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Impact of Public Expenditures on FDI Inflows into Developing Countries

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ABSTRACT

This paper uses Pesaran et al.'s (1999) Pooled Means Group (PMG) estimation to explore the role of government expenditures of the host countries on Foreign Direct Investment (FDI) inflows. The PMG estimator allows for a greater degree of parameter heterogeneity by imposing common long-run relationships across countries. A panel data from 24 developing countries was utilised for the study period between 1982 and 2014. The empirical results show government expenditure significantly promotes FDI inflows in the long-term. The results also suggest that market size plays an important role in FDI inflows.

Keywords: FDI inflows, Government expenditures, Pooled Means Group, Market Size

INTRODUCTION

Foreign Direct Investment (FDI) inflows is crucial element for economic development, especially for developing and emerging economies (Li & Liu, 2005). The FDI inflows is in fact a convenient escape from foreign aid and debt which can lead to more problems in addition to being burdensome, due to various conditions attached to the soft or hard loans and debt servicing. FDI inflows promote technology transfers and generate positive technological spillover effects to local firms. The presence of multinational corporations (MNCs) in the local economy could help local firms form linkages with foreign firms to become part of a global supply chain.

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Public expenditures is an extremely important government economic instrument (Le & Suruga, 2005). Consequently, understanding the effects of government expenditures on FDI inflows is vital in relation to promoting economic growth. Public expenditures are used to manage public utilities, such as education, health care, social security for more efficient human capital and improved physical capital (e.g., infrastructure), which are crucial in attracting FDI (Montagna & Molana, 2007).

Theoretically, development expenditure, such as infrastructure and tax concessions, accounts for the most in rapidly developing and emerging economies aimed at creating a conducive business environment to attract FDI inflows (He & Sun, 2014; Noorbakhsh et al., 2001; Panigrahi & Panda, 2012).

The FDI effect on the economic development and growth of the host country has been discussed in many studies. However, the degree of such impact depends on the absorptive capacity of the host country, such as its human capital, infrastructure, financial and institutional development, and trade policies (Makki & Somwaru, 2004). Higher public expenditures improves economic growth as it encourages more private investment (Chen & Lee, 2005; Kormendi & Meguire, 1986).

Several studies have suggested that an expansionary fiscal policy has a negative impact on economic growth. Specifically, increase in government expenditure leads to crowding out effect and reduces private investment ((Chen & Lee, 2005; Kormendi & Meguire, 1986). These studies conclude that an expanding government size leads to decrease in returns as well as having a crowding out effect on private investment.

Indeed, other than private investments, FDI inflows could also be affected by size of the government expenditures. Scholars argue that higher public expenditures leads to complex bureaucracy and inefficiencies often associated with mismanagement and corruption. Therefore, under such circumstances, multinational companies may avoid or reduce investments in such countries (Bénassy-Quéré et al. 2007).

To date, the relationship between public expenditures and FDI inflows is empirically an under-explored theme. Therefore, the main purpose of this study is to examine long-run and short-run linkages between public expenditures and FDI inflows to developing countries.

The rest of the paper is organised as follows. Section 2 provides a brief literature review of the relationship between government spending and FDI while section 3 describes sources of data and presents econometric methodology. Section 4 discusses empirical findings and sensitivity test results while section 5 concludes the paper.

LITERATURE REVIEW

FDI inflows has received much attention due to its role in economic growth (Kaliappan et al., 2015). Literature suggests that FDI is a significant source of innovation and technology transfer (Caves, 1974;

Findlay, 1978; Mansfield & Romeo, 1980). Neoclassical growth model proposes that FDI increases capital stock, and thus promotes growth in the host economy via capital formation. The FDI is also a complement to domestic private investment. Hence, it is usually associated with new job opportunities, enhancing technology transfers, and boosting overall economic growth of its host countries (Chowdhury & Mavrotas, 2006).

In endogenous growth models, FDI is generally assumed to be more productive than domestic investment since it encourages the incorporation of new technologies in the production (Borensztein et al., 1998) while promoting long-run growth by enhancing knowledge in the host economy through labour training, skill acquisitions and advancing managerial skills (De Mello, 1997). Thus, through capital accumulation and knowledge spillover, FDI inflows improve the competitiveness of the economy and enhance the provision of goods and services for the domestic market (Chidlow et al., 2009). The FDI also accelerates the speed of technology adoption to improve production efficiency.

One of the most important economic determinant of FDI inflows is the market size of the host economy (Ang, 2008; Asiedu, 2002; Lucas, 1993; Tsai, 1994). Choong et al. (2015) explained that strategic government expenditures significantly attract more FDI, which ultimately leads to higher private investment and economic growth. Strong institutions and the presence of quality infrastructure also attract FDI (Alam & Shah, 2013). Gwartney, Lawson, and Hall (2013) and Wu and Heerink (2016) used public expenditures as a proxy for institution quality, which reflects the degree of government intervention in economic freedom. The role of institutional quality in positively affecting FDI was confirmed by Buchanan et al. (2012) and Ahmad and Ahmed (2014). Busse and Hefeker (2007) concluded that political and institutional factors significantly affect FDI inflows into developing countries.

Groh and Wich (2012) calculated an FDI activity index for 127 countries, considering economic status, political environment, infrastructure and business atmosphere as independent variables. The primary reason why some economies receive more FDI is due to the quality of their infrastructure, a strong political and legal system, stable government, security, less corruption, higher government effectiveness, higher GDP per capita and lower corporate taxes. However, economies with high political risks (e.g., Cambodia) have also successfully attracted FDI in the region (Cuyvers et al., 2011). Therefore, of the institutional factors, high political stability is not specifically preferred for higher FDI, as compared with other factors (e.g., minimal or zero corruption, quality of infrastructure, business atmosphere).

Göndör and Nistor (2012) stated that fiscal policy (measured by corporate tax rates and a business-friendly environment) positively affects FDI inflows into emerging European economies. Similarly, Radulescu and Druica (2014) claimed that states in the

Eastern European region (e.g., Romania) must improve their investment environment by introducing good fiscal stimulus and budgetary policies to positively affect FDI inflows. The central government's main priority must be on improving infrastructure and becoming more competitive; this should be complemented by fiscal incentives (e.g., relatively low tax rates).

Many studies have examined the impact of public expenditures on economic growth Afxentiou & Serletis, 1996; Bagdigen & Cetintas, 2003; Singh & Sahni, 1984; Srinivasan, 2013; Verma & Arora, 2010). As one of the government's instruments, together with taxation and a welfare policy, public expenditures are claimed to be "the most powerful economic agent in all modern societies" (Arrow & Kurz (1970), as cited in Le & Suruga (2005)). However, the interrelationship between public expenditures and FDI in promoting economic growth appears to be quite complex. Le and Suruga (2005) show that the effect of the FDI on economic growth is reduced when the ratio to GDP of public current expenditures exceeds 25% for developing countries; this contradicts with findings from developed countries.

Friedman (1997), as cited in Altunc and Aydın (2013), argued that the optimal level of public expenditures should be between 15% and 50%. Yuan et al. (2010) showed that increase in government spending has a positive effect on FDI inflows and this effect is much more significant in developing countries. Hence, among all relevant factors that affect FDI in the various regions, fiscal stimulus is not considered a primary factor.

Thus, most scholars agree that healthy macroeconomic indicators contribute to higher inward FDI. The roles of the government in strengthening institutions, improving governance and formulating reforms on liberalising the economy also play a crucial role in attracting FDI in developing countries. However, the picture is not black and white, because in some countries, higher political risk and government spending levels can also catch the attention of foreign investments. Few studies have conducted research on expansionary fiscal policy; most of the existing theoretical and empirical studies have examined the traditional macroeconomic and socio-economic determinants of FDI. This study claims that higher government expenditures can attract FDI if they are complemented by good infrastructure and strong institutions. In other words, more 'productive' government expenditures in developing countries draw more FDIs. This study will thus, examine the impact of government spending on FDI inflows in developing countries.

METHODOLOGY

This study used Pesaran et al. (1999) panel ARDL model, or Pooled Means Group (PMG) estimation. This model analyses the long-run and short-run relationship among the variables of interest, allowing for a greater degree of parameter heterogeneity by imposing common long-run relationships across countries. There are several

estimation methods used to estimate panel data models such as system Generalized Method of Moments (GMM) and Vector Error Correction Model (VECM) to address endogeneity issue. The uses of GMM is an ideal method for dynamic micro Panel data (such as firm level data). However, endogeneity is not an issue when dealing with heterogeneous dataset where variables are non-stationary and have time invariant effects. Pesaran et al. (1999) argued that the GMM estimation procedure for dynamic panel model (for instance, Arellano & Bond, 1991) can produce inconsistent and misleading coefficients of the long-run coefficients; a problem that is exacerbated when the period is long, unless they are truly identical (Pesaran, Shin, & Smith, 1999).

The main objective of VECM in this case is to get impulse response functions and forecast-error variance decompositions rather than examining the short run and long run relationship, this is not suitable to achieve the objectives of the current paper. Moreover, with large N, it is difficult to treat as system. Thus, VECM is avoided. The PMG allows for heterogeneity in short run coefficients and error variances while imposing homogeneity in long run coefficients across countries. Since the countries in this study have lower degree of heterogeneity, PMG is therefore a better option (see e.g. Lee & Wang, 2015). There are also quite number of studies that used PMG method without conducting VECM or GMM such as Mahyideen et al. (2012) who studied the impact of ICT on growth in 5-ASEAN'S; Bangake and Eggoh (2012) who applied PMG in examining the relationship between savings and investment for 37 African countries. Ndambendia and Njoupouognigni (2010) also used similar method to study the relationship between foreign aid and economic growth.

The data used in this study is annual time series data from 1982 to 2014 (32 observations) for 24 selected developing countries (a list of the countries is in the Appendix). FDI is the dependent variable as FDI, net inflows (% of GDP). The explanatory or independent variables are GDP per capita (constant 2005 US$) and general government final consumption expenditures (% of GDP) as a proxy for public expenditures (Altunc & Aydın, 2013; Landau, 1983). All variables are in the natural log form and were generated from the World Development Indicator (WDI) World Bank Online Database (2014). Some of the observations for FDI are negative. Therefore, this variable is transformed using the following procedure (Busse & Hefeker, 2007):

$$y = \ln\left(x + \sqrt{(x^2 + 1)}\right) \quad [1]$$

where: y is the transformed FDI and x is the smallest FDI inflows absolute values from a linear scale.

Panel unit root test

Since this study uses macro panel data, which consists of large T (times) and small N (groups), it is necessary to perform a panel unit root test to determine the order of integration among the variables before

proceeding to the PMG estimation analysis. In this study, unit root test proposed in Im, Pesaran and Shin (2003) also known as IPS is used and allows for heterogeneity on the coefficient of the explanatory variable. The IPS set the Augmented Dickey-Fuller (ADF) regression over an individual intercept and a time trend for each cross section, as follows:

$$\Delta y_{it} = \beta_i + \rho_i y_{i,t-j} + \sum_{j=1}^{\rho_i} \emptyset_{ij} \Delta y_{i,t-j} + \varepsilon_{it}; i = 1,2, \ldots . . N; t = 1,2,\ldots,\text{T}. \quad [2]$$

where: y_{it} is a selected variable in country i and year t, β_i is the individual fixed effect and ρ is selected to make the residuals uncorrelated over time. The null hypothesis is that ρ_i=0 for all i, whereas the alternative hypothesis is that ρ_i<0 for some i=1,2,….. N_1 and ρ_i=0 for i=$N_{(1+1)}$,….N. A panel cointegration test proposed by Pedroni (2004) is conducted once the order of stationarity has been identified.

Panel cointegration test

To confirm the existence of a long-run relationship between public expenditures and inward FDI, a panel cointegration test is conducted. There are various ways to conduct the panel cointegration test (e.g., the KAO (1999) test and Larsson et al. (2001)). For this study, we use the Pedroni (2004) panel cointegration test, since it allows for considerable heterogeneity. The special features of Pedroni's test include: allowing for multiple regressors, allowing for the cointegration vector to vary across different sections of the panel and for heterogeneity in the errors across the cross-sectional units to exist.

Seven different cointegration statistics are proposed in the Pedroni panel regression model to capture the within (pooled) and between (group means) effects which are classified into two categories. Pooling along the within-dimension (pooled) includes four statistics (i.e., panel v-statistic, panel rho-statistic, panel PP-statistic and panel ADF-statistic) which involves the averaging test statistics for no cointegration in the time series across cross-sections. Pooling the between-dimension (group means) includes three statistics groups (i.e., rho-statistic, group PP-statistic and group ADF-statistic). This is conducted by averaging in pieces so that the limiting distributions are based on the limits of piecewise numerator and denominator terms.

If the null hypothesis of no cointegration is rejected, then a long-run relationship between the variables (i.e., inward FDI and public expenditures) exists. However, the result does not indicate the magnitude of this relationship. Therefore, this study uses econometric techniques (e.g., PMG) to identify the appropriate sign and the size of the energy coefficient in the long-run output equation. The results from the Means Group (MG) and Dynamic Fixed Effect (DFE) are shown for comparison purposes. The PMG method of estimation occupies an intermediate position between the MG method and the fixed effect method.

Pooled means group estimation

Many methods can be used to test a long-run cointegration, such as panel Fully Modified Ordinary Least Squares (FMOLS) and panel Dynamic Ordinary Least Squares (DOLS). However, a panel ARDL model, or PMG estimation, was utilised introduced by Pesaran et al. (1999). This model assumes that the long-run coefficients are identical, but the short-run coefficients and error variances differ across the groups. This estimation framework enables us to capture the long-run and short-run relationship among the variables of interest and the convergence parameter (adjustment coefficient). The unrestricted specification for the ARDL system of equations for t=1,2,…T, time periods and i=1,2,…N, countries for the dependent variable Y is:

$$y_{it} = \sum_{j=0}^{p} \lambda_{ij}\, y_{i,t-j} + \sum_{j=0}^{q} \gamma'_{ij}\, x_{i,t-j} + \mu_i + \varepsilon_{it} \quad [3]$$

where: y_{it} is a scalar dependent variable, FDI inflows, and $x_{i,t-j}$ is the (k x 1) vector of independent variables for group i , which include public expenditures and GDP per capita. μ_i represents the fixed effects (country specific-effects); λ_{ij} is the scalar coefficients of the lagged dependent variables and γ'_{ij} is the k x 1 coefficient vectors.

The re-parameterised form of Equation (3) can be formulated as VECM system:

$$\Delta y_{it} = \phi_i\left(y_{i,t-1} + \beta_i' x_{i,t-1}\right) + \sum_{j=1}^{p-1} \lambda_{ij}\, lfdi_{i,t-j} + \sum_{j=0}^{q-1} lfdi_{ij}\, x_{i,t-j} + \mu_i + \mu_{it} \quad [4]$$

Where β_i are the long run parameters;ϕ_i is the equilibrium or error correction parameters. The PMG restriction is that the elements of β are common across countries:

$$\Delta y_{it} = \phi_i\left(y_{i,t-1} + \beta' x_{i,t-1}\right) + \sum_{j=1}^{p-1} \lambda_{ij}\, lfdi_{i,t-j} + \sum_{j=0}^{q-1} lfdi_{ij}\, x_{i,t-j} + \mu_i + \mu_{it} \quad [5]$$

The group-specific short-run coefficients and the common long run coefficients are computed by the pooled maximum likelihood estimation and all the dynamics and the ECM terms are free to vary. Under some regularity assumption, the parameter estimates of the PMG model are consistent and asymptotically normal for both stationary I(0) and non-stationary I(0) regressors.

RESULTS

Baseline results

A panel unit root test was calculated using EViews 7.1 statistical software. The results are shown in Table 1. As mentioned previously, the dependent variables of the LFDI represent the FDI, net inflows (% of GDP), while the explanatory variables of LY represent the market size, which is the proxy for GDP per capita (constant 2005 US$). The LPE general government final consumption expenditures (% of GDP) is a proxy for public expenditures.

Table 1
Panel unit root test

Series	LFDI		LY		LPE	
	No Trend	Trend	No Trend	Trend	No Trend	Trend
Level						
IPS	-4.005*** (0.000)	-4.060*** (0.000)	4.4109 (1.000)	0.1205 (0.548)	-1.604 (0.054)	0.472 (0.682)
ADF-Fisher	86.752*** (0.001)	91.761*** (0.000)	36.033 (0.898)	52.756 (0.295)	57.832 (0.156)	39.575 (0.802)
PP-ADF	125.473*** (0.000)	125.004*** (0.000)	40.924 (0.756)	67.460** (0.033)	56.911 (0.177)	49.157 (0.427)
First Different						
IPS	-20.121*** (0.000)	-10.402*** (0.000)	-12.621*** (0.000)			
ADF-Fisher	416.756*** (0.000)	200.991*** (0.000)	248.282*** (0.000)			
PP-ADF	617.569*** (0.000)	369.245*** (0.000)	484.397*** (0.000)			

Notes: The figures in parentheses are the probability values. ***, ** and * denote the rejection of the null of non-stationarity at the 1% ,5% and 10% levels of significance, respectively. The maximum number of the lags selection is determined by the Schwarz Bayesian Information Criterion (SBC).

The results in Table 1 shows that null hypothesis of unit roots for the panel data cannot be rejected in the level for LY (except the PP-ADF with a trend) and LPE. Only the LFDI (with and without the trend) are stationary at a 1% significance level. However, all the variables are stationary in the first-difference at the 1% level of significance. Therefore, the results suggest that panel variables are integrated at level I(0) and I (1) and none of the variables are I(2) or have a higher level of integration.

The individual Pedroni cointegration results (between LFDI and LY and between LFDI and LPE) in Table 2 show that six out of seven test statistics (with and without the trend) in the first two columns significantly rejects the null hypothesis of no cointegration at 1% significance level. The panel cointegration for the three variables (i.e., LFDI, LY and LPE) simultaneously were also estimated. The results show that six out of the seven (without a trend) and five out of the seven (with trend) test

statistics in the last columns significantly reject the null hypothesis of no cointegration at 1% significance level. Therefore, the results suggest the existence of cointegration and the variables in the model move together in the long-run. In other words, there is long-run relationship between inward FDI, market size and public expenditures in the 24 developing countries (after allowing for a country-specific effect). The magnitude of this relationship can be tested by using the PMG technique.

Table 2
Panel cointegration results

	LFDI & LY		LFDI &LPE		LFDI, LY & LPE	
Pedroni Cointegration	Without trend	With trend	Without trend	With trend	Without trend	With trend
Panel v-Statistic	0.59	-3.20	0.78	-1.81	1.72	-1.22
Panel rho-Statistic	-10.87***	-6.43***	-7.69***	-6.82***	-4.94***	-2.96***
Panel PP-Statistic	-9.60***	-9.75***	-8.30***	-9.66***	-6.53***	-6.53***
Panel ADF-Statistic	-6.91***	-7.58***	-5.17***	-6.03***	-6.69***	-6.86***
Group rho-Statistic	-7.00***	-3.40***	-4.79***	-2.97***	-3.34***	-1.18
Group PP-Statistic	-8.12***	-8.04***	-8.08***	-8.08***	-8.32***	-7.92***
Group ADF-Statistic	-5.44***	-5.30***	-5.15***	-4.81***	-8.12***	-6.69***

Notes: *** denotes the significance level at 1%. Number of countries (N) = 24 and time periods (T) = 31. The maximum number of lags on the Schwarz Information Criterion (SIC) is 2

Table 3 reports the results of Pooled Means Group (PMG) panel cointegration estimation for long-run and short-run coefficient of the variables and the convergence parameter. The results obtained from the Means Group (MG) and Dynamic Fixed Effect (DFE) are used for comparison purposes only. The convergence coefficient (speed of adjustment) show the expected signs: -0.62, -0.49 and -0.44 for MG, PMG and DFE respectively; these values are statistically significant at 1% level for all three panel cointegration estimations. This finding indicates the convergence parameter allows for an adjustment from the short-run to the long-run between variables across the selected countries.

Table 3
Panel cointegration estimation

Dependent variable (LFDI)	Means group (MG)	Pooled means group (PMG)	Dynamic fixed effect (DFE)
	LONG-RUN		
LY	0.434*** (0.141)	0.216*** (0.064)	0.374*** (0.075)
LPE	0.153 (0.180)	0.326*** (0.062)	0.216* (0.113)
	SHORT-RUN		
Speed of adjustment	-0.629*** (0.054)	-0.49*** (0.514)	-0.44*** (0.030)
ΔLY	0.769** (0.371)	0.93*** (0.344)	0.66*** (0.249)
ΔLPE	-0.025 (0.105)	0.02 (0.950)	-0.005 (0.109)
Maximised log likelihood		195.8715	
Hausman test		4.69 [0.09]	
Number of countries		24	
Number of observations		749	

Notes: All variables are expressed in natural logarithms. The value in parentheses denotes the standard error: * indicates significance at 10%; ** significance at 5% and *** significance at 1%. The P-values are reported in brackets for the Hausman test

A higher speed of adjustment from MG is expected, since MG estimator is the least restrictive procedure and it allows for the heterogeneity of all the parameters. In other words, the MG estimator does not take into account the fact that certain parameters may be the same across groups. However, the lowest speed of adjustment in the DFE estimator is also expected, since it imposes the homogeneity of all slope coefficients, allowing only the intercept to vary across countries. Thus, the MG and DFE models may lead to misleading results, and therefore, should be used cautiously.

The PMG method of estimation occupies an intermediate position between the MG and DFE, where it allows the intercepts, short-run coefficients and error variances to differ freely across groups but constrains the long-run coefficients to be similar across groups. Therefore, the PMG is advantageous in determining the long-run and short-run dynamic relationships.

Before we proceed with the analysis, we need to determine the efficiency of the PMG estimator against the MG estimator. Applying the Hausman test, it is found that if the p-values are greater than 0.05, it indicates failure to reject the null hypothesis of the difference in the coefficients. Therefore, the PMG results are a more appropriate interpretation.

Our variable of interest is public expenditures (LPE). The PMG estimation results in Table 3 suggests a positive relationship between LPE and LFDI

in the long-run. The magnitude of the LPE coefficient is about 0.32 at the 1% significant level. This indicates that, for developing countries, a 1% increase in public expenditures leads to a 0.32% increase in the long-run inward FDI. The coefficient for the short-run is positive, but insignificant. These results indicate lack of a short-run relationship between public expenditures and inward FDI. The short-run coefficient primarily reflects the adjustment of the economy to shocks. Therefore, our results suggest the contemporaneous co-movement of government expenditures and FDI inflows react less, or perhaps do not react at all, to past shocks.

The PMG results also show a positive relationship between the market size (LY) and inward FDI for both the short-run and long-run, indicated by the significant coefficient at 5% and 1% level respectively. This result is in line with most empirical studies which show that market size is the most robust FDI determinant in economic studies (Ang, 2008; Asiedu, 2002; Tsai, 1994) The reliability of this result is confirmed by a significantly negative error correction term from the PMG estimators, with a value of -0.49. These results suggest that around 49% of the deviation from the long-term relationship is corrected in a year. In other words, the system is reversed to achieve an equilibrium in about two years.

Sensitivity Check

The regression is re-estimated using two methods. The first method would one country from the original dataset. The second method replace the explanatory variables of market size (LY) with gross fixed capital formation (% of GDP), denoted as LCAP, which is considered the main determinant of inward FDI.

The purpose of doing a re-estimation is to ensure the results are robust. Table 4 shows the results of the panel cointegration for MG, PMG and DFE estimation after removing one country i.e., China. However, only the PMG results will be discussed, while the rest are presented for comparison purposes.

China emerged as the largest FDI recipient in the world in 2014 (UNCTAD, 2015). By removing this country from the original dataset, the outliers are reduced. The estimated coefficient for PMG may be slightly different, but the sign does not show any significant difference; this illustrates a positive long-run relationship between both LY and LPE with the dependent variable (LFDI) at the 1% significant level. The coefficient for the short-run relationship between LFDI and LPE is negative, but insignificant. This result is confirmed by a significantly negative error correction term from the PMG estimators, with a value of -0.51 at the 1% significance level.

Table 4
Panel cointegration re-estimation (without China)

Dependent variable (LFDI)	Means group (MG)	Pooled means group (PMG)	Dynamic fixed effect (DFE)
		LONG-RUN	
LY	0.447*** (0.146)	0.320*** (0.075)	0.508*** (0.092)
LPE	0.068 (0.166)	0.290*** (0.110)	0.191* (0.110)
		SHORT-RUN	
Speed of adjustment	-0.649*** (0.052)	-0.515*** (0.049)	-0.458*** (0.031)
ΔLY	0.701* (0.381)	0.792** (0.342)	0.618*** (0.255)
ΔLPE	-0.048 (0.107)	-0.026 (0.093)	-0.022 (0.111)
Maximised log likelihood		195.8715	
Hausman test		4.67 [0.096]	
Number of countries		23	
Number of observations		717	

Notes: The value in parentheses denotes the standard error: * indicates significance at 10%; ** significance at 5% and *** significance at 1%. The P-values are reported in brackets for the Hausman test

Table 5 contains the results of the panel cointegration estimation after replacing the market size (LY) variables with the gross fixed capital formation (% of GDP), denoted as LCAP; this variable is also considered the main determinant of inward FDI. Based on the PMG estimation results, the LPE coefficients show the same results as in the previous model, which are positively and statistically significant at 1% level in the long-run. The magnitude of a long-run relationship between the LPE and FDI net inflows is also confirmed by a significantly negative error correction term (-0.46) at 1% significance level. The PMG estimation also found that the short-run coefficient of public expenditures contributed negatively to the inflow of FDI, but this result was statistically not significant.

Table 5
Panel cointegration re-estimation (replace LY with LCAP)

Dependent variable (LFDI)	Means group (MG)	Pooled means group (PMG)	Dynamic fixed effect (DFE)
		LONG-RUN	
LCAP	0.557*** (0.204)	0.197** (0.084)	0.407*** (0.127)
LPE	0.587** (0.279)	0.356*** (0.68)	0.247** (0.124)
		SHORT-RUN	
Speed of adjustment	-0.594*** (0.051)	-0.467*** (0.053)	-0.405*** (0.029)
ΔLCAP	0.128 (0.087)	0.272*** (0.093)	0.194** (0.078)
ΔLPE	-0.077 (0.130)	-0.058 (0.099)	0.126 (0.110)
Maximised log likelihood		190.078	
Hausman test		3.30 [0.192]	
Number of countries		24	
Number of observations		749	

Notes: All variables are expressed in natural logarithms. The value in parentheses denotes the standard error: * indicates significance at 10%; ** significance at 5% and *** significance at 1%. The P-values are reported in brackets for the Hausman test

The results reveal that public expenditures have contributed significantly to FDI inflows in the long-run for all three PMG estimation results shown in tables 3, 4 and 5. The PMG estimation results also confirmed the positive relationship in both the short-run and long-run between the main determinants: market size (LY) and gross fixed capital formation (LCAP) towards inward FDI.

CONCLUSION

This study examined public expenditures and FDI inflows between 1981 and 2014 focusing on 24 developing countries. This study employed the PMG estimator and found a statistically significant relationship for public expenditures variables, which were proxy for general government expenditures/GDP towards FDI inflows. Results revealed that government spending positively and significantly influences FDI inflows in the long-run.

We conclude that public expenditures encourage FDI inflows which in turn promote endogenous growth (e.g., education, training, research and development). This paper also suggests that government spending should be directed towards productive economic activities. Large FDI inflows into the country stimulate economic activities, especially in the long-run, and contribute to higher economic growth.

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