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Article

How government spending matters to FDI inflows in developing countries?

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Abstract. This study explores the effect of government spending on FDI inflows in developing country groups by different level of development. The United Nations' country classification by income level is used to classify country level of development. The study covers a sample of 100 developing countries worldwide over the 2002-2022 period. Applying different estimation techniques, the findings reveal a declining relationship between government spending and FDI inflows along the rise in country level of development. The low-income country group has the largest positive effect of government spending on FDI inflows, the effect decreases in the lower-middle income, the upper-middle income, and finally it turns to be negative in the high-income country group. Policy implications are derived that at lower level of development, larger size of government spending may attract inward FDI but as country level of development rises, FDI inflows favor smaller size of government spending.

Keywords: FDI inflows; government spending; developing countries
JEL classification: F21; H50; O57

1. Introduction

Foreign direct investment (FDI) is widely recognized as an engine for economic growth and development of developing countries. The positive growth effect of FDI in developing countries is evident and confirmed in many empirical studies (Sahu, 2021). FDI supplements the host country's capital stock, raises the skill level of local workforce and contributes to technology transfer (Abbes et al., 2015). Thanks to the high reputation of FDI contribution to economic growth, many developing countries wish to lure FDI and therefore well-understanding of FDI determinants is crucial for policymakers. Great attention has been focused on the determinants of FDI including macroeconomic stability, market size, growth prospect, human capital, labor costs, infrastructure, level of technology, endowment of natural resources, institutional environment (Islam and Beloucif, 2024).

Market-seeking FDI with the aim of serving foreign market is attracted to a country with large market size due to a high expected demand and prospect for efficient utilization of resources and exploitation of economies of scale (Scaperlanda and Mauer, 1969). Foreign firms are seeking for

countries with large market sizes as well as high purchasing power of their people. Growth in per capita GDP results in a larger market size and higher peoples' living standard which offers more opportunities for profitable investments and thus a prosperous business expansion for foreign firms in the host country. According to Onyeiwu and Shrestha (2004), high-growth economies are typically expected to implement stable and credible macroeconomic policies which attract FDI.

Human capital plays an important role in the attraction of FDI, especially for efficiency-seeking FDI (Karimi et al., 2013). Higher level of human capital makes physical capital more productive (Lucas, 1988) and therefore FDI should be attracted to countries with high levels of human capital. Besides, the advantageous source of multinational corporations is the possession of state-of-the-art technology and modern techniques of production and this requires the availability of skilled workforce in the host countries (Abbas et al., 2021).

FDI represents a long-term investment in the host country. Long-term investment decisions work well under the stability of a country's currency and market-determined prices. A stable currency preserves its value and firms are more confident to make long-term plans and more able to achieve the efficiency of allocation of resources which lowers the costs of doing business. Inflation distorts the value of money, causes uncertainty which makes long-term planning difficult and therefore discourages investment (Reece and Sam, 2012). In this respect, monetary policies to ensure the stable and reliable of currency should have a positive effect on the influx of FDI.

The idea that tax burden influences location decisions is initiated in the work of Tiebout (1956) on models of location. In choosing an investment location, owners of mobile factors of production consider the costs of taxation. Reductions in taxes provide incentives for foreign firms to expand as they see more profitable for their investments in the host country. As well argued by Rădulescu and Druica (2014), tax reductions create two positive effects on FDI. The direct effect of tax cuts is to increase business profits while the indirect effect works through the purchasing decisions of households. A decrease in VAT or duty taxes raises the consumption purchasing power and a lower personal income tax increases disposable income which encourages more households' consumption and therefore higher domestic demand for foreign firms' products stimulates the growth of FDI.

FDI is lured by the attractiveness of the investment environment which in turns is shaped by institutional quality. Improvement in institutional quality such as a more stable political environment reduces the risk of property loss, destruction, or expropriation and thus encourage FDI (Chandra and Handoyo, 2020). Foreign investors are more confident to undertake entrepreneurial activity when their properties are protected by secure property rights (Tag, 2021) and the law and order system functions efficiently (Tag and Degirmen, 2022). Relaxation on regulations containing rules, procedures and requirements imposed on business would directly affect the ease of entry and exit, doing business and profit capture (Saha et al., 2022).

Recent interest emphasized on the role of government spending in the attraction of inward FDI in developing countries (Othman et al., 2018). The impact of government spending on FDI can be traced back to the argument raised by Aschauer (1989) who claimed that government spending has two opposing effects – complementary and hindrance effects on private investment. Theoretically, government spending which is directed to productive investment such as provision for infrastructure and human development would raise the economy's resource productivity which in

turns increase returns on private investment and therefore encourage private investment activities. On the other hand, the hindrance effect works when government spending crowds out private investment. Higher government spending pushes pressure upward on interest rates which makes it more costly for private firms to borrow to make investment. Furthermore, increases in government spending may force the government to increase taxes leading to higher costs of production for firms and make business adventures less profitable. Higher government spending, if not accompanied with higher taxes, would result in more accumulation of public debt. Since private sector may consider public debt as an indicator of economic uncertainty (Ahlborn and Schweickert, 2018), rising public debt discourages private investment activities. Empirical studies supported for both effects of government spending on private investment. The positive effect of government spending on private investment is evident in studies by Narayan (2004), Akinlo and Oyeleke (2018), Ramirez (2000), and Nguyen (2023). In contrast, many other studies found that government spending crowds-out private investment, among them are Furceri and Sousa (2011), Cavallo and Daude (2011), Şen and Kaya (2014), Kim and Nguyen (2020) and Carvelli (2023). In another line of argument, researchers claimed that the impact of government spending on private investment depends on the type and composition of government spending. In a study for 14 OECD countries for the 1979-1988 period, Argimon et al. (1997) showed that government investment asserts a positive effect while government consumption has a negative effect on private investment. The same conclusion is reached in a study for Greece by Mamatzakis (2001). For the case of Canada during the 1961- 2000 period, Wang (2005) found that government spending on education and health crowds-in whereas government spending on capital and infrastructure crowd-out private investment. Rahman et al. (2015) examined the impact of government spending on private investment in Pakistan in the period from 1974 to 2010 and concluded that while government spending on transport and communication, health and agriculture has a positive effect on private investment, the effect of debt servicing and community servicing expenditures on private investment is negative.

There are few studies attempted to examine the impact of government spending on FDI inflows and yet the results are mixed. In a study for selected countries in Middle East and North Africa from 2000 to 2016, Anwar (2017) claimed that government spending has a negative effect on FDI inflows. However, a study done by Othman et al. (2018a) for the case of Asean-5, China and India in the 1982-2016 period found a positive effect of government spending on inward FDI. The same conclusion is reached that government spending promotes FDI inflows in the study by Othman et al. (2018b) for a group of 24 developing countries in the period from 1982 to 2014. At the compositional level of government spending, a study by Shah and Iqbal (2016) for Pakistan in the 1972-2013 period found a positive long run relationship between government expenditure on health, education and development and FDI while the relationship between defense expenditure and FDI is negative. Azolibe et al. (2020) showed that government spending on road, transportation, defense, and health infrastructure has a positive relationship with FDI in Nigeria.

There is an ample room for studies discovering how government spending affects FDI inflows in developing countries. Developing countries possess with different levels of development. In our argument, the effect of government spending on FDI inflows is subject to the role of government in the promotion for the economy's resource productivity. When the government plays a major role in providing resources for infrastructure and human development, an increase in

government spending is much needed to modernize the economy's infrastructure and enhance human capital formation leading to higher economy's resource productivity. However, if this role is shifted to the private sector then an increase in government spending dampens private investment and therefore slows down the growth rate of the economy's resource productivity. The involvement of government in the provision of resources for infrastructure and human development seems to depend on country level of development. In countries at lower level of development, a large share of provision for infrastructure and human development relies on public investment. As country level of development increases, the private sector gradually takes over the public sector in undertaking these activities. Since the government has less role in the contribution to the growth of the economy's resource productivity, any increase in government spending would only exaggerate the negative effect on private investment.

This leads us to propose the following hypotheses:

Hypothesis 1: The effect of government spending on FDI inflows in developing countries changes along country level of development.
Hypothesis 2: The effect of government spending on FDI inflows in developing countries is positive at first and then turns to be negative as country level of development rises.

To test for the hypotheses, section 2 presents model specification, data and methodology. Results are provided in section 3 and finally section 4 is concluding remarks.

2. Model specification, data and methodology

2.1 Model specification

The model is developed that specifies government spending as a determinant of FDI inflows. Some key control variables are included into the model as per the existing literature including market growth (Islam and Beloucif, 2024), human capital (Abbas et al., 2021), sound money (Dia and Ondoa, 2023), tax burden (Esteller-More et al., 2020) and institutional quality (Emako et al., 2022).
The regression equation for the model is written as

$$FDI_{i,t} = c + \beta_1 GRGDPC_{i,t} + \beta_2 POP_{t,i} + \beta_3 HCA_{i,t} + \beta_4 SMN_{i,t} + \beta_5 TAX_{i,t} + \beta_6 INST_{i,t} + \beta_7 EXP_{i,t} + e_{i,t} \quad (1)$$

where country and time (measured in year) are denoted by subscript *i* and *t*, respectively. *FDI* is FDI inflows measured as net inflows of foreign direct investment (% of GDP). *GRGDPC* is per capita GDP growth measured as the annual growth rate of GDP per capita. *POP* is population growth measured as the annual growth rate of population. Data on FDI inflows, per capita GDP

growth and population growth are taken from World Development Indicators (World Bank)[1]. *HCA* is human capital level measured as the natural logarithm of mean years of schooling. Human Development Index (UNDP)[2] provides data on mean years of schooling. *SMN* is sound money which is measured by the index of Monetary freedom taken from the Index of Economic Freedom (Heritage Foundation)[3]. The index has the value ranging from 0 to 100 and a higher value means a more commitment of the government to conduct monetary policies to ensure the stable and reliable of currency. *TAX* is reduction in tax burden which is measured by the index of Tax burden taken from the Index of Economic Freedom (Heritage Foundation). The index has the value ranging from 0 to 100 and a higher value means lower burden of taxes. *INST* is institutional quality which is proxied by governance index constructed by Kaufmann et al. (1999). The index comprises of six governance indicators including government effectiveness, regulatory quality, rule of law, control of corruption, political stability and absence of violence, and voices and accountability. The index has the value ranging from -2.5 to 2.5 and a higher value means better institutional quality. Following Hayatt (2019) and others, institutional quality is computed by taking the average of the six governance indicators. Data on governance index is taken from World Governance Indicators (World Bank)[4]. *EXP* is government spending measured as total expenditure of general government (% of GDP). Data on total expenditure of general government is taken from World Economic Outlook Database (International Monetary Fund)[5].

2.2 Data

The objective of this study is to investigate the relationship between government spending and FDI inflows in developing countries by level of development. We adopt the United Nations' country classification by income level to classify country level of development. Using the list of countries by income level provided in the World Economic Situation and Prospects 2019 (United Nations)[6], the sample of 100 developing countries worldwide is divided into four groups by income level including low income (19 countries), lower-middle income (37 countries), upper-middle income (30 countries) and high income (14 countries). The period of study is chosen from 2002 to 2022 which is mainly dictated by the availability of data for all variables included in the model.

Descriptive statistics are provided in Table 1. All data are recorded in yearly basis. The

[1] World Development Indicators (World Bank): https://databank.worldbank.org/source/world-development-indicators
[2] Human Development Index (UNDP): https://hdr.undp.org/data-center/documentation-and-downloads
[3] Index of Economic Freedom (Heritage Foundation): https://www.heritage.org/index/pages/all-country-scores
[4] World Governance Indicators (World Bank): https://databank.worldbank.org/source/worldwide-governance-indicators
[5] World Economic Outlook Database (International Monetary Fund): https://www.imf.org/en/Publications/WEO/weo-database/2025/april/select-country-group
[6] World Economic Situation and Prospects 2019 (United Nations): https://www.un.org/development/desa/dpad/wp-content/uploads/sites/45/WESP2019_BOOK-web.pdf

table shows that the high income country group has highest mean value for FDI inflows, and followed by the low income, upper-middle income and finally lower-middle income country group. The lower and upper-middle income country groups experienced higher per capita GDP growth than the low and high income country groups. Population growth in the lower-middle income and upper-middle income country groups is relatively lower than in the low and high income country groups. The upper-middle and high income country groups have higher mean value for sound money than the low and lower-middle income country groups. There are a clear pattern for human capital, reduction in tax burden and institutional quality as their mean values increase along the rise in income level. Noticeably, government spending tends to increase steadily from the low to the lower-middle, the upper-middle and the high income country group.

Table 1. Descriptive statistics

	High income country group				Upper-middle income country group			
	Max	**Min**	**Std. Dev.**	**Mean**	**Max**	**Min**	**Std. Dev.**	**Mean**
FDI inflow	58.518	-6.967	9.270	6.478	27.760	-8.401	3.707	3.775
Per capita GDP growth	14.710	-17.145	4.515	1.388	35.833	-34.203	5.321	2.014
Population growth	19.360	-4.170	3.190	2.159	11.794	-2.880	1.237	1.503
Human capital	13.443	5.977	1.717	10.007	11.607	3.474	1.516	8.237
Sound money	93.000	62.300	6.073	79.314	94.300	33.400	8.538	74.764
Reduction in tax burden	100.000	52.700	13.636	86.655	98.800	40.900	8.652	78.612
Institutional quality	1.623	-0.488	0.536	0.596	0.870	-1.318	0.487	-0.205
Government spending	62.503	9.015	8.894	28.729	52.123	10.793	8.178	27.035

	Lower-middle income country group				Low income country group			
	Max	**Min**	**Std. Dev.**	**Mean**	**Max**	**Min**	**Std. Dev.**	**Mean**
FDI inflow	43.912	-37.172	5.425	3.561	103.330	-4.846	10.292	5.309
Per capita GDP growth	16.404	-21.567	3.777	2.631	27.831	-36.777	4.753	1.734
Population growth	4.156	-0.402	0.849	1.806	5.663	-0.077	0.616	2.838
Human capital	11.250	1.380	1.951	5.897	7.206	0.977	1.442	3.292
Sound money	90.400	38.100	7.163	73.483	90.300	46.700	7.715	73.822
Reduction in tax burden	91.400	48.200	8.743	77.220	91.100	44.600	9.775	73.392
Institutional quality	0.589	-1.753	0.442	-0.563	0.042	-1.726	0.410	-0.849
Government spending	66.442	6.641	9.067	23.290	42.187	4.173	6.748	19.175

Correlation matrices for all countries as a whole group and four individual country groups are provided in Tables 2. Table 2.1 to 2.4 show that there are low correlations among independent variables. In these tables, the variance inflation factor (VIF) value for each variable is less than 2 implying no prevalence of multicollinearity problem. In Table 2.5, institutional quality variable is highly correlated with government spending variable. Institutional quality

variable has VIF value of 2.54, so to avoid the multicollinearity problem, this variable is excluded from the regression equation for the high income country group.

Table 2.1 Correlation matrix. All countries as a whole group.

	GRGDPC	POP	HCA	TAX	SMN	INST	EXP	VIF
GRGDPC	1.0000							1.10
POP	-0.2090	1.0000						1.19
HCA	-0.0471	-0.2678	1.0000					1.63
TAX	-0.0004	0.0920	0.3039	1.0000				1.16
SMN	-0.0329	-0.0180	0.0419	-0.0073	1.0000			1.18
INST	0.0340	-0.1903	0.5128	0.2176	0.3330	1.0000		1.67
EXP	-0.1274	-0.0694	0.3271	0.0729	0.0059	0.3220	1.0000	1.20

Table 2.2 Correlation matrix. Low income country group.

	GRGDPC	POP	HCA	TAX	SMN	INST	EXP	VIF
GRGDPC	1.0000							1.03
POP	0.0025	1.0000						1.16
HCA	-0.0354	-0.2442	1.0000					1.28
TAX	0.0694	-0.2314	0.3034	1.0000				1.45
SMN	-0.0378	0.1689	-0.3112	-0.1415	1.0000			1.19
INST	0.1190	0.0430	-0.0518	0.3831	0.1830	1.0000		1.31
EXP	-0.0447	0.0494	-0.0763	0.2398	0.0107	0.2259	1.0000	1.09

Table 2.3 Correlation matrix**.** Lower-middle income country group.

	GRGDPC	POP	HCA	TAX	SMN	INST	EXP	VIF
GRGDPC	1.0000							1.11
POP	-0.1865	1.0000						1.20
HCA	-0.0496	-0.2402	1.0000					1.18
TAX	0.1175	-0.1628	0.1756	1.0000				1.18
SMN	-0.0782	-0.0784	-0.1503	-0.2869	1.0000			1.26
INST	0.0823	-0.2283	0.1323	-0.0481	0.2671	1.0000		1.37
EXP	-0.0564	-0.1511	0.2576	-0.0906	-0.0056	0.4244	1.0000	1.35

Table 2.4 Correlation matrix**.** Upper-middle income country group.

	GRGDPC	POP	HCA	TAX	SMN	INST	EXP	VIF
GRGDPC	1.0000							1.10
POP	-0.1846	1.0000						1.14
HCA	-0.1310	-0.1272	1.0000					1.11
TAX	0.0290	0.1035	0.0645	1.0000				1.11
SMN	-0.0318	0.1202	-0.0422	0.1785	1.0000			1.13
INST	0.0789	-0.1865	0.1877	-0.0077	0.1933	1.0000		1.24
EXP	-0.1537	0.0352	0.0867	-0.2041	-0.0432	0.2166	1.0000	1.18

Table 2.5 Correlation matrix**.** High income country group.

	GRGDPC	POP	HCA	TAX	SMN	INST	EXP	VIF
GRGDPC	1.0000							1.30
POP	-0.3638	1.0000						1.38
HCA	0.0884	-0.3097	1.0000					1.49
TAX	-0.1592	0.3778	-0.4498	1.0000				1.66
SMN	0.2418	-0.2327	0.3240	-0.2401	1.0000			1.34
INST	0.2040	-0.2631	0.4037	-0.3860	0.4337	1.0000		2.32
EXP	-0.2878	0.0909	-0.3031	0.0191	-0.3866	-0.6389	1.0000	2.18

The cointegration tests are carried whose results confirm a long run relationship between

FDI inflows and government spending.

Table 3. Panel cointegration

Pedroni cointegration test			**Decision**
	Phillips-Perron	Augmented Dickey Fuller	Cointegration exists
Statistic	-17.455	-16.877	
p-value	0.000	0.000	
Kao cointegration test			
	Augmented Dickey Fuller		Cointegration exists
Statistic	-9.042		
p-value	0.000		
Westerlund cointegration test			
	Variance ratio		Cointegration exists
Statistic	-5.899		
p-value	0.000		

2.3 Estimation technique

In the regression model, there is a high possibility that per capita GDP growth is endogenous variable since output growth is determined by growth of inputs and total factor productivity. We conduct the Hausman test to compare OLS model and GMM model in the presence of potential endogeneity. The null hypothesis of the test is no endogeneity. With the result of chi2(7) = 68.76, p-value = 0.0000, we reject the null hypothesis and conclude that endogeneity is present. To ensure the robustness of the result, two estimation techniques are used to address the endogeneity problem.

First is the two-step system GMM model developed by Arellano and Bover (1995) and Blundell and Bond (1998). To estimate GMM, the lagged FDI variable is included into the regression model which makes the model be a type of dynamic. As claimed by Roodman (2009), GMM model is effective for a sample of large N and small T. In this study, the sample has the number of identities (N = 100 countries) higher than the number of time (T = 21 years) and therefore satisfies the condition for an effective GMM estimation. Besides, Roodman (2009) argued that the number of instruments should not exceed the number of identities. To assess differences in the impact of government spending on FDI inflows between different country groups, three dummies variables are introduced.

$$D_1 = \begin{cases} 1, & \text{Lower middle income countries} \\ 0, & \text{Others} \end{cases}$$

$$D_2 = \begin{cases} 1, & \text{Upper middle income countries} \\ 0, & \text{Others} \end{cases}$$

$$D_3 = \begin{cases} 1, & \text{High income countries} \\ 0, & \text{Others} \end{cases}$$

The regression equation for the GMM model is specified as

$$FDI_{i,t} = \beta_1 FDI_{i,t-1} + \beta_2 GRGDPC_{i,t} + \beta_3 POP_{t,i} + \beta_4 HCA_{i,t} + \beta_5 SMN_{i,t} + \beta_6 TAX_{i,t} + \beta_7 INST_{i,t} + \beta_8 EXP_{i,t} + \beta_9 D_1 * EXP_{i,t} + \beta_{10} D_2 * EXP_{i,t} + \beta_{11} D_3 * EXP_{i,t} + e_{i,t} \quad (2)$$

where FDI is lagged FDI inflows. The rest variables are defined as in equation (1). In the regression model, lagged FDI inflows and per capita GDP growth are treated as endogenous variables and the rest variables are exogenous. Year dummies are included to account for year-specific effects.

Second, per capita GDP growth may be correlated with the error term in the model then to deal with endogeneity problem, following the suggestion by Kumar and Woo (2010) and Cecchetti et al. (2011), we use two-year forward average of FDI inflows rather than annual FDI inflows. Panizza and Presbitero (2014) pointed out that the use of overlapping periods can cause autocorrelation in the model. Feasible generalized least square (FGLS) regression is an effective estimator to deal with autocorrelation problem and so is chosen. The regression equation for the FGLS model is specified as

$$\overline{FDI}_{i,(t,t+1)} = c + \beta_1 GRGDPC_{i,t} + \beta_2 POP_{t,i} + \beta_3 HCA_{i,t} + \beta_4 SMN_{i,t} + \beta_5 TAX_{i,t} + \beta_6 INST_{i,t} + \beta_7 EXP_{i,t} + e_{i,t} \quad (3)$$

where $\overline{FDI}_{i,(t,t+1)}$ is two-year forward average of FDI inflows and the rest variables are the same as in equation (1). Regression is conducted for each country group to examine the magnitude of the effect that government spending has on FDI inflows in each country group. Year dummies are included to account for year-specific effects.

3. Results

Table 4 presents regression results for the GMM model. As the table shows, the lagged FDI inflows is significantly positive which implies that the current period inflow of FDI depends positively on its last period. The success of foreign firms in the host country is a factor attracting further foreign investments. Multinational firms are more likely attracted to countries that already have an accumulated sizable FDI. Per capita GDP growth has a positive effect on FDI inflows. Stronger growth of GDP per capita results in rising purchasing power of domestic residents which lead to a larger demand for goods including those produced by foreign firms. There is a positive relationship between population growth and FDI inflows. Population growth not only results in a larger market size for the host countries but also provides a larger pool of workforce that keep labor costs at a competitive level. Higher level of human capital is a determinant attracting inward FDI in developing countries. This is an evident that it is the quality of labor force, not cheap labor costs in the host country that becomes an increasingly important factor to attract FDI. A dominant competitive advantage of multinational firms over domestic firms is their possession of advanced technology.

However, foreign advanced technology is only implemented in the host countries if the domestic workers can handle it. Foreign firms demand for high skilled workers and the more skilled workers are available the more chance for foreign firms to implement advanced technology to yield higher productivity. The relationship between sound money and the inflow of FDI is positive. Sound money implies a higher commitment of the government to conduct monetary policies endeavors to fight inflation and maintain stable money. Higher macroeconomic stability enables firms to make long term plans and induce them to engage in more investment ventures. Reduction in tax burden contributes positively to the attraction of FDI inflows. Institutional quality has a positive effect on FDI inflows indicating that improvement in institutional quality encourages inward FDI.

Table 4. Determinants of FDI inflows in developing countries by income level.

GMM model

Dependent variable: FDI inflows

Explanatory variables	**Coef.**	**Std. Err.**
FDI : Lagged FDI inflows	0.585***	0.007
GRGDPC: Per capita GDP growth	0.080***	0.013
POP: Population growth	0.084**	0.041
HCA: Human capital	0.750**	0.312
SMN: Sound money	0.027***	0.008
TAX: Reduction in tax burden	0.018*	0.009
INST: Institutional quality	0.902***	0.190
EXP: Government spending	0.057***	0.021
D_1 (Dummy – Lower-middle income) * EXP	-0.050***	0.019
D_2 (Dummy – Upper-middle income) * EXP	-0.063***	0.022
D_3 (Dummy – High income) * EXP	-0.078***	0.024
Year dummies	Yes	
AR(1) test (p-value)	0.003	
AR(2) test (p-value)	0.317	
Hansen test (p-value)	0.236	
Number of instruments	70	
Observations	1940	

Note: *** p < 0.01, ** p < 0.05, * p < 0.1

The coefficient value for government spending in the low income country group is positive (β = 0.057, p-value < 0.01). In comparison to the low income country group, the magnitude of the government spending effect on FDI inflows is lower in the lower-middle income country group (by the difference of β = -0.050, p-value < 0.01) and even lower in the upper-middle income country group (by the difference of β = -0.063, p-value < 0.01), and finally it is lowest in the high income country group (by the difference of β = -0.078, p-value < 0.01). This implies that the size of the effect that government spending has on FDI inflows decreases as country level of development rises.

Regression results for the FGLS model are presented in Table 5. There is a clear pattern on the relationship between government spending and FDI inflows in country groups by income level. Government spending has a largest positive effect on FDI inflows in the low income country group (β = 0.363, p-value < 0.01). The effect declines in the lower-middle income country group (β = 0.130, p-value < 0.01), becomes lower in the upper-middle income country group (β = 0.035, p-value < 0.05) and finally it turns to be negative in the high income country group (β = -0.354, p-value < 0.01). These results again imply a declining effect of government spending on FDI inflows along the rise in country level of development.

Table 5. Determinants of FDI inflows in developing countries by income level.

FGLS model

Dependent variable: FDI inflows

Explanatory variables	Low income	Lower-middle income	Upper-middle income	High income
	Coef. (Std. Err.)	Coef. (Std. Err.)	Coef. (Std. Err.)	Coef. (Std. Err.)
GRGDPC: per capita GDP growth	0.134	0.240***	0.091***	0.043
	(0.132)	(0.054)	(0.034)	(0.127)
POP: Population growth	1.687*	0.831***	0.678***	-0.402**
	(0.961)	(0.210)	(0.109)	(0.172)
HCA: Human capital	3.730***	1.452**	1.712**	8.545**
	(1.188)	(0.500)	(0.737)	(3.642)
SMN: Sound money	-0.040	0.103***	0.101***	0.452***
	(0.068)	(0.025)	(0.016)	(0.096)
TAX: Reduction in tax burden	-0.068	0.068***	0.061***	0.159***
	(0.060)	(0.020)	(0.015)	(0.040)
INST: Institutional quality	0.944	-0.021	0.054	
	(1.42)	(0.439)	(0.283)	
EXP: Government spending	0.363***	0.130***	0.035**	-0.354***
	(0.081)	(0.021)	(0.016)	(0.058)
Year dummies	Yes	Yes	Yes	Yes
Observations	356	710	584	279

Note: *** p < 0.01, ** p < 0.05, * p < 0.1

To interpret the declining pattern of the government spending and FDI inflows relationship, we reason that government spending has two opposing effects – complementary and hindrance effects on private investment, including FDI. The complementary effect encourages FDI inflows via the positive effect of productive public investment on the economy's resource productivity. The hindrance effect discourages FDI inflows via the pressure of government spending on tax burden imposed on tax payers and the creation of economic uncertainty due to the possibility of higher public debt. Governments involve in many economic activities in countries where level of development is low. Public investment accounts for a large share of provision for infrastructure and human development. The majority of infrastructure development projects in roads, transportation, telecommunication, power and water supply and human development programs in education and health care are often undertaken and funded by the government. In these countries, governments take a major role in providing resources for infrastructure and human development which increase resource productivity in the economy. As country level of development rises, the share of government sector in economic activities declines. The provision of resource for infrastructure and human development may be gradually shifted from the government to private sector. In the structure of government spending, more funds are allocated to current government expenditures instead of public investment. Therefore, the complementary effect of government spending decreases.

In the low income country group, the complementary effect of government spending may be largest which dominates the hindrance effect leading to the net positive effect of government spending on FDI inflows. Since the complementary effect decreases as country level of development rises, the size of the positive effect of government spending on FDI inflows declines in the lower-middle income country group and keeps declining in the upper-middle income country group. Finally, the complementary effect of government spending is outweighed by the hindrance effect in

the high income country group that causes a negative government spending effect on FDI inflows.

4. Concluding remarks

This study proposes hypotheses that the effect of government spending on FDI inflows in developing countries changes along country level of development and the effect is positive at first and then turns to be negative as country level of development rises. The hypotheses are tested with the sample of 100 developing countries worldwide grouped into low, lower-middle, upper-middle and high income countries in the 2002-2022 period. Applying different estimation techniques including GMM and FGLS estimators, the results show that the effect of government spending on FDI inflows declines as country level of development rises. Government spending has a positive effect on FDI inflows in the low, lower-middle and upper-middle income country groups, though the magnitude of the impact decreases along the rise in country level of development. In these country groups, increases in the size of government spending play as a stimulus factor to FDI inflows. The effect turns to be negative in the high income country group indicating that sizable government spending acts as a barrier to the inflow of FDI. These findings imply that expansion of government spending is an effective tool to attract inward FDI in countries at low level of development, while in countries at high level of development governments should pursue contraction of their spending for the sake of FDI attraction.

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Appendix

List of developing countries in the study

Developing countries (100 countries)	**Low income countries**: Burkina Faso, Burundi, Central African Republic, Chad, Congo (D.R.), Ethiopia, Gambia, Guinea, Guinea-Bissau, Liberia, Madagascar, Malawi, Mali, Mozambique, Niger, Rwanda, Sierra Leone, Togo, Uganda. **Lower-middle income countries**: Angola, Bangladesh, Benin, Bhutan, Bolivia, Cabo Verde, Cambodia, Cameroon, Comoros, Congo (Republic), Côte d'Ivoire, Egypt, El Salvador, Ghana, Haiti, Honduras, India, Indonesia, Kenya, Lao, Lesotho, Mauritania, Mongolia, Morocco, Myanmar, Nepal, Nicaragua, Nigeria, Pakistan, Philippines, Sao Tome and Principe, Senegal, Sri Lanka, Tanzania, Tunisia, Viet Nam, Zambia. **Upper middle income countries**: Algeria, Argentina, Belize, Botswana, Brazil, China, Colombia, Costa Rica, Dominican Republic, Ecuador, Equatorial Guinea, Fiji, Gabon, Guatemala, Iran, Jamaica, Jordan, Lebanon, Maldives, Malaysia, Mauritius, Mexico, Namibia, Panama, Paraguay, Peru, South Africa, Suriname, Thailand, Turkey. **High income countries**: Bahrain, Barbados, Brunei Darussalam, Chile, Israel, Korea (Republic), Kuwait, Oman, Qatar, Saudi Arabia, Singapore, Trinidad and Tobago, United Arab Emirates, Uruguay.