Impact of FDI on Private Investment in the Asian and African Developing Countries: A Panel-Data Approach

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Abstract

The paper aims to investigate the impact of foreign direct investment (FDI) on private investment with a sample having 49 developing countries in Asia (17 countries) and Africa (32 countries) during the period of 1990-2017. Unlike previous studies, we split the data into three groups for further analysis, including the Asian, African and the full-panel samples. The results confirm a crowding-in effect which shows that foreign direct investment promotes private investment on all three research samples. Besides, the lagged private investment has a positive and significant effect on itself in the next period which reflects the inertia in the trend of private investment in recipient countries. In the full-panel sample, there are some macro factors such as GDP per capita, trade openness, and electricity that also have a positive and statistically significant impact on private investment. Besides, when more deeply estimate with smaller samples, we find that trade openness and labour force have a positive and significant in Africa, on the other hand, not in Asia. However, the domestic credit variable has a negative and significant effect on private investment only in Asian developing countries. Furthermore, there is only a positive and significant impact of the electricity variable on private investment in Asia.

1. Introduction

Foreign direct investment (FDI) plays a leading role in promoting economic growth (Borensztein, Gregorio, & Lee, 1998; Omri & Kahouli, 2014; Ali & Fei, 2016; Erum, Hussain, & Yousaf, 2016) or poverty reduction (Klein, Aaron, & Hadjimichael, 2001; Ucal, 2014) in developing countries worldwide. Besides, the other important roles of FDI are also reflected in the spread of new technologies, advanced management skills, or new business knowledge (Kobrin, 2005; Choi & Yüce, 2016). FDI has been

continuously increasing in recent years, with an estimated value of $ 671 billion coming in developing countries in 2016 (UNCTAD, 2018). However, as an external financial flow, there has been much debate about the real impacts of FDI inflows on macroeconomic variables in host economies. In particular, FDI is said to be a cause of increasing environmental pollution (Cole & Elliott, 2005; Wang, Gu, Tse, & Yim, 2013), making inequality (Figini & Gorg, 2011; Herzer & Nunnenkamp, 2013).

Besides, after timing periods of attracting FDI, many developing countries have also successfully developed the private sector, as well as private investment, has gradually grown. In the context of declining FDI in the world economic recession periods, private investment has become an important driving force for economic recovery in many developing countries. Therefore, the real interaction between FDI and private investment is always an important issue which receives much concerning of policymakers from the host countries worldwide (for example, Kim & Seo, 2003; Agosin & Machado, 2005; Ndikumana & Verick, 2008; Adams, 2009; Wu, Sun, & Li, 2010; Al-Sadig, 2013; Djokoto, Srofenyoh, & Gidiglo,

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2013; Omri & Kahouli, 2014; Szkorupová, 2015; Tung, 2019; Jude, 2019).

In recent years, there are some studies focusing on the effect of FDI on private investment, however, their results are contradictory or arguments. Firstly, FDI positively affects (known as a crowding-in effect phenomenon) on private investment or private capital in receiving countries (Xu & Wang, 2007; Ndikumana & Verick, 2008; Ang, 2009; Wang, 2010; Wu, Sun, & Li, 2010; Al-Sadig, 2013; Djokoto, Srofenyoh, & Gidiglo, 2013; Omri & Kahouli, 2014; Tung, 2019). Secondly, on the other hand, there are some previous results confirm a crowding-out effect which implies FDI negatively affects private investment in host countries (Aitken & Harrison, 1999; Agosin & Machado, 2005; Adams, 2009; Szkorupová, 2015). Thirdly, we have some results suggest that FDI has both crowding-in and crowding-out effect (e.g., Fry, 1993) or non-impact on private investment and also reject both crowding-in and crowding-out effect (e.g., Saglam & Yalta, 2011).

These above contradictory results have made much difficult for policymakers to effectively manage FDI flows into recipient countries. Besides, the developing countries have much FDI always focus in regions which have low labour cost and rich of natural resources such as Asia and Africa region. However, most of the previous studies use worldwide data without separation into specific continents to clarify the impact and compare territorial differences in research results. In order to further provide more evidence to fix this empirical research gap. Our research will have some new contributions. Firstly, our research results go further than the previous studies by dividing the research data into 3 groups: Asia, Africa, and the full-panel sample. Therefore, our analysis results show a panoramic view and a comparison discussion between continents. Secondly, our research results have the most updated data compared to previous studies. Thirdly, besides the impact of FDI, some macro variables are included in our econometric model to quantitatively estimate the interaction between other economic factors and private investment in recipient economies.

The paper is structured in 5 sections. Section 2 presents an overview of the literature. The econometric methodology and research data are presented in section 3. Next, section 4 shows the estimated results and discussion. Finally, section 5 is conclusions and some policy implications.

2. Literature Review

There are some previous studies show a positive impact of FDI on private investment in developing countries. Ndikumana and Verick (2008) note a robust impact of FDI

on private investment in Sub-Saharan Africa, this impact is due to the linking and interaction of technological and managerial activities between FDI companies and domestic companies. Cooperative activities can help private investment and private companies more profitable. These results conclude that FDI is a strong catalyst for private investment. So the African countries would have benefited from FDI because this foreign finance can promote private investment by making a high return on capital in the domestic market.

Besides, Adams (2009) studies the impact of FDI on private investment as well as economic growth with a sample of 42 countries in Sub-Saharan Africa in the period 1990–2003. The quantitative results show that FDI has a negative (constraining) effect on private investment in these countries. On the other hand, the lag variable of FDI has a positive effect on private investment. However, the sign and the intensity when adding the regression coefficients of the FDI variable and the lagged FDI variable show a net negative effect. Therefore, the result confirms a crowding-out hypothesis between FDI and private investment in Sub-Saharan Africa countries during the study period.

Agosin and Machado (2005) examine FDI inflows can crowding-in or crowding-out domestic investment in developing countries. The authors develop a theoretical model of investment with a dataset of 36 developing countries in the period of 1971-2000. The results show that in all three developing regions, FDI has the effect of reducing domestic investment, which supports the hypothesis of the crowding-out effect in these regions. This finding requires some urgent policies to make FDI more effective by improving the domestic investment environment in recipient countries.

In another study, Prasanna (2010) investigates an indirect effect of FDI on domestic investment in India in the period of 1991-2007. The author implies that FDI inflows indirectly and positively affect domestic investment by increasing export performance in India. Ang (2010) studies the determinants of private investment in Malaysia. The private investment function is developed from a neoclassical analytical framework with suitable explanatory variables for the Malaysian economy. The result confirms that FDI has an associated effect on private investment (a crowding-in effect). Besides, domestic financial resources have a positive impact on private investment while macro instability (e.g., inflation) has a negative effect on private investment in this economy.

Saglam and Yalta (2011) analysis the impact of FDI on domestic private and public investment in Turkey in 1970-2009. Their findings indicate that there is no long-term relationship between FDI, public investment and private investment, suggesting a poor contribution of FDI to the

Turkish domestic investment path. The lack of interaction between FDI and domestic investment hinders the contribution of FDI to economic growth from the capital accumulation channel, which can make a question about the benefits of FDI in Turkey. Djokoto, Srofenyoh, and Gidiglo (2013) explore the relationship between FDI and domestic investment in Ghanaian agriculture in 1976-2011. However, the authors conclude that there is a conflictive point in this relationship, which implies a crowding-out hypothesis in this case study.

Omri and Kahouli (2014) quantitatively estimate the impact of FDI inflows on domestic investment and economic growth in 13 Middle East and North Africa (MENA) countries in 1990-2010. The study results showed that FDI has a positive relationship on domestic investment, which confirms a supporting effect in this region. Besides, the authors suggest that governments should remove more barriers to pave the way for domestic enterprises to access capital, technology, qualifications as well as spillovers knowledge of foreign enterprises.

In the Asian region, Chen, Yao, and Malizard (2017) find that the impact of FDI inflows on Chinese domestic investment is mixed. There are both crowding-in and crowding-out effects found, which depending on the sort of investment of foreign enterprises. In particular, they find that FDI in joint-venture companies has a positive effect on domestic investment, however, when FDI as 100% foreign-invested companies making a crowding-out effect. The results imply that the Chinese government needs to actively promote domestic capital in investment ventures between FDI and private companies as well as use this way as a catalyst for improving the industries in the economy.

More recently, Jude (2019) study the relationship between FDI and domestic investment in a sample of 10 Central and Eastern European countries in 1995–2015. The author concludes that FDI makes a creative destruction phenomenon in these economies. There are two kinds of the effect of FDI on domestic investment. In detail, FDI has a short-term crowding-out effect on domestic investment, however, followed by a long term crowding-in effect. Tung (2019) analysis the effect of FDI on private investment in Vietnam by a quarterly dataset in 2003-2017. The quantitative result concludes that FDI positively affects private investment not only in the short-run but also in the long-run. The author also suggests that the Vietnamese government should try to balance its international trade balance (because of the trade deficit prolong), which can help to support the private investment in this economy.

3. Data and Methodology

Based on previous studies, besides the FDI variable, we conduct to add some independent variables into our econometric model.

Table 1: The list of developing countries in the research sample

Country list	Region	Country list	Region	Country list	Region
Azerbaijan	Asia	Uzbekistan	Asia	Madagascar	Africa
Bangladesh	Asia	Benin	Africa	Mali	Africa
Cambodia	Asia	Burkina Faso	Africa	Mozambique	Africa
India	Asia	Botswana	Africa	Mauritania	Africa
Iran,Islamic Rep.	Asia	Cameroon	Africa	Malawi	Africa
Jordan	Asia	Congo, Dem. Rep	Africa	Rwanda	Africa
Kazakhstan	Asia	Congo, Rep	Africa	Sudan	Africa
Lao PDR	Asia	Comoros	Africa	Niger	Africa
Lebanon	Asia	Mauritius	Africa	Senegal	Africa
Sri Lanka	Asia	Egypt, Arab Rep.	Africa	Sierra Leone	Africa
Mongolia	Asia	Fiji	Africa	Eswatini	Africa
Malaysia	Asia	Gabon	Africa	Togo	Africa
Nepal	Asia	Ghana	Africa	Tunisia	Africa
Pakistan	Asia	Guinea	Africa	Tanzania	Africa
Philippines	Asia	Gambia	Africa	Uganda	Africa
Thailand	Asia	Guinea-Bissau	Africa	Zimbabwe	Africa
		Kenya	Africa		

Our quantitative research model to study the impact of FDI on private investment in developing countries as follows.

$$PINV_{it} = \varphi_1 + \varphi_2 PINV(-1)_{it} + \varphi_3 FDI_{it} + \varphi_4 GDPPER_{it} + \varphi_5 EDS_{it} + \varphi_6 DC_{it} + \varphi_7 INF_{it} + \varphi_8 LBF_{it} + \varphi_9 ELEC_{it} + \varphi_{10} OPENNESS_{it} + \varepsilon_{it} \quad (1)$$

Where PINV is the dependent variable denoted by private investment calculated as % of GDP, besides, PINV(-1) is the first lag of PINV variable. FDI is the foreign direct investment (unit is $ billion). GDPPER is GDP per capita calculated as real income per capita (unit is $1000). DC is the domestic credit variable which is calculated as % of GDP. INF is inflation measured as % change of consumer price index. EDS is the foreign debt (unit is $billion). Besides, LBF is labour force which is denoted total number of labour in countries (unit is thousand people), ELEC is percentage of population access to electricity (unit is %), and OPENNESS is trade openness level of countries, which is calculated by exports plus imports and divide GDP (unit is %). There are 49 developing countries in our research sample, which is directly collected from the World Bank Indicators database (World Bank, 2019).

Table 1 displays a list of developing countries in the research sample. Table 2 displays descriptive statistics of the variables.

Table 2: Descriptive statistics of the variables

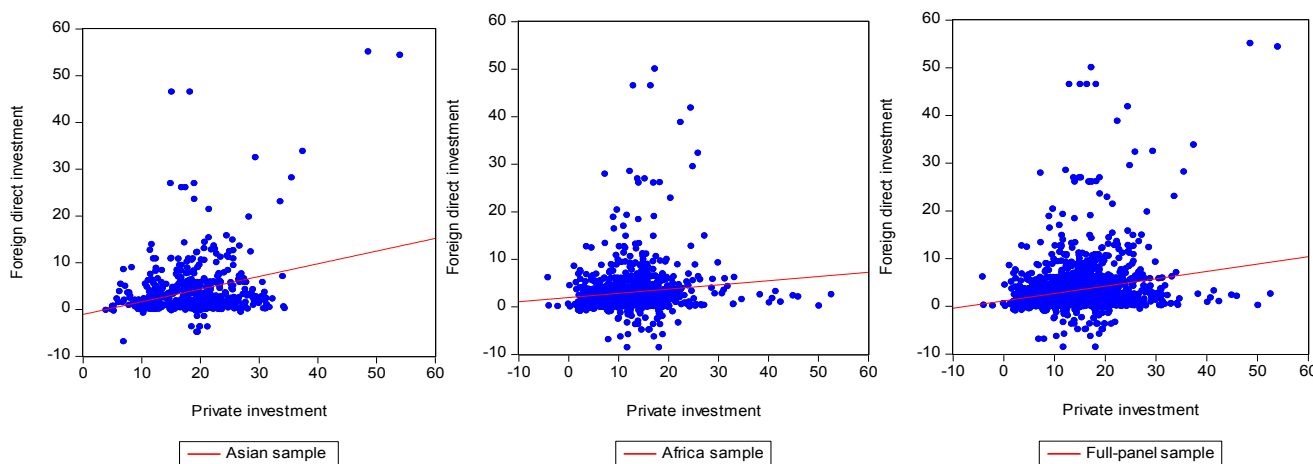| Variable	Mean	Std.Dev.	Min	Max	Obs
PINV	15.10	7.24	-4.09	54.06	1370
FDI	3.47	5.73	-8.58	55.08	1370
GDPPER	1.67	2.14	0.10	13.89	1372
EDS	15.75	40.81	0.03	513.20	1342
DC	38.69	39.11	-79.09	201.91	1370
IFL	48.07	743.99	-29.69	26765.86	1371
LBF	177.74	613.42	0.95	5201.94	1372
ELEC	48.65	35.36	0.01	100	1372
OPENNESS	71.93	34.51	11.08	220.40	1370

Figure 1: The correlative graphs between FDI and PINV in the samples

To identify the impact of FDI on private investment, the OLS technique is used with two models including the fixed effects model (FEM) and the Random effects model (REM). After that, to choose which is the better one between the fixed effects or the Random effects, we will employ the Hausman test to help the selection. In the case, the null hypothesis is rejected (p-value is smaller 0.05), the evidence implies that the REM is biased and the FEM will be chosen, and otherwise.

To have fast predicted results about the impact of FDI on private investment in Asia and Africa region, we have three scatter graphs are drawn following the statistics (see Figure

on our findings, the trade openness, as well as contact with the outside, will give businesses many opportunities to have a higher profit level. After that, high profits will use to expand the private investment as well as the private sector of economies. Our finding is supported by some previous studies such as Adams (2009), Al-Sadig (2013), Omri (2014), and Chen, Yao, and Malizard (2017).

Nextly, our results show that GDPPER also has a positive and significant effect on PINV. Following the results, our evidence has confirmed that when income per capita increases, it can support private investment raise accordingly. The increasing of income per capita will be quickly re-invested and expanded to businesses in the private sector, so GDPPER can help to boost PINV in developing countries is reasonable (Ndikumana & Verick, 2008; Al-Sadig, 2013; Chen, Yao, & Malizard, 2017; Tung, 2018; Tung, 2019).

Infrastructure is one of the important factors in the development of the private sector as well as the growth of private investment in countries. The access ability to energy is added to represent the infrastructure quality of countries. The ELEC variable has a positive and significant effect on private investment at 5% (model 3). This evidence implies that the easier to connect to the energy system (through the electricity situation) which can help domestic businesses more efficient in their operations. This finding is also a valuable conclusion because it helps governments can boost private investment through increase access ability to energy.

However, the estimated results also show that the statistical insignificance of the impact of some explanatory variables on private investment including inflation, foreign debt, labour force, and domestic credit. The regressive coefficients are not statistically significant, leading to inconclusive conclusions about the direction of these variables on private investment during the study period. Besides, due to differences between countries (or continents), they maybe make the regression coefficients are not statistically significant. Therefore, we will present the further regressive results with the splitting into Asian and African country groups in order to help the estimated results go deeper with the specificity of the regions.

4.2. A Comparison between Asia and Africa Regression Results

In this part, we present the estimated results dividing into two samples, the first one is the Asian developing countries and the second one is the African developing countries. There are four models are estimated as same as the previous part. The regressive results show that there are some different points between the two samples of developing countries (see Table 4).

Our results find that FDI has a positive and significant effect on PINV with all estimative models. So we can conclude that the crowing-in effect is confirmed in both Asian and African developing countries. Besides, we have a new finding that the impact of FDI on private investment in Asia may be much more robust than Africa continental because the coefficients in Asia are higher than Africa. Our result also indicates the FDI is very important with developing countries in Asia and Africa because this foreign financial flow can help support the private investment as well as the private sector. Through support the private businesses, FDI also helps expand the output and provides many employments for the labour market of recipient countries.

The first lagged PINV has a positive and significant impact on the PINV variable, which implies that the private investment is affected by its self. This evidence consists of the full-panel estimations. Following this finding, we can conclude that the trend in investment situation is an important factor relates to private investment in the developing countries. Besides, we find some different points about the role of trade openness (OPENNESS) variable. In detail, the trade openness variable has a positive and significant impact on private investment in African developing countries at 1% level, however, this effect is not significant in the Asian region. Based on the results, we can conclude that trade openness can help expand the private sector only in the African region. Trade openness allows domestic companies to successfully enter different markets, become more competitive, and thus increase the size of the target markets. So the policymakers in the Asian developing countries need to have some urgent solutions to deal with this problem.

The labour force (LBF) is found to have a positive impact on private investment in Africa, but only statistically significant at 5% in model 7. This result shows that a large labour force is not a necessary factor for supporting private investment. In fact, there are many countries have a large population but falling into poverty with the underdeveloped private sector. This evidence leads to a suggestion that the policymakers need to focus to increase labour productivity through improving labour skills (see Al-Sadig, 2013), not related to the quantity of labour.

The domestic credit (DC) variable has a negative and significant effect on private investment in Asian developing countries. This evidence implies that more credit can leads to less in private investment in this region. On the other hand, DC's coefficients have an insignificant impact on private investment in the African region. Besides, the coefficients of the DC variables in Africa are quite small so we can conclude that DC has not got an effect on private investment in the African region.

The electricity (ELEC) variable has a positive and significant impact on private investment in Asia at 5% level. This evidence indicates that the available situation of the energy system can support the private sector in the Asia region. However, we can not conclude about the impact of ELEC on PINV in the case of Africa because of the insignificant of estimated results in this region. Finally, we can not conclude about the impact direction of the variable including GDPPER, INF, and EDS because the estimated coefficients are not significant. This problem may be due to restrictions on the number of countries and years used in our research sample.

Table 4: The comparison results of Asia and Africa

Variable	Model 5		Model 6		Model 7		Model 8	
	Asia	Africa	Asia	Africa	Asia	Africa	Asia	Africa
PINV(-1)	0.77***	0.64***	0.76***	0.63***	0.76***	0.68***	0.76***	0.63***
FDI	0.07**	0.05*	0.08***	0.04*	0.08***	0.07***	0.08**	0.04*
IFL	-0.01	0.01			0.01	0.01	-0.01	-0.01
EDS	0.01	0.05					-0.01	0.01
OPENNESS	0.01	0.06***	0.01	0.06***			0.01	0.06***
GDPPER			0.12	0.23	0.11	0.19	0.15	0.21
LBF			0.01	0.01	0.01	0.01**	0.01	0.01
DC			-0.01*	0.01	-0.01*	-0.01	-0.01*	0.01
ELEC			0.02**	-0.01	0.02**	0.01	0.02**	-0.01
Constant	3.85***	0.03	2.45***	-0.27	2.64***	2.77***	2.21**	-0.35
R^2	0.78	0.63	0.79	0.63	0.79	0.64	0.78	0.63
Obs	459	863	459	863	459	863	459	863
Countries	17	32	17	32	17	32	17	32

Notes: ***,**,* denotes significant at 1%, 5% and 10%

5. Conclusions

For several decades, FDI has been an important role in promoting economic growth in developing countries. However, the impact of FDI on private investment in recipient countries is the subject received many controversies. Our paper aims to study the impact of FDI on private investment with a sample having 49 developing countries in Asia (17 countries) and Africa (32 countries) during the period of 1990-2017. Unlike previous studies, we split the data into three groups for further analysis, including the Asian, African and the full-panel samples.

Our research results show that FDI has a positive and significant impact on PINV in the host countries. So the crowding-in hypothesis is confirmed by our evidence in all estimated results. Besides, the lagged PINV has a positive and significant effect on itself in the next period which reflects the inertia in the trend of private investment in recipient countries. In the full-panel sample, there are some macro factors such as GDPPER, OPENNESS, and ELEC that also have a positive and statistically significant impact on PINV. Besides, when more deeply estimate with smaller samples, we find that trade openness (OPENNESS) and labour force (LBF) have a positive and significant in Africa, on the other hand, not in Asia. However, the domestic credit (DC) variable has a negative and significant effect on private investment only in Asian developing countries. Furthermore, there is only a positive and significant impact of the electricity (ELEC) variable on private investment in Asia.

Following our findings, the policymakers in developing countries need to attract more FDI with various incentives and subsidies policies. The more FDI can lead to increasing in private investment as well as improving the performance of domestic enterprises. Besides, policymakers may be to focus on the supporting policies for private companies because the private investment can help to raise itself in the next period. The relationship between trade openness and private investment is also an issue that policymakers need to pay attention to control. On the other hand, policymakers need to reform the market conditions and support trade liberalization which can implement more aggressively to enhance private investment. Finally, the solutions to improve infrastructure also need to be noted because infrastructure systems is a necessary condition to attract FDI as well as create a good environment business for the development of the private sector as well as private investment in developing countries.

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