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**The Market size and Foreign Direct Investment
Relationship: A Panel Data Analysis of the OECD
(The Founders and the Rest)**

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**“One of the stylized facts about world economy is the importance of
foreign direct investment.” (Brakman and Garretsen, 2008, 1)**

Abstract: What effect does market size have on outward foreign direct investment? is the key research theme addressed in this paper. So, this paper aims at examining the market size and outward FDI relationship. This relationship is estimated using a model that has been developed based on the knowledge-capital theory of multinational corporations. Panel data analysis of the OECD countries (the founders and the rest groups) is presented over the period 2010-2021. The results of the estimated model demonstrate the positive influence of market size on outward FDI, positive signs of summing up GDPs supported by the expected effect of square differenced GDPs, providing evidence for horizontal FDI. The predominance of horizontal FDI is for both the OECD founders and the OECD rest members groups.

Keywords: Outward FDI, Inward FDI, Market Size, Horizontal FDI, Vertical FDI, OECD (the Founders and the Rest), Knowledge-Capital Theory.

1.Introduction

The rise of multinational firms' cross-border activity after the second half of the 1980s is the result of market imperfections as a dominating element of international economic relations (Petrović-Randelović et al., 2017). They have argued that the determinants of foreign direct investment can be divided into two groups according to the eclectic theory of foreign direct investment: the first group concerns micro determinants or factors on the supply side (company specific), which are unique to each company and include ownership and internalisation advantages, and the other group concerns macro determinants or factors on the demand side (country specific), which refer to the host country's location advantages.

Dunning (2001) studied locational advantages of host country to answer the question of where to implement an investment location, that is, to explain the expansion of multinational firms' cross-border investment activities.

The size and structure of the market, the attained degree of economic development and possibilities for future growth, the cultural, legal, political, and institutional environment, and national legislation and policies all influence the choice of a specific investment location. Furthermore, the host country's market potential for foreign direct investment should provide a package of locational advantages that will make it a profitable and appealing investment location when compared to other countries.

According to Chakrabarti (2001), the single most extensively acknowledged as a noteworthy indicator of FDI flows is market size. He assured that, for efficient resources utilization and economies of scale exploitation, a large market is required. Billington (1999) added that the Foreign Direct Investment (FDI) amount depends on the total national income

or GDP, representing market size, and development possibility of the host zone.

Multinational corporations (MNCs), the owners of FDI, are more likely to relocate to countries with larger and growing markets and greater purchasing power, where they may make a higher return on their investment and, as a result, a higher profit (Olayemi and Temitope, 2018).

This paper tries to investigate the market size- outward FDI relationship using the knowledge-capital model since, to the best of my knowledge, the doctrine that the larger market size, a significant variable of interest, enhances FDI (horizontal) can be traced back to the appearance of knowledge-capital theory. The knowledge-capital model equation incorporates market size as the first independent variable (determinant) of outward FDI (dependent variable) in its basic equation.

The knowledge-capital model combines "horizontal: market-seeking" FDI motivations, such as the desire to locate production close to consumers and thus avoid trade costs, with "vertical: efficiency-seeking" motivations, like the desire to carry out unskilled-labor-intensive production activities in areas where unskilled labour is relatively abundant (Blonigen et al., 2003).

Panel data of the Organisation for Economic Co-operation and Development (OECD) will be used to estimate the proposed model over the period 2010-2021. OECD data will be divided into two groups; the founders and the other OECD members (the rest). The founders are twenty countries: Austria, Belgium, Canada, Denmark, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, United Kingdom and United states. The rest are eighteen countries: Australia, Chile, Colombia, Costa Rica, Czech Republic,

Estonia, Finland, Hungary, Israel, Japan, Korea, Latvia, Lithuania, Mexico, New Zealand, Poland, Slovak Republic, and Slovenia.

In 2021 (the end of selected period), the share of OECD countries' outward FDI stock in global FDI outflows was 70%, representing their highest level since 2010 (the start of selected period). That is despite the COVID-19 crisis. It is tripled to reach USD1303 billion. Large outflows from the United States are mostly to blame for this spike (one of the OECD founders). This share was 61% in 2020 and 66% in 2019 (<http://www.stats.oecd.org>). In 2021, as well, the OECD's FDI income grew by 39%, making up 2.2% of the OECD's region GDP. In the same year, outward FDI earnings increased by 31%.

The remainder of the paper is structured as follows: The second section reviews some pertinent literature (theoretical and empirical). Section 3 presents a model specification based on the knowledge-capital theory. Sections 4 and 5 show data with discussing the findings and conclude, respectively.

2. Market size and The Foreign direct Investment (FDI): Theoretical base and Empirics

Specified as the first independent variable in the knowledge-capital model equation, the market size is considered as a key variable affecting FDI. As is well known, theory on multinational corporation (MNCs) distinguishes between horizontal and vertical corporations as stated above. Horizontal corporations produce the same product in multiple locations and attempt to expand their market share in the host country (Anghel, 2007). Vertical corporations break down their production process into stages and try to profit from international factor price variations. This makes it possible to determine

what MNCs' goals are. Is it to take advantage of broader markets (horizontal FDI) or to cut costs (vertical FDI)?

According to Dunning (1981), there are three conditions that must be met for corporations to be motivated to pursue foreign direct investments. The first is about the ownership advantage, which means that the corporation has some market power in a foreign market. Another prerequisite for FDI is a favourable location, especially if there are scale economies at the plant level. Finally, a condition concerns the internalisation advantage that refers to a corporation's internal use of its ownership advantage rather than selling or licensing its product to a foreign corporation.

In a consistent manner, the theory of foreign direct investment (FDI) connects Dunning's ideas with a corporation technology and country characteristics (Horstman and Markusen, 1992; Ethier and Markusen, 1996; Markusen, 1997; Brainard, 1997; Markusen and Venables, 2000; and Markusen 2002). Multinationals are crucial in industries where intangible, corporation-specific assets are important, according to Markusen (1997). These assets are referred to as "knowledge capital," and they include anything from unique product or process know-how to brand names and reputations.

In his (2002, 169) work, Markusen defines the knowledge-capital model as "a technology in which enterprise fixed costs are characterised by relatively low costs of geographically fragmenting headquarters and a single plant, skilled-labor intensity of enterprise fixed costs relative to production, and jointness of enterprise fixed costs across multiple plants".

Based on Blonigen at al. (2003, 980), the knowledge-capital model combines "horizontal" FDI motivations, such as the desire to locate production close to consumers and thus avoid trade costs, with "vertical"

motivations, such as the desire to carry out unskilled-labor-intensive production activities in areas where unskilled labour is relatively abundant.

Carr et al. (1998, 2001) have succeeded in translating the knowledge-capital model's theoretical framework into an empirical definition. They can identify the fundamental variables of the model via numerical simulations. In the first empirical work of the multinational enterprise's knowledge-capital model, three assumptions were made by Carr et al. (1998, 2001). The first is about the services provided by knowledge-based and knowledge-generating activities like research and development (R&D). These functions can be isolated from manufacturing geographically and delivered to low-cost production facilities.

Second, when it comes to production, these knowledge-intensive activities require a lot of specialised or skilled labour. These activities can be isolated from manufacturing geographically and delivered to low-cost production facilities. Second, when it comes to production, these knowledge-intensive activities require a lot of specialized labour. Vertical multinationals that split production and place activities based on factor pricing and market size emerge as a result of both of these characteristics.

Finally, knowledge-based services have a partly joint-input feature, which allows them to be sent to other production sites at a cheap cost. As a result, horizontal multinationals emerge, which produce the same goods and services in different places. For estimate purposes, they have a core equation that includes the sum of real GDP variable and the difference between GDP in source and host countries to represent market size variable affecting FDI.

Numerous econometric specifications have been employed in the empirical works on the FDI determinants, including market size; however, it is worth notable that almost all of studies investigating the relationship

between market size and FDI found an agreement between theory and the empirical findings, i.e. the existence of positive direction of the mentioned relationship.

On exploring the determinants of FDI, Lim (2001), selected market size as one of the most important determinants. Lim assured that larger host markets will stimulate horizontal FDI to the extent that economies of scale and lower fixed costs per unit of output reduce the cost of supplying those markets. Vertical FDI, on the other hand, is unaffected by the size of the host market. Market size is anticipated to have a positive net influence on FDI. Lim describes market size as the most strong, positive FDI determinant.

Akin (2009) assured that in developing countries, the small market size, because of low per capita income, is related with non-market seeking FDI activities. He offered a model in which the population and its features have a systematic impact on foreign direct investment in developing economies. His finding shows that FDI considers the aggregate size of the market in developing nations rather than the size of the market per capita.

More specifically, rather than expanding across the country, FDI will likely concentrate on regional areas with stronger purchasing power. He also believes and as a consequence hypothesizes that FDI will be attracted by increasing life expectancy and a smaller cohort size. The findings indicate that life expectancy has a minor impact on FDI. FDI is hampered by an overwhelmingly young or old cohort size; yet, FDI is attracted by a moderate age structure.

In three European locations, Artige and Nicolini (2009) have investigated the potential factors of FDI attraction. In the first section, they present an overview of FDI trends by sector and location, as well as a number of probable determinants. Regressions are run to find a link between regional

FDI inflows by region and sector and the FDI determinants they selected. Their findings reveal that in our sample of areas, there is always a positive and statistically significant association between market size and regional FDI per capita, which is consistent with the empirical literature on the subject at the national level.

To investigate the determinants of FDI in fast emerging BRICS countries and Malaysia, Ho (2013) added openness to market size as independent variables to examine their influence on foreign direct investment (FDI) as a dependent variable in BRICS5 countries and Malaysia. She used data for these six countries for the period 1977-2010. One of her paper's findings, of interest, is that market size is important in promoting FDI in Russia, China, and Malaysia,, but not in the other three nations.

By applying on the six countries in the Western Balkans region for the period 2007-2015, Petrović-Randelović et al. (2017) have investigated the impact of market size, as well as market growth, trade openness, and population size, on foreign direct investment inflows. The impact of the mentioned variables on foreign direct investment inflows was investigated using multiple regression analysis.

Olayemi and Temitope (2018) used interaction influence of both market size, represented by population and gross domestic product, and education, represented by primary and secondary school enrolments, on the Foreign Direct Investment (FDI) in sub-Saharan African countries. They used the Generalized Method of Moment (GMM) technique for estimation. According to their findings, market size (the variable we're interested in) and education have a positive and considerable impact on foreign direct investment.

The findings demonstrate that market size, market growth, and population size all had a substantial positive impact on foreign direct

investment inflows in the nations studied, whereas trade openness had a negative impact. As a result, the major findings of this study confirm that market size is a key driver of FDI inflows into Western Balkans countries. The findings of our research show that market size is one of the most important predictors of market performance. Thus, the market size exerts a significant influence over multinational firms' investment decisions in Western Balkan countries.

By reviewing the literature it is noteworthy that there is a deficiency of studies applied using the knowledge-capital model for OECD countries. By using a knowledge-capital model, we contribute to the literature by capturing the relationship between market size and outward FDI for OECD countries, being an absent case in the literature reviewed which are further separated into two groups: the founders and the rest over the period 2010-2021.

3. Methodology

3.1 Model Specification

On investigating the relationship between market size and foreign direct investment (FDI), knowledge-capital theory of multinational corporations is used to establish a theoretical foundation for the empirical model of this paper (for more details, see Carr et al., 2001; Markusen, 2002; Markusen and Maskus, 2002; Anghel, 2007; Avramov, 2008; Tekin-Koru and Waldkirch, 2010; Cardamone and Scoppola, 2014; and Negem, 2016).

Based on the knowledge-capital model in researches referred above, the model specification of this paper is as follows:

$$FDI_{inwardR} = \delta_0 + \delta_1 GDP_{sum} + \delta_2 GDP_{dif} + \delta_3 Skill_{dif} + \delta_4 Skill_{dif} * GDP_{dif} + \delta_5 BIT + \delta_6 TAR_{meresi} + \delta_7 TAR_{founders} + \delta_8 Common\ lang + \delta_9 Dis + u_i \quad (1)$$

$$\begin{aligned}
FDI_{inwardF} = & \lambda_0 + \lambda_1 GDP_{sum} + \lambda_2 GDP_{dif}^2 + \lambda_3 Skill_{dif} + \lambda_4 Skill_{dif} * GDP_{dif} + \lambda_5 BIT + \lambda_6 TAR_{founder} \\
& + \lambda_7 TAR_{therest} + \lambda_8 Commonlang + \lambda_9 Dis + \nu_2
\end{aligned}
\tag{2}$$

where,

$FDI_{outwardF}$ is the outflow of the funders to the rest of the OECD (at the same time the inflows of the rest).

$FDI_{inwardR}$ is the inflow of the founders from the rest of the OECD (at the same time the outflows of the rest). As a result, both equations' coefficients differ. Some research assumes that a country's outflow is equal to its partner's inflow, resulting in identical coefficients in the equations; however, this is not the case here.

The successors of Carr et al. (1998), the first empirical study of the multinational enterprise's knowledge-capital model, utilised the same variables to represent market size in their study of the FDI-market size relationship. So, our variable of concern, market size, is represented by the first two explanatory variables. The first is the sum of GDPs, $(GDP_i + GDP_j)$, where, the home and host countries are denoted by i and j , respectively. For the first equation, i refers to the OECD founders and the rest of the OECD is represented by j . In the second equation, on the other hand, i represents the rest of the OECD and j represents the OECD founders.

This market size variable is expected to have a positive sign in both equations, indicating its positive role on foreign direct investment decision. The second variable is the square of the difference in the home and host countries' GDPs. It is tested based on Markusen and Venables (1995). It is believed that FDI diminishes as the gap between the countries' GDPs widens.

In this case, horizontal model is accepted while rejecting the vertical one. An inverse relationship between this variable and dependent variable, FDI, is expected.

It is argued that since the home country is significantly larger than the potential host country, it will be more cost effective for the enterprise to be a national firm, establishing its headquarters and production plants in the large country. It will be able to take advantage of the larger market size and factor pricing, as well as avoid the high fixed costs of establishing plants in the small market (Avramov, 2008).

$Skill_{dif}$ shows the disparity in the availability of skilled labour in the home and host countries. According to the knowledge-capital model's projections, it will have a positive sign (evidence for vertical FDI) indicating that enterprises will prefer to locate their headquarters in a skilled-abundant country. A negative sign is a proof of horizontal FDI.

$Skill_{dif} * GDP_{dif}$ is an interaction symbol that describes the implications of both countries' skill endowment and their GDP differences. When the home country is small and skilled labour is plentiful, the sign should be negative (evidence for vertical FDI) since a growth in the skill difference between the countries implies a positive influence on outward FDI. Consistent with the theory, when the home country is large and skilled labour is plentiful, national businesses and domestic output dominate the markets, hence the term's effect on outward FDI is very limited, signifying a negative sign. For the inward FDI the opposite is logic.

BIT is bilateral investment treaties and expected to have a positive sign on FDI (Busse et al., 2010).

TAR is measuring tariff represented by the weighted average bilateral applied tariffs which is divided into two variables as indicated in the specified model. In the first equation, the first variable of *TAR* is the host country (the rest of OECD) tariffs applied to the home country (the OECD founders) exports, and the second one is the home country (the OECD founders) tariffs applied to its imports from the host country (the rest of OECD). Equivalently, considering the inward FDI of the founders as the outward FDI of the rest, in the second equation, the first variable of *TAR* is the host country (the OECD founders) tariffs applied to the home country (the rest of OECD) exports and the second one is the home country (the rest of OECD) tariffs applied to its imports from the host country (the OECD founders).

According to the knowledge-capital model, host country tariffs have a positive impact on horizontal FDI but have no effect on vertical FDI or have a negative impact if subsidiaries in the host nation employ intermediary goods imported from the home one (Cardamone and Scoppola, 2014, 6). While home country tariffs have a negative impact on vertical FDI when items are shipped from a low-cost host country back to the home country, their coefficient is projected to be positive for horizontal (greenfield) FDI.

Due of their importance as determinants of FDI, based on gravity models, distance and common language have been introduced (Cardamone and Scoppola, 2014).

Common – lang is common language. Dummy variables exist for both common-language (*common-lang*) and bilateral investment treaties (*BIT*). If the home and host countries share a common official main language, *common-lang* = one; otherwise, it equals zero. Any pattern of FDI is meant to benefit from the common language. So, it is supposed for the common language to have positive sign. If *BIT* is active (in force), it equals 1;

otherwise, it = 0. As previously stated, BIT is likely to have a positive influence for FDI.

Dis is the distance between the capital cities of the home and host countries. Blonigen and Piger (2011) claim that one of the most important factors of FDI is distance. It is believed that distance has a negative impact on FDI through increasing trade costs, i.e., FDI declines with distance (Markusen, 1997).

ν_1 and ν_2 are error terms.

3.2. Stationarity Test

Im, Pesaran, and Shin's (1998), IPS, panel approach is used to check for stationarity as a panel data analysis is used to estimate the model specified above. This approach checks the existence (or absence) of unit root. The test determines the integration order, taking into account variation, heterogeneity, in intercepts and slope coefficients. The IPS statistic is primarily a weighted average of individual Augmented Dickey-Fuller (ADF) statistics derived as t-bar statistics.

4. Data Source and estimation Results

To estimate the specified model of outward FDI and market size, the empirical work of the first equation uses panel data of 20 OECD countries as founders' group and 18 OECD countries as the rest group, representing the founders' FDI partners. Nonetheless, the empirical work employs panel data of 18 OECD countries as the rest group and 20 OECD founders' countries as the OECD rest countries FDI partners for the second equation.

For both equations, we create a panel of 12-year average over the period 2010-2021. At industry level, to analyze bilateral FDI for OECD countries, Outward FDI stocks by industry (dependent variables) were gotten primarily from United Nations Conference on Trade and Development (UNCTAD)

available at: UNCTAD, FDI-TNC-GVC Information system, FDI, TNC Database (<http://www.unctad.org/fdisstatistics>) and the FDI database of the Organisation for Economic Co-operation and Development (OECD) available at: (<http://www.data.oecd.org>),(<http://www.oecd.org/investment/statistics>),and (<http://www.oecd.ilibrary.org>).

According to the OECD's joining date, some data values were missing. These statistics belong Colombia, Costa Rica, Estonia, Latvia, Lithuania and Slovenia that joined in 2020, 2021, 2010, 2016, 2018, and 2010, respectively. UNCTAD was consulted for information regarding the existence of BITs as well. Both The World Fact-book Archives available at: (<http://www.cia.gov>) and The World Development Indicators (WDI) provide data on GDP. Tertiary school enrolment data from the WDI is used to gauge each nation's endowment in skilled labour. From CEPPI's Distances measures: the GeoDist Database, *DIS*, distances between countries' capitals, and a dummy on common language were obtained.

Based on the availability of data, bilateral applied tariffs are obtained from high income countries in each group. The model estimation for this variable is based on the following nine industries: The six industries represented by (radio, TV, communication equipment), (motor vehicles),(metal products), (mechanical products), (office machinery and computers), and (optical instruments, watches, and clocks) belong to the founders of the OECD.

The other three industries, which are (rubber and plastic products), (textiles and wearing apparel), and (wood, publishing, and printing) all belong OECD rest Members. These tariffs were gotten from stats.oecd.org available at:

(http://stats.oecd.org/index.aspx?DataSetCode=FDI_FLOW_PARTNER), the IMF's International Financial Statistics, International Trade Centre available at: (<http://www.intracen.org/itc/market-info-tools/trade-statistics/>) and Inventory of Tariffs and Trade Data available at: (<http://www.oecd.org>).

The first step in the regression analysis is to check each variable's unit root. Give Win, Pc Give was used to achieve the proper test results. As a simultaneous equation bias represents a challenge in the single equation studies utilising ordinary least square (OLS), the knowledge capital model is estimated using the Generalised Method of Moments (GMM) technique. Additionally, when using OLS, as mentioned, heterogeneity bias develops as a result of the exclusion of observable and non-observable factors specific to each industry-country pair.

The following table displays the results of the unit root test.

Table 1
Stationarity test (Unit Root test)

Variable	Average ADF Level	Average ADF 1 st difference	Average ADF 2 nd difference
For Equation 1			
$FDI_{inwardR}$	-1.74	-3.58*	-6.48*
GDP_{sum}			
GDP_{dif}	-2.49*	-6.75*	-10.33*
$Skill_{dif}$	-2.38*	-5.98*	-8.49*
$TAR_{therest}$			
$TAR_{founders}$	-1.23	-1.97	-3.58*
For equation 2	-1.09	-1.65	-2.83*
$FDI_{inwardF}$	-1.84	-3.23*	-5.13*
$GDP_{inwardR}$			
GDP_{dif}			
$Skill_{dif}$	-2.47*	-5.28*	-11.38*
$TAR_{therest}$			
$TAR_{founders}$	-1.83	-4.27*	-8.21*
	-2.17	-6.32*	-19.59*
	-2.02	-5.92*	-13.27*
	-1.29	-3.84*	-6.34*
	-1.94	-4.01*	-7.72*

Notes:- Logarithmic form of data is used.

- For $Skill_{dif} * GDP_{dif}$ variable, the author multiplied both unit root tested GDP_{dif} and $Skill_{dif}$ time series data to get the mentioned variable to estimate the model using panel data.

- The author excluded dummy variables, *Common – lang & BIT* (bilateral investment treaties) and distance from this test.
- * denotes significance at the 1% level; the critical value at the 1% level is - 2.4 (tabulated in IPS).
- The test is distributed as N (0,1) under the null hypothesis of non stationarity, hence big negative results suggest stationarity.

As reported in table 1, the results of the IPS test on the level form, for the first equation, show that the null of non-stationarity is not rejected i.e. the time series inside panel data are integrated of order one I (1) and exhibit a stochastic trend (except for both GDP_{sum} and GDP_{dif}); however, the null is

rejected as first differenced become stationary at the 1% significance level, with exception of $Skill_{dif}$ and $TAR_{therest}$. All variables are stationary in their second difference, i.e. I (0). For the second equation variables, the results of unit root test indicate that, in the level form, with the exception of $FDI_{inwardF}$ and $FDI_{outwardR}$, the null hypothesis of the presence of unit roots cannot be rejected, nonetheless, it is rejected for all of the variables since first differences become stationary at the 1% significance level.

As mentioned, in order to prevent heterogeneity bias that results from the exclusion of observable and non-observable factors specific to each industry-country twosome when using ordinary least square (OLS), the knowledge-capital model is estimated using the generalized method of moments (GMM).

To examine the relationship between the dependent variable and both explanatory variables, distance and common language in equations 1 and 2, ordinary least square is the only method utilized. When choosing the location of FDI, one of the most important considerations is the common language, particularly when the recipient country is an English-speaking one. Therefore, the English language is used to estimate the relationship between common language and outward FDI.

Since only six of the thirty-eight countries (Australia, Canada, Ireland, New Zealand, the United Kingdom and the United States) use English as a native language, the estimation is based on usage rather than mother tongue. Dis is represented by the distance between the capital cities of the home and the host countries. Table 2 shows the results of the model estimation.

Table 2
Results of outward FDI stocks by industry (Dependent variables) of the OECD founders and the OECD rest members over the period 2010-2021

variables	$FDI_{outwardF}$ $inwardR$	$FDI_{inwardF}$ $outwardR$
$FDI_{(t-1)}$	0.4873* (2.172)	0.6387** (2.874)
GDP_{sum}	1.6328** (3.874)	0.9736** (2.983)
GDP_{dif}^2	-0.018** (4.832)	-0.002*
$Skill_{dif}$	(2.109)	
$Skill_{dif} * GDP_{dif}$	- 0.3534* (2.003)	- 0.5478** (2.584)
BIT	1.9523** (4.378)	0.9187** (2.842)
$TAR_{therest}$	0.5327** (2.677)	0.2176* (1.967)
$TAR_{founders}$	1.0227 * (1.649)	0.9238 (0.954)
$Common - lang$	0.0342 (1.003)	0.0398** (4.219)
Dis	0.2812*(OLS) 0.8934*(OLS) (1.937) -0.8253**(OLS) (OLS) (3.389)	(1.725) -0.4638** (2.829)
R^2	0.534	0.493
F -statistic	17.29 9.35	

Notes: - $FDI_{(t-1)}$ represents one lagged difference of the dependent variables in both equations which means that current or present value of outward FDI depends on its value in the past.

- The abbreviation OLS represents Ordinary Least Square method for estimation.
- ** and * shows significance at 1% and 5%, respectively.
- The tabular t-statistics for 1% and 5% are 2.326 and 1.644, respectively.

The findings indicate that The GDPs of the home and host countries summed, as well as the squared GDPs difference, representing market size, are both significant and exhibit the expected signs (positive and negative, respectively). The first independent variable (GDP_{sum}), as one of the most noteworthy determinants affecting foreign direct investment (FDI), has a sizable significant positive influence (1.6328 and 0.9736), indicating a robust contribution to FDI that is directed outside the country of both the founders, $FDI_{inwardR}^{outwardF}$, and the rest, $FDI_{outwardR}^{inwardF}$, of OECD.

Thus, GDP_{sum} impact is consistent with the knowledge-capital model theory's suggested implications. The second independent variable (GDP_{dif}^2)

has, as mentioned, the anticipated negative sign. The positive coefficient for the sum of GDP suggests that an increase in the two countries' total real income will enhance FDI. Moreover, the adverse impact of the square of the difference between the home and host countries GDPs proposes that the volume of multinationals activities increases as real incomes in the home and host nations become more analogous. The knowledge-capital model views these significances of economic size (GDP_{sum}) and size differences (GDP_{dif}^2)

as proof of horizontal FDI.

As a key variable in the knowledge-capital model, the regression shows that the difference in skilled labour endowments ($skill_{dif}$) has a negative impact and is significant at the 5% level for the first equation where the dependent variable is the outward FDI of the OECD founders. However, this variable is significant at the 1% level for the second equation where the dependent variable is the outward FDI of the rest of OECD. It has a negative sign as well. This supports the claim that FDI, horizontal, is encouraged by countries' equivalent availability of skilled labour.

An interactive term $Skill_{dif} * GDP_{dif}$, another key explanatory variable in the knowledge-capital model, has unpredictable positive sign (confirming horizontal FDI not vertical one) and is significant at the 5% level. BITs, or bilateral investment treaties, have a positive impact on FDI, but they appear to have a bigger impact in the first equation where the dependent variable is $FDI_{outwardF} \cdot inwardsR$.

The host country tariffs coefficients, $TAR_{therest}$ for equation 1 and $TAR_{founders}$ for equation 2, are in the affirmative (positive sign) for the outward FDI and significant, meaning the prevalence of horizontal FDI. However, the influence of the tariff imposed by the OECD rest is greater than the effect of the tariffs imposed by the OECD founders, 1.0227 and 0.0398, respectively.

The home country tariffs coefficients, $TAR_{founders}$ for equation 1 and $TAR_{therest}$ for equation 2, have a positive effect on the outward FD as well, however it is insignificant. Their effects on the outward FDI are 0.0342 and 0.92380, respectively. This result deviates from predictions, which state that the home tariffs coefficient should be negative when there is a vertical FDI and inert when there is a horizontal FDI.

The common language (*Common – lang*) coefficients are significant and have a positive sign for equation 1 and 2, supporting the common language variable's beneficial influence on any pattern of FDI (horizontal or vertical).

The findings demonstrate that, as anticipated, distance has a negative impact on both $FDI_{inwardR}^{outwardF}$ and $FDI_{outwardR}^{inwardF}$, which explains why the majority of countries outflows are invested intra their continent.

5. Concluding Remarks

This study examines how market size affects OECD countries' outward FDI. We use the knowledge-capital framework from the OECD countries divided into two categories: the founders and the rest to provide the empirical specification of the market-size-outward FDI relationship. This method is crucial for differentiating pattern of FDI (horizontal or vertical).

A panel data technique has been used to explore the specified influence in order to enhance the number of observations and, consequently, the power of the estimation. Based on the theory of knowledge-capital of multinational corporations (MNCs), the model is presented within a framework of two equations. Each equation's dependent variable is FDI, which is represented by the outward FDI stock by industry.

The market size, represented by the sum of the GDPs of the home and host countries, is the independent variable and one of the factors that determines outward FDI. Also, square differenced GDPs variable is used. Additionally, bilateral investment treaties and common languages are dummy variables. With the exception of the variables distance and common language,

the model is estimated using the Generalised Method of Moments (GMM). For estimating both variables, Ordinary Least Square (OLS) is used.

Evidence is found for the positive market size-outward FDI relationship along with the horizontal component of knowledge-capital model for both groups. This settles that OECD countries invest in each other to access to domestic markets directly. There is a major contribution of market size sum GDP to outward FDI of OECD countries for the two groups. This contribution outweighs the effects of the other explanatory variables impacting outward FDI.

The variables, TAR, tariffs applied by home countries in both equations, however, are not significant even though the majority of explanatory variables have the predicted signs and are significant. The findings highlight the significance of trade restrictions in the host country since they demonstrate that greater trade restrictions in this country enhance multinational activities.

The host country's trade restrictions positive effect on FDI is distinctive for the horizontal FDI. Distance illustrates the anticipated inverse relationship with multinational activity. In brief, we can claim that there is evidence supporting the positive effects of the countries' total GDP and their size difference based on our empirical tests. The findings support the prevalence of horizontal FDI for panel data of the two groups of OECD countries (the founders and the rest) over the period 2010-2021.

At the last, for making investment decisions, OECD countries have to take the market size, of course besides other determinants of outward FDI into account.

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