Vocational Education and FDI Inflow: A Cross-Country Panel Data Analysis of Asian and Latin-American Countries

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SUMMARY

While global foreign direct investment (FDI) flows have increased dramatically in the last few decades, the greatest proportion has been to Asia and Latin America. It has been argued that human resources in these regions have gone beyond the basic level of skills required for attracting FDI. Empirical studies commonly proxy skilled human capital in the form of academic or general education, such as secondary-enrolment rate, tertiary-enrolment rate, literacy rate, or average years of schooling. Nevertheless, vocational education, which provides graduates with the required knowledge and practical skills for employment, had not yet been studied. Therefore, drawing data from 39 developing countries in Asia and Latin America over the 1990–2018 period, this paper examines the effects of vocational education on FDI inflows. This study employs as proxies for human capital the share of vocational students in secondary education, secondary education enrolment rates, and tertiary education enrolment rates. Statistical analysis, based on Pooled Ordinary Least Squares (POLS), Random Effect Model (REM), Fixed Effect Model (FEM) and Feasible Generalized Least Squares (FGLS), reveals a positively significant effect of human capital on FDI inflows. Responding to the research question, vocational education is found to have a positive influence in attracting FDI in the regions. The results are robust under controls for alternative specifications.

Keywords: *Vocational Education, Human Capital, Foreign Direct Investment*.

[1] The views expressed in this paper are those of the authors. They do not represent the views of the respective institutions.

ABBREVIATIONS

CPI	consumer price index
FDI	foreign direct investment
GDP	gross domestic product
ILO	The International Labour Organization
MNE	multinational enterprise
PPP	purchasing power parity
T-TEP	Toyota Technical Education Program
UIS	UNESCO Institute for Statistics
UNCTAD	United Nations Conference on Trade and Development
UNDP	The United Nations Development Programme
UNESCO	The United Nations Educational, Scientific and Cultural Organization
USA	The United States of America
VIF	variance inflation factor

1. INTRODUCTION

Recent studies have claimed that Asia and Latin America are the regions attracting most of the share of foreign direct investment (FDI)[2]. Furthermore, a number of researchers have found that FDI tends to flow into a country possessing skilled workers or a productive workforce. Skilled labour is generally characterized by the level of education, as well as expertise levels, acquired through training. For instance, vocational education provides practical and technical skills for employment as well as improving labour productivity. In this regard, vocational education may have an impact in attracting FDI. However, this impact remains in question. This study, therefore, addresses the research question "Does vocational education have an impact in attracting FDI inflow into Asia and Latin America?"

In the last few decades, there has been a dramatic increase in the inflow of FDI to developing countries. A number of studies have investigated whether the recent surge in FDI inflows to developing countries enhances their economic growth. Studies conducted by Borensztein et al. (1998) and Li and Liu (2005) found that FDI significantly contributes to the economic growth of the FDI-recipient countries. In addition, FDI helps fill the investment gap and improve the productivity of the economy through technology transfer (Keller, 2010; Liu, 2008; Miningou & Tapsoba, 2020).

However, some studies have found it does not hold for all recipient countries that FDI contributes more to growth than domestic investment. This condition is true only when the host country has a minimum threshold of stock of human capital. Borensztein et al. (1998) and Xu (2000) argued that in order to benefit from technology transfer and to maximize the productivity of FDI, the host country needs to reach a minimum human-capital threshold.

Certainly, a particular level of human capital stimulates FDI contribution to growth, yet what kind of human capital can attract FDI inflow? According to Lucas (1990) and Zhang and Markusen (1999), human capital not only stimulates the economy, but also plays an essential role in attracting inward FDI. Furthermore, the availability of higher levels of human capital, particularly in the form of skilled workers, is a favourable factor in attracting FDI (Kinda, 2013; Lucas, 1990; Noorbakhsh et al., 2001). Lucas (1990) explained that a high level of human capital can make physical capital more productive because high-skilled workers are likely to contribute to increased productivity.

Based on the above studies, we can conclude that a minimum threshold of human capital maximizes the FDI contribution to growth, but human capital has to be in the form of a skilled workforce in order to attract FDI inflow. Thus, the question arises: which level of education indicates the minimum threshold for a skilled labour force to significantly affect the inflow of FDI? According to Cleeve et al. (2015), secondary-school level of education seemed to be the absolute minimum necessary to stimulate efficiency-seeking FDI. In contrast, an empirical study by Siddiqui and Rehman (2017) found that secondary education does not affect either the levels or growth rates of GDP in any South Asian country, while secondary vocational education does. Meanwhile, the effect of vocational education on FDI inflow remains a mystery. Therefore, this study aims to shed light on the gap in existing literature on the impact of vocational education on FDI inflow into Asian and Latin American countries.

The rest of this paper is structured as follows. A review of the theoretical and empirical background is presented in Section 2. Section 3 presents the model applied to the study, describes the data and their sources. Empirical results are presented and discussed in Section 4. The study's summary and conclusions are presented in Section 5.

[2] Foreign direct investment (FDI) is defined as an investment reflecting a lasting interest and control by a foreign direct investor, resident in one economy, in an enterprise resident in another economy (UNCTAD, 2020).

2. LITERATURE REVIEW

2.1. Theoretical Studies

A number of theoretical studies have discussed the relationship between human capital and FDI and have given different arguments. Some studies argued that human capital is a determinant of FDI. They presented a convincing claim that human capital plays an essential role in attracting FDI inflow into a host country. Many theoretical studies have explained several reasons for FDI taking place in a host country. One of those reasons is the availability of human capital. Based on theoretical studies in general, human capital has been considered as an attractive factor for FDI inflow. Dunning (1981) mentioned that the presence of human capital in the host country leads to multinational enterprises (MNEs) undertaking FDI. MNE is an enterprise that controls and manages production establishments – plants – located in at least two countries (Caves, 2007).

However, to be specific, different types of FDI require different levels of human capital. For instance, an efficiency-seeking FDI type[3] tends to flow into a host country where a higher level of human capital, in the form of skilled workers, is available. The reason is that a high level of human capital contributes to increased productivity, which could generate more profit for their investment (Lucas, 1990). In addition, Lucas also noted that physical capital is found to be relatively less productive in poor countries with a lower level of human capital. For this reason, investors are less likely to invest in physical capital in such countries. More specifically, countries that possess a skilled labour force may stand a better chance of attracting FDI. According to Doner and Schneider (2016) and Yeaple (2003), MNEs are more likely to seek to invest in countries with abundant skilled labour. Similarly, Zhang and Markusen (1999) found that, as the supply of skilled labour decreases, the inward FDI converges to zero. Therefore, human capital is an important determinant of FDI inflows (Lucas, 1990; Zhang & Markusen, 1999).

2.2. Empirical Studies

Although theories indicate that human capital plays a crucial role in attracting FDI, the empirical evidence appears to be inconclusive. In order to prove the arguments of theoretical studies, many empirical studies have investigated the causality of human capital and FDI. Empirical studies on human capital as a determinant of FDI, using early-period data, found human capital had no significant influence in attracting FDI. Interestingly, however, the effect becomes positive and significant when recent data is used for investigation.

Theoretical studies have claimed human capital as an attractive factor for FDI inflows, but, unexpectedly, some empirical studies found no significant relationship. Those empirical studies, exploring the relationship with data for the 1960s and 1970s, indicated that human capital was not a significant determinant of FDI inflow (Hanson, 1996; Narula, 1996; Root & Ahmed, 1979; Schneider & Frey, 1985). Noorbakhsh et al. (2001) gave as a reason that during the early period before the 1980s, FDI was mostly oriented towards primary and manufacturing sectors, which required only labour-intensive workers. Supporting Noorbakhsh et al., Dunning (2002) and Ritchie (2002) concluded that FDI inflows of the early period were concentrated in natural resources and market-seeking types. The main determinants for these FDI types were availability and abundance of natural resources and cheap labour. Hence, human capital was not a significant factor for these types of FDI during the early period.

[3] According to Dunning (1993), MNEs' activities are classified into four types: resource seeking, market seeking, efficiency seeking and strategic-asset seeking. The efficiency-seeking FDI is highly associated with productivity, which requires a different set of inputs, such as highly skilled labour, and rendering the stock and flow of human capital.

However, recent empirical studies, employing more recent data, found evidence as expected which aligns with the theories mentioned above. The evidence showed that FDI inflows and human capital have a positive and significant relationship in studies by Cleeve et al. (2015); Dutta et al. (2017); Kheng et al. (2017); Mody et al. (1999); Noorbakhsh et al. (2001); Nunnenkamp and Spatz (2002); Suliman and Mollick (2009); and Thangavelu and Narjoko (2014). A possible reason for this, Cleeve et al. (2015) suggested, is that the trend of FDI inflows to less-developed countries is from natural-resource-seeking and market-seeking types to more efficiency-seeking types. In addition, Kheng et al. (2017) indicated that FDI has recently shifted towards services and technology-intensive sectors which require high-skilled workers. As a result, human capital has become an important factor in attracting FDI inflows.

2.3. The Possible Effects of Vocational Education on FDI Inflow

Although human capital, in general, has been confirmed to be a determinant of FDI, the specific characteristic of human capital has remained in debate. According to Kinda (2013) and Noorbakhsh et al. (2001), the skilled workforce is a favourable factor in the attraction of FDI. In this regard, vocational education may have a positive impact in attracting FDI, because vocational education equips individuals with technical knowledge and practical skills for employment (Bishop, 1989; Blossfeld, 1992; Rumberger & Daymont, 1984).

The connection between vocational education and FDI can be seen in several aspects, such as the demand for specific technical skills and labour productivity. Due to demand for specific skills, MNEs develop necessary industrial-related technical skills in the host country by investment in, or collaboration with, technical and vocational schools. For instance, the Japanese company Toyota Motor Cooperation initiated the Toyota Technical Education Program (T-TEP) in 1990 to support human-resource development by cooperating with technical and vocational schools in the host country. This programme has been successfully introduced across many countries such as the USA, Australia, Italy, South Africa, China, Vietnam and India. The Toyota Company established links and introduced T-TEP to Chinese technical and vocational institutes in 1990. As of 2020, the collaboration has produced more than 35,000 graduates, most of whom are now active in various companies, mainly in the Chinese automotive industry (Toyoto Times, 2020). In another example, a collaboration between Toyota and Indian institutes has produced around 4,200 students since 2006, and more than 2,900 graduates have been employed by Toyota Dealerships across India (Mudholkar, 2014).

It is not only the automobile industry that is engaged in such collaboration, but also other industries, such as the digital industry. In 2017, IBM, in collaboration with the United Nations Development Programme (UNDP), designed the cloud-based learning platform 'IBM Digital – Nation Africa' to provide free skill development, and to promote digital competence and innovation in Africa. (IBM Developer, as cited in ILO, 2020). A possible reason for MNEs taking part in such initiatives could be explained in a study by Shavit and Muller (2000). The authors discovered that workers with specific vocational skills relevant to their job requirements can contribute to the firm from the start of their employment.

Furthermore, recent empirical studies have deeply examined the effect of vocational education on labour productivity. The finding reported by Sala and Silva (2013) suggested that vocational training is a source of comparative advantages to promote growth in labour productivity for the 21 sample European countries in their study. Their finding is consistent with Nilsson (2010), who argued that individuals with vocational skills are likely to have direct and immediate effects on productivity and, consequently, upon economic growth.

In summary, empirical studies have proved vocational education produces a skilled and productive workforce. Hence, based on the statement above of Kinda (2013) and Noorbakhsh et al., (2001), vocational education could affect the inflow of FDI. However, the impact of vocational education on FDI inflow remains

hidden. Therefore, the purpose of this study is to shed light on this issue. Following Cleeve et al. (2015), who claimed that secondary education seemed to be the absolute minimum necessary to stimulate efficiency-seeking FDI, this study will employ secondary-vocational education as a human-capital indicator. Thus, this study examines the impact of secondary-vocational education on FDI inflows into Asian and Latin American countries for the period 1990-2018.

3. METHODOLOGY AND DATA

3.1. Methodology

This study aims to investigate the impact of vocational education in attracting inward FDI into Asian and Latin American countries. Following Cleeve et al. (2015), this study will utilize Pooled Ordinary Least Squares (POLS), Fixed Effect Model (FEM), Random Effect Model (REM), and Feasible Generalized Least Squares (FGLS) to examine the impact of vocational education in attracting inward FDI by using the following model:

$$\begin{aligned} FDI_{it} = {} & \beta_0 + \beta_1 VOC_{it} + \beta_2 SEC_{it} + \beta_3 TER_{it} + \beta_4 LGDPPC_{it} + \beta_5 GDPGROWTH_{it} \\ & + \beta_6 POLITY_{it} + \beta_7 OPENNES_{it} + \beta_8 INFRASTR_{it} + \beta_9 INFLATION_{it} \\ & + \beta_{10} NATRESOURCE_{it} + \mu_i + \gamma_t + \varepsilon_{it} \end{aligned} \quad (1)$$

where the subscripts *i* and *t*, respectively, denote the country and time dimension of the panel, μ_i is the individual-level effect, γ_t is the time effect, and ε_{it} is an error term.

Equation (1) tries to investigate the effect of vocational education (VOC) on FDI inflow. However, FDI might affect human-capital development in the host country. Therefore, the estimation of equation (1) may face a reverse-causality problem. A common strategy in response to endogeneity concerns is to employ lagged-explanatory variables in the model (for empirical application, see Egger & Pfaffermayr, 2001; Hickman & Olney, 2011; Kim & Park, 2013; Miller & Upadhyay, 2000; Nunnenkamp & Spatz, 2002). But economic theory rarely gives us information about the lag length, and there is no "right way" to identify the length of a lag. For instance, VOC in the previous year affects the current year of FDI, and it may be true that VOC in the previous five or ten years also affects the current year of FDI. Jones (1989) mentioned that models with long lags can avoid bias problems but at the cost of a decrease in efficiency of the estimates. On the other hand, lag lengths that are too short will produce efficient estimates that are biased if significant lags are omitted. Therefore, this study employs a one-year lag representing a short lag, as is commonly used by other researchers, and a five-year average lag representing a long lag, shown in equations (2) and (3) respectively.

- One-year lag of human capital variable:

$$\begin{aligned} FDI_{it} = {} & \beta_0 + \beta_1 VOC_{it-1} + \beta_2 SEC_{it-1} + \beta_3 TER_{it-1} + \beta_4 LGDPPC_{it} \\ & + \beta_5 GDPGROWTH_{it} + \beta_6 POLITY_{it} + \beta_7 OPENNES_{it} \\ & + \beta_8 INFRASTR_{it} + \beta_9 INFLATION_{it} + \beta_{10} NATRESOURCE_{it} + \mu_i + \gamma_t \\ & + \varepsilon_{it} \end{aligned} \quad (2)$$

- Five-year average lag of human capital variable:

$$\begin{aligned} FDI_{it} = {} & \beta_0 + \beta_1 \overline{VOC_{it}} + \beta_2 \overline{SEC_{it}} + \beta_3 \overline{TER_{it}} + \beta_4 LGDPPC_{it} + \beta_5 GDPGROWTH_{it} \\ & + \beta_6 POLITY_{it} + \beta_7 OPENNES_{it} + \beta_8 INFRASTR_{it} + \beta_9 INFLATION_{it} \\ & + \beta_{10} NATRESOURCE_{it} + \mu_i + \gamma_t + \varepsilon_{it} \end{aligned} \quad (3)$$

where $\overline{VOC_{it}}$, $\overline{SEC_{it}}$ and $\overline{TER_{it}}$ are five-year average lag of VOC, SEC, and TER respectively for the country *i*. A five-year average lag is calculated by the following equation:

$$\overline{VOC_t} = (VOC_{t-1} + VOC_{t-2} + VOC_{t-3} + VOC_{t-4} + VOC_{t-5})/5$$

For example, a 5-year average lag VOC of year 1990 is

$$\overline{VOC_{1990}} = (VOC_{1989} + VOC_{1988} + VOC_{1987} + VOC_{1986} + VOC_{1985})/5$$

The calculation of five-year average lagged explanatory variables is based on Stata command, and can be calculated only if the values of those variables exist for five consecutive years. Because some data are missing, including five-year average lagged explanatory variables will generate fewer sample sizes and observations.

3.2. Data

The model, presented above, was estimated by using a panel dataset covering 39 developing countries in Asia and Latin America over the 1990-2018 period[4]. The data has been drawn from different sources according to each variable, which will be shown in the following explanation.

For this study, the dependent variable is defined as net FDI inflow[5] into the Asian and Latin-American countries, expressed as percentage of GDP. Data for this variable was drawn from the UNCTAD FDI database[6].

Three main-interest independent variables of this study are VOC, SEC, and TER, which indicate educated and skilled human capital. First of all, VOC is the proportion of all students in secondary education enrolled in vocational programmes, expressed as percentage. The estimated coefficient on this variable is expected to be positive. Next, SEC is the gross secondary-school enrolment ratio (%), as used in Root and Ahmed (1979). This variable can be rationalized as a measure of investment in human capital; it has customarily been used in the empirical literature on growth (see Barro, 1991; Barro & Lee, 2013). Like the VOC variable, it is expected to be positively associated with FDI inflow. Last, the tertiary-education enrolment ratio, TER, is used, following Cleeve et al. (2015), to implicitly account for the number of cumulative years of secondary and some tertiary education in the labour force. It also captures higher levels of technical and managerial skills, and is expected to have a positive relationship with FDI inflows. Data on these variables were drawn from the UNESCO Institute for Statistics (UIS)[7].

Several control variables were included in this study. According to the related literature, countries that pay a higher return on capital are considered as location advantages for FDI to take place. The higher the return, the greater the FDI inflow is expected to be. But measuring the return on capital is very difficult, and finding an appropriate measure for the return on investment is problematic, especially for developing countries. This is because capital markets in most developing countries are not well functioning. In order to get around this problem, the related studies have commonly used real GDP per capita as proxy of return on investment. Real GDP per capita and return on investment establish an inverse relationship when assuming the marginal product of capital is equal to the return on capital (Asiedu, 2002). Capital is scarcer in countries with lower real GDP per capita, thus investments in capital-scarce countries will yield greater marginal productivity. Real GDP per capita is also used as a representative for real wages in the host country, which is expected to decrease FDI inflows as real wages increase. On the other hand, real GDP per capita is expected to have a

[4] The sample period of estimation is 1985-2018 due to the inclusion of five-year average lagged explanatory variables.
[5] The expression "net" FDI inflow does not mean that FDI outflows are subtracted out. Net FDI inflows refer to the sum of new investment inflows, reinvestment of earnings, and other capital less disinvestment in the reporting economy from foreign investors.
[6] https://unctadstat.unctad.org/EN/Index.html
[7] http://data.uis.unesco.org/

positive relationship with FDI inflow when used as proxies of purchasing power and market size. Consequently, the sign of the estimated coefficient on this variable is ambiguous *a priori*. Following the related literature, this study employed real GDP per capita to measure the return on capital. Root and Ahmed (1979), however, indicated that the absolute value of GDP may reflect the size of population rather than size of income. Thus, use of GDP per capita may also induce population bias in the level of income per capita. To overcome this bias, per capita GDP variable is measured by the logarithm based on purchasing power parity (PPP) in constant 2017 international dollars (LGDPPC).

Another control variable, the growth rate GDP (GDPGROWTH), included in this study reflects the pace of economic activity and market growth in the host countries. The growth of the domestic market in host countries is typically found to be a major determinant of FDI inflow to developing countries (Root & Ahmed, 1979; Schneider & Frey, 1985; Torrisi, 1985). This variable represents the attractiveness of the market, which is expected to positively influence FDI inflow.

Open economies inspire more confidence and foreign investment, thus trade regimes in developing countries have been significantly liberalized. Exports plus imports as percentage of GDP is often used as a measure of openness of an economy[8]. The higher the percentage, the more open the economy and the higher expected FDI inflow will be. This study, therefore, includes OPENNESS as a control variable. The data of real GDP per capita, growth rate of GDP and Openness were drawn from the World Bank's World Development Indicators[9].

The unified polity scale, POLITY, derived from institutionalized democracy and autocracy, is also included as a control variable in this study. This variable is used to measure political participation and the absence or lack of democratic institutions. As a combined score, POLITY ranges between +10 (strongly democratic) and -10 (strongly autocratic). The polity scale reflects unrestricted, open and free political participation, the openness and competitiveness of executive recruitment, and whether constraints on the chief executive are substantial. This study obtained the data from "Polity5 Project, Political Regime Characteristics and Transitions, 1800-2018"[10], and uses the variable named in the source "polity2".

Good infrastructure is believed to increase the productivity of investment and stimulate FDI flows (Asiedu, 2002). Hence, this study employed communications infrastructure, INFRASTR, to proxy for infrastructure development in the host country. Communication infrastructure was measured by the number of fixed-telephone subscriptions per 100 population[11]. This variable is expected to have a positive effect on attracting FDI inflows (see Cheng & Kwan, 2000; Loree & Guisinger, 1995; Wheeler & Mody, 1992). The source for this variable is the International Telecommunication Union database[12].

In empirical studies, inflation is considered a macroeconomic instability, which is the other conditioning factor of FDI inflow. The inflation rate shows the government's overall ability to manage the economy (Fischer, 1993). In addition, low rates of inflation represent positive and stable economic growth, and high rates the opposite. Macroeconomic instability can be engendered by fluctuations in prices which distort decisions of producers and consumers (Satyanath & Subramanian, 2004). The inflation rate, INFLATION, used in this study is measured by the consumer price index (CPI). An increase in inflation rate is expected to exert a negative impact on FDI inflow.

[8] Openness is commonly used in most related studies, such as Asiedu (2002), Cleeve et al. (2015) and Noorbakhsh et al. (2001).
[9] https://databank.worldbank.org/source/world-development-indicators
[10] http://www.systemicpeace.org/inscrdata.html
[11] Mobile phones tend to replace mainline or fixed telephones, therefore an alternative proxy for communication infrastructure that could be used is the number of mobile cellular subscriptions per 100 population.
[12] https://www.itu.int/en/ITU-D/Statistics/Pages/publications/wtid.aspx

This paper also employed an indicator, NATRESOURCE, to measure the natural resources of the host countries, as a control variable in the model. Countries with abundant natural resources are historically known to be attractive for FDI and attract a higher share of FDI, especially natural-resource-seeking FDI. The NATRESOURCE is proxied for the total natural resources rents as a percentage of GDP. Data on this variable and inflation rate were drawn from the World Bank's World Development Indicators.

4. EMPIRICAL RESULTS AND DISCUSSION

A panel dataset was used to estimate the model, covering 39 developing countries in Asia and Latin America over the 1990-2018 period. A summary of data is given in Table A.1. in Appendix A. For a multiple linear regression model, one of the assumptions for unbiasedness is that the regressors have no exact linear relationships among them. Thus, to ensure the model was properly specified, a variance inflation factor (VIF) test was conducted to identify the degree of multicollinearity. The VIF results of all independent variables were lower than 5 (see Table A.2. in Appendix A); a low VIF indicates independent variables are not collinear with each other in the model. An outlier can cause serious consequences in statistical analyses. Therefore, this study paid serious attention to address the existence of outliers. After completing the data observation and calculation, this study found that GDP growth rate and inflation rate comprise extreme values which are considered as outliers. Therefore, these outliers were omitted from the dataset (see discussion in Appendix D).

As mentioned in the previous section, two different lag lengths were used in order to respond to endogeneity concerns in this study. Table 1 and Table 2 show the estimation results using a one-year lag and five-year average lag based on Eqs. (2) and (3), respectively. Most of the estimated parameters, reported in Table 1, are found significant, and each with the expected sign. When the model was estimated with the five-year average lag, some parameters, reported in Table 2, turn insignificant, but the signs of estimated coefficients remained within our expectations. Only a few estimated parameters are found with the wrong sign. Basically, however, the results of both lag approaches are quite similar. Most of the results do not change very much, indicating the results are robust. Taking the number of observations into account, the one-year lag case included more observations than the five-year average lag case. Therefore, this study will employ the one-year lag approach to address endogeneity problems in later regressions for further discussion.

Table 1. *Results generated by alternative methods using one-year lag*

	Dependent variable: FDI				
	POLS	REM	FEM		FGLS
VARIABLES	(1)	(2)	(3)	(4)	(5)
VOC(-1)	0.0686***	0.0764***	0.0263	0.0417**	0.0491***
	(0.0189)	(0.0192)	(0.0355)	(0.0201)	(0.0107)
SEC(-1)	0.0554***	0.0573***	0.0161	0.0501***	0.0362***
	(0.0115)	(0.0119)	(0.0186)	(0.0118)	(0.0072)
TER(-1)	0.0147	0.0171	0.0320*	0.0289**	0.0010
	(0.0106)	(0.0116)	(0.0183)	(0.0116)	(0.0069)
LGDPPC	-1.3661***	-1.2900***	0.0542	-1.5572***	-0.5629**
	(0.3276)	(0.3301)	(1.0825)	(0.3280)	(0.2301)
GDPGROWTH	0.2053***	0.1865***	0.1966***	0.2528***	0.0876***
	(0.0437)	(0.0485)	(0.0552)	(0.0495)	(0.0309)
OPENNESS	0.0353***	0.0334***	0.0128	0.0370***	0.0262***
	(0.0039)	(0.0039)	(0.0109)	(0.0039)	(0.0031)
INFRASTR	-0.0484***	-0.0625***	0.0065	-0.0478**	-0.0470***

	(0.0180)	(0.0198)	(0.0382)	(0.0196)	(0.0110)
INFLATION	-0.0068	-0.0110	-0.0164	-0.0040	-0.0114
	(0.0173)	(0.0185)	(0.0205)	(0.0182)	(0.0107)
NATRESOURCE	0.0779***	0.0657***	0.2588***	0.0649***	0.0526***
	(0.0176)	(0.0180)	(0.0388)	(0.0176)	(0.0137)
POLITY	0.0317	0.0150	-0.0043	-0.0426	0.0417**
	(0.0261)	(0.0267)	(0.0507)	(0.0288)	(0.0176)
dummyAsian	-	-	-	-1.9008***	-
				(0.4012)	
Constant	6.7983***	5.3127**	-4.6832	8.7321***	1.7598
	(2.3857)	(2.5860)	(9.1555)	(2.6318)	(1.7034)
Time Dummy	-	Yes	Yes	Yes	Yes
Country Dummy	-	-	Yes	-	-
Observations	526	526	526	526	526
R-squared	0.2651	0.3166	0.2517	0.3468	0.2826
Number of country	39	39	39	39	39

Notes:

1. Dependent variable is a net foreign direct investment (FDI) expressed as a percentage of GDP.
2. VOC(-1), SEC(-1) and TER(-1) are represented one-year lagged of secondary vocational, secondary and tertiary education, respectively.
3. dummyAsian is a regional dummy variable. This variable was assigned value 1 if countries are in the Asian region, and zero otherwise.
4. Standard errors are reported in parentheses. The model in the last column is the feasible generalized least squares (FGLS) which were used to fixed heteroskedasticity.
5. R-squared, in column 5, was estimated after regression by the author. However, an R-squared statistic computed from GLS sums of squares does not represent the percentage of the total variation in the dependent variable which is explained by the model (McDowell, n.d.).
6. ***, **, and * denote significance levels at 1%, 5%, and 10%, respectively.

Table 2. *Results generated by alternative methods using five-year average lag*

	Dependent variable: FDI				
	POLS	REM	FEM		FGLS
VARIABLES	(1)	(2)	(3)	(4)	(5)
$\overline{\text{VOC}}$	0.0429	0.0415	-0.0407	-0.0059	0.0239
	(0.0279)	(0.0289)	(0.0626)	(0.0285)	(0.0167)
$\overline{\text{SEC}}$	0.0470***	0.0375**	0.0480*	0.0356**	0.0166
	(0.0157)	(0.0165)	(0.0277)	(0.0155)	(0.0108)
$\overline{\text{TER}}$	-0.0082	-0.0020	-0.0065	0.0151	-0.0020
	(0.0131)	(0.0144)	(0.0258)	(0.0139)	(0.0096)
LGDPPC	-0.1238	-0.0793	3.5907**	-0.6088	0.1126
	(0.4122)	(0.4175)	(1.3985)	(0.4043)	(0.2697)
GDPGROWTH	0.1140**	0.1328**	0.1857***	0.2243***	0.0871**
	(0.0508)	(0.0584)	(0.0714)	(0.0573)	(0.0367)
OPENNESS	0.0223***	0.0211***	0.0237*	0.0265***	0.0187***
	(0.0047)	(0.0049)	(0.0139)	(0.0047)	(0.0037)
INFRASTR	-0.0563***	-0.0638***	0.0176	-0.0437**	-0.0556***
	(0.0191)	(0.0215)	(0.0490)	(0.0205)	(0.0137)

INFLATION	-0.0364	-0.0644***	-0.0412	-0.0537**	-0.0352**
	(0.0222)	(0.0246)	(0.0260)	(0.0233)	(0.0161)
NATRESOURCE	0.0585**	0.0597**	0.0823	0.0527**	0.0626***
	(0.0233)	(0.0247)	(0.0551)	(0.0233)	(0.0194)
POLITY	-0.0187	-0.0079	0.0168	-0.0630**	0.0404*
	(0.0304)	(0.0320)	(0.0668)	(0.0317)	(0.0229)
dummyAsian	-	-	-	-2.5350***	-
				(0.4530)	
Constant	-1.0495	-1.4472	-35.0593***	4.0153	-1.7302
	(3.0014)	(3.1351)	(12.0785)	(3.1085)	(2.0167)
Time Dummy	-	Yes	Yes	Yes	Yes
Country Dummy	-	-	Yes	-	-
Observations	275	275	275	275	275
R-squared	0.2510	0.344	0.2940	0.4211	0.2698
Number of country	28	28	28	28	28

Notes:

1. Dependent variable is a net foreign direct investment (FDI) expressed as a percentage of GDP.
2. $\overline{\text{VOC}}$, $\overline{\text{SEC}}$ and $\overline{\text{TER}}$ are represented five-year average lagged of secondary vocational, secondary and tertiary education, respectively.
3. dummyAsian is a regional dummy variable. This variable was assigned value 1 if countries are in the Asian region, and zero otherwise.
4. Standard errors are reported in parentheses. The model in the last column is the feasible generalized least squares (FGLS) which were used to fixed heteroskedasticity.
5. R-squared, in column 5, was estimated after regression by the author. However, an R-squared statistic computed from GLS sums of squares does not represent the percentage of the total variation in the dependent variable which is explained by the model (McDowell, n.d.).
6. ***, **, and * denote significance levels at 1%, 5%, and 10%, respectively

Table 1 presents the results estimated by four different estimation methods, POLS, REM, FEM and FGLS. In general, estimated results show the sign as expected, and most are statistically significant. Estimating the basic model on pooled data generated the results reported in column 1. The random-effect model, stated in column 2, was estimated by assuming individual-level effects are random and uncorrelated with the regressors. The Breusch and Pagan LM test was employed to determine whether REM is a more appropriate method than POLS. The test results rejected POLS in favour of REM (see Appendix B; Statistical test results, discussed below, are also reported in this appendix). The estimated results shown in columns 3 and 4 are obtained by assuming the individual-level effect to be fixed and correlated with the regressors. In column 3, the result was estimated with country fixed effect, while in column 4, it was estimated with a regional dummy fixed effect[13]. The regional dummy variable was assigned value 1 if countries are in the Asian region, and zero otherwise. F-test of both fixed-effect models rejected the null hypothesis that fixed effects are jointly zero. It suggests that omitting them from the model would produce biased and inconsistent estimates. Hence, fixed effect models were preferred over POLS. The Hausman test was conducted to examine choices between REM and FEM, and the preferred model is REM for the null hypothesis. The tested results rejected the null hypothesis which means the key REM assumption, that unobserved individual effects are uncorrelated with each explanatory variable, is false, (Wooldridge, 2020, p.474). Therefore, FEM estimates were preferred. Most parameters estimated with country fixed effect were found to be insignificant, but the result turned to statistically significant when estimated with the regional dummy fixed effect. One possible reason is that this study may not have sufficient data to estimate the coefficient of the country dummy variable.

[13] The results reported in columns 4 of Table 1 and Table 2 were estimated by least square dummy variable (LSDV) estimation.

Since panel data comprise time series data, the serial correlation test was also carried out by using the Wooldridge test for autocorrelation in panel data. The result rejected the null of no first-order serial correlation in the model, which implied the model has serial correlation problems. Given the cross-sectional dimension of the data, the validity of the assumption that the error term has the same variance across countries given any value of the explanatory variable was tested[14]. The test results rejected the null of homoskedasticity, which suggest there is presence of heteroskedasticity in the model. The FGLS estimator has been claimed to be more efficient in handling the presence of heteroskedasticity and autocorrelation within countries (see Bai et al., 2021; Hansen, 2007). Therefore, this study re-estimated the basic model with the same vector of control variables using the FGLS method. The results are displayed in column 5. The estimated results showed that most variables are significant at 1% level with the expected signs. Therefore, the FGLS method was used in this study for further investigation of the effect of vocational education on FDI inflow.

Table 3 shows results from the regression investigating the effect of alternative human capital on FDI inflow by using FGLS. First, all three human indicators were estimated together in the baseline model giving the result in column 1. Signs of human-capital indicators and other parameters were found as expected and most of the parameters emerged statistically significant. The result is in agreement with other related empirical studies. The coefficient on the VOC variable was found to be highly significant. Thus, it can be argued that an increase in the vocational education enrolment rate leads to a relatively large increase in FDI inflows. Secondary education was also found to have a positive impact in attracting FDI. However, the coefficient of tertiary education was found a positive sign but was not significant. A thinkable reason why tertiary education does not have an impact in attracting FDI into the regions is that FDI inflows might require the level of skilled labour lower than tertiary education. Zhuang (2017) stated that the foreign investment in East Asia mostly comes from within the same region, which embodied with the lower level of technological content. Similarly, Kheng et al. (2017) also found an insignificant effect of tertiary education on FDI for the study of 55 developing countries.

The model, then, was estimated with the exclusion of alternative proxies for human capital. First, each of the three human-capital proxies was estimated individually in the separate regressions, which generated the results reported in columns 2 to 4. Next, two regressions were estimated by excluding TER and SEC, respectively, yielding the results reported in columns 5 and 6. In any case, VOC, SEC and TER were found to robustly be positive and significant, except for TER which was still found insignificant. The coefficient of the VOC variable, as estimated individually in column 2, has a slight drop when estimated with either SEC or TER, as shown in columns 5 and 6, respectively. This implies that the effect of SEC and TER were included in VOC when it was estimated individually in the model. Besides that, VOC was likely found to affect the magnitude of coefficient on the SEC variable. The estimated coefficient of SEC, stated in column 2, is small when SEC was estimated individually, but it was slightly increased when estimated with VOC as shown in column 5. In summary, when each of the three human-capital indicators was estimated individually in the separate regressions, it might include or depend on each other effects. So, in order to see individual effects separately, all three human-capital indicators should be included altogether in the model.

The empirical results of this study are confirmed with our followed model. Cleeve et al. (2015) found SEC and TER have a positive and significant effect on FDI inflow into Sub-Saharan Africa. Although this study examined a different region, the results are found to be quite similar. The estimated coefficient of SEC is positively significant, and the coefficient of TER is positive but not significant. Since the region of interest of this study is different from the followed model, this study further checked with another empirical study, and

[14] To test heteroskedasticity problem in country fixed effect model, this study employed "xttest3" which calculates a modified Wald statistic for groupwise heteroskedasticity in fixed effect model (Baum, 2001). For regional dummy fixed effect model, Breusch-Pagan / Cook-Weisberg test for heteroskedasticity was employed. Both methods have the same null hypotheses that error term has constant variance.

we found similar results. Kheng et al. (2017), examining the relationship between human capital and FDI of 55 developing countries in the period 1980 to 2011, found SEC and TER were positive but only SEC was found to be significant. Therefore, we can conclude that our results are robust.

Table 3. *Regression with alternative human capital variables using FGLS*

	Dependent variable: FDI					
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
VOC(-1)	0.0491***	0.0522***			0.0480***	0.0492***
	(0.0107)	(0.0116)			(0.0105)	(0.0115)
SEC(-1)	0.0362***		0.0311***		0.0356***	
	(0.0072)		(0.0068)		(0.0070)	
TER(-1)	0.0010			0.0080		0.0052
	(0.0069)			(0.0062)		(0.0067)
LGDPPC	-0.5629**	0.0655	-0.3309	0.2676	-0.6165***	0.1333
	(0.2301)	(0.1732)	(0.2063)	(0.1825)	(0.2188)	(0.1872)
GDPGROWTH	0.0876***	0.0871***	0.0674**	0.0782**	0.0841***	0.0925***
	(0.0309)	(0.0297)	(0.0304)	(0.0312)	(0.0304)	(0.0303)
OPENNESS	0.0262***	0.0235***	0.0254***	0.0241***	0.0267***	0.0225***
	(0.0031)	(0.0031)	(0.0031)	(0.0031)	(0.0031)	(0.0031)
INFRASTR	-0.0470***	-0.0361***	-0.0436***	-0.0366***	-0.0434***	-0.0422***
	(0.0110)	(0.0090)	(0.0091)	(0.0113)	(0.0092)	(0.0115)
INFLATION	-0.0114	-0.0207**	-0.0079	-0.0177*	-0.0105	-0.0217**
	(0.0107)	(0.0094)	(0.0087)	(0.0100)	(0.0097)	(0.0107)
NATRESOURCE	0.0526***	0.0532***	0.0291**	0.0302**	0.0562***	0.0487***
	(0.0137)	(0.0128)	(0.0123)	(0.0126)	(0.0129)	(0.0134)
POLITY	0.0417**	0.0367**	0.0419**	0.0449***	0.0435**	0.0365**
	(0.0176)	(0.0168)	(0.0178)	(0.0168)	(0.0175)	(0.0166)
Constant	1.7598	-1.6941	0.8549	-2.8330*	2.2086	-2.1988
	(1.7034)	(1.4360)	(1.6007)	(1.5401)	(1.6281)	(1.5167)
Observations	526	526	526	526	526	526
R-squared	0.2826	0.2468	0.2571	0.2267	0.2827	0.2474
Number of country	39	39	39	39	39	39

Notes:

1. Dependent variable is a net foreign direct investment (FDI) expressed as a percentage of GDP.
2. VOC(1), SEC(1) and TER(1) are represented one-year lagged of secondary vocational, secondary and tertiary education, respectively.
3. Standard errors are reported in parentheses. The model was estimated with the feasible generalized least squares (FGLS) to fix heteroskedasticity.
4. Each column was estimated with a time dummy.
5. R-squared was estimated after each regression by the author. However, an R-squared statistic computed from GLS sums of squares does not represent the percentage of the total variation in the dependent variable which is explained by the model (McDowell, n.d.).
6. ***, **, and * denote significance levels at 1%, 5%, and 10%, respectively.

Having established that the FDI effect of vocational education is positive, the robustness of this result was checked under various specifications as shown in Table 4. The result displayed in column 1 was generated from the benchmark model, for which the explanations of the results have already been given in Table 3.

Table 4. *Check the robustness of the results by using alternative specifications*

	Dependent variable: FDI					
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
VOC(-1)	0.0491***	0.0318	0.0429***	0.0487***	0.0487***	0.0461***
	(0.0107)	(0.0333)	(0.0113)	(0.0104)	(0.0104)	(0.0106)
$VOC(-1)^2$	-	0.0005	-	-	-	-
		(0.0010)				
SEC(-1)	0.0362***	0.0367***	0.0330***	0.0315***	0.0315***	0.0308***
	(0.0072)	(0.0073)	(0.0074)	(0.0070)	(0.0070)	(0.0070)
TER(-1)	0.0010	0.0005	0.0028	-0.0006	-0.0006	-0.0002
	(0.0069)	(0.0070)	(0.0070)	(0.0067)	(0.0067)	(0.0067)
LGDPPC	-0.5629**	-0.5436**	3.0026	1.0371	1.0371	1.3106
	(0.2301)	(0.2344)	(2.0319)	(1.8381)	(1.8381)	(1.8528)
$LGDPPC^2$	-	-	-0.1935*	-0.0781	-0.0781	-0.0931
			(0.1099)	(0.0984)	(0.0984)	(0.0993)
GDPGROWTH	0.0876***	0.0863***	0.0914***	0.0790***	0.0790***	0.0772***
	(0.0309)	(0.0311)	(0.0309)	(0.0281)	(0.0281)	(0.0281)
OPENNESS	0.0262***	0.0258***	0.0257***	0.0262***	0.0262***	0.0270***
	(0.0031)	(0.0032)	(0.0031)	(0.0030)	(0.0030)	(0.0031)
INFRASTR	-0.0470***	-0.0456***	-0.0449***	-0.0467***	-0.0467***	-0.0475***
	(0.0110)	(0.0112)	(0.0110)	(0.0107)	(0.0107)	(0.0107)
INFLATION	-0.0114	-0.0113	-0.0152	-0.0102	-0.0102	-0.0089
	(0.0107)	(0.0107)	(0.0109)	(0.0140)	(0.0140)	(0.0140)
NATRESOURCE	0.0526***	0.0502***	0.0546***	0.0375***	0.0375***	0.0352***
	(0.0137)	(0.0142)	(0.0137)	(0.0132)	(0.0132)	(0.0134)
POLITY	0.0417**	0.0401**	0.0324*	0.0218	0.0218	0.0165
	(0.0176)	(0.0179)	(0.0184)	(0.0175)	(0.0175)	(0.0182)
ΔFDI (-1)	-	-	-	0.5445***	0.5445***	0.5453***
				(0.0546)	(0.0546)	(0.0544)
GLOBALDUMMY97	-	-	-	-	0.9374	0.9488
					(0.7642)	(0.7656)
GLOBALDUMMY07	-	-	-	-	1.5471***	1.5781***
					(0.5573)	(0.5583)
LandLocked	-	-	-	-	-	-0.3527
						(0.3313)
Constant	1.7598	1.6890	-14.1235	-5.8045	-5.8045	-6.9714
	(1.7034)	(1.7224)	(9.1323)	(8.3165)	(8.3165)	(8.3740)
Observations	526	526	526	515	515	515
R-squared	0.2826	0.2823	0.2825	0.4857	0.4857	0.484
Number of country	39	39	39	39	39	39

Notes:

1. Dependent variable is a net foreign direct investment (FDI) expressed as a percentage of GDP.
2. VOC(-1), SEC(-1) and TER(-1) are represented one-year lagged of vocational, secondary and tertiary education, respectively.
3. Standard errors are reported in parentheses. The model was estimated with the feasible generalized least squares (FGLS) to fixed heteroskedasticity.
4. Each column was estimated with a time dummy.
5. R-squared was estimated after each regression by the author. However, an R-squared statistic computed from GLS sums of squares does not represent the percentage of the total variation in the dependent variable which is explained by the model (McDowell, n.d.).
6. ***, **, and * denote significance levels at 1%, 5%, and 10%, respectively.

The effect of vocational education on FDI inflows is remarkably positively significant. This seems to indicate a strong relationship between vocational education and FDI. This suggests the study investigate the non-linear relationship between these two variables. So, the VOC variable was entered in a quadratic form and estimated together with other variables of the model. The coefficients on the level and squared terms, reported in column 2, was found positive and statistically insignificant. The VOC variable is necessarily nonnegative and both terms are reported insignificantly positive, which evidences there is no turning point. Therefore, this result suggests there is no non-linear relationship between vocational education and FDI. This evidence strongly supports our finding that an increase in the vocational-education enrolment rate leads to a relatively large increase in FDI inflows.

There is a threshold of GDP per capita that determines the inflow of FDI, as explained by Cleeve et al. (2015). Therefore, this study aimed to check the effect of vocational education on FDI inflow at the turning point of GDP per capita by employing squared GDP per capita, $LGDPPC^2$, to the regression. The estimated result is reported in column 3. The coefficients on the level and squared terms have a different sign which suggest there is a turning point. So, the result is in line with Cleeve et al.'s argument. By adding this quadratic term, the coefficient of VOC remains statistically significant, providing evidence the effect of vocational education on FDI inflow is not affected by the threshold of GDP per capita.

Johanson and Wiedersheim-Paul (1975) evidenced that unfamiliarity with and lack of knowledge of foreign countries are obstacles for investors. They added that to avoid risk and uncertainty, investors tend to invest in familiar countries. Therefore, this study employed a lagged change in FDI flow into the model, as shown in column 4, to capture the effect of investors re-investing in the host country. As explained by Noorbakhsh et al. (2001), this variable embodies a level of familiarity of, and information on, business conditions and climate in the host country, which influence the investors' perception of location decision. The estimated coefficient of this variable is statistically positive and significant. By including this variable, the magnitude coefficients of VOC, our main interest variable, and SEC were slightly decreased but remained statistically significant at 1% level which is evidence that vocational education and secondary education remain a highly important human capital in investors' perception of re-investment in the host country. On the other hand, the sign of TER turned into negative which is not the expectation of this study. The result suggests that tertiary education is likely less attractive to the re-investment FDI, when investors are familiar with the host country. But several empirical studies in this field commonly found a positive relationship between tertiary education and FDI. Normally, they estimated the model by including human-capital indicators separately. Due to the reasons discussed above, if human-capital indicators are estimated separately, their effect might include or depend on each other. Therefore, we argued that they should be included together in the model to get their real individual effect. To confirm our argument as well as our result with related empirical studies, this study re-estimated this regression again by separating human-capital indicators. The results are reported in Table C.1 of Appendix C. When TER was estimated separately, the sign of the variable turned to be positive, which is in line with other empirical studies. However, we cannot reject our result above that the coefficient of TER is negative, since the F-test on the joint significance of VOC and SEC rejected the null hypothesis that they are jointly zero. The rejection of the F-test result suggests that omitting them would produce biased and inconsistent results. The F-test result is reported in Appendix B.

Two dummy variables were set up to capture the effect of vocational education in the major global financial/economic events, of which the estimated results are stated in column 5. GLOBALDUMMY97 and GLOBALDUMMY07, respectively, represent the effect of the Asian financial crisis in 1997 and the effect of the financial crisis and the "great" recession in the US and other developed countries in 2007. Accordingly, these events-presentative variables were defined as follows:

GLOBALDUMMY97 = 1 if year = 1997 and 1998
= 0 otherwise.

GLOBALDUMMY07 = 1 if year = 2007 and 2008
= 0 otherwise.

Both estimated coefficients on events-presentative variables turned up positive, but only GLOBALDUMMY07 was found to be significant. The results suggest that the aforementioned major global events, particularly the global financial crisis in 2007, typically increased FDI inflow to the regions. In such a financial crisis, the effect of vocational education remains positively significant in attracting FDI inflow.

Export-oriented and/or import-intensive FDI and primary and secondary sectoral FDI[15] are more likely to flow into a coastline-accessible country than a landlocked one where transportation costs are comparatively higher (see UNCTAD, 2003). Therefore, another binary variable, *whether a country is landlocked*, which influences location decision, was added. The results yielded are in column 6. The LANDLOCKED variable was assigned value 1 if a country is surrounded by other countries, and zero otherwise[16]. The estimated coefficient of this variable was found to be insignificantly negative, which implies that being a landlocked country does not seem to have a direct influence on FDI flows to Asia and Latin America. But the attractiveness of vocational education on FDI remains positively significant regardless of whether a country is coastal or landlocked.

In each case, the magnitude and significance of the estimated coefficients on VOC were not sensitive to the inclusion or exclusion of any of the control variables. Clearly, vocational education is found, *ceteris paribus*, to contribute to FDI inflow, and the results are robust under alternative specifications.

5. CONCLUSION

This study examined the impact of vocational education on FDI inflows by using panel data from 39 developing countries in Asia and Latin America over the period 1990 to 2018. Three alternative proxies for human capital were employed for the empirical analysis presented. In line with several other empirical studies, the results of this study confirm that human capital and FDI have a positive and mutually reinforcing relationship, which is statistically significant, except for tertiary education. The evidence shows tertiary education has a positive impact on FDI inflow, but it becomes less attractive to re-investment FDI. More specific to our research interest, this study finds some evidence that vocational education is a significant explanation for FDI inflows. This is the major finding and contribution of this paper to research on the relationship between human capital and FDI inflows. An increase in the vocational education enrolment rate contributes to a proportionate increase of FDI inflows into regions. Irrespective of the alternative control variables (considered as a determinant of FDI) used, the effect of vocational education on FDI is found to be robustly positive and significant.

Empirical studies have found FDI and economic growth have a mutual relationship. Hence, countries that seek to increase capital inflows for the economy's benefit should develop proactive strategies. The trend of FDI activities shifts away from the primary sector and into manufacturing and services continuously. In this regard, countries that rely solely on low-cost low-skill labour or natural resources to attract FDI will find it difficult to induce FDI into value-added industries and may suffer slower economic growth (Noorbakhsh et al., 2001). Given minimum levels of skills and infrastructure, Lall (1998) argued that low labour costs may only remain significant in a handful of low-technology activities, such as low-end garments, since semiconductors have become highly automated and capital intensive. Therefore, host countries aiming to increase their attractiveness and competitive advantages for FDI should continuously promote human

[15] Primary and Secondary sectors refer to the classification of economic activity. Primary activity involves extraction of raw materials, such as mining, fishing and agriculture. Secondary activity involves transforming raw materials into valuable products, as steel into cars, or textiles into clothing.

[16] https://www.geographyrealm.com/landlocked-countries/

capital, and improve the macroeconomic situation as well as business environment. It is necessary to upgrade human capital with the demanded skills for decent work. Miningou and Tapsoba (2020) gave evidence that skilled labour that matches the demand on the labour market has a positive effect on FDI. Therefore, policymakers should formulate strategies for making vocational education more relevant to FDI activities. In addition, vocational education should be driven by demand for skills – not supply.

Although the econometric result appears robust to different specifications, it remains the case that omitted variables may distort the true relationship between dependent and explanatory variables. We hope that our research contributes to a better understanding of the relationship between vocational education and FDI. However, the paper does not identify the levels of technical skill, classified by occupations, that could be responded to the demand on the labour market. It would be interesting to further examine which levels of technical skill are relatively better in attracting foreign investments.

REFERENCES

Asiedu, E. (2002). On the determinants of foreign direct investment to developing countries: Is Africa Different? *World Development*, *30*(1), 107–119. https://doi.org/10.1016/S0305-750X(01)00100-0

Bai, J., Choi, S. H., & Liao, Y. (2021). Feasible generalized least squares for panel data with cross-sectional and serial correlations. *Empirical Economics*, *60*, 309–326. https://doi.org/10.1007/s00181-020-01977-2

Barro, R. J. (1991). Economic growth in a cross section of countries. *The Quarterly Journal of Economics*, *106*(2), 407–443. https://doi.org/10.2307/2937943

Barro, R. J., & Lee, J. W. (2013). A new data set of educational attainment in the world, 1950–2010. *Journal of Development Economics*, *104*, 184–198. https://doi.org/10.1016/j.jdeveco.2012.10.001

Bishop, J. (1989). Occupational training in high school: When does it pay off? *Economics of Education Review*, *8*(1), 1–15. https://doi.org/10.1016/0272-7757(89)90031-9

Blossfeld, H.-P. (1992). Is the German dual system a model for a modern vocational training system? *International Journal of Comparative Sociology*, *33*(3–4), 168–181. https://doi.org/10.1163/002071592X00220

Borensztein, E., Gregorio, J. D., & Lee, J.-W. (1998). How does foreign direct investment affect economic growth? *Journal of International Economics*, *45*(1), 115–135. https://doi.org/10.1016/S0022-1996(97)00033-0

Caves, R. E. (2007). *Multinational Enterprise and Economic Analysis, Third Edition* (3rd ed.). Cambridge University Press.

Cheng, L. K., & Kwan, Y. K. (2000). What are the determinants of the location of foreign direct investment? The Chinese experience. *Journal of International Economics*, *51*(2), 379–400. https://doi.org/10.1016/S0022-1996(99)00032-X

Cleeve, E. A., Debrah, Y., & Yiheyis, Z. (2015). Human capital and FDI inflow: An assessment of the African case. *World Development*, *74*, 1–14. https://doi.org/10.1016/j.worlddev.2015.04.003

Doner, R. F., & Schneider, B. R. (2016). The middle-income trap: More politics than economics. *World Politics*, *68*(4), 608–644. https://doi.org/10.1017/S0043887116000095

Dunning, J. H. (1981). Explaining the international direct investment position of countries: Towards a dynamic or developmental approach. *Weltwirtschaftliches Archiv (Review of World Economics)*, *117*, 30–64. https://doi.org/10.1007/BF02696577

Dunning, J. H. (2002). *Determinants of foreign direct investment: Globalization-induced changes and the role of policies* [Annual World Bank Conference on Development Economics, Europe 2003]. World Bank and Oxford University Press.

Dutta, N., Kar, S., & Saha, S. (2017). Human capital and FDI: How does corruption affect the relationship? *Economic Analysis and Policy*, *56*, 126–134. https://doi.org/10.1016/j.eap.2017.08.007

Egger, P., & Pfaffermayr, M. (2001). A note on labour productivity and foreign inward direct investment. *Applied Economics Letters*, *8*(4), 229–232. https://doi.org/10.1080/135048501750103917

Fischer, S. (1993). The role of macroeconomic factors in growth. *Journal of Monetary Economics*, *32*(3), 485–512. https://doi.org/10.1016/0304-3932(93)90027-D

Hansen, C. B. (2007). Generalized least squares inference in panel and multilevel models with serial correlation and fixed effects. *Journal of Econometrics*, *140*(2), 670–694. https://doi.org/10.1016/j.jeconom.2006.07.011

Hanson II, J. R. (1996). Human capital and direct investment in poor countries. *Explorations in Economic History*, *33*(1), 86–106. https://doi.org/10.1006/exeh.1996.0004

Hickman, D. C., & Olney, W. W. (2011). Globalization and investment in human capital. *Industrial and Labor Relations Review*, *64*(4), 654–672. https://doi.org/10.1177/001979391106400402

ILO. (2020). *The digitization of TVET and skills systems*. International Labour Organization.

Johanson, J., & Wiedersheim-Paul, F. (1975). The internationalization of the firm—Four Swedish cases. *Journal of Management Studies*, *12*(3), 305–323. https://doi.org/10.1111/j.1467-6486.1975.tb00514.x

Jones, J. D. (1989). A comparison of lag–length selection techniques in tests of Granger causality between money growth and inflation: Evidence for the US, 1959–86. *Applied Economics*, *21*(6), 809–822. https://doi.org/10.1080/758520275

Kar, S. (2013). Exploring the causal link between FDI and human capital development in India. *DECISION*, *40*(1–2), 3–13. https://doi.org/10.1007/s40622-013-0001-5

Keller, W. (2010). International trade, foreign direct investment, and technology spillovers. In B. H. Hall & N. Rosenberg (Eds.), *Handbook of the Economics of Innovation* (Vol. 2, pp. 793–829). North-Holland. https://doi.org/10.1016/S0169-7218(10)02003-4

Kheng, V., Sun, S., & Anwar, S. (2017). Foreign direct investment and human capital in developing countries: A panel data approach. *Economic Change and Restructuring*, *50*(4), 341–365. https://doi.org/10.1007/s10644-016-9191-0

Kim, J., & Park, J. (2013). Foreign direct investment and country-specific human capital. *Economic Inquiry*, *51*(1), 198–210. https://doi.org/10.1111/j.1465-7295.2012.00478.x

Kinda, T. (2013). Beyond natural resources: Horizontal and vertical FDI diversification in Sub-Saharan Africa. *Applied Economics*, *45*(25), 3587–3598. https://doi.org/10.1080/00036846.2012.678982

Lall, S. (1998). Changing perceptions of foreign direct investment in development. In P. K. M. Tharakan & D. Van Den Bulcke (Eds.), *International trade, foreign direct investment and the economic environment* (pp. 101–134). Macmillan Press. https://doi.org/10.1007/978-1-349-14030-5

Li, X., & Liu, X. (2005). Foreign Direct Investment and Economic Growth: An Increasingly Endogenous Relationship. *World Development*, *33*(3), 393–407. https://doi.org/10.1016/j.worlddev.2004.11.001

Liu, Z. (2008). Foreign direct investment and technology spillovers: Theory and evidence. *Journal of Development Economics*, *85*(1–2), 176–193. https://doi.org/10.1016/j.jdeveco.2006.07.001

Loree, D. W., & Guisinger, S. E. (1995). Policy and non-policy determinants of U.S. equity foreign direct investment. *Journal of International Business Studies*, *26*, 281–299. https://doi.org/10.1057/palgrave.jibs.8490174

Lucas, R. E. (1990). Why Doesn't Capital Flow from Rich to Poor Countries? *The American Economic Review*, *80*(2), 92–96.

McDowell, A. (n.d.). *Why does xtgls not report an R-squared statistic?* StataCorp. Retrieved January 21, 2021, from https://www.stata.com/support/faqs/statistics/r-squared-after-xtgls/

Miller, S. M., & Upadhyay, M. P. (2000). The effects of openness, trade orientation, and human capital on total factor productivity. *Journal of Development Economics*, *63*(2), 399–423. https://doi.org/10.1016/S0304-3878(00)00112-7

Miningou, É. W., & Tapsoba, S. J. (2020). Education systems and foreign direct investment: Does external efficiency matter? *Journal of Applied Economics*, *23*(1), 583–599. https://doi.org/10.1080/15140326.2020.1797337

Mody, A., Dasgupta, S., & Sinha, S. (1999). Japanese multinationals in Asia: Drivers and attractors. *Oxford Development Studies*, *27*(2), 149–164. https://doi.org/10.1080/13600819908424171

Mudholkar, N. (2014, November 19). Toyota Technical Education Program launched at ITI. *The Machinist*. https://www.themachinist.in/worldwidemedia/news/507/toyota-technical-education-program-launch-government-iti

Narula, R. (1996). *Multinational investment and economic structure: Globalisation and competitiveness* (1st ed.). Routledge. https://doi.org/10.4324/9780203011362

Nilsson, A. (2010). Vocational education and training—An engine for economic growth and a vehicle for social inclusion? *International Journal of Training and Development*, *14*(4), 251–272. https://doi.org/10.1111/j.1468-2419.2010.00357.x

Noorbakhsh, F., Paloni, A., & Youssef, A. (2001). Human capital and FDI infows to developing countries: New empirical evidence. *World Development*, *29*(9), 1593–1610. https://doi.org/10.1016/S0305-750X(01)00054-7

Nunnenkamp, P., & Spatz, J. (2002). Determinants of FDI in developing countries: Has globalization changed the rules of the game? *TransnationalCorporations*, *11*(2), 1–34.

Ritchie, B. K. (2002). *Foreign direct investment and intellectual capital formation in Southeast Asia* (OECD Development Centre Working Papers No. 194). https://doi.org/10.1787/221517167420

Root, F. R., & Ahmed, A. A. (1979). Empirical determinants of manufacturing direct foreign investment in developing countries. *Economic Development and Cultural Change*, *27*(4), 751–767. https://doi.org/10.1086/451139

Rumberger, R. W., & Daymont, T. N. (1984). The Economic value of academic and vocational training acquired in high school. In M. E. Borus (Ed.), *Youth and the Labor Market: Analyses of the National Longitudinal Survey* (pp. 157–191). W.E. Upjohn Institute. https://doi.org/10.17848/9780880996273.ch6

Sala, H., & Silva, J. I. (2013). Labor productivity and vocational training: Evidence from Europe. *Journal of Productivity Analysis*, *40*(1), 31–41. https://doi.org/10.1007/s11123-012-0304-0

Satyanath, S., & Subramanian, A. (2004). *What determines long-run macroeconomic stability? Democratic institutions* (IMF Working Paper WP/04/215). International Monetary Fund. https://doi.org/10.5089/9781451875072.001

Schneider, F., & Frey, B. S. (1985). Economic and political determinants of foreign direct investment. *World Development*, *13*(2), 161–175. https://doi.org/10.1016/0305-750X(85)90002-6

Shavit, Y., & Muller, W. (2000). Vocational secondary education. *European Societies*, *2*(1), 29–50. https://doi.org/10.1080/146166900360710

Siddiqui, A., & Rehman, A. ur. (2017). The human capital and economic growth nexus: In East and South Asia. *Applied Economics*, *49*(28), 2697–2710. https://doi.org/10.1080/00036846.2016.1245841

Suliman, A. H., & Mollick, A. V. (2009). Human capital development, war and foreign direct investment in Sub-Saharan Africa. *Oxford Development Studies*, *37*(1), 47–61. https://doi.org/10.1080/13600810802660828

Thangavelu, S. M., & Narjoko, D. (2014). Human capital, FTAs and foreign direct investment flows into ASEAN. *Journal of Asian Economics*, *35*, 65–76. https://doi.org/10.1016/j.asieco.2014.11.002

Torrisi, C. R. (1985). The determinants of direct foreign investment in a small LDC. *Journal of Economic Development*, *10*, 29–45.

Toyoto Times. (2020, September 16). Technical academy co-founded by Toyota and Jinbei marks 30 years of “Making People.” *Toyoto Times*. https://toyotatimes.jp/en/insidetoyota/093.html

UNCTAD. (2003). *FDI in landlocked developing countries at a glance* (UNCTAD/ITE/IIA/2003/5). United Nations Conference on Trade and Development. https://unctad.org/system/files/official-document/iteiia20035_en.pdf

Wainer, H. (1976). Robust statistics: A survey and some prescriptions. *Journal of Educational and Behavioral Statistics*, *1*(4), 285–312. https://doi.org/10.3102/10769986001004285

Wheeler, D., & Mody, A. (1992). International investment location decisions: The case of U.S. firms. *Journal of International Economics*, *33*(1–2), 57–76. https://doi.org/10.1016/0022-1996(92)90050-T

Wooldridge, J. M. (2020). *Introductory econometrics: A modern approach* (7th ed.). Cengage.

Xu, B. (2000). Multinational enterprises, technology diffusion, and host country productivity growth. *Journal of Development Economics*, *62*(2), 477–493. https://doi.org/10.1016/S0304-3878(00)00093-6

Yeaple, S. R. (2003). The role of skill endowments in the structure of U.S. outward foreign direct investment. *The Review of Economics and Statistics*, *85*(3), 726–734. https://doi.org/10.1162/003465303322369849

Zhang, K. H., & Markusen, J. R. (1999). *Vertical multinationals and host-country characteristics*. *59*(2), 233–252. https://doi.org/10.1016/S0304-3878(99)00011-5

Zhuang, H. (2017). The effect of foreign direct investment on human capital development in East Asia. *Journal of the Asia Pacific Economy*, *22*(2), 195–211. https://doi.org/10.1080/13547860.2016.1240321

APPENDIX A: Summary of Data

Table A.1. *Summary statistic*

Variable	Obs	Mean	Std. Dev.	Min	Max
FDI	526	3.1183	3.7304	-4.6246	43.9120
VOC (-1)	526	11.5435	8.8084	0.0372	44.0413
SEC (-1)	526	74.1055	23.0387	17.2855	128.9296
TER (-1)	526	30.0133	21.8416	1.1299	109.5492
LGDPPC	526	9.2694	0.8732	7.2610	11.5530
GDPGROWTH	526	5.0554	3.4111	-5.2857	26.1703
OPENNESS	526	76.3913	41.8236	15.5063	220.4068
INFRASTR	526	14.6456	12.1687	0.1659	60.2496
INFLATION	526	7.1867	8.8386	-0.8457	84.6413
NATRESOURCE	526	7.1465	10.0230	0.0110	56.9930
POLITY	526	3.5304	6.5612	-10	10

Table A.2. *Variance inflation factor (VIF)*

Variable	VIF	1/VIF
VOC (-1)	1.40	0.7162
SEC (-1)	3.51	0.2850
TER (-1)	2.70	0.3702
LGDPPC	4.12	0.2427
OPENNESS	1.31	0.7613
GDPGROWTH	1.12	0.8919
INFRASTR	2.43	0.4119
INFLATION	1.18	0.8475
NATRESOURCE	1.57	0.6363
POLITY	1.47	0.6785
Mean VIF	2.08	

Table A.3. *Correlation Matrix*

	FDI	VOC (-1)	SEC (-1)	TER (-1)	LGDPPC	GDPG~H
FDI	1					
VOC (-1)	0.0591	1				
SEC (-1)	0.1537	0.1818	1			
TER (-1)	0.0621	0.3123	0.6907	1		
LGDPPC	0.1095	0.2366	0.7781	0.6148	1	
GDPGROWTH	0.201	-0.1222	-0.1734	-0.223	-0.0988	1
OPENNESS	0.3822	-0.0261	0.1292	0.063	0.3177	0.1123
INFRASTR	-0.0253	0.2656	0.6545	0.6829	0.6633	-0.1167
INFLATION	-0.1395	0.0768	-0.2267	-0.1779	-0.1248	0.0405
NATRESOURCE	0.1853	-0.2847	0.2227	-0.0321	0.34	0.1485
POLITY	-0.0233	0.3522	0.1033	0.256	-0.069	-0.2357

Table A.3. *Correlation Matrix (continue)*

	OPEN~S	INFR~R	INFL~N	NATR~E	POLITY
FDI					
VOC (-1)					
SEC (-1)					
TER (-1)					
LGDPPC					
GDPGROWTH					
OPENNESS	1				
INFRASTR	0.0423	1			
INFLATION	-0.2425	-0.0536	1		
NATRESOURCE	0.1652	0.0847	-0.0222	1	
POLITY	-0.1783	0.097	0.0308	-0.4068	1

Table A.4. *List of sample countries*

No.	Country Name	Observations	No.	Country Name	Observations
1	Afghanistan	1	20	Korea, Rep.	29
2	Bahrain	17	21	Kuwait	10
3	Bangladesh	17	22	Lao PDR	22
4	Bhutan	3	23	Malaysia	26
5	Brazil	14	24	Mexico	27
6	Cambodia	8	25	Mongolia	15
7	Chile	22	26	Nepal	8
8	China	17	27	Nicaragua	1
9	Colombia	20	28	Oman	4
10	Costa Rica	12	29	Pakistan	16
11	Ecuador	3	30	Panama	15
12	El Salvador	21	31	Paraguay	16
13	Guatemala	5	32	Peru	6
14	Guyana	8	33	Philippines	1
15	Honduras	6	34	Qatar	7
16	India	18	35	Saudi Arabia	6
17	Indonesia	28	36	Sri Lanka	6
18	Iran, Islamic Rep.	17	37	Thailand	18
19	Jordan	18	38	Turkey	21
			39	Uruguay	17
				Total	526

APPENDIX B: Statistical Tests

No	Test	F-test	chi-square	chi bar-square	p-value
1	Breusch and Pagan Lagrangian multiplier test for random effects	-	-	98.36	0.0000
2	F test for fixed effect (country fixed effect) - F(38, 449)	4.35	-	-	0.0000
3	F test for fixed effect model (regional dummy fixed effect model) - F(1, 486)	22.44	-	-	0.0000
4	Hausman test (country fixed effect model)	-	47.18	-	0.0000
5	Hausman test (regional fixed effect model)	-	35.26	-	0.0001
6	Wooldridge test for autocorrelation in panel data - F(1, 34)	7.918	-	-	0.0081
7	Modified Wald test for groupwise heteroskedasticity in fixed effect model regression model (country fixed effect model)	-	2.1E+06	-	0.0000
8	Breusch-Pagan / Cook-Weisberg test for heteroskedasticity (regional fixed effect model)	-	665.26	-	0.0000
9	F-test on the joint significant of VOC and SEC – chi-square (2)	-	36.16	-	0.0000

APPENDIX C: Robustness Check

Table C.1. *Estimated results by controlling for lagged change of FDI (robustness check)*

	Dependent variable: FDI		
VARIABLES	(1)	(2)	(3)
VOC(-1)	0.0494***	-	-
	(0.0106)		
SEC(-1)	-	0.0276***	-
		(0.0061)	
TER(-1)	-	-	0.0078
			(0.0060)
LGDPPC	3.3646*	3.7972**	5.5140***
	(1.7380)	(1.7755)	(1.6793)
$LGDPPC^2$	-0.1758*	-0.2142**	-0.2803***
	(0.0946)	(0.0955)	(0.0915)
GDPGROWTH	0.0779***	0.0605**	0.0734***
	(0.0269)	(0.0279)	(0.0279)
OPENNESS	0.0235***	0.0244***	0.0233***
	(0.0029)	(0.0030)	(0.0029)
INFRASTR	-0.0376***	-0.0448***	-0.0419***
	(0.0087)	(0.0089)	(0.0108)
INFLATION	-0.0198	-0.0098	-0.0202
	(0.0128)	(0.0120)	(0.0130)
NATRESOURCE	0.0437***	0.0213*	0.0286**
	(0.0129)	(0.0120)	(0.0126)
POLITY	0.0213	0.0208	0.0263
	(0.0166)	(0.0177)	(0.0171)
ΔFDI (-1)	0.5362***	0.5331***	0.5303***
	(0.0571)	(0.0576)	(0.0577)
Constant	-16.7636**	-18.3158**	-26.8318***
	(7.8366)	(8.0919)	(7.6124)
Observations	515	515	515
R-squared	0.4626	0.465	0.4484
Number of country	39	39	39

Notes:
1. Dependent variable is a net foreign direct investment (FDI) expressed as a percentage of GDP.
2. VOC(-1), SEC(-1) and TER(-1) are represented one-year lagged of vocational, secondary and tertiary education, respectively.
3. Standard errors are reported in parentheses. The model was estimated with the feasible generalized least squares (FGLS) to fixed heteroskedasticity.
4. Each column was estimated with a time dummy.
5. R-squared was estimated after each regression by the author. However, an R-squared statistic computed from GLS sums of squares does not represent the percentage of the total variation in the dependent variable which is explained by the model (McDowell, n.d.).
6. ***, **, and * denote significance levels at 1%, 5%, and 10%, respectively.

APPENDIX D: Outliers Discussion

According to Wainer (1976), points lying near three standard deviations from mean have a strong influence on parameter estimates. In addition, they are not as obvious or easily identified as ordinary outliers. Hence, accepting Wainer's argument, this study used $\bar{X} \pm 3\sigma$ to identify outliers in the dataset.

The inflation rate was found to be comprised of outliers in which 13 observations were omitted from the dataset. Those 13 omitted outliers are Mongolia (1993 - 1994), Lao PDR (1998 - 1999), Turkey (1991 - 1995, and 1997) and Uruguay (1990 - 1992). Mongolia transition economy from 1990 to 1993 caused the inflation rate to dramatically increased and reached three-digit in 1993, which about 268.15%, and dropped to 87.58% in 1994. The devaluation of the Lao kip in 1997, resulted from downward pressure by the devaluation of the Thai baht[17], and budget deficit, mainly caused by increased investment in irrigation, leading sharply to an increase in inflation in 1998 and 1999. Turkey had a currency crisis in 1994, for which the major cause was policy errors in financing the deficit during 1988 and 1993. Furthermore, Turkey, in 1996, was also faced with political issues that led to changing the coalition government twice. Uruguay experienced the second banking crisis in 1982, resulting in the inflation rate increasing to three-digit rates until 1991.

GDP growth rate was also found to be an outlier in the dataset. The Asian financial crisis of 1997 led to a negative growth rate of GDP in the Indonesian, Malaysian and Thai economies in 1998, of about -13.13%, -7.36%, and -7.63%, respectively. The Islamic Republic of Iran's economy was pushed into a deep contraction by the sanctions of international trade and finance in the early part of 2012, which brought the GDP growth rate to about -7.44%. Mexico encountered a currency crisis in 1995, leading to a negative growth rate of GDP of about -6.29%. Lastly, a third banking crisis took place in 2002, pushing the GDP growth rate of Uruguay to drop to about -7.73%.

However, inflation-rate and GDP growth-rate outliers did not have much effect on parameters estimation in this study. The results, whether including or excluding those outliers, are very similar. The sign of coefficient and significant level do not change, except for a slight change in coefficient magnitude of a few parameters. The table below states the estimated results with full sample, without omitting outliers.

Table D.1. *Regression results estimated without dropping outliers by using FGLS method*

	Dependent variable: FDI					
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
VOC(-1)	0.0477***	0.0322	0.0415***	0.0477***	0.0477***	0.0457***
	(0.0106)	(0.0327)	(0.0111)	(0.0101)	(0.0101)	(0.0104)
$VOC(-1)^2$	-	0.0005	-	-	-	-
		(0.0010)				
SEC(-1)	0.0349***	0.0354***	0.0319***	0.0292***	0.0292***	0.0287***
	(0.0069)	(0.0070)	(0.0071)	(0.0065)	(0.0065)	(0.0065)
TER(-1)	0.0014	0.0011	0.0033	-0.0010	-0.0010	-0.0006
	(0.0068)	(0.0068)	(0.0069)	(0.0065)	(0.0065)	(0.0065)
LGDPPC	-0.5407**	-0.5241**	2.9854	1.0652	1.0652	1.2981
	(0.2212)	(0.2248)	(1.9617)	(1.7230)	(1.7230)	(1.7363)
$LGDPPC^2$	-	-	-0.1916*	-0.0751	-0.0751	-0.0880
			(0.1063)	(0.0924)	(0.0924)	(0.0932)
GDPGROWTH	0.0741***	0.0729***	0.0781***	0.0683***	0.0683***	0.0680***

[17] The Thai baht is a major component of Lao money supply (ADB, 2001).

	(0.0274)	(0.0275)	(0.0274)	(0.0244)	(0.0244)	(0.0244)
OPENNESS	0.0265***	0.0263***	0.0262***	0.0256***	0.0256***	0.0262***
	(0.0030)	(0.0031)	(0.0031)	(0.0028)	(0.0028)	(0.0029)
INFRASTR	-0.0480***	-0.0469***	-0.0460***	-0.0477***	-0.0477***	-0.0484***
	(0.0108)	(0.0109)	(0.0108)	(0.0103)	(0.0103)	(0.0103)
INFLATION	-0.0081	-0.0082	-0.0096	-0.0083	-0.0083	-0.0077
	(0.0064)	(0.0064)	(0.0064)	(0.0059)	(0.0059)	(0.0060)
NATRESOURCE	0.0506***	0.0486***	0.0529***	0.0337***	0.0337***	0.0321**
	(0.0135)	(0.0140)	(0.0136)	(0.0128)	(0.0128)	(0.0130)
POLITY	0.0385**	0.0371**	0.0301*	0.0171	0.0171	0.0128
	(0.0171)	(0.0174)	(0.0178)	(0.0167)	(0.0167)	(0.0174)
ΔFDI (-1)	-	-	-	0.5550***	0.5550***	0.5558***
				(0.0538)	(0.0538)	(0.0536)
GLOBALDUMMY97	-	-	-	-	1.0350	1.0443
					(0.6608)	(0.6629)
GLOBALDUMMY07	-	-	-	-	1.6197***	1.6436***
					(0.5352)	(0.5363)
LandLocked	-	-	-	-	-	-0.2918
						(0.3208)
Constant	1.6936	1.6344	-14.0474	-6.0194	-6.0194	-7.0109
	(1.6433)	(1.6564)	(8.8297)	(7.8358)	(7.8358)	(7.8865)
Observations	543	543	543	543	543	543
R-squared	0.2821	0.2819	0.2821	0.4833	0.4833	0.4825
Number of country	39	39	39	39	39	39

Notes:

1. Dependent variable is a net foreign direct investment (FDI) expressed as a percentage of GDP.
2. VOC(-1), SEC(-1) and TER(-1) are represented one-year lagged of secondary vocational, secondary and tertiary education, respectively.
3. Standard errors are reported in parentheses. The model was estimated with the feasible generalized least squares (FGLS) to fixed heteroskedasticity.
4. Each column was estimated with a time dummy.
5. R-squared was estimated after each regression by the author. However, an R-squared statistic computed from GLS sums of squares does not represent the percentage of the total variation in the dependent variable which is explained by the model (McDowell, n.d.).
6. ***, **, and * denote significance levels at 1%, 5%, and 10%, respectively.