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The Directionality of Outward FDI and Its Determinants: Findings From Asian Emerging Countries

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This study investigates the determinants of outward foreign direct investment (OFDI) for eight emerging Asian source countries vis-à-vis 107 host countries from 2009 to 2016. We employ Bayesian model averaging and the weighted average least squares technique to address the problem of model uncertainty. Our findings reveal that the OFDI position of Asian emerging countries targets developed countries for market- and asset-seeking purposes, emerging countries for market seeking, and most resource-seeking investments are directed to other developing countries.

I. Introduction

The objective of this paper is to examine the determinants of outward foreign direct investment (OFDI) originating from Asian emerging countries (AECs). Despite studies on the determinants of OFDI for China (Knoerich & Miedtank, 2018; You, 2017), Singapore (Leong & Lee, 2019), India (Amann & Virmani, 2015; Pradhan, 2011), Indonesia (Lecraw, 1993), and a group of Asian countries (Gao, 2005; Rasiah et al., 2010), evidence-based research on the main destinations of the OFDI of AECs is lacking. We attempt to bridge this research gap by exploring the determinants of the OFDI of AECs at both the source- and host-country levels.

AECs are becoming increasingly active source of OFDI throughout the world. OFDI can be a strategic tool that provides global accessibility to domestic firms and integrates with the value chain of global production systems, not only helping local firm growth and strengthening competitiveness, but also supporting inclusiveness and sustainable economic growth (UNCTAD, 2018). [Table 1](#) shows the total bilateral OFDI positions of selected AECs for 2009 and 2016 and their percentage change. Given the heterogeneity in worldwide destinations, we disaggregate 108 host countries into three categories: developed countries (DCs), emerging countries (ECs), and other developing countries (ODCs). From 2009 to 2016, a remarkable rise in the OFDI of AECs is noted, with a more rapid rise in the case of OFDI to DCs and ODCs.

It is argued that both country-specific advantages and disadvantages can drive ECs OFDI (Moon & Roehl, 2001; Ramamurti, 2012). Thus, our focus is to analyze the country-specific characteristics of bilateral FDI. For this purpose,

we select our variables based on several mainstream theoretical approaches—such as the investment development path hypothesis; motive-based approaches, including market-, resource-, efficiency-, and asset-seeking investments; and a gravity FDI model—and empirical evidence such as macroeconomic stability measures and measures of trade and investment openness together.

Although the importance of OFDI in the context of ECs has been examined (Dunning et al., 2008; Luo & Tung, 2017; Mathews, 2006; Moon & Roehl, 2001; Ramamurti, 2012), the key determinants are still poorly understood because of inconsistencies in theoretical models and empirical analysis (Knoerich, 2019). According to Raftery (1995), standard model selection criteria can be misleading when there are many independent variables in the regression model. Thus, we use two model averaging techniques to address the model uncertainty: the Bayesian model of averaging (BMA) and the weighted average least squares (WALS) approaches (Luca & Magnus, 2011). Further, we disaggregate the hosts into 24 DCs, 23 ECs, and 61 ODCs. The aim is to compare OFDI determinants at both the source and host levels. Most notably, our findings show that the explanation for these approaches changes with the destination, such as DCs, ECs, and ODCs.

The remainder of this article is structured as follows. Section II presents the data and methodology. Section III discusses the estimation results. Section IV concludes the paper.

II. Data and methodology

We collect data from the International Monetary Fund (IMF) database on the bilateral FDI positions of eight AECs

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Table 1. OFDI position of selected AECs in DCs, ECs, and ODCs (US\$ million)

Country	2009			2016			% Change		
	DCs	ECs	ODCs	DCs	ECs	ODCs	DCs	ECs	ODCs
China	29869.8	348623.4	9423.2	124955.1	406719.9	37704.7	318.3	16.7	300.1
India	15802.2	18607.5	2911.4	18172.9	20710.4	32003.1	15.0	11.3	999.2
Indonesia	-4074.6	11869.9	121.8	1795.1	19633.4	-472.7	-144.1	65.4	-488.3
Korea	31092.0	44416.7	4006.6	71753.8	141219.9	6514.9	130.8	217.9	62.6
Malaysia	8013.0	39439.2	2441.2	33041.5	71239.8	11377.6	312.4	80.6	366.1
Pakistan	61.2	420.9	761.3	-271.5	287.4	632.5	-543.5	-31.7	-16.9
Philippines	1918.8	3621.0	22.3	3469.7	7577.4	163.1	80.8	109.5	630.1
Thailand	758.2	4497.7	151.2	6870.5	40801.2	5779.7	806.2	807.2	3723.5
Total	83440.6	471496.3	19839	259787.1	708189.4	93702.9	211.3	50.2	372.3

Notes: This table presents data on the OFDI to different host countries, namely, DCs, ECs, and ODCs for the years 2009 and 2016. The source country is noted in column 1. The last column notes the percentage (%) change in OFDI from 2009 to 2016.

Table 2. Variables and Data Sources

	Variables	Definition	Data source
Dependent variable	<i>Bilateral FDI</i>	Bilateral FDI stock (US \$, Millions)	CDIS, IMF
Gravity measure	GDP_S^H	GDP (constant 2010 US \$)	WDI, WB
	<i>Distance</i>	Distance	CEPII
Motive-based measure	$GDPPC_S^H$	GDP per capita (constant 2010 US \$)	WDI, WB
	$Resource_S^H$	Natural resources depletion (% of GNI)	WDI, WB
	$GFCF_S^H$	Gross fixed capital formation (% of GDP)	WDI, WB
	WGI_S^H	World Governance Index	WGI, WB
	$Freedom\ index_S^H$	Economic Freedom Index	Heritage data
	$Patent_S^H$	Patent applications, non-residents	WDI, WB
Macroeconomic stability measure	$Inflation_S^H$	Inflation (GDP deflator annual %)	WDI, WB
	$Credit_S^H$	Domestic credit to the private sector (% of GDP)	GFD, WB
Openness measure	$Total\ trade_S^H$	Export and import of goods and services % of GDP	WDI, WB
	<i>BIT</i>	1 if Bilateral Investment Treaty	UNCTAD
	<i>Bilateral FTA</i>	1 if Bilateral Free Trade Agreement	WTO
	<i>DTT</i>	1 if Double Taxation Treaty	UNCTAD
Proximity measure	<i>Colony</i>	1 if sharing colonial ties	CEPII
	<i>Language</i>	1 if sharing common official language	CEPII
	<i>Contiguity</i>	1 if sharing a common border	CEPII

Notes: This table reports the description of variables and data sources. All variables are grouped under specific headings, as noted in Column 1. Superscript *H* stands for host while the subscript *S* stands for source. Except for the dummy variable and index variables, all are in logarithmic form.

(China, India, Indonesia, South Korea, Malaysia, Pakistan, the Philippines, and Thailand) in 108 host countries from 2009 to 2016. We select the samples according to the availability of bilateral FDI position data for host and source country pairs. However, the main drawback of the IMF database is that it is available only since 2009. We thus select 18 variables, with detailed descriptions provided in [Table 2](#).

The BMA approach addresses model uncertainty when there is little theoretical guidance regarding the role of potential explanatory variables (Blonigen, 2005; Raftery, 1995). To address the issue of the computational burden in the full BMA estimation, we categorize explanatory variables as either focus or auxiliary regressors (Magnus et al., 2010). The variables that we want in the model on specific theoretical grounds are known as focus regressors. In this study, we consider gravity FDI variables to be focus regressors. The logic behind the FDI gravity model is analogous to that of the trade gravity model. On the other hand, the WALS estimation is perceived to be more computationally efficient than the BMA technique and depends on the orthogonal transformation of auxiliary regressors.

III. Estimation results

The BMA and WALS estimation results are reported in [Table 3](#). We consider four different model specifications: Model 1, AECs–DCs; Model 2, AECs–ECs; Model 3, AECs–ODCs; and Model 4, AECs–all countries. However, due to a lack of consensus on the threshold posterior inclusion probability in the BMA literature (Magnus et al., 2010),

we rely on both the BMA and WALS results to define the robustness of a determinant. Thus, a regressor is considered to be a robust determinant if the posterior inclusion probability has a value of 95% or more in the BMA, with a *t*-statistic greater than or equal to two in the WALS estimation.

Model 1 shows that the gross domestic product (GDP) of the host countries is the only gravity variable, which is a robust determinant, with posterior inclusion probability equal to one (*t*-statistic = 5.78). This result suggests that the domestic market size and the physical distance between partner countries play a minor role when AECs invest in DCs. Among auxiliary regressors, only three of 24 are robust determinants with an inclusion probability of over 95%. We find strong evidence of a positive effect of patent applications by non-residents in DCs, implying the asset-seeking nature of OFDI. Additionally, the trade openness of DCs attracts these investments. On the other hand, the availability of domestic credit facilities acts as a catalyst push factor for the OFDI of AECs.

Model 2 shows the results for the investment of AECs in other ECs following a similar pattern of development. Three of 24 auxiliary regressors are robust determinants of OFDI. The high posterior inclusion probability of GDP (H), GDP (S), and distance suggest a gravity FDI strategy. A trade openness proxy is added as a robust determinant attracting the FDI of AECs and is further strengthened by bilateral free trade agreements. Strong evidence of a common language reveals that AECs are mostly inclined toward more culturally similar nations.

Table 3. Results of BMA and WALS estimation

	DCs (1)		ECs (2)		ODCs (3)		All countries (4)	
	BMA	WALS	BMA	WALS	BMA	WALS	BMA	WALS
<i>Bilateral FDI</i>	Coef. (PIP)	Coef. (t)	Coef. (PIP)	Coef. (t)	Coef. (PIP)	Coef. (t)	Coef. (PIP)	Coef. (t)
<i>Constant</i>	-36.52 (1.00)	-25.90 (-1.75)	-51.04 (1.00)	-48.43 (-6.43)	-12.45 (1.00)	-12.69 (-3.48)	-19.66 (1.00)	-20.11 (-5.55)
<i>GDP(H)</i>	0.72 (1.00)	0.90 (5.78)	0.84 (1.00)	0.76 (6.59)	-0.08 (1.00)	-0.03 (-1.16)	0.21 (1.00)	0.27 (8.85)
<i>GDP (S)</i>	0.74 (1.00)	0.11 (0.22)	1.31 (1.00)	1.33 (6.34)	0.97 (1.00)	0.96 (8.06)	1.01 (1.00)	0.98 (8.38)
<i>Distance</i>	-0.57 (1.00)	-0.33 (-0.93)	-1.24 (1.00)	-1.16 (-8.60)	-1.14 (1.00)	-1.12 (-17.06)	-1.12 (1.00)	-1.13 (-17.78)
<i>GDPPC(H)</i>	-0.05 (0.10)	-0.62 (-1.67)	-0.05 (0.19)	-0.08 (-0.63)	-0.00 (0.02)	-0.03 (-0.58)	-0.33 (1.00)	-0.37 (-7.39)
<i>GDPPC(S)</i>	-0.01 (0.04)	-0.39 (-1.21)	0.20 (0.38)	0.34 (2.07)	0.30 (0.93)	0.11 (1.32)	0.34 (0.99)	0.17 (2.16)
<i>Resource(H)</i>	0.01 (0.11)	0.13 (2.42)	0.14 (0.88)	0.09 (1.89)	0.18 (1.00)	0.13 (4.40)	0.04 (0.67)	0.08 (3.88)
<i>Resource(S)</i>	0.01 (0.08)	0.23 (2.60)	-0.02 (0.14)	-0.09 (-1.58)	0.00 (0.05)	0.04 (1.26)	0.00 (0.07)	0.07 (2.16)
<i>GFCF(H)</i>	-0.01 (0.03)	0.38 (0.61)	0.03 (0.06)	0.38 (0.99)	-0.00 (0.03)	-0.06 (-0.94)	-0.03 (0.17)	-0.18 (-2.37)
<i>GFCF(S)</i>	-1.14 (0.47)	-1.98 (-1.79)	-0.30 (0.17)	-0.99 (-1.43)	-1.67 (0.99)	-1.47 (-3.46)	-1.98 (1.00)	-1.50 (-3.90)
<i>WGI(H)</i>	-0.03 (0.06)	-0.00 (-0.01)	-0.03 (0.10)	-0.20 (-1.01)	0.26 (0.88)	0.26 (3.60)	0.00 (0.03)	0.09 (1.19)
<i>WGI(S)</i>	0.04 (0.07)	1.74 (2.91)	0.64 (0.68)	0.52 (1.45)	0.08 (0.19)	0.45 (2.20)	0.58 (0.99)	0.73 (3.42)
<i>Freedom index(H)</i>	-0.00 (0.03)	-0.01 (-0.47)	0.00 (0.05)	0.02 (1.35)	0.02 (0.92)	0.03 (4.21)	0.04 (1.00)	0.02 (3.98)
<i>Freedom index(S)</i>	0.00 (0.08)	-0.01 (-0.28)	0.10 (0.85)	0.06 (1.65)	0.00 (0.06)	0.02 (0.98)	0.00 (0.03)	0.03 (1.75)
<i>Patent(H)</i>	0.40 (1.00)	0.35 (3.67)	0.00 (0.03)	0.03 (0.71)	0.18 (1.00)	0.16 (10.09)	0.25 (1.00)	0.24 (17.44)
<i>Patent(S)</i>	0.02 (0.12)	0.13 (1.76)	0.00 (0.04)	-0.01 (-0.29)	-0.00 (0.04)	-0.03 (-1.64)	-0.00 (0.02)	0.00 (0.06)
<i>Inflation(H)</i>	0.04 (0.04)	1.68 (1.30)	-0.04 (0.06)	-0.10 (-0.19)	0.00 (0.02)	-0.01 (-0.06)	-0.04 (0.12)	-0.18 (-1.14)
<i>Inflation(S)</i>	-0.01 (0.03)	0.13 (0.17)	-0.00 (0.03)	-0.06 (-0.19)	-0.01 (0.05)	-0.13 (-0.75)	-0.00 (0.02)	-0.16 (-0.98)
<i>Credit(H)</i>	0.01 (0.06)	0.13 (1.58)	0.26 (0.72)	0.25 (2.14)	-0.00 (0.05)	-0.12 (-1.65)	0.03 (0.23)	0.07 (1.70)
<i>Credit(S)</i>	1.50 (1.00)	2.64 (3.97)	0.06 (0.16)	0.15 (0.53)	0.01 (0.05)	0.17 (1.12)	0.48 (0.99)	0.55 (3.23)
<i>Total trade(H)</i>	0.95 (0.99)	1.32 (4.63)	0.74 (0.99)	0.57 (2.63)	-0.73 (1.00)	-0.54 (-4.77)	0.05 (0.22)	0.22 (2.45)
<i>Total trade(S)</i>	-0.23 (0.17)	-2.50 (-2.61)	0.58 (0.65)	0.57 (1.22)	0.44 (0.81)	0.16 (0.58)	0.01 (0.03)	-0.15 (-0.52)
<i>BIT</i>	0.01 (0.04)	0.36 (1.20)	-0.26 (0.42)	-0.58 (-2.72)	0.54 (1.00)	0.58 (4.81)	0.01 (0.03)	0.12 (1.08)
<i>Bilateral FTA</i>	0.06 (0.10)	0.78 (2.17)	1.47 (1.00)	1.19 (5.40)	0.03 (0.05)	0.42 (1.18)	0.97 (1.00)	1.12 (7.29)
<i>DTT</i>	-0.73 (0.88)	-0.73 (-2.72)	0.03 (0.11)	0.24 (1.70)	0.60 (1.00)	0.51 (5.04)	0.39 (1.00)	0.31 (3.70)
<i>Colony</i>	0.01 (0.03)	0.06 (0.14)	NA	NA	0.36 (0.22)	1.41 (1.91)	0.00 (0.02)	0.40 (1.18)

<i>Language</i>	0.01 (0.04)	0.04 (0.09)	1.27 (1.00)	1.16 (5.06)	1.07 (1.00)	0.95 (6.67)	1.14 (1.00)	0.98 (8.31)
<i>Contiguity</i>	NA	NA	-0.74 (0.76)	-0.81 (-2.71)	0.03 (0.07)	0.25 (0.98)	-0.01 (0.03)	-0.17 (-0.81)

Note: This table reports the BMA and WALs results for AECs to developed countries (DCs) (Model 1), AECs to ECs (Model 2), AECs to other developing countries (ODCs) (Model 3), and for all countries (Model 4). NA represents not applicable.

Model 3 reports the determinants of the FDI of AECs in ODCs. Notably, the coefficient of the GDP signals that these investments are not market seeking. It is the domestic market size that drives these regions' FDI. In addition, greater distance discourages these investments, which validates the presumption that most of the investments of AECs are going to their neighboring ODCs. The resource abundance of ODCs is a robust determinant in attracting FDI. This could be due to the strong growth characteristics of emerging market multinationals for which they are seeking low-cost industrial inputs. AECs prefer to sign bilateral investment and double taxation treaties with ODCs to reduce investment risk.

By combining all the countries from the three categories into a single specification (see Model 4), we find that, overall, the gravity variables have a high probability of inclusion. The positive coefficient of the GDP per capita of AECs supports the investment development path hypothesis and suggests that rapid economic growth and domestic market enlargement encourage more OFDI. We find a positive relation between the governance index of the source countries and OFDI that has the potential to encourage outgoing investors. It is the economic freedom of the host countries that can attract these investors. Overall, these countries mostly prefer to engage in bilateral free trade agreements

and double tax treaties with their partner countries. Patent applications of host countries are also a robust determinant. OFDI is mostly encouraged by the financial development of emerging sources.

IV. Conclusion

This paper empirically analyzes the determinants of the bilateral FDI positions of the Asian emerging countries by using BMA and WALs approaches. Our study reveals evidence of market- and asset-seeking FDI flows from these emerging countries to developed countries. Emerging markets collaborate with other emerging countries, where market-seeking motives play a greater role and are further strengthened by bilateral free trade agreements. The emerging countries' outward FDI to other developing countries comprises mostly resource-seeking investments, along with rapid improvements in the institutional infrastructure of destinations that attract these investors. Our study thus recommends that, instead of adopting uniform policies, these countries need to formulate and implement programs that will promote their outward foreign investments by considering the characteristics of their investment partners, as well as domestic requirements.

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