



South Asian Journal of Finance

ISSN (Online): 2719-2547 | Journal Home Page: <https://sajf.sljol.info/>

Determinants of Foreign Direct Investment: A Comparative Analysis of Distance Factors

Sehani Sathya Ramanayake

To cite this article: Ramanayake S.S. (2025). Determinants of Foreign Direct Investment: A Comparative Analysis of Distance Factors, *South Asian Journal of Finance*, 5(1), 31–51.

Determinants of Foreign Direct Investment: A Comparative Analysis of Distance Factors

Ramanayake S.S.^a

^a Department of Industrial Management, Faculty of Business, University of Moratuwa, Sri Lanka.

ABSTRACT

Purpose: This study aims to evaluate the role of the CAGE (Cultural, Administrative, Geographical, and Economic) distance dimensions in attracting bilateral inward Foreign Direct Investments to four sub-regions of Asia (East Asia, Southeast Asia, South Asia, and West Asia/Middle East) from OECD developed markets.

Design/Methodology/Approach: The analysis employs a panel data framework that includes bilateral FDI flows from 8 major OECD investor countries to 17 non-OECD Asian countries, alongside 12 OECD host countries from 2013 to 2019. The estimation techniques used are Pseudo-Poisson Maximum Likelihood (PPML) Estimation and Ordinary Least Squares (OLS) regression.

Findings: The full sample analysis indicates that developed nations tend to invest more in countries that are administratively, geographically, and economically closer. Multiple distance dimensions exert a negative influence on bilateral inward Foreign Direct Investments between country pairs, with developing nations being more susceptible to the negative impact of these distance factors compared to developed countries. Comparative analysis reveals that South Asia and Southeast Asia are predominantly impacted by these distance factors. Furthermore, the results underscore the need to consider structural disparities at the sub-regional level within Asia.

Originality: This study integrates the CAGE framework with the structural gravity approach, offering a systematic evaluation of the heterogeneities among Asian subregions in their ability to attract bilateral inward Foreign Direct Investments. It contributes to a nuanced understanding of how distance dimensions impact Foreign Direct Investments, particularly in the context of developing economies in Asias.

KEYWORDS

FDI, CAGE, Gravity
Model, Asia, Emerging
Market, Distance

JEL CLASSIFICATION

F21, F23, F64, G15

I. Introduction

Over the past five decades, Foreign Direct Investment (FDI) has emerged as one of the most extensively researched topics in international business. This growing academic and policy interest is largely attributed to the sustained global increase in FDI flows. According to the *World Investment Report 2024*, despite the economic disruptions caused by trade and geopolitical tensions around the world, global FDI volumes amounted to \$1.33 trillion in 2023, marking a slight decline from the \$1.35 trillion recorded in 2022. Notably, this represents a 2% decrease,

illustrating the resilience of FDI even in adverse economic conditions. Furthermore, when compared to 1990, when global FDI volumes stood at \$205 billion, the rise to \$1.33 trillion by 2023 highlights the dramatic growth in international capital flows over the past three decades (UNCTAD, 2024). Such exponential growth has naturally drawn the attention of academics and policymakers alike, with FDIs now regarded as central to the global economy's structure and development.

Academic literature consistently emphasizes the numerous advantages FDIs provide, particularly for developing countries. FDIs

CONTACT ^a Sehani Sathya Ramanayake sathyar@uom.lk Department of Industrial Management, Faculty of Business, University of Moratuwa, Sri Lanka. ORCID: 0000-0003-1940-7591



Received: 25 September 2024, Accepted revised version: 07 May 2025
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are often seen as a catalyst for economic growth, driving job creation, improving living standards, and facilitating the transfer of knowledge and technology from more developed nations to less developed host countries (Pegkas, 2015). Consequently, many developing nations have prioritized the attraction of FDI, implementing policies such as trade liberalization, FDI facilitation, infrastructure development, financial system reforms, and regional integration to enhance their attractiveness to foreign investors (Dunning & Lundan, 2008).

However, despite these efforts, there is considerable variation in FDI inflows across regions and even in countries within the same region. Asia, for instance, consistently outperforms other regions in attracting FDI. In 2024, Asia accounted for little less than one-half of the global FDI inflows (47%), with East Asia securing 21.5%, and Southeast Asia receiving 17%. In contrast, South Asia and the Middle East (West Asia) attracted only 2.7% and 4.9% of global FDI inflows during the same period (UNCTAD, 2024). Even within regions, individual countries exhibit varying degrees of success; for example, India remains the leading FDI destination in South Asia. Furthermore, the origins of FDI also display notable patterns, as certain host countries tend to attract investment from specific home countries. Myanmar, for example, receives more FDI from China than from the United States, while Indonesia exhibits the opposite trend, drawing more U.S. investment than Chinese (UNCTAD, 2021). These disparities raise a critical question: *What factors make some countries more attractive to specific investors than others?*

To address this, numerous studies have sought to identify the determinants of FDI location attractiveness. The prevailing literature identifies a range of macroeconomic factors, such as market size, factor price differentials, and the strength of institutional frameworks, as key drivers of FDI inflows (Gani, 2007; Ranjan & Agrawal, 2011; Vijayakumar et al., 2010).

In addition to these hard factors, soft factors such as cultural similarities, common language, and historical ties (e.g., colonial relationships) also play a significant role in shaping investment decisions (Kim & Parkhe, 2009; Loree & Guisner, 1995; Sethi et al., 2003). However, most of these studies have focused primarily on the standalone characteristics of home and host countries, overlooking the comparative or relative aspects that arise from differences between countries.

One key aspect that remains underexplored in the existing literature is the role of distance, defined not merely in geographic terms but also as cultural, administrative, and economic distance, in influencing FDI flows (Engsig et al., 2019; Malhotra et al., 2009; Tokas & Deb, 2020). This multifaceted concept of distance encompasses differences in governance systems, legal frameworks, cultural norms, and economic structures that can either facilitate or hinder investment flows between countries. CAGE Distance Framework of Ghemawat (2001), which considers cultural, administrative, Geographical, and economic distances, provides a useful theoretical foundation for understanding how these factors influence FDI decisions. For example, greater cultural proximity between home and host countries can reduce the perceived risks of doing business abroad, while significant administrative or economic distance may introduce complexities that deter investment. The relative distance between countries, particularly in cultural, administrative, and economic dimensions, is becoming increasingly important in explaining the variations in FDI inflows across regions.

Knowledge-Capital Model proposed by Markusen (1997) underscores the importance of differences in factor endowments between home and host countries in shaping bilateral trade and investment flows. Furthermore, the Eclectic Paradigm of Dunning (2001) suggests that ownership-specific advantages, location-

specific advantages, and internalization advantages are all moderated by the relative distance between the home and host countries.

Unlike traditional models, the multi-dimensionality of the CAGE Framework allows for a more holistic view of how distance affects FDI decisions. Examining these dimensions of distance offers a more comprehensive understanding of why certain FDI relationships are more successful than others. While macroeconomic indicators provide valuable insights into a country's investment attractiveness, they often fail to capture the nuanced barriers or opportunities presented by cultural and institutional differences (Hofstede, 1980; Kogut & Singh, 1988). For instance, cultural distance may influence managerial practices, consumer behavior, and market entry strategies, while administrative distance could manifest in differences in regulatory environments, legal systems, or corruption levels. Moreover, economic distance, which refers to disparities in income levels, technological development, or industrial structures, can create mismatches in expectations between investors and host countries, further complicating FDI decisions. Unlike traditional models, the CAGE framework allows combining both formal and informal factors and hard and soft factors in a single framework.

These comparative factors help explain why, despite favorable macroeconomic conditions, some countries fail to attract substantial FDI. Conversely, countries that may not exhibit optimal macroeconomic conditions can still succeed in attracting FDI by reducing cultural, administrative, or economic distances. For example, Nguyen et al. (2024) find evidence that CAGE distance dimensions between home and host countries impede the innovation productivity of the parent companies and Zheng (2013) and Aiyar et al. (2024) provides evidence that relative economic development and geographical location are important determinants of host country FDI patterns.

Satoğlu & Salmon (2024) finds that corruption distance and direction discourage bilateral FDIs. This study, therefore, seeks to address a critical gap in the literature by analyzing how cultural, administrative, geographic, and economic distance impacts the attractiveness of specific Asian regions for FDI. In doing so, it answers the key question: *Why do certain home countries find particular Asian regions more attractive for FDI, and to what extent do the Cultural, Administrative, Geographical, and Economic dimensions of distance play a role in determining FDI success?*

The novelty of this study lies in its theoretical contribution, the unique methodological strategy chosen for this investigation, and the sample selection. Most of the existing FDI models are developed primarily with developed economies in mind, whereas the CAGE model is particularly useful for studying FDI in emerging markets. Hence, using the CAGE framework to assess bilateral FDI flows to developing Asia offers a fresh perspective on the FDI dynamics of developing countries, integrating both formal and informal factors within a single framework—an approach rarely seen in the current literature.

The study interprets the bilateral FDI patterns of country pairs using the augmented gravity model approach. As Marszk (2014) highlights, the gravity model is among the most comprehensive frameworks for analyzing FDI. Similar interpretations have been used in studies of Bevan and Estrin (2004), Bénassy-Quéré et al. (2007), Talamo (2007), Hattari & Rajan (2009), Mishra and Jena (2019) and Dorakh (2020). These studies combine other variables adopted from various other FDI theories with basic gravity variables. Our study is unique from the previous work as this study would be perhaps the first to combine all the dimensions of the CAGE framework with the Augmented Gravity Model to assess bilateral inward FDI flows.

Moreover, with developing Asia now receiving a significant portion of global FDI, this study addresses the pressing need to examine the factors that make specific Asian regions attractive to foreign investors. The study focuses on four subregions in Asia—Eastern, Southeastern, Southern, and Middle Eastern—and compares them to OECD countries, which primarily comprise high-income, developed economies. To the best of the author's knowledge, this is the first study to systematically evaluate how the four dimensions of distance—economic, administrative, geographic, and cultural—affect FDI attractiveness in these regions.

This innovative approach not only enhances our understanding of FDI determinants but also provides valuable insights for policymakers and investors aiming to optimize FDI strategies in diverse regional contexts.

The remainder of the paper is structured as follows. In Section Two, we discuss the related literature. Section three contains a description of the methodology. Section four discusses the data. Section five discusses the results, and the last section concludes.

II. Literature Review

The empirical literature on the determinants of bilateral Foreign Direct Investment (FDI) can be broadly classified into two streams. One focuses on firm-level (micro) data (Adamoglou & Kyrkilis, 2020; El-Sahli et al., 2018), while the other examines macro or country-level drivers. This study follows the latter approach, allowing for a comprehensive analysis of the factors driving bilateral FDI flows from a regional perspective.

Cultural Distance

Cultural distance refers to the differences in values, norms, and social practices between countries. Several studies have shown that increased cultural distance raises transaction costs and uncertainty, thus reducing FDI (Brock et al., 2008). Differences in

language, religion, and societal norms can complicate communication, heightening the liability of foreignness (Zaheer, 1995). Cultural misunderstandings can also affect managerial practices, leading to inefficiencies in coordination and operations.

Brannen et al. (2017) highlights the growing importance of cultural intelligence (CQ) in reducing the negative effects of cultural distance on FDI. Firms with higher CQ can better navigate culturally diverse environments, mitigating risks and improving the success of international ventures. Additionally, Chua et al. (2012) argue that cultural diversity in host markets, though challenging, can foster innovation and strategic renewal in multinational corporations (MNCs) by exposing them to new perspectives and knowledge flows. This suggests that cultural distance does not always have a purely negative impact; under the right conditions, it can be leveraged for competitive advantage. Building on this understanding of cultural distance's impact on bilateral FDI inflows, we posit:

Hypothesis 1: *There is a significant negative relationship between cultural distance and bilateral FDI inflows.*

Administrative Distance

Administrative or institutional distance refers to the disparity in governance structures, legal systems, and regulatory frameworks between countries. It draws from institutional theory, which posits that differences in regulatory environments significantly impact MNEs' investment decisions (Kostova & Zaheer, 1999). Substantial administrative distance, characterized by divergent political and legal systems, corruption levels, and market regulations, creates uncertainty and raises operational costs, thereby discouraging FDI (Globerman & Shapiro, 2003).

Recent studies have expanded on this concept. Takahashi (2019) finds that institutional voids—gaps in the regulatory

environment of host countries—present significant barriers to FDI, especially from firms based in highly regulated home countries. Additionally, Pajunen (2008) underscores that countries with transparent legal frameworks and political stability tend to attract more FDI, as these factors reduce the risks associated with market entry and enhance predictability.

Moreover, institutional distance may also influence the mode of entry. For instance, firms entering countries with high administrative distance may prefer joint ventures or partnerships over wholly owned subsidiaries to navigate local complexities (Slangen & Beugelsdijk, 2010). Despite these barriers, some MNEs are willing to enter markets with high institutional distance to exploit first-mover advantages or strategic assets. Taken together, the extant literature suggests that higher administrative distance increases uncertainty and costs, thereby reducing the incentive for foreign investment. Hence, we hypothesize:

Hypothesis 2: There is a significant negative relationship between administrative distance and bilateral FDI inflows.

Geographic Distance

Geographic distance affects transportation costs, communication efficiency, and the ability to manage cross-border operations. While technological advancements have reduced the physical barriers posed by distance (Grosse & Trevino, 1996), geographic distance remains a significant determinant of FDI, particularly in industries requiring physical goods transportation or close coordination between headquarters and subsidiaries (Combes et al., 2005).

Studies by Keller and Yeaple (2013) confirm that geographic proximity still plays a critical role in FDI, especially for high-tech sectors that rely on frequent interactions between firms and their suppliers or customers. Additionally, Qian et al. (2010) highlight the impact of geographic distance on knowledge transfer, noting that

knowledge-intensive firms often prefer geographically closer markets to facilitate smoother information exchange. Cooke (2012) suggests that geographical proximity is advantageous in creating knowledge clusters.

Despite these challenges, the importance of geographic distance has diminished in recent years for service-based sectors, which rely less on physical proximity (Deardorff, 2014). The rise of digital communication and global value chains has made it easier for firms to invest in distant markets, particularly in industries such as software, finance, and consulting. However, most of the existing studies suggest that geographical distance still has a dampening effect on trade and FDI. Therefore, we posit,

Hypothesis 3: There is a significant negative relationship between geographical distance and bilateral FDI inflows.

Economic Distance

Economic distance refers to the differences in economic development, income levels, and market size between home and host countries. Ghemawat (2001) argues that economic disparities can either hinder or encourage FDI depending on the motivations of the investing firm. Firms seeking market-seeking FDI are more likely to invest in countries with similar income levels and consumption patterns, as these markets offer better opportunities for economies of scale and easier transfer of business models (Baltagi et al., 2007; Dellis, 2024).

Conversely, resource-seeking FDI may be more prevalent in countries with greater economic distance, as firms seek to exploit cost advantages or access natural resources. Makino et al. (2002) argue that firms investing in less developed countries often gain a competitive advantage by leveraging their superior technology and management practices. A more recent study by Bi et al. (2020) reveals that economic distance can be advantageous when firms pursue innovation-

seeking FDI, as it allows them to tap into new knowledge clusters and gain exposure to different market dynamics.

Economic distance also influences consumer behavior and demand. Firms investing in economically distant markets may need to adapt their products and strategies to cater to local preferences, which can increase operational complexity (Mitra & Golder, 2002). Despite these challenges, firms that successfully navigate economic distance can benefit from diversification and risk reduction by entering markets with distinct economic cycles. However, in line with CAGE distance arguments, we hypothesize,

Hypothesis 4: *There is a significant negative relationship between economic distance and bilateral FDI inflows.*

III. Methodology

In the last few decades, the gravity model has become a standard tool for scholars in trade and FDI research. With the gravity model gaining popularity for predicting international trade flows, scholars began using it to predict international FDI flows, as FDI and trade share many similarities. The investment stock or flow between two countries is frequently chosen as the model's explanatory variable. The factors affecting a country's investment decision in its host or home country are chosen as explanatory variables to develop an econometric model in the form of a formula.

The basic premise of the gravity model is that the larger the countries higher the attractiveness for trade and FDI, and the higher the geographical distance, lesser the attractiveness for trade and FDI. The researcher has purposefully chosen this partial equilibrium model to explain how the cultural, administrative, geographic, and economic distances between home and host countries influence the FDI inflows of host countries.

The study has used the “Gravity with gravitas” model of Anderson and Van Wincoop (2003) to specify the econometric model.

$$X_{ij} = \alpha_0 Y_i^{\alpha_1} Y_j^{\alpha_2} D_{ij}^{\alpha_3} e^{\theta_i d_i + \theta_j d_j} \quad (1)$$

In this specification $\alpha_0, \alpha_1, \alpha_2, \alpha_3, \theta_i$ and θ_j are the parameters to be estimated and d_i and d_j are exporter and importer dummies. The stochastic version of the equation is:

$$\begin{aligned} E(X_{ij} | Y_i, Y_j, D_{ij}, d_i, d_j) \\ = \alpha_0 Y_i^{\alpha_1} Y_j^{\alpha_2} D_{ij}^{\alpha_3} e^{\theta_i d_i + \theta_j d_j} \end{aligned} \quad (2)$$

In traditional gravity literature, structural gravity models are also log-linearized and regressed using OLS. However, both intuitive and structural gravity models face issues in the log-linearization of the equation.

In bilateral trade/ FDI, it is not uncommon for some country pairs to not trade or have no FDIs in certain years for specific country pairs. For example, it is not uncommon for Japan not to have bilateral trade or bilateral FDIs with Bangladesh in a particular year, resulting in zero value for the dependent variable. In log-linearization, these zero values are undefined and therefore dropped from the sample as missing values, causing potential sample selection bias.

Further, according to Shepherd (2013), the validity of the OLS estimates critically depends on the satisfaction of the following three conditions.

1. It is assumed that the error term (η_{ij}) must have a mean of zero and are statistically independent of the regressors. (The orthogonality assumption)
2. It is assumed that the error term (η_{ij}) has a fixed variance or satisfaction of the homoscedasticity assumption.
3. None of the explanatory variables is a linear combination of other

explanatory variables. (The full rank assumption)

Only if all three conditions are fulfilled, OLS estimates would be consistent, unbiased, and efficient.

According to Jensen's inequality, $E(\ln y) \neq \ln E(y)$. The log transformation of the dependent variable creates a potential bias in the estimates of $E(y|x)$ on the original scale, provided the residual term does not have a normal distribution or is heteroskedastic. Therefore, in the case of an error term η_{ij} depends on Y_i, Y_j, D_{ij}, d_i , or d_j , the expected value of $\ln \eta_{ij}$ will also depend on the regressors. Further, it is not uncommon in the usual log-linear specification of the gravity equation for error terms ($\ln \eta_{ij}$) to be heteroskedastic, which can lead to the violation of the orthogonality assumption, ultimately resulting in biased and inconsistent estimates for OLS.

It should be noted that this kind of heteroscedasticity cannot be dealt with by simply applying a robust covariance matrix estimator since it affects the parameter estimates in addition to the standard errors. The presence of heteroscedasticity under the assumption of a multiplicative error term in the original nonlinear gravity model specification requires adopting a completely different estimation methodology (Shepherd, 2013).

As a solution, Silva and Tenreyro (2006) recommend using the Pseudo Poisson Maximum Likelihood (PPML) model to estimate the augmented gravity model under weak assumptions without resorting to non-parametric regression. They state, *"heteroscedasticity is quantitatively and qualitatively important in the gravity equation, even when controlling for fixed effects"*. The PPML estimator provides consistent estimates of the original nonlinear model. Since we are dealing with a pseudo-maximum likelihood estimator, it is not necessary that the data be distributed as Poisson.

Furthermore, the PPML model offers the desired qualities for estimating structural gravity models. First, the estimator is consistent in the presence of fixed effects. (Shepherd, 2013). Second, the Poisson estimator allows the inclusion of zero-value observations, which is a highly desirable property in the gravity equation. Third, the interpretation of the coefficients from the Poisson model is straightforward, and the interpretation is similar to OLS. Fourth, PPML estimates are consistent regardless of how the data is distributed, assuming that the zero and non-zero observations are produced by the same data-generating process. When considering these desirable properties of PPML, there is strong support for using Poisson as the workhorse gravity model estimator. Therefore, Shepherd (2013) suggests that from the applied policy research point of view, estimates of policy impacts should generally be based on Poisson results rather than OLS when considering the desirable properties of the later model.

Therefore, we have run both the Ordinary Least Squares Model and the Pseudo Poisson Maximum Likelihood Model for comparison purposes for the full sample. The two models will be compared using the Ramsey RESET test to select the best-fitted model. After confirming the PPML method is superior, Sub-sample analysis is done using the PPML model.

The econometric specification of this model is:

$$\begin{aligned} FDI_STOCK_{ijt} = & \beta_0 + \beta_1 \ln GDP_{it} + \\ & \beta_2 \ln GDP_{jt} + \beta_3 \ln CulD_{ij} + \\ & \beta_4 \ln AdminD_{ijt} + \beta_5 \ln GeoD_{ij} + \\ & \beta_6 \ln EcoD_{ijt} + \gamma_1 Col_Link_{ij} + \\ & \gamma_2 Com_Boader_{ij} + \gamma_3 FTA_{ij} + \\ & \gamma_4 Com_Lan_{ij} + \theta_i + \lambda_j + e_{ijt} \end{aligned} \quad (3)$$

Here FDI_STOCK_{ijt} is the annual bilateral FDI inflow from the home country to the host country. $\ln GDP_{it}$ is the log GDP of the home country represents the size of the economy of the home country, and

$\ln GDP_{jt}$ is the log GDP of the host country represents the size of the economy of the host country. $\ln CulD_{ij}$ is the log cultural distance between home and host countries. $\ln AdminD_{ijt}$ is the log administrative distance between home and host countries. $\ln GeoD_{ij}$ is the log geographical distance between home and host countries. $\ln EcoD_{ijt}$ is the log economic distance between home and host countries. Col_Link_{ij} is the dummy variable for colonial links between home and host countries. Com_Border_{ij} is the dummy variable for common borders between the home and host countries. FTA_{ij} is the dummy variable for home and host countries having membership in the same FTAs. Com_Lan_{ij} is the dummy variable for the use of a common language between home and host countries. θ_i and λ_j are time and country fixed effects and e_{ijt} is the error term.

IV. Findings and Discussion

This study focuses on a comparative analysis of OECD and non-OECD Asian subregions to examine the determinants of bilateral inward foreign direct investment (IFDI) stock. The detailed list of countries involved in the analysis is presented in Annexure I. The annual bilateral inward FDI stock was collected from 8 major OECD investor countries to 17 non-OECD Asian and 12 OECD countries, selected based on

data availability. Some countries from both groups were excluded due to incomplete data. As a result, the balanced panel dataset consists of 232 country pairs (8 home countries and 29 host countries) over a seven-year period from 2013 to 2019, totaling 1,624 observations. The non-OECD Asian countries are distributed across four sub-regions: East Asia (3 countries), Southeast Asia (6 countries), South Asia (4 countries), and the Middle East (4 countries). Annexure II consists of variables, measurements, and data sources.

Summary Statistics

Table 1 presents summary statistics. As the table shows, the number of observations in the panel is 1624. As shown in the summary statistics, all the variables are converted to log values except for past colonial links, common border, membership in the same FTA, and common language, which are dummy variables. FDI stock has a mean of 31167.62 and a standard deviation of 67646.82. The high standard deviation relative to the mean indicates significant dispersion in FDI values among host countries. About 7.3% of the observations involve countries with historical colonial ties. Approximately 5.2% of country pairs share a border. Nearly 38.9% of the pairs are part of the same free trade agreement, and around 32.3% of the pairs share a common language.

Table 1. Summary Statistics

Variable	Obs.	Mean	Standard Deviation
FDI Stock	1624	31167.62	67646.82
Ln of Host's GDP	1624	6.428026	1.177045
Ln of Source's GDP	1624	7.587098	1.538319
Ln of Cultural Distance	1624	0.569121	0.914235
Ln of Administration Distance	1624	-0.4295772	1.200793
Ln of Geographical Distance	1624	8.50021	0.9736911
Ln of Economic Distance	1624	10.0312	1.092088
Past Colonial Link	1624	0.0732759	0.260669
Common Border	1624	0.0517241	0.2215377
Membership in the same	1624	0.3891626	0.4877105

FTA

Common Language

1624

0.3232759

0.4678711

Source: Authors own work

Table 2 depicts the regional averages of four distance dimensions.

Table 2. Regional Overview

Subregion	Avg. CultD	Avg. AdminD	Avg. GeoD	Avg. EconD
East Asia	2.581	0.782	7617.0	32708.1
Southeast Asia	2.929	1.307	9146.8	42937.1
South Asia	2.340	1.902	7344.1	50491.4
Middle East	2.598	1.174	6260.1	23009.4
Non-OECD average	2.651	1.323	7773.4	38220.6
OECD	1.851	0.609	5325.8	26726.1

Source: Authors own work

According to Table 2, as expected, the OECD host countries exhibit a lesser distance across all four dimensions to home countries from all four distance dimensions. Among the Asian sub-regions, Southeast

Asia demonstrates the highest cultural distance, while South Asia registers the greatest administrative and economic distance.

Full-Sample Analysis

Table 3. OLS and PPML results with Home and Host Fixed Effects- All countries

Dependent Variable	OLS with Home and Host			PPML with Home and Host		
	Fixed Effect – All countries			Fixed Effect – All countries		
	Coef.	Std. Err.	Sig.	Coef.	Std. Err.	Sig.
	<i>Ln_FDI_Stock_{ij}</i>			<i>FDI_Stock_{ij}</i>		
<i>lnCultD_{ij}</i>	0.005	0.030		-0.021	0.024	
<i>lnAdminD_{ijt}</i>	-0.137	0.035	***	-0.091	0.032	***
<i>lnGeoD_{ij}</i>	-0.978	0.049	***	-0.533	0.041	***
<i>lnEconD_{ijt}</i>	-0.059	0.038		-0.094	0.025	***
<i>lnGDP_{it}</i>	0.322	0.420		0.501	0.377	
<i>lnGDP_{jt}</i>	1.045	0.277	***	1.055	0.318	***
<i>Colonial_link_{ij}</i>	-0.003	0.101		-0.316	0.112	***
<i>Com_Border_{ij}</i>	-1.002	0.135	***	-0.553	0.094	***
<i>FTA_{ijt}</i>	0.570	0.086	***	0.296	0.081	***
<i>Com_Lang_{ijt}</i>	0.503	0.088	***	0.404	0.098	***
Constant	9.647	3.107	**	4.587	2.891	

R-squared	0.837	0.850
RESET test p-value	0.000	0.8762
*** p<.01, ** p<.05, * p<.1		

Source: Authors own work

Table III presents the estimation results for OLS and PPML models for the full sample. The log transformation for the OLS model results in the dropping of 124 zero-value observations, generating 124 missing values. The first thing to notice in Table III is that the PPML-estimated coefficients in the overall sample and the OLS coefficients are notably different.

The RESET test (Ramsey, 1969) results on the two models are presented in Table III. The p-value (0.000) of the RESET test (Ramsey, 1969), which is less than 0.05, suggests OLS rejects the null hypothesis of the test, and therefore the model is misspecified. On the other hand, the p-value of the PPML model of the full sample (0.8762) is higher than 0.05, which concludes that the null hypothesis cannot be rejected. Therefore, the PPML model is adequately specified. Further, R-squared values of the theoretically grounded gravity model specification under OLS and PPML are more than 80%. This means independent regressors of the two models explain more than 80% of the variance of the dependent variable.

Under PPML for the full sample, all the distance dimensions have a negative and significant impact on bilateral FDI stock except cultural distance. According to the OLS estimations, only geographical and administrative distances negatively affect bilateral FDI stock. The effects of the other two distance dimensions are negligible.

The regression results of PPML show significant negative impacts of administrative, geographical, and economic distances on bilateral FDI stock, consistent with gravity theory. However, the impact of cultural distance appears statistically insignificant. Many researchers suggest that

cultural distance impacts the selection of FDI destinations; in other words, cultural distance impacts the attractiveness of the host countries (e.g., García-Canal & Guillén, 2008; Beugelsdijk et al., 2018). However, contrary to this general consensus, our study suggests that the impact of cultural distance in the overall sample is insignificant in both PPML and OLS. This finding aligns with Habib & Zurawicki (2002) and Sathe & Schachler (2006), who argue that it is not cultural distance per se but rather a cultural incongruence that discourages investment. This indicates that MNCs may overcome cultural differences if institutional and economic factors align favorably.

Administrative distance, by contrast, shows a strong, significant, and comparably similar deterrent effect on bilateral inward FDI flows across both the OLS and PPML models (- 0.137 versus -0.091). The home countries are discouraged from investing in countries with considerable administrative gaps because of uncertainty, risk, and cost created by operating in an unfamiliar institutional environment (e.g., Aleksynska & Havrylchyk, 2013). However, it is important to highlight that this study only included the administrative gap. We do not differentiate between positive and negative administrative gaps, which can be addressed in future studies.

Geographical distance displays similar relationships in the two models. Even though the elasticity of geographical distance is substantially larger under OLS (- 0.978 versus -0.533), both values are significant. This shows, as claimed by the initial gravity model, that geographical or spatial distance is a deterrent to FDI. The higher the KM distance among the countries lesser the trade and FDI. This finding is

consistent with Head and Mayer (2014) and highlights the ongoing importance of "distance tyranny" in global investment decisions.

Finally, economic distance has a significant negative effect on bilateral FDI stock under PPML but no significant effect under OLS. This discrepancy could be attributed to the heterogeneous effects of economic similarity across regions, as seen in Baltagi et al. (2003). The negative and significant impact of economic distance under PPML supports the "Linder Hypothesis," suggesting that investors are more likely to enter markets with similar economic structures to their

own, thereby minimizing the liability of foreignness.

Comparative Analysis

Table IV presents results for sub-regional analysis, which reveals heterogeneities among regions. Very distinct differences can be seen among the results of these five subsamples. The high R-squared values of all five subsamples suggest that the model explains a significant portion of the bilateral FDI inflows of OECD and Asian subregions.

Table 4. Sub-Sample Results

	East Asia	Southeast Asia	South Asia	Middle East	OECD
$\ln_CultD_{ij}$	0.024 (0.127)	0.688*** (0.171)	-0.371*** (0.094)	-3.812*** (0.762)	-0.02 (0.034)
$\ln_AdminD_{ijt}$	-0.159* (0.081)	-0.258** (0.101)	0.767 (0.538)	0.229 (1.197)	-0.047 (0.031)
$\ln_GeoD_{ij}$	-0.340** (0.158)	-1.568*** (0.328)	-3.842*** (0.610)	8.994** (4.532)	-0.314*** (0.063)
$\ln_EconD_{ijt}$	-0.171*** (0.052)	-0.490*** (0.101)	-6.008*** (0.962)	-0.069 (0.165)	-0.086*** (0.028)
$\ln_GDP_{it}$	0.197 (0.619)	-2.382*** (0.804)	5.400*** (0.619)	3.381* (2.000)	0.491 (0.400)
$\ln_GDP_{jt}$	0.723* (0.406)	1.900*** (0.524)	1.476*** (0.240)	2.652* (1.251)	1.060*** (0.364)
$Colonial_link_{ij}$	0.514*** (0.151)	0.026 (0.170)	-1.320*** (0.296)	-0.260 (.685)	-0.628*** (0.117)
FTA_{ijt}	0.883*** (0.172)	0.405 (0.268)	4.264*** (0.548)	0.000 (0.000)	0.234** (0.108)
Com_Lang_{ijt}	0.383*** (0.129)	0.456* (0.250)	12.682*** (1.585)	0.297 (0.487)	0.358*** (0.123)
Com_Border_{ij}	-	-	-	-	-0.125 (0.122)
Constant	8.049 (5.234)	41.171*** (7.822)	60.327*** (10.774)	-117.971** (61.438)	1.128 (3.886)
R-squared	0.821	0.909	0.979	0.631	0.861

*** p<.01, ** p<.05, * p<.1

Source: Authors own work

Table IV shows some interesting observations. Overall, the sample reports an insignificant impact of cultural distance on bilateral FDI stock. However, an interesting fact in the subsample analysis is that only OECD countries and the East Asian subsamples report an insignificant impact on

cultural distance. All the other three subsamples report that cultural distance is highly significant. Counterintuitive results of Southeast Asian countries suggest that positive cultural distance helps to attract bilateral FDIs. On the other hand, significant and negative coefficients of the South Asian

and Middle Eastern subsamples suggest that cultural distance dissuades location attractiveness. The negative effect of cultural distance is more profound for Middle Eastern countries than for South Asian countries. (A 1% increase in the cultural distance reduces bilateral FDI stock by .371% in South Asia, which is 3.812% in the Middle Eastern region.) This suggests that cultural differences are a stronger deterrent to investment in the Middle East. Such findings echo Zheng (2009) insights on how global investors perceive different regions and countries, and these perceptions impact whether cultural distance becomes a significant determinant of FDI or not. Further, MNEs' interaction with culture ultimately decides whether cultural distance is a barrier or facilitator for foreign firms.

Policymakers in non-OECD Asian countries, particularly in the Middle East and South Asia, should recognize that cultural differences alone may not hinder FDI inflows. Rather, policies fostering intercultural competence and reducing cultural barriers (e.g., promoting cultural exchange programs, business etiquette training, or investment forums) could help mitigate potential challenges posed by cultural incongruence. This aligns with the recommendations from the OECD's 2024 Investment Policy Review, which emphasizes the need for cross-cultural management as a tool to attract foreign investors (OECD, 2024).

Bilateral FDIs from OECD investor countries to OECD host countries record an insignificant impact from the administrative distance. It can be suspected that this is related to the OECD subsample consisting of both OECD home and host countries that are more or less similar in their administrative structure (because the majority are countries that belong to the European Union that operate under similar legal structures). All the selected home countries of the study are developed countries with sound institutions, and the rest of the non-OECD Asian host countries

(except for twelve OECD countries) are not. Therefore, a negative administrative distance between the majority of the host and home countries can be expected between the home countries and Asian subsamples. The Southeast Asian subsample supports the hypothesis that administrative distance negatively affects bilateral FDIs through negative coefficients and significant p-values. Similarly, the East Asian subsample also records a marginally significant negative value. Hence, it can be stated that the findings of the full sample and Southeast Asian and East Asian subsamples are in line with the findings of Aleksynska & Havrylchyk (2013). That is, investors from developed nations were hindered by the administrative distance of developing countries in their FDI selections.

In contrast, the results of the Middle Eastern sample and South Asian sample for administrative distance are insignificant. Contrary to general consensus, a separate line of studies on administrative distance reveals that global investors or MNCs are not discouraged by low institutional quality. Instead, they prefer to invest in countries with low institutional quality (Cuervo-Cazurra & Genc, 2008; Holburn & Zelner, 2010). This is because lower-quality institutions may not have stringent protectionism policies that help MNCs exploit and take advantage of such markets. Therefore, bad institutions do not necessarily reduce a location's attractiveness (Choi et al., 2016). Therefore, insignificant results of Middle Eastern countries and South Asia may reveal a similar phenomenon. Similar results have been reported by Tang & Buckley (2022) related to emerging market MNEs in other developing host countries. Further, Kumari & Ramachandran (2024) state that while FDIs to developed countries may focus on high-quality governance and infrastructure, FDIs to developing countries is driven by factors that may not necessarily align with institutional quality, such as market potential and labor cost advantages. Our results from the Middle East and South Asia align with

this argument that weaker institutions do not necessarily act as a barrier to FDI when other favorable conditions are present. For instance, the low-cost resources in South Asian countries and the natural resources in Middle Eastern countries.

However, non-OECD countries with larger administrative gaps can benefit from institutional reforms aimed at improving governance, transparency, and regulatory frameworks. Simplifying bureaucratic procedures, enhancing the ease of doing business, and promoting legal harmonization with major OECD investors could significantly boost FDI inflows. For instance, regional trade agreements like the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) and Asia-Europe Meeting (ASEM) have been instrumental in reducing administrative frictions and encouraging cross-border investments. Policymakers should consider these reforms to narrow administrative gaps and create a more predictable investment environment.

Geographical distance is highly significant in all the sub-samples. The East Asian subsample, Southeast Asian subsample, South Asian subsample, and OECD subsample record negative coefficients in line with the traditional gravity theory. The negative elasticity of the geographical distance is highest in the South Asian subsample (-3.842) and lowest in the OECD subsample (-0.314). The OECD subsample primarily comprises geographically proximate European nations, and they naturally experience lower distance frictions. Interestingly, both East Asia and Southeast Asia record a lesser negative geographical distance coefficient than South Asia, even though both subregions are more geographically distant to home countries than South Asia. However, the results of these sub-samples align with the premise of the CAGE framework, that geographical distance negatively affects inward FDI.

The most striking result for geographical distance is from the Middle Eastern

subsample. The positive and significant coefficient (8.994) suggests a substantial positive effect on bilateral FDI stock from a higher geographical distance. The bilateral FDI stock of Middle Eastern countries, which is 1% further away from home countries than other host countries, is 8.994% higher. This counterintuitive result contradicts traditional gravity theory. This peculiar finding led to a further analysis of the raw data of the Middle Eastern region to get further insight into this. This counterintuitive result is explained by the region's natural resource endowment. The dominance of U.S. FDI in the region, despite the high geographical distance, points to oil and natural resource-driven investment patterns. This exceptional finding supports the idea that FDI flows into resource-rich regions may diverge from traditional gravity predictions (Buckley et al., 2007). However, regardless of the results from the Middle Eastern subsample (which is a special case due to the natural resource availability), it can be said that geographical distance matters in the selection of FDI location or, in other words, "distance tyranny" still exists.

For regions like the Middle East, where natural resource wealth drives FDI, policymakers can capitalize on these advantages by further developing infrastructure and improving access to foreign investors from geographically distant countries. For example, targeted policies that offer tax incentives or create special economic zones (SEZs) for resource-based industries may attract more investment from distant OECD countries. At the same time, other non-OECD Asian regions should focus on reducing transport costs and improving logistical networks to mitigate the effects of geographical distance. This aligns with the recommendations from the World Bank's 2020 Logistics Performance Index, which highlights the importance of efficient infrastructure in facilitating FDI.

Finally, the economic distance appears to be critical for bilateral FDIs in most regions.

The coefficient for economic distance is negative and significant in four out of five subsamples (South Asia, Southeast Asia, and East Asia), including the OECD subsample, and this suggests that home countries are more interested in investing in economically similar countries. The South Asian region, in particular, is highly sensitive to economic distance. However, results from the Middle Eastern subsample reveal an insignificant effect of economic distance, likely because the overriding pull of natural resource investments overshadows the usual disadvantages associated with economic dissimilarity. Therefore, our results are consistent with Baltagi et al. (2003), Dellis, (2024) and Munir and Bukhari (2020).

The results of economic distance can be partly explained by the Linder effect, which suggests that consumers in countries with similar economies are likely to have similar consumption patterns and be exposed to similar marketing strategies. Therefore, firms can more easily transfer their existing business models, management skills, and knowledge to countries with comparable economic characteristics to their home markets.

However, our economic distance findings challenge the resource exploration and exploitation perspective. It can be argued that the benefits that MNCs expect to realize by investing in an economically distant country are negated due to the "Liability of Foreignness" or the cost of adopting new, unfamiliar markets. Arte & Larimo (2023) argue that low to medium-economically distant countries offer a scope of economic arbitrage, whereas the cost of operating in medium to high-economically distant countries is substantially higher. Hence, MNCs tend to avoid highly economically distant countries and regions, such as in South Asia, and prefer to invest in economically proximate countries where "Liability of Foreignness" is lower, thus increasing the likelihood of survival of

foreign subsidiaries. Our results are consistent with this argument.

Therefore, Countries with greater economic disparity from major OECD investors, such as those in South Asia and Southeast Asia, should adopt policies that foster economic convergence. This includes improving education, technological capabilities, and labor market efficiency to close the gap with more developed countries. Policies that promote economic integration through regional cooperation, such as the ASEAN Economic Community (AEC), could be pivotal in making these regions more attractive to FDI. Additionally, aligning trade policies with OECD standards and improving human capital can help non-OECD countries integrate more seamlessly into global value chains.

Comparative analysis demonstrates that while cultural, administrative, geographical, and economic distances are significant determinants of FDI, their impacts vary widely by subregion. Global investors respond to these dimensions differently based on contexts, whether it is the resource-driven appeal of the Middle East or the administrative hurdles in developing regions. Consequently, tailored policy measures that address the unique challenges and opportunities of each region are essential for enhancing bilateral FDI flows.

V. Conclusion

In conclusion, this study was designed to contribute to the existing body of literature on how different distance dimensions impact bilateral inward FDI. This study combines multiple distance dimensions of the CAGE framework with a theoretically grounded gravity model. The findings of the overall sample suggest that administrative, geographic, and economic dimensions deter the bilateral FDIs from home to host nations, especially for developing countries. Hence, the findings of the study align with the core assumptions of the CAGE framework, suggesting that the CAGE distance

framework can be adopted as a general model to capture the deterrents of FDIs.

However, the analysis highlights that it is important to consider the effects of regional heterogeneities that affect FDIs. For instance, while distance generally acts as a barrier to inward FDI, FDI flows to newly industrialized countries, particularly in East Asia, are less sensitive to this adverse effect. In contrast, high-income and developed countries are even less affected by the negative impact of distance dimensions. In contrast, Southeast Asia and South Asia are the two subregions that are mostly affected by the negative impact of distance. Subsample analysis further reveals that the impact of distance dimensions on the Middle Eastern region is quite different from the rest of Asia due to special circumstances relating to oil reserves and culture.

The subsample analysis revealed that a very high economic distance and significant cultural distance in South Asian countries may explain the reason why the region receives the least amount of FDI from OECD countries out of all the Asian subregions. Additionally, the findings suggest that the impact of cultural distance in general acts as a barrier for FDI; however, in certain instances it can improve the appeal of a region. Finally, natural resource endowment can help to mitigate the negative impact of geographical distance.

While this study provides valuable insights, it also highlights several areas for future research. First, future research could expand upon this study by incorporating time-varying effects of distance dimensions, investigating whether the influence of geographic, administrative, and economic distances shifts over time as countries integrate more deeply into global value chains. A longitudinal approach might provide a deeper understanding of how distance factors evolve in response to geopolitical changes, regional trade agreements, and infrastructure development.

Secondly, exploring the role of policy interventions in mitigating the adverse effects of distance dimensions could yield practical insights for policymakers. Comparative studies across different regions could help identify best practices for reducing the barriers posed by institutional, economic, and geographic distances, providing a more comprehensive framework for enhancing FDI in developing nations.

Lastly, future research should investigate the role of emerging technologies, such as digital platforms and remote work, in reshaping the traditional impact of distance dimensions on FDI. As globalization increasingly transitions into the digital realm, the concept of "distance" itself may be redefined, warranting new theoretical models to explain its effects on cross-border investments.

In conclusion, this study supports the predictions of the CAGE framework, affirming that developed nations tend to invest in countries that are institutionally, geographically, and economically closer, and developing nations remain more vulnerable to the negative effects of distance dimensions, underscoring the need for targeted policies aimed at reducing these gaps.

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Annexure I

The Country List

Home Countries	Host Countries				
	OECD Countries	Non- OECD Asian Countries			
		East	Southeast	South	Middle East
	Australia				
	Belgium				
United States	Canada				
United Kingdom	Denmark		Singapore		
Germany	Ireland		Thailand	India	Kuwait
France	Italy	China	Malaysia	Sri Lanka	Qatar
Netherlands	Norway	Taiwan	Indonesia	Pakistan	Saudi Arabia
Japan	Spain	Hong Kong	Philippines	Bangladesh	UAE
Republic of Korea	Sweden		Vietnam		
Luxembourg	Switzerland				
	Mexico				
	Turkey				

Annexure II

Type, Measurement of Variables, and Data Source

Variable	Type	Measurement	Data Home
Bilateral FDI stock	Dependent	Bilateral FDI stock of home country in the host country	OECD data library
Cultural Distance	Independent	Cultural distance index of Hofstede's four cultural dimensions of countries i and j	Hofstede's Cultural Database
Administrative Distance	Independent	The squared difference in World Governance Indicators (WGI) average scores of countries i and j	World Governance Indicators
Geographical Distance	Independent	Actual kilometer distance between capital cities of country i and j	Kristian Skrede Gelditsch data set
Economic Distance	Independent	The squared difference in per capita GDP of countries i and j	World Development Indicators
Economy size of the home country	Control	GDP of home	World Development Indicators
Economy size of the host country	Control	GDP of host	World Development Indicators
Colonial link	Control	Dummy variable	Dynamic Gravity dataset
Common Border	Control	Dummy variable	Dynamic Gravity dataset
Membership in the same FTA	Control	Dummy variable	Dynamic Gravity dataset
Common language	Control	Dummy variable	Dynamic Gravity dataset