Assessing the impact of fiscal transparency on FDI inflows

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ABSTRACT

This paper analyzes the role of fiscal transparency as a determinant of foreign direct investment (FDI) attractiveness. It proposes an empirical test based on a panel regression analysis on data from 72 countries in the 2006–2015 time span. The evidence supports the idea that countries characterized by higher levels of budget openness attract more FDI inflows. In more detail, a higher degree of transparency during the phase of budget execution is associated with increases of FDI inflows, even when the sample is restricted to non-OECD countries and low and lower-middle-income countries. The positive effect is robust to several different specifications and is found to be additional to the one of general government transparency. Moreover, we also show that the role played by fiscal transparency in attracting FDI is independent of other close institutional determinants like control of corruption and regulatory quality.

1. Introduction

The recent literature on the political economy of foreign direct investments (FDI) suggests that government transparency – i.e. the availability and accessibility of information on governmental activities – makes countries more attractive to foreign investors [1–5].

Recent contributions on the impact of government transparency on FDI rely on broad definitions of transparency; in some papers it is interpreted as control of corruption alone [6] or together with institutional quality [7]; whereas in others government transparency is measured by looking at the opinions of company executives [8]. Other scholars, meanwhile, look at the quantity of economic data released by the government [9,10] and build indexes that provide "a precise measure of a limited but important component of transparency" that "does not capture all the dimensions of transparency" [9]; p. 414). One of the missing dimensions is the transparency of public budgets.

Given that information included in public budgets is important for monitoring the provision of public services as well as fiscal policies [11], and that "access to meaningful information is (…) a powerful incentive to invest" [12], this paper argues that transparency of governmental financial activities (i.e. fiscal transparency) has its own specific role in attracting FDI, which is additional to the one that the existing literature attributes to generic government transparency. Therefore, the present

contribution aims to provide a conceptual framework linking fiscal transparency to FDI and to empirically test the existence of such a link. The test is carried out by means of a panel regression analysis performed on a sample of 72 countries observed between 2006 and 2015.

While the beneficial properties of fiscal transparency have been widely studied by scholars over the last decade [13–17], its potential role as a driver of FDI remains undertheorized, and consequently, sound empirical evidence is still lacking. This paper aims at filling this gap in the literature.

To the best of our knowledge, this is the first contribution on this topic. Therefore, the first innovative contribution of the present study lies in building a clear conceptual framework in which the link between fiscal transparency and FDI is based on a precise definition of the former. The second innovative contribution consists of testing this framework with an extensive empirical analysis.

The paper is organized as follows. Section two presents our conceptual analysis of the impact of fiscal transparency on FDI. Section three illustrates the data and the empirical strategy adopted to test our predictions. The results and additional robustness checks are presented in section four. Finally, concluding remarks are reported in section five.

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2. Fiscal transparency and FDI inflows

The numerous alternative definitions of fiscal transparency provided in recent years agree that it consists of the timely and systematic disclosure of reliable and internationally comparable data about public revenues and expenses [18–21]. Thus, greater fiscal transparency can be achieved by opening budget documents to the public and by providing high-quality information at the right time. This concept is derived from the broader concept of government transparency, but clearly captures a specific aspect of the dissemination of information.

Disclosure of fiscal information helps to "strengthen the credibility of a country's fiscal plans and can help underpin market confidence and market perceptions of fiscal solvency"[1] by making the past, the present and the future state of public finance more reliable and predictable. This is important information for multinational enterprises (MNEs). Indeed, MNEs planning to invest abroad have to face the so-called liability of foreignness [22], as entering a new market entails some uncertainty. Following Ayadi et al. (2014, p. 150), "firms engaging in cross-border investments do a thorough examination of the macroeconomic indicators of all potential host economies", as well as of the host economy's basic, technological, and environmental infrastructural endowment and its efficiency along with energy self-sufficiency [23–25]. Budget documents can provide MNEs with information on the size and objectives of national expenditures reported over recent years and on the expectations for the future, as well as information on trends and sources of national revenues. The more comprehensible, reliable, and timely these data are, the lower the costs of investigation become for enterprises planning investment abroad.

Furthermore, budget documents indicate the policy direction of governments. Indeed, "the Executive's Budget Proposal is the most important policy document that a country issues each year, for it is through the budget that governments translate many of their key policy goals into action" [11]; p. 10). Labor market policies, industrial policies, and environmental policies may exert a heavy influence on the location decision because they reveal the objectives and strategies of governments. In addition, in some developing countries, budget documents have started being supplemented by additional information on fiscal risks, including the "sensitivity of the budget to variations in macroeconomic assumptions (including assumptions about natural resources prices), risks in public debt management, risks from contingent liabilities […], and risks from subnational governments and state-owned corporations" [11]; p. 13). According to Ref. [26]; the most common type of political risk that foreign investors face is transfer risk, namely the risk that host governments constrain the investors' ability to repatriate earnings by means of exchange restriction or taxation. Reliable information about current policies, like those disclosed by a fiscal transparent country, may allow investors to foresee future policy changes [27]. According to this line of reasoning, the role of fiscal transparency is to reduce information asymmetries, allowing a country with a higher degree of budget openness to theoretically attract more FDI, ceteris paribus.

When information eventually becomes available, firms face another uncertainty, namely, politicians revealing time-inconsistent preferences. Governments interested in increasing FDI inflows may try a moral hazard, luring foreign firms with attractive policy projects that will not be enforced after the investment has been made [28]. [29] argued that membership in international organizations may change the payoff structure, such that it is convenient for governments to keep their promises. Fiscal transparency may play a different role that could lead to a similar result. Indeed, the disclosure of fiscal information allows us to observe the consistency between programmed and executed financial activities, which affects the payoff structure of decision-makers, making non-compliance more costly. In this perspective, the openness of

budgets provides locally-relevant information, which is crucial for the foreign investors to build a business strategy that is as unlikely as possible to be prone to uncertainty [4]; p. 327). In this sense, fiscal transparency may be viewed as a constraint that governments impose on themselves and on their successors as a guarantee of clarity. In fact, when governments are more open to external scrutiny, they are likely to be constrained in their action as they may "face political consequences from antimarket policies or violating property rights when transparency is high" [2]; p. 223).

Moreover, as highlighted particularly by Ref. [30]; a consistent degree of fiscal transparency, in addition to acting as a hard factor providing tangible aid in programming and performing direct investments, provides a symbolic incentive in terms of commitment. Good governments may want to send a signal to demonstrate the reliability and integrity of the institutional system. Clearing the opacity from budget documents may be a good signaling strategy because it opens the way for an external control of consistency and a validation of budget proposals and reports, while a lack of transparency may well mean all-internal – and therefore perhaps less trustworthy – monitoring.

Based on previous arguments, fiscal transparency might induce more FDI by three channels: (1) Reducing investigation costs; (2) Revealing the governments' policy plans and execution; (3) Tying the governments' hands via public commitment. Clearly, this classification is more a matter of theory. In practice, MNEs evaluate the setting of a potential foreign investment by considering these factors all together. Still, this framework may be helpful in disentangling the complexity of the relation between fiscal transparency and FDI.

Fiscal transparency can operate along the different stages of the implementation of public budgets. During the phase of budget formulation governments state their fiscal strategy and translate their goal into action by means of the enacted budget: the provision of public revenues and expenses authorized by law. Instead, during the phase of budget execution, budget implementation and fiscal performances are periodically assessed in order to ascertain whether governments actually followed the stated strategy and whether their reporting was accurate [11].

It could be argued that the first channel (reducing investigation costs) is more likely to operate in the phase of budget formulation, when governments state their goals and programs and legislate accordingly. Instead, the second channel (revealing governments' plans) is more likely to operate in the phase of budget execution, when the planned decisions are compared to the actual public revenues and expenditures. During this phase, where a significant degree of fiscal transparency is operational, the discretional power of governments becomes explicit. Instead, when public budgets are not openly evaluated the potential discrepancy between budgetary provisions and their implementation remains hidden. The third channel (public commitment) may operate during both phases, as a high level of transparency in the formulation phase may commit governments to the disclosed plans, while a high level of transparency in the execution phase entails a public evaluation of government actions.

When studying the link between fiscal transparency and FDI one has to bear in mind that fiscal transparency has a positive effect on numerous aspects of a country's political and economic environment that create a better setting for foreign investments [13,15,16,31–33]. As a matter of fact, fiscal transparency and the quality of institutions complement each other very well, as highlighted by many scholars [15,34,35]. At the same time, the positive role of institutions as FDI attractors has been widely suggested by the literature; better institutions reduce costs associated with cross-border economic activity and uncertainty of investment environment for MNEs, even if conclusive evidence is still lacking [3,36–38]; Bailey, 2018).

A further aspect to be examined is the possible effect of fiscal transparency on FDI though corruption. Enhancing public sector transparency is one of the declared priorities of the Anti-Corruption Working Group (ACWG) established by the G20 leaders at the Toronto Summit in 2010. In particular, strengthening transparency of budget processes and

tax and revenue administration is considered a possible tool for combating misconduct, fraud, and corruption, which discourage investment and distort international competitive conditions.[2] Fiscal transparency is proven to be an effective weapon for tackling corruption because, by increasing the visibility of budgetary decision-making and predictability in firm-bureaucrat negotiations, it can be considered a sign of a government's efforts to reduce economic rents and promote market competition [16,39–41]. In more than one case, corruption measures have even been used as a proxy for low transparency [6,7]. The relationship between levels of corruption and FDI inflows has been intensively studied by scholars, albeit with some contrasting results (Bailey, 2018) [42]. suggest that under-the-table exchanges of money reduce MNE attrition with the bureaucratic and political establishment, and therefore act as a stimulus for FDI, while a number of scholars reach the opposite conclusion, highlighting that corruption imposes additional costs that choke foreign investments [43,44].

In the light of these considerations, the following empirical analysis will test whether any link between fiscal transparency and FDI actually exists, and will pay attention to checking whether the relationship between fiscal transparency and FDI is confounded by the quality of the institutional environment or by corruption.

3. Data and empirical strategy

To test the effects of fiscal transparency on FDI empirically, this study provides an analysis of how the disclosure of fiscal information in year $t – 1$ affects FDI inflows in year t. Data on FDI is drawn from the World Bank's World Development Indicators (WDI), and refers to net equity flows to the reported economy, including reinvestment of earnings and equity capital. In order to deal with over-dispersion in the data, a logged measure of FDI inflows will be employed.

Fiscal transparency is measured by relying on the OBI data provided by the International Budget Partnership. This index is the fruit of desk research and of biannual surveys conducted on national government officials and is widely used by the existing literature [15,45–48]. The OBI ranks the openness of budget processes between 0 and 100 by measuring their compliance with international guidelines and declarations to multilateral institutions such as the IMF, the OECD, and the International Organization of Supreme Audit Institutions (INTOSAI) [48]. The OBI has been published in 2006, 2008, 2010, 2012 and 2015, in a growing number of countries (from 59 in the first edition to 112 in the last). For each of these years the content, availability, and timeliness of the eight key budget documents are evaluated. Four of these documents cover the formulation phase – pre-budget statement, executive budget proposal, enacted budget, citizens' budget – and four cover the execution phase – in-year reports, mid-year review, year-end report, audit report – allowing us to build two separate indexes, one for the formulation and one for the execution phase. Therefore, the logged net inflows of FDI will be regressed alternatively on the complete OBI score, on the sub-score for transparency of budget formulation, and on the sub-score for transparency of budget execution.

Given the specificity of fiscal transparency as a government practice, the risk of the analysis being influenced by omitted variables is very high. For this reason, the analysis is performed by considering an accurately selected set of control variables that are potentially linked with fiscal transparency and FDI inflows. The Global Investment Competitiveness Report [49] asks investors what the factors are that drive the decision to invest abroad. According to this survey, the most important attractors of FDI are host countries' political stability and security, their domestic market and macroeconomic stability, as well as a favorable exchange rate.

Political stability is affected by a country's political regime, therefore

the regression includes the index of democracy Polity IV [50], which measures the competitiveness of political participation and executive recruitment, and the constraints on the chief executive. At the same time, democracy and respect of civil liberties are potentially linked with political stability and information availability [4], which leads to the inclusion of the Freedom House measure for civil liberties [57]. This index captures the "freedoms of expression and belief, associational and organizational rights, rule of law, and personal autonomy without interference from the state", which are features of democracy not included in the Polity IV index. Political risk is also associated with arbitrary government conduct, which includes expropriation and limitations to the transfer of currency in and out of the country. For this reason, our analysis includes a measure of political risk in the medium-long term from the Credendo group [26].

Countries with a large and thriving market attract more FDI, therefore data on GDP per capita (in constant 2010 US dollars, extracted from the WDI) is included in the analysis in order to control for the purchasing power in the domestic market of the host country. WDI data on GDP growth and the annual percent change in inflation (as measured by the IMF) are included in the regression in order to control for host countries' macroeconomic dynamic and stability. The regression also includes the exchange rate between the local currency and US dollar, as estimated by the UN National Accounts on the basis of IMF data. Finally, the dissemination of socio-economic information is controlled for by including the HRV index of government transparency [9], while in two separate specifications the regressions will be replicated with one variable controlling for the level of corruption, and one controlling for the regulatory quality of the host country (both extracted from the Political Risk Services database).

A preliminary analysis of fixed-versus random-effects results in a Hausman chi-squared test of 10.67 (p-value = 0.47), which leads us to rely on a random-effects panel regression. Because longitudinal analyses always face the risk of biases due to time-related shocks and the existence of cross-individual contemporaneous correlation, all regressions in this analysis include year fixed effects. In order to address the issues of heteroskedasticity and autocorrelation of the residuals, the inferences are performed with robust standard errors [51].

The choice of the sample is constrained by data availability, and builds on the 112 countries for which OBI index was computed in the last wave. The inclusion of the HRV index leads us to drop 36 countries, while unavailability of data for the democracy and political risk variables leads us to discard 4 additional countries. Therefore, the full sample includes 72 fairly heterogeneous countries (23 from Africa, 19 from Asia, 17 from America, 11 from Europe, and 2 from Oceania). Table 1 provides the overall descriptive statistics,[3] while the countries included in the analysis, together with their mean values of the degree of fiscal transparency, are listed in Table 2. Unfortunately, while the OBI is available for 2006, 2008, 2010, 2012 and 2015, the HRV index of transparency is only available yearly up to 2010. For this reason, the analysis is first performed without a control for government transparency; the HRV index is then included among the controls in a following analysis. Other than maximizing the number of observations, this strategy allows us to test whether the coefficient of fiscal transparency changes when controlling for the dissemination of general information. If the coefficient keeps its size and statistical significance across the estimations, it can be concluded that the effect of fiscal transparency on FDI is additional to the effect of the dissemination of information.

Since the sample includes a heterogeneous set of countries, the estimations performed on the full sample are replicated on the sub-sample of non-OECD countries and on the sub-sample of those countries

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[3] The discrepancy in the number of observations is due to the fact that all the variables except the OBI are observed annually, and the HRV is observed only up to 2010.

Table 1
Descriptive statistics.

Variable	N	Mean	SD	Min	Max	Source
FDI (log)	690	27.079	1.812	19.778	31.575	World Development Indicators
Open Budget Index	329	44.088	24.201	0	93	International Budget Partnership
Openness of Budget Formulation	330	43.755	23.253	0	98.250	Authors' elaboration on International Budget Partnership
Openness of Budget Execution	330	38.333	25.212	0	98.250	Authors' elaboration on International Budget Partnership
Government transparency	360	2.124	2.254	−1.739	8.171	[9]
GDP per capita (constant 2010 US$)	714	9865.199	15209.230	292.038	91594.180	World Development Indicators
GDP growth (annual %)	714	4.358	3.468	−7.821	22.593	World Development Indicators
Inflation (Percent change)	711	6.055	7.215	−7.44	121.738	International Monetary Fund
Exchange Rate (IMF Based)	715	704.392	2566.971	.500	21697.570	United Nations National Accounts (based on IMF)
Democracy	710	5.080	5.184	−10	10	Polity IV project [50]
Civil Liberties	716	3.297	1.548	1	7	Freedom House
Transfer risk	720	3.989	1.856	1	7	Credendo group [26]
Control of Corruption	670	0.415	0.169	0.083	0.917	Political Risk Services
Regulatory quality	670	0.670	0.173	0.136	1	Political Risk Services

Table 2
List of countries and country means of relevant variables.

Country	OBI	Open form.	Open exec.	OECD	Inc. class	Country	OBI	Open form.	Open exec.	OECD	Inc. class
Albania	36	36	32	0	3	Mali	41	56	16	0	1
Algeria	13	22	2	0	3	Mexico	57	51	59	1	3
Angola	18	31	8	0	3	Mongolia	43	47	41	0	2
Argentina	52	40	41	0	3	Morocco	30	31	19	0	2
Bangladesh	49	33	27	0	2	Mozambique	38	51	24	0	1
Bolivia	14	25	25	0	2	Nepal	38	23	45	0	1
Botswana	55	50	33	0	3	New Zealand	89	90	90	1	4
Brazil	74	74	63	0	3	Nicaragua	33	26	27	0	2
Bulgaria	58	53	54	0	3	Niger	13	20	2	0	1
Cambodia	12	27	17	0	2	Nigeria	19	40	10	0	2
Cameroon	18	33	10	0	2	Norway	80	64	84	1	4
Sri Lanka	53	49	38	0	2	Pakistan	46	37	24	0	2
Chad	4	16	5	0	1	Peru	68	59	65	0	3
Chile	65	53	63	1	4	Philippines	53	43	48	0	2
China	13	4	33	0	3	Poland	66	54	75	1	4
Colombia	59	49	39	0	3	Portugal	61	58	53	1	4
Costa Rica	48	41	29	0	3	Romania	62	43	45	0	3
Dom. Rep.	27	32	34	0	3	Russia	63	67	61	0	3
Ecuador	37	39	28	0	3	Rwanda	14	45	21	0	1
El Salvador	40	59	30	0	2	Saudi Arabia	1	0	0	0	4
Fiji	9	33	7	0	3	Senegal	15	25	14	0	1
France	84	88	80	1	4	Vietnam	13	25	24	0	2
Ghana	49	37	36	0	2	South Africa	88	91	91	0	3
Guatemala	48	43	38	0	2	Spain	61	51	37	1	4
Honduras	31	34	34	0	2	Sudan	4	14	9	0	2
India	59	54	60	0	2	Sweden	82	94	73	1	4
Indonesia	54	56	58	0	2	Thailand	40	45	19	0	3
Iraq	2	10	2	0	3	Trin. Tobago	35	23	13	0	4
Italy	64	70	66	1	4	Turkey	47	40	40	1	3
Jordan	53	46	41	0	3	Uganda	53	70	37	0	1
Kenya	50	56	38	0	2	Egypt	28	21	35	0	2
Korea, S.	70	87	55	1	4	UK	85	78	86	1	4
Lebanon	25	8	25	0	3	Tanzania	44	39	33	0	1
Liberia	31	26	32	0	1	United States	81	44	90	1	4
Malawi	47	39	24	0	1	Burkina Faso	19	28	27	0	1
Malaysia	40	23	34	0	3	Venezuela	29	33	15	0	3

classified as low and lower middle income by the World Bank.

4. Results

4.1. Fiscal transparency and FDI inflows

Table 3 presents the results from a series of panel regressions in which the degree of fiscal transparency at the different phases of the budget process are alternatively used to predict net inflows of FDI. The conceptual framework predicts that fiscal transparency has a role as an attractor of FDI. Column 1 shows some support for this prediction, as the coefficient associated with the overall OBI score is positive and significant, although only at the 10% conventional level. Bearing in mind that the FDI inflow data are log-transformed, the regression predicts that an

increase of 1 point of the OBI is associated with an increase of 0.92% in the net inflows of FDI. In Column 2 the main explicative variable is transparency of budget formulation, which shows a small coefficient that is statistically not distinguishable from zero. Column 3 reports the coefficient associated with transparency of budget execution, which is positive and significant at the conventional level of 1%. A one-point increase in the score of transparency of budget execution is predicted to increase the inflow of FDI by 1.32% the following year.

When government transparency is included among the control variables (Column 4), the overall score of fiscal transparency keeps a positive sign and statistical significance at the 10% level, confirming an additional effect of budget openness with respect to government transparency. The results printed in Column 5 confirm that transparency of budget formulation is not associated with an increase in FDI. Instead,

Table 3
FDI inflows and fiscal transparency. Results of a random-effects panel estimation on the full sample.

	(1)	(2)	(3)	(4)	(5)	(6)
	FDI (log)	FDI (log)	FDI (log)	FDI (log)	FDI (log)	FDI (log)
Open Budget Index	0.00917*			0.0122*		
	(1.76)			(1.85)		
Openness of Budget Formulation		0.000414			−0.00231	
		(0.14)			(-0.53)	
Openness of Budget Execution			0.0132***			0.0126**
			(3.23)			(2.28)
Government transparency				0.291***	0.334***	0.279***
				(3.16)	(3.86)	(2.93)
GDP per capita	0.0000125	0.0000150	0.00000881	0.0000145	0.0000179	0.0000124
	(0.88)	(1.04)	(0.64)	(1.04)	(1.24)	(0.90)
GDP growth	0.0735***	0.0735***	0.0737***	0.108***	0.104***	0.104***
	(3.86)	(3.81)	(4.02)	(3.45)	(3.19)	(3.39)
Inflation	0.0171	0.0186	0.0180	0.00421	0.00594	0.0114
	(1.33)	(1.40)	(1.43)	(0.30)	(0.40)	(0.75)
Exchange Rate	0.0000311	0.0000306	0.0000165	0.0000943***	0.0000926***	0.0000800***
	(1.08)	(1.09)	(0.53)	(4.15)	(3.88)	(3.41)
Democracy	−0.0289	−0.0216	−0.0300	−0.0270	−0.0221	−0.0235
	(-1.02)	(-0.75)	(-1.10)	(-1.06)	(-0.82)	(-0.87)
Civil Liberties	0.0361	−0.00390	0.0354	0.325***	0.241**	0.307***
	(0.35)	(-0.04)	(0.37)	(2.62)	(1.99)	(2.61)
Transfer risk	−0.408***	−0.431***	−0.400***	−0.358***	−0.376***	−0.366***
	(-4.18)	(-4.49)	(-4.27)	(-2.96)	(-3.11)	(-3.06)
Constant	27.86***	28.37***	27.75***	25.57***	26.33***	25.71***
	(40.41)	(42.74)	(45.65)	(29.37)	(28.74)	(30.42)
Observations	311	311	311	181	181	181
Countries	72	72	72	72	72	72
R2 Within	0.102	0.0974	0.124	0.170	0.164	0.180
R2 Between	0.397	0.367	0.425	0.548	0.536	0.559
R2 Overall	0.395	0.369	0.419	0.506	0.492	0.519

Full sample. *$p < 0.1$, **$p < 0.05$, ***$p < 0.01$.
Robust t statistics in parentheses. All models include year fixed effects and all independent variable are lagged one year.

transparency of budget execution is associated with an increase of FDI inflows. The coefficient is of comparable size to the one estimated without government transparency. In fact, an increase of one point in the score of transparency of budget execution predicts an increase in FDI inflows of 1.26% in the following year. Therefore, the predictions of our conceptual framework are partially confirmed. The results suggest that more open budgets are associated with a higher inflow of FDI. This effect is additional to the one associated with government transparency for the OBI index, and even more so for transparency in the phase of budget execution. Following our conceptual framework, this means that the main channels through which fiscal transparency attracts FDI are by making government preferences explicit, and by increasing government commitment to fiscal evaluation.

Consistently with the previous literature [1,4], government transparency shows a positive and statistically significant effect when it is included in the analysis. GDP growth is the most consistent predictor of FDI inflows, while GDP per capita shows a positive sign but is statistically insignificant. The coefficient for inflation also shows a positive sign but does not reach statistical significance, while the exchange rate is positively associated with FDI inflows, although it is statistically significant only in models 4 to 6. Democracy is not statistically significant, while civil liberties shows positive and significant coefficients, and transfer risk is significantly associated with a decrease of FDI inflows. The similar natures of the interest variable and the government

transparency control may raise some concerns about multicollinearity. Multicollinearity does not bias the estimation of the coefficients but it artificially increases the size of the standard errors, possibly leading to false rejection of the null hypothesis that coefficients are not different from zero. In order to control for this issue, the variance inflation factors (VIFs) are computed for models 4 to 6. The mean VIF is always smaller than 3, which is largely below the common thresholds (5 and 10) indicating multicollinearity.

[14] have shown that cross-national comparisons on transparency are mostly focused on developed nations, which instills the doubt that the conclusions cannot be generalized to a broader region. For this reason, and to address the heterogeneity of the full sample, a separate analysis of the 58 non-OECD countries of our sample is presented in Table 4. Again, the overall score of fiscal transparency has a positive and statistically significant coefficient (Column 1), the score of transparency of budget formulation is not statistically different from zero (Column 2), while the score of transparency of budget execution has a positive and statistically significant coefficient (Column 3). Again, Column 4 shows that the statistical significance of OBI and its magnitude hold to the inclusion of the measure of government transparency, which supports the idea of an additional effect of fiscal transparency on FDI presented in our conceptual framework. The same applies to transparency in budget execution (Column 6), which shows a statistically significant coefficient, and a magnitude comparable to the estimation without government

Table 4
FDI inflows and fiscal transparency. Results of a random-effects panel estimation for non-OECD countries.

	(1)	(2)	(3)	(4)	(5)	(6)
	FDI (log)	FDI (log)	FDI (log)	FDI (log)	FDI (log)	FDI (log)
Open Budget Index	0.00961*			0.0144**		
	(1.89)			(2.10)		
Openness of Budget Formulation		0.00191			0.00118	
		(0.61)			(0.24)	
Openness of Budget Execution			0.0137***			0.0147**
			(3.17)			(2.36)
Government transparency				0.275**	0.330***	0.260**
				(2.48)	(3.10)	(2.27)
GDP per capita	0.0000643	0.0000641	0.0000690	0.0000717	0.0000687	0.0000761
	(1.26)	(1.18)	(1.41)	(1.35)	(1.22)	(1.47)
GDP growth	0.0656***	0.0664***	0.0661***	0.122***	0.118***	0.116***
	(3.02)	(3.03)	(3.19)	(3.33)	(3.06)	(3.28)
Inflation	0.0180	0.0205	0.0190	0.00311	0.00629	0.0111
	(1.34)	(1.48)	(1.45)	(0.21)	(0.41)	(0.69)
Exchange Rate	0.0000432	0.0000413	0.0000290	0.000112***	0.000108***	0.0000957***
	(1.52)	(1.51)	(0.94)	(4.49)	(4.11)	(3.79)
Democracy	−0.0324	−0.0261	−0.0320	−0.0259	−0.0211	−0.0213
	(-1.07)	(-0.84)	(-1.13)	(-1.01)	(-0.76)	(-0.78)
Civil Liberties	0.0438	0.00815	0.0450	0.364***	0.291**	0.341***
	(0.39)	(0.08)	(0.43)	(2.89)	(2.38)	(2.81)
Transfer risk	−0.337***	−0.362***	−0.335***	−0.300**	−0.324**	−0.312**
	(-3.05)	(-3.30)	(-3.18)	(-2.19)	(-2.35)	(-2.34)
Constant	27.17***	27.63***	27.06***	24.72***	25.41***	24.90***
	(33.16)	(33.40)	(36.23)	(26.07)	(25.25)	(27.18)
Observations	253	253	253	148	148	148
Countries	58	58	58	58	58	58
R2 Within	0.0936	0.0874	0.118	0.151	0.133	0.165
R2 Between	0.386	0.342	0.424	0.541	0.528	0.549
R2 Overall	0.398	0.362	0.427	0.497	0.479	0.505

Robust t statistics in parentheses. All models include year fixed effects and all independent variable are lagged one year.
Sample: non-OECD countries. *p $<$ 0.1, **p $<$ 0.05, ***p $<$ 0.01.

transparency. Generally, the magnitude of the coefficients estimated for non-OECD countries is larger than the one estimated for the full sample, indicating that fiscal transparency in non-OECD countries may have higher returns in terms of FDI inflows. In particular, the size of transparency of budget execution is 17% larger than in the full sample.

Table 5 reports the results of a further analysis replicated on the 44 countries of our sample identified as low and lower-middle income countries by the World Bank.[4] All the scores for fiscal transparency, except for openness of budget execution, fail to reach statistical significance in the first three estimations. As the control for government transparency is included, openness in the phase of budget execution keeps statistical significance.

While these results are indeed suggestive, the analyses performed remain unable to help provide a causal explanation. It is possible that countries that receive higher inflows of FDI react by releasing more data, and previous regressions partially address this issue by lagging all independent variables by one year. Unfortunately, to properly address the issue of reverse causality with a Granger approach would require a longer time-span, while adopting a dynamic panel approach would consistently lower the statistical power due to the limited depth of the

dataset. Nevertheless, an intuitive test of the causal direction can be provided.

In fact, if FDI inflows have an impact on the fiscal openness of the host country, one would expect a positive effect of current FDI inflows on the future average values of the OBI. If this is not the case, then an alternative question is whether the average values of the budget openness score have an influence on the FDI inflows in the following years. Column 1 of Table 6 presents the results of a panel regression in which the two-years moving average of the OBI observed at *t+1* and *t+2* is regressed on FDI inflows observed at time *t*. The results show that FDI inflows do not predict the average future values of the OBI. In Column 2 the analysis is reversed: the FDI inflow at time *t* is predicted by the average of two-years lags of the OBI. Unfortunately, this estimation fails to confirm a statistically significant relation between overall fiscal transparency and FDI inflows.

A similar explorative test is performed in Column 3 for transparency in budget execution. Again, current FDI inflows do not predict the future average scores of transparency of budget execution. Instead, the past average scores of openness of budget execution have a positive and statistically significant coefficient (Column 4). Establishing the direction of a causal link requires a more in-depth analysis and more sophisticated methodology. However, given the available data, the explorative analysis provided here suggests that the causal direction may be hypothesized as going from fiscal transparency to FDI inflows.

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[4] Data on World Bank Country classification was extracted on 2019-08-09 from https://datahelpdesk.worldbank.org/knowledgebase/articles/90651 9-world-bank-country-and-lending-groups.

Table 5
FDI inflows and fiscal transparency. Results of a random-effects panel estimation for low and lower-middle income countries.

	(1)	(2)	(3)	(4)	(5)	(6)
	FDI (log)	FDI (log)	FDI (log)	FDI (log)	FDI (log)	FDI (log)
Open Budget Index	0.00839			0.0132		
	(1.33)			(1.63)		
Openness of Budget Formulation		0.00265			−0.000907	
		(0.75)			(-0.14)	
Openness of Budget Execution			0.0100*			0.0146*
			(1.93)			(1.78)
Government transparency				0.198	0.284**	0.170
				(1.35)	(2.14)	(1.04)
GDP per capita	0.000159	0.000160	0.000164	0.0000535	0.0000345	0.0000638
	(1.24)	(1.23)	(1.27)	(0.35)	(0.22)	(0.42)
GDP growth	0.0385	0.0382	0.0402	0.0970**	0.0951*	0.0909**
	(1.32)	(1.31)	(1.42)	(2.13)	(1.93)	(2.08)
Inflation	0.00969	0.0125	0.0109	0.00820	0.0136	0.0181
	(0.67)	(0.83)	(0.77)	(0.45)	(0.74)	(0.95)
Exchange Rate	0.0000311	0.0000304	0.0000197	0.0000979***	0.0000929***	0.0000792***
	(1.03)	(1.07)	(0.60)	(4.08)	(3.70)	(3.19)
Democracy	−0.0414	−0.0368	−0.0383	−0.00695	−0.00286	−0.00250
	(-1.51)	(-1.26)	(-1.42)	(-0.24)	(-0.09)	(-0.08)
Civil Liberties	0.0206	−0.00355	0.000732	0.328*	0.255	0.324*
	(0.15)	(-0.03)	(0.01)	(1.80)	(1.44)	(1.85)
Transfer risk	−0.489***	−0.525***	−0.485***	−0.588***	−0.615***	−0.616***
	(-3.72)	(-3.99)	(-3.77)	(-3.50)	(-3.40)	(-3.82)
Constant	28.05***	28.46***	28.07***	26.55***	27.25***	26.73***
	(26.30)	(27.91)	(27.69)	(21.49)	(19.90)	(21.94)
Observations	160	160	160	100	100	100
Countries	44	44	44	44	44	44
R2 Within	0.142	0.133	0.162	0.177	0.146	0.217
R2 Between	0.455	0.436	0.461	0.578	0.579	0.571
R2 Overall	0.404	0.392	0.404	0.507	0.501	0.503

Robust *t* statistics in parentheses. All models include year fixed effects and all independent variable are lagged one year.
Sample: low and lower-middle income according to the World Bank classification. *$p < 0.1$, **$p < 0.05$, ***$p < 0.01$.

Table 6
Explorative analysis on causal direction on FDI inflows and fiscal transparency. Random-effects panel estimation on full sample.

	(1)	(2)	(1)	(2)
	Future OBI	FDI (log)	Future openness of budget execution	FDI (log)
FDI (log)	0.843		0.843	
	(1.10)		(1.10)	
Past OBI		0.00580		
		(0.73)		
Past openness of budget execution				0.0114*
				(1.65)
Observations	180	174	180	174
Countries	71	70	71	70
R2 Within	0.0878	0.0898	0.182	0.0890
R2 Between	0.611	0.358	0.564	0.389
R2 Overall	0.583	0.377	0.570	0.405

Future OBI is $(OBI_{t+1} + OBI_{t+2})/2$. Past OBI is $(OBI_{t-1} + OBI_{t-2})/2$. The same applies for openness of budget execution. Robust *t* statistics in parentheses. All models include year fixed effects and control for GDP per capita, GDP growth, inflation, exchange rate, democracy, civil liberties and transfer risk. All control variables are lagged one year. Full sample. *$p < 0.1$, **$p < 0.05$, ***$p < 0.01$.

4.2. Is the relationship between fiscal transparency and FDI inflows robust to quality of institutions and corruption?

There are reasons to believe that the potential impact of fiscal transparency on FDI inflows is twofold: first, as shown in the previous section, fiscal transparency directly affects the decision-making process of multinational enterprises (MNEs); second, fiscal transparency may create favorable conditions for foreign investments by enhancing institutional quality and reducing corruption.

Following this reasoning, in Table 7 the full specification presented in the previous section is augmented by including the PRS indexes for control of corruption and regulatory quality. Other than working as a further robustness check, this specification could provide insights into the stability of the main result. If the coefficients of budget openness fail to reach significance using this specification, then the conclusion would be that fiscal transparency is not directly associated with FDI inflows, but rather, it may be a channel of propagation for the effect of institutional quality. Alternatively, if budget openness keeps its significance but discloses an appreciable variation in magnitude, then this result would induce the suspicion that the previous results are due to fiscal transparency reflecting institutional quality. In both of these cases, we could not confirm the previous results.

The coefficients for the corruption variable are negative and significant only at the 10% conventional level in models 1 and 3, confirming

Table 7

FDI inflows and fiscal transparency. Robustness checks on corruption and institutional quality. Random-effects panel estimations on full sample.

	(1)	(2)	(3)	(4)	(5)	(6)
	FDI (log)	FDI (log)	FDI (log)	FDI (log)	FDI (log)	FDI (log)
Open Budget Index	0.0124*			0.0114*		
	(1.91)			(1.69)		
Budget Formulation		−0.00192			−0.00242	
		(-0.39)			(-0.49)	
Budget Execution			0.0132**			0.0130**
			(2.42)			(2.31)
Control of Corruption	−1.638*	−1.330	−1.619*			
	(-1.90)	(-1.48)	(-1.91)			
Regulatory quality				−0.857	−0.669	−0.986
				(-0.92)	(-0.70)	(-1.06)
Government transparency	0.265***	0.308***	0.256***	0.267***	0.308***	0.255***
	(2.99)	(3.58)	(2.74)	(2.99)	(3.63)	(2.74)
GDP per capita	0.0000247	0.0000267*	0.0000222	0.0000204	0.0000231	0.0000183
	(1.61)	(1.68)	(1.46)	(1.37)	(1.49)	(1.23)
GDP growth	0.125***	0.121***	0.119***	0.126***	0.122***	0.121***
	(4.54)	(4.40)	(4.30)	(4.34)	(4.15)	(4.16)
Inflation	−0.00412	−0.000515	0.00545	−0.00287	0.000539	0.00602
	(-0.27)	(-0.03)	(0.35)	(-0.19)	(0.04)	(0.39)
Exchange Rate	0.000103***	0.0000976***	0.0000889***	0.0000902***	0.0000877***	0.0000773***
	(3.79)	(3.35)	(3.27)	(4.00)	(3.55)	(3.38)
Democracy	−0.0366	−0.0327	−0.0341	−0.0314	−0.0285	−0.0288
	(-1.44)	(-1.31)	(-1.21)	(-1.30)	(-1.16)	(-1.10)
Civil Liberties	0.315**	0.240**	0.304**	0.348***	0.270**	0.340***
	(2.57)	(1.99)	(2.52)	(2.85)	(2.26)	(2.96)
Transfer risk	−0.356***	−0.369***	−0.362***	−0.352***	−0.365***	−0.362***
	(-3.04)	(-3.12)	(-3.13)	(-3.06)	(-3.17)	(-3.18)
Constant	26.34***	26.94***	26.42***	26.23***	26.80***	26.38***
	(27.14)	(26.88)	(27.66)	(25.46)	(25.23)	(25.56)
Observations	170	170	170	170	170	170
Countries	67	67	67	67	67	67
R2 Within	0.196	0.194	0.197	0.186	0.186	0.187
R2 Between	0.558	0.535	0.582	0.555	0.537	0.583
R2 Overall	0.512	0.487	0.534	0.504	0.483	0.530

Robust *t* statistics in parentheses. All models include year fixed effects and all independent variable are lagged one year. Full sample.

*p < 0.1, **p < 0.05, ***p < 0.01.

that the impact of corruption on FDI is difficult to assess (e.g., Refs. [42, 52,53]. Column 1 reports the results for OBI, which is positive and statistically significant at 10%, similarly to the main specifications. Openness of budget formulation also shows a statistically insignificant coefficient (Column 2), while openness of budget execution (Column 3) still predicts a statistically significant increase of FDI inflows of comparable magnitude to the main specification.

The specification in Columns 4 to 6 includes an index of regulatory quality. The results are very similar to those reported in the previous estimations; the coefficient of regulatory quality is not significantly distinguishable from zero, while the coefficient of the OBI and openness in budget execution (Column 6) are still positive and significant with comparable magnitude to the results of the main model. Overall, the findings presented in Table 7 support the idea that a direct correlation exists between openness of budget execution and FDI – i.e. that the correlation exists regardless of the degree of corruption or the level of institutional quality. The estimations augmented with control of corruption and institutional quality were also performed for the sub-samples of non-OECD countries and low and lower-middle income countries. The results, which are not reported for reasons of space, provide some additional insights. Indeed, for the sub-sample of non-OECD countries a positive and statistically significant relation is found between OBI and FDI inflows and between openness of budget execution and FDI inflows, and corruption is also found to negatively affect FDI inflows. For low and lower-middle income countries the inclusion of corruption and regulatory quality causes the coefficient of OBI and budget execution to lose statistical significance. These results suggest that for low and lower-middle income countries the indirect effect of institutional environment is more pronounced.

5. Conclusions

This paper studies the relation between budget openness and the inflow of FDI. This relation is empirically investigated by examining 72 countries with different institutional and macroeconomic environments and by observing them along the 2006–2015 time-span. The empirical analyses find that the effect of overall fiscal transparency on FDI inflows is positive but not consistently significant among different estimations, while fiscal transparency during the budget execution phase has a strong and statistically significant positive association with FDI inflows, which is found to be additional to the effect of general government transparency assessed by recent literature [1,4]. This result is a step forward with respect to the existing literature, as it sheds light on a dimension of transparency that had been overlooked until now [9].

A one-point increase in the score of transparency in budget execution is found to increase FDI inflows by 1.26% in the full sample, by 1.47% in the sub-sample of non-OECD countries, and by 1.46% in the sub-sample of low and lower-middle income countries. Quite importantly, this relation is shown to exist regardless of the degree of corruption and the quality of institutions of host countries. Despite not providing a robust causal assessment, an explorative analysis indicates that fiscal transparency most likely drives more FDI, while the opposite relation does not hold.

This paper enriches the list of the possible beneficial effects of fiscal transparency by empirically showing how fiscal openness can be of great importance not only for domestic actors [13] or external donors [45] but also for international investors. From another perspective, it shows that countries that do not follow international guidelines on fiscal transparency also lose out on foreign investment. Because foreign investment may affect economic growth [10,54], this result is particularly

important for developing economies, considering that the positive relation is also valid – and with a greater magnitude – for the sub-sample of non-OECD countries and for the sub-sample of low and lower-middle income countries.

For these countries, improving the openness of budget documents could lead to significant returns. In this regard, it is important to emphasize that fiscal transparency is a complex objective to achieve, and that it does not exclusively consist of the availability of budget documents. Availability is certainly a key, but the quality of the content and timeliness are also essential. Producing complete information can reduce the uncertainty for MNEs, and delivering such information as soon as possible is both a signal of commitment to best practices and a useful service for foreign investors. More specifically, this paper suggests that making an effort to enhance transparency in the phase of budget execution makes the country more attractive in the eyes of foreign investors. This effort should entail the provision of periodic reports on budget implementation, where a government's fiscal performance is assessed on the basis of what was actually spent and collected relative to what was budgeted in the phase of budget formulation. Publication of independent audit reports may also be a critical factor for improving openness of budget executions [11]. Such documents must be clear, accurate, and timely, and their completion may impose an administrative burden and discourage the implementation of fiscal transparency. However, the administrative costs associated with the realization of an effective transparency reform can be considered a strategic tool for governments, given that this effort may provide a substantial return in terms of international attractiveness. Moreover, international best practices provide many solutions to help governments improve the comprehensiveness and accessibility of budget documents for external stakeholders [55,56].

CRediT authorship contribution statement

Lorenzo Cicatiello: Conceptualization, Data curation, Investigation, Methodology, Writing - original draft, Writing - review & editing. **Elina De Simone:** Conceptualization, Investigation, Writing - original draft, Writing - review & editing. **Salvatore Ercolano:** Investigation, Writing - review & editing. **Giuseppe Lucio Gaeta:** Conceptualization, Methodology, Writing - original draft, Writing - review & editing.

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Appendix A. Supplementary data

Supplementary data related to this article can be found at https://doi.org/10.1016/j.seps.2020.100892.

Note: Income class is observed in 2015 and is coded as 1 for low income, 2 for lower-middle income, 3 for upper-middle income and 4 for high income.

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