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DETERMINANTS OF INWARD FDI IN MONGOLIA: AN APPLICATION OF THE ARDL BOUNDS TESTING APPROACH TO COINTEGRATION

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ABSTRACT

The study at hand is the first of its kind that aimed to provide a comprehensive analysis of the determinants of foreign direct investment (FDI) in Mongolia by analyzing their short-run, long-run, and Granger causal relationships. In doing so, we methodically used a series of econometric methods to ensure reliable and robust estimation results that included the augmented Dickey-Fuller and Phillips-Perron unit root tests, the most recently advanced autoregressive distributed lag (ARDL) bounds testing approach to cointegration, fully modified ordinary least squares, and the Granger causality test within the vector error-correction model (VECM) framework. Our findings revealed domestic market size and human capital to have a U-shaped relationship with FDI inflows, with an initial positive impact on FDI in the short-run, which then turns negative in the long-run. Macroeconomic instability was found to deter FDI inflows in the long-run. In terms of the impact of trade on FDI, imports were found to have a complementary relationship with FDI; while exports and FDI were found to be substitutes in the short-run. Financial development was also found to induce a deterring effect on FDI inflows in both the short- and long-run; thereby also revealing a substitutive relationship between the two. Infrastructure level was not found to have a significant impact on FDI on any conventional level, in either the short- or long-run. Furthermore, the results have exhibited significant Granger causal relationships between the variables; thereby, ultimately stressing the significance of policy choice in not only attracting FDI inflows, but also in translating their positive spill-over benefits into long-run economic growth.

Keywords: Mongolia, FDI determinants; macroeconomic determinants, ARDL bounds, VECM, Equilibrium relationships, Granger causality.
JEL Classification: C32, F14, F21, F43, O19, O23.

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Contribution/ Originality

This study contributes to the existing literature by serving as the first comprehensive analysis of short- and long-run foreign direct investment determinants of Mongolia, and their causal relationships. It methodically employs a series of econometric methods, including the recently developed autoregressive distributed lag bounds testing approach to cointegration.

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1. INTRODUCTION

Global foreign direct investment (FDI) inflows have increased six-fold from 225 billion United States Dollars (USD) in 1990 (United Nations Conference on Trade and Development, 1992) to 1.23 trillion USD in 2014 (UNCTAD, 2015) with a peak of 1.45 trillion USD in 2013 (UNCTAD, 2014). From this, approximately 55% flowed to developing economies. More interestingly, since the 1990s, sales revenues of foreign affiliates have consistently exceeded that of merchandise and service trade (UNCTAD, 2015).

Therefore, it is unsurprising that the literature on the role, impact, and determinants of FDI inflows and outflows is not only extensive, but has also been: (a) ever-increasing in quantity, and (b) controversial in nature, yielding differing results that advocate both policy and non-policy factors in attracting FDI (Fedderke and Romm, 2006). The ambiguity plaguing this field of study has only served in maintaining - if not fueling - the interest in this topic. This is especially true for developing economies, as FDI is considered a crucial source of funding for developmental projects where domestic capital falls short (Alguacil *et al.*, 2011; Bekhet and Al-Smadi, 2015). Furthermore, despite the indistinctness of the direction of causality running between FDI and economic growth, FDI is still considered by many nations to be a significant component of their economic development strategy (Alguacil *et al.*, 2011) if not a major driver of strong economic growth (Ang, 2008). This has led many local authorities to strive towards policies aimed at providing a lucrative investment environment, of which Mongolia is no exception.

Although the absolute positive effect of FDI on economic growth is contested; on the whole, FDI has been credited for its relative stability, higher contribution to the host country's economic growth and development in the long-run, and potential for being absorbed faster by rapidly emerging markets (Lipsey *et al.*, 1999; International Monetary Fund, 2007; Yu and Walsh, 2010). Additionally, conventional wisdom now dictates that FDI yields more benefits relative to other types of capital flows through its positive impact on productivity growth, which would in turn translate into sustained economic growth via the transfers and adoption of superior and foreign technology, knowledge and skills, managerial and organizational know-how, as well as through its direct and indirect employment generation (Wang and Blomström, 1992; Borensztein *et al.*, 1998; De Mello, 1999; Ayanwale and Bamire, 2001; Smarzynska and Spatareanu, 2002). FDI is also considered one of the chief mechanisms through which developing economies integrate themselves into the international market and the wheels of globalization (Chudnovsky and Lopez, 1999). This is particularly true for post-communist, former transitional economies, such as Mongolia.

However, the vastly differing results obtained from past empirical studies have enforced the belief that the impact and determinants of FDI - as well as the direction of the causal relations running between them - are highly contextual, reliant on country-specific characteristics, easily affected by changes in the conditional information set, and dependent on the host country's absorptive capacity (Borensztein *et al.*, 1998; Chakrabarti, 2001; Zhang, 2001; Durham, 2004). This suggests that a simple copy-paste approach to policy formulation is as inadequate as it is inefficient. Thus, the need for investigating the determinants of inward FDI on the one hand, and the direction of causality running between them on the other, while taking into account the individual host country's unique context is crucial (Angelo *et al.*, 2010) practical, and justified.

Considered by the UNCTAD to be a high actual and potential FDI recipient for more than a decade since the turn of the millennium (UNCTAD, 2001;2002;2003;2004;2005;2006;2007;2008;2011;2012) FDI inflows to Mongolia have tapered off since 2013; hence becoming a major concern of the government, intellectuals, and citizens alike. Thus far, unlike the plethora of literature concerned with the determinants of FDI in other countries, there has been a large gap in the knowledge base when it comes to Mongolia; with the few studies that have been conducted on FDI determinants in Mongolia being either descriptive in nature, or mostly dealing with firm-level and cross-sectional data. Moreover, to the best of the authors' knowledge, there is not a single study that has comprehensively analyzed the long-term determinants and impacts of FDI, nor the causal relationships that exist between them, for Mongolia. In that respect, this study is the first of its kind. Therefore, in light of the above-mentioned gap in research - and the

historical effectiveness of policies aimed at attracting FDI have been at simultaneously boosting economic growth in the host country - we aim to investigate the determinants of FDI and the causal relations between them for Mongolia, using a comprehensive set of econometric methods. By doing so, we hope the study at hand will prove its contribution by providing: (a) Mongolian policymakers with more reliable and robust estimation results upon which they may base and formulate policies; and (b) further empirical evidence on the determinants of inward FDI for small developing countries overall, and landlocked developing countries more specifically, using Mongolia as a case study.

The remainder of this paper will continue with the theoretical and empirical literature review on the topic, followed by a brief evaluation of Mongolia's background and previous studies conducted in relation to its FDI inflows, description of the data and research methodologies employed in this study, reports of the empirical findings, discussion and policy implications of the results, ending with concluding remarks and suggestions for future research on the subject.

2. THEORETICAL AND EMPIRICAL LITERATURE REVIEW

The relationship between economic growth and FDI has drawn the attention of international scholars, local governments, and the efforts of policy analysts for decades since the 1950s. Theoretically, economic growth theory is based on two main competing theories: (1) Solow (1956) and Swan (1956) first generation neoclassical growth models that have dominated the scene from the 1950s to the 1970s; and (2) Romer (1986); Lucas (1988) and Barro (1988) second generation endogenous growth models that have stolen the limelight since their inception. The difference between the competing theories primarily resides in the fact that in the first model, FDI leads to a mere transitional increase in per capita income growth via the increase in investment rate. In other words, FDI does not translate into long-term economic growth, with the latter thought to stem from exogenous sources, such as technological progress and growth in the labor force. Thus, after the initial short-term effects have worn off, the host economy would then converge to its steady equilibrium state under the assumption of diminishing returns to capital inputs, with no evidence of any lasting imprints from FDI. On the other hand, the endogenous growth models postulate that FDI can lead to economic growth through the rational conduct of economic agents, structure of the host economy in question, macroeconomic policy in effect, human capital development, and the transfer of skills, knowledge and technology; all of which lead to a permanent growth effect in the host country, and are considered endogenous sources. Thus in essence, it is the optimistic views espoused by the latter group of scholars that have spawned the dedication of countless theoretical and empirical literature on the subject.

However, regardless of whether the impact of FDI is considered to be short- or long-term, many countries - developed and developing alike - have adopted an FDI-led growth path to enhancing their economic growth and the wellbeing of their citizens. Nonetheless, despite the positivity associated with FDI inflows, skepticism accompanies it as well, as FDI is deemed to be born from the competing motives of exploiting market imperfectness (Hymer, 1976) from the investors' side, and maximizing the lasting effects of superior technology and capital from the host country's side. An abundance of studies have been dedicated to the FDI-growth nexus and the determinants of FDI flows, and while the majority of the empirical studies have professed the aforementioned general positive impacts of FDI, there has also been a substantial amount of literature claiming the opposite that FDI leads to a crowding-out effect on domestic investment, dependence on foreign capital, destructive competition and market-stealing effects, and fierce exposure to external shocks due to poor absorptive capacities of the host country in question (Caves, 1996; Aitken and Harrison, 1999; Konings, 2001; Fedderke and Romm, 2006; Morrissey and Udomkerdmongkol, 2012).

In terms of methodology, the empirical literature is brimming with a wide array of various econometric methods, with the vector autoregressive (VAR) models (Hansen and Rand, 2006; Pradhan *et al*., 2011), vector error-correction models (VECM) (Tang *et al*., 2014; Bekhet and Al-Smadi, 2015), and autoregressive distributed lag (ARDL) models (Frimpong and Oteng-Abayie, 2006; Shahrudin *et al*., 2010) being popular choices. The causal relations between FDI and its determinants have been studied in

many countries, as can be witnessed from the summary of selected empirical studies in *Table 1*. Overall, although the majority of the studies agree to FDI's growth enhancing effect on the whole (Borensztein *et al*., 1998; De Mello, 1999; Fedderke and Romm, 2006; Ayanwale, 2007; Tiwari and Mutascu, 2011; Krstevska and Petrovska, 2012; Pradhan *et al*., 2013; Iwasaki and Tokunaga, 2014), there is still substantial doubt echoed by the findings of Belloumi (2014); Carkovic and Levine (2002); Durham (2004) and Frimpong and Oteng-Abayie (2006).

Table-1. Empirical literature review summary of selected studies on the causal relationship between FDI and its determinants.

Author	Methodology	Period	Case	Causality	Author	Methodology	Period	Case	Causality
Zhang (2001)	ECM	1970-1997	Latin America and Asia	FDI → GDP	Pradhan *et al.* (2011)	Panel-data, VAR, ECM	1980-2010	Bangladesh, Bhutan, India, Nepal, Pakistan, Sri Lanka, Maldives	FDI <-> GDP FDI <-> EXR EXR → FDI INF → FDI LP → FDI LTD → FDI CAB → FDI MTB → FDI
Hasan (2004)	Granger causality	1970-2000	Malaysia	GDP → FDI EXR → FDI	Sun (2011)	ECM, Granger causality	1985-2010	China	GDP → FDI
Fedderke and Romm (2006)	ARDL bounds, VECM	1970-2000	Ghana	TO → GDP	Othman *et al.* (2012)	Panel-data, ARDL bounds, ECM, Granger causality		Asia, North America, and Europe	FDI <-> GDP
Hansen and Rand (2006)	Panel-data, VAR	1970-2000	Asia, Latin America, and Africa	FDI → GDP	Enu *et al.* (2013)	VAR	1980-2012	Ghana	FDI → GDP EXR → GDP FDI <-> EXR INF <-> GDP TO <-> GDP TO <-> INF
Hsiao and Hsiao (2006)	Panel-data, VAR	1986-2004	China, South Korea, Taiwan, Hong Kong, Singapore, Malaysia, Philippines, Thailand	GDP → FDI FDI → GDP EX → FDI FDI → EX EX → GDP FDI <-> GDP EX <-> GDP	Pradhan *et al.* (2013)	ARDL bounds, VECM	1970-2012	India	FDI <-> GDP FDI <-> INFRA GDP <-> INFRA
Mishal and Abulaila (2007)	VAR	1976-2003	Jordan	FDI <-> GDP IM <->	Belloumi (2014)	ARDL bounds, VECM	1970-2008	Tunisia	FDI → TO GDP → K TO → K

				GDP FDI ←> IM					K → FDI K → GDP K → TO
Choong and Lam (2010)	VAR	1970-2006	Malaysia	GDP → FDI TO → FDI LR → FDI	Tang *et al.* (2014)	ARDL bounds, VECM	1980-2008	Malaysia	GDP → FDI EXR → FDI FD → FDI TAX → FDI MUNC → FDI SUNC → FDI
Nwosa *et al.* (2011)	VECM	1970-2009	Nigeria	FD → GDP FDI → GDP	Bekhet and Al-Smadi (2015)	ARDL bounds, VECM, Granger causality	1978-2012	Jordan	FDI <-> MS FDI → GDP FDI → SMI FDI → TO

Notes: → or ← denotes unidirectional causality; while <-> denotes bidirectional causality.

Source: Compiled by the authors.

Table-2. Empirical literature review summary of selected studies on the determinants of FDI.

FDI determinants	Selected empirical studies																												
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
Market size	+	+	+	+	+			+	+	+	+				+		+		+		+		-	+	-	+		+	+
Market growth		+	+				+		+/0		+	+	+			+				+									+
Internal market growth														+															
Market size of China															+														
OECD growth rate	+																												
Agriculture					-																								
Agglomeration effects				+	+	+							-				+		+			+							
Cost of capital	-								+																				
Capital investment																											+		
Capital flight							-																						
Labor population		+		+													+			+							-		
Labor cost						-		-	+/-/0								-												
Human capital development					-										+														
Natural resource		+				+													+							+			
Infrastructure		+	+	+	+	+				+	+	+	+				+					+							
Economic instability		-								-	+						-											+	

Exchange rate depreciation							+		+/-/0		+		+	-			+/-						+	+	+	+		+	
Exchange rate instability		-	-																	-									
Inflation rate									-			-									-	+	-	+	+				
Inflation rate instability		-																		-									
Interest rate														-											+				
Current account balance							-													+									
Public expenditure							+												+			+							
Long run debt outstanding																				-									
Financial development																+	+		-									+	+
Money supply																									+				+
International remittances																			+										
Stock market index																													+
Corporate tax		-						-	+/-/0		-	-																-	
Political instability	-	-						-														-							
Social instability																												-	
Country risk									-					-															
Quality of institutions & bureaucracy						+																							
FDI policy		+																			+								
Business environment		+							+																				
Rule of law						+		+	+																				
Judicial independence																	+												
Trading agreements		+							+/-/0																				
Trade openness			+	+		+		+	+/0		+	+	+		+		+		+			-	+						+
Imports								-										+											
Exports							+	+					-					+											
Sea access					+																								
Scientific research																					+								

Notes: The symbols denote the relationship between FDI and its determinants. 1 = Wang and Swain (1995) 2 = Balasubramanyam (2002) 3 = Erdal and Tatoglu (2002) 4 = Agiomirgianakis *et al.* (2003) 5 = Deichmann *et al.* (2003) 6 = Kinoshita and Campos (2003) 7 = Hasan (2004) 8 = Fedderke and Romm (2006) 9 = Moosa and Cardak (2006) 10 = Ayanwale (2007) 11 = Ang (2008) 12 = Demirhan and Masca (2008) 13 = Marial and Ngie (2009) 14 = Angelo *et al.* (2010) 15 = Choong and Lam (2010) 16 = Shahrudin *et al.* (2010) 17 = Yu and Walsh (2010) 18 = Ahmed *et al.* (2011) 19 = Anyanwu (2011) 20 = Pradhan *et al.* (2011) 21 = Singhania and Gupta (2011) 22 = Imoudu (2012) 23 = Enu *et al.* (2013) 24 = Malik and Malik (2013) 25 = Oladipo (2013) 26 = Onuorah and Nnenna (2013) 27 = Belloumi (2014) 28 = Tang *et al.* (2014) 29 = Bekhet and Al-Smadi (2015).

Source: Compiled by the authors.

In a similar vein, many studies have already acknowledged the importance of FDI in enhancing domestic economic growth, as evidenced from the sheer amount of research conducted on analyzing the determinants of inward FDI, a portion of which is reported in *Table 2*. Like the empirical literature on the causal relations between FDI and its determinants, the findings concerning the determinants of FDI inflows are not consistent either. From *Tables 1* and *2*, we can infer that although there are many variables that could potentially influence inward FDI - of which the most commonly studied in the empirical literature are agglomeration effects, economic stability, financial development, human capital, level of infrastructure, market size and growth, public expenditure, and trade openness – the manner in which they impact FDI is not uniform, and therefore varies according to the country in question.

3. COUNTRY CONTEXT

From the largest contiguous empire the world had ever seen in the 13th century to being absorbed into the Manchu Qing dynasty in the 18th century, Mongolia declared independence in 1911 shortly after the collapse of the Qing dynasty, but did not achieve de facto independence from the Republic of China till 1921. In 1924, Mongolia evolved into a Soviet satellite state and remained one till 1990, when it went through a peaceful democratic revolution, which - coupled with the collapse of the Union of Soviet Socialist Republics - brought about Mongolia's dual transition to a multi-party political system and free market economy.

Although both transitions were painful, the political transition was more successful and smooth than the economic one (United Nations Development Programme, 2000). As for the economic transition, the course of "shock therapy" became the path of choice that led to a "transformational recession", which yielded disturbing immediate effects that include - but were not limited to - inflation that reached 300% (IMF, 1997) drop in government revenue, and breakdown of its relatively stable social institutions that had been in place prior to the transition (UNDP, 2000; Cheng, 2003). However, a series of reforms initiated by four successive Democratic Union Coalition governments, all aiming towards macroeconomic stabilization, coupled with high world copper prices paved the way for expansions in trade and increases in FDI. This resulted in a GDP rise to USD 1.6 billion in 2003, efficiently pulling Mongolia out of the ranks of the world's poorest countries. Since then, Mongolia has garnered praise from the international community for its lasting commitment to democratic values and institutions, free market practices, rule of law, human rights, and multilateral dialogue. However, Mongolia today is plagued by extremes; on the one hand boasting natural resources that are valued between 1 and 3 trillion USD (Gupta *et al.*, 2015) and on the other hand, home to a population of which 27.4% lives in poverty (World Bank, 2012).

Although currently facing grim prospects with an estimated 3% GDP growth in 2015 from a 7.8% growth rate in 2014; Mongolia was once considered one of the fastest growing economies in the world due to its booming mining industry at the onset of the second millennium, leading it to become one of the top hotspots for investment. The success of the mining sector catapulted Mongolia's previously almost non-existent GDP growth rate to a record 17.3% in 2011, but since then, growth has dropped to 8% in 2014.

In terms of FDI inflows, large amounts of capital inflows were recorded at the onset of 2010 when Mongolia attracted USD 1.69 billion, which escalated to USD 4.71 billion and USD 4.45 billion in 2011 and 2012, respectively, of which approximately 80% was flowing to the booming mining sector. However in 2013, FDI fell to USD 2.15 billion and further declined by 62.4% in the first half of 2014 (Asian Development Bank, 2014). One concern amidst the inflow of FDI is the pattern of FDI attracted to Mongolia, which has been mostly extractive in nature. Although economists tend to prefer drafting policies aimed at attracting FDI into secondary and tertiary sectors, Mongolia's largest economic strength by far resides in its mines, one of which is Oyu Tolgoi, one of the largest untapped mineral resource deposits in the world. This massive reserve of national wealth, and the memory of previous decades of poverty, have motivated the Mongolian authorities into recognizing FDI as a colossal tool in facilitating economic

growth in Mongolia, and undergoing substantial political and economic reforms that aim to further promote, attract, and sustain FDI inflows into the country (Demirbag *et al.*, 2005); which began with mass privatization of state-owned enterprises in 1992. Hence, Mongolian authorities have been trying to entice international investors by providing a lucrative and attractive climate for investment since the early 1990s (Foreign Investment and Foreign Trade Agency, 2002; United States Agency for International Development, 2007). Yet in recent years, despite the efforts on the Mongolian government's part, FDI inflows have dried up.

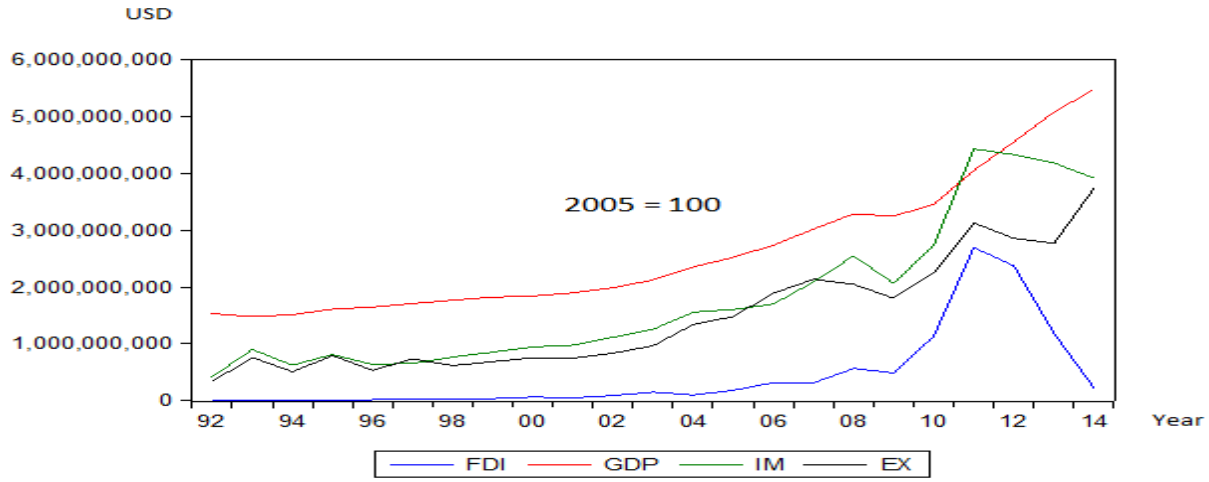

Fig-1. Real USD values of FDI inflows, GDP, imports (IM), and exports (EX) of Mongolia for the period from 1992 to 2014.
Source: World DataBank (2015).

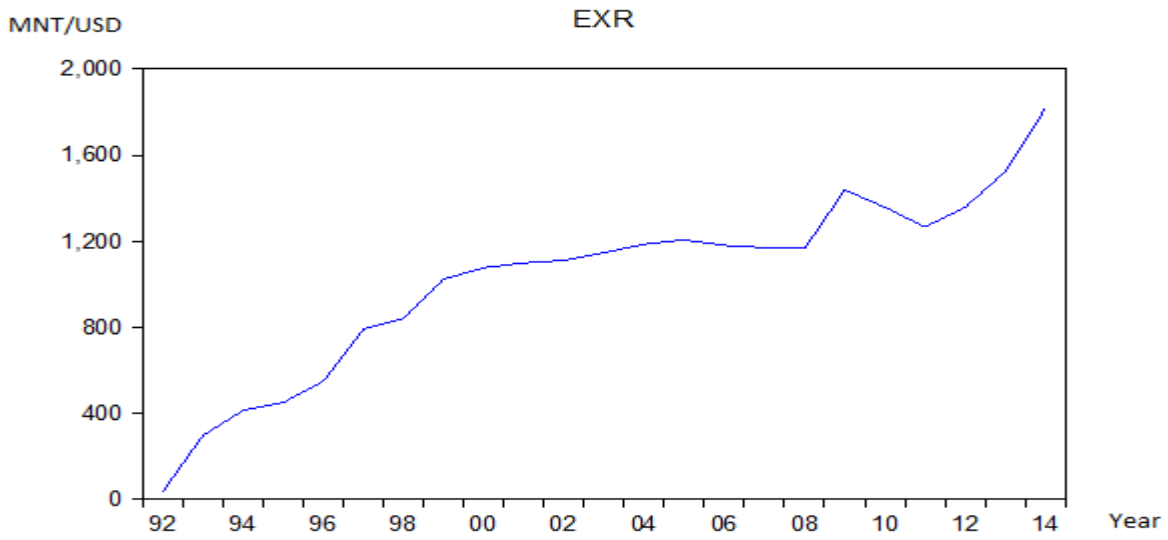

Fig-2. Real exchange rate (EXR) of Mongolia for the period from 1992 to 2014.
Source: WDB (2015).

In terms of studies conducted on FDI in Mongolia, there have been a few descriptive studies on the trends and patterns of FDI (Demirbag *et al.*, 2005; Kaynak *et al.*, 2007; Davaakhuu *et al.*, 2014) which have been mostly conducted using firm-level data. Davaakhuu *et al.* (2015) did not find any evidence of positive spillover effects of FDI on social conditions - such as poverty alleviation or decrease in unemployment levels - in Mongolia. Davaakhuu *et al.* (2015) found market growth rate, infrastructure, and Chinese economic growth to positively contribute; and geographical distance and commodity price increases to negatively influence FDI in Mongolia. Furthermore, they acknowledged the significantly positive effects of FDI on export earnings, suggesting that this may be due to FDI inflows being primarily directed to the mining sectors, which is more capital intensive, as opposed to being labor

intensive. So far, the few studies conducted on FDI determinants in Mongolia have been different in scope and objectives from the study at hand.

4. RESEARCH METHODOLOGIES

4.1. Empirical Model and Data

The aim of the paper at hand is fourfold: (1) analyze Mongolia's inward FDI determinants, (2) examine the presence of cointegrating, long-run equilibrium relationships, (3) determine the long- and short-run relationships, and (4) ascertain the Granger causal relationships, amongst FDI and its determinants.

Based on the previous surveys and studies conducted on the determinants of FDI, there are many factors that may affect FDI inflows into a particular country; however, given the relatively small sample included in the study, lack of sufficient data of all initial variables of interest, coupled with avoiding problems associated with multicollinearity, we cannot include all potential determinants identified in the literature review into a single model. However, in order to comprehensively analyze the relationships between FDI and as many (macroeconomic) variables as possible, the following 2 multivariate linear regression models were ultimately found to be of interest:

$$\mathrm{FDI}_t = \beta_0 + \beta_1 \mathrm{GDP}_t + \beta_2 \mathrm{IM}_t + \beta_3 \mathrm{EX}_t + \beta_4 \mathrm{LAB}_t + \beta_5 \mathrm{T}_t + \varepsilon_t \quad (1)$$

$$\mathrm{FDI}_t = \beta_0 + \beta_1 \mathrm{PC}_t + \beta_2 \mathrm{EXR}_t + \beta_3 \mathrm{FIN}_t + \beta_4 \mathrm{M2}gr_t + \beta_5 \mathrm{ROAD} + \beta_6 \mathrm{T} + \varepsilon_t \quad (2)$$

where FDI is real aggregate FDI inflows to Mongolia; GDP is real GDP, and PC is real GDP per capita, both serving as proxy for domestic market size; IM is real value of total imports; EX is real value of total exports; LAB is labor population, which serves as proxy for human capital; EXR is real exchange rate from Mongolian Tugrug (MNT) to USD, serving as a measure for macroeconomic instability; FIN is the ratio of domestic credit provided by the financial sector to GDP, and M2*gr* is real money and quasi money growth rate, both serving as indicators of financial development; ROAD is total paved roads in kilometers, serving as proxy for infrastructure level; and T is a time trend. For efficiency and consistency, all variables apart from EXR and M2*gr* were transformed into natural logarithmic forms to obtain the growth rate of the variable, as well as to decrease problems associated with heteroskedasticity. Additionally, all variables were calculated using constant prices with the year 2005 serving as the base year (2005 = 100). Annual data from 1992 to 2014 were obtained from the WDB and the Mongolian National Statistical Office (MNSO). For econometric analysis, statistical packages of E-views 9 and R were used.

In accordance with results obtained from previous empirical studies, GDP, PC, LAB, EX, FIN, M2*gr*, and ROAD are expected to yield positive relationships with FDI; while EXR and IM are expected to exhibit negative relationships with FDI.

4.2. Methodology Specification

4.2.1. Unit Root Tests

Due to the commonly known problems associated with spurious regression results in time series analysis, the first part to analyzing the short- and long-run relationships between FDI inflows and its determinants is to test for stationarity of the variables in question. Although the bounds testing approach to cointegration advanced by Pesaran *et al.* (2001) does not advocate the use of unit root pre-tests - as it is valid regardless of whether the variables are purely *I*(0), *I*(1), or mutually integrated - the computed F-statistics of the bounds testing approach will crash in the presence of variables integrated of order higher than *I*(1). Therefore, we employ the augmented Dickey-Fuller (ADF) and the Phillips-Perron (PP) unit root tests to ensure that none of the variables are integrated of order *I*(2) and above.

4.2.2. Cointegration Analysis

After it is determined that none of the variables are integrated of order higher than *I*(1), we employ the ARDL bounds testing approach to cointegration to determine the existence of long-run equilibrium relationships between FDI and its determinants in the case of Mongolia, which consists of estimating the following dynamic unrestricted error-correction model using ordinary least squares (OLS), by taking each variable as the dependent variable in turns. In doing so, the short-run dynamics are integrated with the long-run equilibrium; therefore, long-run information is retained:

$$\Delta \mathrm{Y_t} = \alpha_0 + \alpha_t \mathrm{T} + \sum_{h=1}^{a} \delta_h \Delta \mathrm{Y}_{t-h} + \sum_{i=0}^{b} \delta_i \Delta \mathrm{X}_{t-i} + \beta_1 \mathrm{Y}_{t-1} + \beta_2 \mathrm{X}_{t-1} + e_t \quad (3)$$

where Δ represents the first difference operator, α_0 is the drift component in the equation, T is the time trend, $\mathrm{Y_t}$ is the dependent variable, X_t is a vector of determinants of $\mathrm{Y_t}$, δ's are the short-run coefficients, β's are the long-run multipliers, and e_t represent the error terms that are assumed to be independent and identically distributed.

According to Pesaran *et al.* (2001) the existence of a long-run equilibrium relationship between FDI and its determinants may be tested through a joint F-test on the one period lagged level variables; with the null hypothesis of no cointegration, $\mathrm{H_0}$: $\beta_1 = \beta_2 = 0$, against the alternative hypothesis, $\mathrm{H_1}$: $\beta_1 \neq \beta_2 \neq 0$. Should the F-statistics exceed the upper bounds of the critical value, *I*(1), then we may reject the null hypothesis of no cointegration, concluding that the variables contained in the models share meaningful long-run relationships. However, if the F-statistics are inferior to the lower bounds of the critical value, *I*(0), we fail to reject the null hypothesis of no cointegration among the variables, and conclude that the variables being tested do not share a significant long-run relationship. Furthermore, if the calculated F-statistics fall in between the upper and lower bounds of the critical values, we can neither accept nor reject the null hypothesis of no cointegration, ultimately leading to inconclusiveness of the results. Due to the small sample size of this study, we have opted to use the small sample critical values calculated by Narayan (2005). The bounds testing approach was chosen for this study due to several reasons that include: (1) its simplicity and elegance in estimating the short- and long-run relationships simultaneously within a single model, (2) performance superiority when the study at hand has a small number of observations, (3) its application regardless of whether the models consist of variables that are stationary at *I*(0), *I*(1), or a mixture of both, and (4) its flexibility in allowing uneven lag orders of the variables.

4.2.3. Long- and Short-Run Relationship Analyses

In the event the ARDL bounds tests support stable long-run relationships amongst the variables, the following conditional ARDL long-run models are estimated using fully modified ordinary least squares (FMOLS):

$$\mathrm{FDI}_t = \theta_0 + \theta_1 \mathrm{T} + \sum_{i=1}^{a} \theta_{2FDI\mathrm{i}} \mathrm{FDI}_{t-i} + \sum_{j=0}^{b} \theta_{3GDP\mathrm{j}} \mathrm{GDP}_{t-j} + \sum_{j=0}^{c} \theta_{4IM\mathrm{j}} \mathrm{IM}_{t-j} + \sum_{j=0}^{d} \theta_{5EX\mathrm{j}} \mathrm{EX}_{t-j} + \sum_{j=0}^{e} \theta_{6LAB\mathrm{j}} \mathrm{LAB}_{t-j} + \epsilon_t \quad (4)$$

$$\mathrm{FDI}_t = \theta_0 + \theta_1 \mathrm{T} + \sum_{i=1}^{a} \theta_{2FDI\mathrm{i}} \mathrm{FDI}_{t-i} + \sum_{j=0}^{b} \theta_{3PC\mathrm{j}} \mathrm{PC}_{t-j} + \sum_{j=0}^{c} \theta_{4EXR\mathrm{j}} \mathrm{EXR}_{t-j} + \sum_{j=0}^{d} \theta_{5FIN\mathrm{j}} \mathrm{FIN}_{t-j} + \sum_{j=0}^{e} \theta_{6M2gr\mathrm{j}} \mathrm{M2}gr_{t-j} + \sum_{j=0}^{e} \theta_{7ROAD\mathrm{j}} \mathrm{ROAD}_{t-j} \epsilon_t \quad (5)$$

where θ_0 are the drift components in the equations, T are the time trends, and ϵ_t represent the error terms that are assumed to be independent and identically distributed. The FMOLS estimator was chosen for this study, due to its reported greater performance in providing optimal estimates and test statistics in small finite samples, and models with mixed *I*(0), *I*(1) regressors and unit roots, by taking into account the negative effects of serial correlation and endogeneity issues that plague cointegrating regressions (Phillips and Hansen, 1990; Phillips, 1995).

Following the estimation of the long-run relationships amongst the variables - and the subsequent attainment of the long-run coefficients – the following short-run error-correction models were estimated:

$$\Delta \mathrm{FDI}_t = \varphi_0 + \sum_{i=1}^{a} \varphi_{1FDI\mathrm{i}} \Delta \mathrm{FDI}_{t-i} + \sum_{j=0}^{b} \varphi_{2GDP\mathrm{j}} \Delta \mathrm{GDP}_{t-j} + \sum_{j=0}^{c} \varphi_{3IM\mathrm{j}} \Delta \mathrm{IM}_{t-j} + \sum_{j=0}^{d} \varphi_{4EX\mathrm{j}} \Delta \mathrm{EX}_{t-j} + \sum_{j=0}^{e} \varphi_{5LAB\mathrm{j}} \Delta \mathrm{LAB}_{t-j} + \mathrm{ECM}_{t-1} + \epsilon_t \quad (6)$$

$$\Delta \mathrm{FDI}_t = \varphi_0 + \sum_{i=1}^{a} \varphi_{1FDI\mathrm{i}} \Delta \mathrm{FDI}_{t-i} + \sum_{j=0}^{b} \varphi_{2PC\mathrm{j}} \Delta \mathrm{PC}_{t-j} + \sum_{j=0}^{c} \varphi_{3EXR\mathrm{j}} \Delta \mathrm{EXR}_{t-j} + \sum_{j=0}^{d} \varphi_{4FIN\mathrm{j}} \Delta \mathrm{FIN}_{t-j} + \sum_{j=0}^{e} \varphi_{5M2gr\mathrm{j}} \Delta \mathrm{M2}gr_{t-j} + \sum_{j=0}^{e} \varphi_{6ROAD\mathrm{j}} \Delta \mathrm{ROAD}_{t-j} + \mathrm{ECM}_{t-1} + \epsilon_t \quad (7)$$

where Δ represent the first difference operators; φ_0 are the drift components in the equations; ECM_{t-1} are the error correction terms obtained from the long-run associations, whose significance indicate the inclination of the variables to revert to their long-run equilibrium relationships; and ϵ_t represent the error terms that are assumed to be independent and identically distributed.

4.2.4. Granger Causality Analysis

Should we find cointegration amongst the variables in question, then the final step would be to employ a VECM to test for short- and long-run Granger causality. On the other hand, if a cointegrating relationship is not found among the variables, a first-difference form of a VAR model could similarly be employed to test for the existence of only the short-run Granger causality as well. In the case of cointegration, the following VECM is estimated, which can be expressed as the following systems equations:

$$\Delta \begin{bmatrix} \mathrm{FDI} \\ \mathrm{GDP} \\ \mathrm{IM} \\ \mathrm{EX} \\ \mathrm{LAB} \end{bmatrix}_t = \begin{bmatrix} \sigma_1 \\ \sigma_2 \\ \sigma_3 \\ \sigma_4 \\ \sigma_5 \end{bmatrix} + \sum_{p=0}^{q} \begin{bmatrix} w_{11} & w_{12} & w_{13} & w_{14} & w_{15} \\ w_{21} & w_{22} & w_{23} & w_{24} & w_{25} \\ w_{31} & w_{32} & w_{33} & w_{34} & w_{35} \\ w_{41} & w_{42} & w_{43} & w_{44} & w_{45} \\ w_{51} & w_{52} & w_{53} & w_{54} & w_{55} \end{bmatrix}_p \times \Delta \begin{bmatrix} \mathrm{FDI} \\ \mathrm{GDP} \\ \mathrm{IM} \\ \mathrm{EX} \\ \mathrm{LAB} \end{bmatrix}_{t-p} + \begin{bmatrix} \pi_1 \\ \pi_2 \\ \pi_3 \\ \pi_4 \\ \pi_5 \end{bmatrix} \times \mathrm{ECM}_{t-1} + \begin{bmatrix} \epsilon_1 \\ \epsilon_2 \\ \epsilon_3 \\ \epsilon_4 \\ \epsilon_5 \end{bmatrix}_t \quad (8)$$

$$\Delta \begin{bmatrix} \mathrm{FDI} \\ \mathrm{PC} \\ \mathrm{EXR} \\ \mathrm{FIN} \\ \mathrm{M2}gr \\ \mathrm{ROAD} \end{bmatrix}_t = \begin{bmatrix} \sigma_1 \\ \sigma_2 \\ \sigma_3 \\ \sigma_4 \\ \sigma_5 \\ \sigma_6 \end{bmatrix} + \sum_{p=0}^{q} \begin{bmatrix} w_{11} & w_{12} & w_{13} & w_{14} & w_{15} & w_{16} \\ w_{21} & w_{22} & w_{23} & w_{24} & w_{25} & w_{26} \\ w_{31} & w_{32} & w_{33} & w_{34} & w_{35} & w_{36} \\ w_{41} & w_{42} & w_{43} & w_{44} & w_{45} & w_{46} \\ w_{51} & w_{52} & w_{53} & w_{54} & w_{55} & w_{56} \\ w_{61} & w_{62} & w_{63} & w_{64} & w_{65} & w_{66} \end{bmatrix}_p \times \Delta \begin{bmatrix} \mathrm{FDI} \\ \mathrm{PC} \\ \mathrm{EXR} \\ \mathrm{FIN} \\ \mathrm{M2}gr \\ \mathrm{ROAD} \end{bmatrix}_{t-p} + \begin{bmatrix} \pi_1 \\ \pi_2 \\ \pi_3 \\ \pi_4 \\ \pi_5 \\ \pi_6 \end{bmatrix} \times \mathrm{ECM}_{t-1} + \begin{bmatrix} \epsilon_1 \\ \epsilon_2 \\ \epsilon_3 \\ \epsilon_4 \\ \epsilon_5 \\ \epsilon_6 \end{bmatrix}_t \quad (9)$$

where Δ represent the first difference operators; σ_i (i = 1, … , n) represent the intercepts of the models; ECM_{t-1} is the one period lagged error-correction term, whose significance indicates the presence of long-run causality; and the ϵ_{it} are serially uncorrelated random disturbance terms with zero mean. q's represent the lag lengths, and p's represent the lag orders. Short-run causality is derived from a significant joint F-test on the lagged explanatory variables; with the null hypothesis of no short-run causality, H_0: $w_{ij} = 0$ (i,j = 1, … , n), against the alternative hypothesis, H_1: $w_{ij} \neq 0$.

5. EMPIRICAL FINDINGS

In this section, the results of the econometric tests described in section 4 - and employed in this study - are reported. Due to the relatively small sample of data used, the results should be viewed with slight caution. *Table 3* reports the descriptive statistics and the correlation matrix. The results from the Jarque-Bera test confirm that all the variables, namely FDI_t, GDP_t, PC_t, LAB_t, EXR_t, IM_t, EX_t, FIN_t, $\mathrm{M2}gr_t$, and ROAD_t are normally distributed. From the correlation matrix, we can see that FDI_t has strong correlations with GDP_t, PC_t, LAB_t, EXR_t, IM_t, EX_t, and ROAD_t.

5.1. Stationarity and Cointegration Tests

From *Table 4* we can see that according to the ADF and PP unit root tests, none of the variables are integrated of order higher than $I(1)$. Furthermore, since the dependent variable is $I(1)$, and the independent variables are mutually integrated of order $I(0)$ and $I(1)$, the bounds testing approach to cointegration is deemed an appropriate methodology for this study. As the bounds testing approach to cointegration is sensitive to the ARDL model's choice of lag order, we set the maximum lag order to 3 years with the optimal ARDL model being selected based on the Schwarz Information Criterion (SIC) for consistent estimators.

Table-3. Descriptive statistics and correlation matrix results.

Variable	FDI	GDP	PC	LAB	EXR	IM	EX	FIN	M2*gr*	ROAD
Mean	18.488	21.608	6.876	13.841	1021.337	21.069	20.894	2.976	14.829	8.490
Median	18.450	21.478	6.759	13.839	1146.543	20.953	20.692	2.995	19.378	8.642
Maximum	21.715	22.424	7.540	14.099	1817.939	22.212	22.042	4.208	47.524	9.151
Minimum	14.213	21.117	6.485	13.590	35.833	19.865	19.636	1.857	-24.407	8.031
Std. Dev	1.937	0.412	0.333	0.161	427.164	0.698	0.676	1.623	20.577	0.391
Skewness	-0.157	0.573	0.607	0.038	-0.631	0.258	0.080	0.046	-0.210	0.158
Kurtosis	2.418	2.068	2.092	1.729	2.925	1.950	1.836	2.334	2.114	1.428
Jarque-Bera	0.419	2.091	2.204	1.553	1.532	1.311	1.323	0.433	0.921	2.465
Probability	0.811	0.351	0.332	0.460	0.465	0.519	0.516	0.805	0.631	0.292
FDI	1.000									
GDP	0.881	1.000								
PC	0.873	1.000	1.000							
LAB	0.937	0.973	0.968	1.000						
EXR	0.856	0.848	0.836	0.924	1.000					
IM	0.940	0.967	0.964	0.964	0.839	1.000				
EX	0.919	0.954	0.952	0.957	0.843	0.980	1.000			
FIN	0.535	0.788	0.795	0.724	0.532	0.705	0.680	1.000		
M2*gr*	0.183	0.088	0.079	0.188	0.169	0.105	0.124	0.048	1.000	
ROAD	0.883	0.961	0.960	0.965	0.839	0.946	0.954	0.815	0.160	1.000

Source: Compiled and calculated by the authors using data obtained from the WDB (2015) using Eviews 9 econometrics software.

Table-4. ADF and PP unit root test results.

Variables	ADF							PP						
	I(0)			*I*(1)				*I*(0)				*I*(1)		
	No C or T	C	C+T	No C or T	C	C+T		No C or T	C	C+T		No C or T	C	C+T
FDI	1.19 (0)	-2.51 (0)	-3.26 (3)	-4.61 (0) ***	-4.49 (0) ***	-4.69 (0) ***		1.18 (0)	-2.51 (0)	-2.70 (1)		-4.58 (1) ***	-4.49 (0) ***	-4.69 (0) ***
GDP	2.85 (1)	3.39 (0)	-1.18 (0)	-1.20 (0)	-3.07 (0) **	-4.43 (1) ***		4.86 (2)	5.55 (6)	-1.11 (4)		-1.08 (5)	-3.05 (3) **	-4.30 (7) ***
PC	2.88 (1)	2.84 (0)	-1.40 (0)	-1.55 (0)	-3.27 (0) **	-4.44 (1) ***		4.52 (1)	4.58 (6)	-1.38 (3)		-1.50 (4)	-3.25 (3) **	-4.42 (7) ***
LAB	7.23 (1)	0.49 (1)	-4.28 (0) ***	-0.06 (3)	-7.97 (0) ***	-7.85 (0) ***		30.80 (13)	0.67 (12)	-4.28 (0)		-1.53 (2)	-10.85 (10) ***	-14.52 (15) ***
EXR	2.36 (0)	-1.55 (0)	-2.56 (0)	-2.72 (0) ***	-3.67 (0) ***	-3.29 (0) *		2.11 (1)	-1.55 (2)	-2.59 (1)		-2.72 (0) ***	-3.67 (1) ***	-3.29 (1) *
IM	1.96 (0)	1.51 (3)	-3.06 (1)	-7.19 (0) ***	-3.53 (1) ***	-3.40 (1) *		3.77 (5)	-1.04 (1)	-3.56 (1) **		-6.65 (2) ***	-8.88 (4) ***	-12.27 (12) ***
EX	3.39 (1)	0.47 (1)	-4.06 (0) **	-0.57 (3)	-11.40 (0) ***	-11.24 (0) ***		2.78 (1)	-1.01 (2)	-4.21 (2) **		-7.82 (2) ***	-10.77 (1) ***	-11.57 (3) ***
FIN	1.01 (1)	0.09 (1)	-4.49 (0) ***	-7.45 (0) ***	-7.50 (0) ***	-8.16 (0) ***		0.14 (2)	-1.41 (3)	-4.49 (0) ***		-7.34 (1) ***	-7.50 (0) ***	-8.16 (0) ***
M2gr	-3.45 (0) ***	-4.63 (0) ***	-4.84 (0) ***	-5.09 (2) ***	-4.91 (2) ***	-4.85 (2) ***		-3.44 (1) ***	-4.63 (1) ***	-4.85 (2) ***		-13.09 (12) ***	-12.72 (12) ***	-16.98 (11) ***
ROAD	2.55 (0)	0.16 (0)	-2.29 (0)	-3.81 (0) ***	-4.88 (0) ***	-4.90 (0) ***		2.55 (0)	0.16 (0)	-2.29 (1)		-3.85 (2) ***	-4.88 (1) ***	-4.89 (1) ***

Notes: C denotes the constant term; T denotes the trend term; ( ) denotes the optimal lag order or bandwidth for the ADF and PP unit root tests, respectively; * denotes significance at the 10% level; ** denotes significance at the 5% level; and *** denotes significance at the 1% level.

Source: Compiled and analyzed by the authors using data obtained from the WDB (2015) using Eviews 9 econometrics software.

Table 5 reports the results of the bounds testing approach to cointegration, from which we can see that the null hypothesis of no cointegration is rejected at the 10% or 1% significance levels for all models, except for models F_{PC}(PC | FDI, EXR, FIN, M2gr, ROAD) and F_{ROAD}(ROAD | FDI, PC, EXR, FIN, M2gr), indicating that FDI and its determinants do share meaningful long-run equilibrium relationships.

Table-5. Results from the ARDL bounds testing approach to cointegration.

No.		Model	ARDL	F-stat	Nar (p)	Conclusion
1 a	*F*(FDI|	GDP, IM, EX, LAB)	(2,2,1,2,2)	11.299	***	Cointegrated
b	*F*(GDP|	FDI, IM, EX, LAB)	(1,2,0,2,2)	17.596	***	Cointegrated
b	*F*(IM|	FDI, GDP, EX, LAB)	(1,2,2,2,2)	19.022	***	Cointegrated
c	*F*(EX|	FDI, GDP, IM, LAB)	(2,2,2,1,2)	14.601	***	Cointegrated
d	*F*(LAB|	FDI, GDP, IM, EX)	(1,2,2,1,2)	7.082	***	Cointegrated
2 a	*F*(FDI|	PC, EXR, FIN, M2*gr*, ROAD)	(1,0,0,0,0,1)	7.287	***	Cointegrated
b	F(PC|	FDI, EXR, FIN, M2*gr*, ROAD)	(2,0,0,0,1,0)	2.442		Not-cointegrated
c	*F*(EXR|	FDI, PC, FIN, M2*gr*, ROAD)	(2,2,1,2,2,2)	14.302	***	Cointegrated
d	*F*(FIN|	FDI, PC, EXR, M2*gr*, ROAD)	(1,0,0,0,0,0)	4.531	*	Cointegrated
e	*F*(M2*gr*|	FDI, PC, EXR, FIN, ROAD)	(1,1,1,0,0,1)	6.750	***	Cointegrated
f	*F*(ROAD|	FDI, PC, EXR, FIN, M2*gr*)	(1,0,0,0,0,0)	1.306		Not-cointegrated
	Lower bound critical value for *k*=4		3.097 *	3.715 **	5.205 ***	
	Upper bound critical value for *k*=4		4.118 *	4.878 **	6.640 ***	
	Lower bound critical value for *k*=5		2.907 *	3.504 **	4.850 ***	
	Upper bound critical value for *k*=5		4.010 *	4.743 **	6.473 ***	

Notes: ARDL denotes the selected ARDL model based on the SIC; Nar (p) denotes the level of statistical significance based on critical values obtained from Narayan (2005) for case IV of unrestricted intercept and restricted trend; * denotes significance at the 10% level; ** denotes significance at the 5% level; and *** denotes significance at the 1% level.

Source: Compiled and analyzed by the authors using data obtained from the WDB (2015) using Eviews 9 econometrics software.

From *Table 6*, we can see that the 2 main models of interest – F_{FDI}(FDI | GDP, IM, EX, LAB) and F_{FDI}(FDI | PC, EXR, FIN, M2*gr*, ROAD) – are free from problems associated with serial correlation, heteroskedasticity, or/and model misspecification, as can be witnessed from the results of the Breusch-Godfrey, Breusch-Pagan-Godfrey, ARCH LM, and Ramsey RESET tests. This coupled with the relatively high R-squared statistics of the models suggest the suitability of the selected ARDL models, and the high reliability and consistency of the cointegration estimates.

Table-6. Results of the diagnostic tests conducted on the models of interest.

No.		Model	ARDL	F-stat	Breusch-Godfrey [1]	Breusch-Pagan-Godfrey	ARCH LM [1]	Ramsey RESET [1]	R-squared	Adj.R-squared
1 a	*F*(FDI|	GDP, IM, EX, LAB)	(2,2,1,2,2)	11.299 ***	[1] 1.493 (0.222)	4.202 (0.989)	[1] 0.003 (0.960)	[1] 0.763 (0.416)	0.908	0.736
					[2] 3.288 (0.193)		[2] 0.555 (0.758)	[2] 0.417 (0.680)		
2 a	*F*(FDI|	PC, EXR, FIN, M2*gr*, ROAD)	(1,0,0,0,0,1)	7.287 ***	[1] 0.008 (0.931)	13.247 (0.104)	[1] 0.060 (0.806)	[1] 0.616 (0.448)	0.797	0.672
					[2] 0.210 (0.900)		[2] 2.235 (0.327)	[2] 1.655 (0.235)		

Notes: The SIC statistic was used to select the optimal lag order; ( ) refers to the p-values associated with the test; [ ] refers to the diagnostics test order; * denotes significance at the 10% level; ** denotes significance at the 5% level; and *** denotes significance at the 1% level.

Source: Compiled and analyzed by the authors using data obtained from the WDB (2015) using Eviews 9 econometrics software.

5.2. Long- and Short-Run Relationship Analyses

Now that we have established the existence of cointegrating relationships, the next step is to investigate the long-run relationship between FDI and its determinants, the results of which are reported in *Table 7*. OLS estimation

results are also provided alongside those of the FMOLS estimation for comparative purposes. Results from *Table 7* show that the coefficient estimates of the variables – and their subsequent levels of significance - do not vary greatly between the 2 estimation methods. According to the FMOLS estimation, on the one hand FDI flows into Mongolia respond positively to increases in imports, which is consistent with the findings of Ahmed *et al.* (2011) in Sub-Saharan African countries. On the other hand, FDI responds negatively to increases: (a) in GDP, which supports the findings of Enu *et al.* (2013) in Ghana, and Onuorah and Nnenna (2013) in Nigeria; (b) GDP per capita, which corroborates the findings of Yu and Walsh (2010); (c) labor population, which upholds the findings of Belloumi (2014) in Tunisia; (d) exchange rate depreciation, which confirms the findings of Angelo *et al.* (2010) in Brazil, and Moosa and Cardak (2006) and Yu and Walsh (2010) in developing countries; and (e) financial development, which is consistent with the findings of Anyanwu (2011) in African regions.

More specifically, the FMOLS estimation results suggest that a 1% increase in the value of imports would translate into a 1.23% increase in FDI inflows in the long-run. On the other hand, a 1% increase in GDP, GDP per capita, labor population, and financial development would result in a subsequent 0.99%, 6.06%, 16.32%, and 0.95% decrease in FDI inflows, respectively. Moreover, a 1 unit depreciation of the currency exchange rate would decrease FDI flows by 0.005% in the long-run. The magnitude of the negative effect of the currency exchange rate depreciation is clarified when we realize that according to model *2a*, the 294-unit currency depreciation that resulted from 2013 to 2014 would give way to a 1.36% decrease in FDI in the long-run. Out of the variables studied, EX, M2*gr*, and ROAD were not found to have significant long-run impacts on FDI.

Table-7. Long-run coefficients.

Model	Variables	Long-run equation - FMOLS				Long-run equation - OLS			
		Coefficients	Std. Error	t-Statistics		Coefficients	Std. Error	t-Statistics	
1a	Constant	226.6859	85.42007	2.653778 (0.0452) **		254.4176	212.2565	1.198633 (0.2759)	
FDI	Trend	0.553046	0.141667	3.903840 (0.0114) **	R-squared	0.598431	0.348885	1.715265 (0.1371)	R-squared
[2,2,1,2,2]	GDP	-0.987865	0.206739	-4.778328 (0.0050) ***	0.992079	-1.054221	0.582574	-1.809591 (0.1203)	0.993334
	IM	1.234894	0.109904	11.23608 (0.0001) ***	Adj. R-squared	1.247502	0.262518	4.752062 (0.0032) ***	Adj. R-squared
	EX	0.263864	0.192918	1.367754 (0.2297)	0.969901	0.320857	0.504493	0.635999 (0.5483)	0.977779
	LAB	-16.31777	6.433222	-2.536485 (0.0521) *		-18.36341	16.00562	-1.147310 (0.2949)	
2a	Constant	65.39047	18.73709	3.489895 (0.0045) ***		52.27601	12.99341	4.023272 (0.0014) ***	
FDI	Trend	0.931231	0.204507	4.553549 (0.0007) ***	R-squared	0.787081	0.129239	6.090119 (0.0000) ***	R-squared
[1,0,0,0,0,1]	PC	-6.061103	2.458750	-2.465116 (0.0298) **	0.973368	-4.515748	1.609632	-2.805454 (0.0149) **	0.971608
	EXR	-0.004614	0.001295	-3.562866 (0.0039) ***		-0.003993	0.000938	-4.254788 (0.0009) ***	
	FIN	-0.953824	0.500210	-1.906848 (0.0808) *	Adj. R-squared	-0.678163	0.353528	-1.918272 (0.0773) *	Adj. R-squared
	M2*gr*	-0.006233	0.005696	-1.094301 (0.2953)	0.955613	-0.004954	0.004975	0.995756 (0.3375)	0.954135
	ROAD	-0.931067	1.285792	0.724119 (0.4829)		-0.621891	1.130621	-0.550043 (0.5916)	

Notes: ( ) refers to the p-values; [ ] refers to the selected ARDL model based on the SIC statistic; * denotes significance at the 10% level; ** denotes significance at the 5% level; and *** denotes significance at the 1% level.

Source: Compiled and analyzed by the authors using data obtained from the WDB (2015) using Eviews 9 econometrics software.

Table-8. Short-run coefficients.

Model	Variables	Short-run equation			Diagnostic tests			
		Coefficients	Std. Error	t-Statistics				
1 a	Constant	827.8688	74.48403	11.11472 (0.0000) ***				
ΔFDI	ΔGDP	9.041017	2.630860	3.436525 (0.0056) ***	ECM(t-1) t-statistic	-11.11256 (0.0000) ***	Breusch-Godfrey LM	0.514972 (0.4730)
[1,1,0,1,1]	ΔIM	5.883992	0.484748	12.13825 (0.0000) ***	R-squared	0.949086	Breusch-Pagan-Godfrey	6.680600 (0.6703)
	ΔEX	-4.290557	0.506271	-8.474819 (0.0000) ***	Adj. R-squared	0.907428	ARCH	1.716227 (0.1902)
	ΔLAB	26.56845	5.682787	4.675250 (0.0007) ***	F-statistic	22.78320 (0.0000) ***	Ramsey RESET	0.826841 (0.3846)
2 a	Constant	99.63341	16.55761	6.017379 (0.0001) ***				
ΔFDI	ΔPC	4.092238	3.150529	1.298905 (0.2231)	ECM(t-1) t-statistic	-5.973139 (0.0001) ***	Breusch-Godfrey LM	0.666446 (0.4143)
[1,1,0,2,0,0]	ΔEXR	-0.001549	0.001116	-1.388056 (0.1953)	R-squared	0.913138	Breusch-Pagan-Godfrey	7.279292 (0.6081)
	ΔFIN	-1.278117	0.256603	-4.980909 (0.0006) ***	Adj. R-squared	0.834962	ARCH	0.071893 (0.7886)
	ΔM2*gr*	-0.006549	0.002664	-2.458828 (0.0337) **	F-statistic	11.68053 (0.0003) ***	Ramsey RESET	2.712431 (0.1340)
	ΔROAD	0.024958	0.732460	0.034074 (0.9735)				

Notes: ( ) refers to the p-values; [ ] refers to the selected ARDL model based on the SIC statistic; * denotes significance at the 10% level; ** denotes significance at the 5% level; and *** denotes significance at the 1% level. 1a ECM(t-1) = (FDI – (226.6859 + 0.553046*T - 0.987865*GDP + 1.234894*IM + 0.263864*EX - 16.31777*LAB)). 2a ECM(t-1) = (FDI – (65.39047 + 0.931231*T - 6.061103*PC - 0.004614*EXR - 0.953824*FIN - 0.006233*M2gr - 0.931067*ROAD)).

Source: Compiled and analyzed by the authors using data obtained from the WDB (2015) using Eviews 9 econometrics software.

When we analyze the short-run relationships between FDI and its determinants (*Table 8*), we are greeted with a different scenario. According to the results from the short-run models, FDI responds significantly and positively to increases in GDP, LAB, and IM; and significantly and negatively to increases in EX, FIN, and M2*gr*. More interestingly, the magnitude of the short-run positive impacts of GDP and LAB, 9.04% and 26.57% respectively, largely outweigh their long-run negative impacts on FDI; and the short-run negative effect of FIN on FDI is also larger than its long-run negative counterpart. On the other hand, the influences of PC, EXR, and ROAD on FDI were found to be insignificant in the short-run. Moreover, the significant negative sign of the one period lagged error-correction terms [ECM(t-1)] at the 1% level for both models suggest that any short-run disequilibrium will be corrected and adjusted towards the long-run equilibrium.

5.3. Granger Causality Analysis

With the existence of cointegrating relationships between FDI and its determinants comes the subsequent inquiry of Granger causality. Therefore, we are brought to the last step of our study - ascertaining the direction of Granger causality between the variables via the Granger causality technique within the VECM framework (*Tables 9* and *10*) to further strengthen our findings. The significant negative signs of the one period lagged error-correction terms [ECM(t-1)] at the 5% level or better for all models, except for models 2*b* and 2*f*, support our previous results from the bounds test that imply bidirectional causality between FDI and GDP, LAB, EXR, IM, and FIN; and unidirectional causality running from PC to FDI, in the long run. In terms of short-run Granger causality, the results exhibit unidirectional causality running from FIN to FDI. Bidirectional causality is also found between: (1) FDI and GDP; (2) FDI and IM; (3) FDI and EX; (4) FDI and LAB; and (5) FDI and EXR.

Table-9. Granger causality results based on a VECM framework for models 1*a* – 1*e*.

Variables	Models				
	ΔFDI(1a)	**ΔGDP(1b)**	**ΔIM(1c)**	**ΔEX(1d)**	**ΔLAB(1e)**
∑ΔFDI(t-i)	---	27.94030 (0.0000) ***	209.7983 (0.0000) ***	90.91487 (0.0000) ***	25.97627 (0.0000) ***
∑ΔGDP(t-i)	36.67063 (0.0000) ***	---	81.89347 (0.0000) ***	98.35204 (0.0000) ***	25.70786 (0.0000) ***
∑ΔIM(t-i)	93.08924 (0.0000) ***	9.486542 (0.0235) **	---	113.5239 (0.0000) ***	38.03626 (0.0000) ***
∑ΔEX(t-i)	81.49630 (0.0000) ***	29.66545 (0.0000) ***	122.0523 (0.0000) ***	---	52.45764 (0.0000) ***
∑ΔLAB(t-i)	64.11406 (0.0000) ***	26.05227 (0.0000) ***	79.09154 (0.0000) ***	61.50168 (0.0000) ***	---
ECM(t-1) (t-Statistic)	-5.451762 (0.0055) ***	-3.247309 (0.0476) **	-12.97529 (0.0000) ***	-11.99974 (0.0000) ***	-7.541301 (0.0000) ***
Direction of causality	GDP --> FDI	FDI --> GDP	FDI --> IM	FDI --> EX	FDI --> LAB
	IM --> FDI	IM --> GDP	GDP --> IM	GDP --> EX	GDP --> LAB
	EX --> FDI	EX --> GDP	EX --> IM	IM --> EX	IM --> LAB
	LAB --> FDI	LAB --> GDP	LAB --> IM	LAB --> EX	EX --> LAB

Notes: ( ) refers to the p-values; [ ] refers to the selected ARDL model based on the SIC statistic; * denotes significance at the 10% level; ** denotes significance at the 5% level; and *** denotes significance at the 1% level.

Source: Compiled and analyzed by the authors using data obtained from the WDB (2015) using Eviews 9 econometrics software.

Table-10. Granger causality results based on a VECM framework for models 2*a* – 2*f*.

Variables	Models					
	ΔFDI(2a)	**ΔPC(2b)**	**ΔEXR(2c)**	**ΔFIN(2d)**	**ΔM2*gr*(2e)**	**ΔROAD(2f)**
∑ΔFDI(t-i)	---	0.511060 (0.6163)	4.368929 (0.0522) *	1.475123 (0.2849)	1.635117 (0.2539)	1.069301 (0.3831)
∑ΔPC(t-i)	0.270270 (0.7699)	---	1.816791 (0.2236)	0.070567 (0.9324)	1.515094 (0.2767)	0.130384 (0.8794)
∑ΔEXR(t-i)	4.035762 (0.0614) *	2.561967 (0.1316)	---	0.161453 (0.8536)	1.261222 (0.3341)	0.038665 (0.9622)
∑ΔFIN(t-i)	5.389619 (0.0329) **	0.453283 (0.6493)	0.980090 (0.4162)	---	2.949906 (0.1097)	2.330618 (0.1529)
∑ΔM2*gr*(t-i)	0.419175 (0.6712)	0.001866 (0.9981)	2.817202 (0.1185)	1.875720 (0.2148)	---	0.719805 (0.5129)
∑ΔROAD(t-i)	0.334988 (0.7249)	0.102643 (0.9035)	0.750300 (0.5028)	5.187444 (0.0359) **	4.963261 (0.0397) **	---
ECM(t-1) (t-Statistic)	-2.448814 (0.0400) **	---	-3.332005 (0.0104) **	-2.971831 (0.0178) **	-5.446339 (0.0006) ***	---
Direction of causality	EXR --> FDI		FDI --> EXR	ROAD --> FIN	ROAD --> M2gr	
	FIN --> FDI					

Notes: ( ) refers to the p-values; [ ] refers to the selected ARDL model based on the SIC statistic; * denotes significance at the 10% level; ** denotes significance at the 5% level; and *** denotes significance at the 1% level.

Source: Compiled and analyzed by the authors using data obtained from the WDB (2015) using Eviews 9 econometrics software.

Finally, *Fig. 3* and *Fig. 4* show the plots of cumulative sum of recursive residuals (CUSUM) and cumulative sum of squares of recursive residuals (CUSUMQ) tests of the 2 main FDI_t models, which together reflect the reliability,

stability, and consistency of the cointegration estimates in the long- run, as all residuals were found to be within the critical bounds of the 5% significance level.

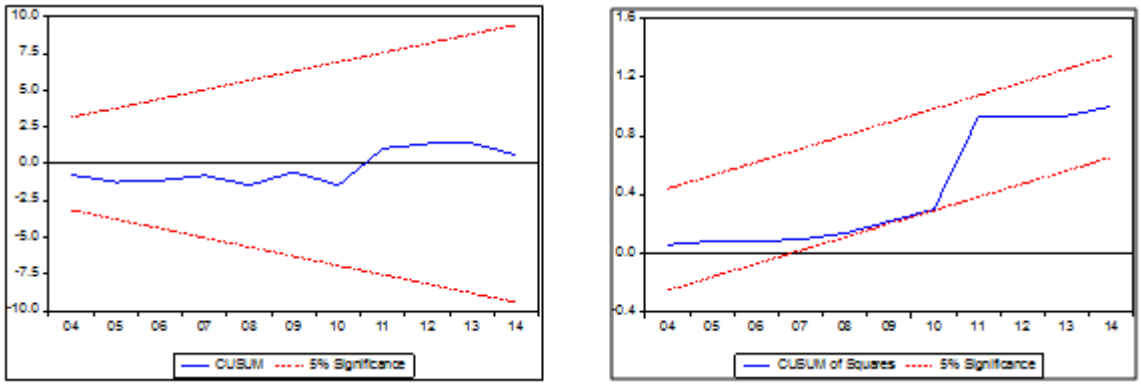

Fig-3. FDI_t | GDP_t, IM_t, EX_t, LAB_t model CUSUM and CUSUMQ.
Source: The Output of CUSUM and CUSUMQ were retrieved from Eviews 9 econometric software.

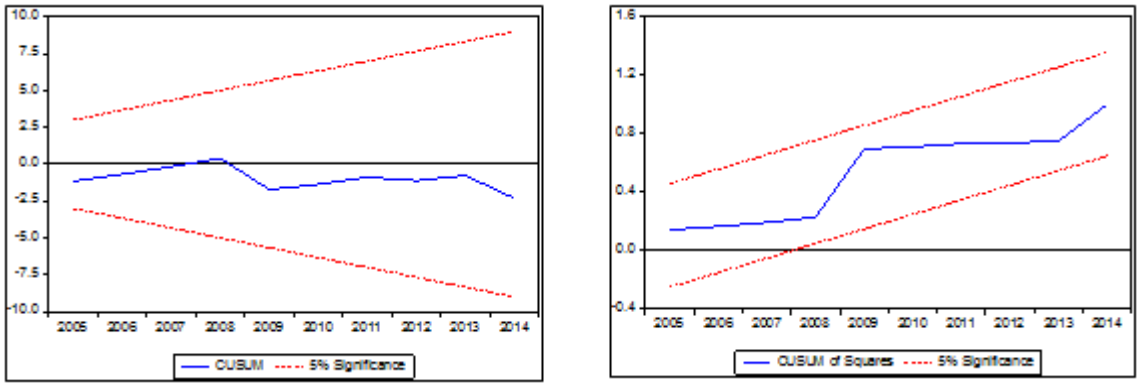

Fig-4. FDI_t | PC_t, EXR_t, FIN_t, $M2gr_t$, $ROAD_t$ model CUSUM and CUSUMQ.
Source: The Output of CUSUM and CUSUMQ were retrieved from Eviews 9 econometric software.

6. DISCUSSION AND POLICY IMPLICATIONS OF FINDINGS

The findings of this study are primarily intended to assist Mongolian policy makers in making a more informed decision when formulating policies aimed at attracting FDI. First and foremost, Mongolian authorities must be responsive to the detrimental effects of macroeconomic instability on investor confidence, as evidenced through the significantly negative long-run impact of exchange rate depreciation on FDI inflows, and the bidirectional short- and long-run Granger causal relationships shared between them. This does not come as a surprise as FDI is considered a long-term investment, and FDI primarily geared towards the extractive nature – as is the case for Mongolia – has relatively higher sunk costs.

The negative short- and long run influences of financial development on Mongolia, indicated by the growth in money supply and the degree to which domestic credit is provided by the financial sector, were unexpected and stand in stark contrast to the findings of previous empirical studies. However, it could be explained with the following reasonings. Firstly, according to Dutta and Roy (2011) financial development means little in terms of attracting FDI if the host country exhibits signs of political instability. Therefore, if we control for political instability, the negative relationship between FDI and financial development could perhaps be reversed. Secondly, according to Bilir *et al.* (2013) and Ju and Wei (2010) higher level of financial development is associated with higher entry of new domestic firms and expansion of existing domestic firms. Hence, the increase in domestic competition could negatively affect MNC profits; thereby reducing the attractiveness of the host country. Ultimately, our results indicate that FDI is serving as a substitute for domestic financial market development in Mongolia.

The importance of an open economy in fostering investor assurance in the host country has been well documented, and our results serve evidence to this theory through the bidirectional Granger causality witnessed between FDI and imports, and the significantly positive impact of imports on FDI, in both the short- and long-run. However, contrary to the majority of the findings of past empirical studies, exports were found to significantly and negatively influence FDI inflows, with a bidirectional Granger causality running between FDI and EX, in the short-run. Although the results are contrary to what we initially expected, it is in coherence with the behavior of Chinese FDI – which constitutes a major portion of FDI inflows to Mongolia – as reported by Buckley *et al.* (2007) who iterated that Chinese FDI tend to be defensive, tariff-jumping, and therefore follows imports from China. Moreover, it supports the findings of Napshin and Brouthers (2015) who found FDI inflows to be associated with trade deficits.

Bidirectional Granger causality was found between FDI and labor in both the short- and long-run, as well as a significantly positive impact of labor on FDI in the short-run, which then turns significantly negative in the long-run, implying an inverted U-shaped relationship between them. The long-run negative sign of labor could be an indication of the growing unemployment levels in Mongolia in recent years; low productivity of labor, which does not further induce FDI inflows; and the predominance of FDI directed towards the primary sector that is not labor inducive. Furthermore, the initial short-run positive impact of labor could be argued as MNCs selectively picking the best talents in the country with previous experience and training obtained from local companies, or selectively training a small part of the local force; after which they interchange the existing personnel amongst themselves or continue in attracting high talents from domestic firms, which would explain the subsequent negative impact of labor. Thus our findings showcase the biggest challenge for Mongolia, which would be to delegate the revenues garnered from FDI inflows to sectors that would create a lasting growth effect on the economy - such as health and education - as human capital development is considered one of the key tools of sustainable development.

In terms of the relationship between economic growth and FDI inflows in Mongolia's case, the results are slightly disturbing. Firstly, a bidirectional Granger causal relationship between FDI and GDP in both the short- and long-run, and a unidirectional causality running from PC to FDI in the long-run are witnessed. Secondly, although the short-run impacts of GDP and PC on FDI are positive; the long-run effects turn negative, implying an inverted U-shaped relationship between FDI and domestic market size, much like the relationship between FDI and human capital. This could be due to the following five reasons: (1) the dominance of FDI attracted to the mining sector; (2) the prevalence of vertical FDI in Mongolia; (3) the lack of positive spillover effects from FDI to human capital; (4) inadequate absorptive capacity to benefit from FDI's positive spillovers; and (5) higher levels of FDI leading to reduction of export revenues and increases in the current account imbalance. Thus, our results support those of Davaakhuu *et al.* (2014) who did not find substantial evidence of the positive social impacts of FDI. Finally, despite the widespread belief of the importance of infrastructure development in attracting FDI, we have found no evidence of this in our study for Mongolia.

Seeing as the attraction of FDI has been the leading national development policy of choice for Mongolia since the early 1990s, Mongolian authorities should be attentive in engaging in measures that will translate the expected positive impacts of FDI to sustained economic growth by providing a more constructive environment in which positive spill-over effects may be absorbed; thereby improving social conditions. From a policy standpoint, our findings impress upon policies that aim for exchange rate stabilization, market liberalization, human capital development, and attraction of FDI in sectors other than the primary sector of mining. From a more general point of view, the findings of this study show that for small, open, developing economies, FDI may not lead to inevitable economic growth.

7. CONCLUSION AND FUTURE RESEARCH

The study at hand investigated the determinants of inward FDI in Mongolia by analyzing the short- and long-run relationships among FDI, domestic market size, human capital, macroeconomic uncertainty, financial development, trade barriers, and infrastructure level. In doing so, the ADF and PP unit root tests, the most recently developed ARDL bounds testing approach to cointegration, FMOLS, and the Granger causality test within the VECM framework were employed. Ultimately, the results show significant short- and long-run relationships between FDI and its determinants. Domestic market size and human capital were found to exhibit a U-shaped relationship with FDI inflows, with an initial positive impact on FDI in the short-run, which then turn negative in the long-run. Macroeconomic instability was found to deter FDI inflows in the long-run. In terms of the impact of trade on FDI, imports were found to have a complementary relationship with FDI; while exports and FDI were found to be substitutes in the short-run. Financial development was also found to induce a deterring effect on FDI inflows in both the short- and long-run; thereby also revealing a substitutive relationship between the two. Infrastructure level was not found to be significant on any conventional level, in either the short- or long-run. In terms of Granger causality, bidirectional causality was found between FDI and GDP, EXR, IM, and LAB in both the short- and long-run; between FDI and FIN in the long-run; and between FDI and EX in the short-run. Furthermore, a unidirectional causality was found running from PC to FDI in the long-run; and from FIN to FDI in the short-run.

From a policy point-of-view, our findings suggest that in order to increase FDI inflows, and more importantly translate its benefits to sustained economic growth, Mongolian authorities should aim for further macroeconomic stabilization, market liberalization, human capital development, and attraction of FDI in the export-oriented secondary and tertiary sectors. As for future research, much remains to be done in terms of studying the determinants and impacts of FDI in Mongolia, starting with investigating the influence of other variables not included in this research - such as political and institutional instability - on aggregate FDI. At present many potential FDI determining variables were either not accessible overall, or were insufficient in quantity. Additionally, it would be interesting to further study the qualitative and quantitative determinants - and impacts - of industry-specific FDI, further dissected according to the origin of the FDI.

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REFERENCES

Agiomirgianakis, G., D. Asteriou and K. Papathoma, 2003. The determinants of foreign direct investment: A panel data study for the OECD countries. Discussion Paper Series, City University, London.

Ahmed, A.D., E. Cheng and G. Messinis, 2011. The role of exports, FDI and imports in development: Evidence from Sub-Saharan African countries. Applied Economics, 43(26): 3719-3731. *View at Google Scholar | View at Publisher*

Aitken, B.J. and A.E. Harrison, 1999. Do domestic firms benefit from direct foreign investment? Evidence from Venezuela. American Economic Review, 89(3): 605-618. *View at Google Scholar | View at Publisher*

Alguacil, M., A. Cuadros and V. Orts, 2011. Inward FDI and growth: The role of macroeconomic and institutional environment. Journal of Policy Modeling, 33(3): 481-496. *View at Google Scholar | View at Publisher*

Ang, J.B., 2008. Determinants of foreign direct investment in Malaysia. Journal of Policy Modeling, 30(1): 185-189. *View at Google Scholar | View at Publisher*

Angelo, F.C., R.V. Eunni and M.M.D.N. Fouto, 2010. Determinants of FDI in emerging markets: Evidence from Brazil. International Journal of Commerce and Management, 20(3): 203-216. *View at Google Scholar | View at Publisher*

Anyanwu, J.C., 2011. Determinants of foreign direct investment inflows to Africa, 1980-2007. Working Paper Series No.136. African Development Bank Group, Tunis, Tunisia.

Asian Development Bank, 2014. Asian development outlook 2014: Fiscal policy for inclusive growth. Mandaluyong City, Philippines. Retrieved from https://www.adb.org/sites/default/files/publication/59685/ado2014update_1.pdf. [Accessed 10 December, 2016].

Ayanwale, A.B., 2007. FDI and economic growth: Evidence from Nigeria. AERC Research Paper No. 165. African Economic Research Consortium, Nairobi.

Ayanwale, A.B. and A.S. Bamire, 2001. The influence of FDI on firm level productivity of Nigeria's agro/agro-allied sector. Final Report Presented to the African Economic Research Consortium, Nairobi.

Balasubramanyam, V.N., 2002. Foreign direct investment in developing countries: Determinants and impact. New Horizons for Foreign Direct Investment, 548: 187. *View at Google Scholar*

Barro, R.J., 1988. Government spending in a simple model of endogenous growth. Journal of Political Economy, 98(S5): 103-125.

Bekhet, H.A. and R.W. Al-Smadi, 2015. Determinants of Jordanian foreign direct investment inflows: Bounds testing approach. Economic Modelling, 46: 27-35. *View at Google Scholar | View at Publisher*

Belloumi, M., 2014. The relationship between trade, FDI and economic growth in Tunisia: An application of the autoregressive distributed lag model. Economic Systems, 38(2): 269-287. *View at Google Scholar | View at Publisher*

Bilir, L.K., D. Chor and K. Manova, 2013. Host country financial development and MNC activity. Unpublished Manuscript. Retrieved from http://www.princeton.edu/~ies/IESWorkshopS2013/ManovaPaper.pdf [Accessed 20 November, 2016].

Borensztein, E., J. De Gregorio and J.W. Lee, 1998. How does foreign direct investment affect economic growth? Journal of International Economics, 45(1): 115-135. *View at Google Scholar | View at Publisher*

Buckley, P.J., L.J. Clegg, A.R. Cross, X. Liu, H. Voss and P. Zheng, 2007. The determinants of Chinese outward foreign direct investment. Journal of International Business Studies, 38(4): 499-518. *View at Google Scholar*

Carkovic, M.V. and R. Levine, 2002. Does foreign direct investment accelerate economic growth? University of Minnesota, Department of Finance Working Paper. Minneapolis, Minnesota. Retrieved from https://www.researchgate.net/profile/Ross_Levine/publication/228258222_Does_Foreign_Direct_Investment_Accelerate_Growth/links/02e7e520a712542b37000000.pdf [Accessed 11 December, 2016].

Caves, R., 1996. Multinational firms and economic analysis. Cambridge: Cambridge University Press.

Chakrabarti, A., 2001. The determinants of foreign direct investments: Sensitivity analyses of cross-country regressions. Kyklos, 54(1): 89-114. *View at Google Scholar | View at Publisher*

Cheng, K., 2003. Growth and recovery in Mongolia during transition. IMF Working Paper, WP/03/217.

Choong, C.K. and S.Y. Lam, 2010. The determinants of foreign direct investment in Malaysia: A revisit. Global Economic Review, 39(2): 175-195. *View at Google Scholar | View at Publisher*

Chudnovsky, D. and A. Lopez, 1999. Globalization and developing countries: Foreign direct investment and growth and sustainable human development. UNCTAD/UNDP Global Programme, Globalization, Liberalization and Sustainable Development.

Davaakhuu, O., K. Sharma and Y.M. Bandara, 2014. Foreign direct investment in a transition economy: Lessons from the experience of Mongolia. Global Business Review, 15(4): 663-675. *View at Google Scholar | View at Publisher*

Davaakhuu, O., K. Sharma and Y.M. Bandara, 2015. Determinants of foreign direct investment during economic transition in Mongolia. Australasian Journal of Regional Studies, 21(1): 138-158.

De Mello, L.R., 1999. Foreign direct investment-led growth: Evidence from time series and panel data. Oxford Economic Papers, 51(1): 133-151. *View at Google Scholar | View at Publisher*

Deichmann, J., S. Karidis and S. Sayek, 2003. Foreign direct investment in Turkey: Regional determinants. Applied Economics, 35(16): 1767-1778. *View at Google Scholar | View at Publisher*

Demirbag, M., E. Tatoglu and A. Oyungerel, 2005. Patterns of foreign direct investment in Mongolia, 1990-2003: A research note. Eurasian Geography and Economics, 46(4): 306-318. *View at Google Scholar | View at Publisher*

Demirhan, E. and M. Masca, 2008. Determinants of foreign direct investment flows to developing countries: A cross-sectional analysis. Prague Economic Papers, 17(4): 356-369. *View at Google Scholar | View at Publisher*

Durham, J.B., 2004. Absorptive capacity and the effects of foreign direct investment and equity foreign portfolio investment on economic growth. European Economic Review, 48(2): 285-306. *View at Google Scholar | View at Publisher*

Dutta, N. and S. Roy, 2011. Foreign direct investment, financial development and political risks. Journal of Developing Areas, 44(2): 303-327. *View at Google Scholar | View at Publisher*

Enu, P., E.D.K. Havi and P. Attah-Obeng, 2013. Impact of macroeconomic factors on foreign direct investment in Ghana: A cointegration analysis. European Scientific Journal, 9(28): 331-348. *View at Google Scholar*

Erdal, F. and E. Tatoglu, 2002. Locational determinants of foreign direct investment in an emerging market economy: Evidence from Tukey. Multinational Business Review, 10(1): 21-27. *View at Google Scholar*

Fedderke, J.W. and A.T. Romm, 2006. Growth impact and determinants of foreign direct investment into South Africa, 1956–2003. Economic Modelling, 23(5): 738-760. *View at Google Scholar | View at Publisher*

Foreign Investment and Foreign Trade Agency, 2002. Investment policy: Statement of Mongolia. Government Statement to the Investors' Forum. Ulaanbaatar, Mongolia: Government of Mongolia, Foreign Investment and Foreign Trade Agency.

Frimpong, J.M. and E.F. Oteng-Abayie, 2006. Bounds testing approach: An examination of foreign direct investment, trade, and growth relationships. MPRA Paper, 352. Available from https://mpra.ub.uni-muenchen.de/352/1/MPRA_paper_352.pdf [Accessed 16 November, 2016].

Gupta, P., G.B. Li and J. Yu, 2015. From natural resource boom to sustainable economic growth: Lessons for Mongolia. IMF Working Paper, No. WP/15/90.

Hansen, H. and J. Rand, 2006. On the causal links between FDI and growth in developing countries. World Economy, 29(1): 21-41. *View at Google Scholar | View at Publisher*

Hasan, Z., 2004. Determinants of FDI flows to developing economies: Evidence from Malaysia. Foreign Investment in Developing Countries: 154-170, Palgrave Macmillan UK.

Hsiao, F.S. and M.C.W. Hsiao, 2006. FDI, exports, and GDP in East and Southeast Asia—Panel data versus time-series causality analyses. Journal of Asian Economics, 17(6): 1082-1106. *View at Google Scholar | View at Publisher*

Hymer, S., 1976. The international operations of nation firms: A study of foreign direct investment (1960 Doctoral Dissertation). Cambridge: MIT Press.

IMF, 1997. Press release Number 97/36. Washington. Retrieved from https://www.imf.org/en/News/Articles/2015/09/14/01/49/pr9736 [Accessed 10 December, 2016].

Imoudu, E.C., 2012. The impact of foreign direct investment on Nigeria's economic growth; 1980-2009: Evidence from the Johansen's cointegration approach. International Journal of Business and Social Science, 3(6): 122–134. *View at Google Scholar*

International Monetary Fund, 2007. World economic outlook, October 2007, globalization and inequality. Washington. Retrieved from https://www.imf.org/external/pubs/ft/weo/2007/02/pdf/text.pdf [Accessed 10 December, 2016].

Iwasaki, I. and M. Tokunaga, 2014. Macroeconomic impacts of FDI in transition economies: A meta-analysis. World Development, 61: 53-69. *View at Google Scholar | View at Publisher*

Ju, J. and S.J. Wei, 2010. Domestic institutions and the bypass effect of financial globalization. American Economic Journal: Economic Policy, 2(4): 173–204. *View at Google Scholar | View at Publisher*

Kaynak, E., M. Demirbag and E. Tatoglu, 2007. Determinants of ownership-based entry mode choice of MNEs: Evidence from Mongolia. Management International Review, 47(4): 505-530. *View at Google Scholar | View at Publisher*

Kinoshita, Y. and N.F. Campos, 2003. Why does FDI go where it goes? New evidence from the transition economies. IMF Working Paper No. 573.

Konings, J., 2001. The effects of foreign direct investment on domestic firms: Evidence from firm-level panel data in emerging economies. Economics of Transition, 9(3): 619-633. *View at Google Scholar | View at Publisher*

Krstevska, A. and M. Petrovska, 2012. The economic impacts of the foreign direct investments: Panel estimation by sectors on the case of Macedonian economy. Journal of Central Banking Theory and Practice, 2(1): 55-73. *View at Google Scholar*

Lipsey, R.E., R.C. Feenstra, C.H. Hahn and G.N. Hatsopoulos, 1999. The role of foreign direct investment in international capital flows. International Capital Flow. University of Chicago Press. pp: 307-362.

Lucas, R.E., 1988. On the mechanics of economic development. Journal of Monetary Economics, 22(1): 3-42. *View at Google Scholar*

Malik, S. and Q.A. Malik, 2013. Empirical analysis of macroeconomic indicators as determinants of foreign direct investment in Pakistan. Journal of Business and Management, 7(2): 77-82. *View at Publisher*

Marial, A.Y. and T.T. Ngie, 2009. Estimating the domestic determinants of foreign direct investment flows in Malaysia: Evidence from cointegration and error-correction model. Jurnal Perngurusan, 28(1): 3–22. *View at Google Scholar*

Mishal, Z. and Z. Abulaila, 2007. The impact of foreign direct investment and imports on economic growth: The case of Jordan. Journal of Economic and Administrative Sciences, 23(1): 1-31. *View at Google Scholar | View at Publisher*

Moosa, I.A. and B.A. Cardak, 2006. The determinants of foreign direct investment: An extreme bounds analysis. Journal of Multinational Financial Management, 16(2): 199-211. *View at Google Scholar | View at Publisher*

Morrissey, O. and M. Udomkerdmongkol, 2012. Governance, private investment and foreign direct investment in developing countries. World Development, 40(3): 437 – 445. *View at Google Scholar | View at Publisher*

Napshin, S. and L.E. Brouthers, 2015. Intermediary products: FDI strategies, imports, exports, and trade balances in developed economies. Thunderbird International Business Review, 57(4): 311-322. *View at Google Scholar | View at Publisher*

Narayan, P.K., 2005. The saving and investment nexus for China: Evidence from cointegration tests. Applied Economics, 37(17): 1979–1990. *View at Google Scholar | View at Publisher*

Nwosa, P.I., A.M. Agbeluyi and O.M. Saibu, 2011. Causal relationships between financial development, foreign direct investment and economic growth the case of Nigeria. International Journal of Business Administration, 2(4): 93-102. *View at Google Scholar | View at Publisher*

Oladipo, S.O., 2013. Macroeconomic determinant of foreign direct investment in Nigeria (1985-2010): A GMM approach. Journal of Emerging Issues in Economics, Finance and Banking, 2(4): 801-817. *View at Google Scholar*

Onuorah, A.C. and O.M. Nnenna, 2013. Long run relationship between macroeconomic variables and FDI in Nigeria. Developing Country Studies, 3(1): 162-169. *View at Google Scholar*

Othman, R., N.H.M. Salleh and T. Sarmidi, 2012. Analysis of causal relationship between tourism development, economic growth and foreign direct investment: An ARDL approach. Journal of Applied Sciences, 12(12): 1245-1254. *View at Google Scholar | View at Publisher*

Pesaran, M.H., Y. Shin and R.J. Smith, 2001. Bounds testing approaches to the analysis of level relationships. Journal of Applied Econometrics, 16(3): 289-326. *View at Google Scholar | View at Publisher*

Phillips, P.C., 1995. Fully modified least squares and vector autoregression. Econometrica: Journal of the Econometric Society, 63(5): 1023-1078. *View at Google Scholar | View at Publisher*

Phillips, P.C. and B.E. Hansen, 1990. Statistical inference in instrumental variables regression with I(1) processes. Review of Economic Studies, 57(1): 99-125. *View at Google Scholar | View at Publisher*

Pradhan, R.P., N.R. Norman, Y. Badir and B. Samadhan, 2013. Transport infrastructure, foreign direct investment and economic growth interactions in India: The ARDL bounds testing approach. Procedia-Social and Behavioral Sciences, 104: 914-921. *View at Google Scholar | View at Publisher*

Pradhan, R.P., D. Saha and V. Gupta, 2011. Determinants of FDI in SAARC countries: An investigation using panel VAR model. Information Management and Business Review, 3(2): 117–126. *View at Google Scholar*

Romer, P.M., 1986. Increasing returns and long-run growth. Journal of Political Economy, 94(5): 1002-1037. *View at Google Scholar | View at Publisher*

Shahrudin, N., Z. Yusof and N.M. Satar, 2010. Determinants of foreign direct investment in Malaysia: What matters most. International Review of Business Research Papers, 6(6): 235-245. *View at Google Scholar*

Singhania, M. and A. Gupta, 2011. Determinants of foreign direct investment in India. Journal of International Trade Law and Policy, 10(1): 64-82. *View at Google Scholar*

Smarzynska, B. and M. Spatareanu, 2002. FDI spillovers through backward linkages in Romania: Some determinants. World Bank, Mimeo.

Solow, R.M., 1956. A contribution to the theory of economic growth. Quarterly Journal of Economics, 70(1): 65-94. *View at Google Scholar | View at Publisher*

Sun, H., 2011. Co-integration study of relationship between foreign direct investment and economic growth. International Business Research, 4(4): 226-230. *View at Google Scholar | View at Publisher*

Swan, T.W., 1956. Economic growth and capital accumulation. Economic Record, 32(2): 334-361. *View at Google Scholar*

Tang, C.F., C.Y. Yip and I. Ozturk, 2014. The determinants of foreign direct investment in Malaysia: A case for electrical and electronic industry. Economic Modelling, 43: 287-292. *View at Google Scholar | View at Publisher*

Tiwari, A.K. and M. Mutascu, 2011. Economic growth and FDI in Asia: A panel-data approach. Economic Analysis and Policy, 41(2): 173-187. *View at Google Scholar | View at Publisher*

UNCTAD, 2001. World investment report: Promoting linkages. New York and Geneva: United Nations.

UNCTAD, 2002. World investment report: Transnational corporations and export competitiveness. New York and Geneva: United Nations.

UNCTAD, 2003. World investment report: FDI policies for development: National and international perspectives. New York and Geneva: United Nations.

UNCTAD, 2004. World investment report: The shift towards services. New York and Geneva: United Nations.

UNCTAD, 2005. World investment report: Transnational corporations and the internationalization of R&D. New York and Geneva: United Nations.

UNCTAD, 2006. World investment report: FDI from developing and transition economies: Implications for development. New York and Geneva: United Nations.

UNCTAD, 2007. World investment report: Transnational corporations, extractive industries and development. New York and Geneva: United Nations.

UNCTAD, 2008. World investment report: Transnational corporations and the infrastructure challenge. New York and Geneva: United Nations.

UNCTAD, 2011. World investment report: Non equity modes of international production and development. Switzerland: United Nations.

UNCTAD, 2012. World investment report: Towards a new generation of investment policies. Switzerland: United Nations.

UNCTAD, 2014. World investment report: Investing in the SDGs: An action plan. Switzerland: United Nations.

UNCTAD, 2015. World investment report: Reforming international investment governance. Geneva: United Nations.

United Nations Conference on Trade and Development, 1992. World investment report: Transnational corporations as engines of growth. New York: United Nations.

United Nations Development Programme, 2000. Human development report Mongolia 2000: Reorienting the state. Ulaanbaatar, Mongolia: United Nations Development Programme.

United States Agency for International Development, 2007. Foreign direct investment in Mongolia: An interactive case study. Nathan Associates Inc., United States Agency for International Development. Retrieved from http://pdf.usaid.gov/pdf_docs/Pnadk050.pdf.[Accessed 11 December, 2016].

Wang, J. and M. Blomström, 1992. Foreign investment and technology transfer: A simple model. European Economic Review, 36(1): 137–155. *View at Google Scholar*

Wang, Z.Q. and N.J. Swain, 1995. The determinants of foreign direct investment in transforming economies: Empirical evidence from Hungary and China. Weltwirtschaftliches Archiv, 131(2): 359-382. *View at Google Scholar | View at Publisher*

World Bank, 2012. What's behind Mongolia's economic boom? Retrieved from http://www.worldbank.org/en/news/video/2012/02/28/what-behind-mongolia-economic-boom [Accessed 19 October, 2016].

World DataBank, 2015. World development indicators. Retrieved from http://databank.worldbank.org/data/reports.aspx?source=2&country=MNG&series=&period= [Accessed 16 April, 2016].

Yu, J. and M.J.P. Walsh, 2010. Determinants of foreign direct investment: A sectoral and institutional approach. IMF Working Paper, No. WP/10/187.

Zhang, K.H., 2001. Does foreign direct investment promote economic growth? Evidence from East Asia and Latin America. Contemporary Economic Policy, 19(2): 175-185. *View at Google Scholar | View at Publisher*