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Foreign direct investment and natural resources

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Abstract

This paper examines the determinants of net FDI inflows in 89 low and middle-income countries for the period 1980-2014. It focuses on the role of institutional and resource abundance in attracting FDI. Democracy, Economic Freedom and Legal and Property Rights attract FDI, as do growth, secondary school enrollment, and openness. However, only coal and forest rents act to positively affect FDI.

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Foreign Direct Investment and Natural Resources

1. INTRODUCTION

There has been an enormous increase in Foreign Direct Investment (FDI) to developing countries in the past few decades. FDI inflows to low and middle-income countries increased from $7.55 billion in 1980 to $617.67 billion in 2015 in current US dollars, having peaked at $750.1b in 2013. Net inflows of FDI as share of GDP in low and middle-income countries rose from 0.5% in 1980 to 2.3% in 2015, after peaking at 3.7% in 2007 (World Bank). These increases have been driven on the one hand by increased receptivity to FDI on the part of host countries including liberalization and institutional changes and on the other by a search for markets, resources, and efficiency by source country firms. Accompanying this increase in FDI has been a tremendous increase in scholarly efforts to explore the determinants of FDI flows.

In this literature, one unsettled question is the role of resources in attracting or deterring FDI. For instance, does resource abundance attract resource seeking FDI or is there a 'resource curse', with high levels of natural resource endowments deterring FDI (Asiedu, 2013)? Furthermore, current literature has one or a small group of usually non-renewable resources such as mineral fuels (Asiedu, 2013; Asiedu and Lien, 2011), minerals and oil (Jadhav, 2012) or oil, coal, and natural gas (Teixeira et al, 2017). This paper contributes to the literature by examining the role of oil, coal, natural gas, mineral, and forest rents in affecting FDI separately and also in aggregate.

Another currently unsettled question is the role of democracy and economic freedom in attracting foreign direct investment. Theoretically, international investors might be attracted to countries that offer better protection of property rights and of economic freedom. Supportive institutions offer better incentives for investment in human and physical capital. Democracies are expected to have more stable and transparent policies. Alternatively, multi-national enterprises may invest in countries that offer them an opportunity to garner economic rents. Greater economic freedom may deter such investment. Empirically, the results have been ambiguous.

The interaction between institutions and resource abundance is unclear. Asiedu and Lien (2011) examine the role of democracy in encouraging FDI in the presence of significant fuel and mineral exports. They find that such natural resource exports attenuate the positive effects of democracy on FDI. However, Carril-Caccia, Milgram-Baleix and Paniagua (2019) examine the relationship between institutional quality and FDI in oil-rich countries and find that the effect of good governance, as measured by lack of corruption, and existence of democracy and political stability, is not undermined by oil exports. On the contrary, they find that oil rents enhance the role of good governance in the economy.

This paper examines the determinants of FDI to a group of low and middle income developing countries. We address two key questions. (1) How important are democracy and economic freedom relative to resource endowment as determinants of FDI? In particular, is there a race to the bottom in FDI, i.e., does FDI flow to countries with lower levels of democracy and economic freedom? (2) The empirical literature finds that resource abundance has positive, negative, and insignificant impacts on FDI. We examine the role of resources (oil, coal, natural

gas, minerals, and forests) in attracting or deterring FDI, i.e., is resource abundance a blessing or a curse? By examining the role of oil, natural gas, minerals, coal, and forests in aggregate and also individually we ask: All else the same, do some resources attract FDI while others do not?

Many prior studies focus on a limited number of countries (Sub-Saharan Africa, Sub-Saharan Africa and Middle East and North Africa, Africa, oil abundant countries, BRICS, BRICS and MINT) or a limited range of resources (oil, oil and minerals, mineral fuels). Several studies employ large samples of developing countries, and a few employ the sum of oil, natural gas, minerals, coal, and forest rents. This paper contributes to the literature by employing a large sample of low- and middle-income countries over a 34-year period and examining the role of institutional quality and resource rents in affecting FDI not only in aggregate but also individually.

2. RELATED LITERATURE

The economic and policy literature on FDI has focused on Dunning's OLI model that explains foreign investment by multinational corporations in terms of competitive advantages specific to the organization of the enterprise, the locational advantages of countries and regions, and the ability of the firm to internalize these advantages (Dunning 1980, 2000). The motivations of multinational enterprises for engaging in foreign direct investment have been broken up into resource seeking, market seeking, efficiency seeking, and strategic asset seeking (Dunning 2000; Cleeve, Debrah, and Yiheyis, 2015). More recent developments in information technologies and globalization of production and resulting extended value chains have resulted in firms moving certain parts but not necessarily all of the production process to foreign countries, further complicating our analysis of the determinants of FDI (Feenstra 1998, Dunning 2002, Kinuthia and Murshed 2015, *World Development Report* 2020).

A search for markets leads to FDI being attracted to larger economies. Larger markets allow multinational enterprises to take advantage of scale economies in production and distribution. Market size is measured by GNI or GDP (Kinuthia and Murshed, 2015; Donaubauer, Meyer, and Nunnenkamp, 2016; Agosin and Machado, 2007). Lucke and Eichler (2016) use population growth as a measure of future market size as does Okafor (2015). Per capita income and the growth rate of per capita income are also used as measures of current or future market size (Okafor, Piesse, and Webster, 2015; Cleeve, Debrah, and Yiheyis, 2015; Naanwaab and Diarrassouba, 2016). Fast growing economies tend to attract increasing volumes of FDI (Fingar 2015). Based upon this, we use the growth rate of per capita GDP as a measure of market size and its growth.

Efficiency seeking investment aiming to lower costs of production would be responsive to the cost of labor. Thus, per capita income may also be treated as a measure of prevailing wages. Such FDI would also be responsive to the productivity of labor as reflected in the human capital and the skill level of the labor force in the host country. Measures of education used in the literature include literacy (Cleeve, Debrah, and Yiheyis, 2015; Asiedu 2006), the UNDP education index (Agosin and Machado 2007), and primary or secondary education (Okafor 2015; Lucke and Eichler 2015; Rodriguez-Pose and Cols 2017; Naanwaab and Diarrassouba, 2016). In this investigation, we use secondary gross enrollment ratio (%) as a measure of human capital.

Domestic policy variables such as the openness of the economy are likely to affect both market seeking and efficiency seeking investment. Openness is measured by the ratio of exports and imports in GDP (Okafor 2015; Naanwaab and Diarrasouba 2016; Benacek et al 2014). We employ the same measure in our analysis.

Resource seeking investment goes where the resources are. For instance, a large proportion of FDI to sub-Saharan Africa in 2000-2014 went to a handful of commodity rich countries. The theoretical argument for natural resource abundance increasing FDI is rooted in the idea that multinational enterprises seek lower cost and better quality of inputs. FDI in resource rich countries may be motivated by the desire for investing nations to achieve energy security (Teixiera et al 2017) and the need to secure key inputs for industry. However, the 'resource curse' argument might suggest a negative effect of natural resource abundance on FDI. The potential channels of transmission include the possibility of currency appreciation, leading to a decline in competitiveness of non-natural resource export sectors and a greater susceptibility to shocks due to less diversified trade (Okafor et al 2015, 2017; Carril-Caccia et al 2019). Another channel is the increased possibility of conflict over certain expropriable or point-source resources, raising the risk associated with investment (Rigterink, 2010). Finally, the possibilities for rent seeking and patronage to the detriment of productive investment may deter FDI (Carril-Caccia et al 2019, Kolstad and Soreide, 2009).

Resource abundance as an FDI determinant has shown mixed results in the empirical literature. Prior studies have used different definitions of resource abundance (extractive FDI, mineral fuels, oil rents, minerals and oil, non-renewable energy resources, and oil, natural gas, minerals, coal, and forests). We use the most comprehensive measure of resource abundance available for a large group of low- and middle-income countries: the share of oil, natural gas, minerals, coal, and forest rents in GDP.

Multiple studies have found resources to be an insignificant determinant of FDI. Insignificant coefficents are obtained by Kolstad and Wiig (2013) in a sample of 81 countries, Okafor et al (2017) for Sub Saharan Africa and Middle East and North Africa and Asongu et al (2018) in BRICS and MINT countries.

However, Asiedu (2013) and Asiedu and Lien (2011), find natural resource abundance to be negatively related to FDI among developing countries. Similarly, Jadhav (2012) finds that the share of minerals and oil in total exports has a negative coefficient in FDI regressions for BRICS economies. Okafor (2015) and Okafor et al (2015) also obtain a negative coefficient for resources as a determinant of FDI in SSA countries. Carril-Caccia et al (2019) examine oil rents and determine that they negatively affect FDI in oil abundant countries. On the other hand, Teixiera and co-authors (2017) find that non-renewable energy resources (oil, coal, and natural gas) have a positive coefficient in FDI regressions for a sample of 125 countries. Similarly, Asiedu (2006) found the share of fuel and minerals in exports to positively affect FDI in Africa.

We are interested in investigating whether these differing results depend on the nature of resources and use the sum of oil, natural gas, mineral, forest, and coal rents as a percentage of GDP as a measure of natural resource abundance. Since the sum of resource rents is insignificant

in our FDI regressions, we explore their role further by examining the effect of each resource separately.

Prior research emphasizes the importance of institutions for the volume of investment and its productivity. An absence of secure property rights and enforcement of contracts deters investment, particularly efficiency seeking investment. Insecure property rights and courts that do not enforce contracts increase risks and discourage investment. Institutional quality, thus, is expected to positively affect FDI. Unfortunately, there is only limited agreement regarding the appropriate measure(s) of institutional quality. We use three measures: Polity2, Economic Freedom of the World Index, and a subset of the Economic Freedom of the World Index, legal and property rights. The three measures assess different concepts of institutional quality, and their coverage and availability are different. Polity2 captures the "political regime authority spectrum on a 21-pont scale ranging from -10 (hereditary monarchy) to +10 (consolidated democracy) (systemicpeace.org/polityproject.html)." The Economic Freedom index is defined as follows: "The cornerstones of economic freedom are (1) personal choice, (2) voluntary exchange coordinated by markets, (3) freedom to enter and compete in markets, and (4) protection of persons and their property from aggression by others. Individuals have economic freedom when property they acquire without the use of force, fraud, or theft is protected from physical invasions by others and they are free to use, exchange, or give their property as long as their actions do not violate the identical rights of others. Individuals are free to choose, trade, and cooperate with others, and compete as they see fit (Fraser Institute, July 19, 2018)". The legal and property rights index is a subset of the economic freedom measure.

3. DATA AND METHODS

This study employs an unbalanced sample of 89 low and middle income countries over 1980 to 2014. The choice of countries was constrained by the availability of consistent data. A country list is available in Appendix 1. The time span is divided into five-year sub-periods (seven periods) and values of all variables (except for the Economic Freedom of the World Index, as noted below) are calculated as five-year averages (of annual data) in an effort to smooth out cyclical effects. The Economic Freedom of the World index is only available on a five-year basis until 2000 but available annually thereafter. Appendix 3 provides summary statistics.

Net FDI inflow as a percentage of GDP varies between -5.28 (Sierra Leone, 1985-89) and 42.24 (Liberia, 2010-14) with a mean value of 2.61. Because of the presence of negative values, we chose not to take natural logs of FDI. The mean real GDP per capita value is $3,125, centering our data around the benchmark for lower middle income economies ($1,026-$3,995 of 2018 GNI per capita according to the World Bank in fiscal 2020). Oil and forest rents as a percentage of GDP are quite substantial for some countries (oil rents of 68.84% of GDP in Iraq in 2000-04 and forest rents of 56.48% of GDP in Liberia in 1990-94, respectively). While 98% of country periods showed non-zero forest rents, non-zero coal rents only appear in 23% of country periods. Polity2 takes on values between -10 and 10 and the mean is barely positive at 0.75. Table I summarizes the correlation between the three measures of institutional quality: Polity2, Economic Freedom and the Legal and Property rights sub-index. As expected, the Legal

and Property rights sub-index is correlated with the Economic Freedom Index, but the correlation coefficient is only 0.52. Economic Freedom and democracy (Polity2) are positively correlated.

Table I: Correlation Coefficients between Democracy and Institutional Indicators

	Polity2	**Economic Freedom**
Polity2		
Economic Freedom	0.1024	
Legal and Property Rights	-0.0239	0.5198

We estimate the reduced form: $FDI_{it} = \alpha_i + \beta X_{it} + \mu_i + u_{it}$

FDI_{it} are FDI flows in country i in period t, X_{it} is a matrix of explanatory variables, μ_i are country level fixed effects and u_{it} is the error term. The explanatory variables are: Lagged FDI (net inflows as % of GDP), Growth: Real GDP per capita growth (annual percent), Openness: measured as the sum of Imports and Exports of goods and services (percent of GDP); Secondary Enrollment: Gross enrollment ratio, secondary (both sexes); Resources: measured as the sum of oil, natural gas, mineral, forest, and coal rents as percent of GDP. Three alternative measures of institutions are employed: Polity2: available from the Polity IV Project database, varies between a low of -10 and a high of 10; Economic Freedom: Economic freedom of the World Index and Legal & Property: the legal system and property rights sub-index of the Economic Freedom of the World Index (both varying between 0 and 10) obtained from the Fraser Institute. Fixed effects estimation is employed based upon the results of the Hausman test.

4. RESULTS:

Democracy, Economic Freedom and Legal and Property Rights

Table II presents fixed effects results with robust standard errors for Foreign Direct Investment (net inflow, percent of GDP) as the dependent variable and democracy (measured by Polity2), the index of economic freedom, and the index of legal and property rights as well as control variables. We ran different iterations of the model. GDP per capita (constant US dollars), inflation (consumer prices annual percent change) as a measure of macroeconomic stability, and fixed telephone subscriptions (per 100 people) as a measure of infrastructure were considered in the initial regressions but were eliminated because they were consistently insignificant. Although lagged FDI is insignificant in all three equations (significant at 12.4% in equation 1), we retain it in the model to maintain consistency with prior research. We believe the insignificant coefficient is the result of using an FDI measure that is a 5-year average of annual net FDI. This averaging reduces or eliminates the correlation between lagged FDI and FDI obtained in annual data.

Equations 1 finds the democracy variable positive and significant and resource rents as a percentage of GDP insignificant at conventional levels. Equations 2 and 3 replace Polity2 with economic freedom, and legal and property rights, respectively, and each was positive and significant determinants of FDI.

Table II: Results of FDI Estimations using Alternative Institution Measures

FDI	Eq. 1	Eq. 2	Eq. 3
	Coeff. (p value)	Coeff. (p value)	Coeff. (p value)
Constant	-3.4314 (0.002)	-4.6298 (0.001)	-3.5169 (0.000)
Lag FDI	0.1575 (0.124)	0.1322 (0.296)	0.1222 (0.351)
Growth	0.1981 (0.003)	0.2481 (0.003)	0.2530 (0.010)
Secondary Enrollment	0.301 (0.025)	0.0207 (0.095)	0.0363 (0.000)
Openness	0.0459 (0.015)	0.0317 (0.097)	0.0264 (0.063)
Resource rents	0.0499 (0.326)	0.0338 (0.467)	0.0467 (0.326)
Polity2	0.0988 (0.021)		
Economic Freedom		0.4896 (0.014)	
Legal & Property			0.2434 (0.055)
n	495	392	377

Growth rate is consistently positive and significant and economically important in all three estimations, confirming the role of economic dynamism and future increase in market size. Secondary enrollment is also positive and significant, indicating an important role for human capital in attracting efficiency seeking investment. Openness of the economy is positively and significantly related to FDI inflows. Finally, democracy, economic freedom, and legal and property rights protection are all individually positive and significant determinants of FDI, reinforcing the role of democracy and institutional quality. However, resource rents are consistently insignificant at conventional levels in all three equations.

5. RESOURCE RENTS EXPLORED FURTHER:

Since the resource variable is insignificant in all our specifications, we next explore the composition of resources in greater detail. The literature classifies resources into two broad categories: point source resources such as minerals and oil and diffuse resources such as forests. In the discussion of the "resource curse" it is usually point source resources that are implicated. This could be because of the increased possibility of corruption and conflict over control of resource rents from point source resources.

Our resource variable consists of the sum of resource rents from minerals, natural gas, oil, coal, and forests as a percentage of GDP. When we separately examine the role of individual categories of resources, we find that point source resources (Oil, Natural Gas, and Minerals) are insignificant in all specifications. These results are displayed in Table III.

Table III: Results of FDI Estimations with Resource Sub-categories

FDI	Eq. 1	Eq. 2	Eq. 3
	Coeff. (p value)	Coeff. (p value)	Coeff. (p value)
Constant	-3.824748 (0.000)	-5.030871 (0.000)	-3.966948 (0.000)
Lag FDI	0.1317941 (0.167)	0.0940862 (0.423)	0.0878035 (0.474)
Growth	0.170839 (0.004)	0.2132945 (0.002)	0.2190571 (0.007)
Secondary Enrollment	0.0278814 (0.036)	0.0173163 (0.133)	0.0335247 (0.000)
Openness	0.0530576 (0.009)	0.0392923 (0.039)	0 .0327426 (0.010)
Oil rents	0.0078738 (0.873)	-0.0063573 (0.890)	0 .0110167 (0.776)
Natural gas rents	-0.1251022 (0.399)	-0.1183779 (0.386)	-0.1637656 (0.154)
Mineral rents	0.0467035 (0.735)	0.0093685 (0.926)	0.0141507 (0.871)
Forest rents	0.1387004 (0.044)	0.1354809 (0.223)	0.2274269 (0.070)
Coal rents	1.500952 (0.032)	1.62702 (0.022)	1.920283 (0.001)
Polity2	0.0876667 (0.055)		
Economic Freedom		0.498288 (0.016)	
Legal & Property			0.2314179 (0.057)
n	495	392	377

In all three equations, oil, natural gas, and mineral rents are both individually and jointly insignificant (p value of F test oil, natural gas, and minerals = 0.8119 for equation 1, p = 0.7854 for equation 2, and p = 0.5257 for equation 3). However, forest and coal rents are consistently (in 5 of 6 estimations) positively and significantly related to FDI.

6. CONCLUDING REMARKS:

These preliminary results are intriguing. Fortunately, the results for economic growth, education, and openness confirm prior findings. These results reinforce the importance of domestic policy variables for attracting FDI. The consistently positive and significant coefficient for the democracy measure are also consistent with prior literature. That democracy, economic freedom and legal and property rights protection positively affect FDI supports the argument for the relevance and importance of institutions. The results regarding resource rents raise many

questions. Are the insignificant coefficients for oil and minerals because point source resources are more susceptible to corruption, rent seeking, and conflict? Why are forest and coal rents the only consistently significant resource endowment determinants of FDI? These preliminary results merit further investigation.

REFERENCES

Adeleke, A. (2014) "FDI-Growth Nexus in Africa: Does Governance Matter?" *Journal of Economic Development*, **39:1**, 111-135. https://doi.org/10.35866/caujed.2014.39.1.005

Agosin, M and R. Machado. (2007) "Openness and the International Allocation of Foreign Direct Investment," *Journal of Development Studies*, **43:7**, 1234-1247. https://doi.org/10.1080/00220380701526410

Asiedu, E. (2006) "Foreign Direct Investment in Africa: The Role of Natural Resources, Market Size, Government Policy, Institutions and Political Stability," *World Economy*, 63-77. https://doi.org/10.1111/j.1467-9701.2006.00758.x

Asiedu, E. (2013) "Foreign Direct Investment, Natural Resources and Institutions," IGC Working Paper, March, 1-47.

Asiedu, E and D. Lien. (2011) "Democracy, Foreign Direct Investment, and Natural Resources," *Journal of International Economics*, **84**: 99-111. https://doi.org/10.1016/j.jinteco.2010.12.001

Asongu, S., U. S. Akpan and S. Isihak. (2018) "Determinants of Foreign Direct Investment in Fast Growing Economies: Evidence from BRICS and MINT Countries," *Financial Innovation*, **4**: 26, 1-17. https://doi.org/10.1186/s40854-018-0114-0

Aziz, O. G. (2018) "Institutional Quality and FDI Inflows in Arab Economies," *Finance Research Letters*, **25**: 111-123. https://doi.org/10.1016/j.frl.2017.10.026

Benacek, V., H. Lenihan, B. Andreosso-O'Callaghan, E. Michalikova and D. Kan (2014) "Political Risk, Institutions and Foreign Direct Investment: How Do They Relate in Various European Countries?" *The World Economy*, **37**: 625-653. https://doi.org/10.1111/twec.12112

Carril-Caccia, F., J. Milgram-Baleix and J. Paniagua. (2019) "Foreign Direct Investment in Oil-Abundant Countries: The role of institutions," *PLOS One*. 1-23. https://doi.org/10.1371/journal.pone.0215650

Cleeve, E., Y. Debrah and Z. Yiheyis. (2015) "Human Capital and FDI Inflow: An Assessment of the Africa Case," *World Development*, **74**:1-14. https://doi.org/10.1016/j.worlddev.2015.04.003

Donaubauer, J., B. Meyer, and P. Nunnenkamp. (2016) "Aid, Infrastructure and FDI: Assessing the Transmission Channel with a New Index of Infrastructure," *World Development*, **78**:230-246. 9-31. https://doi.org/10.1016/j.worlddev.2015.10.015

Dunning, J. (1980) "Towards an Eclectic Theory of International Production: Some Empirical Tests," *Journal of International Business Studies,* **11***:* https://doi.org/10.1057/palgrave.jibs.8490593

Dunning, J. (2000) "The Eclectic Paradigm as an Envelope for Economic and Business Theories of MNE Activity," *International Business Review*, **9**: 163-190. https://doi.org/10.1016/S0969-5931(99)00035-9

Dunning, J. (2002) "Determinants of Foreign Direct Investment: Globalization Induced Changes and the Role of FDI Policy," Background Paper for the Annual Bank Conference on Development Economics, Washington, DC: World Bank. http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.201.5542&rep=rep1&type=pdf

Economou, F. et. al. (2017) "Foreign Direct Investment in OECD and Developing Countries," *Review of Development Economics*, **21: 3**, 527-542. https://doi.org/10.1111/rode.12269

Farla, K., D. de Crombrugghe, and B. Verspagen. (2016) "Institutions, Foreign Direct Investment and Domestic Investment: Crowding Out or Crowding In?" *World Development*, **88**:1-9. https://doi.org/10.1016/j.worlddev.2014.04.008

Feenstra, R. (1998) "Integration of Trade and Disintegration of Production in the Global Economy." *Journal of Economic Perspectives*, **12:4**, 31-50. https://doi.org/10.1257/jep.12.4.31

Fingar, C. (May 19, 2015) "Foreign Direct Investment in Africa Surges," *Financial Times.*

Fraser Institute. Retrieved July 19, 2018 (https://www.fraserinstitute.org/economic-freedom/economic-freedom-basics)

Gopalan, S., R. Rajan, and L. Duong. (2019) "Roads to Prosperity? Determinants of FDI in China and ASEAN," *The Chinese Economy*, **52**: 318-341. https://doi.org/10.1080/10971475.2018.1559092

Gossell, S. J. (2017) "Democratic Capital, Democratic Rights and FDI in Sub-Saharan Africa," *Journal of International Development*, **29**: 1033-1061. https://doi.org/10.1002/jid.3302

Gossell, S. J. (2018) "FDI, Democracy and Corruption in Sub-Saharan Africa," *Journal of Policy Modelling*, **40**: 647-662. https://doi.org/10.1016/j.jpolmod.2018.04.001

Jadhav, P. (2012) "Determinants of Foreign Direct Investment in BRICS economies," *Procedia-Social and Behavioral Sciences*, **37**: 5-14. https://doi.org/10.1016/j.sbspro.2012.03.270

Jakobsen, J. and I. de Soysa. (2006) "Do Foreign Investors Punish Democracy?" *Kyklos*, **3**: 383-410. https://doi.org/10.1111/j.1467-6435.2006.00338.x

Kinuthia, B. and S. M. Murshed. (2015) "FDI Determinants: Kenya and Malaysia Compared," *Journal of Policy Modelling*, **37**: 388-400. https://doi.org/10.1016/j.jpolmod.2015.01.013

Kolstad, I. and T. Soreide. (2009) "Corruption in Natural Resource Management: Implications for Policy Makers", *Resources Policy*, **34:4**, 214-226. https://doi.org/10.1016/j.resourpol.2009.05.001

Kolstad, I. and A. Wiig. (2013) "Digging in the Dirt: Extractive Industry FDI and Corruption," *Economics of Governance*, **14**: 369-383. https://doi.org/10.1007/s10101-013-0133-2

Lucke, N. and S. Eichler. (2016) "Foreign Direct Investment: The Role of Institutional and Cultural Determinants," *Applied Economics*, **48**:**11**, 935-956. https://doi.org/10.1080/00036846.2015.1090551

Naanwaab, C. and M. Diarrassouba. (2016) "Economic Freedom, Human Capital and Foreign Direct Investment," *Journal of Developing Areas*, **50:1**, 407-424. https://doi.org/10.1353/jda.2016.0011

Okafor, G. (2015) "Locational Determinants of US Outward FDI into Sub-Saharan Africa," *Journal of Developing Areas*, **49:1**, 187-205. https://doi.org/10.1353/jda.2015.0000

Okafor, G., J. Piesse, and A. Webster. (2015) "The Motives for Inward FDI into Sub-Saharan African Countries," *Journal of Policy Modelling*, **37**: 875-890. https://doi.org/10.1016/j.jpolmod.2015.07.003

Okafor, G., J. Piesse, and A. Webster. (2017) "FDI Determinants in Least Recipient Regions: The Case of Sub-Saharan Africa and MENA," *African Development Review*, **29:4**, 589-600. https://doi.org/10.1111/1467-8268.12298

Peres, M., W. Ameer, and H. Xu. (2018) "The Impact of Institutional Quality on Foreign Direct Investment Inflows: Evidence from Developed and Developing Countries," *Economic Research,* **31:1**, 626-644. https://doi.org/10.1080/1331677X.2018.1438906

Rigterink, A. (2010) "Natural Resources and Civil Conflict", *The Economics of Peace and Security Journal*, **5:2**, 17-22. http://dx.doi.org/10.15355/epsj.5.2.17

Rodriguez-Pose, A. and G. Cols (2017) "The Determinants of Foreign Direct Investment in Sub-Saharan Africa: What Role for Governance?" *Policy and Practice,* **9**: 63-81. https://doi.org/10.1111/rsp3.12093

Teixeira, A., R. Forte, and S. Assunção. (2017) "Do Countries' Endowment of Non-Renewable Energy Resources Matter for FDI Attraction?" **150**: 57-71. https://doi.org/10.1016/j.inteco.2016.12.002

The Polity Project, Center for Systemic Peace. https://www.systemicpeace.org/polityproject.html

Williams, K. (2015) “Foreign Direct Investment in Latin America and the Caribbean,” *Latin American Journal of Economics*, **52:1**, 57-77. http://dx.doi.org/10.7764/LAJE.52.1.57

“Global Value Chains”. (2020) *World Development Report* 2020.

Appendix 1: Country List

Algeria, Angola, Argentina, Bangladesh, Benin,
Bolivia, Botswana, Brazil, Burkina Faso, Burundi,
Cambodia, Cameroon, Central African Republic, Chad, Chile,
China, Colombia, Congo (Democratic Republic), Congo (Republic), Costa Rica,
Cote d'Ivoire, Dominican Republic, Ecuador, Egypt, El Salvador,
Eritrea, Ethiopia, Gabon, Gambia, Ghana,
Guatemala, Guinea, Guinea-Bissau, Haiti, Honduras,
India, Indonesia, Iran, Iraq, Jamaica,
Jordan, Kenya, Korea, Lao PDR, Lebanon,
Lesotho, Liberia, Libya, Madagascar, Malawi,
Malaysia, Mali, Mauritania, Mauritius, Mexico,
Mongolia, Morocco, Mozambique, Namibia, Nepal,
Nicaragua, Niger, Nigeria, Pakistan, Panama,
Papua New Guinea, Paraguay, Peru, Philippines, Rwanda,
Senegal, Sierra Leone, S. Africa, Sri Lanka, Sudan,
Swaziland, Syria, Tanzania, Thailand, Togo,
Tunisia, Turkey, Uganda, Uruguay, Venezuela,
Vietnam, Yemen, Zambia, Zimbabwe.

Appendix 2: Variable List and Sources

Foreign Direct Investment (net inflow, percent of GDP)
Real GDP per capita Growth (annual percent)
Openness, measured as the sum of Imports and Exports of goods and services (percent of GDP)
Gross enrollment ratio, secondary (both sexes)
Resource intensity, measured as the sum of oil, natural gas, mineral, forest and coal rents as percent of GDP.
These data were obtained from the World Bank datasets.
Three alternative measures of institutions are used:
Polity2 (available from the Polity IV Project database, varies between a low of -10 and a high of 10)
Economic freedom of the world index and the legal system and property rights sub-index of the Economic Freedom of the World Index (both varying between 0 and 10) obtained from the Fraser Institute.

Appendix 3: Summary statistics

Variable	Obs.	Mean	Min.	Max.
FDI	594	2.61	-5.28	42.24
Real GDP per capita	600	2830.33	149.71	23285.03
Landlines	620	5.18	0.02	60.38
Growth	603	1.61	-42.62	24.94
Inflation	573	70.65	-5.18	8603.28
Secondary Enrollment	546	46.20	2.86	109.93
Openness	590	68.44	4.3	273.90
Oil Rents	600	5.20	0	68.84
Natural gas rents	606	0.60	0	22.35
Mineral rents	606	1.55	0	38.01
Forest rents	600	4.03	0	56.48
Coal rents	606	0.10	0	8.85
Resource rents	596	11.46	0	69.29
Polity2	612	0.75	-10	10
Economic Freedom	474	5.60	2.61	8.02
Legal & Property	456	4.48	1.14	8.13