

FDI AND PROPERTY RIGHTS IN RESOURCE-RICH COUNTRIES

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Abstract

The literature in the internationalization of multinational companies (MNC) that operate in the primary sector remains poorly developed. In particular, little is known about the relationship between host country institutions and foreign direct investment (FDI) in natural resources. Addressing this gap in knowledge, we focus on low- and middle-income countries, and investigate how the presence of natural resources in the host country affects the relationship between property rights and FDI. Our results, based on system GMM (Generalized Method of Moments) estimates of a panel of 92 countries from 1996 to 2008, indicate that the sensitivity of foreign investors to local institutions varies across countries and types of investments. Namely, in resource-rich countries, where FDI is concentrated principally in the primary sector, institutions may be less important for attracting FDI.

1. Introduction

Following the recent wave of liberalization in developing and emerging economies and the subsequent growth of multinational companies (MNC) and foreign direct investment (FDI), international organisations and policy makers have promoted foreign investment as a necessary instrument for economic development. The theoretical literature in support of this view argues that FDI can trigger growth and development by generating knowledge and technological spillovers. However, the empirical evidence on this is rather mixed (Alfaro et al., 2009). Scholars have shown that positive effects arising from FDI are likely to depend on the host country characteristics, such as the level of human capital, financial markets and the institutional frameworks (De Mello, 1999; Blömstrom and Kokko, 2003). Moreover, the activities of MNCs have aroused controversy and concern, especially in the case of international companies in extractive industry and natural commodities, where resources are often located in conflict-prone regions. Recent research has highlighted that in some cases foreign companies in extractive industry have aggravated violence and conflict, for example, by providing arms or finance (Ballentine, 2004). In such cases, the beneficial effect of FDI is likely to be limited due to the potential effects on real exchange rate and loss of competitiveness (Sachs and Warner, 2001; Le Billon, 2005), worsening social inequality (Ross, 1999; Renner, 2002) and instability (Collier, 2004). In addition, recent research highlights that in resource rich economies the role played by host country characteristics in attracting foreign investors differs compared to other countries. Novel empirical studies, for example, have shown that the relationship between democracy and FDI in the primary sector may be atypical (Aisedu and Lien, 2011; Shultz, 2007). In this instance, there is no evidence of the expected positive relation between foreign investment and democracy. Until now, the literature on resource-rich economies has only investigated the relationship between democracy and FDI, while the link between FDI and other aspects of the institutional environment remains unexplored. In light of the issues and concerns related to investments in natural resources, understanding the interplay between institutions and foreign investor in resource-rich countries seems particularly important. Addressing this gap in knowledge, we focus on low- and middle-income countries, and investigate the relationship between property rights and foreign investment. We extend the literature by examining the effect of property rights on FDI inflows using a dataset of up to 92 developing and emerging countries from 1996 to 2008. We estimate a model of FDI

determinants using the Blundell-Bond system GMM (Generalized Method of Moments) estimator (Blundell and Bond, 2000). This allows us to attenuate the effects of unobserved heterogeneity, the endogeneity of regressors, while also capturing the dynamic aspects of observed interrelations – issues often overlooked by existing studies. The results provide broad support for the argument developed in the paper that the presence of natural resource affects the institutions–FDI relationship. This finding is important as it indicates that the sensitivity of foreign investors to local institutions varies across countries and types of investments. More precisely, in resource-rich countries, where FDI is concentrated principally in the primary sector¹, institutions may be less important for attracting FDI. While existing research stresses that institutional weakness are negatively correlated with FDI, we posit that the risk posed by frail institutions can be offset by the investment potential and by the MNC’s ability to negotiate favourable entry conditions with the host government.

We proceed as follows. Section 2 discusses the relationship between institutions, FDI and natural resources and we formulate the key hypothesis that we wish to test. The third and fourth sections present the econometric model and the data used in our estimations. Finally, we discuss the results and draw conclusions.

2. Property rights and FDI in natural resources

The economic literature has largely discussed that the characteristics of the legal system, in particular property rights are vital components of a country’s institutional set-up and therefore matter for both domestic and foreign investment (North, 1990; Demsetz, 1967; Libecap, 1989). The theoretical proposition that better institutions, such as effective property rights, facilitate foreign and domestic investment has been tested empirically in a growing body of cross-country studies. While there seem to be a growing consensus that the overall institutional environment can significantly increase FDI inflows (Globerman and Shapiro, 2003; Bénassy- Queré, et al. 2005), the same can’t be said about specific aspect of the institutional set-up. For instance while several empirical studies find that better property rights have a significant and positive effect on FDI

¹ The assumption that resource rich economies attract mainly resource seeking investment is confirmed by research empirical research. For instance Poelhekke and van der Ploeg, (2010) find that natural resource production significantly decreases non-resource FDI

(Gani, 2007; Biglaiser and Staats, 2010; Ali et al 2010), others don't find robust evidence in support of this hypothesis (Jung and Sing 1996; Daude and Stein, 2007; Asiedu 2002)². Conflicting findings on the effects of the efficiency of the legal system may be due to differences in time and country coverage, which in turn may reflect differences in the composition of FDI flows. In fact, FDI can be market-, efficiency- or resource-seeking (Caves, 1996) and this may affect the interactions between host countries' characteristics and FDI. Given the focus of our analysis, in the following section we review the existing economic and international business literature on foreign investments in natural resources. In doing so we try to unveil whether the relationship between host country institutions, in particular property rights, and foreign investment is affected by the composition of FDI.

The first discussion on the interaction between host countries and MNC in natural resources stems from Vernon's (1971) obsolescing bargain model (OBM). This framework aimed at explaining the wave of expropriation of natural resources-based FDI that occurred in the 1970s in developing countries by analysing the relationship between the MNC and the host country's bargaining power. Vernon and his followers (Moran, 1974 and Tugwell, 1975) argue that the bargaining power of MNC in extractive industries is weaker than that of other industries because these firms commit to high fixed costs, which transfer bargaining power to the host country's government (Vernon, 1971). A new take on the OBS argues that the risk of expropriation, as represented by weak property rights or low political stability, is particularly important to MNC in natural resources because of the high asset specificity of locations with large sunk cost and long gestation period associated with these types of ventures (Asiedu and Lie, 2011; WRI 2007; Nunnenkanp and Spatz, 2003). This view can be criticized on several grounds. First, it is only partly correct to assume that the government has a stronger position than the MNC, as the withdrawal of FDI and technical expertise may lead to disruption of income for the host government. Therefore, what we see is a mutual dependence where, using Williamson's (1987) terminology, the cost of breaking a transaction is high for both sides. Second, the OBS has overestimated the power of the local government, and MNC can put pressures on the host countries to protect their interests (Jenkins, 1986). Several

² There are mixed results also on other aspect of the institutional environment. For instance, while several studies indicate a negative relationship between political instability and foreign investment (Lucas, 1990; Henisz, 2000; Busee and Hckefer, 2006), others do not find any significant relationship (Bennet and Green 1972, Fatehi-Sedeth and Safizadeh 1989, Olibe and Crumbley 1997, Lorre and Gruisinger 1995, Jaspersen et al 2000, Hausmann and Fernandez-Arias 2000).

case studies have shown that MNCs have been able to retain some bargaining power and prevent government expropriation (Eden et al., 2005).³ The critics of Vernon's predictions have also noted that in recent times the MNC-host countries relationship is more co-operative than conflictual and therefore today the OBS framework is less relevant (Dunning, 1993; Luo, 2001).

Concerning the interplay between investment in the primary sector and host country institutions, scholars have discussed that the impact of institutions on foreign investors vary across sectors (Asiedu, 2002; Busse, 2004; Ali et al, 2010; Asiedu and Lie, 2011). Recent discussion has centred on investors' preferences for political regimes. Typically it is argued that resources-based investments may display an inclination towards autocratic regimes and they are not sensitive to the host country institutional risk. This can be explained in three ways. First the stability that characterizes autocratic regimes facilitates the development of close relationships between investors and the host government (Asiedu and Lie, 2011). The development of close ties is a necessary condition to access natural resources, which are usually tightly controlled by the local government. Second, some transaction costs induced by weak institutions may be balanced out by expected returns (Agarwal and Ramaswami, 1992). The institutional framework is not a precondition to attract investment: if the comparative advantage of the host country is high (e.g. large amount of natural resources or large market), investors may be willing to accept the risks associated with a weak legal system and institutions. Finally, given the need of investor to access the resources, which are not readily available in other countries, investors have no choice but to accept the host country political and legal institutions (Spar, 1999; Bayulgen, 2010). Testing the relationship between political regime and resource-based investments is challenging, mainly because the data on sectoral FDI is scarce. However there is small but growing body of empirical work aimed at testing this hypothesis. When micro data is not available studies rely on the assumption that when high resource endowment is associated with FDI concentrated in the primary sector (Asiedu and Lien, 2011). Schults (2007), using data on industry level FDI, finds some evidence that the relationship between formal institutions (democracy vs. autocracy) is sector dependent, and resource-seeking FDI is less sensitive to democracy. In a similar fashion, Asiedu and Lien (2011), using aggregate data, find that

³ For example, Kramer and von Tulder (2009) mentioned the agreement between the Libyan government and Mittal Steel as an example of a foreign investor having been able to negotiate favourable conditions. The agreement includes tax incentives, facilitation of corporates' rights over those of local communities, and forbids the application of new law to the company.

democracy is positively correlated with FDI only if the share of minerals and oil in total exports is less than some critical value. However the results on the association between democracy, or lower institutional quality, and resource seeking FDI is not unchallenged. In fact Poelhekke and van der Ploeg (2010), using micro data on Dutch foreign investments, do not find evidence that resource based FDI are correlated with lower institutional quality. While existing studies focus on democracy, their discussion can be easily rephrased in terms of property rights, as constitutional democracy and security of property rights are closely related concepts (Acemoglu and Johnson, 2005; Aidis et al., 2010). Thus, developing their argument would lead us to the conclusion that the general security of property rights may be less important for FDI in the resources sector, as it can be substituted with a specific protection by an autocratic and otherwise arbitrary government. In support of this conclusion we also note that FDI in natural resources tend to have few linkages to the local product and labour markets (Nunnenkanp and Spatz, 2003). This feature of natural resource-based FDI has been proposed as an explanation for the limited spillover from this type of investment. However, a lack of linkages to other sectors of economic activity may also imply that FDI in the natural resource sector may be less sensitive to the general institutional framework shaping economic interactions in most of the economy.

The above discussion highlights that property rights may pose different constraints on different types of investment. Nevertheless, there is still little evidence on the interaction between the type of FDI and this aspect of the institutional set-up.

Yet, based on the discussion above, we expect that institutional weakness should have less impact on FDI in natural resources because (i) the latter can be isolated from most of the other sectors in the economy and institutional risk may be decreased by colluding with a local government; and (ii) high transaction costs can be compensated for by higher returns results from participating in the resource rents. Hence the hypothesis that we wish to test is the following:

H1) When FDI are concentrated in the primary sector this is expected to attenuate the effect of property rights on FDI.

3. Data, Variables and Descriptive Statistics

Our empirical analysis uses a panel data of 92 low- and middle-income countries over the period 1996-2009.⁴ As the aforementioned hypotheses require some proxies of institutions and natural resources and measuring both have proved controversial, in this section we discuss our choice of indicators. We also make a first attempt at exploring the interrelationship between FDI, natural resources and institutions by presenting some descriptive statistics and correlations. We conclude the section by briefly discussing the control variables included in the econometrics specifications. Table 1 in the appendix summarizes the source of the data and measurements used for each variable. Full descriptive statistics and the correlation table for the variables described in table 1 are found in tables 2 and 3 in the appendix.

3.1 Measurements: Institutions and Natural Resources

For the period analysed (1996-2009), a number of institutional indicators are available from the International Country Risk Guide (ICRG). The dataset has been widely used in the economics literature and it provides de facto indicators intended to measure the actual institutional outcome. The data are obtained through surveys of knowledgeable individuals who are asked about their perceptions of institutions.⁵ Amongst other institutional measures, the dataset supplies measures of the effectiveness of the legal system. Our measure of property rights is the ICRG's "law and order" that measures both the strength and impartiality of the legal system, and the extent to which the law is observed.

Moving to natural resources, the economics literature has traditionally measured resource endowment using the amount of natural resources produced or exported (Hodler, 2005). We are aware of the difficulties in defining and measuring natural resource endowment, but in this instance we follow the literature and our main measure of natural resources is the share of three primary commodities in merchandise export; namely, we take the share of ores and metal, fuel and agricultural goods in total export (Sachs and Warner, 1995; Asiedu and Lien, 2011). As robustness check we also use alternative measure of natural resources: resources production (share of GDP) and resources rent (as share of GDP). Data on oil production, oil rent and mineral rent are available from the World Bank

⁴ We defined low- and middle-income countries using the distribution of GDP per capita in PPP. Low-income countries are those in the lower 20% of the income distribution; lower-middle-income countries are between the 20% and 50% of the income distribution; and symmetrically, upper-middle-income countries are between the 50% and the 80% of the income distribution.

⁵ Kaufmann and Kraay (2008) provide an in-depth discussion of de-jure vs de facto indicators.

adjusted net saving dataset.⁶ Oil production, calculated as the unit price multiplied total production, provides a measure of the economic importance of resource extraction. Natural resources rent is calculated as the unit rent, that is, price net of cost, multiplied by the amount of resource extracted. Some scholars argue that rents are a better measure than resource export, especially when analysing the interplay between institutions and resources (de Soysa and Neumayer, 2007). This is because rents are a direct measure of the gains from natural resources. Moreover it has been shown that resource rent are strongly correlated with the value of reserves, in which case rents can be taken as a good proxies for sub-soil asset (Poelhekke and van der Ploeg, 2010).

We make a first attempt at analysing the interplay between natural resources, FDI and institutions by looking at some descriptive statistics. As shown in Table 2, the correlation between FDI and political stability and property rights is positive as expected. We divide countries according to their export intensity of two types of natural resources: oil and metal; and agricultural raw materials. Following UNCTAD (2011), countries are defined as major natural-resource exporters if the share of natural resource export to total export is greater than 50%. In our sample, this corresponds roughly to the 80 percentile of the distribution of the export intensity variables (e.g. oil and metal to total export; agricultural raw material to total export). Figures 1 and 2 indicate that there is a significant difference in the correlation between FDI and “law and order” depending on the degree of export intensity. For major natural-resource exporters, the correlation between FDI and institution seems much weaker compared to other countries. These simple plots indicate that there are some difference in the relationship between FDI and institutions across countries, and in particular it seems to differ according to the level of resource endowment, as proxies by resource export intensity. This will be further investigated in the following econometric analysis.

3.2 Controls

To test our hypotheses on the interaction between natural resources and institutions, we should include adequate controls. In selecting our control variables we follow the existing empirical literature. The empirical literature on FDI inflows determinants is large and the evidence on the effects of many variables is mixed. Where consensus has

⁶ Minerals included in the calculations of rent are the following: tin, gold, lead, zinc, iron, copper, nickel, silver, bauxite and phosphate.

emerged it is around the finding that country-level variables such as GDP, GDP per capita, inflation, trade openness and institutions are important determinants of FDI inflows. The size of the market, as measured by GDP, is expected to be positively correlated with FDI. This is because larger markets imply lower distribution costs if production facilities are located in the same countries and facilitate economies of scale. Indeed most empirical studies find GDP to be a significant determinant of FDI (Chakrabarti, 2001; Globerman and Shapiro, 2003; Lipsey, 1999; Brewer, 1993; Crenshaw, 1991; Grosse, 1997). GDP per capita, as a proxy of consumer purchasing power and labor productivity is also expected to be positively correlated with FDI. There is some empirical evidence in support of this hypothesis (Benassy-Qeres et al, 2007). Aside from wealth measures, proxies for macroeconomic environment and stability, such as inflation and trade openness, are often included in the empirical analysis of FDI. Typically macroeconomic uncertainty can be measured by inflation which is expected to negatively affect investments (Satyanath and Subramanian, 2004). For what concern trade openness it is commonly assumed that it is complement to FDI. There is some empirical evidence that in developing countries greater trade openness stimulates FDI (Stone and Jeon, 2000; Leu, Wang and Wei, 2001). Finally, the literature has stressed the importance of institutions as determinants of FDI (Globerman and Shapiro, 2002). As we focus our analysis on property rights, it is important to control for democracy and political stability. Legal system, political stability and democracy are closely interrelated, so not taking the latter into account may cause an omitted variable problem. Although the evidence on the role of democracy and political stability is mixed, the most common view argues that democracy and political stability have a positive impact on FDI⁷.

We are aware that the literature has identified other variables that may matter in determining FDI, however here we focus on the most important one. Having discussed the variables included in our econometric model, we now turn to the empirical strategy used to test the aforementioned hypotheses.

⁷ See for instance, among others, Olson (1993) and Li and Resnik (2003) for a discussion on the impact of democracy on investment. Henisz (2000) explains the relationship between political instability and investments.

4. Empirical Strategy

4.1 Model Estimated

The main question we aim at answering is whether the presence of natural resources play a moderating role in the institutions-FDI relationship, as explained in hypothesis 1. However we need to take into account the role of a number of variables that have been shown to typically affect FDI. Hence the model chosen to test our hypotheses is the following:

$$(1) \quad LFDI \ln w_{it} = \beta_0 + \beta_1 LFDI \ln w_{i(t-1)} + \beta_2 LGDP_{it} + \beta_3 LGDP \text{per capita}_{it} + \beta_4 Democracy_{it} + \beta_5 propertyrights_{it} + \beta_6 politicalstability_{it} + \beta_7 inflation_{it} + \beta_8 Ltrade_{it} + \beta_9 propertyrights_{it} * naturalresou$$

where

$LFDI \ln w_{it}$ is the logarithm of FDI inflow as share of GDP, in country i at time t.

$LFDI \ln w_{i,t-1}$ is the lagged dependent variable

Equation (1) models the inflow of FDI as a dynamic process where the dependent variable in year t depends in part on its value in year t-1. The specification principally follows Cheng and Kwan (2000),⁸ and Noorbakhsh et al. (2001). FDI often involves high initial costs and therefore tends to be persistent over time. At the aggregate level, this can be captured by a positive feedback effect of past FDI onto current FDI. Additionally, foreign investors tend to prefer to operate in familiar environments, therefore, the existing foreign investments serve to encourage the operations of new and existing companies by creating a more familiar environment and increasing investors' confidence.

For our purposes, we use the flows of FDI, rather than the stock, as our dependent variable. This is because FDI stocks may not reflect recent changes in investments where FDI has been present for a long time (Globerman and Shapiro, 2002). In terms of the functional form, whenever possible, we use our variables in logarithmic form. This

⁸ Cheng and Kwan (2000) apply a similar model to FDI stock. Dynamic model in the context of FDI inflow has been applied empirically by Carstensen and Toubal (2005).

garners two advantages: first, it normalizes the variable's distribution; and second, the coefficient estimated has the direct economic interpretation representing elasticity.

4.2 Estimator

The empirical estimation of the model presented above is problematic as the lagged dependent variable as well as some regressors are endogenous. While the lagged dependent variable is endogenous by construction, the relationship between inflation and GDP per capita is likely to suffer from reverse causality. High GDP and low inflation may attract FDI; however, FDI inflows raise GDP and possibly inflation. In addition, there are likely to be some omitted variables correlated to our dependent and independent variables.

We therefore estimate the model with System GMM, a method designed for fixed effects-idiosyncratic errors that are heteroskedastic and correlated within but not across individuals. System GMM estimates a system of level and difference equations, where the level equation is instrumented with the contemporaneous first difference and the difference equation is instrumented with levels dated $t-1$ or earlier. System GMM allows us to attenuate the bias and inconsistencies stemming from the two issues mentioned above. First, by first differencing the equation, the unobserved individual level fixed effect is eliminated and this removes a source of omitted variables. Second, and most importantly, GMM is a way of dealing with endogenous variables by creating instruments with existing data. We can distinguish between the lagged dependent variable and other endogenous covariates. The OLS and fixed effect estimates of dynamic model present well-known difficulties. With OLS, the lagged dependent variable is endogenous to the fixed effect of the error term. The lagged dependent variable is positively correlated with the error term and OLS overestimate the coefficients. In the fixed effect estimator the lagged dependent variable is negatively correlated with the error term and the fixed effect estimator underestimates the coefficients (Roodman, 2006). Good estimates of the true parameter should therefore lie in the range between the OLS and fixed effect estimate, or at least near it (Roodman, 2006). There are alternative transformations that can eliminate

the panel bias such as differentiation or orthogonal deviations, but these methods have drawbacks.⁹

When implementing GMM estimates particular attention should be given to two diagnostic tests. First, the Arellano-Bond test for autocorrelation in the differenced residuals: while AR(1) is expected, higher order autocorrelation indicates that lags of any variable used as instruments are endogenous. Second, the Sargan and Hansen tests for over-identifying restrictions report whether the instruments are exogenous.

Before turning to the discussion of our results, we conclude this section with some details on our estimation strategy. In our estimates reported below we used two sets of instruments: ‘GMM’ style instruments, which can be predetermined variables (i.e. correlated with the past but not the present values of the error term), and ‘iv’ style instruments, which should be strictly exogenous variables. In all specifications we do not make use of external instruments.

We estimate two models. In the first model, all variables except the lag dependent variable are assumed to be exogenous and used as IV instruments. In the second model, we relax the assumption of exogeneity, and we allow all the regressors, except the year dummies, to be endogenous. In this instance, all endogenous variables are included as GMM instruments. This is clearly a realistic assumption, as all independent variables (GDP, inflation, trade, resource export and institutions) suffer from reverse causality. It is well-known that foreign investors are not passive agents but they can affect the economic and institutional characteristics of the host countries. However, introducing many variables as GMM instruments has the drawback of creating a large number of instruments, which can cause concerns (Roodman, 2009). In order to limit the number of instruments, the estimates have been performed using the “collapse” option available in STATA 10. With this option, one instrument is created for each variable and lag distance, instead of for each time period, variable and lag distance. Although the number of instruments may remain high even using the collapse option, Hayakawa (2007) showed that, in small samples, System GMM remains less biased than Difference GMM. For consistency, we limit the number of instruments also when we assume the variables

⁹ Difference GMM, for example, takes the first difference and by doing so eliminates the fixed effect but leaves a problem with the potential endogeneity of all predetermined variables. A drawback of this transformation is that in unbalanced panels it amplifies gaps. Also, it tends to make successive errors correlated even if they are uncorrelated. Orthogonal deviations instead of subtracting previous observations form the contemporaneous, subtract all the future available observations of a variable. However, in unbalanced panel with heteroscedasticity both transformations tend to give similar results, holding the set of instrument fixed.

to be exogenous. Finally, we control for heteroscedasticity between individuals using the robust option in Stata 10.

5. Results

We now turn to our empirical findings. In our analysis we aim to shed some light on how natural resources endowment – here, proxies by natural resources export intensity – affect the FDI-institutions relationship. We distinguish between export intensity in oil, metal and agricultural raw material. In tables 1, we analyse the effect of oil and metal export, in order to capture the effect of natural resources in extractive industry. In column 1 and 2 we assume that all variables except the lag dependent variables are exogenous, while in the specifications reported in column 3 and 4 we allow all independent variables, except the year dummies, to be endogenous. In all columns the lagged values of FDI and trade openness are positive and highly significant. The results confirm previous findings that FDI and trade are very much complements rather than substitutes, and also that FDI is a dynamic process, characterized by persistence. GDP and GDP per capita are positive, while inflation, as expected, is consistently negative, although these variables are not significant. The variable “nat”, which stands for oil and metal export intensity, has a positive and at times significant effect on FDI flows. The estimates reported show that property rights, as measured by the law and order indicator, political stability (ICRG), and democracy (polity2) are positively correlated with FDI. Law and Order and democracy have a robust and significant effect, while political stability is significant in only one instance.

In columns two and four we explore whether the relationship between FDI and institutions is affected by the natural resources endowment by introducing an interactive term. Columns two and four indicate that the interaction between natural resource and “law and order” is negative and significant. The sign of the coefficient indicates that for increasing level of oil and metal exports the impact of the legal system on FDI is decreasing, thus confirming our hypothesis that an increasing level of natural resources decreases the positive effect of property rights on FDI.

We are now interested in exploring in greater depth how different levels of export intensity affect the interrelationship between the institutions analysed and natural resources. Table A reports the effect of law and order and political stability on FDI

inflow for meaningful levels of oil and metal export intensity.¹⁰ Our calculations show that an increasing level of natural resource export has a substantial effect on the impact of both political stability and property rights on FDI. For instance, an increase in oil and metal export intensity from 4%, the level of Thailand, to 36%, the level of South Africa, decreases the impact of “law and order” from 0.84 to 0.16. In the case of political stability the effect is less sizeable, as an increase in export intensity from 1.6% to 11% decreases the effect of political stability on FDI from 0.07 to 0.04. Our calculations also show that at certain levels of natural resource export the relationship between institutions and natural resource is reversed.

Table A

$$\delta Lfdi / \delta institutions = \hat{\alpha} + \hat{\beta}_{oil \& \ metal} export$$

evaluated at various levels of oil and metal export

Value of Oil and Metal Export Intensity	Quartile	Corresponding Country	Law & Order
1.651257	10 th	Paraguay	0.906357065
4.441002	25 th	Thailand	0.847055176
11.29105	50 th	Honduras	0.701443021
36.67997	75 th	South Africa	0.16174821
74.38813	90 th	Russia	-0.639817918

In tables 2 and 3 we analyse whether the impact of political stability and property rights on FDI is conditional on the type of resources exported. Recent discussion has shown that the impact of resources on economic development depends on the type of resources produced (Boschini et al., 2007). Namely, resources that are highly appropriable (due, for example, to ease of transportation) may have a negative impact on economic growth, while this may not be the case for other types of resources. As such, minerals and oil tend to be more problematic than agricultural products, as the former are more lootable.¹¹ In what follows, we therefore test whether the type of natural resources determines the effect of the institutions analysed on FDI.

In tables 2, we analyse the effect of metal and oil export intensity independently. We estimate the same regressions reported in table one, but we include two measures of export intensity, one for oil and one for metal. In columns two and four of table 2 we

¹⁰ For law and order, we used the coefficient reported in column two of table one.

¹¹ Several theories can explain the negative impact of extractive industry on development. The main explanations are centred on the negative impact of oils and metal on the following: conflict (Collier and Hoeffler, 2004), state institutions (Fearon & Laitin, 2003; Snyder & Bhavnani, 2005) and trade shocks (Humphreys, 2005).

interact these two variables with “law and order” in order to capture the effect of institutions conditional on natural resources endowment. The interaction between the property rights indicator and fuel export is negative and significant, pointing that an increasing intensity in fuel export decreases the positive effect of property rights on FDI. However the interaction between “law and order” and metal export is not significant. The variable is jointly significant with the property rights indicator, although does not have the expected sign. Looking at column 3 and 4, where we allow the regressors to be endogenous, the results seem to broadly confirm the findings summarized in the first two column of table 2. “Law and order” is positive and highly significant across the three specifications, while we do not find political stability to be significant. In column 4, the interaction between fuel export intensity and “law and order” is negative and significant, while the interaction with metal export intensity is negative but only jointly significant with “law and order”.

In tables 3 finally, we explore the role of agricultural export intensity. As shown in columns two to four we find that agricultural exports do not moderate the impact of property rights on FDI.

Overall, our results highlight that high resources endowments undermine the positive effect of institutions on FDI. When we measure natural resource as the share of metal and oil export to total export, we find that the effect of property rights on FDI is affected by natural resources. This is likely to be due to the ability of MNC to negotiate preferential treatments and to collude with governments. Moreover, by analysing the interaction terms between different types of natural resources export intensity and institutions, we are also able to explore whether the effect of institutions on FDI is conditional on the type of resources produced. We find strong evidence that in oil-rich countries the effects of efficient property rights are undermined. Our results also show that the effects of metal export intensity, on its own, is less robust than the impact of oil export intensity. This seems to be in contrast to the discussion that stresses the similarities between oil and metal industry. Recent empirical evidence has shown that both oil and metal have a negative impact on economic outcomes (Sala-i-Martin and Subramanian, 2003; Asiedu and Lien, 2011). However, scholars have pointed out that the measure “ores and metal export” may be a poor proxy for the importance of extractive industry. The measure includes items such as crude fertilizer and scrap metal that are not part of extractive industry (de Soysa and Neumayer, 2007), and it fails to include diamonds and other precious gem which can notably have a deleterious effect on

economic outcome (Fearon, 2005). Interestingly, we find that agricultural export does not significantly affect the institutions-FDI relationship, confirming recent discussion that agricultural sector, compared to extractive industries, have a less detrimental effect on economic development (Isham et al., 2005).

5.1 Robustness

In order to give some credibility to our results, we carry out a number of robustness checks.

First, we use alternative measures of natural resources. Again, we estimate two sets of models. In the first one, only the lagged dependent variable is taken as endogenous; in the second set of specifications all regressors, except the year dummies, are treated as endogenous. Starting with table 4, we analyse the impact of oil production relative to GDP on the interplay between FDI and institutions. In column two and four the interaction of oil production with legal system is negative and highly significant. In table 5 we measure natural resources with oil rent relative to GDP. The results seem to confirm the findings illustrated in table 4. Oil rents are positive and significantly related to FDI. The interaction between oil rent and property rights are again significant and negative. We do not find any evidence that mineral rent as a share of GDP or its interaction with “law and order” is significant determinants of FDI¹². In sum, when using alternative measures of natural resources, our robustness checks seem to confirm the findings summarized in the previous section. First, the extraction of oil has a significant impact on the interplay between property rights and FDI. Second, we do not find evidence that mineral extraction moderate the FDI-institutions relationship.

As a second check we divide the sample between low and middle-income countries. The results are reported in table 6. In column 1 and 2 we measure natural resource endowment with the share of ores, metal and fuel export to total export, while in column 3 and 4 with oil production as share of GDP. Our results show that the interactive term between the chosen measure of natural resources and ‘law and order’ is significant in all except column one.

As a third we use an alternative measure of FDI. In Table 7 we measure FDI in per capita term and we replicate the results summarized in table one, where we explored the impact of oil and metal export intensity on the interplay between FDI and institutions,

¹² Estimate on the role of mineral rent are not reported but available on request.

and the results reported in table 4, where we measure resources endowment with oil production as a share of GDP. In both cases we can see that the interactive terms between the property rights and natural resource remain significant.

As fourth and final check, in table 8 and 9, with split the sample in resource rich and non-resource rich countries, and investigate whether this affect the significance of the 'law and order' indicator. We do this in two ways: in table 9 we use the UNCATD (2011) definition and we split countries according to their level of resource export intensity, so resource rich economies are those which have a resource export as share of total export are greater than 50%; second, in table 10, we follow Poelhekke and van der Ploeg (2010) and create a dummy variable equal 1 when oil rent are positive. The latter measure allows capturing the effect of a resource discovery by assuming that when rent are zero resources are not extractable (for instance if there is a civil war). In both tables the 'law and order' indicator is positive and significant only in non-resource rich countries, while is positive but not significant in resource rich economies. Our last robustness check thus further confirm our hypothesis that resource endowment affect the impact of the quality of institutions, in this instance the legal system, on the inflow of foreign investments.

6. Conclusions

The theoretical discussion and the econometric analysis carried out in this study aim to untangle the role of institutions in attracting foreign investment. In particular, we wanted to analyse whether the presence of natural resources plays a moderating role in the institutions-FDI relationship. The existing theoretical and empirical literature has emphasized that good institutions are important for both foreign and domestic investors. Accordingly, we should expect property rights to be positively correlated with FDI. However, this may not be the case for MNC in natural resources because: (1) the latter can be isolated from most of the other sectors in the economy and institutional risk may be decreased by colluding with a local government, (2) high transaction costs can be compensated by higher returns results from participating in the resource rents. Our econometrics results show clearly that institutions do not act in isolation and that their effect on FDI is influenced by the natural resources, confirming recent findings of Asiedu and Lien (2011). However, our paper adds to Asiedu and Lien (2011) in several ways. First, we explore the interplay between property rights and FDI, while Asiedu and

Lien (2011) focus merely on democracy. As we argued above, property rights are closely related to democracy, they represent separate dimensions of a country's institutional environment and they therefore merit a separate analysis. Our results show that natural resources significantly affect the impact of property rights on FDI. Second, we contribute to the discussion on the impact of different types of natural resources on economic development. Our study finds that only oil, and not minerals or agricultural products, has a robust and significant moderating impact on the FDI-institutions relationship. The evidence on the effect of different types of natural resources on economic outcomes has stressed that lootable resources may be more harmful than diffuse resources, such as agricultural products. The economics literature has traditionally considered the effect of oil to be similar to that of minerals; however, political scientists have argued that oil-rich countries are different than other resource-rich countries. In particular, recent studies have found that the institutional environment of oil-producing economies does not reflect the country's level of development, as measured by per capita income; they are weaker than expected and this in turn can have a negative impact on political instability and conflict (Fearon and Laitin, 2003; Fearon, 2005). Our study therefore shows how the distorted institutional setting of oil-rich countries may have a negative effect on development. Namely, we find that in oil-based economies investors are less sensitive to weak property rights protections. If this is the case, the influence of FDI on the host country institutional environment may be of concern. We believe that what explains the different effects of oil as contrasted with that of metal ores, is that the former generates particularly strong economic rents given the current trend in energy prices. Thus, our findings give indirect support to a recent literature arguing that it is the amount of rent generated rather than the presence of natural resources that is a key factor in how natural resources affect development (Fearon, 2005).

Third, we make use of alternative measures of natural resources and we not limit our analysis to resource export intensity. Unlike Asiedu and Lien (2011), which only use resource export intensity as a measure of resource endowment, we also replicate our results measuring resources with production and rent relative to GDP. Our robustness checks ensure that the effect of oil endowment is robust to the use of alternative measures.

Fourth, we estimate two specification one assumes all variables except the lag dependent variable to be exogenous, in the other one we relax the exogeneity assumption and allow all independent variables to be included as GMM instruments, unlike Asiedu and Lien

(2011), which only allow democracy and its interaction with resources export to be endogenous. Clearly, given that controls such as trade and GDP are likely to be endogenous, our choice of instruments seem more appropriate.

In sum, our study contributes to the existing literature on the determinants of FDI, as we find novel evidence that the importance of institutions, in particular property rights, is mitigated by the presence of natural resources. Moreover, we have more trust in our results as these are based on stronger methodology and robustness checks as just argued. In term of future research the question addressed in this study may be better explored with the use of sector-level FDI data, which is currently not available for the period and the countries analysed.

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Table 1 Data Definition and Sources

Variable name	Variable Label	Source
Lfdigdp	Log FDI inflow as % of GDP	UNCTAD
LFDIpercap	Log FDI inflow per capita	UNCTAD
LGDPcons	Log GDP in constant us \$	World Bank (WB)- World Development indicators (WDI)
LGDPppcons	Log GDP per capita in constant us \$	WB- WDI
inflation	Inflation, consumer price annual %	WB- WDI
Ltrade	Log trade (import and export as percentage of GDP)	WB- WDI
nat	Fuel and Metal Export as percentage of total export	WB- WDI
fuelex	Fuel Export as percentage of total export	WB- WDI
Oresex	Ores and metal export as percentage of total export	
agriex	Agricultural Export as percentage of total export	WB- WDI
Polstab	Political stability (principal component of internal/external conflict, government stability and ethnic tension)	International Country Risk Guide (ICRG)
Lawl	Law and Order	ICRG
Polity2	Democracy indicator	PolityIV
Oilprogdgp	Oil production/GDP	World Bank
Oilrentgdp	Oil rent/GDP	World Bank
Minrentgdp	Mineral rent/GDP	World Bank

Table 2- Descriptive Statistics¹³

	count	mean	sd	min	max
Lfdigdp	895	.8389867	1.080217	-5.34439	3.809899
Ltrade	895	4.250664	.4862133	2.703562	5.395475
Lgdpccons	895	23.87695	1.702105	19.66008	28.52983
LgdppcPPP	895	8.353527	1.028289	6.040272	9.999921
inflation	895	10.58481	39.07732	-8.52517	1058.374
nat	895	24.21902	27.74202	.0261753	99.66927
polstab2	895	-.0283588	1.195102	-5.821879	2.555989
lawl	895	.5993094	.1842385	.1666667	1
polity2	895	4.13743	5.889559	-10	10
fuelex	895	16.57244	26.37575	0	99.6565
agriex	895	6.171548	11.94902	.0026887	93.82378
oilprogdgp	794	.009693	.019583	0	.1244949
oilrentgdp	794	.0480174	.0989797	0	.5670667
oresex	895	7.646584	14.07359	.0008543	84.77268
N	895				

¹³ Based on observations included in the regression in table 1 in column 1

Table 3 - Correlation

	Lfdigdp	Ltrade	Lgdpcns	Lgdppc-p	inflat-n	nat	polstab2
Lfdigdp	1.0000						
Ltrade	0.3445	1.0000					
Lgdpcns	-0.2087	-0.3742	1.0000				
Lgdppc-p	0.0503	0.1991	0.4479	1.0000			
inflation	-0.0317	0.0189	-0.0275	-0.0087	1.0000		
nat	-0.0644	-0.0762	-0.0726	-0.0566	-0.0087	1.0000	
polstab2	0.1690	0.3369	-0.0269	0.3075	0.0136	-0.1921	1.0000
law1	0.1069	0.2162	0.0854	0.2907	0.0074	-0.1052	0.4360
polity2	0.1644	0.0596	0.0378	0.3205	0.0177	-0.3788	0.1275
fuelex	-0.1618	-0.0930	0.1045	0.0923	-0.0209	0.8735	-0.2220
agriex	-0.0654	-0.0713	-0.4266	-0.3513	0.0120	-0.0734	-0.1151
oilprodgdp	-0.0964	-0.0253	0.0693	0.0857	-0.0104	0.7375	-0.1339
oilrentgdp	-0.1091	-0.0014	0.1093	0.1321	-0.0249	0.7685	-0.1133
oresex	0.1846	0.0270	-0.3499	-0.2940	0.0231	0.3225	0.0435

	law1	polity2	fuelex	agriex	oilpro-p	oilren-p	oresex
law1	1.0000						
polity2	-0.1235	1.0000					
fuelex	-0.0898	-0.4275	1.0000				
agriex	-0.0735	-0.0503	-0.1831	1.0000			
oilprodgdp	-0.0041	-0.4158	0.8431	-0.1508	1.0000		
oilrentgdp	0.0151	-0.4728	0.8778	-0.1576	0.8946	1.0000	
oresex	-0.0380	0.0657	-0.1790	0.2077	-0.1489	-0.1537	1.0000

Figure 1

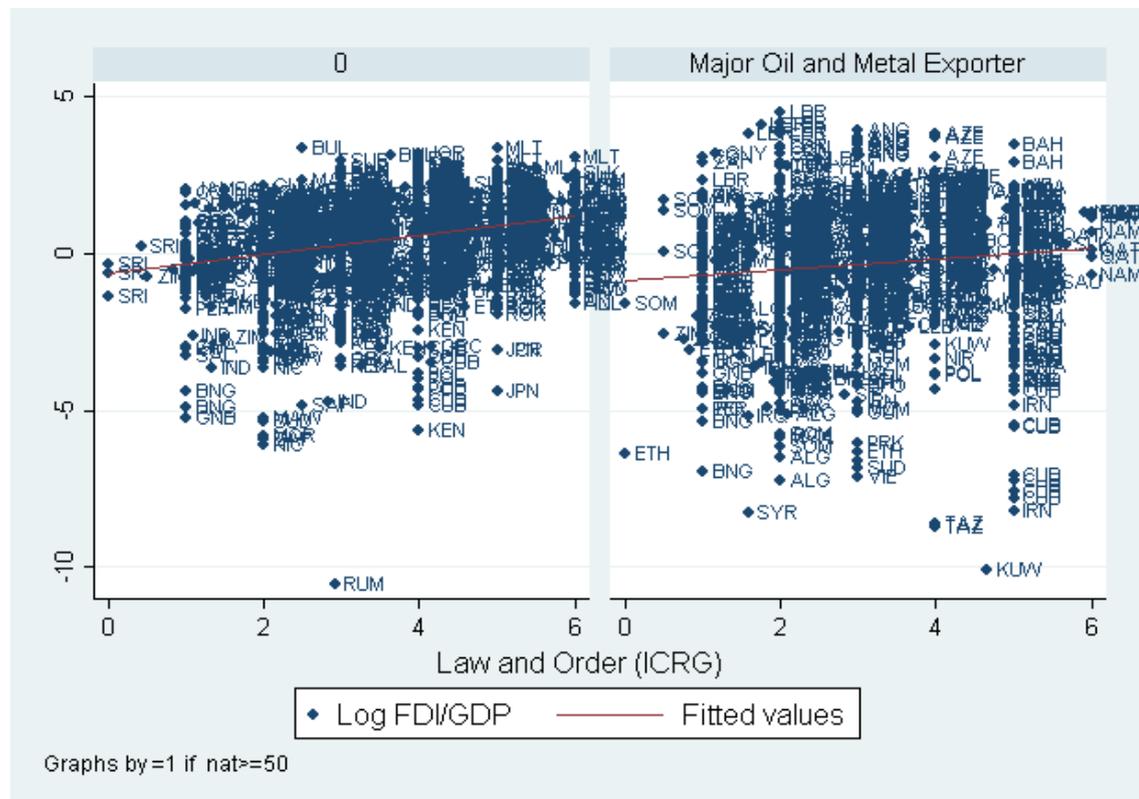


Figure 2

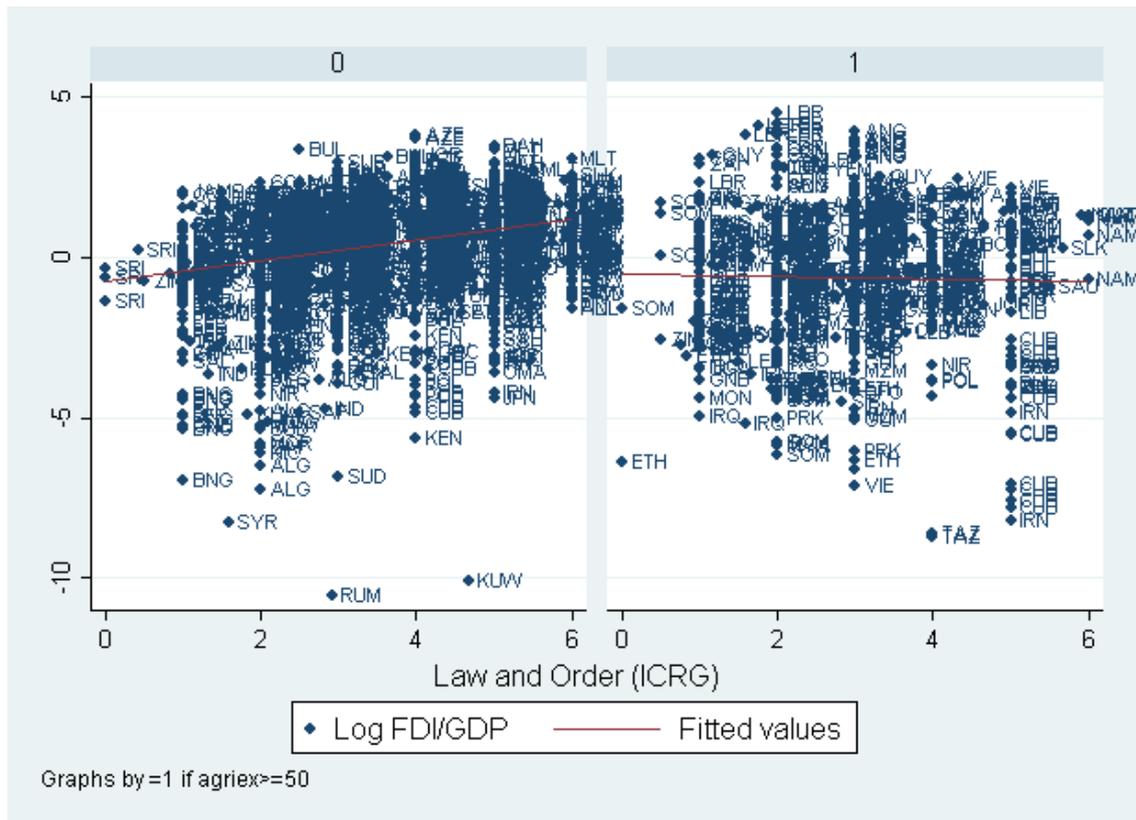


Table 1

VARIABLES	GMM			
	(1) Lfdigdp	(2) Lfdigdp	(3) Lfdigdp	(4) Lfdigdp
L.Lfdigdp	0.335*** (0.0734)	0.347*** (0.0743)	0.388*** (0.0879)	0.425*** (0.0936)
Ltrade	0.378*** (0.128)	0.347*** (0.125)	0.717 (0.897)	0.673 (1.119)
Lgdpcns	-0.0352 (0.0361)	-0.0417 (0.0323)	0.313* (0.166)	0.297* (0.179)
LgdppcPPP	-0.00913 (0.0669)	0.0107 (0.0594)	-0.575** (0.280)	-0.589* (0.309)
Inflation, consumer prices (annual %)	1.44e-05 (0.000583)	7.94e-05 (0.000548)	8.03e-05 (0.000713)	5.66e-05 (0.000783)
Nat	0.000724 (0.00213)	0.0126** (0.00544)	-0.0129 (0.00877)	0.0547** (0.0240)
Political Stability	0.00869 (0.0331)	0.0275 (0.0331)	0.00277 (0.0904)	-0.119 (0.119)
law	0.532* (0.305)	0.934*** (0.324)	1.796* (0.940)	4.521*** (1.540)
polity2	0.0203** (0.00965)	0.0152* (0.00886)	0.0518 (0.0465)	0.0505 (0.0491)
Nat*law		-0.0210** (0.00969)		-0.122*** (0.0451)
Constant	-0.162 (0.970)	-0.247 (0.921)	-5.844 (4.452)	-6.692 (5.851)
Observations	895	895	895	895
Number of ID	92	92	92	92
AR(1)- p value	5.14e-08	9.02e-08	5.10e-06	1.34e-05
AR(2)-p value	0.325	0.336	0.209	0.401
Hansen- p value	0.263	0.308	0.666	0.624
Instrument Number	43	44	39	42

Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1; Year dummies included but not reported. Dependent variable is the log of FDI per capita. Nat is the share of fuel and metal export to total export. Law is the law and order indicator

from ICRG, normalised between 0 and 1. In column 1 and 2 all regressors except the lag dependent variable are exogenous. In column 3 and 4 all regressors are endogenous except the year controls. Collapse option is used in all specification.

TABLE 2

VARIABLES	GMM			
	(1) Lfdigdp	(2) Lfdigdp	(3) Lfdigdp	(4) Lfdigdp
L.Lfdigdp	0.342*** (0.0735)	0.352*** (0.0743)	0.398*** (0.0914)	0.409*** (0.0967)
Ltrade	0.378*** (0.128)	0.330*** (0.119)	0.753 (0.848)	0.742 (0.863)
Lgdpcns	-0.0257 (0.0355)	-0.0333 (0.0313)	0.346* (0.180)	0.305* (0.181)
LgdppcPPP	0.0261 (0.0676)	0.0549 (0.0579)	-0.663** (0.285)	-0.588** (0.289)
Inflation, consumer prices (annual %)	-4.09e-07 (0.000608)	-4.30e-05 (0.000610)	2.87e-05 (0.000726)	-2.55e-05 (0.000780)
Ores and metals exports (% of merchandise exports)	0.00597** (0.00263)	-0.00971 (0.0108)	0.00450 (0.0170)	0.0159 (0.0633)
Fuel exports (% of merchandise exports)	-0.00115 (0.00266)	0.0130** (0.00539)	-0.0156 (0.0103)	0.0526** (0.0230)
Political stability	-0.00510 (0.0324)	0.0199 (0.0313)	0.0284 (0.101)	-0.0817 (0.115)
law	0.481 (0.302)	0.649** (0.318)	1.970** (0.913)	4.073** (1.582)
polity2	0.0140 (0.00994)	0.00695 (0.00858)	0.0717 (0.0490)	0.0542 (0.0481)
oresex*law		0.0276 (0.0181)		-0.0165 (0.103)
fuel*law		-0.0251*** (0.00904)		-0.118*** (0.0454)
Constant	-0.668 (0.991)	-0.586 (0.880)	-6.376 (4.659)	-7.136 (5.289)
Observations	895	895	895	895
Number of ID	92	92	92	92
AR(1)- p value	5.12e-08	1.02e-07	8.35e-06	2.05e-05
AR(2)-p value	0.335	0.318	0.219	0.383
Hansen- p value	0.291	0.339	0.695	0.587
Instrument Number	44	46	42	48

Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1; Year dummies included but not reported. Dependent variable is the log of FDI per capita. Nat is the share of fuel and metal export to total export. Law is the law and order indicator from ICRG, normalised between 0 and 1. In column 1 and 2 all regressors except the lag dependent variable are exogenous. In column 3 and 4 all regressors are endogenous except the year controls. Collapse option is used in all specification.

TABLE 3

VARIABLES	(1)	(2)	(3)	(4)
	Lfdigdp	Lfdigdp	Lfdigdp	Lfdigdp
L.Lfdigdp	0.381*** (0.0947)	0.378*** (0.102)	0.409*** (0.0814)	0.411*** (0.0806)
Ltrade	0.319 (0.294)	0.290 (0.313)	1.673** (0.732)	1.271* (0.723)
Lgdpcns	0.0507 (0.158)	0.0543 (0.165)	0.256 (0.159)	0.327** (0.155)
LgdppcPPP	-0.593 (0.468)	-0.656 (0.503)	-0.672** (0.271)	-0.545** (0.270)
Inflation, consumer prices (annual %)	-0.000583 (0.00143)	-0.000696 (0.00159)	-0.000234 (0.000853)	-0.000130 (0.000793)
Agricultural raw materials exports (% of merchandise exports) (-0.0129 (0.00785)	0.0412 (0.0524)	0.0109 (0.0141)	-0.158* (0.0877)
Political stability	-0.105 (0.126)	-0.116 (0.136)	0.0215* (0.0880)	-0.0635 (0.0870)
law	2.632* (1.564)	3.356* (1.980)	1.540* (0.801)	-0.104 (1.013)
polity2	0.232	0.254*	0.0709	0.0567

	(0.142)	(0.153)	(0.0653)	(0.0624)
agriex*law		-0.0978		0.282*
		(0.0945)		(0.151)
Constant	0.830	0.899	-8.145*	-8.143*
	(2.888)	(3.107)	(4.190)	(4.167)
Observations	908	908	908	908
Number of ID	93	93	93	93
AR(1)- pvalue	1.50e-06	3.40e-06	2.06e-06	3.10e-06
AR(2)-p value	0.348	0.352	0.313	0.364
Hansen- p value	0.537	0.612	0.693	0.668
Instrument Number	42	43	36	39

Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1; Year dummies included but not reported. Dependent variable is the log of FDI per capita. Nat is the share of fuel and metal export to total export. Law is the law and order indicator from ICRG, normalised between 0 and 1. In column 1 and 2 all regressors expect the lag dependent variable are exogenous. In column 3 and 4 all regressors are endogenous except the year controls. Collapse option is used in all specification.

TABLE 4

VARIABLES	GMM			
	(1)	(2)	(3)	(4)
	Lfdigdp	Lfdigdp	Lfdigdp	Lfdigdp
L.Lfdigdp	0.419***	0.421***	0.421***	0.447***
	(0.0804)	(0.0796)	(0.0913)	(0.0851)
Ltrade	0.318**	0.252**	2.181**	0.300
	(0.132)	(0.118)	(0.973)	(0.784)
Lgdpcons	-0.0353	-0.0445	0.203	0.251
	(0.0350)	(0.0313)	(0.240)	(0.188)
LgdppcPPP	-0.0909	-0.0556	-0.675**	-0.386*
	(0.0621)	(0.0579)	(0.289)	(0.219)
Inflation, consumer prices (annual %)	-0.000188*	-	-	-
	(0.000113)	0.000354**	0.000378***	0.000591***
Oil production/gdp	5.466***	19.79***	1.415	37.82***
	(1.957)	(5.137)	(4.385)	(13.52)
Political stability	0.0338	0.0437	0.0321	0.0732
	(0.0318)	(0.0305)	(0.103)	(0.100)
law	0.406	0.670***	1.289	2.388**
	(0.250)	(0.242)	(0.938)	(0.938)
polity2	0.0280***	0.0207**	0.0486*	0.0228
	(0.00911)	(0.00826)	(0.0268)	(0.0228)
Oil production*law		-28.17***		-59.65**
		(9.763)		(25.35)
Constant	0.731	0.833	-8.751*	-4.677
	(0.904)	(0.817)	(4.631)	(4.539)
Observations	881	881	881	881
Number of ID	88	88	88	88
AR(1)- pvalue	2.06e-07	2.13e-07	1.86e-05	3.59e-06
AR(2)-p value	0.454	0.459	0.454	0.423
Hansen- p value	0.159	0.165	0.453	0.458
Instrument Number	43	44	39	42

Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1; Year dummies included but not reported. Dependent variable is the log of FDI per capita. Law is the law and order indicator from ICRG, normalised between 0 and 1. In column 1 and 2 all regressors expect the lag dependent variable are exogenous. In column 3 and 4 all regressors are endogenous except the year controls. Collapse option is used in all specification.

TABLE 5

VARIABLES	GMM			
	(1)	(2)	(3)	(4)
	Lfdigdp	Lfdigdp	Lfdigdp	Lfdigdp
L.Lfdigdp	0.416***	0.435***	0.437***	0.434***
	(0.0805)	(0.0815)	(0.0882)	(0.0846)
Ltrade	0.365**	0.301**	2.191***	1.869***
	(0.142)	(0.127)	(0.635)	(0.654)
Lgdpcons	-0.0341	-0.0379	0.155	0.309

	(0.0355)	(0.0308)	(0.234)	(0.215)
LgdppcPPP	-0.0865	-0.0487	-0.607**	-0.602**
	(0.0652)	(0.0589)	(0.249)	(0.253)
Inflation, consumer prices (annual %)	-4.87e-05	-0.000119	-	-
	(9.31e-05)	(0.000103)	(0.000411***)	(0.000567***)
oilrent/gdp	0.843*	3.169***	0.474	6.408
	(0.509)	(0.887)	(1.080)	(4.608)
Politicak stability	0.0175	0.0238	-0.0355	0.0189
	(0.0329)	(0.0316)	(0.105)	(0.0904)
law	0.380	0.585**	1.316	1.466
	(0.258)	(0.252)	(0.912)	(0.975)
polity2	0.0260**	0.0176**	0.0505	0.0296
	(0.0103)	(0.00892)	(0.0375)	(0.0342)
oilrent*law		-4.582***		-11.20
		(1.377)		(8.709)
Constant	0.471	0.431	-8.286*	-10.59**
	(0.947)	(0.848)	(4.439)	(4.398)
Observations	881	881	881	881
Number of ID	88	88	88	88
AR(1)- pvalue	1.95e-07	2.99e-07	6.78e-06	5.90e-06
AR(2)-p value	0.504	0.489	0.453	0.489
Hansen- p value	0.201	0.167	0.479	0.552
Instrument Number	43	44	39	42

Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1; Year dummies included but not reported. Dependent variable is the log of FDI per capita. Law is the law and order indicator from ICRG, normalised between 0 and 1. In column 1 and 2 all regressors except the lag dependent variable are exogenous. In column 3 and 4 all regressors are endogenous except the year controls. Collapse option is used in all specification.

Table 6

VARIABLES	(1)	(2)	(3)	(4)
	Low Income Countries	Middle Income Countries	Low Income Countries	Middle Income Countries
L.lfdigdp	0.297**	0.361***	0.369***	0.392***
	(0.116)	(0.0921)	(0.0912)	(0.100)
Ltrade	0.710**	0.267**	0.0728	0.300**
	(0.355)	(0.107)	(0.444)	(0.120)
LgdpcONS	0.118	-0.0752**	-0.0652	-0.0478
	(0.0778)	(0.0326)	(0.128)	(0.0353)
LgdppcPPP	-0.688**	0.00355	-0.645**	-0.0732
	(0.314)	(0.0755)	(0.289)	(0.0811)
Inflation, consumer prices (annual %)	-0.00647	0.000233	-0.00159	-0.000351**
	(0.00806)	(0.000461)	(0.00113)	(0.000162)
nat	0.00309	0.00797		
	(0.00642)	(0.00573)		
Political stability	-0.104	0.0284	0.141***	0.0321
	(0.0851)	(0.0376)	(0.0498)	(0.0365)
law	2.044**	0.544*	0.985	0.493*
	(0.928)	(0.311)	(0.785)	(0.264)
polity2	0.00189	0.0110	-0.0193	0.0233***
	(0.0166)	(0.00930)	(0.0270)	(0.00848)
nat*law	0.0123	-0.0173*		
	(0.0101)	(0.00960)		
Oil production			33.58***	17.97***
			(10.97)	(5.336)
Oil production*law			-38.65*	-25.33**
			(20.43)	(10.17)
Constant	-1.390	1.296	6.172	0.996
	(2.463)	(0.826)	(3.772)	(0.849)
Observations	195	700	154	727
Number of ID	21	77	16	78
AR(1)- pvalue	0.00965	2.99e-06	0.00421	5.74e-06
AR(2)-p value	0.397	0.131	0.133	0.159
Hansen- p value	1	0.256	1	0.219
Instrument Number	44	44	45	45

Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1; Dependent variable is the log of FDI per capita. Nat is the share of fuel and metal export to total export. Law is the law and order indicator from ICRG, normalised between 0 and 1. Collapse option is used in all specification.

TABLE 7

VARIABLES	GMM			
	(1) LFDIpp	(2) LFDIpp	(3) LFDIpp	(4) LFDIpp
L.LFDIpp	0.234*** (0.0870)	0.249*** (0.0849)	0.292*** (0.107)	0.312*** (0.102)
Ltrade	0.363** (0.157)	0.323** (0.148)	0.319* (0.182)	0.256 (0.156)
Lgdpcns	-0.0629 (0.0460)	-0.0715* (0.0413)	-0.0502 (0.0447)	-0.0575 (0.0385)
LgdppcPPP	0.879*** (0.138)	0.889*** (0.132)	0.705*** (0.146)	0.748*** (0.148)
Inflation, consumer prices (annual %)	-0.00126	-0.00115	-	-
nat	(0.00104) -0.000641 (0.00293)	(0.000982) 0.0159** (0.00736)	(8.13e-05)	0.000227*** (8.17e-05)
Political stability	0.0198 (0.0427)	0.0455 (0.0430)	0.0585 (0.0443)	0.0697 (0.0431)
law1	0.615 (0.380)	1.173*** (0.403)	0.432 (0.327)	0.478 (0.295)
polity2	0.0243* (0.0126)	0.0173 (0.0121)	0.0342*** (0.0127)	0.0188 (0.0127)
nat*law1		-0.0291** (0.0133)		
Oil production			5.118** (2.452)	10.39*** (2.346)
Oil production*law				-3.226*** (1.202)
Constant	-4.304*** (1.347)	-4.345*** (1.263)	-3.152** (1.499)	-3.030** (1.338)
Observations	895	895	881	881
Number of ID	92	92	88	88
AR(1)- pvalue	4.83e-07	5.55e-07	3.58e-05	1.53e-05
AR(2)-p value	0.456	0.479	0.664	0.620
Hansen- p value	0.599	0.664	0.0960	0.116
Instrument Number	43	44	23	24

Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1; Dependent variable is the log of FDI per capita. Nat is the share of fuel and metal export to total export. Law is the law and order indicator from ICRG, normalised between 0 and 1. Collapse option is used in all specification.

Table 8

VARIABLES	GMM					
	(1) Resource Rich Countries	(2) Non Resource Rich Countries	(3) Resource Rich Countries	(4) Non Resource Rich Countries	(5) Resource Rich Countries	(6) Non Resource Rich Countries
L.Lfdigdp	0.601*** (0.0856)	0.209*** (0.0808)	0.506*** (0.101)	0.181** (0.0731)	0.483*** (0.104)	0.181** (0.0732)
Ltrade	0.393 (0.280)	0.361*** (0.136)	0.474 (0.294)	0.247** (0.125)	0.650** (0.328)	0.235* (0.126)
Lgdpcns	-0.0831 (0.0596)	-0.0478 (0.0416)	-0.0483 (0.0710)	-0.0883** (0.0409)	-0.0508 (0.0790)	-0.0914** (0.0427)
LgdppcPPP	-0.0775 (0.0735)	0.0730 (0.0767)	-0.174** (0.0795)	0.0473 (0.0895)	-0.214** (0.0911)	0.0603 (0.0890)
Inflation, consumer prices (annual %)	0.0121** (0.00542)	-0.000425 (0.000763)	-	-0.000577 (6.64e-05)	-	-0.000540 (0.000837)
nat	-0.00245 (0.00481)	0.00904** (0.00429)			0.000230** (9.03e-05)	
Political stability	0.180* (0.0940)	0.0394 (0.0386)	0.0682 (0.0676)	0.0824** (0.0393)	0.124* (0.0748)	0.0790** (0.0400)
law	1.179 (0.613)	0.761** (0.336)	0.464 (0.413)	0.731** (0.340)	0.739 (0.478)	0.694** (0.345)
polity2	0.00656	0.0133	0.0277**	0.0157	0.0340**	0.0159

Oil production	(0.0119)	(0.0115)	(0.0119)	(0.0123)	(0.0171)	(0.0129)
			6.036***	21.92***		
			(2.089)	(7.954)		
Oil rent					1.391**	3.987**
					(0.659)	(1.850)
Constant	1.041	-0.526	0.864	1.296	0.215	1.315
	(1.783)	(1.106)	(2.383)	(1.116)	(2.671)	(1.160)
Observations	166	729	244	637	244	637
Number of ID	25	80	38	71	38	71
AR(1)- pvalue	0.0637	2.09e-06	0.0566	3.36e-07	0.0578	3.33e-07
AR(2)-p value	0.574	0.519	0.426	0.551	0.307	0.551
Hansen- p value	1.000	0.657	0.520	0.183	0.637	0.226
Instrument Number	43	43	43	43	43	43

Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1; Dependent variable is the log of FDI inflow to GDP. Nat is the share of fuel and metal export to total export. Law is the law and order indicator from ICRG, normalised between 0 and 1. Collapse option is used in all specification.

Table 10

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
	Resource Rich Countries	Non Resource Rich Countries	Resource Rich Countries	Non Resource Rich Countries	Resource Rich Countries	Non Resource Rich Countries
L.Lfdigdp	0.412***	0.127	0.504***	0.217*	0.503***	0.216*
	(0.0858)	(0.127)	(0.0958)	(0.120)	(0.0961)	(0.120)
Ltrade	0.343**	0.492*	0.244*	0.633**	0.292**	0.633**
	(0.140)	(0.270)	(0.131)	(0.279)	(0.143)	(0.279)
Lgdpcns	-0.0265	-0.186**	-0.0464	-0.107	-0.0484	-0.107
	(0.0376)	(0.0837)	(0.0349)	(0.0893)	(0.0351)	(0.0894)
LgdppcPPP	0.0278	-0.0602	-0.127*	-0.176	-0.117	-0.176
	(0.0797)	(0.117)	(0.0725)	(0.115)	(0.0764)	(0.115)
Inflation, consumer prices (annual %)	8.51e-06	-0.000794	-0.000197*	-0.00312	-9.86e-05	-0.00312
	(0.000609)	(0.00852)	(0.000113)	(0.00811)	(9.41e-05)	(0.00811)
nat	-0.00119	0.00267				
	(0.00220)	(0.00359)				
Political stability	-0.00440	0.106*	0.0287	0.129**	0.0110	0.129**
	(0.0401)	(0.0558)	(0.0379)	(0.0520)	(0.0397)	(0.0520)
law1	0.195	1.379**	0.179	1.502***	0.127	1.502***
	(0.317)	(0.624)	(0.294)	(0.522)	(0.301)	(0.523)
polity2	0.0129	0.0384	0.0243***	0.0482*	0.0208**	0.0482*
	(0.00880)	(0.0339)	(0.00807)	(0.0266)	(0.00897)	(0.0267)
Oil production			3.858**	-88,348		
			(1.929)	(417,952)		
Oil rent					0.440	-32,286
					(0.434)	(132,370)
Constant	-0.352	2.891	1.746*	1.193	1.540*	1.193
	(1.066)	(2.068)	(0.895)	(2.252)	(0.935)	(2.253)
Observations	637	258	589	292	589	292
Number of ID	67	32	62	33	62	33
AR(1)- pvalue	1.68e-06	0.00924	7.13e-06	0.00307	7.03e-06	0.00303
AR(2)-p value	0.0696	0.156	0.0820	0.0630	0.0897	0.0635
Hansen- p value	0.145	0.832	0.164	0.810	0.172	0.810
Instrument Number	43	43	43	42	43	42

Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1; Dependent variable is the log of FDI inflow to GDP. Nat is the share of fuel and metal export to total export. Law is the law and order indicator from ICRG, normalised between 0 and 1. Collapse option is used in all specification.