Does corruption matter for sources of foreign direct investment?

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Abstract
The paper provides a cross-country empirical analysis of the impact of corruption on foreign direct investment flows. The gravity model augmented with joint effects of corruption in the origin and destination countries determines differentiated patterns of investment flows between countries with various levels of control of corruption. The estimates point towards greater investment flows between countries with good control of corruption. Moreover, if control of corruption in the destination country improves, investment flows from cleaner countries rise more strongly than those from countries with a higher incidence of corruption. The resulting shift towards a greater share of investment from low-corruption countries may further reinforce the strengthening of economic and political institutions that keep corruption in check.

Keywords  Corruption · Foreign direct investment · Gravity model

JEL Classification  F21 · O43

1 Introduction

This paper re-examines the relationship between bilateral foreign direct investment (FDI) flows and corruption, in origin and destination countries of FDI. This is a topic that has received much attention and the impact of corruption on cross-border investment has been documented in various studies [see, for instance, Wei (2000) and Javorcik and Wei (2009)]. A number of studies find that corruption affects investment negatively as it imposes additional costs on investors and increases
uncertainty surrounding future project costs and revenues, leading to lower risk-adjusted returns and thus reduced investment levels. However, the overall empirical evidence to date has been far from uniform or conclusive.

The contribution of this paper to the existing literature is to determine differentiated patterns of investment flows between countries with different level of control of corruption. In particular, the paper looks at the joint effects of corruption in the origin and destination countries and documents the extent to which the impact of corruption in the recipient country of FDI depends on the corruption in the country of origin of investment. We argue that the novel approach presented in the paper provides additional insights compared with the existing methodology, which typically uses the distance between the levels of institutional quality in a pair of countries as a determinant of the joint effects of institutions in the source and destination countries on FDI.

The paper employs a gravity model of FDI to explain bilateral investment flows in a large sample of developed and developing countries, which covers a wide range of country-level investment partnerships during the period 2008–2012. The gravity model estimates suggest that, all else equal, a pair of countries with strong control of corruption enjoys substantially higher FDI flows. Moreover, the estimated effect of lower incidence of corruption is not homogenous: the effect of better control of corruption in the destination country on the size of investment flows increases with the control of corruption in the origin country. As a result, the destination country attracts additional investment that comes to a greater extent from countries with low corruption and to a lesser extent from countries with widespread corruption. This change in the geographical composition of FDI may lead to improvements in the quality of management, corporate governance and business conduct in the host country and further reinforce the strengthening of institutions that limit corruption (for instance, Long et al. (2015) provide evidence of influence of FDI on economic institutions of China’s regions).

The rest of the paper is structured as follows. Section 2 provides a brief review of the existing empirical literature on FDI, focusing on the link between FDI and corruption, and discussed case studies. Section 3 introduces the data and the augmented gravity models to illustrate the joint effects of corruption in the origin and destination countries for FDI flows. Section 4 discusses the results and provides robustness checks. Section 5 concludes.

2 Determinants of foreign direct investment flows

2.1 Corruption and FDI

It is often hypothesised that corruption raises the cost of investment projects and increases uncertainty with respect to returns on investment, thus discouraging FDI. If governments are rent-seeking, they may create bottlenecks for investors in a way that enables bureaucrats to obtain the highest possible bribe tolerated by a firm (Kaufmann and Wei 1999).
Does corruption matter for sources of foreign direct…

Consistent with this view, Mauro (1995) shows that corruption has a pronounced negative effects on long-term growth by deterring investment. Wei (2000) documents a negative effect of corruption on FDI in a sample of 12 source countries and 45 host economies (mostly OECD members). Wei (1997) finds that corruption-induced uncertainty also has a negative impact on FDI (where the uncertainty is captured by variability of responses to the questions about the level of corruption in the 1997 Competitiveness Report Survey). Javorcik and Wei (2009) further find that corruption decreases the likelihood of FDI taking place and increases the likelihood of a foreign investor teaming up with a local investor rather than establishing a fully-owned subsidiary. This is because local partners may have advantages in dealing with corrupt officials even though dilution of ownership and potential leakages of knowledge and technology often entail substantial costs. Kinda (2010) shows that poor business environment negatively affects FDI inflows. Globerman and Shapiro (2002) show that the overall quality of economic institutions (or governance infrastructure) is an important determinant of both inward and outward FDI flows.

However, findings on corruption and FDI are not uniform or fully conclusive. In an environment where general economic institutions are poor corruption may at times help to achieve second-best outcomes by mitigating distortions induced by bad policies and red tape (see Lui (1985) for a discussion of how corruption can help to optimally jump the queues, and Aït (2003) for a broader discussion). This may also apply to FDI. Stein and Daude (2001), for instance, find no effect of corruption (captured by the International Country Risk Group Index) on FDI in a sample of 18 source and 58 host countries when, unlike Wei (2000), they control for GDP per capita (control of corruption and per capita income are strongly positively correlated). Henisz (2000) finds no significant impact of corruption on investment by US multinationals.

Hausmann and Fernández-Arias (2000) note that while capital does tend to flow to less corrupt countries, countries with poorer institutions and higher perceived risks tend to have a higher proportion of FDI in total capital flows making the overall effect of corruption on FDI somewhat ambiguous. They note that—contrary to common beliefs—FDI flows appear to be a dubious measure of success when it comes to institutional reforms and that composition of investment flows in addition to volume may matter.

Bellos and Subastat (2012a) further find empirical evidence of a positive relationship between FDI and corruption in a sample of transition countries in 1995–2003, where corruption is estimated based on the PRS Group International Country Risk Guide. Bellos and Subastat (2012b) present a similar finding while Bellos and Subastat (2013) report this effect in a sample of Latin American countries.

2.2 Corruption and bilateral FDI: differential impacts

It may be possible to reconcile these conflicting findings by taking into account the sources of FDI in addition to investment volumes. Sometimes concerns over corruption or environmental impact of a project may force a potential investor to step down only for another investor to take their place—an investor with,
presumably, a different perception of the risks involved or different expertise in mitigating risks in a high-corruption environment (for instance, one prepared to take advantage of rent-seeking behaviour in order to circumvent particularly burdensome regulations).

Businesses in different countries may have different levels of tolerance towards corruption, often based on their domestic experiences. Multinationals prepared to tolerate corruption and deal with associated additional costs may be “rewarded” by monopoly rents resulting from lower competition in a more corrupt environment where potential entrants cannot access markets freely (see Bellos and Subasat 2012a). Furthermore, countries’ practices in terms of prosecuting firms for corrupt dealings abroad vary, both in terms of laws on the books and their application.

Thus the effect of reducing corruption may be much higher in terms of attracting investment from corruption-intolerant countries compared with the effect on investment from corruption-tolerant countries. Control of corruption may therefore characterize not just a particular country but also an investment relationship, similar to the geographical distance between countries or countries’ sharing a border or a language. In gravity models of trade such characteristics are referred to as “bilateral resistance terms” as opposed to “multilateral resistance terms”.

In sum, improvements in institutions helping to control corruption need not necessarily affect investment volumes in consistent ways—but they are likely to consistently affect the composition of FDI. In particular, as corruption becomes less widespread investment from low-corruption countries may rise faster than that from high-corruption countries, and vice versa. The next section discusses a couple of case studies that illustrate such “substitution effects”. Subsequent sections test for such differential effects in a large sample of countries.

A few studies examined differential impacts of corruption on FDI—specifically by looking at the difference in the levels of corruption control within pairs of countries. Habib and Zurawicki (2002) found that institutional distance, like physical distance, has a negative impact on investment. Bellos and Subasat (2012) conclude the opposite—that countries with good institutions tend to invest more in countries with poor institutions.

The approach based on measuring institutional distance is somewhat restrictive when it comes to analysing differential impact of corruption on bilateral FDI. In particular, the sign of the marginal effect of improving a recipient country’s economic institutions is assumed to depend on the institutions of its investment partners, yet the magnitude of the effect is assumed to remain unchanged. In other words, as a country’s institutions improve, it is expected to see the same growth in investment from all countries with superior institutions (and the same contraction in investment from countries with inferior institutions), or vice versa.

This paper relaxes this restriction by using interaction terms between countries’ levels of corruption. It follows the approach of Koczan and Plekhanov (2013) who study the impact of control of corruption in exporting and importing countries on bilateral trade by augmenting standard gravity specifications with an interaction term. Koczan and Plekhanov (2013) find that the marginal effect of reduced corruption on trade is higher in the case of trade with countries with stronger institutions.
2.3 Case studies

A couple of case studies below help to illustrate the differential impact of control of corruption on bilateral FDI.

Georgia of the 2000s is an interesting case of comprehensive anti-corruption measures adopted in the aftermath of the Rose Revolution. The aggressive anti-corruption campaign rolled out in the second half of 2004 included eastern Europe’s first law holding businesses legally liable for bribery, reforms of customs and tax collection and an immediate dismissal of traffic policemen who were told to re-apply for their jobs (see World Bank 2012). As a result, perceptions of the business environment and measures of the quality of institutions improved rapidly. The World Governance Indicator of control of corruption, for instance, increased by 1.1 of a standard deviation between 2002 and 2006. In the Doing Business ranking Georgia quickly climbed to the 9th position. Inward FDI into Georgia increased markedly in 2005–2008 compared with 2003–2004.

This increase was not uniform: while investment from Russia, Azerbaijan and other countries in the Commonwealth of Independent States increased by around 80%, investment from the European Union countries and North America rose more than twofold. These two sets of countries are, on average, almost two standard deviations apart in terms of the average control of corruption scores. The divergent nature of investment growth became even more pronounced from 2009 onwards but investment in later years was arguably also affected by the armed conflict with Russia in the second half of 2008.

A number of other cases where foreign assets changed hands may be traced to different speed of evolution of institutions in the country of origin and destination country of investment. Royal Dutch Shell, for instance, has been running a refinery in Curacao since 1918, a business that still accounts directly and indirectly for a large part of the island economy’s total value added. By the mid-1980s the environmental impact of old technologies may have been seen as too problematic in the Netherlands where rules and regulations underpinning environmental protection have fundamentally evolved since the beginning of the twentieth century. The investment was sold down to the government for a notional amount of one guilder and promptly re-leased to Venezuela’s state-owned oil company, PVDSA. In this example an existing FDI asset changed hands.1

3 Empirical approach

3.1 Gravity model of foreign direct investment

This paper is part of the vast and growing literature seeking to explain bilateral FDI flows using a gravity model (see, for instance, Chakrabarti (2001) and Blonigen (2005) for an overview). A gravity model relates FDI flows to the measures of market size of

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1 See, for instance, http://www.bbc.co.uk/news/world-latin-america-17290626.
the home and host countries (GDP per capita and population), various measures that affect physical and information costs (distance between the two countries, existence of common border, existence of common language or common colonial past). Even though the gravity model is better known for its application in the trade context (see Head and Mayer (2013), for an overview), it has also been widely used to study the determinants of FDI (Bergstrand and Egger 2011). Brainard (1997) and Head and Ries (2008) provide theoretical foundations for a baseline gravity model of FDI.

Larger markets offer higher demand and allow for economies of scale. Market size is closely linked to the size of GDP and can be decomposed into the level of income (GDP per capita) and the size of population (see, for instance, Chakrabarti 2001). The cost variables are linked to microfoundations in the context of trade (see, for instance, Anderson and Van Wincoop 2003, 2004) but their role in the context of FDI may be somewhat ambiguous. In a typical model of horizontal FDI, where a firm serves a foreign market, FDI and cross-border trade can be seen as substitutes. A long distance may translate into high transportation costs and thus encourage FDI: building a plant in the destination country may be cheaper than shipping goods from the source country. On the other hand, in a model of vertical FDI, where a firm serves a domestic or international market but places certain stages of production overseas, high transportation costs would discourage FDI. In this case, an advantage of a low factor price abroad will be gradually eroded as transportation costs rise (see, for instance, Ramondo et al. 2013).

Variables that reflect information and communication costs such as common language or colonial relationship would have similar effects on FDI and trade: lower barriers (common language, common colonial past) are expected to be associated with higher investment flows. Financial openness in terms of a less restrictive FDI regime or a more open capital account is expected to be associated with lower investment costs and hence higher FDI.

The perceived levels of corruption in the country of origin of FDI and the country of destination and various interplays between the two can be integrated into the basic gravity model of bilateral FDI flows, as discussed below, enabling us to test the following propositions:

1. The sign of the effect of improving control of corruption on bilateral FDI flows may depend on the relative levels of corruption in the recipient and origin countries (the institutional distance hypothesis).
2. The magnitude of the marginal effect of lower corruption in the recipient country depends on the control of corruption in the country of origin of FDI. In other words, the lower the corruption in partner countries, the higher additional FDI flows associated with lower corruption in a country of origin, once other characteristics are controlled for.

3.2 Data

Data on foreign direct investment flows are notoriously incomplete. Various available cross-country datasets, such as the ones compiled by the Organisation for
Does corruption matter for sources of foreign direct...

Economic Co-operation and Development (OECD), United Nations Conference on Trade and Development (UNCTAD) or Eurostat, provide coverage for different sets of countries and time periods. In many instances they may be inconsistent with each other. Inconsistencies reflect complexities of defining and recording FDI (which include equity purchases, debt flows related to loans from shareholders with a significant stake in a company as well as reinvested profits of foreign-owned firms). Treatment of cross-border investments routed via offshore jurisdictions presents further challenges when it comes to identifying sources and destinations of FDI (see Gouel et al. (2012) for a discussion of FDI data sources).

For the purpose of determining effects of control of corruption on FDI flows, we require a dataset that captures a wide cross-country variation in terms of degrees of control of corruption in both destination and origin countries. Therefore, for this analysis we use bilateral FDI outflows data from UNCTAD and focus on the latest available consistent data. These cover the period 2008–2012; the start of the period broadly coincides with the global financial crisis of 2008–2012 and the estimates need to be viewed in a post-crisis context. In contrast to Eurostat dataset that covers bilateral inward and outward investment for EU countries, Turkey and FYR Macedonia in relation to the rest of the world and OECD dataset with a similar set of countries pairs, UNCTAD offers a broader coverage of countries, including south–south FDI flows (those between emerging market countries). Alternative data are used to conduct robustness checks.

Macroeconomic variables such as GDP and population are taken from the IMF World Economic Outlook; various gravity control variables, including the average distance between countries, existence of a common border, common colonial history and common language, are taken from CEPII (Centre d’Etudes Prospectives et d’Informations Internationales) distance dataset. Capital account openness is captured by the Chinn-Ito Index (Chinn and Ito 2006). Corruption is proxied by the World Governance Indicator of control of corruption. This index ranges from −2.5 to 2.5, with higher values corresponding to better quality of institutions. It is available annually for a large number of developed and developing economies (see Kaufmann et al. 1999). To make interpretation easier, the index is rebased to the range from 0 to 5. Descriptive statistics for variables of the model are reported in Table 1. The only variables that exhibit strong pairwise correlations are control of corruption and per capita income (see “Appendix”), hence the importance of controlling for per capita income in the regression analysis.

### 3.3 The gravity model specification and its extensions

The basic gravity model of FDI can be written as follows:

\[ fdl_{ijt} = \alpha + \beta_1 X_{it} + \beta_2 X_{jt} + \gamma Z_{ijt} + \alpha_t + \varepsilon_{ijt} \]  

(1)

where \( fdl_{ijt} \) is the logarithm of the flow of FDI from country \( i \) to country \( j \) in year \( t \), \( X \) is the measure of control of corruption, \( Z_{ijt} \) are a set of control variables including logarithms of population and per capita income in the source and destination countries, distance between the countries, existence of common border, common
language and colonial history and so on. $\alpha_t$ denotes fixed time effects and $\varepsilon_{ijt}$ denotes the error term.

The basic specification assumes that control of corruption is a country characteristic that equally affects investment relationships with all other countries (in the context of trade gravity models such characteristics are also referred to as “multilateral resistance terms”). To relax this assumption, the existing literature has largely focused on the institutional distance hypothesis (see for example, Bellos and Subasat 2012a; Cazer and Escobar 2015).

In this case the marginal impact of changes in control of corruption on investment flows may depend on whether the incidence of corruption in the country of origin of investment is higher, or lower, than in the destination country. In particular, the investment levels are explained, among other things, by the “institutional distance” between the two countries. The institutional distance can be introduced in Specification 1 by augmenting the standard gravity equation with an absolute difference of control of corruption in the destination country and the source country:

$$
fdi_{ijt} = \alpha + \beta_1 X_{it} + \beta_2 X_{jt} + \beta_3 |X_{jt} - X_{it}| + \gamma Z_{ijt} + \alpha_t + \varepsilon_{ijt} \quad (2)
$$

If the coefficient on the distance term, $\beta_3$, happens to be negative, this specification predicts that countries with similar levels of control of corruption will have the highest levels of bilateral FDI, controlling for other factors. The marginal effect of improving control of corruption in a destination country in this specification can be $\beta_2 + \beta_3$ or $\beta_2 - \beta_3$ depending on the relative levels of corruption in the two countries.

The Specification 2 can be written in a more general form, allowing for different marginal effects of changes in corruption levels. Denoting a dummy variable $D_1$ for the case of better control of corruption in the destination country ($X_{jt} > X_{it}$) and $D_2$ for the opposite case, the generalised version of Specification 2 becomes:

$$
fdi_{ijt} = \alpha + \varphi_1 X_{it} D_1 + \varphi_2 X_{it} D_2 + \varphi_3 X_{jt} D_1 + \varphi_4 X_{jt} D_2 + \gamma Z_{ijt} + \alpha_t + \varepsilon_{ijt} \quad (3)
$$

Table 1 Descriptive statistics

| Variable                              | Median   | Mean       | Std. Dev. | Min   | Max       |
|---------------------------------------|----------|------------|-----------|-------|-----------|
| FDI flows                             | 39.20    | 891.08     | 4050.18   | 0.002 | 101,826.60|
| Distance                              | 4509.07  | 5504.45    | 4332.35   | 59.62 | 19,335.40 |
| Common border                         | 0        | 0.09       | 0.28      | 0     | 1         |
| Common language                       | 0        | 0.19       | 0.39      | 0     | 1         |
| Common colonial history               | 0        | 0.05       | 0.23      | 0     | 1         |
| GDP per capita, destination           | 9671.94  | 19,341.74  | 19,844.47 | 184.05| 85,015.80 |
| GDP per capita, origin                | 19,269.37| 24,350.23  | 21,031.04 | 150.74| 85,015.80 |
| Population, destination, million      | 16.75    | 82.99      | 225.55    | 0.05  | 1350.70   |
| Population, origin, million           | 20.10    | 124.70     | 310.76    | 0.05  | 1350.70   |
| Capital account openness, destination | 2.39     | 1.13       | 1.50      | −1.89 | 2.39      |
| Capital account openness, origin      | 2.39     | 1.26       | 1.47      | −1.89 | 2.39      |
| Control for corruption, destination   | 2.19     | 2.44       | 1.07      | 0.32  | 4.52      |
| Control for corruption, origin        | 2.63     | 2.65       | 1.07      | 0.17  | 4.52      |

Descriptive statistics average over the years 2008 to 2012
In this case, the marginal effects of better control of corruption on inward FDI flows and on outward FDI are no longer linked by a linear restriction (four parameters are estimated for four different marginal effects instead of three as in Specification 2).

The specification can be generalised further, by augmenting Specification 2 with an interaction term between the control of corruption in the country of origin of investment and the recipient country.

\[ f_{dijt} = \alpha + \beta_1 X_{it} + \beta_2 X_{jt} + \beta_3 |X_{jt} - X_{it}| + \beta_4 X_{jt}X_{it} + \gamma Z_{ijt} + \alpha_t + \epsilon_{ijt} \]  (4)

Specification 4 implies the following marginal effects of better control of corruption in the recipient country:

\[ \frac{df_{dijt}}{dX_{jt}} = \beta_2 + \beta_4 \times X_{it} + \beta_3 \times \text{sign}(X_{jt} - X_{it}) \]  (5)

The marginal effect of changes in corruption levels on FDI flows can now also depend on the control of corruption in partner countries—being effectively different for every investment partner.

4 Results

4.1 Baseline results

The standard determinants of the gravity model \( (Z_{ijt}) \) show expected signs and magnitudes [Table 2, column 1, corresponding to Specification (1)]. Bilateral investment flows strongly depend on the size of the source and destination economies and their and levels of income. A 10% increase in income per capita in the source economy is associated with an approximately 6% increase in bilateral investment flows; as is a 10% increase in population. The elasticities with respect to population and income of the destination economy are somewhat smaller.

Doubling the distance between the countries is estimated to halve bilateral investment. Bilateral investment flows between countries that share a border are on average 60 to 70% higher than between non-neighbouring countries. Other measures of proximity also have a sizable effect on FDI. Investment between countries with a common language is around 90% higher; having a common colonial history is associated with 40 to 60% higher investment flows. Even though investments may tend to originate in more financially open countries, the results are not statistically significant (and the sign is, if anything, negative).

Control of corruption is important in both source and destination countries. A one standard deviation increase in control of corruption index (roughly a one unit increase) is associated with an approximately 30% increase in inward FDI (and a 40% increase in outward FDI).

The results of the Specification 2 (reported in the Table 2, column 2) support the institutional distance hypothesis. The coefficient of the absolute difference
Table 2 The joint effects of corruption on FDI flows

| Variables                          | Specifications 1 | Specifications 2 | Specifications 3 | Specifications 4 | Specifications 5 | Specifications 6 |
|------------------------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| Distance, log                      | −0.4159***       | −0.4100***       | −0.3995***       | −0.4036***       | −0.4063***       | −0.4044***       |
|                                   | [0.039]          | [0.038]          | [0.039]          | [0.038]          | [0.038]          | [0.038]          |
| Common border                      | 0.6645***        | 0.6074***        | 0.6149***        | 0.5883***        | 0.6002***        | 0.5847***        |
|                                   | [0.125]          | [0.126]          | [0.127]          | [0.126]          | [0.126]          | [0.126]          |
| GDP per capita, destination, log   | 0.2785***        | 0.2807***        | 0.3132***        | 0.2975***        | 0.2869***        | 0.2935***        |
|                                   | [0.043]          | [0.043]          | [0.042]          | [0.043]          | [0.043]          | [0.043]          |
| GDP per capita, origin, log        | 0.6839***        | 0.6826***        | 0.7191***        | 0.6877***        | 0.6856***        | 0.6862***        |
|                                   | [0.052]          | [0.052]          | [0.051]          | [0.052]          | [0.052]          | [0.052]          |
| Population, destination, log      | 0.3699***        | 0.3769***        | 0.3745***        | 0.3752***        | 0.3756***        | 0.3767***        |
|                                   | [0.023]          | [0.023]          | [0.023]          | [0.023]          | [0.023]          | [0.023]          |
| Population, origin, log           | 0.5371***        | 0.5399***        | 0.5356***        | 0.5346***        | 0.5371***        | 0.5364***        |
|                                   | [0.021]          | [0.021]          | [0.021]          | [0.021]          | [0.021]          | [0.021]          |
| Common language                    | 0.9955***        | 0.9830***        | 0.9860***        | 0.9784***        | 0.9792***        | 0.9777***        |
|                                   | [0.083]          | [0.083]          | [0.084]          | [0.083]          | [0.083]          | [0.083]          |
| Common colonial history            | 0.4503***        | 0.4634***        | 0.4628***        | 0.4452***        | 0.4601***        | 0.4519***        |
|                                   | [0.134]          | [0.133]          | [0.133]          | [0.132]          | [0.132]          | [0.131]          |
| Capital account openness, origin   | −0.0021          | −0.0064          | −0.0055          | 0.0026           | −0.0051          | −0.0004          |
|                                   | [0.029]          | [0.029]          | [0.029]          | [0.029]          | [0.029]          | [0.029]          |
| Capital account openness, destination | −0.0518*        | −0.0563*         | −0.0531*         | −0.0415          | −0.0472          | −0.0460          |
|                                   | [0.030]          | [0.030]          | [0.031]          | [0.031]          | [0.030]          | [0.030]          |
| Control of corruption, destination | 0.3321***        | 0.3308***        | −0.2495          | 0.0728           | −0.0984          |                  |
|                                   | [0.056]          | [0.056]          | [0.156]          | [0.110]          | [0.107]          |                  |
| Control of corruption, origin      | 0.4491***        | 0.4748***        | −0.0949          | 0.1752           | 0.0575           |                  |
|                                   | [0.056]          | [0.058]          | [0.154]          | [0.107]          | [0.090]          |
Table 2 (continued)

| Specifications | 1       | 2       | 3       | 4       | 5       | 6       |
|----------------|--------|--------|--------|--------|--------|--------|
| Variables     | Bilateral FDI, log |
| Control of corruption, origin*Dummy1 | 0.5336*** |        |        |        |        |        |
|                | [0.092] |        |        |        |        |        |
|                |        |        |        |        |        |        |
| Control of corruption, origin*Dummy2 | 0.2429*** |        |        |        |        |        |
|                | [0.063] |        |        |        |        |        |
|                |        |        |        |        |        |        |
| Control of corruption, destination*Dummy1 | 0.1464* |        |        |        |        |        |
|                | [0.079] |        |        |        |        |        |
|                |        |        |        |        |        |        |
| Control of corruption, destination*Dummy2 | 0.4857*** |        |        |        |        |        |
|                | [0.074] |        |        |        |        |        |
|                |        |        |        |        |        |        |
| Control of corruption, abs diff. destination-origin | −0.1546*** | 0.0861 | −0.0392 |        |        |        |
|                | [0.042] | [0.074] | [0.056] |        |        |        |
|                |        |        |        |        |        |        |
| Control of corruption, origin*destination | 0.2118*** |        |        |        | 0.1566*** |        |
|                | [0.053] |        |        |        | [0.031] |        |
|                |        |        |        |        |        |        |
| Control of corruption, origin*destination*D1 | 0.0980*** |        |        |        |        |        |
|                | [0.034] |        |        |        |        |        |
|                |        |        |        |        |        |        |
| Control of corruption, origin*destination*D2 | 0.1100*** |        |        |        |        |        |
|                | [0.033] |        |        |        |        |        |
|                |        |        |        |        |        |        |
| Constant       | −19.4829*** | −19.5620*** | −19.9186*** | −18.4699*** | −19.0155*** | −18.7666*** |
|                | [0.753] | [0.747] | [0.741] | [0.787] | [0.760] | [0.770] |
| Year fixed effects | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations   | 9138 | 9138 | 9138 | 9138 | 9138 | 9138 |
| R²             | 0.407 | 0.409 | 0.407 | 0.412 | 0.411 | 0.411 |

Robust standard errors in brackets
***p < 0.01; **p < 0.05; *p < 0.1
between the levels of control of corruption is negative and statically significant. The results of the Specification 3 are reported in the Table 2, column 3. The Wald test does not reject the null hypothesis that the distance effect is the same for inward and outward FDI, namely that the following linear restriction holds: \( \varphi_1 - \varphi_2 = \varphi_4 - \varphi_3 \) (the \( p \) value is around 20%). A more parsimonious Specification 2 is thus preferred.

### 4.2 Results with interaction terms

The results of the basic estimation including the interaction term for the levels of corruption are presented in the Table 2, Column 4. The interaction term is positive and statistically significant, while the coefficient on the absolute difference loses its statistical significance. The coefficients on various gravity control variables remain broadly unchanged, compared with the earlier specifications.

One can think of a model with an interaction term as an extension and generalisation of the institutional distance approach. Suppose the true marginal effect of improving control of corruption in a destination country on bilateral investment flows is a function of the control of corruption in the country of origin. In this case, a step-line implied by the institutional distance approach is a much better approximation of the relationship than the specification implying a constant marginal effect. Yet a specification with an interaction term (where the marginal impact is approximated by a sloping line) may provide a further improvement in terms of approximation of the true dependence.

Specification 4 can be further generalised to allow for different coefficients on the interaction term for the cases when control of corruption in the country of origin of investment is stronger than that in the destination country compared with cases when it is weaker. Using earlier notation, this specification can be written as:

\[
fdi_{ijt} = \alpha + \beta_1 X_{it} + \beta_2 X_{jt} + \beta_3 |X_{jt} - X_{it}| + \beta_4 X_{jt}X_{it}D_1 + \beta_5 X_{jt}X_{it}D_2 + \gamma Z_{ijt} + \alpha_t + \epsilon_{ijt}
\]  

(6)

The results, reported in Table 2, column 5, remain broadly unchanged. The coefficient on the distance term remains statistically insignificant. The two interaction effects remain positive and statistically significant. At the same time, they are not different from each other in statistical or economic sense. A parsimonious Specification 4 is therefore preferred. If the institutional distance term is omitted (column 6), the interaction term remains positive and statistically significant.

When interaction terms are included in the estimated specifications (columns 4–6), the coefficients on the control of corruption in the origin and destination countries lose their statistical significance and in fact often turn negative. However, this can be expected, as these coefficients represent the marginal effect of improving control of corruption on bilateral investment coming from a hypothetical, non-existent, partner with control of corruption score of zero (original World
Governance Indicator score of $-2.5$). The marginal effects estimated for a wide range of partner countries remain positive.

### 4.3 Fixed effects analysis

The basic gravity specifications may omit a number of country characteristics that affect countries’ propensity to invest abroad and attract investment yet may be difficult to observe. These could include, for instance, a country’s privatisation policies, its compliance with various standards and conventions and so on.

One way to mitigate this issue and account for unobserved heterogeneity in cross-country gravity models is to include origin and destination country fixed effects (see, for instance, Anderson and van Wincoop 2003). The fixed effects subsume various unobserved country characteristics, including FDI policies or a country’s level of development.

Corruption itself becomes subsumed as part of a country’s “fixed effect” as common measures of corruption have relatively little meaningful time variation (and in fact may be viewed as part of a country “fixed effect”).

Yet the matrix structure of the dataset provides for identification of a joint impact of corruption in the origin country and in the destination country on bilateral FDI flows while controlling for time-invariant partner country effects. In other words, the terms capturing relative magnitudes of the levels of corruption in the origin and destination countries (such as the institutional distance or the interaction term) can be included in a fixed-effects specification. This approach is in fact similar to the estimation employed by Rajan and Zingales (1998) who focus on the interaction term between country and industry characteristics while at the same time controlling for country fixed effects and industry fixed effects in a study of the effects of financial development on industry-level output growth.

The results for the specifications that include time-country fixed effects for both the countries of origin of investment and the destination countries are presented in Table 3, columns 1 to 3. In columns 1 and 2 country-year fixed effects are included, in turn, only for the countries origin and only for the destination countries. In Column 3 both sets of fixed effects included at the same time. The coefficient on the interaction term between the origin country control of corruption and that of the destination country remains positive and statistically significant across specifications.

### 4.4 Discussion

To understand the magnitude of the estimated effect, consider two countries of origin of FDI that correspond to roughly the 25th and the 75th percentiles in the distribution of control of corruption scores (say, Israel and the Philippines, respectively). A one standard deviation increase in control of corruption in a destination country results in a 32% greater increase in FDI from the country with lower perceived
corruption (Israel in this case) than from the country with higher corruption (the Philippines). This estimate is in fact broadly consistent with the patterns of FDI in the Georgia case study discussed earlier.

---

**Table 3 Fixed-effect estimation**

| Specifications                     | 1                              | 2                              | 3                              |
|-----------------------------------|---------------------------------|---------------------------------|---------------------------------|
| Variables                         | Bilateral FDI, log              |                                 |                                 |
| Distance, log                     | −0.6156***                     | −0.5306***                     | −0.8307***                     |
|                                  | [0.040]                        | [0.042]                        | [0.039]                        |
| Common border                     | 0.4908***                      | 0.4992***                      | 0.3649***                      |
|                                  | [0.124]                        | [0.125]                        | [0.120]                        |
| Common language                   | 0.9080***                      | 0.9452***                      | 0.7280***                      |
|                                  | [0.098]                        | [0.091]                        | [0.099]                        |
| Common colonial history           | 0.3814***                      | 0.5492***                      | 0.5382***                      |
|                                  | [0.122]                        | [0.133]                        | [0.113]                        |
| GDP per capita, destination, log  | 0.3698***                      |                                 |                                 |
|                                  | [0.041]                        |                                 |                                 |
| Population, destination, log      | 0.4014***                      |                                 |                                 |
|                                  | [0.024]                        |                                 |                                 |
| Capital account openness, destination | −0.0203                      |                                 |                                 |
|                                  | [0.026]                        |                                 |                                 |
| Control of corruption, destination | −0.2168**                     |                                 |                                 |
|                                  | [0.011]                        |                                 |                                 |
| GDP per capita, origin, log       |                                 | 0.7434***                      |                                 |
|                                  |                                 | [0.051]                        |                                 |
| Population, origin, log           |                                 | 0.5736***                      |                                 |
|                                  |                                 | [0.020]                        |                                 |
| Capital account openness, origin   |                                 | −0.0529*                       |                                 |
|                                  |                                 | [0.029]                        |                                 |
| Control of corruption, origin      |                                 | 0.0042                         |                                 |
|                                  |                                 | [0.087]                        |                                 |
| Control of corruption, interaction origin*destination | 0.2007***                      | 0.1592***                      | 0.2014***                      |
|                                  | [0.029]                        | [0.029]                        | [0.026]                        |
| Constant                          | −0.4906                        | −9.5700***                     | 6.1856***                      |
|                                  | [0.547]                        | [0.632]                        | [1.375]                        |
| Country of origin*Year fixed effect | Yes                           | No                             | Yes                            |
| Country of destination*Year fixed effect | No                           | Yes                            | Yes                            |
| Observations                      | 10,009                         | 9721                           | 10,637                         |
| \( R^2 \)                         | 0.535                          | 0.510                          | 0.631                          |

Robust standard errors in brackets

***\( p < 0.01 \); **\( p < 0.05 \); *\( p < 0.1 \)

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2 This is calculated as one standard deviation (1.07) times the difference between control of corruption scores in the respective countries (1.48) times the estimated coefficient on the interaction term in the fixed-effect specification (0.2).
The estimated difference is sizeable. It corresponds to an extra US$ 250 million in annual investment for an average pair of countries. At the same time, the estimate only sheds light on the differential impact—without any inference as to the sign of the overall impact of corruption on FDI (which could be positive or negative). Yet it does so with greater precision taking into account country fixed effects on both sides.

In sum, the estimates suggest that improvements in a country’s control of corruption may help to catalyse more investments from countries with lower incidence of corruption. Over time, increased weight of investment partnerships with cleaner countries may in turn help to strengthen domestic economic institutions through improved business practices, better corporate governance and quality of management (see, for instance, Long et al. (2015) for evidence from China’s regions). This could create a virtuous spiral of institution building and higher FDI from countries with lower corruption.

4.5 Additional robustness checks

A number of other robustness checks have been performed. Table 4 (columns 1–4) reports the results obtained using the Eurostat dataset of bilateral FDI flows rather than the UNCTAD data. The Eurostat dataset covers bilateral flows between the EU member states and a number of associated economies (including Serbia and Turkey) versus the rest of the world. While reporting to Eurostat may be to a greater extent harmonized across countries, by construction the dataset has fewer observations on investment flows between pairs of countries with weaker control of corruption. The results are broadly consistent with those discussed earlier. In particular, the interaction term is positive, statistically significant and economically meaningful.

The identification primarily relies on cross-country differences in the levels of perceived corruption. To fully focus on the cross-country dimension (as opposed to time variation), the between estimator can be used (which effectively averages in each pair of countries over time). The results presented in Table 4 (columns 5–8) are consistent with those discussed above. If anything the interaction terms are larger.

In both cases the impact of control of corruption per se on the average FDI flows is somewhat ambiguous, consistent with a number of previous studies. In particular, the estimated impact of changes in bilateral FDI flows in response to lower corruption is implied to be negative for a (relatively small) fraction of partner countries with low control of corruption. For the “median” partner country (control of corruption of 2.2) and the “average” partner country (control of corruption of 2.45) the overall impact on FDI remains positive.

Table 5 further checks the robustness of the fixed effects estimates to inclusion of interaction terms between advanced countries of origin and countries of destination of FDI—to account for a fact that FDI flows tend to be higher between advanced economies that also, on average, have lower levels of corruption. While the coefficient on the interaction term for advanced countries is positive and significant, the coefficient on the interaction term between the levels of control of corruption drops only marginally and remains statistically significant.
| Variables | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|-----------|---|---|---|---|---|---|---|---|
| Distance, log | $-0.4518^{***}$ | $-0.4386^{***}$ | $-0.4351^{***}$ | $-0.4351^{***}$ | $-0.4051^{***}$ | $-0.3921^{***}$ | $-0.3816^{***}$ | $-0.3824^{***}$ |
| | [0.038] | [0.038] | [0.038] | [0.038] | [0.036] | [0.036] | [0.036] | [0.036] |
| Common border | 0.7232*** | 0.6559*** | 0.6472*** | 0.6467*** | 0.7002*** | 0.6247*** | 0.6057*** | 0.5997*** |
| | [0.142] | [0.143] | [0.143] | [0.143] | [0.139] | [0.139] | [0.139] | [0.139] |
| GDP per capita, destination, log | 0.4726*** | 0.4477*** | 0.4571*** | 0.4565*** | 0.2922*** | 0.2949*** | 0.3206*** | 0.3146*** |
| | [0.049] | [0.049] | [0.049] | [0.049] | [0.042] | [0.042] | [0.042] | [0.042] |
| GDP per capita, origin, log | 0.8763*** | 0.8313*** | 0.8408*** | 0.8400*** | 0.5827*** | 0.5719*** | 0.5844*** | 0.5797*** |
| | [0.054] | [0.054] | [0.054] | [0.054] | [0.049] | [0.049] | [0.049] | [0.049] |
| Population, destination, log | 0.4297*** | 0.4395*** | 0.4388*** | 0.4389*** | 0.3351*** | 0.3441*** | 0.3402*** | 0.3424*** |
| | [0.024] | [0.023] | [0.023] | [0.023] | [0.020] | [0.020] | [0.020] | [0.020] |
| Population, origin, log | 0.4481*** | 0.4576*** | 0.4552*** | 0.4553*** | 0.5041*** | 0.5106*** | 0.5019*** | 0.5050*** |
| | [0.023] | [0.023] | [0.023] | [0.023] | [0.017] | [0.017] | [0.017] | [0.017] |
| Common language | 0.7334*** | 0.7325*** | 0.7471*** | 0.7467*** | 0.9825*** | 0.9717*** | 0.9609*** | 0.9620*** |
| | [0.106] | [0.105] | [0.105] | [0.105] | [0.087] | [0.087] | [0.087] | [0.087] |
| Common colonial history | 0.5040*** | 0.5106*** | 0.5119*** | 0.5119*** | 0.6629*** | 0.6816*** | 0.6617*** | 0.6693*** |
| | [0.126] | [0.126] | [0.126] | [0.126] | [0.155] | [0.154] | [0.154] | [0.154] |
| Capital account openness, origin | 0.0162 | 0.0041 | 0.0101 | 0.0098 | 0.0313 | 0.0259 | 0.0379 | 0.0341 |
| | [0.029] | [0.029] | [0.029] | [0.029] | [0.029] | [0.029] | [0.029] | [0.029] |
| Capital account openness, destination | 0.0599* | 0.0487 | 0.0543* | 0.0540* | $-0.0588^{* *}$ | $-0.0633^{* *}$ | $-0.0455$ | $-0.0506^{*}$ |
| | [0.032] | [0.032] | [0.032] | [0.032] | [0.028] | [0.028] | [0.028] | [0.028] |
| Control of corruption, destination | 0.2279*** | 0.2165*** | $-0.3181^{*}$ | $-0.3026^{***}$ | 0.2511*** | 0.2491*** | $-0.5464^{***}$ | $-0.3493^{***}$ |
| | [0.059] | [0.059] | [0.180] | [0.105] | [0.055] | [0.055] | [0.164] | [0.098] |
| Control of corruption, origin | 0.2525*** | 0.3083*** | $-0.2197$ | $-0.2037^{**}$ | 0.5159*** | 0.5606*** | $-0.2202$ | $-0.0202$ |
Table 4 (continued)

| Specifications       | 1            | 2            | 3            | 4            | 5            | 6            | 7            | 8            |
|----------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Variables            | Eurostat dataset | Between effects estimator | Eurostat dataset | Between effects estimator | Eurostat dataset | Between effects estimator |
| Bilateral FDI, log   | [0.055]      | [0.056]      | [0.179]      | [0.095]      | [0.055]      | [0.055]      | [0.161]      | [0.091]      |
| Control of corruption, abs. diff. dest-origin | −0.1891*** | 0.0078       | −0.2128***   | 0.1104       | −0.2128***   | 0.1104       | −0.2128***   | 0.1104       |
|                      | [0.039]      | [0.076]      | [0.039]      | [0.074]      | [0.039]      | [0.074]      | [0.039]      | [0.074]      |
| Control of corruption, origin*destination | 0.1882*** | 0.1827***    | 0.2882***    | 0.2167***    | 0.2882***    | 0.2167***    | 0.2882***    | 0.2167***    |
|                      | [0.060]      | [0.031]      | [0.056]      | [0.029]      | [0.056]      | [0.029]      | [0.056]      | [0.029]      |
| Constant             | −9.5754***   | −8.9313***   | −7.8735***   | −8.8974***   | −7.6629***   | −7.8046***   | −16.3211***  | −16.7092***  |
|                      | [0.582]      | [0.592]      | [0.664]      | [0.634]      | [0.707]      | [0.704]      | [0.758]      | [0.713]      |
| Observations         | 6845         | 6845         | 6845         | 6845         | 9138         | 9138         | 9138         | 9138         |
| R²                   | 0.456        | 0.459        | 0.461        | 0.461        | 0.437        | 0.442        | 0.446        | 0.446        |
| Number of pairid     | 3217         | 3217         | 3217         | 3217         | 3217         | 3217         | 3217         | 3217         |
**Table 5** Additional robustness checks for the fixed-effects specifications

| Specifications                                      | 1                              | 2                              | 3                              | 4                              |
|-----------------------------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|
| Variables                                           | Bilateral FDI, log              |                                 |                                 |                                 |
| Distance, log                                       | $-0.8307^{***}$                  | $-0.8134^{***}$                  | $-0.8117^{***}$                  | $-0.8115^{***}$                  |
|                                                     | [0.039]                         | [0.041]                         | [0.041]                         | [0.041]                         |
| Common border                                       | $0.3649^{***}$                   | $0.3753^{***}$                   | $0.3759^{***}$                   | $0.3762^{***}$                   |
|                                                     | [0.120]                         | [0.120]                         | [0.120]                         | [0.120]                         |
| Common language                                     | $0.7280^{***}$                   | $0.7296^{***}$                   | $0.7347^{***}$                   | $0.7334^{***}$                   |
|                                                     | [0.099]                         | [0.099]                         | [0.099]                         | [0.099]                         |
| Common colonial history                             | $0.5382^{***}$                   | $0.5527^{***}$                   | $0.5458^{***}$                   | $0.5482^{***}$                   |
|                                                     | [0.113]                         | [0.113]                         | [0.113]                         | [0.113]                         |
| Control of corruption, interaction origin*destination| $0.2014^{***}$                   | $0.1773^{***}$                   | $0.1634^{***}$                   | $0.1661^{***}$                   |
|                                                     | [0.026]                         | [0.028]                         | [0.031]                         | [0.033]                         |
| Advanced country dummy, interaction origin*destination| 0.2636*                         |                                 | 0.0803                          |                                 |
|                                                     | [0.134]                         |                                 | [0.303]                         |                                 |
| Control of corruption*origin*destination*advanced*advanced| 0.0244**                        |                                 | 0.0179                          |                                 |
|                                                     | [0.012]                         |                                 | [0.027]                         |                                 |
| Constant                                            | $6.1856^{***}$                   | $6.2614^{***}$                   | $6.3560^{***}$                   | $6.3341^{***}$                   |
|                                                     | [1.375]                         | [1.364]                         | [1.367]                         | [1.370]                         |
| Country of origin*Year fixed effect                 | Yes                             | Yes                             | Yes                             | Yes                             |
| Country of destination*Year fixed effect            | Yes                             | Yes                             | Yes                             | Yes                             |
| Observations                                        | 10,637                          | 10,637                          | 10,637                          | 10,637                          |
| $R^2$                                               | 0.631                           | 0.632                           | 0.632                           | 0.632                           |

Robust standard errors in brackets

***$p<0.01$; **$p<0.05$; *$p<0.1$
Additionally, the interaction term between advanced economies is further interacted with the interaction term for the levels of corruption. In this instance, too, the coefficient on corruption interaction barely changes while the coefficient on the composite interaction term, while also positive and statistically significant, is an order of magnitude smaller. This suggests that investment flows involving emerging markets account for a major part of the differential response of bilateral investment to corruption while the differentials in the case of investment between advanced economies are smaller (perhaps reflecting the fact that differences in the level of corruption among advanced economies are less pronounced and safeguards around project implementation are stronger).³

5 Conclusion

The paper looked at the effects of the quality of institutions limiting corruption on bilateral flows of FDI focusing on the joint effect of control of corruption in the source and destination countries. This approach treated control of corruption as characterizing both a country and an investment relationship between a pair of countries.

Increased foreign direct investment is often seen as a reflection, and indeed an objective, of institutional strengthening in the economy and the associated reduction in the incidence of corruption. The analysis suggests that even though better control of corruption is associated with higher inward FDI, this effect is not universal and often not very large—a finding in line with a number of earlier studies. Instead, a reduction in the level of corruption appears to have a stronger, robust impact on the composition of foreign direct flows: it raises investment inflows from low-corruption countries to a much greater extent those from more corrupt countries.

This finding may reconcile the results of previous studies of the determinants of FDI and explain why the results with respect to the impact of corruption on FDI appear to be dependent on the dataset used (some datasets have many more observations on “south–south” bilateral FDI flows where the predominant levels of corruption are higher).

Reassuringly, the differential impact of corruption on FDI flows from different countries of origin can also be estimated with greater precision and confidence than the overall impact of changes in corruption on FDI—by controlling for all relevant country-specific effects both in the countries of origin and in the destination countries using fixed-effect specifications.

Even if corruption does not have as large an impact on the overall FDI flows as it often believed, the impact of having better control of corruption on the composition of FDI may by itself be highly valuable. Sourcing FDI increasingly from low-corruption countries may help to improve the quality of management, standards of business conduct and corporate governance in the domestic economy, giving rise to a virtuous cycle of stronger control of corruption and higher

³ Similar robustness checks for estimations based on the Eurostat data are available upon request.
proportion of FDI from countries with strong economic institutions. Furthermore, a change in the mix of FDI may be seen as a reflection of changes in the underlying business environment in the country. Such changes may also need to be taken into account when it comes to endeavours to build a theoretical model capturing the observed patterns of FDI.

Acknowledgements The authors are grateful to Erik Berglöf, Ralph de Haas, Jeromin Zettelmeyer, Cagatay Bircan, Sergei Guriev, Yothin Jinjarak, Teodora Tsankova, Roxana Mihet, Jeffrey Mo, Ganeshan Wignaraja, the editor and the anonymous referees for valuable comments and suggestions.

Appendix

List of countries in the sample

Albania, Algeria, Angola, Antigua and Barbuda, Argentina, Armenia, Aruba, Australia, Austria*, Azerbaijan, Bahrain, Bangladesh, Barbados, Belarus, Belgium*, Belize, Benin, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, Bulgaria*, Burkina Faso, Burundi, Cabo Verde, Cambodia, Cameroon, Canada, Central African Republic, Chad, Chile, China, Colombia, Costa Rica, Croatia*, Cyprus*, Czech Republic*, Denmark*, Dominica, Dominican Republic, Ecuador, Egypt, El Salvador, Equatorial Guinea, Eritrea, Estonia*, Ethiopia, Fiji, Finland*, France*, Eritrea, Gabon, Georgia, Germany, Ghana, Greece*, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong SAR, Hungary*, Iceland*, India, Indonesia, Ireland*, Islamic Republic of Iran, Israel, Italy*, Japan*, Jordan, Kazakhstan, Kenya, Korea, Kuwait, Kyrgyz Republic, Lao P.D.R., Latvia*, Lebanon, Liberia, Libya, Lithuania*, Madagascar, Malawi, Malaysia, Maldives, Mali, Malta*, Marshall Islands, Mauritania, Mauritius, Mexico, Moldova, Mongolia, Morocco, Mozambique, Namibia, Nepal, Netherland*s, New Zealand, Nicaragua, Niger, Nigeria, Norway*, Oman, Pakistan, Panama, Papua New Guinea, Paraguay, Peru, Philippines, Poland*, Portugal*, Qatar, Republic of Congo, Romania*, Russian Federation, Rwanda, Saint Kitts and Nevis, Samoa, Saudi Arabia, Saint Lucia, Senegal, Seychelles, Sierra Leone, Singapore, Slovak Republic*, Slovenia*, Solomon Islands, South Africa, Spain*, Sri Lanka, Sudan, Suriname, Swaziland, Sweden*, Switzerland*, Tajikistan, Tanzania, Thailand, The Bahamas, The Gambia, Togo, Trinidad and Tobago, Tunisia, Turkey*, Uganda, Ukraine, United Arab Emirates, United Kingdom*, United States*, Uruguay, Uzbekistan, Venezuela, Vietnam, Yemen, Zambia, Zimbabwe.

Note: Countries marked with * are reporter countries in the Eurostat database.

Correlation coefficients

See Table 6.
|                                | FDI flows, log | Distance, log | Common border | GDP per capita, destination, log | GDP per capita, origin, log | Population, destination, log | Population, origin, log | Common language | Common colonial history | Capital account openness, destination | Capital account openness, origin | Control for corruption, destination | Control for corruption, origin |
|--------------------------------|----------------|---------------|---------------|-------------------------------|-----------------------------|-------------------------------|---------------------------|---------------------|----------------------|--------------------------------|-------------------------------|--------------------------------|-----------------------------|
| FDI flows, log                 | 1              |               |               |                               |                             |                               |                          |                     |                      |                                |                               |                                |                             |
| Distance, log                  | −0.094***      | 1             |               |                               |                             |                               |                          |                     |                      |                                |                               |                                |                             |
| Common border                  | 0.106***       | −0.437***     | 1             |                               |                             |                               |                          |                     |                      |                                |                               |                                |                             |
| GDP per capita, destination, log| 0.223***       | −0.060***     | −0.059***     | 1                             |                             |                               |                          |                     |                      |                                |                               |                                |                             |
| GDP per capita, origin, log    | 0.342***       | 0.021***      | −0.109***     | −0.010***                     | 1                           |                               |                          |                     |                      |                                |                               |                                |                             |
| Population, destination, log   | 0.088***       | 0.070***      | 0.037***      | −0.213***                     | −0.064***                   | 1                             |                          |                     |                      |                                |                               |                                |                             |
| Population, origin, log        | 0.149***       | 0.063***      | 0.060***      | −0.085***                     | −0.199***                   | −0.050***                     | 1                         |                     |                      |                                |                               |                                |                             |
| Common language                | 0.107***       | −0.083***     | 0.185***      | −0.087***                     | −0.108***                   | 0.062***                      | 0.011                     | 1                   |                      |                                |                               |                                |                             |
| Common colonial history        | 0.108***       | −0.050***     | 0.116***      | 0.016***                      | −0.021***                   | 0.041***                      | 0.045***                   | 0.232*** | 1                   |                                |                               |                                |                             |
| Capital account openness, destination | FDI flows, log | Distance, log | Common border | GDP per capita, destination, log | GDP per capita, origin, log | Population, destination, log | Population, origin, log | Common language | Common colonial history | Capital account openness, destination | Capital account openness, origin | Control for corruption, destination | Control for corruption, origin |
|-------------------------------------|----------------|--------------|---------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------|--------------------------|-------------------------------|-----------------------------|--------------------------|--------------------------|
| 0.099***                           | −0.088***      | −0.039***    | 0.639***      | −0.100***                  | −0.180***                  | −0.085***                   | 0.016*                     | 0.007 | 1                        |                               |                             |                          |                          |
| Capital account openness, origin    | 0.217***       | −0.077***    | −0.057***     | 0.603***                   | −0.042***                  | −0.072***                   | 0.015                        | 0.019 | −0.049***                |                               |                             |                          |                          |
| Control for corruption, destination | 0.220***       | 0.000        | −0.074***     | 0.835***                   | −0.097***                  | −0.246***                   | −0.063***                   | −0.014 | 0.599***                 | −0.057***                    |                             |                          |                          |
| Control for corruption, origin      | 0.311***       | 0.073***     | −0.112***     | 0.830***                   | −0.044***                  | −0.256***                   | 0.085***                     | −0.082 | 0.552***                 | −0.066***                    |                             |                          |                          |
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