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Public Expenditure Efficiency and Foreign Direct Investment in Developing Countries

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Abstract

This paper examines the effect of public expenditure efficiency on FDI inflows, using data on a panel of 100 developing countries from 1990 to 2017. We find robust evidence that improvements in public expenditure efficiency significantly increase FDI inflows. This effect is complementary to institutional quality, per capita income and binding fiscal frameworks such as fiscal rules. Our findings highlight that, in addition to promoting the sustainability of public finances, the efficient use of public resources can exert significant positive spillover effects on the attractiveness of developing countries to foreign investors.

Keywords: Public expenditure efficiency; foreign direct investment; developing countries

JEL Classification: E6; F21; H6; O11

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Abbreviations

FDI	foreign direct investment
HP filter	Hodrick-Prescott filter
IMF	International Monetary Fund
LSDVC	least squares dummy variable corrected
OLS	ordinary least squares
V-DEM	Varieties of Democracy
WDI	World Development Indicators
2SLS	two-stage least squares

1 Introduction

Public expenditure efficiency measures a government's performance in delivering public goods and services in relation to the resources used, in other words by comparing the socio-economic indicators targeted by the public sector and the expenditure used to achieve them. Indeed, governments intervene in the economy to meet various socioeconomic needs: by providing public goods and services, correcting negative externalities resulting from market failures, and regulating business cycles (Afonso et al., 2024a; Barro, 1990; Kaplow, 2006; Musgrave, 1959; Stiglitz, 2000; Stiglitz & Dasgupta, 1971). However, appropriate increases in expenditure are constrained by the need to prevent waste, a crucial factor in ensuring efficiency and the sustainability of public finances (Apeti et al., 2025; Spilimbergo et al., 2009). Public expenditure efficiency has become one of the key issues in public finance in recent decades, and is all the more crucial in the context of an increasing scarcity of public funds – with growing deficits over recent decades, exacerbated by recent crises and the rise in military spending due to geopolitical tensions (Afonso et al., 2005; Afonso et al., 2024b; Apeti et al., 2023; Hauner & Kyobe, 2010).

Several low- and middle-income countries face major financing challenges in achieving the 2030 Agenda for Sustainable Development and the Sustainable Development Goals (Bambe, 2025; Cull et al., 2024; OECD, 2022). This underscores the critical need for more efficient public finance management and the urgency of mobilising more private capital to promote sustainable development. External capital can provide "big push" leverage in developing economies facing severe investment constraints, particularly when public investment capacity is limited (Sachs, 2006). Among the various forms of external finance, foreign direct investment (FDI) stands out as a key source of capital for low- and middle-income countries. FDI flows to these economies have risen significantly since the 1980s and 1990s, driven by the relaxation of foreign investment restrictions and the expansion of transnational corporations (Gohou & Soumaré, 2012; Morrissey & Udomkerdmongkol, 2012; Noorbakhsh et al., 2001; Zeng & Eastin, 2012). Several expectations drive the interest in FDI in these economies: its potential to provide financial resources, foster knowledge and technology transfer, facilitate integration into international markets, and enhance productivity, economic growth and job creation (Alfaro et al., 2010; Bénassy-Quéré et al., 2007; Selaya & Sunesen, 2012). In this context, the drivers of FDI in developing countries have attracted growing interest, with studies highlighting the role of market size, natural resources, business environment, institutional quality, financial development, geographical and historical factors (see, for example, Aleksynska & Havrylchyk, 2013; Asiedu & Lien, 2011; Blonigen & Piger, 2014; Busse & Hefeker, 2007; Campos et al., 1999; Desbordes & Wei, 2017; Gopalan et al., 2023; Lederman et al., 2013; Naudé & Krugell, 2007; Nguyen & Lee, 2021).

While a substantial body of literature has explored the determinants of FDI inflows in developing countries, little attention has been given to whether specific dimensions of economic performance – such as the way governments manage public spending – also influence the capacity of low- and middle-income countries to attract foreign investment. A government's level of public spending efficiency is an important driver of its overall economic performance. Efficient management of public resources enhances social welfare and supports the optimal allocation of investment projects – both at the sectoral level (e.g. health, education, infrastructure, public administration) and at the macroeconomic level, by fostering growth, economic stability and more equitable income distribution (Afonso & Schuknecht, 2019; Aschauer, 1989; Barro, 1990; Chauvet & Ferry, 2021; Wilhelm & Fiestas, 2005). Along these lines, we argue that these mechanisms could be important channels through which efficient public spending could foster FDI inflows in the developing world. In other words, while greater efficiency in public spending can significantly enhance the sustainability of public finances, we argue that it can also generate important positive spillovers for FDI attractiveness in developing countries – particularly through

improvements in infrastructure quality, human capital development, macroeconomic stability and the effectiveness of public administration.[1]

Using a panel of 100 developing countries from 1990 to 2017, this paper contributes to the extensive literature on the determinants of FDI in developing countries, examining the role of public expenditure efficiency. The empirical findings indicate that greater efficiency in public spending significantly increases FDI inflows. The results are statistically and economically significant and robust to a series of robustness tests, including when using additional control variables, alternative subsamples, and efficiency measures. Our main findings are not affected by endogeneity bias when conducting an instrumental variables approach based on lagged public expenditure efficiency. Lastly, heterogeneity analyses indicate that the positive effect of public expenditure efficiency on FDI is strengthened by higher per capita income, institutional quality and fiscal frameworks such as fiscal rules.

The paper is structured as follows. The following section briefly reviews the key theoretical arguments behind the relationship between public expenditure efficiency and FDI inflows. Section 3 briefly discusses the concept of efficiency and describes the Apeti et al. (2023) index. Section 4 presents the data used. Section 5 provides descriptive statistics and stylised facts. Section 6 presents the empirical strategy and discusses our main results. Section 7 examines the sensitivity of our main finding. The last section concludes and discusses economic policy recommendations.

2 Background

According to the neoclassical framework, since investors seek the highest returns, this may lead to significant financial flows from rich to poor countries, where returns are expected to be higher due to abundant labour and limited capital (Alfaro et al., 2008; Cockcroft & Riddell, 1991; Faeth, 2009). These investments should, in theory, provide poor countries with the resources needed to develop their physical capital, thereby boosting employment and income. In contrast to what is predicted by the neoclassical framework, Lucas (1990) has shown that capital flows from rich to poor countries are very modest and well below the levels predicted by the theory. Hence, a significant body of literature has emerged to explore and explain what is known as Lucas' paradox, including the "eclectic paradigm" of ownership location–internalisation (OLI) of Dunning (1973, 1981). According to this theory, FDI is influenced by three interdependent types of advantage. The ownership advantage enables a company to differentiate itself from its competitors through elements such as its brand, patents and expertise in technology and marketing. The location advantage explains why a company chooses to operate in a host country rather than elsewhere, this choice being motivated by factors such as the country's comparative advantage or the reduction in transaction costs, notably the absence of customs duties on locally manufactured products. Finally, the advantage of internalisation justifies the preference for an integrated approach to FDI, thus avoiding alternative strategies such as product licensing, capital lending or technical assistance (see Gastanaga et al., 1998). While the ownership advantage in the OLI framework typically depends on investors' behaviour,

1 A large body of literature investigates the role of institutions in shaping FDI. As North (1990) defines them, institutions are the humanly devised "rules of the game" that structure political, economic and social interactions, encompassing both formal (laws and regulations) and informal (norms and conventions) dimensions. While institutional quality is typically assessed through subjective indicators (García-Sánchez et al., 2016), public expenditure efficiency quantitatively measures how effectively governments use fiscal resources – though the institutional environment shapes this efficiency itself. In this regard, our work focuses not on institutional quality as such, but on how governments allocate and use their fiscal resources.

intentions and plans (Dunning, 2004; Tintin, 2013), the host country's policies and institutions can play a prominent role in the second and third advantages – for instance, via high-quality infrastructure, a well-developed human capital base, a stable economic environment, strong institutions, a functional bureaucracy and an efficient judicial system.

The literature has highlighted several key drivers of FDI, which may, at least in part, explain Lucas's paradox. Some of them include market size (Aleksynska & Havrylchyk, 2013; Asiedu, 2006; Goh et al., 2011; Jaumotte, 2004), trade barriers (Ghodsi, 2020; Medvedev, 2012), labour costs (Dunning & Lundan, 2008; Iwai & Thompson, 2012; Kucera, 1992); ownership advantages (Dunning, 1973, 1981); and availability of natural resources (Asiedu, 2006; Asiedu & Lien, 2011). Other equally important factors include skilled and qualified human capital (Cleeve et al., 2015; Dunning, 2009; Kar, 2013; Noorbakhsh et al., 2001; Suliman & Mollick, 2009; Zhang and Markusen, 1999), quality of infrastructure (Cheng & Kwan, 2000; Kaur et al., 2016; Mensah & Traore, 2024); macroeconomic uncertainty (Nguyen & Lee, 2021), and various types of political factors – such as political stability, bureaucracy, corruption and the degree of economic freedom (Bénassy-Quéré et al., 2007; Cleeve, 2012; Kim, 2010). In other words, this provides a better understanding of the factors explaining the Lucas paradox, which does not ultimately appear so paradoxical in the light of the studies previously discussed.

Many developing countries face various challenges, such as inadequate infrastructure, low levels of human capital, high macroeconomic instability, poor-quality institutions, and an increased risk of default on external debt. These bottlenecks reduce the expected return on investment, discouraging foreign investors. Yet, governments play a crucial role in addressing these challenges by intervening in the economy – particularly through fiscal policy, notably public spending – to meet socioeconomic needs, correcting negative externalities resulting from market failures, and regulating business cycles. Efficient management of public spending is essential to optimising investment in key sectors that shape the economic environment and influence FDI attractiveness. More specifically, an efficient allocation of public expenditures in education and healthcare enhances human capital formation, thus strengthening workforce skills. This may, in turn, boost overall productivity and improve the return on investment for foreign firms (Alsan et al., 2006). Similarly, strategic public investment in critical infrastructure – such as roads, highways, ports, communications networks and electricity – raises economic efficiency, reduces transaction costs and facilitates trade, making the country more appealing to foreign investors. Beyond sectoral investments, macroeconomic stability – one of the key fiscal responsibilities outlined in the Musgravian factors – enhances economic predictability and investor confidence. This is particularly crucial because FDI involves substantial sunk costs, leading investors to adopt a "wait-and-see" approach in highly volatile environments (Bambe et al., 2024). Furthermore, an efficient public administration should promote well-functioning markets, ensure efficient contract enforcement, reliable property rights, business-friendly regulations, and high-quality public services, making countries more attractive to foreign investors while fostering overall economic growth (Acemoglu et al., 2005; Afonso et al., 2005; Rodrik et al., 2004). Efficient management of public resources in the aforementioned sectors would reduce fiscal waste and potentially enable environmentally conscious governments to reallocate a portion of their budget savings to areas such as environmental sustainability. This could involve funding green initiatives, supporting eco-sustainable production methods and developing climate-resilient infrastructure. Such a strategy could generate significant catalytic effects on foreign investment, particularly as it has been shown that emerging markets and developing economies that are more vulnerable and exposed to physical climate risks tend to be less attractive destinations for FDI inflows (Gopalan et al., 2023). Finally, since it also emerges that greater public spending efficiency enhances access to financial markets (Afonso et al., 2022), one may expect positive benefits of efficient spending on FDI attractiveness by improving public resource allocation and mitigating sovereign, liquidity and exchange rate risks. This is all the more plausible as sovereign defaults or debt crises can generate huge

macroeconomic imbalances, which are well known to have a considerable impact on foreign investors' choices.

In short, we assume that improvements in public spending efficiency can enhance FDI attractiveness by enhancing the quality of infrastructure, human capital, macroeconomic stability and public administration. Efficient fiscal management limits budget deficits, mitigates sovereign defaults or debt crises, and may boost investor confidence in the domestic economy. Moreover, by optimising resource use, governments can finance sustainable and climate-resilient infrastructure, making their economies more competitive – which is crucial to attracting FDI and stimulating growth.

3 Public expenditure efficiency: the Apeti et al. index

Public spending is a fundamental pillar of fiscal policy and has risen sharply in recent decades to address growing socioeconomic needs. While it is widely acknowledged that increased public expenditure can generate significant multiplier effects, macroeconomic constraints limit governments' ability to expand spending indefinitely (ADB et al., 2016; Aschauer, 1989; Barro, 1990; Devarajan et al., 1996; Ilzetzki et al., 2013; Kraay, 2014). In other words, governments must provide public goods and services while ensuring fiscal discipline – especially in an era of increasing globalisation, where capital and taxpayer mobility exert downward pressure on tax revenues. Moreover, the emergence of binding budgetary frameworks such as fiscal rules – which have become very popular since the 1990s – alongside greater transparency in government practices worldwide, have further reinforced public pressure for more efficient resource management to preserve fiscal sustainability (Afonso et al., 2010; Apeti et al., 2025; Heller, 2003; Tanzi et al., 2000). The concept of efficiency is grounded in the fundamental idea that the public sector, like any other economic agent, may allocate resources sub-optimally, often leading to fiscal waste. This is all the more plausible given the lack of competition in the public sector, as emphasised by the public choice school (Jackson & McLeod, 1982). Against this backdrop, the literature dealing with public sector efficiency has gained significant attention in recent decades, with important contributions from, among others, Afonso et al. (2005), Afonso & Fernandes (2008), Afonso et al. (2010), Apeti et al. (2025), Eeckaut et al. (1993), Gupta & Verhoeven (2001), Hauner & Kyobe (2010), Tanzi & Schuknecht (1997), Tanzi et al. (2000) and Worthington (2000).

Public spending efficiency is commonly assessed in the literature by analysing the relationship between government expenditures and the socioeconomic indicators they aim to improve. This, therefore, requires the identification of the economic sectors likely to be genuinely influenced by government intervention, which is an inherently challenging task. So far, the mainstream literature (see the studies cited earlier) has examined public spending efficiency in key sectors such as education, health and infrastructure. In a seminal work, Afonso et al. (2005) provide a broader measure of public sector efficiency across 23 industrialised countries. Specifically, in addition to the sectors traditionally analysed in the literature (education, health and infrastructure), the authors incorporate public administration and the Musgravian tasks for government: allocation, distribution and stabilisation. More recently, Apeti et al. (2023) extended the study by Afonso et al. (2005), considering the same public sector dimensions while covering a large sample of 158 advanced and developing economies from 1990 to 2017. Efficiency is estimated based on the relative distance of inefficient observations from an ideal frontier, made of the best-performing units in the sample. The authors compute public sector performance indicators based on various socioeconomic variables targeted by public spending in each sector. For instance, performance or outcome indicators for education include primary and secondary school enrolment, as well as the expected years of schooling; those for health include life expectancy at birth and the infant mortality rate; and those for infrastructure include various indicators grouped into three sub-sectors: transport, communication, and energy (see Table B3

for more details). A composite index summarising the performance indicators for each sector is computed, and then regressed on the sector-specific expenditure to obtain the efficiency scores.[2] Finally, the overall efficiency score is derived as a composite index across all sectors. Further, it is worth noting that, in contrast to the prevailing literature, which typically estimates efficiency using non-parametric methods, Apeti et al. (2023) adopt a parametric approach (a stochastic frontier analysis or SFA), which accounts for measurement errors and unobserved heterogeneity across units.

In short, Apeti et al.'s paper (2023) has the merit of providing public expenditure efficiency scores that account for several dimensions of the public sector; for a large sample of 158 developed and developing countries over a long period (1990–2017), while drawing on a parametric approach that addresses the limitations of commonly used non-parametric methods. In view of these advantages – which are probably not exhaustive – this study approximates public expenditure efficiency using the scores provided by Apeti et al. (2023), which we call here the "Apeti et al. index". However, we recognise that, as with most synthetic indicators, this measure has certain limitations. The authors acknowledge these, discuss them, conduct robustness tests, and show that the baseline model scores do not seem to be very sensitive to changes in certain outcome indicators or when excluding certain sectors from the baseline specification (see Section 3 of their Supplementary Appendix for more details). Further, it should be emphasised that, although efficiency is an essential dimension that governments should consider in their budgetary decision-making processes, it does not in itself sum up all the relevant criteria. Beyond sectoral or macroeconomic objectives, public authorities may pursue other important goals (such as resilience, preparedness for shocks, and ideological considerations), which may, in some cases, override the sole pursuit of efficiency. Our study therefore focuses on public spending efficiency without claiming to cover the full range of objectives potentially pursued by governments.

4 Data

Our dependent variable is the ratio of net FDI inflows to GDP (Agosin & Machado, 2005; Gohou & Soumaré, 2012; Nguyen & Lee, 2021; Okara, 2023). Public expenditure efficiency is proxied by the Apeti et al. index. Our study covers 100 emerging markets and low-income countries selected based on data availability for the variables of the baseline model. Our classification of developing countries follows the International Monetary Fund (IMF), which distinguishes between emerging market economies – characterised, among other factors, by rapid growth in per capita income and a transition toward a developed market status – and low-income countries, which exhibit limited structural transformation and weak external financial linkages, preventing them from being classified as emerging economies (see Bambe, 2023). The study period is limited to 1990–2017 due to data availability on public expenditure efficiency. However, 1990 also coincides with a wave of trade and financial liberalisation reforms in many of these countries, allowing us to capture the dynamics of FDI flows throughout the study period. We include a set of control variables that may affect FDI inflows and influence the impact of public expenditure efficiency, namely: national private sector investment, foreign aid, real effective exchange rate, the terms of trade, and institutional quality (proxied by press freedom).

2 It should be pointed out that, while public spending may have immediate effects on certain outcome indicators (such as growth, school and road maintenance, and teacher and doctor training and remuneration), its impact on other dimensions, such as infrastructure construction (schools, roads, hospitals), may be deferred in time. This time lag reflects the inherent complexity of measuring efficiency, especially given the dissociation between short-term effects and long-term spinoffs. It is therefore important to keep in mind the inherent limitations of the indicator used, even if the authors attempt to mitigate such biases by using a one-year lag in the inputs used.

Private-sector investment is included as high levels of domestic investment may indicate strong economic dynamism with high-performing companies – which can, in turn, enhance the country's attractiveness to foreign investors (Akinlo, 2004; Morrissey & Udomkerdmongkol, 2012).[3] Regarding foreign aid, many studies show that it could have ambiguous effects on FDI (see, for example, Bhavan et al., 2011; Harms & Lutz 2006; Kimura & Todo, 2010). In particular, Selaya & Sunesen (2012) argue that foreign aid can help ease financing constraints in developing countries by funding public infrastructure and human capital, addressing the lack of private and public investment due to budgetary limitations, and enhancing FDI attractiveness. Conversely, when allocated to physical capital, it may compete with private investment and disrupt resource allocation, causing capital to shift to other markets. Real effective exchange rates capture the competitiveness of the domestic economy; appreciations may reduce the country's attractiveness to export-oriented FDI (Froot & Stein, 1991; Udomkerdmongkol et al., 2009; Xing & Wan, 2006). The terms of trade are not introduced as an ad hoc control, but rather to capture the effect of costly shocks on the domestic economy. Indeed, developing countries are much more vulnerable to terms-of-trade shocks than their advanced peers; and variations in the terms of trade can explain most of the volatility of output in these countries; which can have important repercussions on foreign investor attractiveness (Chaudhuri & Biswas, 2016; Kose, 2002; Mendoza, 1995). Lastly, a free and transparent media acts as a watchdog, ensuring checks and balances and fostering a more transparent and accountable public service, thus contributing to a strong democratic framework. Consequently, a reduction in press freedom is expected to worsen foreign investors' attractiveness, especially as numerous studies highlight the role of institutions in enhancing FDI appeal (see, for example, Asiedu & Lien, 2011; Bénassy-Quéré et al., 2007; Morrissey & Udomkerdmongkol, 2012).[4]

Foreign aid and the terms of trade (the price of exports relative to the price of imports) are from the World Bank's World Development Indicators (WDI) database. Private investment is measured as the share of private-sector gross fixed capital formation to GDP, and is from the IMF Investment and Capital Stock database. The real effective exchange rate variable (2007=100) is from Darvas (2012). Press freedom is taken from the Freedom House database, which considers three aspects of the media environment: the legal environment (which accounts for laws and regulations likely to influence the content of the media, or even constrain them); the degree of political influence on media content, and the media's economic environment (i.e. its ownership structure, transparency, cost of establishment, obstacles to news production and distribution, government subsidies, etc.). The index can range from 0 (total media freedom) to 100 (total absence of media freedom).

3 We lag private domestic investment by one year to reduce simultaneity bias with FDI inflows.

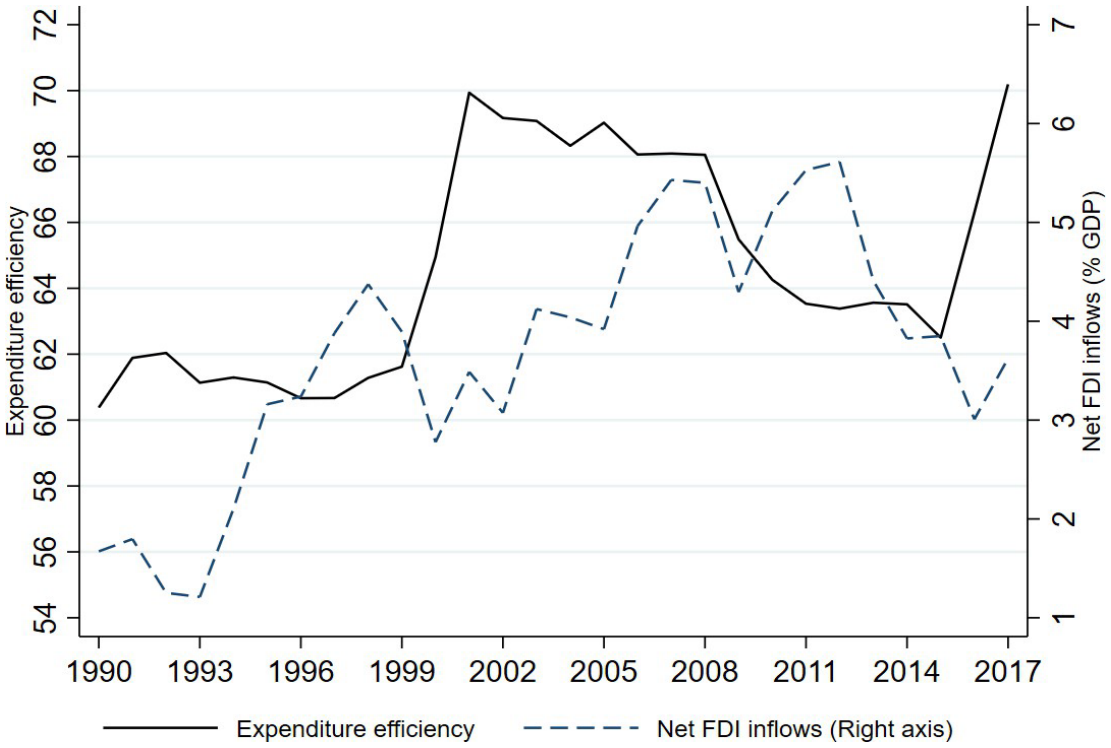
4 Taking due note that media freedom is not an exhaustive measure of the institutional environment, we include other institutional variables in robustness, such as property rights, corruption control and the level of democracy.

5 Descriptive statistics and stylised facts

By construction, the Apeti et al. index can range from 0 to 1, with higher values indicating more efficient public spending. To ease the reading of our results, we multiply the initial index by 100. Figure 1 shows a rising trend in public spending efficiency in emerging markets and low-income countries over our study period, with significant fluctuations. Public spending efficiency rose sharply from the late 1990s and early 2000s, followed by stagnation until a drastic decline in the wake of the 2000–2009 global financial crisis, before a further surge after 2014. In our sample and over our study period, we report an average efficiency score of around 65, in other words well below that of advanced countries reported by Apeti et al. (2023), which is around 71. This implies that, on average, developing countries have considerable scope for improving their public spending efficiency, as suggested by previous studies. Specifically, governments in these countries could increase the supply of public goods and services by around 35%, while maintaining the same level of public spending; or, conversely, they could reduce their spending by around 35% while maintaining the same level of public goods and services. Emerging markets report a higher score than low-income countries (66.42 versus 61.87), with a statistically significant difference at the usual thresholds (p-value: 0.00; t = -14.80). Costa Rica is the most efficient country in our sample and over our study period, with an average score of almost 72, followed by Kazakhstan, Peru, and Brazil – with scores fluctuating between 71 and 70. On the other hand, Yemen, Tanzania and Nigeria report the lowest scores, ranging from 54 to 55. Regarding regional distributions, we report a low score of around 63 in African economies, followed by Asian countries (65), while Latin American and European countries report the highest score (67).

As shown in Figure 1, FDI flows to developing countries have shown an upward trend over our study period, with sharp fluctuations. The first uptrend in the early 1990s occurred in the global context of trade and financial liberalisation reforms in many emerging and low-income countries, followed by a significant decline in 1997, probably due to the Asian crisis – which led to a sharp drop in external private capital flows to the region (Thangavelu et al., 2009). A new upward trend began in the early 2000s, followed by a further decline due to the 2008–2009 global financial crisis, with marked volatility and a new downward trend after 2014 – probably due to the oil price shock. In our sample and over our study period, we report an average net FDI inflow of around 3.7% of GDP, with emerging markets reporting a slightly higher value than low-income countries (4.14 % of GDP versus 3.01 % of GDP). Equatorial Guinea reported the highest average FDI net inflows in the sample and over the study period (almost 24% of GDP), followed by Liberia (around 22% of GDP) and Azerbaijan (16% of GDP), probably due to their high endowment in natural resources. On the other hand, on average, Suriname reported negative net inflows over our study period (-3% of GDP), and Iraq, Nepal and Yemen reported almost zero net inflows. Lastly, with regard to regional distributions, Europe and Africa report, on average, the highest average net FDI inflows in the sample and over the study period (almost 4% of GDP), while Asia and Latin America report average values of around 3% of GDP. Lastly, Figure C (see Appendix) displays trends in public spending efficiency and FDI flows, distinguishing between emerging and low-income countries, and excluding China from the full sample, respectively. The trends observed remain broadly similar to those described above, even when China is excluded from the sample in order to neutralise the effect of its disproportionate economic size.

Figure 1: Public expenditure efficiency and FDI inflows in developing countries (1990-2017)



Notes: The statistics cover 100 developing countries from 1990-2017.

Source: Authors, from the World Development Indicators (WDI) (World Bank, 2025) and Apeti et al. (2023)

6 Methodology and main results

This paper examines the effect of public expenditure efficiency on FDI inflows, using ordinary least squares (OLS) to estimate the following equation

$$Y_{it} = \alpha_i + {}_{\beta}X_{it} + \eta Z_{it} + \mu_i + \psi_t + \varepsilon_{it} \qquad (1)$$

where Y_{it} represents net FDI inflows (as a percentage of GDP) for a country i in the year t. $X_{i,t}$ measures public expenditure efficiency, and Z_{it} is the set of control variables of the baseline model. μ_i represents country-fixed effects, allowing us to account for unobserved and time-invariant country-specific characteristics. ψ_t captures time-fixed effects, thus accounting for common time-varying shocks associated with public expenditure efficiency and FDI inflows. ε_{it} represents the standard residual error term. Before moving on to econometric estimations, we perform Phillips-Perron and Augmented Dickey-Fuller and unit root tests, and show that all our series are stationary in levels or I(0) – which allows us to avoid potential non-stationarity biases in our main results.

Column [1] of Table 1 reports our baseline results. We observe that an improvement in public spending efficiency increases net FDI inflows, and the coefficient is significant at the 1% threshold. Specifically, a 10-percentage-point increase in the Apeti et al. index rises net FDI inflows by almost 1 percentage points, corroborating our hypothesis. Regarding the baseline model's control variables, the results suggest that lagged private investment and foreign aid are positively associated with FDI inflows, while real effective exchange appreciations and a decline in press freedom play negatively. There is a follow-up question. Are the baseline results equally

economically significant? In our sample and over our study period, we report an average net FDI inflow of approximately 3.7% of GDP. Therefore, the main results suggest that for an average country in the sample, a one-standard-deviation increase in public spending efficiency is associated with almost a 0.7 percentage point rise in FDI inflows, representing a 18.9% increase for the average country, which is economically sizable.

7 Sensitivity

Our previous results suggest a positive, statistically and economically significant effect of public expenditure efficiency on net FDI inflows. The remainder of the paper examines the sensitivity of our main result through a series of robustness and heterogeneity tests.

7.1 Robustness

7.1.1 Additional control variables

Although our baseline model considers a range of potential determinants of net FDI inflows, other relevant omitted determinants could introduce bias into our estimates. To address this, we re-estimate our baseline model using a series of alternative specifications. In Columns [2] and [3] of Table 1, instead of the press freedom index, we consider alternative institutional variables such as the V-Dem (Varieties of Democracy) liberal democracy and government accountability indices, respectively. Next, we include a series of additional control variables, namely: annual GDP growth, per capita income, annual GDP, the share of urban population, manufacturing value added, real effective exchange rate volatility, exchange rate regime, trade openness, natural resources, and additional institutional variables (namely, corruption control and property rights).[5] Annual GDP growth is included, as studies show that FDI inflows can significantly respond to the host country's business cycles (Chowdhury & Mavrotas, 2006; Doytch, 2015; Goldberg, 2004). Per capita income allows us to capture differences in economic development, since even within developing countries there are still differences in economic levels. Annual GDP is used to account for the market size, while the urbanisation rate is used to capture agglomeration effects, or what Henderson (1986) calls "urbanisation externalitie" – that is, the tendency of firms to locate in areas with high local demand. This reflects the idea that a larger market size can generate agglomeration benefits by increasing potential revenues, lowering transportation costs and facilitating economies of scale (Glaeser et al., 1992). Manufacturing value added reflects a country's industrial capacity, under the premise that a higher level of industrial development enhances its attractiveness to foreign investors. Real effective exchange rate volatility is included to capture macroeconomic

5 The V-Dem Liberal Democracy index captures a broad range of democratic dimensions, including suffrage, electoral freedom and fairness, freedom of association and expression, the protection of individual and minority rights, equality before the law and constraints on executive power. In addition, the concept of government accountability refers to the extent to which the exercise of political power is subject to justification requirements and potential sanctions, thereby limiting arbitrary governance. GDP growth, per capita income, the urbanisation rate, manufacturing value added, trade openness, and natural resources are from WDI. Real effective exchange rate volatility is estimated from the HP filter, using data from Darvas (2012). The exchange rate regime is from Ilzetzki et al. (2019) and can range from 1 to 15, where a low (high) value indicates a fixed (flexible) regime. Corruption control is from the International Country Risk Guide (ICRG) database (PRS, 2025) and ranges from 0 to 5 in our sample and over our study period (higher values indicate better institutions). The property right index is from V-Dem and ranges from 0 to 0.9 in our sample (higher values indicate better performance).

volatility, along with the exchange rate regime – which can play a role in a country's ability to mitigate external shocks (Cushman & De Vita, 2017). Trade openness is considered as lower tariff and non-tariff barriers can lead to increased flows of goods and services, as well as capital (Medvedev, 2012). Natural resources account for foreign investors' preference for countries with a strong primary sector (Aleksynska & Havrylchyk, 2013). Finally, to account for trends in FDI inflows that may not be related to changes in public spending efficiency, we also introduce a linear trend variable. The new results are reported starting from Column [2] of Table 1. In Columns [4] to [15], the new controls are introduced separately, while in the last column, they are all included in the same regression. In all cases, the coefficient on public expenditure efficiency remains positive and significant, with a magnitude comparable to the coefficient of the baseline model. Similarly, overall, the coefficients of the baseline model controls hold despite some variations. Finally, with regard to the new control variables, the results suggest a positive effect of GDP growth and trade openness.[6]

6 We have considered a series of other determinants in robustness, such as the level of financial development, the level of taxation, the labour force and the population's dependency ratio. Our results (not reported but available on request) remain stable.

Table 1: The effect of public expenditure efficiency FDI inflows

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Public expenditure efficiency	0.091***	0.091***	0.093***	0.073***	0.116***	0.107***	0.091***	0.060**	0.092***	0.088***	0.049**	0.093***	0.090**	0.100***	0.091***	0.063**
	(0.024)	(0.024)	(0.025)	(0.024)	(0.028)	(0.029)	(0.026)	(0.025)	(0.024)	(0.024)	(0.019)	(0.025)	(0.038)	(0.026)	(0.024)	(0.028)
Lag. Private investment	0.252***	0.268***	0.266***	0.219***	0.314***	0.330***	0.266***	0.218***	0.252***	0.251***	0.151*	0.235***	0.281***	0.249***	0.252***	0.287**
	(0.066)	(0.076)	(0.077)	(0.064)	(0.073)	(0.070)	(0.065)	(0.082)	(0.066)	(0.066)	(0.085)	(0.062)	(0.096)	(0.070)	(0.066)	(0.113)
Log. Foreign aid	3.063*	2.701**	2.731**	3.063*	1.244*	0.876	2.786*	1.589	3.072*	3.091*	0.352	3.036*	1.701	3.258*	3.063*	0.240
	(1.696)	(1.330)	(1.335)	(1.631)	(0.694)	(0.758)	(1.479)	(1.084)	(1.718)	(1.698)	(0.592)	(1.690)	(1.189)	(1.781)	(1.696)	(0.436)
Log. Terms of trade	-4.303	-3.488	-3.563	-4.071	-3.202*	-2.399*	-4.403	-0.864	-4.293	-4.399	-1.020	-4.411	-0.824	-4.291	-4.303	-0.193
	(2.856)	(2.294)	(2.280)	(2.579)	(1.664)	(1.373)	(2.749)	(1.451)	(2.824)	(2.890)	(1.048)	(2.860)	(1.093)	(2.817)	(2.856)	(1.353)
Log. Real effective exchange rate	-4.047***	-3.557***	-3.645***	-3.899***	-2.865**	-2.215	-3.987***	-3.348**	-4.301**	-4.390***	-1.353	-3.450***	-3.157**	-4.035***	-4.047***	0.281
	(1.235)	(1.242)	(1.261)	(1.194)	(1.394)	(1.518)	(1.239)	(1.652)	(1.742)	(1.306)	(1.056)	(1.250)	(1.362)	(1.262)	(1.235)	(1.557)
Press freedom (Freeodom House)	-0.063**			-0.062**	-0.055**	-0.057*	-0.065**	-0.054*	-0.062**	-0.063**	-0.035*	-0.063**	-0.044	-0.059**	-0.063**	-0.048*
	(0.030)			(0.029)	(0.027)	(0.029)	(0.031)	(0.028)	(0.029)	(0.030)	(0.021)	(0.029)	(0.029)	(0.029)	(0.030)	(0.027)
Observations	1857	1977	1979	1857	1824	1824	1857	1692	1857	1857	1661	1853	1403	1797	1857	1216
R-squared	0.1288	0.1177	0.1172	0.1386	0.1975	0.2025	0.1367	0.1037	0.1288	0.1304	0.1272	0.1303	0.1066	0.1299	0.1288	0.183

Column [1] displays the main results. Robust standard errors are in parentheses. Columns [2] and [3] include the V-Dem (Varieties of Democracy) liberal democracy and government accountability indices, respectively, instead of the press freedom index considered in the baseline model. Columns [4]-[14] separately include a series of additional control variables, namely: annual GDP growth, per capita income, annual GDP, the share of urban population, manufacturing value added, real effective exchange rate volatility, exchange rate regime, trade openness, natural resources, corruption control, property rights, and a linear trend variable, respectively. The last column includes the new controls in the same regression. All regressions include the constant, as well as country- and year-fixed effect, not reported in the table. With regard to the new control variables, the results suggest a positive effect of GDP growth and trade openness. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

7.1.2 Alternative subsamples and efficiency measures

Our second set of robustness tests consists of re-estimating the main model by considering several alternative subsamples. This allows us to check whether our main results obtained from the whole sample are not biased by specific countries or periods. Our sample includes six countries considered by the IMF to exhibit institutional and social fragilities, which structurally limit the provision of public goods, leading to extreme poverty, forced displacement, and even permanent conflict.[7] These countries may, therefore, differ radically from the rest of the sample, exposing our results to sample-dependency bias. Therefore, we remove these countries from the initial sample in the second column of Table A1. In Column [3], we exclude the years during the 2008–2009 global financial crisis from the initial sample, given the macroeconomic imbalances generated by the shock – as illustrated in Figure 1. Similarly, in Column [4], we exclude country-year observations characterised by hyperinflation episodes, defined in previous studies as inflation rates greater than or equal to 40% (see, for example, Balima et al., 2017; Bambe et al., 2024; Lin & Ye, 2009). In Columns [5] and [6], we exclude from the sample country-year observations with FDI inflows and expenditure efficiency higher than the 90th percentile of the sample, respectively, to account for outliers. Along the same line, in Column [7] China is excluded from the main sample to control for potential bias arising from its outsized economic weight; and in Column [8] we exclude from the main sample country-year observations with negative or zero net FDI inflows. In all cases (see Columns [2]–[8] of Table A1), the results remain stable. This suggests that our main results are not driven by specific countries, outliers, hyperinflation episodes or the global financial crisis – which strongly support our main conclusions.

As highlighted in Section 3, Apeti et al. (2023) provide alternative efficiency scores to check the robustness of the scores obtained from the main model. Therefore, we conclude this robustness series by re-estimating the baseline model using these alternative efficiency measures. Among the Musgravian dimensions considered (stabilisation, distribution and economic performance), the initial index considers per capita income, GDP growth (10-year average), and unemployment rate (10-year average) as outcome indicators for economic performance. As a robustness measure, Apeti et al. (2023) exploit a “subjective” well-being approach, replacing per capita income with a measure of happiness. Next, the authors raise a critical discussion about the initial index, which includes public administration, whereas certain agencies, institutions and authorities, although belonging to the public sector, operate with budgetary autonomy and independent management. Furthermore, factors such as the independence of the judiciary and the size of the informal economy, included in the outcome indicators for public administration, are deeply rooted in long-term dynamics and are unlikely to be affected in the short term by public spending. Consequently, the authors re-estimate the efficiency scores by eliminating public administration from the dimensions considered. New results using these two alternative measures of efficiency are reported in the last two columns of Table A1, respectively, and remain robust.

7.1.3 Alternative methods and endogeneity concerns

FDI flows could have a significant inertia effect, which is not captured in our previous estimates. Therefore, in Column [2] of Table A2 we apply a bias-corrected fixed effects (LSDVC) specification (Debrun et al., 2008; Gootjes et al., 2021), which estimates a dynamic model while avoiding the Nickell bias. The results confirm a moderate inertia effect in FDI. More importantly, the coefficient on public expenditure efficiency remains positive and significant, despite a slight drop compared to the effect obtained with OLS regression.

7 These countries include Burundi, Republic of the Congo, Guinea-Bissau, Lebanon, Papua New Guinea, Venezuela (Bolvarian Republic of).

Next, it is important to consider the possible endogeneity of public expenditure efficiency in our main model. Fixed effects included in all our regressions mitigate bias due to unobserved country-specific and time-invariant factors; while the long list of additional control variables included in Table 1 mitigates bias due to (observed) time-varying factors. We also believe that the alternative measures discussed in the previous section allow us to reasonably mitigate bias arising from measurement errors in expenditure efficiency. A last source of endogeneity, and perhaps the most important in our setting, may come from reverse causality. One may consider that FDI can equally influence public spending efficiency by expanding the tax base through the entry of new firms (Feld & Heckemeyer, 2011) or by promoting more efficient technologies within the public sector. However, we consider this effect to be rather indirect and thus the risk of reverse causality bias in our case may be relatively limited. Nevertheless, to ensure that our main results are not subject to endogeneity bias, we follow previous studies (see, for example, Harms & Lutz, 2006; Morrissey & Udomkerdmongkol, 2012; Selaya & Sunesen, 2012) and re-estimate our main equation by 2SLS (two-stage least squares) using lagged public expenditure efficiency as an instrumental variable. Given the well-documented persistence in fiscal variables, we assume that contemporary public spending efficiency may be correlated with its own lagged values. However, as part of our identification strategy, we postulate that these lagged values – used instrumental variable – are not correlated with the model's error term, thereby satisfying the exogeneity condition required for consistent estimation. The results from 2SLS are reported in Column [3] of Table A2. Although the new coefficient of the variable of interest increases slightly compared to that of the baseline model, the two effects remain qualitatively comparable. Moreover, the Kleibergen-Paap F-statistic for the baseline model significantly exceeds the threshold value of 10, as suggested by the Staiger and Stock (1994) rule of thumb, indicating that the potential bias from weak instruments is minimal. Consequently, we can reasonably conclude that our main results obtained from ordinary least squares are unlikely to be driven by endogeneity bias.

7.2 Heterogeneity

7.2.1 Geographical regions

We conduct a series of heterogeneity analyses, first distinguishing the effect of public spending efficiency by geographical region. Theoretically, we may expect a more amplified effect in countries with a high level of efficiency, since better public financial management may also reflect a stronger institutional framework. Should this be the case, the effect of efficiency on FDI attractiveness should be more pronounced in European countries, which report, on average, the highest efficiency score in the sample and over the study period. Conversely, since countries with low net FDI inflows have greater room to improve their attractiveness, one might expect the marginal gains from enhancing public spending efficiency to be higher in these regions – particularly in Asia and Latin America. The results are presented in Table 2, where we estimate the baseline model, augmented with interactions between public expenditure efficiency and the geographical heterogeneity variables. The results indicate a positive effect of public spending efficiency on FDI in all the regions considered; however, the effect appears significantly greater in Europe – which corroborates our first hypothesis of an amplified effect in high-efficiency countries.

Table 2: Heterogeneity: geographical regions

	(1)	(2)	(3)	(4)
Expenditure efficiency	0.102***	0.087***	0.077***	0.103***
	(0.036)	(0.024)	(0.025)	(0.028)
Expenditure efficiency * Africa	-0.020			
	(0.044)			
Expenditure efficiency * Europe		0.197*		
		(0.113)		
Expenditure efficiency * Asia			0.089	
			(0.063)	
Expenditure efficiency * Latin America				-0.048
				(0.042)
Observations	1857	1857	1857	1857
R-squared	0.1288	0.1296	0.1297	0.1291

We consider the main equation and augment it by the interactive term. Vector X variables in isolation (without interaction with public expenditure efficiency) have been omitted due to multicollinearity). All the baseline model control variables are included but not reported for space purposes. All regressions include the constant, not reported in the table, as well as country- and year-fixed effects. * p < 0.1, ** p < 0.05, *** p < 0.01

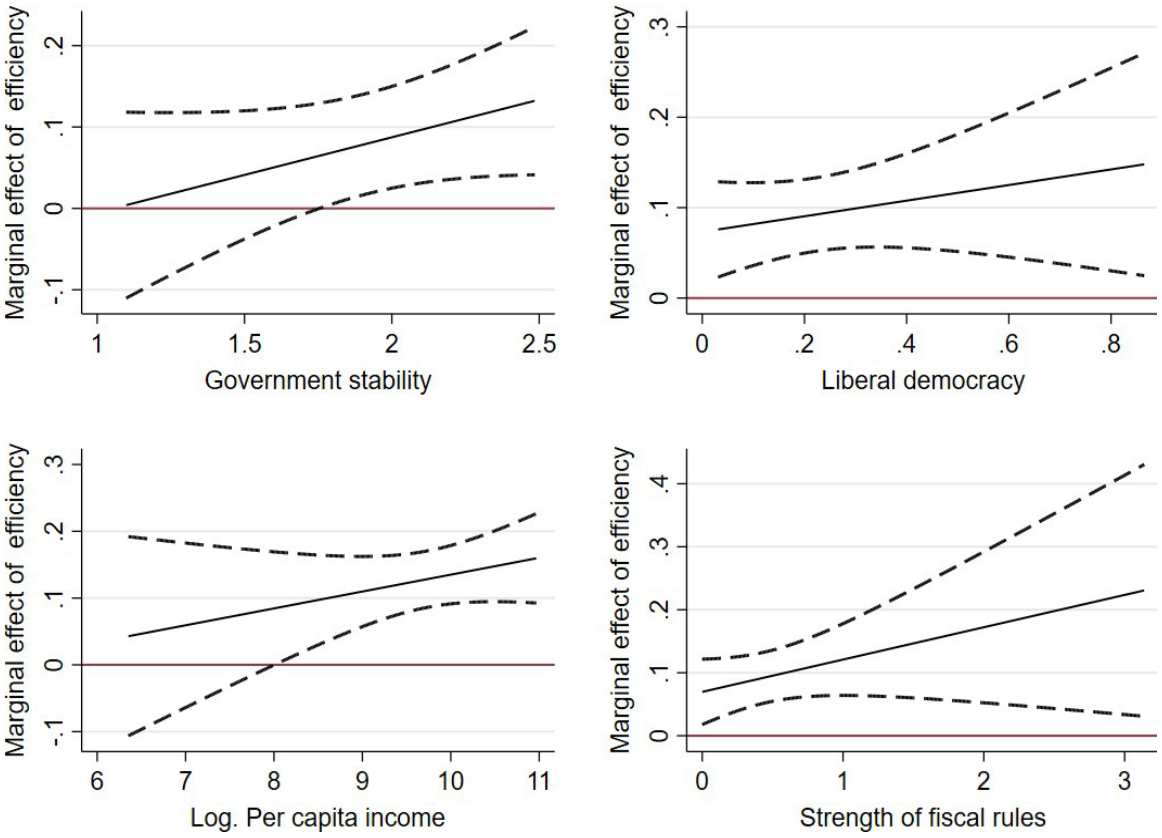
7.2.2 Role of economic and institutional factors

Next, we conclude our sensitivity analysis by examining potential heterogeneities in the effect of public expenditure efficiency according to several economic and institutional factors: the level of liberal democracy and government stability, per capita income and fiscal rules.[8] We expect strong institutions to amplify the favourable effect of public expenditure efficiency on FDI inflows. In the same vein, given the positive correlation between institutional quality and per capita

8 The liberal democracy index is from V-Dem. Government stability is extracted from the International Country Risk Guide (ICRG) dataset. Per capita income is from WDI. Building on Gootjes et al. (2020) and Apeti et al. (2024) and using data from the IMF Fiscal Rules Dataset, we compute a fiscal rule index that incorporates both national and supranational fiscal rules across four categories: balanced budget rules, debt rules, expenditure rules, and revenue rules. The index includes several aspects of the fiscal rules. Coverage specifies the level of government affected by the rule, whether central or general. The legal basis assesses the foundation of the rule, ranging from political agreements to legislative statutes and constitutional provisions. Supporting procedures evaluate mechanisms such as multiannual expenditure ceilings, fiscal responsibility laws, and independent fiscal bodies responsible for setting budgetary assumptions and overseeing implementation. Enforcement quantifies the existence of formal enforcement procedures. Flexibility examines whether well-defined exemption clauses exist, balanced budget targets are cyclically adjusted, and whether public infrastructure spending is excluded from expenditure ceilings. Monitoring measures the extent of compliance oversight by independent bodies outside the government. Lastly, fiscal councils identify the presence of independent public institutions that reinforce commitments to sustainable public finances. We normalise each of the five components to unity.

income (see Acemoglu & Johnson, 2005; North, 1990), a complementary effect between public spending efficiency and higher per capita income is expected. The potential complementarity between public spending efficiency and fiscal rules is quite intuitive. Research suggests that by constraining fiscal aggregates, fiscal rules encourage governments to use public resources more efficiently to meet their intended targets (see, for example, Apeti et al., 2025). Moreover, credible fiscal rules can signal to foreign investors a government's commitment to enhancing economic performance, which can positively influence FDI inflows. Figure 2, which plots the marginal effect of public spending efficiency on FDI inflows in relation to the different heterogeneity variables considered, reveals clear patterns. The positive effect of public spending efficiency is greater in countries with strong institutions and high per capita income, and in countries that tighten their fiscal rules.

Figure 2: Heterogeneity: role of economic and institutional factors



Source: Authors

8 Conclusion

An extensive body of literature examines the determinants of FDI in developing countries. This article focuses on one particular aspect of economic performance: how governments manage their expenditure. Based on 100 developing countries from 1990 to 2017, we find that improvements in public spending efficiency significantly increase FDI inflows. Our main estimates are robust across multiple tests, and we show that they are not driven by endogeneity issues. The positive effect of public spending efficiency on FDI increases with sound institutions, per capita income and stricter fiscal rules.

Complementing a large body of literature on the determinants of FDI in developing countries, our results highlight another key driver: the efficiency with which governments manage their public spending. In other words, while efficient management of public resources is crucial to

ensure the sustainability of public finances, we show that it can equally help developing countries promote a strengthened financing ecosystem, thus catalysing foreign investment to achieve sustainable development goals. The need for sound public resource management has become even more pressing due to rising fiscal deficits in recent years, exacerbated by global crises and the constraints imposed by the current international political and geopolitical landscape. Low-income economies, which face substantial development challenges, and certain regions such as Africa – suffering from persistent structural deficits – nevertheless hold significant potential for improvements. Sound fiscal standards and appropriate institutional reforms may play a crucial role in this process, alongside credible fiscal frameworks – such as fiscal rules, which help reinforce fiscal discipline and institutional credibility (Apeti et al., 2025). Engagement in IMF-supported programmes, while enhancing foreign investors' confidence in the domestic economy, can also serve as an important lever for promoting the sustainability of public finances. This is particularly the case when such programmes are accompanied by a set of policy measures (i.e. conditionality) that the participating country is encouraged to implement (Balima & Sokolova, 2021). Conditionalities can be particularly beneficial when they incentivise governments to adopt more rigorous fiscal management and promote sound public finance practices. However, these instruments are not exhaustive; rather, they are part of a broader set of reforms that can enhance public expenditure efficiency and further reinforce investor confidence.

Last but not least, while FDI is a critical source of external capital for developing countries, it is not a panacea; large-scale FDI inflows do not necessarily ensure a positive spin-off for the domestic economy. Consequently, governments in developing countries should optimise the benefits of foreign investment by fostering a more efficient transfer of skills, knowledge and technologies to the local economy, ultimately boosting domestic employment and promoting inclusive, sustainable growth.

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Appendix A: Robustness

Table A1: Public expenditure efficiency FDI inflows: alternative subsamples and measures of efficiency

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Public expenditure efficiency	0.091***	0.075***	0.102***	0.076***	0.037**	0.179***	0.092***	0.087***		
	(0.024)	(0.023)	(0.024)	(0.025)	(0.014)	(0.056)	(0.024)	(0.025)		
Lag. Private investment	0.252***	0.266***	0.229***	0.231***	0.076**	0.229***	0.278***	0.212***	0.255***	0.235***
	(0.066)	(0.069)	(0.068)	(0.083)	(0.038)	(0.065)	(0.065)	(0.062)	(0.066)	(0.079)
Log. Foreign aid	3.063*	3.233*	3.283*	2.823	-0.064	3.005*	3.058*	2.869	3.040*	1.292
	(1.696)	(1.747)	(1.772)	(1.795)	(0.259)	(1.638)	(1.691)	(1.793)	(1.690)	(0.909)
Log. Terms of trade	-4.303	-5.584*	-4.331	-4.950	-0.786**	-4.080	-4.443	-4.322	-4.326	-0.953
	(2.856)	(3.103)	(2.786)	(3.483)	(0.361)	(2.622)	(2.855)	(2.871)	(2.839)	(1.159)
Log. Real effective exchange rate	-4.047***	-4.565***	-3.812***	-4.360**	-0.925*	-3.700***	-3.882***	-3.765***	-4.030***	-3.287**
	(1.235)	(1.289)	(1.201)	(1.712)	(0.546)	(1.355)	(1.218)	(1.267)	(1.239)	(1.521)
Press freedom (Freedom House)	-0.063**	-0.068*	-0.064**	-0.074**	-0.021**	-0.055**	-0.063**	-0.063**	-0.064**	-0.051*
	(0.030)	(0.036)	(0.031)	(0.036)	(0.011)	(0.027)	(0.030)	(0.028)	(0.030)	(0.029)
Public expenditure efficiency (Alternative 1)									0.097***	
									(0.025)	
Public expenditure efficiency (Alternative 2)										0.056*
										(0.033)
Observations	1857	1760	1670	1725	1644	1663	1834	1781	1857	1772
R-squared	0.1288	0.1436	0.1279	0.1138	0.1148	0.1321	0.1324	0.1174	0.1294	0.0986

Column [1] displays the main results. Column [2] excludes from the full sample countries classified by the IMF as exhibiting institutional and social fragilities. Column [3] excludes the years during the 2008-09 global financial crisis. Column [4] excludes country-year observations characterized by hyperinflation episodes. Column [5] excludes countries with FDI inflows on average greater than or equal to 10% of GDP over the study period. Robust standard errors are in parentheses. Columns [5] and [6] exclude from the sample country-year observations with FDI inflows and expenditure efficiency higher than the 90th percentile of the sample, respectively. In Column [7] China is excluded from the main sample. Column [8] excludes from the main sample country-year observations with negative or zero net FDI inflows. Columns [9] and [10] consider alternative efficiency measures. In Column [9], among the outcome indicators for economic performance, per capita income is replaced with an indicator of happiness. In Column [10], the initial efficiency index is re-estimated, excluding public administration. All regressions include the constant, not reported in the table, as well as country- and year-fixed effects. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table A2: Public expenditure efficiency FDI inflows: LSDVC and 2SLS estimates

	(1)	(2)	(3)	(4)
	OLS (Baseline)	LSDVC	2SLS	2SLS First stage
Public expenditure efficiency	0.091***	0.047**	0.138***	
	(0.024)	(0.023)	(0.048)	
Lag. Private investment	0.252***	0.081**	0.251***	0.031
	(0.066)	(0.040)	(0.073)	(0.031)
Log. Foreign aid	3.063*	2.466***	2.895***	0.041
	(1.696)	(0.344)	(1.117)	(0.319)
Log. Terms of trade	-4.303	-2.783***	-4.639***	0.189
	(2.856)	(0.654)	(1.729)	(0.509)
Log. Real effective exchange rate	-4.047***	-2.194**	-4.228***	0.123
	(1.235)	(0.894)	(0.940)	(0.766)
Press freedom (Freedom House)	-0.063**	-0.041	-0.057***	-0.028**
	(0.030)	(0.029)	(0.018)	(0.013)
Lag. FDI		0.454***		
Lag. Public expenditure efficiency				0.702***
				(0.034)
Observations	1857	1852	1842	1842
R-squared	0.129		0.431	0.709
Kleibergen-Paap LM stat (p-value)			0.000	
Kleibergen-Paap F-stat			390.58	

Column [1] displays the main results using ordinary least squares. Column [2] uses lagged public expenditure efficiency as an instrumental variable. All regressions include the constant, not reported in the table. * p < 0.1, ** p < 0.05, *** p < 0.01

Appendix B: Descriptive statistics, sample and data

Table B1: Summary statistics of the baseline model variables

Variable	Obs.	Mean	Std. Dev.	Min	Max
Net FDI inflows (% of GDP)	2735	3.713	7.513	-82.892	161.824
Public expenditure efficiency	2472	64.765	7.654	24.664	87.796
Lag. Private investment	2662	12.824	7.141	0.001	53.389
Log. Foreign aid	2639	1.192	1.12	-2.858	4.561
Log. Terms of trade	2411	4.552	0.283	2.928	5.899
Log. Real effective exchange rate	2774	4.646	0.4	-0.96	9.232
Press Freedom	2298	53.925	19.738	7	100

Table B2: Sample

Afghanistan	China	Kuwait	Philippines
Albania	Colombia	Lebanon	Rwanda
Algeria	Congo, Rep	Lesotho	Saudi Arabia
Angola	Costa Rica	Liberia	Senegal
Argentina	Dominica	Madagascar	Seychelles
Azerbaijan	Dominican Republic	Malawi	Sierra Leone
Bahamas, The	Ecuador	Malaysia	South Africa
Bahrain	Egypt, Arab Rep	Maldives	Sri Lanka
Bangladesh	El Salvador	Mali	St Vincent and the Grenadines
Barbados	Equatorial Guinea	Mauritius	Sudan
Belarus	Eswatini	Mexico	Suriname
Belize	Ethiopia	Moldova	Tajikistan
Benin	Fiji	Mongolia	Tanzania
Bhutan	Georgia	Morocco	Thailand
Bolivia	Ghana	Namibia	Togo
Bosnia and Herzegovina	Grenada	Nepal	Tunisia
Botswana	Guatemala	Nicaragua	Turkey
Brazil	Guinea-Bissau	Niger	Uganda
Burkina Faso	Honduras	Nigeria	Ukraine
Burundi	India	Oman	Uruguay
Cabo Verde	Indonesia	Pakistan	Uzbekistan
Cambodia	Iran, Islamic Rep	Panama	Venezuela, RB
Cameroon	Jordan	Papua New Guinea	Vietnam
Central African Republic	Kazakhstan	Paraguay	Yemen, Rep
Chile	Kenya	Peru	Zambia

Table B3: Sources of variables for the calculation of the efficiency scores

Variables	Nature	Sources
1. Public expenditure (inputs)		
Education expenditure (%GDP)	Continuous	Public Expenditures for Economic Development (SPEED)
Infrastructure expenditure (%GDP)	Continuous	SPEED
Health expenditure (%GDP)	Continuous	SPEED
Government final consumption (%GDP)	Continuous	World Economic Outlook (WEO)
2. Sectoral performance indices (outcomes)		
Education		
— Primary enrollment	Continuous	World Development Indicators (WDI)
— Secondary enrollment	Continuous	WDI
— Expected years of schooling	Continuous	WDI
Health	Continuous	WDI
— Life expectancy at birth	Continuous	WDI
— Infant mortality rate (per 1000 live births)	Continuous	WDI
Infrastructure	Continuous	
— Total length of roads in kilometers	Continuous	World Telecommunication/ICT Indicators Database
— Number of paved roads (% total roads)	Continuous	World Telecommunication/ICT Indicators Database
— Fixed telephone subscriptions (per 100 people)	Continuous	World Telecommunication/ICT Indicators Database
— Fixed broadband subscriptions (per 100 people)	Continuous	World Telecommunication/ICT Indicators Database
— Faults for 100 fixed telephone lines per year	Continuous	World Telecommunication/ICT Indicators Database
— Proportion of households with electricity	Continuous	World Telecommunication/ICT Indicators Database
— Electric power consumption (in kWh per capita)	Continuous	World Telecommunication/ICT Indicators Database
— Electric power transmission and distribution losses (%production)	Continuous	World Telecommunication/ICT Indicators Database
Administration		
— Independence of the judiciary	Continuous	Teorell et al. (2021)
— Quality of property rights	Continuous	Teorell et al. (2021)
— Quality of government	Continuous	Teorell et al. (2021)
— Level of the shadow economy	Continuous	International Country Risk Guide (ICRG)
Stability		
— Standard deviation of the three-year moving average of GDP growth	Continuous	Authors, from WDI
— Standard deviation of the three-year moving of inflation	Continuous	Authors, from WDI
Distribution		
— Gini index	Continuous	Standardized World Income Inequality Database (SWIID)
Economic performance		
— GDP per capita	Continuous	WDI
— GDP growth (10-year average)	Continuous	WDI
— Unemployment rate (10-year average)	Continuous	WDI

Source: Apeti et al. (2023)

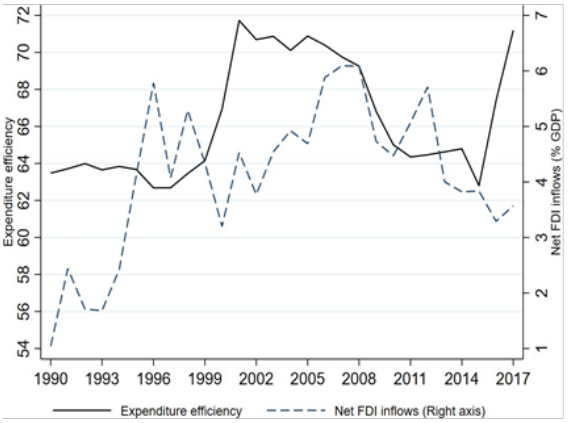
Table B4: Public expenditure efficiency and FDI: sources of variables

Variables	Nature	Sources
1. Main model variables		
FDI inflows to GDP	Continuous	World Development Indicators (WDI)
Public expenditure efficiency	Index ranging from 0 to 100	Apeti et al. (2023)
Terms of trade	Continuous	WDI
Private investment	Continuous	IMF Investment and Capital Stock database
Real effective exchange rate Press freedom	Continuous (2007=100) Continuous	Darvas (2012) Freedom House
2. Additional control variables		
Real GDP growth	Continuous	WDI
Liberal democracy	Index ranging from 0 to 1	V-Dem (Varieties of Democracy)
Government accountability	Index ranging from 0 to 1	V-Dem (Varieties of Democracy)
Real GDP per capita	Continuous	WDI
Annual GDP	Continuous	WDI
Population urbanization	Continuous	WDI
Manufacturing value added	Continuous	WDI
Natural resources	Continuous	WDI
Real effective exchange rate volatility	Continuous	Authors, using data from Darvas (2012) and employing HP filter
Exchange rate regime	Index ranging from 1 to 15	Ilzetzki et al. (2019)
Trade openness	Continuous	WDI
Corruption control	Index ranging from 0 to 5	International Country Risk Guide (ICRG)
Property rights	Index ranging from 0 to 0.9	V-Dem (Varieties of Democracy)

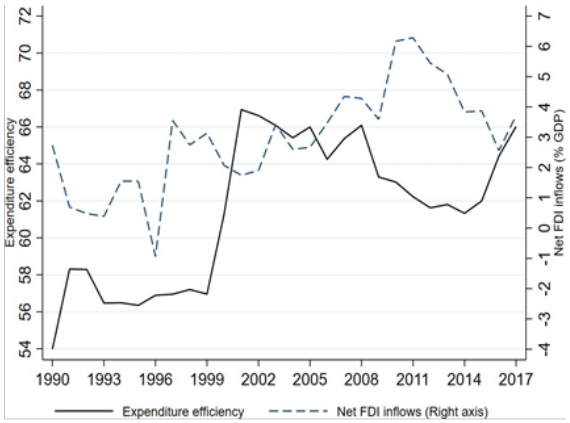
Appendix C: Figures

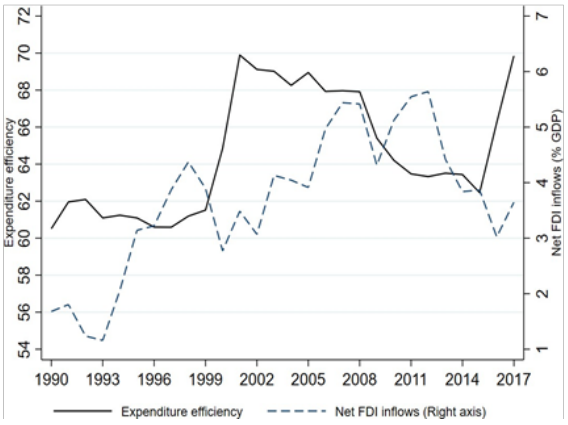
Figure C1: Public expenditure efficiency and FDI inflows in developing countries, by income level (1990–2017)

(a) Emerging economies



(b) Low-income countries





(c) Total sample, excluding China

Source: Authors, from the World Development Indicators (WDI) (World Bank, 2025) and Apeti et al. (2023)