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Do Foreign Investors Crowd Out or Crowd In Domestic Investment? A Panel Analysis for OECD Countries

Burçak Polat

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Abstract

The studies of the relationship between foreign direct investment and domestic investments indicate that the findings are mixed and controversial. This study argues that some of the conflicting evidence may be related to the ignorance of financing structure of foreign direct investments in the host market. Foreign investment can be financed as a mixture of three components (equity capitals, reinvested earnings, and intra-company loans). Thus, crowding out or crowding in effect of foreign investments on local investments may be determined by the choice of investors to finance the foreign capital in the host country. The main objective of this study is to find out the impact of foreign investment inflows on domestic investments for 30 Organization for Economic Co-operation and Development (OECD) countries from 2006 to 2013 by employing one-step Generalized Method of Moments system. We have empirically confirmed that while total foreign direct investment inflows do not have a significant effect on overall domestic investments, intra-company loans as sub-component of total foreign direct investments, do indeed, have a positive effect on domestic capital formations.

Keywords: foreign direct investment, gross domestic capital formation, domestic investment, dynamic panel data, intra-company loans

1. Introduction

Regarding of foreign direct investment (FDI) as a source of capital accumulation for both developed and developing countries leads policymakers to find new ways to attract new investments into the country. However, the role of FDI as an engine behind the economic

growth in local market may vary based on its substitution or/and complementary interactions with domestic investment.

FDI may affect the structure of capital stock in the local market through two ways. First, the majority of foreign investments are likely to be financed by borrowing from host market rather than the home market. Thus, the domestic capital stock may be structured by foreign investments at the expense of domestic investments in the local market. In other words, as demand for loanable funds increases, higher cost of borrowing may crowd out domestic investments. In that case, there might be a substitution effect between domestic investments and foreign investments. On the other hand, foreign investments may be followed by domestic supplies. It is the mere fact that most of the investments in abroad take place to utilize from lower resource cost in the host market. In such case, foreign investments may have a complementary effect on the domestic investments. Therefore, complementary or substitution interactions between foreign and domestic investments, if any, may be ones' policy interest to formulate and adjust right FDI strategies to enhance the capital accumulation in the local market.

Even though there is an abundant literature dealing with crowd in or crowd out effect of FDI on domestic investments, almost none of these studies concern for the characteristics of financial components of FDI. FDI can be financed as a mixture of three components (equity capitals, reinvested earnings, and intra-company loans). Due to the fact that crowding out effect of FDI on domestic investments arises from the financing choice of foreign capital in the local market, one should also consider the main characteristics of financial components. Equity capitals are regarded as initial investments in the local market. Therefore, they are more likely to be financed by borrowing from the host market. However, subsequent components of FDI emerge over long run and differ from the initial investments. While reinvestments represent the undistributed earnings from the foreign investments, intra-company loans represent the financing of foreign investments by borrowing from parent company rather than local institutions. Thus, these two components of FDI may reduce the need for funds to expand foreign operations within the local market.

The main objective of this study is, therefore, to find out the impact of FDI inflows on domestic investments for 30 Organization for Economic Co-operation and Development (OECD) countries from 2006 to 2013 by employing one-step generalized method of moments (GMM) system. The contribution of study to the existing literature can be explained as follows: First, this study employs three financial components of FDI to find out any substitution or complementary relations between foreign investments and domestic investments. Second, this study also employs total FDI to capture the complementary interaction between domestic supplies and foreign investments. Third, by employing the one-step GMM method, this study is aimed to capture any endogeneity, if any, among the explanatory variables within the specification.

The rest of the chapter is organized as follows: Second section explains literature review and overviews the theoretical background. This is followed by a description of data and methodological part. In the fourth section, empirical results and their implications are discussed. The last section summarizes the findings by suggesting important implications to shed light for the future policy formations.

2. Literature review

A recent debate regarding the role of FDI in domestic investment is still a controversial and forgoing issue in the FDI literature. Some of the literature argue a positive relation, while some others argue a negative relation and still others claim a neutral effect of FDI on domestic investment. As the FDI stock reached a considerable share in the domestic market of many developing countries, domestic investors increased their complication about uncontrolled foreign investments entry into the domestic market. They argued that FDI policies formulated to please investors yielded an important portion of domestic share to the foreigners. The studies of Refs. [1, 2] have claimed that part of the fear regarding the FDI comes from its crowding out effect on domestic investment. If the foreign investment is not a complement for domestic investment, local firms may suffer from a lost in their profits and close down completely [3]. Also contributed the literature by arguing that FDI may crowd out domestic investment by creating a national sovereignty in the host market. The studies of Refs. [4–10] have all agreed that foreign investments may cause crowding out effects on domestic investments through competition in the product market, financial market, or using a superior technology.

On the other side, if foreign investments are supplied by domestic firms, they may have complementary effect on domestic investments. The studies of Refs. [10–14] have analyzed the impact of FDI on local investments and concluded that foreign investments may boost the domestic investment through complementarity in production and efficiency from new advanced technology. A recent study by Farla et al. [15] reanalyzed the study of Ref. [10] by employing total gross capital formation without subtracting foreign investment. Notation assigned to the domestic investment and a foreign investment varies so that differentiating accumulated domestic investment from foreign investment may give biased estimation results. Finally, they concluded that some statistical measurement mistakes and estimation methods may yield different conclusions. Contrary to the study of Ref. [10], they claimed that foreign investments may affect the host country's domestic investment positively.

Furthermore, several scholars found neutral effects of FDI on domestic investment if it leads one-to-one increase in total investment in the host market. The studies of Refs. [6, 13, 16] have supported the view that foreign investments will increase the capital formation one to one in the host country. Scholars finding mixed evidence explain that the diversity of findings may depend on selected country group, regions, or sectors, alongside the chosen variables and methodologies in the analysis. For example, Ahmed et al. [17] have investigated the effect of FDI on the domestic investment at the sectoral level by using data from 1992 to 2012 for Uganda. They have proved that while foreign investments have a neutral effect on the overall domestic investments, this effect may change with respect to the sectors that the foreign investment flowed in. They have found a crowding out effect in four sectors; a crowding in effect in two sectors; and a neutral effect in three sectors. They have attributed the varying impacts of FDI on different sectors to the ability of foreign investors to out-compete domestic investors due to having superior technology.

3. Data and methodology

3.1. Data

Gross domestic capital formations in 30 OECD countries are determined as our dependent variable. This variable is taken from the OECD statistics [18]. The main interest of independent variables is selected as total FDI inflows and its three financial components (equity capital inflows, reinvested earnings, and intra-company debt flows). Data on FDI and its components have taken from International Monetary Fund (IMF) retrieval tool [19]. The rest of the control variables are determined as Gross Domestic Product (GDP), growth rates (Growth) in GDP, corporate tax rates (Tax) on Profits, inflation, openness, exchange rates (REX), and composite CR (country risks) indices. Statistical data on GDP, growth, corporate tax, inflation, openness, and exchange rates were received from the World Bank Data dissemination tool [20]. Data points on CR indices are taken from Political Risk Service (PRS) group website [21]. CR indices represent composite indices of economic, financial, and political risk ratings of 30 OECD countries. The risk ratings range from low to high so that as the ratings get higher, risk gets lower. Furthermore, all data are measured in US dollars.

Expected effects of the variables on dependent variable and descriptive statistics are summarized in **Tables 1** and **2**, respectively,

As seen from **Table 2**, there are no missing observations except REX, and all of the variables are in expected range. From the mean of the variables, it is clear that equity capital constitutes the largest portion of total FDI, whereas subsequent components constitute the almost half

Variable	Expected sign
FDI	+/−
Equity	+/−
Reinvestments	+
Loans	+
GDP	+
Growth	+
Tax	+/−
Inflation	−
Openness	+
REX	+/−
Composite	+

Note: Main variables of interest are represented by italic letters. Expected signs of all coefficients are expressed based on the economic theory.

Table 1. Expected sign of the coefficients.

Variable	Obs.	Mean	Std. Dev.	Min	Max
FDI	228	45.36	83.77	−22.72	525.44
Equity	228	27.81	63.28	−40.26	363.27
Reinvestments	228	8.18	14.70	−33.16	87.48
Loans	228	9.36	25.29	−81.90	187.98
GDP	228	146.75	287.45	1.69	1676
Growth	228	1.37	3.46	−14.73	10.68
Tax	228	43.98	11.71	19.8	75.4
Inflation	228	1.97	2.15	−5.20	11.34
Openness	228	101.13	61.26	24.76	371.43
REX	224	99.66	5.72	80.15	125.72
Composite	228	77.73	6.80	56.62	92

Table 2. Descriptive statistics and summary.

of total FDI. Again, from the standard deviations, one may easily assume that least volatile variable is reinvested earnings while equity components are most volatile component of total FDI. Stability of reinvested earnings and intra-company loans as an important part of total FDI may mean that FDI may cause a crowd in rather than a crowd out effect on domestic investments.

3.2. Methodology

Most of the econometric applications need to be taken within a dynamic equation. With panel data, the dynamic structure can be formulated by taking the first lagged of the dependent variable into the panel specification. However, the inclusion of lagged of dependent variable into the model leads collinearity problem between the previous variable of dependent variable and error term. And, this problem cannot be solved by employing fixed effects and random effects approach of panel data models. At this point, Arellano and Bond [22] proposed generalized method of moment (GMM) procedure, which generates both unbiased and efficient estimators. This method mainly utilizes from the orthogonality conditions that exist between lagged values of y_{it} and the disturbance v_{it}. The method takes several steps.

The econometric model should be first transformed into the first differences. The resulting equation can be written as follows:

$$\Delta y_{i,t} = \Delta \alpha_{0t} + \Delta \alpha y_{i,t-1} + \Delta \sum_{k=1}^{n} \delta_k X_{kit} + \eta_i + \varepsilon_{it} \tag{1}$$

Where $\Delta y_{it} = y_{it} - y_{i,t-1}$ and so on, and $u_{i,t} = v_{i,t} - v_{i,t-1}$. This transformation eliminates the country effect while leaving the time effect intact. By applying [22] estimation, the lagged of dependent variables can be used as instruments. The procedure of inclusion previous values of a dependent

variable as regressor is known as a difference GMM estimation. However, if explanatory variables in the form of lagged of dependent variable are persistent over time, they may act as weak instruments which produce biased estimators. Therefore, [23, 24] propose using additional moment conditions by taking the first difference of moment conditions. This procedure is called as system GMM, which generates estimators that are more efficient and unbiased.

Since previous foreign investments are likely to crowd out or crowd in current domestic investments, the econometric model also needs to be adjusted to capture a dynamic structure of first lagged of foreign investment. Therefore, we have employed one-step system GMM to deal with the endogeneity issue within the explanatory variables. Our one-step stem GMM equation is formulated as below:

$$\Delta y_{i,t} = \Delta \alpha_{0t} + \Delta \alpha \, y_{i,t-1} + \Delta \sum_{k=1}^{n} \delta_k X_{kit} + \eta_i + \varepsilon_{it} \tag{2}$$

Where $y_{i,t}$ and $y_{i,t-1}$ represent the dependent variable and lagged of dependent variable. Moreover, while $X_{ki,t}$ represent the explanatory variables within the specification, η_i and $\varepsilon_{i,t}$ denote fixed effects and the error disturbance, respectively.

4. Empirical results

The study employs yearly data from 2006 to 2013 to find out the effect of FDI inflows on domestic investments within a one-step system GMM specification. Empirical findings of the estimations are presented in **Table 3**. To ensure the robustness of the model, we have determined two different GMM specifications to be able to employ both total FDI and its financial components. Two specifications are represented by GMM 1 and GMM 2 located in the first and second columns of **Table 3**, respectively. Furthermore, post-test statistics are presented at the bottom of the table. Based on the Hansen and Arellano-Bond AR (2) test statistics, the study ensures that our results are robust and the findings are well fit with the dynamic structure of the data.

It is clearly seen from **Table 3** that we could not find any effect of total FDI on domestic investments. Yet, we have found empirical evidence that intra-company debt flows have a positive significant effect on domestic investment. In other words, FDI inflows seem not to have any substitution or complementary interaction between domestic investments. Yet, employing each financial FDI component separately shows that intra-company debt flows may have a complementary effect with domestic investments. Possible explanation for this result may be that: Foreign investors do not only borrow from parent company to finance their investment but they may also transfer funds from parent company to its subsidy to receive a high rate of return (high-interest income) on their deposits. As the financial market improves in the local (host) market, this may induce foreign investors to invest in more of transferred funds into the deposit accounts hold by local financial institutions. In conclusion, loanable funds from financial institutions to the domestic investors enhance the ability of domestic investors to increase the volume of domestic capital accumulations.

Variable	Sys-GMM1	Sys-GMM2
Investment$_{t-1}$	0.4919 (0.000)**	0.4914 (0.005)**
FDI	−0.0006 (0.707)	–
Equity investments	–	−0.0050 (0.077)
Reinvested earnings	–	0.0249 (0.126)
Intra-company loans	–	0.0047 (0.035)*
GDP	−0.0012 (0.111)	−0.0019 (0.057)
Growth	0.3125 (0.000)**	0.2932 (0.000)**
Tax	0.0510 (0.020)**	0.0512 (0.018)**
Inflation	0.0405 (0.437)	0.0389 (0.416)
Openness	−0.0017 0.645	−0.0004 (0.896)
REX	0.0195 0.230	−0.0182 (0.295)
Composite	0.1149 (0.001)**	0.0929 (0.013)**
Wald Test	2447.28 (0.000)**	5318 (0.000)**
Hansen Test	0.544	0.628
Arellano Bond AR (2) Test	0.298	0.394
Observations	178	178
Instruments	25	28

* represents % 5 significance level but ** represents % 1 significance level.

Table 3. Estimation results.

With respect to the effects of control variables on domestic investments, we have found similar results. Growth rates, corporate tax rates on profits, and composite risk ratings have a meaningful positive effect on domestic capital accumulations. We can interpret these results as follows: The increase in GDP growth rates may make domestic investors feel more optimistic for the future market potentials in which then lead them to invest in more of physical capitals. Furthermore, the positive relation between corporate taxes and domestic capital formations may be the natural result of government investments into the physical capitals. It is well-known fact that government investments constitute the important portion of domestic investments. Higher corporate tax rates raise the government revenues so that government expenditures may be reallocated more to the physical capital investments. Moreover, as expected, composite risk ratings reveal that as the OECD Country group's political, financial, and economic risks decrease, all households, firms, and government feel more confident to increase the level of their physical investments. This result does not come to a surprise since, as the economic, political, or financial conditions get better, higher income levels may be realized by households. Thus, households will be more willing to translate their disposable income into savings.

5. Conclusion

The FDI is widely accepted as the main source to fulfill the inadequate capital formations for not only developing but also developed countries. However, FDI may have varying effects on the structure of capital stock depending on its substitution or complementary interactions with domestic investments. Thus, foreign investments have often received criticism by scholars in such that they may also crowd out local investments. The main objective of this study was, therefore, to find out the impact of total FDI and its financial components on the domestic investments in 30 OECD countries from 2006 to 2013 by employing one-step system GMM specification.

The local investments may be crowded in or crowded out by foreign investments depending on the foreign investors' choice to finance the new investments in the foreign market. This study, therefore, has employed not only total FDI but also its financial components to determine any substitution or complementary interactions between foreign and local investments.

Based on the estimation results, we have empirically confirmed that total FDI inflows do not have a significant effect on domestic investments. Yet, employing each financial component separately reveals that intra-company loans, do indeed, have a positive effect on domestic capital formations. In other words, foreign investors do not crowd out or crowd in the domestic investments by the other two financial components (equity capital investments or reinvested earnings) of total FDI. However, their transfers (intra-company debt inflows) from parent company into the bank deposits in the host market increase loanable funds from domestic banks to all investors. In conclusion, one may simply assume that as the local banks impose higher interest income on the deposits, this may motivate the profit appetitive investors to invest the more of their transfers into the deposit accounts of the local banks. Thus, as the volume of intra-company debt inflows rises, this may create new loanable funds from local banks to all investors and, thus, crowd in domestic investments. Our intuition is that policy-makers should improve the deepness of financial environments to attract the FDI in the form of intra-company loans. In the case of developed countries, deepness of financial market may be well-structured. Yet, interest rates on foreign deposits should be adjusted to attract foreign investors to earn more interest income on their deposits in the host country. On the other side, we can argue that most of the developing countries are structured with poor financial institutions that are inadequate to meet the demand for loanable funds from both domestic and foreign investors. Therefore, local banks or financial institutions should be supported by the central banks of these countries to strengthen their financial structure. Investment schemes or new incentives designed by the central banks may encourage local banks to provide higher interest income payments to the foreign deposits.

With respect to the effect of control variables on domestic investments, we have found that higher GDP growth rates, corporate taxes rates on profits and better CR ratings have a positive significant effect in boosting the capital formations. Higher GDP growth rates may be taken as a signal for the high volume of sales and thus higher profitability for both domestic and foreign investors. Thus, as the growth rates increase, we may expect that foreign and domestic investors will be induced to invest more in physical capital to expand their

operations in the host country. Higher CR ratings ensure that the economic, financial, and political environment get better in the host countries. Approaching from the same perspective, better macroeconomic indicators and political rights may make investors feel more comfortable to expand their operations in the local market. Furthermore, as we noted before, strengthened financial markets also help both domestic and foreign investors to reach loanable funds offered by the local banks. Thus, as the CR ratings increase, we expect higher domestic physical capital investments by today. As we know, the most of the physical capital investments come from the investments held by governments rather than private sectors. This is especially true for the developed countries where the government imposes high corporate tax rates on the firms' profits. Since higher corporate tax rates add to the government revenues, these tax revenues can be redistributed into the physical capital investments by the government today.

JEL classifications: C23, F21, F23, F24, F29

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