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Institutions and Inward Foreign Direct Investment in the Primary Sectors

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Institutions and Inward Foreign Direct Investment in the Primary Sectors

Abstract

Purpose:

Well-functioning institutions are repeatedly claimed to attract foreign direct investment (FDI) by reducing the costs and uncertainty of economic activity. Nonetheless, it has been argued that institutions may matter less for FDI in the primary sector. This study theoretically and empirically investigates the role of institutions for attracting FDI in agricultural and in extractive activities.

Design/methodology/approach:

The study uses worldwide country and sector level data on inward FDI for the period 1996 to 2007. The key independent variables property rights protection, corruption and democracy, are measured using World Bank Governance Indicators and Polity IV as data sources. Fixed effect panel regression, Tobit regression, and generalized method of moments are used for data analysis.

Findings:

We corroborate the importance of institutions for aggregate FDI. Disaggregating by primary subsector, we find that agricultural FDI, like aggregate FDI, is attracted by institutional features such as rule of law and property rights protection and democracy, while extractive FDI is not. We also find some evidence that corruption deters FDI in both primary subsectors.

Originality:

We take a first step towards linking the largely empirical institutions-FDI literature more closely with the economics-based theoretical discussions of FDI risk grounded on a property rights approach, to discuss issues such as effective control rights over investments, which may vary between sectors. We also explore a novel idea that extractive activities may be less sensitive to institutions because the time horizon is limited by the depletion of the resource, resulting in an inherently relatively short-term commitment to a host-country location.

Keywords

Foreign direct investment, institutions, primary sector, extractive sector, agricultural sector

Institutions and Inward Foreign Direct Investment in the Primary Sectors

1. Introduction

A substantial literature across fields such as economics, political science and international business has established the general importance of well-functioning host-country institutions for attracting foreign direct investment (FDI) (Ali, Fiess, and MacDonald, 2010; Bailey, 2018; Bevan, Estrin, and Meyer, 2004; Blonigen, 2005; Contractor, Dangol, Nuruzzaman, and Raghunath, 2020; Donnelly and Manolova, 2020; Schneider and Frey, 1985; Wei, 2000). Institutional features such as the protection of property rights, corruption and democracy may directly affect the costs and uncertainty facing multinational enterprises (MNE) in their operations (Bahoo, Alon, and Paltrinieri, 2020); indirectly they may affect the development of local resources such as human capital (Baum and Lake, 2003). Nevertheless, beyond demonstrating that “institutions matter”, the exact role of institutions differs according to firm-level, industry-level and other environmental factors (Donnelly and Manolova, 2020). Studies moving beyond aggregate FDI to look at specific sectors have suggested that institutions are of less importance in primary, resource-based sectors. For instance, Ali et al. (2010), Schulz (2009), and Walsh and Yu (2010) found no evidence that institutional quality affects investment decisions in the primary sector, while Kolstad and Wiig (2013) found corruption *attracts* FDI in the extractive sector.

The apparent uniqueness of the primary sector in this respect raises important questions both from a theoretical perspective and from a practical perspective. Theoretically, the diverging results suggest that sector-specific characteristics influence the sensitivity of FDI to institutions. Researchers have explained the differences arguing that in the extractive sector, investment is primarily resource-seeking and “[c]hoices are greatly limited when choosing between alternative investment sites” (Ali et al., 2010, p. 205). Even if also extractive MNEs

prefer better institutions, all else equal, the limited availability of certain resources could mean that good institutions are an unaffordable luxury. Further, the potential rents associated with certain resource extraction activities may be sufficiently high to outweigh institutional risk.

Yet, industries such as petroleum extraction and mining are also generally characterized by large investments which once made are "sunk", and which may subsequently be vulnerable to expropriation or other unfavorable actions by the host government (Vernon, 1971), making the institutional environment especially important. Moreover, there are important differences between primary sectors. While some types of resources (e.g. certain types of minerals) are found only in a limited set of locations, for other resources (e.g. forests or fisheries) the choice of locations is larger. Primary sectors also differ in terms of the size of the investments and the technological level required, as well as the governmental regulations faced. A better theoretical understanding of such sectorial characteristics is therefore important.

Sectorial differences may also have important implications for policy and for company strategies. Host countries seem to be able to attract FDI to their extractive sector without having to improve the institutional environment. On the other hand, with a need to increase investment in agriculture, how to attract FDI into the agricultural sector is a salient issue (UNCTAD, 2009). Hence, it is important to consider whether the different results for primary sector FDI are mainly driven, for instance, by the importance of extractive sector FDI, and how institutional characteristics affect other types of primary sector FDI, that may be of greater importance in some host countries.

In this article, we address these issues theoretically and empirically by exploring different sectorial characteristics affecting the relationship between key institutional features and FDI in the context of two primary sub-sectors – the extractive sector (petroleum and mining) and the agricultural sector (agriculture, forestry and fisheries). We focus on three institutional aspects that have received extensive attention in the literature: Property rights

protection, corruption, and level of democracy. A range of theoretical arguments and empirical results are found for these aspects in the literature, but mostly from a more aggregate perspective. We link arguments from the largely empirically based and eclectic institutions-FDI literature more closely with the economics-based theoretical discussions of FDI risk grounded on the property rights approach (Grossman and Hart, 1986; Schnitzer, 1999), discussing issues such as effective *control rights* over investments, which may vary between sectors. We also explore the idea, to our knowledge new to the literature, that extractive activities may be less sensitive to institutions because the time horizon is limited by the depletion of the resource, resulting in an inherently relatively short-term commitment to a host-country location.

For our empirical investigation, we use UNCTAD data on FDI inflows in the agricultural, forestry and fishing sectors (referred to as agricultural FDI) and in the mining, quarrying and petroleum sectors (referred to as extractive FDI) from 1996 to 2007. In line with previous literature, a first set of analyses confirms the important role of a “benign” institutional environment for aggregate FDI inflows, and its lesser role for aggregate primary sector FDI. Disaggregating by primary subsectors, however, in many analyses we find agricultural FDI is attracted by institutional features such as rule of law and democracy, while extractive FDI generally is not. Finally, some analyses find corruption deters FDI in both primary subsectors.

The next section provides a theoretical discussion identifying relevant dimensions of FDI in the two primary subsectors that may influence the role of important institutional features. The two sections thereafter describe our methods and data and report the results. Finally, we offer a brief discussion and conclusion.

2. Literature and Theory

A substantial literature has sought to identify country-level factors that are conducive to inward foreign direct investment (Ali et al., 2010; Blonigen, 2005; Schneider and Frey, 1985).

Economists and international business scholars often focused on gravity-type variables such as market size and growth, as well as trade costs and resource availability. However, there is also a long tradition of considering political and institutional factors as determinants of FDI (see e.g., Asiedu, 2006; Bailey, 2018; Bevan et al., 2004; Blanton and Blanton, 2009; Globerman and Shapiro, 2002; Habib and Zurawicki, 2002; Root and Ahmed, 1979; Schneider and Frey, 1985; Wei, 2000; Wheeler and Mody, 1992). In international business, a wide range of country-level characteristics have been studied as location factors within the dominant analytical framework in international business, Dunning's ownership-location-internalization (OLI) paradigm (Dunning, 1998). International business scholars like Ali et al. (2010) have extended the analysis of locational factors by integrating arguments developed in political science and new institutional economics (e.g., Acemoglu, Johnson, and Robinson, 2005; North, 1990; Williamson, 2000).

Using the frequently quoted definition from North (1990, p. 3), institutions are “the rules of the game in a society, or, more formally, are the humanly devised constraints that shape human interaction.” Institutions function to reduce uncertainty in exchange, and they directly affect transaction and production costs associated with economic activity (North, 1991). Institutional features that have received extensive attention include political stability, democracy, corruption and property rights protection. Although the results for particular institutional indicators have been somewhat mixed, the literature has generally demonstrated a positive role for a “benign” institutional environment in attracting FDI (Ali et al., 2010).

While most studies of the effect of institutions on FDI have employed aggregate country-level FDI data, some contributions use more disaggregated data to provide important nuances.^[1] Of particular relevance for this article are studies that have considered effects at the

^[1] For example, researchers have taken into account the source country of the investment (e.g., Cuervo-Cazurra, 2006) and investing firm characteristics such as state ownership (e.g., Knutsen, Rygh, and Hveem, 2011). Firm level studies have also examined issues such as how institutional factors affect the entry mode choice of firms

sector or industry levels. These studies have generally found that institutions matter less in the primary sector (Ali et al., 2010; Schulz, 2009; Walsh and Yu, 2010), arguing that institutions as a “man-made” location advantage may be trumped by the availability of resources that are difficult to find elsewhere. Studies also suggest that institutions matter less in the primary sectors due to characteristics of these sectors, for instance because the sectors are generally less integrated in the host economy and are less dependent on obtaining a “social license” for their activities (Blanton and Blanton, 2009); or because their generally less complex inputs and outputs depend less on good contracting institutions (Nicolini, 2007).

Only a few studies look specifically at industries beyond the primary-secondary-tertiary classification. Golub (2009) reports that openness to FDI is lowest in service sectors that are sensitive to issues of national sovereignty and security such as telecommunications, transport, finance, and electricity. Kolstad and Villanger (2008) find differences between service subsectors; for instance, institutional quality is found to matter in the transport industry but not in the financial industry. Looking at *primary subsectors*, Blanton and Blanton (2009) consider institutional variables such as human rights, worker rights and democracy, comparing petroleum and mining. They find human rights to attract FDI in sectors with higher skill intensity and closer integration with the host society. Since their study uses only US data, it is unclear how generalizable the findings are to other source countries of FDI. Kolstad and Wiig (2013) consider FDI in the extractive sector, focusing on corruption, which they find to attract FDI.

In the following, we revisit three key variables that have been widely studied in the institutions-FDI literature, and that could have different effects depending on sectorial

(Benito, 1996; Henisz and Delios, 2001; Meyer, Estrin, Bhaumik, and Peng, 2009). Studies using bilateral flows investigated the interplay between home and host country factors, showing that institutional distance also matters (e.g. Bénassy-Quéré, Coupet, and Mayer, 2007; Habib and Zurawicki, 2002). There are only a few multi-source-country studies at more disaggregate industry levels. Javorcik and Spatareanu (2005) use firm-level data for large firms from Western European countries, finding that greater labor market flexibility attracts FDI.

characteristics: Property rights, corruption and democracy (Bailey, 2018). We discuss their importance for inward FDI in subsectors of extraction (mining and petroleum) and agriculture (covering agriculture, forestry and fishing), exploring theoretically three key sectorial and investment characteristics: The required up-front investment; the effective control rights to investments; and the extent of resource rents available.

2.1. Property rights protection

Among the institutional factors studied, property rights protection has probably achieved the most consensus and produced relatively consistent empirical results (Ali et al., 2010). North defined *property rights protection* (1990, p. 33) as “the rights individuals appropriate over their own labor and the goods and services they possess.” According to North, “[a]ppropriation is a function of the legal rules, organizational forms, enforcement, and norms – that is, the institutional framework” (1990, p. 33). Property rights are thus closely linked to the incentives of economic actors. MNEs will be reluctant to invest in a given country if contracts are not enforced or if the government may exploit its *sovereign rights* (Schnitzer, 1999) to expropriate MNEs’ investments. As argued by North (1991, p. 101), mere promises by rulers not to expropriate will tend not to be credible, and thus “the shackling of the ruler’s power to prevent arbitrary seizure of assets” is necessary to ensure secure property rights over time.

Nevertheless, the importance of property rights security for investors may depend on sectorial characteristics. First, sectors differ in terms the *required investment commitment*, i.e. the upfront investment needed. Mining and petroleum generally require large initial investments. Marshall (2001, p. 9) notes that “[l]ocating, developing and constructing a modern mine usually requires hundreds of millions of dollars in capital investment” and “[u]nlike a manufacturing business, a modern mine does not have the option of starting small and, if things go well, expanding. To achieve the economies of scale required, a modern mine must start large with the associated large capital cost”. Much of the same applies to petroleum extraction. In

contrast, less upfront investments are required in the agricultural sector. Although some processing, transportation and storage equipment may be needed, the required scale and sunk costs will be lower.

However, it also matters to what extent the investor has *effective control rights to the assets*, in the sense of being able to control their use. The notion of *sovereign risk* implies that, ultimately, the host state retains control rights over all assets in its territory, given that international contracts are generally unenforceable (Schnitzer, 1999). Following this perspective, when the FDI has been sunk, the only real deterrent to expropriation is the negative reputational effect on future investment in the country. However, this argument overlooks the fact that to the extent that advanced technologies are involved, and these technologies are difficult to operate without the participation of the MNE (Albuquerque, 2003; Schnitzer, 1999), actual benefits from expropriation will be lower; although Vernon's (1971) famous "obsolescing bargain" argument suggested that over time, the host country would learn to operate the investment, progressively reducing the bargaining power of the MNE. An important part of the MNE's assets, over which the MNE plausibly retains effective control rights, is non-local human capital that can be withdrawn from the country. Something similar applies to intangible assets such as brand names. On the other hand, when assets largely consist of physical assets embodying little technology, de facto control rights are weaker. In sectors such as agriculture and forestry the main investment is in land, and the technological level required for operation is presumably generally low. The share of the assets that an MNE will be able to recover if exiting in such cases is negligible.^[2]

^[2] MNEs may also have other strategies available for reducing risk without fully refraining from investing in a country. For example, MNEs can (albeit sometimes economically inefficiently) scale down their operations to limit the amount of assets at risk (Benito and Welch, 1997; Eaton and Gersovitz, 1984) or adjust the subsidiary's capital structure (Kesternich and Schnitzer, 2010; Rygh and Benito, 2018). The availability of such strategies might also be conceptualized as a form of effective control right. Reducing risk by adjusting the scale of operations may be less viable in sectors such as mining that rest heavily on economies of scale (Marshall, 2001).

Effective control rights also depend on *MNE production system vulnerability*. As noted by Schulz (2009, p. 9), “[r]esource-seeking FDI typically involves vertically integrated production structures, in which raw materials sourced in the developing world are used as production inputs in the MNC’s home country”. There are theoretical arguments for why vertical FDI is more sensitive to political risk than horizontal FDI. Due to greater substitutability of outputs produced in different countries in horizontal FDI, “[t]he ability to diversify production when FDI is horizontal cuts the exposure to the political risk induced by the threat of nationalization or production stoppage” that is more serious in vertical FDI (Aizenman and Marion, 2004, p. 133). While a horizontal affiliate mainly sells locally, threats to a vertical affiliate will also threaten other affiliates of the same MNE that rely on the output of this affiliate (Slangen and Beugelsdijk, 2010). Although FDI in the primary sectors tends to be vertical, its vulnerability may differ between primary sectors due to resource availability, factor prices and trade costs. Hence, the locational distribution of economic activities varies (Barba Navaretti and Venables, 2004). One would expect the risk expropriation poses to the supply chain to depend on the type of product in question. For instance, it is probably more important in the case of scarce resources such as rare earth minerals, than in the case of forests or agricultural land.

Finally, the need for institutionalized protection of property rights is likely to depend on the investor’s *time horizon*. Marshall (2001, p. 9) notes that in the mining sector “[e]xploration often lasts five to ten years, with preliminary assessment, feasibility study preparation and ongoing stakeholder consultations leading to the necessary government approvals, taking an additional two to three years.” Thus, even if the MNE has a good relationship with the incumbent government, there may be uncertainty about what future governments will do and hence a need for institutionalized protection of property rights. While agricultural products also require time to grow, the *investment horizon* of a particular

investment is likely to be longer for mining and petroleum, which may include extensive exploratory activities. However, whereas extractive activities in mining and petroleum inevitably involve depleting a local pool of resources, agricultural resources are, at least in principle, regenerative. Thus, the *location horizon* may differ between the sectors. As local resources get depleted, investors in the extractive sectors have an ever-smaller incentive to continue investing in the country. In contrast, investors in the agricultural sector have an undiminished incentive to invest over time and could theoretically have an infinite horizon on their activities in a country.

Overall, while both sectors are characterized by significant sunk investments, MNE effective control rights should be stronger in the extractive sector, at least in certain types of technologically sophisticated activities such as offshore oil.

2.2. *Corruption*

Another much studied institutional factor for FDI is *corruption*. Diverging theoretical arguments have been proposed on the economic effects of corruption (Shleifer and Vishny, 1993). On one hand, it has been suggested that in contexts with poorly functioning institutions, corruption “greases the wheels” of economic activity by facilitating transactions. The alternative view is that corruption is “sand in the wheels”, increasing both the costs and uncertainty of doing business – including the fact that one cannot use courts to enforce corrupt transactions. Some authors argue the costs of corruption are above all linked to its arbitrariness (Wei, 2000). On balance, the evidence suggests corruption has predominantly negative effects on FDI (e.g., Bénassy-Quéré et al., 2007; Busse and Hefeker, 2007; Cuervo-Cazurra, 2006; Egger and Winner, 2006; Hakkala, Norbäck, and Svaleryd, 2008; Wei, 2000; Wu, 2006), although there are also studies finding the opposite result (Egger and Winner, 2005; Kolstad and Wiig, 2013).

Corruption could also have different effects in different sectors. In particular, sectors such as the extractive sector in which high rents are available, may be particularly prone to corruption (Kolstad and Wiig, 2013). Relatedly, many resource sectors, especially strategically important sectors such as the petroleum sector, face pervasive governmental regulation. Marshall (2001) argues that the many points of regulation in the mining sector makes it particularly susceptible to corruption. However, as Kolstad and Wiig (2013, p. 307) note, “there are also benefits to be had from illicitly colluding with public officials, to secure contracts or licences, access to information or other sources of economic rents.” In extractive sectors, the gains from securing resources access may be high enough to outweigh the costs of corruption. In contrast, although land can be a source of rents, rents in the agricultural sector are likely to be smaller than in petroleum and minerals. In this context, the costs of corruption may dominate the benefits.

Finally, as discussed above, an important characteristic of the extractive sector is that the time horizon of the investor may be limited to the point in time at which the resource is expected to be depleted. Hence, MNEs in such sectors may pay less attention to potential long-term effects on the economy of widespread corruption.

2.3. *Democracy*

The relationship between *political regime type* (i.e. autocracy versus democracy) and FDI has long been contentious (Harms and Ursprung, 2002; Jakobsen and de Soysa, 2006). Part of the disagreement about the effects of regime type concerns how the latter affects lower-order institutional characteristics. Some have argued a positive effect from democracy is explained by the positive effect of democracy on property rights protection.^[3] Thus, Li and Resnick

^[3] Some argue that autocracy promotes property rights protection inter alia by sheltering property more efficiently from popular demands for redistribution. Others argue that democracy, through greater restrictions on power of the executive, limits the discretion of power holders e.g. to expropriate property for personal gains or to reward political supporters. Overall, the evidence seems to support the latter view (Knutson, 2011).

(2003) found the positive effect of democracy on FDI disappeared once property rights were controlled for. However, replicating this analysis, Jakobsen and de Soysa (2006) found the result was reversed when increasing sample size and log-transforming FDI, so that democracy had a positive effect. Although there are arguments that restricting democracy and human and labor rights could reduce labor costs, such factors could have a positive indirect effect on FDI by encouraging local investment in human capital (Blanton and Blanton, 2006, 2007; Kucera, 2002), leading to higher productivity and economic growth in the long run (Baum and Lake, 2003; Knutsen, 2015), attracting FDI. Finally, besides moral concerns among MNE decision makers themselves (Brown, Vetterlein, and Roemer-Mahler, 2010), MNEs may take into account morally motivated consumers and investors (Vogel, 2005). Facing a “spotlight regime” (Spar, 1998), MNEs, especially those originating in democratic countries, may be reluctant to invest in autocracies with poor human rights protection.

One aspect of products that has been considered in this respect is the degree to which companies have direct contact with final consumers. The reputation mechanism may be more relevant for products where brand value is particularly important, such as apparel (Vogel, 2005); however, it could also be relevant for agricultural products, as suggested by the attention surrounding “land grabbing” (Borras Jr, Hall, Scoones, White, and Wolford, 2011), the general social sensitivity of the agricultural sector (UNCTAD, 2009) and the rise of “ethical trade” initiatives such as Fairtrade (Becchetti and Rosati, 2007). It may be less relevant for “anonymous” products resulting from extractive activity (notably petroleum), although a product such as diamonds may be an important exception.

Another possible channel relates to *skill levels and relative capital/labor intensity*. Many resource extraction activities involve large capital investments, and labor costs are often of relatively little importance. Further, while worker skill levels are, on average, less important in the primary than in the manufacturing and service sectors, they may be more important in

primary sectors requiring the operation of sophisticated capital equipment. Thus, the proposed mechanism whereby democracy and human rights promote citizens' investments in human capital may be more relevant here. That may help explain why Blanton and Blanton (2009) found worker rights attracted US FDI in the petroleum sector. In contrast, agricultural work generally requires low skill levels, and labor costs may be a more important concern for MNEs in that sector; which, according to some common arguments (see Blanton and Blanton, 2007 for further discussion) would suggest a role for repressive regimes in keeping labor costs down.

On the other hand, the extractive sector investors' time horizons may be limited by the fact that the resource is depletable, while investors in other sectors are more likely to take a long-term view on the viability of the location. This might mean that agricultural MNEs may pay more attention to long-term beneficial effects of democracy and human rights on the strength of an economy in terms of technology and human capital. In contrast, extractive MNEs may expect to leave the location as the resource has been depleted and would hence discount such beneficial long-term effects.

3. Data and Methods

3.1. Dependent variable: inward FDI with breakdown on primary subsectors

Our dependent variables are the annual inward FDI flows in million USD from 1996 to 2007 for (i) total FDI (reported for 189 countries); (ii) primary sector FDI (reported for 88 countries); and the following primary subsectors as classified in the International Standard Industrial Classification (ISIC), Rev 4: (iii) Agriculture, forestry and fishing (section A, divisions 01-03), and (iv) mining, quarrying and extraction of crude petroleum and natural gas (section B, divisions 05-09).^[4] Aggregate FDI data was downloaded from UNCTAD at

^[4] Country/year coverage at lower levels of aggregation was much more uneven. For instance, many countries reported only at the level of extractive FDI, even though they are known to have petroleum production and are also likely to have inward FDI, indicating that studying e.g. petroleum FDI in isolation could give misleading results..

<http://unctadstat.unctad.org/TableViewer/tableView.aspx?ReportId=88>, while proprietary primary sector data – including a further division into the agricultural and extractive subsectors – were obtained from UNCTAD for a fee. These latter data allow testing the role of institutions at more disaggregated level than has been done in the vast majority of studies so far. Despite suffering from some shortcomings typical of FDI data, UNCTAD’s data remain an authoritative data source on FDI, covering a large sample of countries.

About half of the countries reporting total FDI also reported primary sector FDI during our sample period; for the other half, data enter as missing. *Missing data* for FDI could either mean there was no FDI to report, or that the country is unable or unwilling to report. Both cases may be related to institutional quality. If institutional environments are sufficiently problematic, MNEs may refrain from investing altogether (or countries may be unable or unwilling to report). Thus, the same factors may determine both whether a country is selected into the sample of countries with reported FDI, and the amount of FDI that the country receives, leading to a selection bias. Following these considerations, in our analyses we will consider two alternative assumptions about the data. First, we will run analyses only on the country samples that have reported FDI. Second, in alternative analyses we assume that missing data means there was no FDI and replace missing values by zeros. With a large number of observations censored at zero, researchers often opt for a Tobit model (Guerin and Manzocchi, 2009; Javorcik and Spatareanu, 2005).^[5] Like most empirical FDI studies (cf., Busse and Hefeker, 2007; Daude and Stein, 2007), we transform the FDI figures using the natural logarithm. Specifically, we use the transformation $Y = \ln(y + \sqrt{y^2 + 1})$ (Busse and

^[5] Some of these locations will be irrelevant for MNEs in this sector, as they do not possess the natural resources. Therefore, including a proxy for resource richness of the country in the sector in question as a control is essential.

Hefeker, 2007, p. 404) for FDI, allowing us to include observations with negative or zero FDI values (although in the Tobit analyses the former will also be set to zero).^[6]

3.2. Main independent variables: Institutional measures

Based on the theoretical discussion above, we consider three important types of institutions related to property rights protection, corruption and democracy.^[7] To measure property rights, we use the Rule of Law index (RLI) from the World Bank Governance Indicators (WBGI) (Kaufmann, Kraay, and Mastruzzi, 2010). The RLI is based on a set of indicators that relate to private property protection and rule of law. Specifically, it captures “perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence” (Kaufmann et al., 2010, p. 4).

Our main measure of corruption, or more precisely, its absence, is the Control of Corruption index, also from the WBGI. It measures “perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests (Kaufmann et al., 2010, p. 4).

Finally, our main measure of democracy is the *polity2* measure from Polity IV (Marshall, Gurr, and Jaggers, 2016), which subtracts a score for autocracy from a score for democracy. The democracy component includes “three essential, interdependent elements. One is the presence of institutions and procedures through which citizens can express effective preferences about alternative policies and leaders. Second is the existence of institutionalized constraints on the exercise of power by the executive. Third is the guarantee of civil liberties

^[6] As explained by UNCTAD, “FDI flows with a negative sign indicate that at least one of the three components of FDI (equity capital, reinvested earnings or intra-company loans) is negative and not offset by positive amounts of the remaining components. These are instances of reverse investment or disinvestment.”; see http://unctad.org/en/Pages/DIAE/Investment%20and%20Enterprise/FDI_Flows.aspx.

^[7] Most of the country-level institutional and economic variables were culled from the 2017 version of the Quality of Government Institute dataset (Teorell et al., 2017).

to all citizens in their daily lives and in acts of political participation” (Marshall et al., 2016, p. 14). In contrast, autocracies “sharply restrict or suppress competitive political participation. Their chief executives are chosen in a regularized process of selection within the political elite, and once in office they exercise power with few institutional constraints” (Marshall et al., 2016, p. 15).

3.3. Control variables

The following controls suggested by the FDI literature as relevant location factors are included.^[8] Annual gross domestic product (GDP) growth proxies for market growth and GDP for market size, both expected to attract FDI by indicating market potential. Both variables are taken from the World Bank’s World Development Indicators (WDI), and transformed using the natural logarithm (Blanton and Blanton, 2009).^[9] GDP per capita measures both the wage level (labor cost) and purchasing power (Bénassy-Quéré et al., 2007). High trade openness as measured by the sum of imports and exports as a percentage of GDP (current prices) from the 2008 Penn World Tables, and human capital as captured by the gross tertiary enrolment rate from the World Development Indicators, are both expected to attract FDI. We include two proxies for resource availability in the primary sectors: Forest rents as percentage of GDP for the agricultural sector, and the sum of oil rents, natural gas rents and mineral rents as percentage of GDP for the mining and petroleum sector. Finally, year dummies control for common shocks (Daude and Stein, 2007). Descriptive statistics are shown in Table I, and a correlation matrix in the Appendix.^[10]

^[8] Some of these variables control for indirect channels from institutional variables (for instance, human capital) to FDI, so we are likely to underestimate the total effect of institutions.

^[9] Since growth may be negative, we use the Busse-Hefeker transformation $x = \ln(x + \sqrt{x^2 + 1})$.

^[10] Although some correlations are high (especially between GDP per capita and the institutional variables), variance inflation factors (VIFs) from baseline OLS regressions are all well below the commonly suggested threshold of 10, with the highest VIFs at about 6. In contrast, including both Rule of Law and Control of Corruption together, leads to VIFs between 11 and 14 depending on the model.

*** Table I about here ***

4. Results

4.1. Fixed effects using reported FDI

Using panel data allows controlling for unobserved time-invariant country characteristics affecting both institutions and FDI, such as social capital, norms and initial endowments (Papaioannou, 2009), including unobserved natural resource endowments (Kolstad and Wiig, 2013) not captured by our time-variant resource proxies. Hausman tests consistently advised the use of fixed effects (FE) rather than random effects (RE), suggesting unobserved country characteristics are correlated with the regressors, which could lead to statistical inconsistency. FE is also theoretically preferred when considering a fixed population, i.e. the world's countries (Greene, 2003).^[11] We use robust standard errors clustered at the host-country. This first set of regressions uses only observations where a numerical FDI amount is reported, while the later Tobit analyses take into account missing values.

Baseline FE results using the Busse-Hefeker (2007) transformation of annual FDI inflows in million USD as dependent variable, are presented in Tables II-IV below. In all regression tables, column (1) shows the results for the total FDI inflows regression; column (2) aggregate primary sector FDI (the sum of the two subsectors); column (3) FDI in agriculture, forestry and fishing; and column (4) FDI in mining and quarrying and petroleum. In the main analyses, each institutional variable is entered separately, to avoid multicollinearity as institutions are highly correlated (Bénassy-Quéré et al., 2007): For instance, Rule of Law and

^[11] FE may be problematic, however, with persistent regressors such as institutions (Beck and Katz, 2001), as variables with little temporal variation may be highly correlated with the unit effects. Although we prefer the FE analyses for the reasons noted in the main text, in unreported RE regressions (available on request) the important result of a positive effect of democracy on agricultural FDI described below was lost.

Control of Corruption have a correlation of 0.95. Robustness checks include all three variables in one model (available on request).

In line with previous literature, aggregate FDI is attracted by all three types of “good institutions”, while all three institutional variables are insignificant for aggregate primary FDI. However, disaggregating primary FDI into the two subsectors reveals an interesting difference. There is a strongly significant positive effect of democracy on agricultural FDI, and a negative, although insignificant effect on extractive FDI. Nevertheless, both rule of law and control of corruption are insignificant for both subsectors.

*** Tables II, III, and IV about here ***

4.2. Tobit regressions including missing FDI

As discussed, the above regressions may be problematic since they only include reported FDI. We now instead assume that non-reporting of FDI reflects no FDI, setting all missing FDI values to zero. This increases the estimating sample size substantially for the primary sectors. To best exploit the information from the substantial number of observations of zero FDI, we employ a random effects Tobit model (Javorcik and Spatareanu, 2005). Since FDI flows can be negative (also after the Busse-Hefeker transformation), FDI is not censored at zero. However, it can be argued that like zero FDI, negative FDI flows reflect a lack of willingness to invest in a country (Guerin and Manzocchi, 2009). Thus, we set entries of negative FDI at zero as the lower limit in the Tobit analysis.

The results in Tables V-VII below, differ in some respects from the FE results for the sample with reported FDI. While all institutions remain significant for total FDI, Rule of Law turns significantly positive also for agricultural FDI, and Control of Corruption is significantly positive for all types of FDI. As in the FE regressions, an important difference between the

sub-sectors is that democracy as measured by polity2 is strongly positively significant for agricultural FDI, but insignificant for extractive FDI. Overall, the Tobit regressions strengthen the conclusion from the FE analyses that institutions are more important for agricultural FDI than for extractive FDI.

*** Tables V, VI, and VII about here ***

4.3. *Generalized method of moments (GMM) analyses*

Since a reverse effect from FDI to institutions has been demonstrated previously (Ahlquist and Prakash, 2008), we follow Walsh and Yu (2010) and use generalized method of moments (GMM) estimation based on generating instruments that are internal to the model (Roodman, 2009a).^[12] In the original difference-GMM approach (Arellano and Bond, 1991), possible endogeneity between the explanatory variables and the dependent variable is addressed by estimating the equation using the lagged values in levels as instruments (Walsh and Yu, 2010). Like fixed effects analyses, such regressions account for unobserved time-invariant country factors. However, we omit the lagged dependent variable, as an agglomeration argument (Krugman, 1991) is less compelling than when working with FDI stocks, and since including the lagged dependent variable without a clear theoretical motivation may inappropriately crowd out the effects of all other variables (e.g., Keele and Kelly, 2006; Li and Resnick, 2003).^[13]

We implement GMM using the Stata *xtabond2* package (Roodman, 2009a). Since institutions tend to be highly persistent variables, we follow Heid, Langer, and Larch (2012) and use the system GMM approach. Blundell and Bond (1998) showed that estimation can be

^[12] Other variables may also be endogenous to FDI (Busse and Hefeker, 2007). In all GMM analyses, we specify GDP as potentially endogenous.

^[13] Alternative analyses including the lagged dependent variable generally washed away the results from most other variables, including key gravity variables such as GDP as well as institutions, a result which seems implausible given the results in the FDI literature.

made more efficient by using also some differences as instruments in *level* equations. Following Roodman (2009a, 2009b) we include year dummies (reducing correlation across groups) and use the orthogonal deviation transformation (Arellano and Bover, 1995) in order to maximize sample size in a panel with gaps. To avoid overinstrumentation (Roodman, 2009b), we implement a method based on principal components analysis (Bontempi and Mammi, 2015; Mehrhoff, 2009). We use the two-step version of GMM implementing the Windmeijer (2005) bias correction for standard errors. Tests for first and second order autocorrelation and instrument exogeneity indicate the models are generally well specified.^[14]

As shown in Tables VIII-X below, the results are generally weaker than in the fixed effects and random effects Tobit analyses. This is especially the case for democracy, which is now statistically insignificant in all models. Nevertheless, we find that corruption is significant in the agricultural sector while it is insignificant in the extractive sector, providing some indications that institutions matter more for agricultural FDI.

*** Tables VIII, IX, and X about here ***

5. Discussion and Conclusion

This investigation has been motivated by the finding from previous studies that while FDI in general tends to be influenced by host country institutions, this relationship seems to be much weaker in the primary sector. To gain a better understanding of the relevant characteristics of primary sectors, we have studied the role of property rights protection, corruption and

^[14] Almost all specifications passed the test for no second-order autocorrelation (except for a couple of cases with a p -value between 0.05 and 0.1). Some specifications did not pass the Sargan test (which is insensitive to the number of instruments, but not robust to heteroskedasticity) but almost all passed the Hansen J-test (robust to heteroskedasticity, but potentially weakened by many instruments) for instrument exogeneity (Roodman, 2009a) with a couple of specifications having a p -value of about 0.03. Given that the number of instruments is small compared to the number of groups in all specifications and that no Hansen test p -values seem to be alarmingly high, we attach confidence to the Hansen test results.

democracy in the extractive sector and the agricultural sector. Although results are not equally strong for all these institutional features, the overall main finding is that the agricultural sector resembles the secondary and tertiary sectors rather than the extractive sector, in terms of how institutions affect FDI.

In particular, we find that democratic institutions are an attracting rather than a deterring factor for agricultural sector FDI. In contrast, there are only weak indications that the institutional climate matters for extractive industry FDI. Surprisingly, even property rights security does not seem to have a significant effect in the extractive sector, despite the prevalence of large sunk investments. Only control of corruption is found to play a positive role in the Tobit analyses, which suggests that, in general, the rents in the extractive sector are not sufficient to outweigh other costs of corruption in this highly regulated sector.

We considered theoretically a number of characteristics such as the required investment commitment and degree of effective control of assets (i.e. the degree that technological and other know-how provide implicit protection from expropriation), investment horizon, social sensitivity, and importance of human capital, which may all be relevant for the institutions-FDI relationship. The different results for the extractive and agricultural sectors are consistent with the most striking differences between the sectors: Namely the fact that resource extraction tends to be more bound to particular locations where the resource is available, and that when the resource has been extracted, the location may be of little further interest for the MNE.

The results have managerial implications for the choice among alternative investment locations. Institutional aspects such as property rights protection, corruption and democracy vary in their importance for different firms, depending on the specific sectorial and investment characteristics. Firms in the agricultural sector seem to value strong institutions more than firms in mining and petroleum, which may reflect the lesser protection against expropriation offered

by assets that are likely less complex to operate, and a longer time-horizon following from the resource not being inherently depletable, unlike in the case of mines and petroleum reserves.

The results also have potential policy implications for host countries of FDI. In particular, the analysis suggests that countries seeking to attract FDI into their agricultural sector need to offer an attractive institutional environment. In other words, it should not be assumed that prospective host countries of agricultural FDI can extrapolate the policy implication that host countries of extractive FDI do not need to provide a strong institutional environment in order to attract FDI.

Overall, our analysis and findings contribute to a more fine-grained view of the role of institutions as a location factor for FDI (Bailey, 2018; Donnelly and Manolova, 2020). We complement studies such as Kolstad and Villanger (2008) using UNCTAD's data to study different service sub-sectors, and Blanton and Blanton (2009) studying US outward FDI in ten industries from both the primary (mining and petroleum), secondary and tertiary sectors. Although the development of theoretical arguments and the disaggregation of FDI in this study furthers our understanding of the boundary conditions of institutions as a location factor (Donnelly and Manolova, 2020), our analysis remains at a relatively aggregated level. Future studies can provide further insights by a finer classification of sectors and sub-sectors according to theoretically relevant characteristics. Additional insights may be gained by linking sectorial and investment characteristics with firm-level factors (ownership advantages) such as political capabilities and the nature of the MNE's assets. Even within a sector, there may be differences between firms in terms of the technological sophistication of investments, in turn affecting for instance the expected costs and benefits for governments contemplating expropriation. This represents an important avenue for future research.

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Table I. Descriptive statistics

	Mean	Standard deviation	Minimum	Median	Maximum
Aggregate FDI	8.75	2.38	-10.80	8.84	13.40
Primary sector FDI	4.42	3.81	-8.45	5.06	12.30
Agricultural FDI	2.17	3.00	-7.57	2.78	8.30
Extractive FDI	4.08	3.87	-8.43	4.62	12.30
Rule of Law index	0.29	0.87	-1.31	0.18	1.96
Control of Corruption	0.27	0.94	-1.49	0.06	2.40
Polity index of democracy	6.64	4.96	-10.00	9.00	10.00
Log of GDP growth	2.09	0.80	-3.05	2.25	3.35
Log of GDP	26.10	1.76	21.30	26.10	30.20
GDP per capita	13.90	11.40	0.40	10.20	43.50
Trade openness	80.50	39.60	14.90	70.30	212.10
Tertiary enrolment	40.80	21.80	0.43	40.70	93.10
Forest rents	0.67	1.31	0	0.25	10.60
Mineral and petroleum rents	4.03	8.21	0	0.95	60.00

Table II. Fixed effects regressions, Rule of Law index

	(1) Aggregate FDI	(2) Primary sector FDI	(3) Agricultural FDI	(4) Extractive FDI
Rule of Law index	1.11*	-0.78	1.00	-0.93
	(0.60)	(1.57)	(0.85)	(1.70)
Log of GDP growth	0.060	-0.48***	-0.12	-0.48**
	(0.062)	(0.18)	(0.20)	(0.21)
Log of GDP	-4.29	3.07	3.83	2.89
	(2.97)	(2.76)	(2.98)	(3.03)
GDP per capita	-0.18	-0.22	-0.055	-0.29
	(0.13)	(0.23)	(0.14)	(0.24)
Trade openness	0.029**	-0.030	-0.0090	-0.030
	(0.013)	(0.021)	(0.018)	(0.024)
Tertiary enrolment	0.031	-0.090*	-0.024	-0.10**
	(0.019)	(0.046)	(0.041)	(0.048)
Forest rents	-0.082	-0.063	-0.38	
	(0.17)	(0.35)	(0.45)	
Mineral and petroleum rents	0.012	-0.060		-0.076
	(0.016)	(0.047)		(0.048)
Observations	978	496	384	446
R ²	0.094	0.075	0.066	0.083

Standard errors in parentheses,
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table III. Fixed effects regressions, Control of Corruption

	(1)	(2)	(3)	(4)
	Aggregate FDI	Primary sector FDI	Agricultural FDI	Extractive FDI
Control of Corruption	1.07*** (0.36)	1.31 (0.94)	-0.60 (1.02)	1.07 (0.99)
Log of GDP growth	0.049 (0.060)	-0.49*** (0.18)	-0.13 (0.19)	-0.48** (0.21)
Log of GDP	-4.07 (2.86)	2.28 (2.68)	4.38 (3.13)	1.97 (2.90)
GDP per capita	-0.18 (0.12)	-0.25 (0.23)	-0.022 (0.14)	-0.31 (0.24)
Trade openness	0.028** (0.013)	-0.026 (0.020)	-0.013 (0.017)	-0.026 (0.022)
Tertiary enrolment	0.029 (0.019)	-0.090** (0.044)	-0.023 (0.040)	-0.10** (0.045)
Forest rents	-0.11 (0.17)	0.0090 (0.31)	-0.47 (0.49)	
Mineral and petroleum rents	0.011 (0.017)	-0.052 (0.045)		-0.066 (0.046)
Observations	978	496	384	446
R^2	0.098	0.079	0.066	0.085

Standard errors in parentheses,

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table IV. Fixed effects regressions, Polity index of democracy

	(1)	(2)	(3)	(4)
	Aggregate FDI	Primary sector FDI	Agricultural FDI	Extractive FDI
Polity index of democracy	0.048* (0.025)	0.0030 (0.082)	0.098*** (0.035)	-0.018 (0.088)
Log of GDP growth	0.031 (0.049)	-0.26 (0.19)	-0.0076 (0.15)	-0.30 (0.19)
Log of GDP	-2.55 (2.68)	1.94 (2.55)	4.00 (2.57)	1.58 (2.71)
GDP per capita	-0.17 (0.14)	-0.14 (0.20)	0.024 (0.11)	-0.19 (0.20)
Trade openness	0.026** (0.011)	-0.016 (0.016)	0.0050 (0.014)	-0.028 (0.018)
Tertiary enrolment	0.022 (0.019)	-0.079** (0.036)	-0.039 (0.031)	-0.084** (0.038)
Forest rents	-0.055 (0.15)	0.085 (0.28)	-0.14 (0.41)	
Mineral and petroleum rents	0.010 (0.017)	-0.045 (0.038)		-0.059 (0.038)
Observations	1213	629	491	565
R^2	0.082	0.054	0.078	0.068

Standard errors in parentheses,

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table V. Tobit regressions, Rule of Law index

	(1) Aggregate FDI	(2) Primary sector FDI	(3) Agricultural FDI	(4) Extractive FDI
Rule of Law index	0.46*** (0.16)	1.66** (0.71)	2.23*** (0.56)	0.94 (0.77)
Log of GDP growth	0.042 (0.050)	0.068 (0.14)	0.25* (0.14)	0.14 (0.17)
Log of GDP	0.94*** (0.057)	2.20*** (0.32)	1.53*** (0.23)	2.06*** (0.35)
GDP per capita	-0.026** (0.012)	-0.25*** (0.067)	-0.31*** (0.060)	-0.15** (0.066)
Trade openness	0.0087*** (0.0023)	0.0083 (0.011)	0.012 (0.0082)	0.0012 (0.012)
Tertiary enrolment	0.014*** (0.0050)	0.021 (0.020)	0.045*** (0.017)	0.013 (0.022)
Forest rents	-0.013 (0.043)	-0.050 (0.22)	0.12 (0.16)	
Mineral and petroleum rents	-0.0034 (0.0048)	-0.0073 (0.023)		-0.017 (0.025)
Observations	982	982	931	817

Standard errors in parentheses,

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table VI. Tobit regressions, Control of Corruption

	(1) Aggregate FDI	(2) Primary sector FDI	(3) Agricultural FDI	(4) Extractive FDI
Control of Corruption	0.54*** (0.14)	1.45*** (0.56)	1.16** (0.47)	1.26** (0.61)
Log of GDP growth	0.039 (0.050)	0.058 (0.14)	0.24* (0.14)	0.12 (0.17)
Log of GDP	0.95*** (0.057)	2.23*** (0.32)	1.51*** (0.23)	2.09*** (0.35)
GDP per capita	-0.033*** (0.012)	-0.24*** (0.063)	-0.24*** (0.057)	-0.18*** (0.063)
Trade openness	0.0092*** (0.0023)	0.0092 (0.010)	0.013 (0.0081)	0.0019 (0.012)
Tertiary enrolment	0.013*** (0.0050)	0.019 (0.020)	0.045*** (0.017)	0.011 (0.022)
Forest rents	-0.029 (0.043)	-0.10 (0.22)	0.056 (0.16)	
Mineral and petroleum rents	-0.0034 (0.0046)	-0.013 (0.023)		-0.017 (0.024)
Observations	982	982	931	817

Standard errors in parentheses,

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table VII. Tobit regressions, Polity index of democracy

	(1)	(2)	(3)	(4)
	Aggregate FDI	Primary sector FDI	Agricultural FDI	Extractive FDI
Polity index of democracy	0.064***	0.12**	0.17***	0.10
	(0.016)	(0.058)	(0.050)	(0.062)
Log of GDP growth	0.052	0.14	0.32***	0.18
	(0.040)	(0.11)	(0.11)	(0.13)
Log of GDP	1.00***	2.19***	1.51***	2.01***
	(0.068)	(0.33)	(0.23)	(0.35)
GDP per capita	-0.012	-0.15***	-0.18***	-0.10*
	(0.013)	(0.052)	(0.042)	(0.052)
Trade openness	0.012***	0.012	0.016**	0.0021
	(0.0025)	(0.0099)	(0.0076)	(0.011)
Tertiary enrolment	0.0098*	0.016	0.034**	0.011
	(0.0057)	(0.019)	(0.016)	(0.021)
Forest rents	0.0072	0.089	0.15	
	(0.042)	(0.19)	(0.15)	
Mineral and petroleum rents	-0.0054	-0.012		-0.017
	(0.0047)	(0.021)		(0.023)
Observations	1214	1214	1166	1031

Standard errors in parentheses,

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table VIII. System-GMM regressions, Rule of Law index

	(1)	(2)	(3)	(4)
	Aggregate FDI	Primary sector FDI	Agricultural FDI	Extractive FDI
Rule of Law index	2.89***	-4.95	1.29	-2.75
	(1.12)	(3.32)	(1.59)	(2.05)
Log of GDP growth	0.033	-0.19	0.016	-0.10
	(0.075)	(0.24)	(0.20)	(0.22)
Log of GDP	0.60*	1.16	0.19	0.26
	(0.36)	(0.87)	(0.54)	(0.85)
GDP per capita	-0.13*	0.26	-0.16	0.21
	(0.070)	(0.24)	(0.13)	(0.15)
Trade openness	-0.000043	0.0093	-0.012	-0.011
	(0.0080)	(0.024)	(0.011)	(0.018)
Tertiary enrolment	0.0100	-0.022	0.0055	-0.029*
	(0.019)	(0.034)	(0.016)	(0.017)
Forest rents	-0.039	0.088	-0.0086	
	(0.13)	(0.33)	(0.19)	
Mineral and petroleum rents	0.033	-0.0064		0.028
	(0.022)	(0.055)		(0.039)
Observations	978	496	384	446

Standard errors in parentheses,

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table IX. System-GMM regressions, Control of Corruption

	(1)	(2)	(3)	(4)
	Aggregate FDI	Primary sector FDI	Agricultural FDI	Extractive FDI
Control of Corruption	1.81*	-1.70	3.85**	0.29
	(0.93)	(2.51)	(1.69)	(1.73)
Log of GDP growth	0.040	-0.34	-0.015	-0.18
	(0.075)	(0.26)	(0.23)	(0.28)
Log of GDP	1.10***	2.13*	0.42	0.68
	(0.32)	(1.20)	(0.57)	(1.39)
GDP per capita	-0.11	-0.041	-0.40***	-0.042
	(0.069)	(0.22)	(0.15)	(0.17)
Trade openness	0.0096	0.018	-0.0076	-0.016
	(0.0069)	(0.033)	(0.012)	(0.023)
Tertiary enrolment	0.0017	-0.020	0.025	-0.024
	(0.017)	(0.034)	(0.021)	(0.020)
Forest rents	-0.061	0.34	0.24	
	(0.095)	(0.40)	(0.22)	
Mineral and petroleum rents	0.0068	0.042		0.076**
	(0.017)	(0.052)		(0.034)
Observations	978	496	384	446

Standard errors in parentheses,

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table X. System-GMM regressions, Polity index of democracy

	(1)	(2)	(3)	(4)
	Aggregate FDI	Primary sector FDI	Agricultural FDI	Extractive FDI
Polity index of democracy	0.041	-0.30	0.095	-0.48
	(0.091)	(0.26)	(0.085)	(0.32)
Log of GDP growth	0.062	-0.11	0.19	-0.26
	(0.055)	(0.21)	(0.18)	(0.29)
Log of GDP	0.91**	1.32**	0.36	0.81
	(0.36)	(0.53)	(0.30)	(0.62)
GDP per capita	0.0082	-0.022	-0.10***	0.063
	(0.033)	(0.072)	(0.035)	(0.089)
Trade openness	0.0084	0.0086	-0.0052	-0.0021
	(0.0066)	(0.013)	(0.0088)	(0.016)
Tertiary enrolment	0.0071	-0.0076	0.000085	-0.016
	(0.014)	(0.032)	(0.013)	(0.035)
Forest rents	-0.047	0.20	-0.0100	
	(0.11)	(0.20)	(0.11)	
Mineral and petroleum rents	-0.0076	0.049		0.032
	(0.015)	(0.048)		(0.058)
Observations	1213	629	491	565

Standard errors in parentheses,

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Appendix: Correlation matrix.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
(1) Aggregate FDI	1.00													
(2) Primary sector FDI	0.21	1.00												
(3) Agricultural FDI	0.18	0.32	1.00											
(4) Extractive FDI	0.18	0.96	0.11	1.00										
(5) Rule of law	0.46	-0.10	-0.16	-0.12	1.00									
(6) Control of corruption	0.44	-0.04	-0.14	-0.06	0.95	1.00								
(7) Polity index of democracy	0.35	-0.15	-0.13	-0.15	0.55	0.50	1.00							
(8) Log of GDP growth	0.05	0.03	0.06	0.01	-0.06	-0.08	-0.11	1.00						
(9) Log of GDP	0.75	0.19	0.10	0.19	0.41	0.38	0.27	-0.01	1.00					
(10) GDP per capita	0.45	-0.03	-0.18	-0.02	0.82	0.83	0.44	-0.09	0.46	1.00				
(11) Trade openness	-0.05	-0.24	-0.09	-0.25	0.11	0.07	-0.03	0.10	-0.25	0.13	1.00			
(12) Tertiary enrolment	0.57	-0.06	-0.12	-0.08	0.64	0.62	0.51	-0.02	0.56	0.64	0.05	1.00		
(13) Forest rents	-0.40	-0.06	0.01	-0.06	-0.37	-0.31	-0.21	-0.01	-0.39	-0.37	-0.16	-0.42	1.00	
(14) Mineral and petroleum rents	-0.03	0.24	0.08	0.25	-0.26	-0.24	-0.44	0.07	0.06	-0.01	0.08	-0.14	-0.10	1.00
