
Efficiency-seeking investors always prefer a freer and well-developed financial market to lessen their financial risk. Therefore, this variable has a significant impact on FDI. In this study financial development is measured by the proxy of domestic credit to private sector (% of GDP) since it captures more fully the theoretical arguments for financial development. So, it is expected that a better developed financial market affects FDI flows positively. Thus, the reasonable empirical hypothesis in this subject matter is:
H7: Well-developed financial market positively affects FDI inflows to the emerging countries.

4. Research Methodology

In this study, the entire population of the emerging countries is being investigated. Thus, the unit analysis of this study is a group that consists of 24 emerging economies. Here, the time horizon is longitudinal or panel data. Panel data are data for multiple entities in which each entity is examined at two or more time periods (Stock and Watson). That means it describes data set for *n* different entities observed at *T* different time periods. It combines the elements of both time-series and cross-sectional data. In this case, the study analyzed the data from the period of 1992 to 2016. In this study, the type and source of data being used are quantitative and secondary for all of the explanatory variables such as market size, trade openness, economic instability, infrastructure facilities, availability of natural resources, labor force, financial development level and FDI. The variables of this study are collected from existing information and obtained from World Bank database. The data set of this study consists of yearly observations for the time period of 1992-2016. The study considered 24 countries as emerging countries that are enlisted in the MSCI emerging markets index which constitute the sample of this subject matter. Moreover, in this study, to perform data analysis STATA software is used.

4.1 Panel data analysis

The main purpose of this study is to analyze the effect of the selected seven determinant variables on FDI inflows to the emerging countries. For this, the combination of both time-series and cross-sectional data are being used.
Panel data analysis is the most useful analytical tool to handle panel data set. Panel data or longitudinal data refers to data containing time series observations of a number of individuals (Hsiao, 2007). It consists of data for n different entities observed at T different time periods which can be depicted as follows:

$$(XitYit),\ i = 1,\ldots n \text{ and } t = 1,\ldots T$$

In this paper, the data for n=24 entities (countries), where each entity is observed in T=25 time periods (1992 to 2016), providing a total of 600 observations. When the dataset has no missing data, then it is called balanced panel. On the other hand, a panel that has some missing data for at least one time period for at least one entity, then it is referred to as unbalanced panel. The data set of this study depicts a balanced panel data. Panel data estimation is conducted to capture the dynamic behavior of the parameters and to offer more resourceful estimation and information of the parameters. Panel data techniques by blending the inter-individual differences and intra-individual dynamics provide some advantages over

cross-section and time series in using all the available information, which are not detectable in pure cross-sections or in pure time series (Baltagi and Kao, 2000). It possesses several major advantages. It is an invaluable tool to obtain more accurate inference of model parameters. It helps to increase the reliability of the research regardless of given sample size, boost degree of freedom, and cope up with multicollinearity among independent variables. With panel data it is easier to control for unobserved and unmeasurable sources of individual heterogeneity that vary across individuals but do not vary over time as well as it assists to omit variable bias. The panel data model comprises of three different methods, which include (a) pooled OLS regression, (b) fixed effects model, and (c) random effects model.

(a) Pooled OLS regression: The principal assumption of this model is that there are no differences among the data matrices of the cross- sectional dimension and it is useful under the hypothesis that the data set is a priori homogenous. This model is denoted as follows:

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

In this case i denote the entities and t is the time period. In this study if this method is employed, then all 600 observations will be polled together and treated as if there is no difference between the cross-sections (countries). This is not the case in this study. There are some country-specific factors that play a major role in this paper. Therefore, the pooled OLS regression model is not an appropriate tool for the data analysis here.

(b) Fixed effects method: It is a method for controlling for omitted variables in panel data when the omitted variables vary across entities but do not change over time (Stock and Watson, 2015). The fixed effects regression model is:

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

Here, Z_i is an unobserved variable that varies from one entities to the next but is constant over time.

(b) Random effects method: Random effects method is an alternative model of estimation where the individual-specific effect is a random variable that is uncorrelated with the explanatory variables. It can be viewed as a regression model with a random constant term. Under this model, the variability of the constant from each section comes from the fact that:

$$\alpha_i = \alpha + \nu_i$$

Here, ν_i represents zero mean standard random variable. Therefore, the formula for random effects model is as follows:

$$Yit = (\alpha + \nu i) + \beta 1\ X1it + \beta 2X2it + \ldots + \beta k\ Xkit + uit$$

$$Yit = \alpha + \beta 1\ X1it + \beta 2X2it + \ldots + \beta k\ Xkit + (\nu i + uit)$$

Both fixed effects and random effects models have some potential advantages—as well as disadvantages to consider when choosing an approach. The fixed effects model will generate unbiased estimates of β, whereas the random effects model will, except in rare circumstances, produce bias in estimates of β (Clark and Linzer, 2012). One major disadvantage of the random effects model is that under this method one needs to make definite assumptions about the distribution of the random component. Therefore, the use of this method in the estimation requires a lot of care and must be used only if it is necessary and meaningful compare to fixed effects model.

Based on the above discussion, the pooled OLS model is not chosen for this study. Apparently, the choice of panel data analysis will be between the other two models- fixed effects and random effects model. In theories, for balanced panel, fixed effects model is preferred. On the other hand, when the sample contains limited observations of the existing cross-sectional units, the random effect model is more appropriate. Therefore, to decide between a random

effects and fixed effects model, researchers often rely on the Hausman (1978) specification test.

Hausman specification test: In Hausman test, two hypothesis-testing procedures are conducted. It compares the fixed versus random effects under the null hypothesis that the individual effects are not correlated with the other regressors in the model (Hasuman, 1978). Here, the null hypothesis is that the preferred model is random effects whereas the alternate hypothesis is that the model is fixed effects. Thus, the hypothesis for this test is formulated as follows:

H_0 = Random effects model is appropriate (p-value > α)

H_1 = Fixed effects model is appropriate (p-value < α)

$$H = (\beta^{FE} - \beta^{RE}) [Var (\beta^{FE}) - Var (\beta^{RE})]^{-1} (\beta^{FE} - \beta^{RE}) \sim X^{2(k)}$$

In the later part of this study, the chosen model along with Hausman specification test will be conducted and explained further.

Interpreting the result from a Hausman specification test is fairly straightforward. If the value of $p < 0.05$, at conventional levels of significance, then the null hypothesis is rejected, and therefore to reject the random effects model in favor of the fixed effects model. In contrast, if the value of $p > 0.05$, then it doesn't necessarily follow that the random effects estimator is "safely" free from bias, and therefore to be favored over the fixed effects estimator.

4.2 Research model

In this study, the effect of the seven explanatory variables (market size, trade openness, economic instability, infrastructure facilities, availability of natural resources, labor force, and financial development level) on the dependent variable FDI in the emerging countries is examined based on the panel data analysis. Based on the existing empirical literature, this paper will adopt the following research or equation model to investigate the determinants of FDI:

$$LFDI_{i,t} = \alpha + \beta_1 LGDPi_{,t} + \beta_2 TRADE_{i,t} + \beta_3 INFLA_{i,t} + \beta_4 INFRA_{i,t} + \beta_5 NATRES_{i,t} + \beta_6 LBFC_{i,t} + \beta_7 FIN_{i,t} + \varepsilon_{i,t}$$

Where,

$LFDI_{i,t}$ is the log of Foreign Direct Investment in current US$ for country i at time period t, α is a constant.

$LGDPi_{,t}$ is the log of Gross Domestic Product in current US$ for country i at time period t and is the measure of market size.

$TRADE_{i,t}$ is the trade openness for country i at time period t and is computed as ratio of export and import of goods and services divided by GDP.

$INFLA_{i,t}$ is the inflation rate for consumer prices in annual percent for country i at time period t which measures the economic stability of a country.

$INFRA_{i,t}$ is the electric power transmission and distribution losses (% of output) for country i at time period t that measures the infrastructure facilities of a country.

$NATRES_{i,t}$ is the fuel exports (% of merchandise exports) for country i at time period t that measures the availability of natural resources of a country.

$LBFC_{i,t}$ is the labor force participation rate, total (% of total population ages 15+) for country i at time period t which measures the quantity of labor resources of a country.

$FIN_{i,t}$ is the domestic credit to private sector (% of GDP) for country i at time period t which measures the financial development level of a country.

And $\varepsilon_{i,t}$ is the error term at time period t.

5. Empirical results and discussion

Present study employed panel data analysis technique to estimate the dynamic behavior of determinants of FDI inflow to the emerging countries. Before proceeding to estimate panel data analysis, descriptive statistics and correlation analysis have been carried out in the study. The outcomes of descriptive statistics are depicted in the following table.

Table 1: Descriptive statistics of variables in the study

	Observations	Mean	Std. Dev.	Min	Max
LFDI	557	22.22318	1.602947	14.50866	26.39634
LGDP	575	26.18738	1.178468	22.6913	30.04685
INFLA	554	19.81312	132.7246	-4.863278	2075.887
TRADE	564	70.0997	41.82012	15.63556	220.4073
INFRA	529	11.25865	5.346218	2.033697	30.41358
NATRES	550	16.51334	22.34054	.1832958	93.84781
LBFC	575	61.75987	9.420602	44.8396	87.56011
FIN	522	59.08509	40.02462	10.73813	166.5041

The above table demonstrated that all the variables are having range of 522 to 575 observations. Trade openness (TRADE) has the highest mean value of 70 whereas inflation (INFLA) has the highest standard deviation value of 132.72 in the data distribution. Highest value of standard deviation of inflation indicates the presence of vast fluctuation of inflation in the emerging countries. The inflation rate reached up to 2075.89% in 1994 in Brazil which indicates economic crisis and political turmoil. The lowest rate of inflation was -4.86% in 2009 in Qatar which indicates mainly slump in property rents. On the other hand, GDP has the lowest standard deviation of 1.17. Moreover, the outcomes of correlation analysis for the selected variables are presented in the following table. It shows that the variable LGDP is highly positively correlated with LFDI (0.73) and the variable INFRA is negatively correlated with the variable TRADE (-0.45). Moreover, the variable FIN is positively correlated with the variable TRADE (0.41) whereas it is negatively correlated with the variable INFRA (-0.55). The presence of high correlation between the explanatory variables will result the problem of multicollinearity in the estimation. Still the study considered this situation due to the statistical nature of panel data estimation which takes care of the collinearity problems.

Table 2: Correlation of variables in the study

	LFDI	LGDP	INFLA	TRADE	INFRA	NATRES	LBFC	FIN
LFDI	1							
LGDP	0.7261	1						
INFLA	-0.1944	-0.0650	1					
TRADE	0.0341	-0.2084	-0.2340	1				
INFRA	-0.1310	-0.0577	0.3067	-0.4531	1			
NATRES	-0.0920	-0.1781	-0.0662	-0.0189	-0.0970	1		
LBFC	0.2209	0.0756	-0.2353	0.1467	-0.3042	0.2961	1	
FIN	0.1821	0.2149	-0.2848	0.4065	-0.5496	-0.1950	0.1394	1

In this study panel data analysis is employed to test each hypothesis. Before proceeding to the panel data analysis, this paper carried out Hausman specification test to check whether fixed effects or random effects model is more appropriate. The test result is shown in the following table.

Table 3: Determinants of FDI inflows: investigation of appropriate model (fixed versus random effects model) for panel data estimation based on Hausman specification test

Explanatory Variables	Fixed Effect		Random Effect	
	Coefficients	t-statistics	Coefficients	t-statistics
LGDP	1.100	(13.76)***	1.129	(16.45)***
INFLA	-0.008	(1.88)*	-0.009	(2.12)**
TRADE	0.008	(2.46)**	0.008	(3.28)***
INFRA	0.049	(2.26)**	0.040	(2.19)**
NATRES	0.026	(3.22)***	0.014	(2.49)**
LBFC	0.006	(0.38)	0.006	(0.48)
FIN	0.008	(2.75)***	0.006	(2.43)**
R-squared	0.54		0.53	
Hausman test (prob>chi^2)	0.0126			
Note: * denote significant at 10% level; ** denote significant at 5% level and *** denote significant at 1% level				

The table demonstrates that the value of prob>chi^2 is 0.0126 which is smaller than 0.05. This implies that the null hypothesis is rejected. Thus, the fixed effects model is the most appropriate panel data analysis in this study. However, both results are shown on the above table, but the paper will only discuss the results of fixed effects model. The fixed effects model is chosen to test the data set under different specific country characteristic estimations, in which the panel data consists of 24 emerging countries with the time span of twenty five years from 1992 to 2016. The results of panel data analysis with fixed effects model are summarized in the following table.

Table 4: Panel data estimation results based on fixed effects model

Dependent variable: log of FDI inflow					
Regressor	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**
Log_gdp	1.301 (10.76)***	1.167 (13.15)***	1.193 (14.09)***	1.193 (13.82)***	1.100 (11.88)***
Trade Openness		0.007 (2.78)**	0.009 (3.26)***	0.009 (3.05)***	0.008 (2.16)**
Availability of Natural Resources		0.020 (3.67)***	0.025 (3.61)***	0.025 (3.86)***	0.026 (3.28)***
Economic Instability			-0.001 (12.17)***	-0.001 (11.10)***	-0.008 (1.66)
Infrastructure Facilities			0.041 (1.86)*	0.040 (1.64)	0.049 (1.93)*
Labor Force				-0.004 (0.17)	0.006 (0.33)
Financial Development Level					0.008 (1.99)*
Constant	-11.888 (3.75)**	-9.109 (3.92)**	-10.420 (4.55)**	-10.180 (5.07)**	-8.901 (3.61)**
Summary Statistics					
Observations	557	530	485	485	440
Number of Country	24	24	24	24	24
R-squared	0.51	0.53	0.55	0.55	0.54
Years	1992-2016	1992-2016	1992-2016	1992-2016	1992-2016
Clustered standard errors?	Yes	Yes	Yes	Yes	Yes
Notes: Robust t statistics are given in parentheses. * denote significant at 10% level; ** denote significant at 5% level and *** denote significant at 1% level					

The above table summarizes the results of regressions of the FDI inflows on various sets of regressors. Each column of the table reports a separate regression. Each regression has the same dependent variable, log of FDI inflow. Each row reports a coefficient estimate with the value of t-statistics below them in parentheses. The asterisks indicate whether the t-statistics, testing the hypothesis that the relevant coefficient is zero, is significant at the 10% level (one asterisk), the 5% level (two asterisks) or the 1% level (three asterisks). The final five rows contain summary statistics for the regression (sample size, R-squared, number of years and clustered standard error). The table presents a set of OLS estimated regressions of FDI inflows on total GDP and other control variables. Column (1) details a regression of log of FDI on log of GDP only. In this specification the coefficient on the log of GDP is positive (1.3) and statistically significant at 1% level. It implies that 1% increment of GDP is associated with 1.3% increment of FDI inflows. This means that GDP or in other words the market size plays a significant role on FDI inflows to the emerging countries. However, this result is definitely subject to omitted variable bias. In second column of table, the variables trade openness and availability of natural resources are included. Inclusion of these two variables shows a jump of the value of R-squared from 0.51 to 0.53. The coefficient of log of GDP is still positive and significant at 1% level. The other two coefficients are also positive as expected in which trade openness is significant at 5% level whereas availability of natural resources is significant at 1% level. It implies that with 1% increment of natural resources results 0.020% increment in FDI inflow and with 1% increment of total volume of trade (export and import) leads to 0.007% increment in inward FDI. Moreover, in third column, another two control variables named economic instability and infrastructure facilities are included. Inclusion of these two variables shows the highest value of R-squared (0.55). The coefficient of economic instability (inflation rate) is negative as expected and statistically significant at 1% level. It signifies that if inflation rate is increased by 1%, FDI inflow to the emerging countries slumped by 0.001%. On the other hand, the coefficient of infrastructure facilities is positive and significant at 10% level. Furthermore, in column 4, labor force is included as another variable. Adding this variable doesn't change the value of R-squared and this variable is not statistically significant as well. Finally, in column 5, another variable financial development level is included. Inclusion of this variable eventually decreases the value of R-squared from 0.55 to 0.54. The coefficient of this variable is statistically significant at 10% level. It implies that if domestic credit to private sector (% of GDP) is increased by 1%, then inward FDI is increased by 0.008%. By analyzing all columns, it is apparent that column 3 is the feasible model for this study.

In this part of the study, an in-depth discussion will be carried out based on column 3 since it proves to be an appropriate model here. In this model the value of R-squared is most significant (0.55). It indicates that the explanatory variables included in this equation can explain most of the variation in the dependent variable. In particular, this model explains 55% variation of FDI inflows to the emerging countries, while the remaining 45% of FDI inflows into the emerging countries is influenced by other variables which are not included in this paper. Moreover, this column shows that the coefficient of market size, trade openness, availability of natural resources and economic instability are statistically significant at 1% level whereas the coefficient of infrastructure facilities is significant at 10% level. The coefficient signs for four out of five variables are positive and one is negative as expected. Positive value of the coefficients denotes perfect synchronization of explanatory variable with inward FDI while negative value indicates that it affects FDI inflow in reverse manner like decreasing the value of the determinant attracts more FDI to the emerging countries.

The coefficient of GDP shows a positive sign as expected and denotes that 1% increase in GDP is associated with 1.19% increase in FDI inflow. It implies that market size (GDP) plays a vital role on FDI inflows to the emerging countries. This result is a complete match with Dunning's eclectic OLI paradigm theory and UNCTAD framework which tells that firms look for larger market opportunities when taking FDI decisions (market-seeking FDI motive), in particular to serve and meet the demand of large population within the emerging countries. Therefore, it can be concluded that national GDP is a positive and significant determinant on attracting FDI to the emerging countries. The coefficient of trade openness (TRADE) is positive and statistically significant at 1% level which is in line with the earlier expectation. It indicates that 1% increase in the total volume of trade (export and import) is associated with 0.009% increase in inward FDI to the emerging countries. This confers that the higher the degree of trade openness of a country the more likely they are able to attract FDI which confirms OLI paradigm theory as well as UNCTAD framework. The coefficient of availability of natural resources (NATRES) is positive and statistically significant at 1% level which is in line with the priori expectation. The result demonstrates that for 1% increase in natural resources in the emerging countries, a boost of 0.025% of FDI inflow occurs. Thus, more abundant natural resources play a vital role when MNEs take FDI decisions in these countries. This finding confirms Dunning's eclectic OLI paradigm theory and UNCTAD's resource –seeking FDI motive. Further, the coefficient of inflation rate (INFLA) is negative and statistically significant at 1% level as expected based on the research purpose. It indicates that inflation rate which is a measurement of economic instability deter or have an inverse effect on FDI inflow to the emerging countries. When the inflation rate is increased by 1%, FDI inflow is decreased by 0.001%. It implies that countries with lower inflation rate are considered as economically stable and therefore more likely to be preferred as FDI destinations. Moreover, the coefficient of infrastructure facilities (INFRA) is positive and significant at 10% level which is line with the earlier expectation. It indicates that 1% increase in the electric power transmission and distribution (% of output) to the emerging countries is associated with 0.041% increase in inward FDI. It demonstrates that infrastructure is a significant FDI determinant as well-developed infrastructure results in reduced cost in business operation. Finally, the coefficient of labor force (LBFC) is not statistically significant in both column (4) and column (5). Thus, labor force is not a leading determinant of FDI inflow to the emerging countries. This finding contradicts Dunning's eclectic OLI paradigm and UNCTAD's resource-seeking FDI motive. Furthermore, the coefficient of financial development level (FIN) is significant at 10% level in column (6). It indicates that domestic credit given to private sector is a significant factor in attracting FDI to the emerging countries. Therefore, it depicts that market size, trade openness, economic instability, infrastructure facilities, availability of natural resources and financial development level are significant determinants of inward FDI to the emerging countries. On the contrary, labor force seems to be an insignificant determinant of FDI inflows to the emerging countries.

6. Conclusion and policy implication

Recent trend of the global business shows that emerging economies of the world have caught economics and investors' attention since they represent larger market potentials and therefore expected to attract larger inflow of FDI. However, there has been limited research based on the emerging countries enlisted in the MSCI index. Therefore, this study attempts to identify the significant factors that determine FDI inflow to the emerging countries during the time frame of 1992 to 2016. The variables that are chosen in this study include market size, trade openness, availability of natural resources, economic instability, infrastructure facilities,

labor force and financial development level. The empirical results in this study demonstrate that GDP, total volume of trade (export and import), natural resources availability, infrastructure facilities and domestic credit to private sector are statistically significant and have positive effects on inward FDI to the emerging countries. On the other hand, inflation rate negatively affects FDI inflow which implies that a lower inflation rate will attract more inward FDI. Moreover, surprisingly, the study reveals that labor force is an insignificant determinant which is on contrary to the earlier expectation. This finding doesn't match with some of the theories like Dunning's eclectic OLI paradigm and UNCTAD's resource-seeking FDI motive. This empirical analysis has some practical policy implications for the government and policy makers towards the improvement of investment atmosphere to attract more inward FDI into the emerging countries. It will facilitate the understanding of the policy makers to obtain a more comprehensive idea that market size, trade openness, economic instability, availability of natural resources, infrastructure facilities and financial development level are key determinants when MNEs look at the opportunities to invest in the emerging countries. Further, the result also indicates that MNEs don't put much emphasis on the labor force factor when taking FDI decisions within these countries.

In this study, it is suggested to the policy makers of the emerging countries to maintain the level of inflation lower through different kinds of policies such as monetary, fiscal and exchange policy since investors prefer to invest in countries with stable economy rather than a volatile one. Then, it is also recommended that to develop better infrastructure facilities as it lowers costs in favor of efficiency and productivity to attract more inward FDI. Further, it has been suggested to the policy makers of the emerging countries to facilitate trade openness internationally. It means that greater the trade openness in a country, the better is the chances to attract a large amount of FDI. A country can enhance its trade openness internationally through fewer firm policies regarding export and import, and fewer bureaucratic business procedures in favor of improving simplicity of doing business. Among the emerging countries, some countries ranked so well in the World Bank's ease of doing business index. In this index, Korea placed 4th, United Arab Emirates 21st, Malaysia 24th, Thailand 26th, Poland 27th , Czech Republic 30th , Russia 35th and so on. Moreover, to maintain the available natural resources properly is also crucial since it is a significant FDI determinant in these country settings. Finally, it is also suggested to the policy makers that they should facilitate the process of providing domestic credit to the private sectors since this variable also plays a vital role in attracting FDI inflows to the emerging countries. Thus, the above mentioned empirical analysis will be invaluable to the emerging countries for carefully planning, managing and reviewing their policies and regulations in developing and sustaining their attractiveness as FDI destinations. This study attempts to identify the significant determinants of inward FDI to the emerging countries which may offer a potential empirical framework for further future studies on FDI. The future studies can focus on the variables to investigate other existing markets or economic grouping acronyms such as G7, E7, ASEAN, NAFTA, ASEAN, MINT, Next Eleven etc. and even for future new economic group acronyms.
Therefore, to sum up, the overall significance of the model presented in this study would contribute to a better understanding of the potential FDI determinants in the emerging countries. Moreover, the findings of the study would also place emphasis on the betterment of infrastructural facilities and economic structure and policy reforms.

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