Exports from developing countries and outward foreign direct investment: An empirical analysis

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ABSTRACT

This empirical study investigates how exports from developing countries are influenced by outward foreign direct investment. By classifying developing economies into subgroups based on income (low-income countries, lower-middle-income countries, upper-middle-income countries), as well as at the regional level (Africa, Asia, Latin America, and the Caribbean), this study also tries to analyze the variation in this association at different levels of development and across different geographical regions. The study uses imbalanced panel data from 64 developing countries spanning the years 1990 to 2019 for estimation purposes and employs panel estimation techniques of fixed and random effects model. The results suggest that at the aggregate level, outward foreign direct investment has a complementary impact on the home country export performance of developing countries. Moreover, middle and upper middle-income groups of developing countries also indicate the complementary effect of investing abroad on home country exports. At the regional level, results indicate that in Asia, this complementary effect is more vital than in any other region of developing countries. It may be due to the high share of outward FDI from Asian developing countries, which leads to more exports of intermediate goods and headquarter activities from home countries. On the contrary, results indicate that OFDI substitutes for home country exports in the group of Latin America and the Caribbean countries, and these countries have a smaller and relatively more volatile share in total world outward FDI. The general complementary type relationship between OFDI and the home country's exports highlights the need to consider OFDI as a part of national development plans to attract much-needed foreign exchange reserves for the growth and development of developing countries.

INTRODUCTION

The amount of FDI[1] at the global level has significantly increased during the previous two decades (Bhasin & Kapoor, 2021). According to the literature currently available, the FDI has a variety of effects on both the home countries and the host countries. FDI has an effect on domestic economic growth, productivity, investment, employment, and especially exports; both host and home countries are affected by investing abroad. In the past, OFDI remained associated mainly with the world's developed countries, but later on, developing countries became more active in investing abroad (UNCTAD, 2015).

Outward FDI affects the home economies of developing and developed countries in several ways. Firstly, concerning the effects of outflows of capital on the employment level of the domestic economy, it is observed that the employment level of the home country may decrease due to shifts in production structure abroad. As a result, it may lead to a decrease in jobs in the home economy (Fumagalli & Motta, 2001). This may occur because growing economic integration makes it easier to move production from one location to another and makes firms more footloose. This may increase their motivation to shift production to low-wage countries, which is thought to either reduce domestic employment or worsen working conditions and reduce their wages.

Conversely, Slaughter (2000) and Lipsey et al. (2000) concluded that outward FDI provides jobs in the home economy due to supervisory responsibilities and ancillary employment at home to service foreign operations. According to the third group of researchers, including Feenstra and Hanson (1996) and Markusen (2002), foreign investments can raise the demand and wages of skilled people in both the parent and host nations. The reasons behind this effect are the differences in labor demand between the two countries. Activities that multinational corporations shift to low-

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[1] *The inward foreign direct investment means direct investment in the reporting economy and outward FDI (hereafter, OFDI) refers to direct investments made abroad (Falzoni, 2000).*

cost nations are unskilled labor intensive from the perspective of the home economy but skilled labor intensive from the perspective of the host country. As a result, both parties may benefit from the outcome.

Secondly, productivity level is also affected by outward FDI. All over the world, many firms are combining the production of the home country with other countries' production to decrease costs and increase the home country's production (Desai et al., 2005). Thirdly, outward FDI affects the level of technology in the home country. When a country begins to invest abroad, it may acquire new technical expertise and bring it back home. However, due to the significance of exports for developing economies, the impact of outward FDI on home country exports is thought to be far more significant than these impacts of outward FDI on the performance of the home nation. Most developing economies rely heavily on exports to attain foreign exchange reserves and further because exports enable people and businesses to access a wide variety of new markets fostering economic growth.

Depending heavily on the underlying motives for the company's foreign investments as well as the characteristics of the relevant economy, the impact of OFDI on home country exports may vary from home country to another. For instance, capital outflows will have different effects on resource-abundant countries compared to resource-constraint countries. The impact of OFDI through transferring production activities in foreign countries highly depends on the reasons for investment abroad. Previous studies recognize three motives for investing abroad, i.e., market, efficiency, and strategic asset seeking (Dunning & Lundan, 1993).

The motive of efficiency-seeking happens when firms from their home country increase their efficiency by sending production activities to economies with comparatively inexpensive inputs. It includes transferring some parts of the production to the host nation and is considered a complement to trade. By exporting capital and intermediate goods from domestic countries to a foreign country, OFDI increases the size of the home country's investment without initially causing a fall in domestic production (Hejazi and Pauly, 2003).

Serve the host country's domestic market, as well as its neighboring markets, is the second motive of market-seeking OFDI. The amount of investment made in the home country would decrease if OFDI substituted domestic exports or if a domestic company moved its production facilities abroad. Although OFDI may replace exports of final goods, it may also encourage the parent company in the home nation to export intermediate goods to the firm's abroad subsidiaries. The overall result is unclear. The third strategic asset-seeking motivation demonstrates the desire to acquire resources and assets that are not locally accessible but may be crucial to a firm's long-term growth strategy. It is also known as FDI for sourcing technology. Access to new knowledge and technologies that assist businesses in growing their production level and engaging in new activities in the home country may have a favorable effect on the level of investment in the home nation.

Prior studies have examined the effects of OFDI on domestic exports, mainly at the firm and industry levels. Still, they have primarily focused on developed rather than developing countries (Hymer, 1976; Dunning & McQueen, 1981; Caves, 1971; Kindleberger, 1969; Knickerbocker, 1973; Paul & Benito, 2018). Additionally, the evidence currently available is inconclusive regarding the overall effect of OFDI on the performance of the home country's exports. The empirical research obtained from various studies suggests that OFDI may have a complementary relationship (Head & Ries, 2001; Mullen & Williams, 2011; Padilla-Perez & Nogueira, 2016; Ahmed et al., 2016) or a substitution type relationship with exports of the home nation (Bojnec & Fertő, 2014; Bhasin & Paul, 2016). Most of these studies are based on developed countries or small country groups. The empirical research about developing countries is quite limited. Even though developing countries make up a growing portion of global OFDI and exports are also crucial for developing nations to generate the necessary foreign reserves. To fill this gap, the current study explores how OFDI affects developing countries' domestic exports. An unbalanced panel of 64 developing nations from 1990 to 2019 served as the basis for this analysis. According to each country's level of development, the whole sample of developing countries is divided into three groups in this study (20 low-income countries, 30 lower-middle-income countries, and 14 upper-middle-income countries). Additionally, we have examined this relationship across different regions (including Africa, Asia, Latin America & the Caribbean countries).

The findings of the study will not only contribute to empirical literature but also be beneficial for the policy reviewers and researchers in understanding the behavior of Outward FDI and its impact on the home country exports of the developing countries. This research will help highlight the income group and regions, which can use ODFI as an option to expand their exports.

Five sections make up the remainder of this study. A comprehensive review of the literature is presented in Section 2. The OFDI profile of developing countries is covered in Section 3. The data and estimation techniques are reported in section 4. Section 5 also includes the empirical findings and discussion. The analysis is wrapped up in the final section, which also offers some recommendations for public policy.

LITERATURE REVIEW

Due to the onset of globalization just after World War II, FDI gained instant prominence and significance. This resulted in increased international financial flows in the latter two decades and the emergence of MNCs (multinational corporations). As a result, numerous theories describing the flows of capital between countries and the underlying motivations of these flows were developed. International capital flows, according to Mundell (1957), would eventually promote the relocation of trade in goods between those economies, displacing exports. MNCs face entry barriers in the form of host-country nationalism, risk, and uncertainty; however, Hymer (1976) noted that they could overcome these issues by acquiring or merging with companies abroad.

Other theories of FDI, such as Vernon's PLC (Product Life Cycle) theory of 1966, Dunning's Ownership, Location and Internalization paradigm of 1977 & 1988, and the theory of internationalization by Buckley and Casson (1976), address the factors influencing outward foreign investment, such as the timing of FDI and locational preferences relating FDI (Buckley & Casson, 1981). International trade and foreign investment were connected by Vernon (1966). According to this theory, the relocation of production from developed to developing countries is linked with the stages of the product cycle in production. Another explanation for FDI was provided by Buckley and Casson's Internalization theory (1976), when internalization costs are lower than the cost of exporting, businesses will choose FDI over exports. The result of this global internalization is the development of MNCs.

Up till now, the theories we have mentioned mainly rely on the firm-specific characteristics that influence FDI and explain how firms conduct businesses in foreign markets depending upon their firm-specific factors. A theory explaining the location aspect of OFDI, i.e., where firms should operate holding particular firm-specific features, was developed by Dunning & McQueen, (1981). Suppose three benefits—location (L), ownership (O), and internalization (I)—occur concurrently. In that case, a firm will select OFDI as a strategy of entry into a foreign country (OLI paradigm established by Dunning & McQueen, 1981). The business will profit by producing the good domestically and choosing to export if there are no location advantages. The firms will decide to license their firm-specific benefits to outside parties if internalization becomes challenging. As a result, the substitution effect is essential to these theories.

Hymer's work was further extended by Kindleberger (1969), who explained FDI theory using monopolistic power rather than a market incentive. With the attainment of monopolistic advantages, a multinational firm would prefer to carry out production abroad rather than including international competitors. In addition to these monopolistic benefits, Knickerbocker (1973) offered another explanation for outward foreign investment based on oligopolistic behavior. Firms may invest abroad because one of their competitors has already done so.

The location decision of investment and the nature of the relationship underlying exports and OFDI are dependent on the motivations for FDI (Debaere et al., 2010). If the investment is made in a less developed country compared to the home country, then it would lead to a complementary type of relationship as the subsidiary will be importing intermediary products from home country suppliers because the host country's suppliers are lacking supplies of the necessary intermediate products (Lim & Moon, 2001).

According to Bhasin and Kapoor (2020), non-productive FDI activities like distribution networks, sales, paid advertising, retail and wholesale of goods after modifying them to the clients' choices in the target market will lead to the harmonization of the nexus between OFDI and exports. The working environment of the host nation, including its institutional characteristics, government policies, non-tariff and tariff barriers, usual operational circumstances, market size, cost of investment, etc., might occasionally affect the choice of location and mode of entry. Additionally, with the goal of expanding the market's size, if the market-seeking OFDI is undertaken in a country with which the parent firm has no earlier export relation, then such an outward investment won't impede the export flow because the relevant market indeed didn't exist. This is referred to as market co-creation (Pitelis & Teece, 2010). Johanson and Vahlne (2009) claim that relationships, links, and connections in new foreign markets influence how firms react to the internationalization process. Because networking forms the foundation of this approach, it is also known as the networking model.

Many researchers and scholars have attempted to analyze the internalization of multinational corporations, particularly those from emerging nations. Lattemann et al. (2012) cited the market size as the primary justification for their international investments. Their connections abroad through networking and strategic alliances aid them in successfully achieving their goal. According to Mathews' LLL theory (2002, 2006), learning happens in three stages: linkage, leverage, and learning. Luo & Tung (2007) also hold the same opinion. Institutional factors can sometimes be considered responsible for foreign investments, including political influences, government pressure, a lack of opportunity at home, unstable working conditions, exchange rate volatility, unskilled labor, etc. (Verma & Brennan, 2013).

In conclusion, we can state that there are multiple causes of OFDI. Numerous market-specific variables (market size, globally growing demand, etc.) OFDI is primarily influenced by factors related to resources (strategic assets), internal drivers (mainly firm-specific factors such as firm size, KSAs, R&D capabilities, etc.), and networking models (effective home country suppliers and networks of skilled international distributors, etc.), Lattemann et al., (2012). Therefore,

no one theory can adequately account for the internalization process of enterprises in emerging nations. It is a mixture of theories that can partially explain the motivation behind such an action, how it is carried out, and the outcome of such an action.

Numerous studies have tested the impact of outward FDI on home country exports empirically at firm, industry, and country levels. We have identified different stands of literature. One is showing the effect that OFDI complements home country exports. Others show OFDI substitutes home country exports or some studies show mixed effects. Exports and outward foreign direct investment (FDI) were analyzed by Kim and Rang (1997). They made use of samples from Japan and South Korea. To examine the relationship between these two variables, they used cross-sectional data. They discovered that outward foreign direct investment did not impact South Korea's and Japan's exports. Similarly, other studies also supported the view that outward FDI did not affect home country exports. Cantwell and Narula (2001) and Goh et al. (2012) considered Malaysia a case. By employing the Gravity model, they found that trade linkages and outward FDI were not significant. However, flows of inward FDI had a significant effect on trade. However, numerous studies demonstrated a complementary effect of outward FDI on exports from domestic countries. In order to investigate the impact of direct investment into other countries on exports, Head and Ries (2001) employed a panel dataset consisting of 25 years of data on 932 manufacturing firms from Japan. They used the simple ordinary least square (OLS) method. It was discovered that the flows of exports from home countries and outward foreign direct investment at the overall level indicated that the sampled firms were complementary.

Similarly, Lim and Moon (2001) used firm-level data sets from Korean firms to examine the relationship between OFDI and country exports. They used ordinary least squares (OLS) as an estimation technique and highlighted a positive relationship between OFDI and home country exports. Ghosh and Wang (2011) used cross-country time series data for 1989 - 2001 to study Canadian and American experiences of investing abroad and exports, particularly to China and India. The results reported increased exports due to increased investment in the other country. The study of Bojnec and Fertő (2014) exhibited the substitution effect of OFDI on home country exports. Foreign direct investment (FDI) and bilateral exports at the national level of the European Organization for Economic Co-operation and Development (OECD) countries were analyzed by using the Gravity model. They employed four different econometric techniques and made a panel analysis for the period 2004-2008. Their results reported a negative effect of OFDI on the increase in bilateral merchandise exports.

Similarly, Bhasin and Paul (2016) analyzed the relationship between outward FDI with exports of the home country in ten countries of Asia over the period 1991 to 2012. They applied panel co-integration and causality test and reported that exports and OFDI are substitutes for each other. However, Liu et al. (2016) pointed out that the home country's exports were highly dependent upon the development of OFDI. They work on samples of two main data sets of exports and outward FDI. They use a panel of China and the Organization for Economic Co-operation and Development (OECD) countries and the US and the developing economies. Their findings based on these two-panel data sets suggested that at the early stages of OFDI, exports increase more in response to an increase in OFDI. But when OFDI matures, exports increase at a lower rate compared with OFDI increases. Moreover, Ahmed et al. (2016) tested the impact of OFDI on domestic country exports by taking four Association of Southeast Asian Nations (ASEAN) as a sample from 1981 to 2013. They use OLS regression; they found that complementary type effects of OFDI on home country exports are dominated in the case of the ASEAN region. Padilla-Perez and Nogueira (2016) investigated the impact of OFDI on the home economy of a small developing economy in Costa Rica. They conducted a case study on Costa Rican firms which were making investments abroad. They found a positive relationship existed even if the country was small. According to Kapoor and Arora (2021), the disaggregation of data at different levels, including firm, industry, country, and product, caused variations in the relationship between outward foreign direct investment and exports. Most industry and country-level studies reveal complementary type association, while studies at the product or firm level corroborate the traditional theory.

Overall, the above literature shows three types of effects of OFDI on home country exports. Literature shows complementary or substitution effects of OFDI on home country exports. Some studies show mixed effects of OFDI. Most studies are based on an individual country or a small sample of developed and developing countries. It is essential to analyze the nature of OFDI and exports for an extensive panel of developing countries as the overall share of developing countries in OFDI is rising over time. It is also essential to analyze whether this relationship between OFDI and exports of developing countries varies with the level of development across different regions.

DEVELOPING COUNTRIES AND OUTWARD FDI
The process of globalization extends as more developing countries join the ranks of outward foreign direct investment. The global outward FDI reached $800 billion in 1999 to $1.76 trillion in 2016 [2]. This Global outward FDI increased to almost $1.8 trillion in 2017. The increase in prices of commodities had a direct impact on the revenues

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[2] *Most of the information provided here is originated from World Investment Report (2020 and its earlier issues).*

from investing abroad. After World War II, the developed states of the world appeared as the dominant investors of foreign direct investment. Moreover, discussions on the impact of outward foreign direct investment on the country of origin were also initiated. However, since the mid-1980, some developing countries have been actively investing abroad. The rise in foreign direct investment from developing countries called for a detailed understanding of home country factors that promoted foreign direct investment from developing countries. The literature indicated that the home economy's macroeconomic soundness, political governance, openness, and science and technology investments played a vital role in stimulating direct investment from developing countries.

According to Williams (2009) and Das (2013), the high levels of corruption, the low levels of per capita income, and economic growth at home were most powerful in motivating firms from the domestic economy to be engaged in outward FDI from small developing economies. However, the host country factors which were promoting outward FDI from developing countries include natural resources, geographical proximity, and market size of the host country (Buckley et al., 2007; Kolstad and Wiig, 2012). As mentioned in the World Investment Report (1995), outward investment from developing countries as a share of world investment doubled from 5 percent in 1980 to 1984 and 10 percent from 1990 to 1994. At the aggregate level, 15 percent of world outward FDI came from developing countries in 1995. This increase was since outflows of FDI can increase the firm's competitiveness in developing countries or cause other benefits to the domestic economy. But in most developing countries, proactive policies dealing with outward FDI were still not standard, which reflected that capital outflow might have unfavorable effects on the economy. The World Investment Report (2006) summarized many reasons for increasing direct investment from developing countries. These included an improvement in market conditions and trade, a change in conditions of macroeconomic policy, and an increase in the production cost of the country. As described in the World Investment Report (2014), developing countries invested 468 billion dollars abroad, an increase of 23% over the previous year. Foreign direct investment share reached 32% in 2014, compared to 13% in 2007.

Outward FDI (as a percentage of total world OFDI) from developing countries kept on rising day by day (see figure 1). It shows that besides developed countries, developing countries also had a significant share in total world outward FDI. Developing countries expanded international production through Greenfield investments (World Investment Report 2014). Figure 1 depicts that over time, developing countries' share in total world outward FDI increased, and now in recent years, it accounted for more than one-third of global outflows of FDI, up from about only one-tenth in 2000. Between 1990 and 2010, their share of world outward FDI increased from 5.37 percent to 26.97 percent and peaked in 2018 upto 42 percent. However, the low-income group of developing countries had less share in outward FDI. It was due to high political and economic crises in their economies. Many countries of lower-middle-income and upper-middle-income countries served as home to running TNC (Transnational Corporations) and were investing a lot of outward FDI into different nations. Flows of FDI into the manufacturing sector had been quickly rising due to large projects of Greenfield in industries like steel, electronics, and petrochemicals (World Investment Report 2015). In Asia, low-cost countries were becoming attractive bases for the activities of manufacturing in low-middle-income and upper-middle-income countries. Developing economies were investing a big share of total world outward FDI abroad. In addition, the global FDI share reached a record 42% in 2018 compared with 13% in 2007.
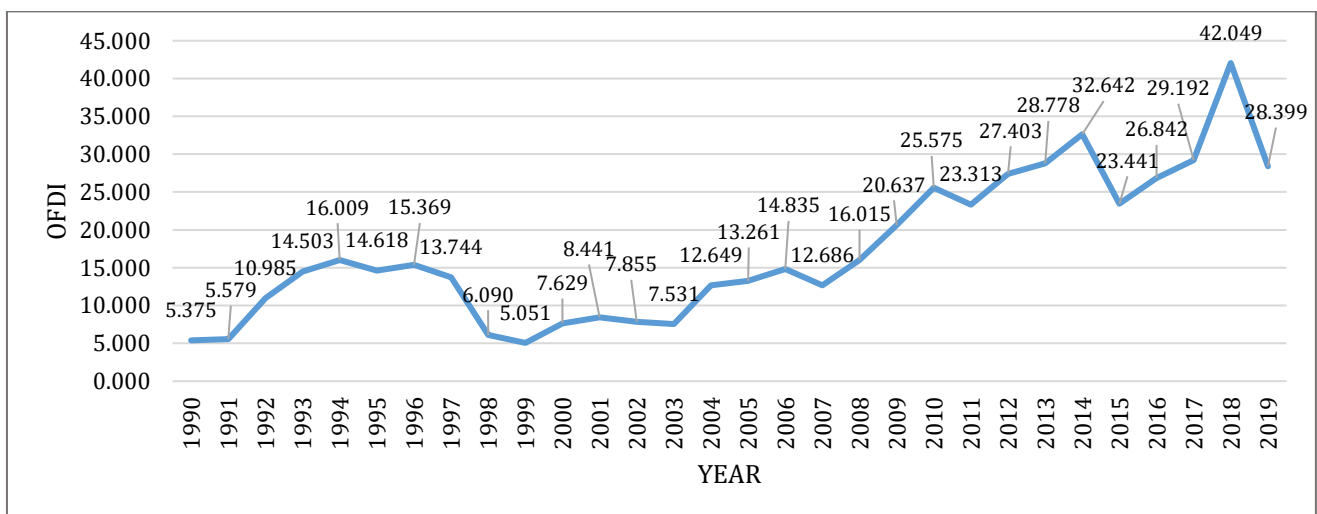

Figure 1: Share of developing countries in total world outward FDI
OFDI from developing countries (percentage of total world OFDI). Source: ©UNCTAD, FDI/MNE database (www.unctad.org/fdistatistics)

Table 1 depicts a detailed view of the overtime behavior of outflows from developing countries and their regions. The most prominent growth of FDI outflows appeared in the Asian region. The outward FDI from this region reached $79 billion in 2005. Asian OFDI mainly focused on services, but a growing portion of capital outflows from this region was now more focused on manufacturing and natural resources. Outflows from this region, specifically from the countries

of the Gulf, more than doubled. The high level of economic growth, global demand for oil, and a favorable environment for investment were the key factors behind this development. Despite the fact that there were few concerns about geopolitical uncertainty in some regions of Asia, this upward trend in FDI streams from Asia continued in 2006. The rise was widespread, covering all the significant Asian economies and sub-regions. One of the key drivers of the outflow from Asia had been China. Developing nations continued to gain in importance as outward FDI rose to a new peak level of $253 billion in 2007 because of the development of Asian TNC. In 2007, Africa also contributed to the outflows of developing countries by enlarging their activities inside and outside of the region, pushing FDI outflows from the region to $6 billion. The top five supporters of outward FDI from this area were South Africa, Egypt, Morocco, Angola, and Libya. They invested in the exploitation of natural resources and the services area. South Africa seemed the most vital among these nations.

Table 1: FDI flows by region and economy (US$: *In Billions*)

OFDI	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
World	881	1323	1997	1929	1101	1451.4	1694.4	1284	1306	1354	1594	1452	1601	986	1314
Developed	749	1087	1692	1572	821	989.6	1237.5	873	834	823	1173	1044	1095	534	917
Developing	118	212	253	296	229	400.1	383.8	357	381	468	389	383	467	415	373
Africa	2	8	6	10	5	7	3.5	12	16	13	18	18	12	8	5
Asia	79	141	195	204	210.9	273	280.5	299	335	432	339	363	417	407	328
Latin America and the Caribbean	36	63	52	82	47	119.9	99.7	44	28	23	31	1	38	0.1	42

Data Source: World Investment Report (2021 and its earlier issues)

The investment abroad from Latin America and the Caribbean continued to grow, mainly from Brazil and Mexico; they were competing for control in such enterprises as gas and oil, steel, mining, cement, and food items and beverages. However, in 2007, the outflows of FDI from this region were reduced to $52 billion because of a decrease in outflows from Brazil. Several countries in this region started projects connected to the promotion of outward FDI. For example, the national oil company of Brazil began to invest in the Dominican Republic, Colombia, and Africa. While these projects had focused on the extractive industries, they had gradually been extending to strategic sectors, including food and infrastructure. The flows of outward FDI from developed economies decreased in 2008; while these flows increased to a record level in 2007, the reason behind this was the financial crisis and the economic recession in many developed economies, which reduced the ability of, and the tendency for, TNC to invest into other countries in both 2008 and early 2009. Although flows of FDI from developing economies rose by 3 percent in the middle of 2008 but started to decrease at the start of 2009 due to an extreme decline in flows of FDI globally in 2009. Outward investment from Africa shrank by half, to $5 billion in 2009. However, investment in other countries in Asia continued to grow in 2009. It was due to the outward investment of China in the non-financial segment, which continued to grow, pushed by a continued search for mineral base resources and increased global outward FDI flows. Capital outflow was expected to restore foreign investment in 2010 as FDI outflows from China, South Korea, Singapore, and Taiwan recovered. Although this growth of outward FDI was slow and modest, outward FDI from developing countries touched $400.1 billion in 2010, capital outflows from developing economies reached a record high, and most of their investment was made in other economies within these regions. The global outflow of foreign direct investment increased 17% in 2011 compared to 2010.

Outward FDI from developing countries was $383.8 billion in 2011, although it was slightly less the last year. It was due to the decline in capital outflows from Latin America and the Caribbean and a very slow rate of developing Asia in the growth of foreign investments (see Table 1). Nonetheless, direct investment from developing and transition countries remained meaningful, reaching the second highest level. Investment from emerging and developing economies increased over time. Vertically integrated operations have been spread into other countries by developing countries. While there was a decline in outflows from Latin America and Africa, multinational corporations from Asia have expanded their overseas investment in developing countries. For the first time, Asian multinational corporations made up about one-third of the total amount of foreign investments made worldwide. Nine top 20 home economies for outward FDI, including Hong Kong, China, Singapore, the Russian Federation, the Republic of Korea, Kuwait, Chile, Malaysia, and Taiwan, were developing or transitioning. Global investments by multinational corporations from developing economies totaled $468 billion in 2014, an increase of 23% from the previous year. MNEs with headquarters in developing Asia increased their international investment to $432 billion in 2014. The development was broad, including all of Asia's major economies as well as its sub-regions. Chinese multinational corporations invested $143 billion in the East Asian region in 2014. As a result, after the United States, China became the second-largest investor. This phenomenal growth was mainly due to the expansion of cross-border investment. China's investment in other countries grew faster than inflows into the country.

However, developing countries witnessed a little decline in their outward FDI in 2015. MNEs from emerging nations decreased their foreign investments by 17% to $389 billion. Asia, which became the most prominent investment area in 2014, experienced a decline in FDI outflow in 2015. It was due to a weak aggregate demand level, declining

commodities prices, and depreciation of national currencies. Moreover, limited openings of new affiliates in other countries and a lower acquisition rate across borders were also major factors that contributed to vulnerability in outflows of foreign direct investment from developing economies. Against this general downward pattern of outflows in 2015, very few developing countries recorded an increase in foreign direct investment. China continued to be the world's second-largest investor after the United States. China had turned into a noteworthy investor in some developed nations, particularly through cross-border activities. Due to changes in intracompany loans, the countries of the Latin American region also saw their FDI outflows rising by 5 percent. The downturn that occurred in 2015 was revealing the weakness of the economy of the world, the continuing weakness of aggregate demand, and a slump in profits of MNE. After this great slump of 2015, the investing abroad from developing countries listed a 1 percent decrease to $383 billion in 2016, despite a great flow of outward FDI from China. However, foreign direct investment from the developing world continued to be significant and contributed a larger portion of the overall outflow. Gradually, the emphasis shifted from efficiency-seeking to market and asset-seeking FDI (World Investment Report 2017). International Investment Agreements have a significant role in the growth of OFDI from developing economies (IIAs). Numerous regional and bilateral agreements were made.

Developing countries' FDI outflows showed a downward trend after 2017. Due to government restrictions intended to limit foreign investment and heightened scrutiny of inward investment in the United States and Europe, Chinese multinationals saw a decline in investment for the second year in succession. Foreign investment by Latin American multinationals fell to record levels in 2018 [World Investment Report (2021)]. This was heavily impacted by negative cash outflows from Brazil and lower investment from Chile. Capital outflows from Brazil have slowed as foreign companies continue to direct their sources of financing, often raised in foreign capital markets, to their parent companies. Lowered commodity prices, increased geopolitical unrest, and decreased FDI outflows from China all contributed to a 19% decline in capital outflows from Asia to $328 billion. A slowdown in intraregional flows and negative outflows that reduced last year's totals helped FDI outflows from Latin America and the Caribbean to reach US$42 billion.

Reviewing current patterns in outward FDI from developing countries reveals that these economies are generally continuing to increase their investment in foreign nations in order to integrate developing nations into the global economy. The foreign direct investment made outside the home country improves market access and corporate competitiveness domestically. The day-by-day increasing trend in outward FDI is mainly attributed to some countries in the developing world. It is due to a rise in regional agreements and promotional steps from the government side to encourage outward FDI and enable domestic firms to reap the benefits of investing abroad. However, some countries of the developing world have shown very vulnerable behavior towards outgoing investment flows. Financial crises have always hurt them. Governments should work harder to entice external FDI that boosts competitiveness and improves ties between foreign affiliates and domestic businesses in order to improve the economic performance of their countries. They should revise their policies to attract capital, technology, and skills and offer facilitation to access markets with the help of outward FDI.

METHODOLOGY AND DATA

Model
The model used to examine the relationship between outward foreign direct investments (OFDI) and domestic exports is described in this section. According to Brainard's (1993, 1997) theory, a firm's decision between exporting and establishing a foreign affiliate will be heavily influenced by various variables, including transportation costs, the relative sizes of the different countries, the relative endowment of multiple factors, etc. We concentrate on the model specification, which uses outward FDI as the independent variable with other control variables and exports as the dependent variable. A detailed analysis of the theoretical and empirical literature is the foundation for our control variables explaining exports.

All data are first transformed into a natural log form. The use of natural logarithm form for the variables has many advantages. It makes it relatively simple to interpret the regressors' slope parameters. The dependent variable's partial elasticities with respect to a 1% change in the regressors are represented by the coefficients of the logged regressors. The issue of outliers can be lessened by using a variable in logged form.

Considering the study of Ahmad et al. (2016) with some modifications, the final model is formed and is shown in equation 1 below. In the model taken into consideration by Ahmad et al. (2016), we have added the GDP of the home country and the rest of the world as an additional regressor. Among the supply side determinants of export, GDP is considered an important determinant of exports (Bertil, 1968). Majeed et al. (2006) also consider this a determinant of exports. The higher level of economic activity will generally cause export expansion because a surplus of output can be exhausted in international markets. Empirical studies, i.e., Sohn (2005), Dodaro (1993), and Anwer & Sampath (1997) have also shown the negative effect of GDP on exports. When economic activity increases, it also means that aggregate domestic demand also increases with an increase in income. If domestic consumption increases more

extensively, it leaves less for export. Similarly, the rest of the world's GDP serves as an important demand side determinant of exports. Demand for exports is subject to economic conditions in the rest of the world, including our trade partners. A higher level of economic activity in the rest of the world (or higher GDP of the rest of the world) is expected to encourage the home country's export.

$$In(EXP)_{it} = \beta_0 + \beta_1 In(OFDI)_{it} + \beta_2 In(IFDI)_{it} + \beta_3 In(OP)_{it} + \beta_4 In(ER)_{it} + \beta_5 In(GDP)_{it} + \beta_6 In(GDPRW)_{it} + \tau_i + \eta_t + \varepsilon_{it}(i = 1, ... N); (t = 1, ... T) \quad (1)$$

Where
ln = Natural logarithm
EXP = Export of goods and services
OFDI = Outward FDI flows
IFDI = Inward FDI flows
OP = openness of the economy
ER = Official exchange rate
GDP = Real Gross domestic product
GDP$_{RW}$ = Real Gross domestic product from the rest of the world
ε_{it} is the error term, τ_i represents cross-section specific effects, and η_t denotes period-specific effect.

This model is to be first estimated for the entire sample of developing countries, then for three distinct sub-samples based on level of development (LICs, LMIs, and UMICs), and finally for the entire sample of countries divided into their regions (Africa, Asia, Latin America, and the Caribbean).

The aforementioned model, shown in Equation-1, estimates how outward FDI affects the volume of exports without taking the size of the economy into account. However, the assessment of the influence of outward foreign direct investment on the proportion of exports in relation to the size of the domestic economy is more pertinent.

$$In(EXP/GDP)_{it} = \gamma_0 + \gamma_1 In(OFDI/GDP)_{it} + \gamma_2 In(IFDI/GDP)_{it} + \gamma_3 In(OP)_{it} + \gamma_4 In(ER)_{it} + \gamma_5 In(GDP)_{it} + \gamma_6 In(GDPRW)_{it} + \tau_i + \eta_t + \varepsilon_{it}(i = 1, ... N); (t = 1, ... T) \quad (2)$$

Where,
ln = Natural logarithm
(EXP/GDP) = Exports of goods and services relative to GDP
(OFDI/GDP) = Outward FDI flows relative to GDP
(IFDI/GDP) = Inward FDI flows relative to GDP

Definition of Variables and Estimation Methodology
This study's main objective is to assess how OFDI affects domestic exports. In addition, the study takes into account other export-specific factors that also impact domestic exports. The factors are the rest of the world's GDP, inward FDI, exchange rate, gross domestic product, and trade openness. Most previous studies, like those of, Bojnec and Fertő (2014), and Ahmed et al., (2016), have also considered similar variables in their empirical analysis. Table 2 presents the symbols used for variables, definitions, and sources of the variables used in this study.

Table 2: Variables definitions

Variable	Symbol	Definition	Source
Dependent variable:			
Exports	EXP	Goods and services exports (current US$)	WDI
Independent variables:			
Outward foreign direct investment	OFDI	FDI outflows (Bop, current US$)	WDI
Inward foreign direct investment	IFDI	FDI inflows (Bop, current US$)	WDI
Openness of economy	OP	Trade share as a% of GDP	WDI
Exchange rate	ER	LCU per US$, period average	WDI
Real Gross domestic product	GDP	GDP (constant US$)	WDI
Rest of the world's real gross domestic product	GDPRW	GDP of the world (constant US$) less home country GDP (constant US$)	WDI

Considering our panel data we mainly focus on two techniques to estimate the panel regression model. These techniques are fixed and random effect models. These techniques allow us to control unobserved variables, which account for individual heterogeneity in the panel data. To choose between fixed and random effect approaches, the study utilizes Hausman (1978) test.

Data and Sources
The subsequent empirical analysis is based on an imbalanced panel data set covering the years 1990–2019. It is based on 64 developing nations for which data are available to assess the effect of outward FDI on the home country's exports. This study divides these developing countries into low-income (LI), lower-middle-income (LMI), and upper-middle-income (UMI) groups based on their income levels, adhering to the World Bank's annual classification of these countries from 1990 to 2019. The GNP threshold is the main factor in this World Bank classification. Additionally, by separating the total sample of developing countries into the regions of Africa, Asia, Latin America, and the Middle

East, this study attempts to investigate how this link differs across geographic regions. These classifications are given in the Appendix.

Table 2 indicates the sources and definitions of the variables used in this analysis. Our dependent variable is 'exports.' The data of dependent and six independent variables (gross domestic product from the rest of the world outward FDI, trade openness of the economy, inward FDI, gross domestic product, and exchange rate) are taken from World Development Indicator (WDI) database. Summary statistics are provided in Table 3.

Table 3: Descriptive statistics

Variables	Observations	Mean	Std.Dev.	Minimum	Maximum
lnEXP	1629	22.5889	2.0152	17.1678	28.5569
lnFDIOUT	1629	13.7600	7.9634	-12.1684	34.1411
lnFDIINF	1629	18.8704	4.8981	-7.1223	37.7273
lnOP	1629	4.1877	0.5056	2.6212	5.6360
lnER	1629	13.5370	10.5082	-10.4291	28.4520
lnGDP	1629	13.7677	10.4633	-17.3248	30.1109
lnGDPRW	1629	31.3892	0.4010	30.7452	31.9955

Table 3 presents descriptive statistics of variables included in the model. In this table, mean is a measure of the center of a variable. Standard deviation shows spread from mean value. However, maximum and minimum values give an idea about the highest and lowest value of the variables included in this analysis.

RESULTS AND INTERPRETATIONS

In the case of developing countries, the model provided by Equation-1 is estimated for the overall sample of developing countries, and the sub-samples are derived based on the level of development and geographical locations. This analysis examines the impact of outward foreign direct investment on the export performance of the home country. We then convert the level form model into a relative GDP form (Equation-1) to assess the effect of OFDI on exports in relation to the size of the economy for the entire sample of developing nations as well as the subgroupings for both the fixed effect and random effect models. The best model among fixed or random effect models is selected using the Hausman specification test. Fix effect models in level form, or relative to GDP form are more suitable for estimation, according to the Hausman test for overall developing countries, the degree of development, and region-wise model classifications (See Appendix). This suggests that the alternative hypothesis, which supports the fixed effect model, has been accepted instead of the null hypothesis. Tables 4-6 present the results of the fixed effect model for the impact of outgoing FDI on home country exports in the case of developing countries, broken down by level of development (LICs, LMICs, and UMICs) and by region (Asia, Africa, Latin America, and the Caribbean).

Table 4: Fixed Effect Estimates for Impact of OFDI on Home Country Exports (*Overall Developing Countries*)

Independent Variable	Dependent Variable	
	Exports (current US$)	Exports (% OF GDP)
lnFDIOUT	0.0059***	0.0077***
	(0.0012)	(0.0014)
lnFDIINF	-0.0026	-0.0068***
	(0.0019)	(0.0023)
lnOP	0.6624***	0.6678***
	(0.0397)	(0.0395)
lnER	0.0522***	0.0525***
	(0.0120)	(0.0120)
lnGDP	0.0552***	-0.9446***
	(0.0079)	(0.0082)
lnGDPRW	1.3150***	1.3195***
	(0.0294)	(0.0292)
Constant	-22.9618***	-18.4719***
	(0.7897)	(0.7679)
Adj-R^2	0.9769	0.9989
Hausman Test	205.1512	194.6645
	(0.0000)	(0.0000)
F-Statistic	1003.129	23528.49
	(0.0000)	(0.0000)

Standard errors are shown in brackets.
*, **, and *** are used to show significance at 10%, 5% and 1% level of significance, respectively.

First, we consider how exports from the home country are influenced by outward foreign direct investment. In the case of the entire sample of developing countries, the outward foreign direct investment variable shows a significant positive coefficient to explain exports of the domestic country. This positive influence is also present in the results obtained for several subgroups of developing countries. Only lower-middle-income countries have a positive and significant outward foreign direct investment coefficient, but when the model is stated as a percentage of GDP, it shows a positive and significant effect for both lower-middle-income and upper-middle-income developing countries. This significant positive effect exerts that outward FDI complements home country exports mainly because of

vertically integrated investment in other countries. Desai et al. (2005) suggest that vertically-integrated FDI, which increases exports of intermediate inputs from the home country to the host market, may be the cause of these complementarities. The lower middle and upper middle-income groups of developing countries can cover the costs of establishing new businesses abroad while benefiting from the accessible resources of the host nation. The low-income countries group's external FDI coefficient is positive but insignificant. This may reflect the fact that the OFDI by low-income groups is mostly focused on the services sector and is only projected to have little impact on exports. Furthermore, a comparison of developing countries by region shows that exports from the African region are positively and significantly impacted by outward FDI, but when the model is expressed as a percentage of GDP, both exports from Asia and Africa are positively and significantly influenced. This effect is especially pronounced in the Asian region, which may be because massive OFDI flows from this region are invested abroad. The negative but insignificant effect of outward FDI on home country exports in the case of America and the Caribbean may be due to the highly vulnerable flow of outward FDI from this region. The bulk of outward FDI from this region is merely associated with horizontal or market-seeking FDI to overcome trade barriers. It serves as a substitute for the home country exports of Latin America and the Caribbean region (Dunning, 1993). Our findings are also consistent with the findings of some earlier studies, i.e., Chen *et al.* (2012), Qiang (2013), Bojnec and Fertő (2014), and Bhasin and Paul (2016).

Table 5: Fixed Effect Estimates for Impact of OFDI on Home Country Exports (*For Sub Samples of Countries According to Income*)

Independent Variable	Dependent Variable					
	Exports (current US$)			Exports (% OF GDP)		
	L.I.C	L.M.I	U.M.I	L.I.C	L.M.I	U.M.I
lnFDIOUT	0.0015	0.0057***	0.0003	0.0019	0.0080***	0.0113***
	(0.0012)	(0.0019)	(0.0007)	(0.0013)	(0.0022)	(0.0039)
lnFDIINF	-0.0010	-0.0060**	0.0008	-0.0008	-0.0110***	-0.0104**
	(0.0023)	(0.0031)	(0.0010)	(0.0025)	(0.0032)	(0.0047)
lnOP	1.0844***	0.7408***	1.0830***	1.0820***	0.7478***	1.0902***
	(0.0408)	(0.0703)	(0.0274)	(0.0408)	(0.0699)	(0.0263)
lnER	0.9919***	0.0173	-0.0019	0.9909***	0.0176***	-0.0026
	(0.0336)	(0.0219)	(0.0042)	(0.0335)	(0.0217)	(0.0041)
lnGDP	-0.0535***	0.0586***	0.9452***	-1.0430***	-0.9445***	-0.0559***
	(0.0160)	(0.0096)	(0.0220)	(0.0162)	(0.0101)	(0.0212)
lnGDPRW	-0.0577	1.3814***	0.0619***	-0.0576	1.3882***	0.0622**
	(0.0627)	(0.0473)	(0.0323)	(0.0627)	(0.0471)	(0.0316)
Constant	-3.6323***	-24.8475***	-6.1962***	1.9919***	-22.4222***	-1.5599***
	(1.2329)	(1.2671)	(0.5063)	(1.2299)	(1.2595)	(0.5078)
Adj-R2	0.9920	0.9570	0.9977	0.9974	0.9988	0.9862
Hausman Test	14.5353	75.2166	30.3823	15.1709	51.4397	31.8528
	(0.0242)	(0.0000)	(0.0000)	(0.0190)	(0.0000)	(0.0000)
F-Stat	2430.123	493.7105	8339.028	7623.958	19878.91	1375.089
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)

Table 6: Fixed Effect Estimates for Impact of OFDI on Home Country Exports (*By Region*)

Independent Variable	Dependent Variable					
	Exports (current US$)			Exports (% OF GDP)		
	Africa	Asia	Caribbean	Africa	Asia	Caribbean
lnFDIOUT	0.0052***	0.0005	0.0004	0.0070***	0.0075***	-0.0025
	(0.0019)	(0.0020)	(0.0012)	(0.0023)	(0.0022)	(0.0016)
lnFDIINF	-0.0019	0.0107**	-0.0082***	-0.0081**	0.0163***	-0.0108***
	(0.0026)	(0.0052)	(0.0062)	(0.0032)	(0.0052)	(0.0030)
lnOP	0.6915***	0.8556***	0.8858***	0.7049***	0.8475***	0.9030***
	(0.0716)	(0.0520)	(0.0469)	(0.0708)	(0.0512)	(0.0462
lnER	0.4618***	-0.0085	0.0176*	0.4500***	-0.0086	0.0187**
	(0.0461)	(0.0126)	(0.0101)	(0.0459)	(0.0120)	(0.0101)
lnGDP	0.0264***	0.2914***	0.3472***	-0.9751***	-0.6734***	-0.6342***
	(0.0097)	(0.0260)	(0.0328)	(0.0102)	(0.0268)	(0.0330)
lnGDPRW	0.7087***	1.3005***	0.9785***	0.7320***	1.2420***	0.9661***
	(0.0738)	(0.0500)	(0.0473)	(0.0728)	(0.0497)	(0.0476)
Constant	-11.9243***	-25.3953***	-17.9849***	-7.8122***	-19.4353***	-13.3156***
	(1.5870)	(1.2257)	(0.9216)	(1.5559)	(1.2011)	(0.9197)
Adj-R2	0.9608	0.9886	0.9898	0.9981	0.9995	0.9997
Hausman Test	117.0251	181.4014	107.8997	112.2614	141.8511	134.9591
	(0.0000)	(0.0000)	(0.0000)	(0.0190)	(0.0000)	(0.0000)
F-Stat	524.9631	1752.535	1749.014	11443.57	47929.15	63879.19
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)

Standard errors are shown in brackets.
*, **, and *** show significance at 10%, 5%, and 1% significance levels, respectively.

The variable of inward FDI for overall developing countries appears as a significant variable to describe exports of the home country with negative signs both in the level form model and in the model specified relative to GDP. This variable also exhibits significant negative signs for the lower middle-income group in level form and for both LMICs

and UMICs groups of developing economies when the model is specified in relative to GDP form. The comparison of the regions reveals that in Africa, Latin America & the Caribbean region, the coefficient of inward FDI is significant with a negative sign. The negative effect of inward FDI on exports in these income and region-wise groups indicates that inward FDI leads to the invention of harsh competition in reporting economy and thus elimination of potentially weak exporters from the competition. It means that inward FDI is substituting domestic production. Low-income countries of the developing world exhibit an insignificant effect on home country exports, which shows that the low ratio of FDI inflows into these countries has an insignificant effect due to the poor infrastructural situation and political instability of these countries. The significant and positive effects prevail in the Asian region due to the large flow of inward FDI into extractive industries of the Asian region, which contributes to the expansion of its exports. These findings align with the findings of Zhang (2005) and Tufa & Tashu (2015).

The level of exports from the domestic economy in the entire sample and its income and geographic subgroups is significantly affected by the variable of economic openness. This positive effect implies that the openness of borders for trade leads to reaping the advantages of enlarged demand for exports. Santos-Paulino (2002) also pointed out that exports grow faster in open economies. The positive relationship between the openness of the economy and exports is also confirmed by Butcher and Agama (2003) and Abbas (2014).

According to the exchange rate variable, exports from home economies of developing countries are significantly positively affected. In low-income and low-middle-income countries, this effect is the most convincing. Both Africa and the regions of Latin America and the Caribbean see the same favorable impact of currency rates on exports. The positive coefficient means that as currencies depreciate, these groups export more due to their relatively cheaper exports. In the case of the upper-middle-income group and the Asian region of developing countries, the exchange rate has an insignificant negative impact indicating no effect of currency depreciation on exports in this region.

The effect of real gross domestic product is significant at the overall level and for all subgroups, but it is positive only in the level form model except for low-income countries, where it exhibits a negative effect on exports. In the relative form model, the stronger negative effect of GDP is realized at the overall level and for all subgroupings of developing countries. When economic activity increases, it also means that aggregate domestic demand also increases with an increase in income, leaving less for export. This negative relationship is also found by Sohn (2005), Dodaro (1993), and Anwer & Sampath (1997).

Last but not least, except for low-income nations where the effect is small, the real gross domestic product of the rest of the world has a highly significant positive impact on exports for the whole sample and its income and region-wise subgroups. This is because export demand rises whenever the gross domestic product of the rest of the world rises; hence GDP of the rest of the world has a favorable impact on exports from the home country. This result is consistent with Bojnec and Fertő (2014). The values of Adjusted R^2 are very high, indicating that the estimated models have high explanatory power. The results suggest that the model is a good fit, as shown by the p-values for F-statistics.

CONCLUSION AND POLICY IMPLICATIONS

It is concluded that exports from the home country are positively associated with outward FDI at both levels and relative to GDP form models. The results reveal a complementary type of effect of outward FDI on home country exports at the overall level of developing countries. While the effect of OFDI is insignificant for LICs but for LMICs and UMICs segments of developing countries, OFDI complements their exports. A vertically integrated investment that boosts the export of intermediate inputs from the home economy to the market of the host country may be the cause of this complementarity. The LMI and UMI groups in developing countries are capable of managing the costs associated with launching new businesses abroad while gaining access to the low-cost resources of the host country. When we examine the effect of outward foreign direct investment (FDI) on domestic exports in developing nations according to their regions, we find that exports in the African and Asian regions are being enhanced by FDI, but in relative to the GDP form model, Asia and Africa exhibit more complementarity. It is because the Asian region contributes a sizable portion of overall OFDI and reaps greater rewards in the form of more exports from the region.

The general complementary type relationship between OFDI and the home country's exports highlights the need to consider OFDI as a part of national development plans to attract much-needed foreign exchange reserves for the growth and development of developing countries. In order to get access to international markets and integrate firms into regional and global value chains, OFDI is particularly crucial. This can increase the competitiveness of businesses and industries at home, opening doors for equitable and sustainable growth. Considering the success of China in positively utilizing OFDI for its growth and development, there is a need that governments of developing countries desiring to benefit from OFDI should undertake different measures like investment-related services, political risk insurance, effective regulatory requirements, fiscal and financial support to attain more OFDI, operational support for investments to exploit the benefits from OFDI.

APPENDICES

Appendix-A is available at https://tinyurl.com/5c5s2vzf

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