A blessing to be cursed?
On resource dependency and outward direct investment

The correlation between countries rich in natural resources and their state of development has not been left unnoticed in the economic literature. Some have even spoken of a resource curse, where abundance in natural resources induces slower economic growth. This paper investigates whether such a resource curse is reflected in the outward direct investment patterns of resource dependent countries and to what extent institutional quality from both the source and destination country have a role in this. Employing greenfield investment data from the fDi Markets database, I indeed find evidence in favour of a resource curse. Furthermore, contrary to the existing literature, I establish that investments originating from resource dependent countries are more sensitive to deterioration of institutions in the destination country. Finally, interacting source country institutional quality with resource dependence, I find no evidence for the hypothesis that resource dependent countries with higher institutional quality are less prone to the resource curse. These results are robust to several changes in the analysis.

Celine Woldring
(supervised by Prof. dr. Enrico Pennings)

Contact:
431022cw@eur.ese.nl

Introduction

"[The business of mining] is perhaps the most disadvantageous lottery in the world, or the one in which the gain of those who draw the prices bears the least proportion to the loss of those who draw the blanks."

- Adam Smith, *The Wealth of Nations (1776)*-

Whilst the strategic importance of natural resources is growing due to soaring demand, the share of developing and emerging countries in the global FDI (foreign direct investment) stock has doubled in the past 20 years. Numerous studies have attempted to answer the question whether investment into these economies is actually causing or deterring growth, or what the causality of this relationship is (Chowdhury & Mavrotas, 2006), (Obwona, 2001). This question seems to be particularly relevant in the light of the natural resources sector, where an abundance of natural resources, often exploited by a high share of foreign investors, tends to be associated with lower growth numbers than resource-poor countries (Sachs and Warner 1995), (Sachs and Warner, 1997), although this so-called natural resources curse is disputed by others (Bravo-Ortega & De Gregorio, 2005), (Brunnschweiler & Bulte, 2008). Natural resource-rich countries are often said to be stuck in a natural resource trap, where the economy is highly dependent on this one sector, at the expense of other industries that contribute to aggregate growth. Related to this is the concept of the Dutch Disease, where the increase in development in one sector hampers development in other sectors. In addition to the Dutch Disease, the literature identifies several other mechanisms through which the resource curse manifests itself.

This paper is centred on the question whether such a resource curse is reflected in the outward direct investment (ODI) patterns of a country. It researches whether increased resource dependency leads to more investment in this sector abroad. Moreover, it incorporates one of the most important channels of the resource curse being the institutional quality of the investing country, to see if this relationship remains unchanged. At the same time, this article considers the hypothesis that resource dependent countries are better equipped to navigate in difficult governance conditions as it provides them with a similar environment as they are used to operating in at home. Hence, I test if resource dependent countries invest more in

countries with institutions of a lower quality. My findings confirm the existence of a resource curse in outward direct investment. Furthermore, whereas both resource dependent and less dependent countries are found to respond negatively to a decrease in institutional quality, this effect, contrary to my expectations, seems to be more severe for countries dependent on the natural resources sector. Finally, I interact resource dependency with source country institutional quality as to research whether resource dependent countries with higher quality institutions invest less in the resource sector abroad. However, no evidence is found to support this claim. I test for robustness by excluding Norway from the sample as well as using an alternative measurement of resource dependency. The majority of the results appear to be robust to these changes in the analysis.

Combining the theories as described above, this research is novel in a few ways. Whereas most papers examine investment flows into resource-rich countries, this paper offers a different perspective by looking at outward direct investment flows *originating* from these countries instead. Furthermore, most of the research on ODI patterns of emerging economies has been directed towards China, thereby leaving other countries relatively unstudied. In addition, this paper is one of the first in researching ODI patterns in combination with resource abundance. To my knowledge only Aleksynska & Havrylchyk (2013) have explored this before, albeit more focused on the presence of natural resources in the destination country as well as on the role of institutional distance. This paper is structured as follows. First, a literature review is conducted followed by a theoretical framework in which I build my hypotheses. Consequently, the data is introduced together with an explanation of the methodology in place. In the subsequent sections, the results are displayed and discussed accordingly. I will conclude with the most important findings, limitations and directions for future research.

Literature review

Natural resources and economic development: a curse or a blessing?

Whether the abundance of natural resources is either a catalyst or an impediment for economic development has been a subject of debate for a long time in economic literature.

This paragraph discusses the empirical support that is available in this literature for a potential "curse" of natural resources. Thereafter, I will elaborate more on the theoretical background of this phenomenon.

Historically, one can observe the fact that resource-rich countries have often been outperformed by their resource-poor counterparts. Examples include the Netherlands and Spain in the 17th century as well as Japan and Russia in the 20th century. Looking at today's countries with the highest levels of GDP such as Hong Kong, Switzerland and Singapore, none of these countries owe their wealth to the presence of natural resources (Gyfalson & Zoega, 2006). Even countries like the UK and the US, major players in the world economy, only attribute a minor part of their national income to the endowment of natural resources. On the other hand, natural resources are much more prevalent among developing countries. This seems logical, as in these economies the modern sector is often underdeveloped and of a modest size, which makes primary activities such as agriculture and resource-extraction relatively more important. Nevertheless, many of these countries (typical examples include Sierra Leone, Congo and Venezuela) have been unable to demonstrate sustainable growth whilst being truly rich in terms of natural resources. Notwithstanding the existence of exceptions such as Norway and Botswana, there seems to be a correlation between the state of development of certain countries and the degree to which they seem to be "blessed" with natural resources. Naturally, the question remains whether it is only correlation that can be observed here, or if there is some sort of causation between these two variables. Does the presence of natural resources indeed induce slower growth, thereby leaving these countries "trapped" in poverty?

The evidence for such a resource curse, also sometimes referred to as the resource trap, is not bulletproof. In their seminal work, Sachs and Warner (1995), (1997) and (2001) establish a negative relationship between the abundance of natural resources and economic growth. For a large cross-country sample, the authors demonstrate that, after controlling for initial income levels, trade policy, government efficiency and investment rates, countries with a high ratio of national resource exports to GDP in the base year tend to have low growth rates in the subsequent period. Whereas this result has been confirmed by others such as Auty (1997), Subramanian and Sala-i-Martin (2003), Kronenberg (2004), and Gyfalson and Zoega (2006) it has raised controversy at the same time. Brunnschweiler (2008) criticizes the measurement of

resource abundance as well as the neglected role of institutional quality in the development of resource-rich countries. She even finds a positive relationship between resource abundance and growth in concurrence with Davis (1995) and Lederman and Maloney (2003). Similarly, Bravo-Ortega & De Gregorio (2005), present a model where the endowment of natural resources positively affect the level of income. However, the effect on the growth rate of income is found to be negative, although this can be ameliorated by high levels of human capital in such manner that this may more than offset the negative effects of abundance in natural resources on growth. Stijns (2005) is unable to reproduce the significant results of (Sachs & Warner, 1995) when altering the resource-abundance variable. In this paper, both 'positive' and 'negative channels' of effect are identified that alter the relationship between natural resources and economic growth, proving that the evidence is less clear-cut than is assumed in Sachs and Warner (1995) as well as acknowledging the problem of reverse causality. Stijns (2005) concludes that although resource-export intensity is associated with lower growth rates, the proposition that the production of natural resources inhibits economic growth through diverting efforts away from the manufacturing sector and learning-by-doing, is not supported by the data. Furthermore, Arezki & van der Ploeg (2007) comment on the endogenous nature of the explanatory variables employed by Sachs and Warner, as well as the potential for omitted variable bias.

Another stream of literature focuses on natural resource booms (either in the form of discoveries or price increases) and their effect on GDP levels. Economies that are highly dependent on natural resource activities such as oil production are more likely to be confronted with (more frequent) economic shocks, with all of the corresponding problems, and are more susceptible to acute cycles of boom and bust (Karl, 2004). This line of approach is particularly interesting when considering economic development through "the big push" strategy where a country is stuck in a low-income equilibrium trap. In this logic, a large increase in demand is needed to expand the size of the market such that entrepreneurs will find it profitable to incur the fixed costs of industrialization (Sachs & Warner, 1999). In this respect, a natural resource boom can serve as a catalyst for low-income economies, although the question remains, "whether specialization in natural resources is a viable strategy for successful economic development" (Sachs & Warner, 1999). In this paper, Sachs and Warner present evidence on seven Latin American countries where initial GDP levels increase due to a resource boom. However, in the long run such as resource boom causes growth levels to

stagnate or even decrease. Again, the support for these findings is ambiguous, where the rise in GDP (per capita) in generally confirmed by other papers (Berument et al., 2010), (Yang & Lam, 2008) but the negative effects on long term growth only by a few (Barbier, 1999), (Barbier, 2004). Moreover, Mehrara (2009) proposes that this relationship is not necessarily linear. In this paper it is suggested that a threshold exists (18-19%) in the growth rate of oil revenues in oil-exporting countries, beyond which growth in oil revenues hampers output growth.

Overlooking the great number of papers on this topic, one can conclude that the evidence for a resource curse is somewhat mixed, with some challenging and others concurring with the status quo as set by Sachs and Warner (1995). Nonetheless, it remains that nations more dependent on natural resource wealth exhibit slower growth patterns compared to their resource-poor counterparts. In addition, this former group tends to suffer from weak accountability and institutions, poor social capital and increased likelihood of conflict (Barma, 2012). The next paragraph will consider such political, institutional and social factors in an attempt to explain a potential resource course.

The different channels of the resource curse

In the light of the lack of uniform support for a phenomenon such as the resource curse, a closer look at the underlying mechanisms may be useful in explaining the diverging experiences of resource-rich and poor countries over the years. In the following I will discuss the role of institutions, political regimes and civil war, the Dutch disease, and other factors such as trade policy, human capital, saving and investment.

Institutions

As mentioned earlier, the neglected role of institutions in the Sachs and Warner (1995) paper is often put forward as a caveat. As Harford and Klein (2005) put it:

> *"[Natural resource exports] can damage institutions (including governance and the legal system) indirectly—by removing incentives to reform, improve infrastructure, or even establish a well-functioning tax bureaucracy—as well*

as directly—by provoking a fight to control resource rents. … There is growing evidence that [this] effect is the most problematic."

Based on the finding of Acemoglu et al. (2001) that "institutions matter", Mehlum et al. (2002) address this concern by hypothesizing that institutions are decisive for the resource curse, illustrated by resource-rich growth winners such as Norway, Botswana and Australia as well as equally endowed growth losers exemplified by Angola, Venezuela and Zambia. In their view, growth winners differ systematically from losers in their institutional arrangements, a finding verified by others such as Arezki and van der Ploeg (2007) and Robinson et al., (2006). Mehlum et al. (2002) distinguish between producer friendly institutions, where rent seeking and production are complimentary activities, and grabber friendly institutions, where these two activities are competing with each other. In the case of natural resource abundance, grabber friendly institutions redirect scarce entrepreneurial resources out of production into unproductive activities, thereby providing gains from specialization into such unproductive influence activities. At the same time these institutions, characterized by a weak rule of law, high risk of appropriation, malfunctioning bureaucracy and governmental corruption, impose extra costs on production activities as a result of discretionary power and favouritism. Therefore, the combination of weak institutions and natural resources will lead to sluggish growth, which seems to be consistent with the observed differences between various resource-rich countries. In countries with producer friendly institutions on the other hand, richness in resources diverts entrepreneurs into production inducing higher growth. In this manner, natural resources are more likely to be employed for the national welfare instead of the welfare of an elite. From a more political perspective, Robinson et al. (2006) add that countries with institutions that stimulate political accountability and state competence are likely to gain from natural resource abundance as the perverse political incentives inherent to resource booms are allayed by such institutional forces.

Related to the research on the role of institutions in resolving the observed differences between resource-rich and resource-poor countries, rent-seeking activities such as corruption are often hypothesized as a cause of stagnant growth patterns, which is supported by a number of papers including Leite and Weidmann (1999), Torvik (2002), Karl (2004), Mehlum et al. (2002), Arezki & van der Ploeg (2007 and Kolstad and Wiig (2009). Based on the finding that corruption exerts a negative effect on investment and thereby growth (Mauro, 1995),

Leite and Weidmann (1999) confirm this observation in the context of natural resources. Concerns of corruption are particularly relevant when it comes to natural resource abundance, as activities into this sector are extremely high rent and likely to foster rent-seeking behaviour. The authors identify corruption as an important channel for the slow growth of resource-rich economies. Whereas the view that corruption reduces growth compared to the non-corruption case is widely accepted, this effect is found to even be more evident in less-developed economies. This is illustrated by Subramanian and Sala-i-Martin (2003), who recognize corruption as one of the most important explanations for poor long run economic performance in the Nigerian experience and introduce several possible solutions to alleviate the resource course in this country.

Political regimes and civil war

Another potential element that may interact with the endowment of natural resources and economic development is the presence of democratic governance. The majority of the research validates the claim that natural resources negatively affect democracy (Ross, 2000), (Ross, 2001), (Aslaksen, 2010) although this is refuted by some (Herb, 2005), (Haber & Menaldo, 2011). This is illustrated by the puzzle that countries in the Middle East have remained unaffected by several waves of democratization despite their high income. The most common explanations provided in the literature are a "modernization effect", a "rentier effect" and a "repression effect". A comprehensive elaboration on these effects can be found in (Ross, 2000). As discussed in this paper, the theory of the modernization effect is based on the view that growth generated by oil and mineral exports fails to accomplish the social and cultural changes that are fundamental to democratic government. An alternative mechanism known as the rentier effect puts forward that resource-rich governments use low tax rates and patronage to mitigate appeals for greater accountability. The third effect that is tested in Ross (2000) is the repression effect, which entails that wealth accumulated by natural resources impedes democratization by facilitating better funding to the apparatus of repression. Whereas this paper finds little support for a modernization effect, evidence is found for the existence of both a rentier as well as a repression effect.

Wantchekon (2000) explores whether dependence on natural resources undermines democratic governance *and* spawns authoritarian governments. Empirical evidence indeed indicates that the level of dependence on natural resource revenues is a pivotal determinant of

African and Asian political regimes. In his research, Wantchekon demonstrates that "when the state institutions are weak so that budget procedures either lack transparency or are discretionary, resource windfalls tend to generate and consolidate incumbency advantage in democratic elections" (Wantchekon, 2000). This could provoke the use of political violence by an opposition aspiring to acquire political power, with the consequence of creating political instability and instigating authoritarian regimes.

The body of literature on such rentier states - states that are highly dependent on external-rents, typically generated from the exploitation of natural resources – is rather large, and generally suggests that rentier states have a tendency towards high autonomy. Rents from natural resource exploitation allow for more detached regimes as well as less accountability since the need to levy taxes is absent (Wantchekon, 2000). Moreover, as majority of the country's resources does not have to be extracted from its own population, the institutional capacities that are inherent to such extraction are not present (Karl, 2004). Furthermore, the paper poses that dependence on natural resources weakens agencies of restraint due to a less intense population pressure on scarce economic resources where inefficiency and predation cannot not be tolerated. As a consequence of the above, rentier states are denied access to the information that administrative institutions generate and lack incentives for innovation.

In addition to the research on natural resources and political regimes, from the 1990`s an increasing interest has emerged in the relationship between natural resource wealth and civil war. As civil war is known to hamper economic growth (Murdoch & Sandler, 2002), a potential causal effect of natural resource abundance on the onset of civil war may provide yet another explanation for the disappointing economic performance of resource-rich countries. Inspired by papers such as Collier and Hoeffler (1998, 2002a) and served by anecdotal evidence from the wars in Sudan, Colombia and the Republic of Congo, scholars have been examining this relationship in both quantitative and qualitative studies. However, the results remain inconclusive mainly due to methodological issues such as misspecification and spuriousness. Ross (2004) reviews 14 cross-national econometric studies as well as a great number of qualitative studies and comes to the conclusion that oil exports are linked to the onset of conflict and that lootable resources (resources that are easy to exploit for rebels or generally unskilled groups (Karl, 2004)) significantly influence the duration of conflict. The finding that oil dependence is particularly likely to invoke civil war is supported by Karl

(2004), who goes even further by suggesting that not only the likelihood of war is greater for countries with high petroleum dependence, but also that these wars have a higher probability of being secessionist, of a greater duration and of a higher intensity. The paper distinguishes two effects through which natural resources induce civil war. First, oil revenues may directly serve as a catalyst for the outbreak of conflict that might be absent otherwise. This is illustrated by the funding an opposition group in the Republic of Congo received from a French oil company, with the aim of receiving a more favourable treatment from the government after the takeover. Second and more often, this effect is of a more indirect nature, where long-standing resentment over land expropriation, environmental damage, corruption or the distribution of resources fuels civil war. This holds especially during bust cycles as economic opportunities abate.

Although the link between natural resources and democracy, authoritarian rule and civil war is not undisputed, the majority of the evidence suggests some correlation, especially regarding the first two. With regards to their relation with the resource curse, there is no consensus on what the effects of different political regimes are on economic growth, and in what way this causality runs. Nevertheless, in general political instability and civil war are known to deter growth (Alesina et al., 1992), (Feng, 1997), (Murdoch & Sandler, 2002), and therefore could be a potential factor explaining the resource curse. Further research will have to explore this linkage further.

The Dutch Disease

The "Dutch disease" is one of the most popular causes referred to by economists for the resource curse, although it can appear in several guises. One of the fundamental models for the Sachs and Warner (1995) paper is Matsuyama (1992). In this article, Matsuyama develops a model where manufacturing is characterized by learning-by-doing, and examines the role of agriculture in this model. He establishes that forces that push the economy away from manufacturing into the agricultural sector reduce the growth rate in the economy by lowering learning-induced growth of manufacturing. Market equilibrium is not efficient in this case, as the learning effects are external tot the firm. Sachs and Warner (1995) generalize this model as a theoretical framework for the resource curse. Named after the disappointing economic experience of the Netherlands in the aftermath of the discovery of North Sea oil in the 1970`s, this version of the Dutch disease model divides the economy into three sectors: a tradable

natural resource sector, a tradable (non-resource) sector and a non-traded sector (Stijns, 2005). As natural resource endowment increases, demand for non-traded goods rises. This, in turn, decreases the amount of labour and capital that can be allocated to the manufacturing sector, leading to de-industrialisation.

Others such as Gylfason and Zoega (2006), discuss the Dutch disease in the light of a natural resource boom. The surge in raw-material exports associated with a boom causes the real exchange rate to appreciate, thereby reducing manufacturing and service exports. Cycles of booms and busts that are often observed in resource-rich countries can increase the exchange rate volatility (Herbertsson et al., 1999). This in turn depresses investment in the tradable sector as well as exports and imports of goods and services (Dixit & Pindyck, 1994). Empirical evidence for the hypothesis that severe dependence on natural resources leads to less foreign trade and investment is provided by Gyfalson (2004) and Harding and Venables (2016). Using data on 41 resource exporters between 1970-2006, the latter illustrate that in response to every dollar of resource revenue, non-resource exports drop by 75 cents.

Other factors

Whereas it will be impossible to list all of the factors that may interact with a potential resource curse, I will briefly mention the most important ones identified by the literature in addition to the mechanisms described above.

Both Arezki and van de Ploeg (2007) and Brunschweiler and Bulte (2008) recognize openness to trade as an important factor affecting economic growth through natural resource dependence and provide empirical evidence to support this claim. Whilst the presence of natural resources may create political pressure to protect non-resource export sectors from vigorous international competition, trade policy aimed at more exposure to competition from abroad, transfer of technological know-how and managerial skills ameliorates the resource curse, and in some cases even turns it into a blessing (Arezki & van der Ploeg, 2007).

Others (Gyfalson, 2001), (Bravo-Ortega & De Gregorio, 2005) have stressed the importance of human capital in combating the resource trap. It may be one of the channels through which natural resources retard economic growth. (Gyfalson, 2001) demonstrates that public spending on education relative to national income, expected years of schooling for girls and

gross secondary-school enrolment are all negatively related to the share of natural capital in national wealth. Wealth in natural resources may blind an economy for the need to invest in educating their children. Due to a hyper focus on the lucrative natural resources sector, education often receives inadequate attention as well as funding. At the same time, here lies the opportunity to soften the harmful consequences that countries suffer from the resource curse. This is illustrated by (Bravo-Ortega & De Gregorio, 2005), who prove that countries with high levels of human capital may be able to more than offset the negative effects of resource abundance on economic growth.

Finally (Gyfalson and Zoega, 2006) propose a linkage between resource endowment and economic growth through saving and investment. When a country becomes more resource-dependent, the share of output that accrues to the owners of natural resources grows which leads to a fall in the demand of capital. Consequently, real interest rates drop which has a dampening effect investment, saving and eventually economic growth. Moreover, the abundance of natural resources may impede the development of financial institutions and thus hinder saving, investment and economic growth.

Crossing the border: foreign investment into the natural resource sector

Investment in the natural resource sector has become increasingly attractive, given the growing strategic importance of natural resources. Whilst demand for resources has been surging, their prices have been skyrocketing. This has motivated emerging economies to intensify efforts to obtain oil or mineral assets (Aleksynska & Havrylchyk, 2013). In large parts of the world, such as Sub-Saharan Africa, foreign investment is largely driven by natural resources. Resource-rich countries attract the majority of such investments, and in these countries investment is extremely concentrated into the natural resource sector. Taking the example of Sub-Saharan Africa, 65% of the incoming foreign investment flows to this region are attracted by Angola, Nigeria and South Africa, three countries with significant natural resource reserves (Asiedu, 2006). However, investments in this sector tend to not encompass the positive spill-overs that are usually associated with FDI (Asiedu, 2004). In order to explore whether resource-dependent countries are ‘trapped’ into the natural resource sector not only domestically, but also in their investments abroad, it is necessary to investigate what drives investments *into* this industry. Moreover, since the literature on outward foreign direct

investment (ODI) originating from resource-dependent countries is remarkably scarce, examining the determinants of into this sector as well as the host country consequences may provide useful insides, particularly in the context of the resource curse.

One of the few countries that have attracted publishing with regards to its ODI is China. As a consequence of a domestic shortage of natural resources, China has been increasingly involved in resource-seeking ODI and its government has promoted this type of ODI via various ways, including preferential bank loans (Buckley et al, 2007), (Aleksynska & Havrylchyk, 2013). Other important investors in the resource sector are Brazil, Malaysia, Russia and Kuwait, all countries that are well endowed with natural resources themselves. Aleksynska and Havrylchyk (2013) remark that investors from the "South" are generally state-owned and that therefore their investments may not solely be lead by economic incentives. Furthermore, they find that whereas investors from the North are consistently deterred by institutional distance, investors from the South are less deterred when the host country is endowed with a substantial wealth in natural resources. Somehow, the attraction of natural resources seems to outweigh the negative effect of institutional distance. This applies for example to Venezuela, Russia and Algeria (Aleksynska & Havrylchyk, 2013). As a more extreme example, one may consider investment of Malaysia, India and China in Sudan, a country rich with natural resources but at the same time suffering from some of the worst institutions of the world due to the onset of conflict in the Darfur region. In a paper on China, Buckley et al. (2007) even indicate a positive relationship between investment from China and political risk. Another interesting observation concerning political risk and investment is made by Burger et al. (2015). Analysing investment inflows into economies affected by the Arab Spring, the authors show that whilst investment in the non-resource tradable sectors significantly decreased after the emergence of political unrest, investment in the natural resource sector appears to be insensitive to political shocks. Potential explanations for this finding include limited alternative investment opportunities due to the geographically constrained nature of natural resources, reduced flexibility in timing options because of first mover advantages or simply because the risk-adjusted profit margins are too high (Burger et al., 2015).

From the perspective of the host country, foreign investment inflows into the natural resource sector may entail considerable consequences. An interesting paper in this respect is the one

written by Poelhekke and van der Ploeg (2013). First, these researches empirically establish that for those countries that were not a resource producer before, a discovery of natural resources induces a 16% fall in non-resource FDI in the short run and 68% in the long run. Second, if countries were already a resource producer and they were to double there resource rents, this causes a 12.4% decrease in non-resource FDI. Overall, this contraction in non-resource FDI outweighs the boom in resource FDI. Third, this paper proves that resource-FDI is mostly vertical, driven by multinational firms locating different parts of their production chain in different countries. Although natural resources are often extracted by multinationals possessing substantial capital as well as knowledge, FDI into this sector tends to generate fewer spill-over effects into non-resource sectors of the host country since it relies less on local subcontractors or suppliers (Poelhekke & van der Ploeg, 2013). Hence, it seems as if FDI into the resource sector of countries heavily dependent on these natural resources is yet another channel through which the resource curse manifests itself.

Hypotheses

Having reviewed the relevant literature, in the upcoming section I will build my hypotheses. The main question that I attempt to answer in this paper is whether resource dependency is reflected in ODI patterns. Despite the fact that the evidence on the existence of the resource curse is not bulletproof, the observed correlation between resource-rich countries and their state of development cannot be disregarded. Acknowledging exceptions such as Norway, countries well endowed with natural resources often seem to be trapped into this sector leading to the underdevelopment of other sectors and a lack of diversification in the economy. At the same time, foreign investment into the resources sector does not bring about the spill-over effects as it does in any other industry. Together with weak institutions, regimes that are far from democratic, the prevalence of the Dutch disease and a lack of crucial investments into other sectors such as education, this leads to a hyper focus of the economy on natural resources. Such countries accumulate considerable capital as well as know-how regarding the natural resource sector, and thus may wish to replicate this knowledge abroad. Furthermore, as a country's national resources become depleted, it may be forced to ensure the continuity of its sector abroad due to the geographic constrained nature of natural resources. Another reason why resource-dependent countries are more likely to invest in this sector abroad lies in

the degree to which countries are deterred by institutional quality. Developed countries, or countries from the North as Aleksynska and Havrylchyk (2013) define them, will refrain from investing in countries with poor institutions due to a large institutional distance. When it comes to natural resources, however, transitioning and developing countries from the South are not deterred by such distance. Since the majority of the countries with natural resource abundance are characterized by poor institutions, one would expect countries from the South to invest in these sectors abroad, either as the institutional distance is small, or as they are less deterred by this distance. For all of these reasons, I hypothesize that resource-dependency will cause countries to invest in the natural resource sector abroad.

Hypothesis 1: The more resource-dependent a country is, the more it will invest in the natural resources sector abroad

Further exploring the institutional aspect as one of the channels for a resource curse reflected in patterns of outward investment, I consider not only source country but also destination country institutional quality. An interesting approach in this respect is to consider the role of host country institutions in attracting foreign direct investment. Although in general multinational enterprises (MNE's) from developing countries tend to be less competitive than their counterparts from developed countries, such firms may actually be at an advantage when operating in third countries with difficult governance conditions (Cuervo-Cazurra & Genc, 2008). Whereas usually these firms operate at a disadvantage due to underdeveloped institutions at home, this environment has equipped them with the capability to survive in difficult circumstances, a useful skill in other developing countries that present similar difficulties. Empirically, this claim is substantiated by Cuervo-Cazurra and Genc (2008), who find that, despite the earlier observation that developing-country MNE's are less competitive, they are more prevalent among the largest foreign firms in least developed countries (LDC's) than developed-country MNE's, in particular in countries where regulatory quality and control of corruption is low. Following the premise above, resource-rich countries may be more inclined to invest in countries with lower institutional quality, as countries well endowed with resources often suffer from poor institutions, thereby decreasing institutional distance. Moreover, countries with a large wealth in natural resources may be less deterred by political instability such as civil war. As discussed in the literature review, the presence of natural resources often invokes political unrest. When a country is frequently confronted with

these circumstances at home, it is less likely to refrain from investing in countries with similar conditions, as again, it is more fit to manage the potential difficulties. Hence:

Hypothesis 2: Resource-dependent countries invest more in countries with lower institutional quality compared to less dependent countries

Recognizing the differences among resource-rich countries, the next hypothesis distinguishes between various institutional conditions in the home country. One of the most frequently proposed explanations in the literature for the diverging experiences among certain resource-rich countries is the quality of institutions at home. Returning to the (Aleksynska & Havrylchyk, 2013) article, countries from the North with high quality institutions are less likely to invest in resource-rich countries with poor institutions, due to the obstacle of institutional distance. Furthermore, as indicated in the literature section above, low quality institutions can be a channel through which the resource curse is aggravated, resulting in for example poor accountability and corruption (Mehlum et al., 2002). Although countries from the South may not be deterred by such institutional distance, the resource trap induced by poor institutions may lead them to concentrate their foreign investments merely on the natural resources sector as explained in hypothesis 1. Moreover, countries from the South are often characterized by low quality institutions, and similar institutional environments may make it easier for firms to navigate in foreign countries, decreasing the so-called "liability of foreignness". A possible reason for this might be that these countries are more equipped to operate in risky environments due the experience it has gained at home. Thus, whereas resource dependent countries with high quality institutions will be deterred by a large institutional distance and therefore invest less in the resource sector abroad, I expect resource dependent countries with lower institutional quality to be at an advantage compared to their high institutional quality counterparts. Both through mitigating the liability of foreignness and aggravating the resource curse, their low institutional quality will cause them to invest more in the resource sector abroad than resource dependent countries characterized by institutions of a high quality.

Hypothesis 3: Resource-dependent countries with institutions of a higher quality will invest less in the natural resources sector abroad, compared to resource-dependent countries with lower institutional quality

Data

ODI flows

Data on greenfield FDI flows (and ODI flows, dependent on the perspective one chooses) by source and destination country, project date, industry sector and investing company was obtained from the fDi Markets database, an in-depth cross border greenfield investment monitor from the Financial Times. Whereas it would be most ideal to have data on total ODI flows, comparable data for mergers and acquisitions is not available as is denoted by Burger et al. (2015), limiting the analysis in this article to greenfield ODI flows. However, a major advantage of this dataset is that it allows for distinction between different sectors, something that is fundamental to this research. Measuring both new (greenfield) investments and expansions during the period April 2003-December 2013, the data contains 136,763 investment projects in 39 different sectors in 165 countries, which I aggregate to sector-country level. Of these investment projects, 3,683 involve investment in the natural resource sector. This number seems rather low, however, if one considers the value of investments, ODI in the natural resources sector accounts for 18% of total capital investment. Apparently, investments in this sector are not that large in number, but the invested capital per transaction is rather high. A first glance at the data reveals some promising insights. Table 1 displays the top 15 countries investing in the coal, oil and natural gas sector measured by capital investment in million US dollar. Interestingly, the majority of countries on this list are rich in natural resources themselves, possibly indicating the existence of a resource curse. Examples of such countries include Oman, Kuwait, Iran, Qatar and Venezuela.

Resource dependency

As indicated earlier, the common measurement of resource abundance (primary exports as a percentage of GDP) as developed by Sachs and Warner (1995) has received considerable criticism in the literature. Following Brunnschweiler and Bulte (2008), I aim to measure dependency instead of abundance, and study natural resource exports instead of primary exports. In order to test for the effect of this resource dependency on ODI patterns, data on resource dependency form the World Bank was collected and merged with the fDi Markets database. The World Bank provides two indicators that are suitable to measure resource dependency, being natural resources rents as a percentage of GDP and fuel exports as a percentage of merchandise exports. However, the second one is preferred for two reasons.

First, whereas the first indicator includes oil, natural gas, coal, mineral and forest rents, the second one is solely focused on fuels, where fuels comprise SITC section 3 (mineral fuels) such as coal, petroleum and gas (World Bank, 2016) (UnStats, 2016). This corresponds with the "Coal, Oil and Natural Gas" sector as defined by the fDi Markets database. Hence, the second indicator provides a better fit with the data. Second, for developed countries such as Norway, high GDP levels may conceal substantial dependency on natural resources, which makes fuel exports as a percentage of merchandise exports more appropriate. Thus, resource dependency is measured by fuel exports as a percentage of merchandise exports, and natural resources are defined as coal, petroleum and natural gas.

The data from the World Bank includes observations for 248 countries from 1962-2014, of which I use the years 2003-2013, corresponding to the fDi Markets database. Among the most resource-dependent countries are Algeria, Libya, Kuwait and Iraq, and the top 10 of the list is dominated by countries from the Middle East and Africa, with the exceptions of Venezuela and Brunei. Graph 1 illustrates resource dependency throughout the world. Once again, one can see that resource dependency is most prevalent in the North African and Middle Eastern regions. In particular, it displays the earlier mentioned correlation between resource dependency and economic development.

Institutional quality

As a proxy for institutional quality, data from the World Governance Indicators (WGI) project was employed. This data measures institutional quality along six dimensions being voice and accountability, political stability and absence of violence, government effectiveness, regulatory quality, rule of law and finally control of corruption. Based on 31 underlying data sources reflecting the perceptions of a large number of survey respondents and expert assessments worldwide, the six aggregators range from -2.5 (very weak governance performance) to 2.5 (very strong governance performance) (World Governance Indicators, 2015). The data reports governance indicators for 215 economies during the period 1996-2014. Since this paper examines institutional quality in general, an average of these six indicators was taken, and then merged with the fDi Markets database for both destination (hypothesis 2) and source countries (hypothesis 3).

GDP per capita, population and openness to trade

In order to control for other factors that may influence outward direct investment, I include data regarding GDP per capita, population and openness to trade, both at the origin as well as the destination level. Countries with higher levels of GDP per capita have more resources to invest abroad, and a larger population size increases the demand for goods and services, which may induce investment in foreign countries. Moreover, when a country is more open to trade, it is more inclined to be involved in ODI activities. On the other hand, destination countries with a higher GDP, greater population and more openness to trade may be a more interesting market to invest in. Data on these control variables was retrieved from the World Bank and then merged with the fDi Markets database for the relevant years. GDP per capita is measured in current US$. As a proxy for trade openness, I use trade as a percentage of GDP.

Bilateral data: distance, contiguity, common language, same country and colonial past

The second hypothesis requires the insertion of bilateral controls, as it explores whether resource dependent countries invest more in destinations with lower institutional quality. Therefore, similar to (Aleksynska & Havrylchyk, 2013), data on bilateral distance as well as contiguity (whether countries share a border), common language (whether countries have the same common official or primary language), same country (whether countries were or are the same country) and colonial past (whether countries were ever in a colonial relationship) was extracted from the CEPII, a French research centre in international economics. The data is dyadic, including variables valid for pairs of countries. Except for distance, measured as the simple distance between most populated cities in km, all of the variables are dummy variables, with 0 indicating no shared border, language, country or colonial past, and 1 a shared border, language, country or colonial past.

Summary statistics of all of the included variables can be found in Table 2. What strikes when comparing ODI flows in the natural resource sector with ODI flows in all sectors is that the overall average is substantially lower than the natural resource average. This could be explained by the large (upfront) investments that are required in the natural resources sector. Furthermore, the institutional quality of source countries seems to be much higher than that of destination countries. Similarly, GDP per capita is more than twice as high in countries investing abroad compared to countries receiving investments. Thus, in general, it appears

that economically more developed countries tend to invest in economically less developed countries, supporting the idea of "North-South" trade flows. The average dependency ratio is 13.79%, which does not seem very high. Clearly, given the minimum, maximum and standard deviation, the sample consists of a large group of countries that do not depend to a great extent on natural resources, and small group with a high dependency ratio.

Methodology

Having created the dataset, this section elaborates on the estimation strategy and methodology of this research paper. Investigating the existence of a resource curse, the basic model (hypothesis 1) is illustrated by the following equation:

Equation (1) $$ln(Natural\ Resource\ Investment)_{it} = \beta_0 + \beta_1 Dependency_{it} + \beta_2 ln(GDP\ per\ capita)_{it} + \beta_3 ln(Population)_{it} + \beta_4 Trade\ Openness_{it} + \varepsilon_{it}$$

where ln(Natural Resource Investment) denotes the natural logarithm of capital investment in the natural resources sector from source country *i* in time *t* in million US$, Dependency represents the ratio of fuel exports as a percentage of total merchandise exports, ln(GDP per capita) captures the natural logarithm of the Gross Domestic Product of a country in current US$, Population reports the number of residents in a country, Trade Openness measures trade as a percentage of GDP, and an error term is included to capture the remaining variation. Natural logarithms were taken of the Natural Resource Investment, GDP per capita and Population variable to ensure normal distribution of these variables.

The second hypothesis concerns whether resource dependent countries invest more in countries with lower institutional quality. In order to test this, the original dataset (including all of the industry sectors) was split into two samples. Based on De Renzio et al. (2005), who classify resource dependent countries as countries with resource exports as a percentage of total exports of at least 25%, the samples include countries with a resource dependency of lower than 25% and countries with a resource dependency of 25% and higher respectively. Regressing institutional quality together with the controls on both of these samples allows me to research the differences in outward direct investment between resource dependent and less

dependent countries in relation to the institutional quality of the destination country. Hypothesis 2 is modelled by Equation (2).

Equation (2) $$ln(Capital\ Investment)_{ijt} = \beta_0 + \beta_1 Institutional\ quality\ (destination)_{jt} + \beta_2 ln(GDP\ per\ capita)_{it} + \beta_3 ln\ (Population)_{it} + \beta_4 Trade\ Openness_{it} + \beta_5 ln(GDP\ per\ capita)_{jt} + \beta_6 ln(Population)_{jt} + \beta_7 Trade\ Openness_{jt} + \beta_8 ln(Distance)_{ij} + \beta_9 Contiguity + \beta_{10} Common\ Language + \beta_{11} Same\ Country + \beta_{12} Colonial\ Relationship + \varepsilon_{ijt}$$

Whereas in the previous equation the dependent variable was limited to capital investment in the natural resources sector, ln(Capital Investment) as displayed in Equation (2) includes capital investment in all of the 39 available sectors. Hence, ln(Capital Investment) denotes investment in million US$ from source country *i* to destination country *j* during time *t*. In addition to the controls as introduced in Equation (1), I add similar controls for the destination country as well as a number of bilateral control variables. As explained in the data section, the variable for institutional quality is an average of six institutional indicators. Distance is measured as the simple distance between the most populated cities in kilometres. Again, the error term captures any variation unobserved by the other independent variables.

Finally, an interaction term between resource dependency and source country institutional quality is included for the third hypothesis as to research whether resource-dependent countries with high quality institutions invest less in the natural resources sector abroad, compared to their poor institutional counterparts (Equation (3)).

Equation (3) $$ln(Natural\ Resource\ Investment)_{it} = \beta_0 + \beta_1 Dependency_{it} + \beta_2 Institutional\ quality(source)_{it} + \beta_3 Dependency * Institutional\ quality_{it} + \beta_4 ln(GDP\ per\ capita) + \beta_5 ln(Population)_{it} + \beta_6 Trade\ Openness_{it} + \varepsilon_{it}$$

Except for the interaction term between resource dependency and institutional quality, the variables are similar to the ones described in Equation (1). Note that contrary to the Equation (2), the independent and control variables in Equation (3) regard only the *source* country *i* at time *t* and the dependent variable describes natural resource investment.

Using panel data, either fixed or random effects seem most suitable to model the above equations. If the fixed unobserved heterogeneity is correlated with the explanatory variables, then random effects is inconsistent, while fixed effects is unbiased. If however, the fixed unobserved heterogeneity is uncorrelated with the explanatory variables, then random effects is more efficient compared to fixed effects, as the latter exploits both the between and within variation of the data. A Hausman test indicated random effects as the most consistent and efficient estimation strategy for the models presented above, since the null hypothesis of systematic differences between fixed and random effects could not be rejected. Furthermore, robust standard errors are included due to significant Breusch-Pagan tests, as to avoid the problem of heteroskedasticity.

Results

The first results of the regression analyses can be found in Table 3. Column (1) presents a regression with only the control variables. From the three control variables included, both ln(GDP per capita source) and ln(Population source) are significant and have the expected (positive) sign. Hence, the higher a source country's GDP per capita and population, the greater will its ODI flows be. Column 2 displays the results regarding hypothesis 1. Contrary to my expectations, the coefficient of the dependency variable is negative and significant, albeit rather small, whilst both of the control variables from column 1 remain significant. This suggests that an increase in the dependency ratio of 1 leads to a decrease in outward direct natural resource investment of 0.5%.

As can be seen from column 3 and 4, these results do not unequivocally present evidence for hypothesis 2. Starting with the control variables, most of them are positive and significant in both columns, as was expected beforehand. An interesting observation here though, is that in column 3 (countries that have a resource dependency of 25% or more), the natural logarithm of GDP per capita at destination is significant and has a negative sign, suggesting that countries with lower GDP attract more investment from less dependent countries. This coefficient is not significant in column 4 (countries that have a resource dependency of less than 25%). Furthermore, contiguity (whether countries share a border) is positive and significant in column 3, whereas it is insignificant in column 4. The opposite holds for

common language. The independent variable for institutional quality in the destination country is not significant for the less dependent countries, whilst it is negative and significant for countries with a dependency of 25% or higher. On one hand this indicates that there is no significant relationship between institutional quality and outward direct investment for countries less dependent on the natural resource sector. On the other hand, it demonstrates that resource dependent countries invest more in a foreign country when it has institutions of a lower institutional quality (a decrease in the institutional quality variable of 1 leads to an increase in ODI of 43.6%). From this it follows that the outcomes of the regression analyses in Table 3 only partially support hypothesis 2.

From a broader perspective, the sign of the institutional quality coefficient in column 4 is puzzling: whereas conventional theory suggests that "institutions matter", meaning that a country would be more inclined to invest in another country when the institutions are of a higher quality, the regression results in column 4 report the opposite, where an increase in institutional quality leads to a decrease in outward direct investment. The literature has, however, established such negative effects for investments originating from countries with low institutional quality, a characteristic that often resembles with countries heavily dependent on natural resources.

The sample sizes in column 3 and 4 are substantially larger than in the other columns, due to the fact that for these two particular regressions the data was not only aggregated based on source country, industry sector and project date, but also on destination country, thereby resulting in more observations. In addition, column 3 and 4 report changes in capital investment, instead of investment in natural resources only as in columns 1, 2 and 5.The sample size for the regression in column 3 however, is considerably larger than the sample size for the resource-dependent countries in column 4, illustrating that resource-dependent countries appear to be scarcer than less dependent countries.

The results of hypothesis 3 are displayed in column 5. Investigating whether resource-dependent countries with institutions of a higher quality invest less in the natural resources sector abroad, compared to resource-dependent countries with lower institutional quality, no support for this claim is found in the data. Whilst both the dependency and the institutional quality variable are negative and significant (similar to previous regressions), the interaction

term remains insignificant. According to these outcomes, institutional quality of the source country does not affect the relationship between resource dependency and outward direct investment.

Time and country fixed effects

As there may be certain time-variant as well as country-specific factors affecting the dependent variables, I have re-estimated the regressions in Table 3, this time including time and country fixed effects. The results are presented in Table 4. In the first two regressions, the control variables lose their significance, most likely because they do not vary enough over time, and therefore are absorbed by the time fixed effects. Some interesting results appear in the second column, where one can observe a positive and significant coefficient of dependency. Apparently, an increase in the dependency ratio of 1 causes countries to invest approximately 4.8% more in the natural resources sector abroad, thereby confirming a reflection of the resource curse in ODI as expected in hypothesis 1.

Regarding institutional quality in the destination country, the results in Table 4 are unable to validate hypothesis 2. To the contrary, whereas for both samples the coefficients of institutional quality (destination) are significant and positive, the coefficient from the resource dependent sample is almost twice as high as the coefficient from the less dependent sample. Phrased differently, although both dependent and less dependent countries lower their foreign investment as a consequence of a decrease in institutional quality in the host country, resource dependent countries lower their investments *more*. This means that institutions, for both dependent and less dependent countries, actually do matter, as opposed the results obtained in Table 3. No evidence is provided here for the theory that resource dependent countries may be better able to deal with host country risk and therefore are less deterred or even attracted by this type of circumstances. Additional analysis reveals that the coefficients of destination country institutional quality significantly differ from each other at a 5% level, where the ≥25% dependency sample indeed invests significantly less compared to the <25% dependency sample following a deterioration of the institutions in the country of destination. The control variables in column 3 and 4 are similar to the ones in Table 3, except for ln(Population destination) which has turned negative in the less dependent sample and insignificant in the dependent sample.

For the third and last hypothesis, adding country and time fixed effects has not changed the outcome of the interaction term. Whilst negative, it has remained insignificant, providing no evidence for hypothesis 3. The natural logarithm of the source country's population has lost its significance, and the institutional quality (destination) coefficient has increased in magnitude. Similar to the regression in column 1, the dependency coefficient is positive and significant. The next section performs several robustness checks, where after I will further elaborate on potential explanations for the regression outcomes in the discussion.

Robustness

To ensure the reliability of the results, I have incorporated several robustness checks. First, I have excluded Norway from the data and ran similar regressions as in Table 3 (without country and time fixed effects). As discussed in previous research (Gylfason, 2004), (Bravo-Ortega and DeGregorio, 2005), Norway has proved to be an exception when it comes to the resource curse, enjoying a high level of economic development whilst being truly rich in terms of natural resources. The majority of the results did not hold when Norway was excluded, as for example the dependency variable became insignificant, thereby stipulating the unique case this country presents. Apparently, the result in Table 3 column (1) is largely driven by a resource dependent albeit developed country such as Norway, from which diversified foreign investments can be expected. Large differences among resource dependent countries may be responsible for the insignificant coefficient. For this reason, the model with country and time fixed effects is preferred over the one without, as country fixed effects control for such country-specific characteristics. Therefore, the results from Table 4 should be considered as being most trustworthy. In order to confirm their strength I have replicated the analysis in Table 4, again excluding Norway from the sample. The results are visible in Table 5. As for the hypotheses, the results are all comparable to the results of the regression analyses in Table 4, except for some minor changes in the control variables. Clearly, incorporating country and time fixed effects make the outcomes less vulnerable to removing Norway from the data sample.

In addition to excluding Norway from the data sample, I have checked for an alternative definition of resource dependency. As discussed in the data section, the World Bank data

offers another variable that measures this, being natural resource rents as a percentage of GDP. The results of the analyses are presented in Table 6. Altering the definition of resource dependency does not bring about major changes compared to the results previously established. Once more, hypothesis 1 is confirmed, whereas no support is found for the interaction in hypothesis 3. The dependency coefficient in column 2 is even higher when measuring resource dependency by natural resource rents a percentage of GDP, implying a 5.05% increase in outward resource investment as a consequence of a rise in the dependency ratio of 1. When considering the results in column 3 and 4, hypothesis 2 is no longer confirmed or rejected by the data. In column 4, the coefficient for destination country institutional quality has become insignificant, whilst the same coefficient in column 3 has remained positive and significant. Allegedly, institutional quality in the country of destination does not significantly affect capital investment from resource dependent countries when introducing an alternative measurement of resource dependency. In addition, both the natural logarithm of source country population as well as the degree of destination country trade openness have become significant in column 3 and 4 respectively.

Overall, altering some factors in the analysis provides results similar to Table 4. In some cases, slightly different results are obtained, although the only major difference with previous analysis in Table 4 and 5 is the insignificant coefficient of institutional quality (destination) for resource dependent countries. Nevertheless, for reasons described in the data section, the dependency variable based on exports is preferred over the alternative dependency variable, and most weight should therefore be attached to the original results as displayed in Table 4. In other cases, such as the first and third hypotheses, the robustness checks strengthen the original observations.

Discussion

This section further discusses and interprets the results gathered above. First, this research attempts to answer the question whether countries heavily dependent on natural resources are more likely to invest in this sector abroad. Named by the literature as the resource “curse” or “trap”, resource dependent countries are often associated with slower growth patterns compared to their less dependent counterparts. Although one could expect diversification in

the foreign investments of such dependent countries as to avoid being trapped in the natural resources sector, my results indicate the opposite: the more resource dependent a country is, the more it invests in this sector abroad, thereby confirming the phenomenon of the resource curse. This is in accordance with papers such as (Sachs and Warner, 1995) and (Subramanian and Sala-i-Martin, 2003), who pose that natural resources exert a negative impact on economic growth. However, the results obtained demonstrate that it is not only growth that is affected by the "blessing" of natural resources, but that the resource curse manifests itself in other ways as well, exemplified by outward direct investment in this article. It would be too simple to say that merely the presence of natural resources induces deterioration of the economy. Instead, it is the blemished institutional, economic and political environment induced by an abundance of natural resources that leads to a hyper focus in the economy on the natural resources sector. Examples of such difficult conditions include weak institutions, regimes that are far from democratic, the prevalence of the Dutch disease and a lack of crucial investments into other sectors such as education. This skewedness in the economy is then, in turn, reflected in investment abroad. Other explanations for increased foreign investment in the resource sector as a country is more dependent on natural resources encompass the acquired skills and know-how that a resource dependent country possesses and may wish to replicate abroad, as well as the need to ensure continuity of its own national resource sector by investing in foreign reserves as resource reserves in the home country become depleted.

The literature has identified several mechanisms that may explain a potential resource curse as well as the different experiences of some resource-rich countries. One of these so-called "channels" is institutional quality, where it is expected that resource dependent countries with higher quality institutions (e.g. Norway) invest less in the resource sector abroad (hypothesis 3). However, no evidence for such a mechanism was obtained from the analyses, as the interaction term between dependency and institutional quality remained insignificant. A more detailed analysis at country level could possibly shed more light on the differences among resource dependent countries and the effects on the relationship tested in hypothesis 1. However, given the scope of this research, this analysis will not be performed here.

Finally, this paper examines whether resource dependent countries invest more in countries with lower quality institutions. Resource dependent countries, often characterized by a weak institutional environment, may be better equipped to operate in countries with difficult

governance conditions, thereby being at an advantage compared to investors from less dependent countries with stronger institutions. Thus, whereas one would expect less dependent countries to respond negatively to a decrease in institutional quality of the destination country, countries dependent on natural resources should be insensitive to this, or in a more extreme fashion report a negative coefficient (suggesting a "risk-loving" attitude as illustrated by (Buckley et al., 2007)). This claim, however, is unsubstantiated by the data. In fact, the results indicate that resource dependent countries invest *less* responding to a deterioration of institutional quality of the destination country compared to less dependent countries, although both respond with a decrease in investment. Thus, whereas for both dependent and less dependent countries institutions matter, they matter most to countries with a dependency of 25% or more. Possibly, foreign investments originating from resource dependent countries have different characteristics, such as a greater capital sum per investment, that makes them more sensitive to host country risk. Moreover, MNE's from developed countries, a group that is often not very dependent on natural resources, may have both more experience and more resources to ameliorate the cost of doing business abroad compared to developing country's MNE's who's home country displays a high ratio of resource dependency. As this finding contradicts the current literature on institutional distance, additional research is needed to further validate this observation.

Conclusion

The strategic and economic importance of natural resources is growing. Whereas existing reserves are becoming depleted, alternative forms of energy have not (yet) resulted in adequate and profitable alternatives. At the same time, with emerging economies such as China on the rise, demand for natural resources is unprecedentedly large. Economies heavily dependent on the production of such resources may therefore strive towards a more balanced economy. However, this could be easier said than done. Previous research regarding resource abundance and economic growth generally demonstrates a negative relationship between these two variables, often referred to as the resource curse. Countries that are largely dependent on natural resources may find themselves "trapped" into lower stages of economic development. This article has investigated whether such a resource curse is reflected in outward direct investment (ODI) patterns. The focus on outward investment is rather new, as

earlier work mainly researches foreign direct investment (FDI) flows. Moreover, being identified as one of the most important mechanisms in explaining the resource curse, I include institutional quality, from both a source and destination country perspective, in the analysis.

The findings of this paper can be summarized as follows. First, resource dependency seems to be positively related to outward resource investment, thereby providing evidence for a reflection of the resource curse in ODI patterns. Second, resource dependent and less dependent countries respond negatively to a decrease in institutional quality of the destination country. However, dependent countries respond more negatively to this than less dependent countries, suggesting the former to be more sensitive to destination country institutional quality. Finally, an interaction term is added to the regression as to research whether resource dependent countries with higher quality institutions invest less in the natural resources sector abroad. No support is found in the data for this hypothesis.

Several limitations pertain to this research. Not surprisingly, data availability is an issue when studying economically less developed countries. Often, the precise amount of capital investment is not known, leading to some estimated numbers in fDi Markets database. In a similar fashion, the institutional quality variables derived from the WGI indicators are based on expert opinions, lacking more objective ways to measure institutional quality. In addition, variables such as dependency rates and institutional quality were not available for a few developing countries (e.g. Angola), thereby excluding them from the sample. With regards to the methodology, reverse causality might be a plausible issue, especially for hypothesis 3, where foreign investment in the natural resource sector (a sector often associated with troublesome practices such as corruption) may harm the institutional quality of the source country. Lastly, the fDi Markets database only contains data on greenfield investments as comparable data for mergers and acquisitions is not available. Future research could see if the results obtained hold when including other forms of investment. Moreover, more detailed analysis on the differences among resource dependent countries may provide useful insights into the existence of a resource curse.

References

Acemoglu, D., Johnson, S. and Robinson, J. (2001). The Colonial Origins of Comparative Development: An Empirical Investigation. *American Economic Review*, 91(5), pp.1369-1401.

Aleksynska, M. and Havrylchyk, O. (2013). FDI from the south: The role of institutional distance and natural resources. *European Journal of Political Economy*, 29, pp.38-53.

Alesina, A., Ozler, S., Roubini, N. and Swagel, P. (1992). Political instability and economic growth. *Working paper*, no. 4173.

Arezki, R. and Ploeg, F. (2007). Can the Natural Resource Curse Be Turned Into a Blessing? The Role of Trade Policies and Institutions. *IMF Working Papers*, 07(55), p.1.

Asiedu, E. (2004). The Determinants of Employment of Affiliates of US Multinational Enterprises in Africa. *Development Policy Review*, 22(4), pp.371-379.

Asiedu, E. (2006). Foreign Direct Investment in Africa: The Role of Natural Resources, Market Size, Government Policy, Institutions and Political Instability. *The World Economy*, 29(1), pp.63-77.

Aslaksen, S. (2010). Oil and democracy: More than a cross-country correlation?. *Journal of Peace Research*, 47(4), pp.421-431.

Auty, R. (1997). Natural resource endowment, the state and development strategy. *Journal of International Development*, 9(4), pp.651-663.

Barbier, E. (2004). Agricultural Expansion, Resource Booms and Growth in Latin America: Implications for Long-run Economic Development. *World Development*, 32(1), pp.137-157.

Barma, N. (2012). *Rents to riches?*. Washington, D.C.: World Bank.

Berument, M., Ceylan, N. and Dogan, N. (2010). The Impact of Oil Price Shocks on the Economic Growth of Selected MENA1 Countries. *EJ*, 31(1).

Bravo-Ortega, C. and De Gregorio, J. (2005). The relative richness of the poor? Natural resources, human capital and economic growth. *World Bank working paper series*, no. 3484.

Brunnschweiler, C. (2008). Cursing the Blessings? Natural Resource Abundance, Institutions, and Economic Growth. *World Development*, 36(3), pp.399-419.

Brunnschweiler, C. and Bulte, E. (2008). The resource curse revisited and revised: A tale of paradoxes and red herrings. *Journal of Environmental Economics and Management*, 55(3), pp.248-264.

Buckley, P., Clegg, L., Cross, A., Liu, X., Voss, H. and Zheng, P. (2007). The determinants of Chinese outward foreign direct investment. *Journal of International Business Studies*, 38(4), pp.499-518.

Burger, M., Ianchovichina, E. and Rijkers, B. (2015). Risky Business: Political Instability and Sectoral Greenfield Foreign Direct Investment in the Arab World. *The World Bank Economic Review*.

Chowdhury, A. and Mavrotas, G. (2006). FDI and Growth: What Causes What?. *The World Economy*, 29(1), pp.9-19.

Collier, P. and Hoeffler, A. (1998). On Economic Causes of Civil War. *Oxford Economic Papers*, 50(4), pp.563-573.

Collier, P. and Hoeffler, A. (2002a). Greed and Grievance in Civil War. *Oxford University, Centre for the Study of African Economies, Working Paper*.

Cuervo-Cazurra, A. and Genc, M. (2008). Transforming disadvantages into advantages: developing-country MNEs in the least developed countries. *Journal of International Business Studies*, 39(6), pp.957-979.

Data.worldbank.org. (2016). *Fuel exports (% of merchandise exports) | Data | Table*. [online] Available at: http://data.worldbank.org/indicator/TX.VAL.FUEL.ZS.UN [Accessed 30 May 2016].

Davis, G. (1995). Learning to love the Dutch disease: Evidence from the mineral economies. *World Development*, 23(10), pp.1765-1779.

de Renzio, P., Gomez, P. and Sheppard, J. (2005). Budget transparency and development in resource-dependent countries. *International Social Science Journal*, 57, pp.57-69.

Dixit, A. and Pindyck, R. (1994). *Investment under uncertainty*. Princeton, N.J.: Princeton University Press.

Feng, Y. (1997). Democracy, Political Stability and Economic Growth. *British Journal of Political Science*, 27(3), pp.391-418.

Gylfason, T. and Zoega, G. (2006). Natural Resources and Economic Growth: The Role of Investment. *The World Economy*, 29(8), pp.1091-1115.

Gylfason, T. (2001). Natural resources, education, and economic development. *European Economic Review*, 45(4-6), pp.847-859.

Gylfason, T. (2004). Natural resources and economic growth: from dependence to diversification. *CEPR Discussion Paper*, no. 4804.

Haber, S. and Menaldo, V. (2011). Do Natural Resources Fuel Authoritarianism? A Reappraisal of the Resource Curse. *Am Polit Sci Rev*, 105(01), pp.1-26.

Hakan Berument, M., Basak Ceylan, N. and Dogan, N. (2010). The Impact of Oil Price Shocks on the Economic Growth of Selected MENA1 Countries. *EJ*, 31(1).

Harding, T. and Venables, A. (2016). The Implications of Natural Resource Exports for Nonresource Trade. *IMF Economic Review*.

Harford, T. and Klein M. (2005). Aid and the Resource Curse. The World Bank Group, Private Sector Development Vice Presidency, Note # 291, Washington D.C.

Herb, M. (2005). No Representation without Taxation? Rents, Development, and Democracy. *Comparative Politics*, 37(3), p.297.

Herbertsson, T., Skuladottir, M. and Zoega, G. (1999). Three Symptoms and a Cure: A Contribution to the Economics of the Dutch Disease. *Working paper*, no. W99:10.

Info.worldbank.org. (2015). *World Governance Indicators*. [online] Available at: http://info.worldbank.org/governance/wgi/index.aspx#home [Accessed 30 May 2016].

Karl, T. (2004). Oil-Led Development: Social, Political, and Economic Consequences. *Encyclopedia of Energy*, 4.

Kolstad, I. and Wiig, A. (2009). Is Transparency the Key to Reducing Corruption in Resource-Rich Countries?. *World Development*, 37(3), pp.521-532.

Kronenberg, T. (2004). The curse of natural resources in the transition economies*. *The Economics of Transition*, 12(3), pp.399-426.

Lederman, D. and Maloney, W. (2003). Trade structure and growth. *World Bank Policy Research working paper*, no. 3025.

Leite, C. and Weidmann, J. (1999). Does Mother Nature Corrupt: Natural Resources, Corruption, and Economic Growth. *IMF Working Papers*, 99(85), p.1.

Matsuyama, K. (1992). Agricultural productivity, comparative advantage, and economic growth. *Journal of Economic Theory*, 58(2), pp.317-334.

Mauro, P. (1995). Corruption and Growth. *The Quarterly Journal of Economics*, 110(3), pp.681-712.

Mehlum, H., Moene, K. and Torvik, R. (2002). Institutions and the resource curse. *Memorandum, Department of Economics, University of Oslo*, 29.

Mehrara, M. (2009). Reconsidering the resource curse in oil-exporting countries. *Energy Policy*, 37(3), pp.1165-1169.

Murdoch, J. and Sandler, T. (2002). Economic Growth, Civil Wars, and Spatial Spillovers. *Journal of Conflict Resolution*, 46(1), pp.91-110.

Obwona, M. (2001). Determinants of FDI and their Impact on Economic Growth in Uganda. *African Development Review*, 13(1), pp.46-81.

Poelhekke, S. and van der Ploeg, F. (2013). Do Natural Resources Attract Nonresource FDI?. *Review of Economics and Statistics*, 95(3), pp.1047-1065.

Robinson, J., Torvik, R. and Verdier, T. (2006). Political foundations of the resource curse. *Journal of Development Economics*, 79(2), pp.447-468.

Ross, M. (2000). Does Resource Wealth Cause Authoritarian Rule?. *World Bank Working Paper*.

Ross, M. (2001). Does Oil Hinder Democracy?. *World Pol.*, 53(03), pp.325-361.

Ross, M. (2004). What Do We Know about Natural Resources and Civil War?. *Journal of Peace Research*, 41(3), pp.337-356.

Sachs, J. and Warner, A. (1995). Natural resource abundance and economic growth. *NBER working paper*, no. 5398.

Sachs, J. and Warner, A. (1997). Sources of Slow Growth in African Economies. *Journal of African Economies*, 6(3), pp.335-376.

Sachs, J. and Warner, A. (1999). The big push, natural resource booms and growth. *Journal of Development Economics*, 59(1), pp.43-76.

Sachs, J. and Warner, A. (2001). The curse of natural resources. *European Economic Review*, 45(4-6), pp.827-838.

Smith, A. (n.d.). *An inquiry into the nature and causes of the wealth of nations*. Raleigh, N.C.: Alex Catalogue.

Stijns, J. (2005). Natural resource abundance and economic growth revisited. *Resources Policy*, 30(2), pp.107-130.

Subramanian, A. and Sala-i-Martin, X. (2003). Addressing the Natural Resource Curse: An Illustration From Nigeria. *IMF Working Papers*, 03(139), p.1.

The Handbook of Environmental and Resource Economics. (1999). London: Edward Elgar, pp.731-744.

Torvik, R. (2002). Natural resources, rent seeking and welfare. *Journal of Development Economics*, 67(2), pp.455-470.

Unstats.un.org. (2016). *United Nations Statistics Division - Classifications Registry*. [online] Available at: http://unstats.un.org/unsd/cr/registry/regcst.asp?Cl=14 [Accessed 30 May 2016].

Wantchekon, L. (2000). Why do Resource Dependent Countries Have Authoritarian Governments?. *Working Paper*.

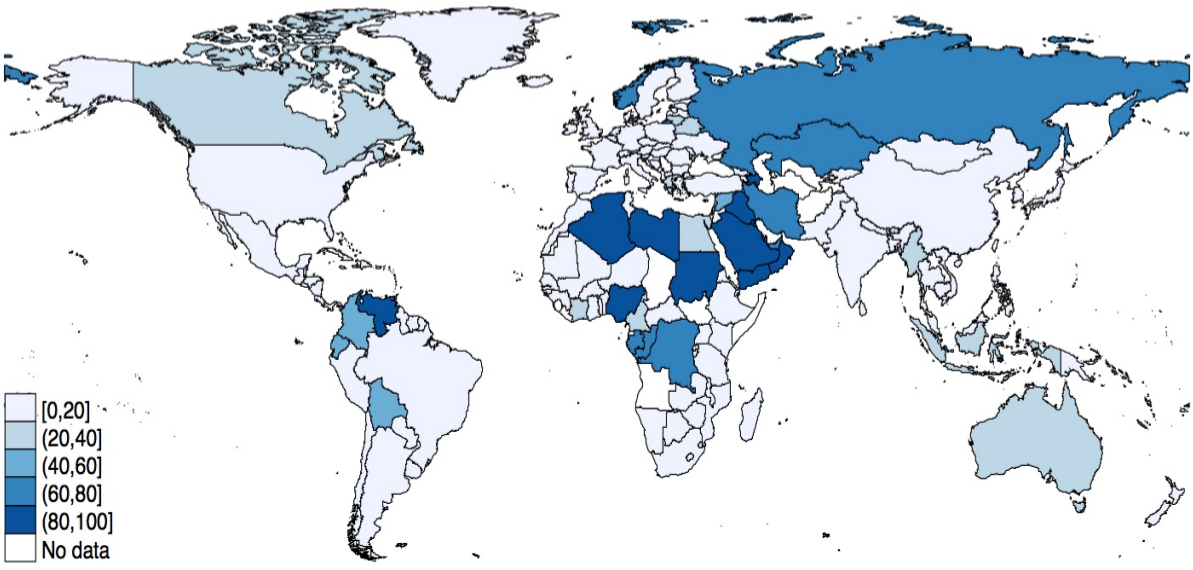
Yang, B. and Lam, Y. (2008). Resource booms and economic development: the time series dynamics for 17 oil-rich countries. *Applied Economics Letters*, 15(13), pp.1011-1014

Appendix

Table 1. Top 15 countries investing in the natural resources sector abroad

Country	Investment in US$mln
1.Lebanon	3000
2.Oman	2400
3.Kuwait	2189
4.Iran	1748
5.South Africa	1694
6.Israel	1175
7.Qatar	931
8.Kenya	924
9.Mauritius	902
10.Japan	897
11.Malaysia	805
12.Estonia	757
13.Argentina	755
14.Venezuela	752
15.China	630

Graph 1. Resource dependency throughout the world



The map displays resource dependency measured by fuel exports as a percentage of merchandise exports, based on data from the World Bank. It illustrates the observation that countries that are the most resource dependent often can be classified as developing countries.

Table 2. Summary Statistics

VARIABLES	(1) N	(2) Mean	(3) SD	(4) Min	(5) Max
Natural Resource Investment	436	505.9	1,129	1.800	16,000
Capital Investment (all sectors)	26,317	107.9	394.5	0.00600	40,000
Institutional quality (source)	12,275	0.846	0.756	-1.763	1.847
Institutional quality (destination)	26,317	0.0201	1.105	-1.902	1.847
Dependency (source)	26,317	13.79	20.51	0	98.24
GDP per capita (source)	26,317	34,469	23,582	244.2	113,727
Population (source)	26,317	1.535e+08	3.218e+08	165,407	1.357e+09
Trade openness (source)	26,317	88.30	73.66	22.09	455.3
Distance	26,317	6,638	4,429	59.62	19,586
GDP per capita (destination)	26,317	16,562	19,957	168.2	113,727
Population (destination)	26,317	1.121e+08	2.833e+08	64,798	1.357e+09
Trade openness (destination)	26,317	87.60	52.93	22.09	439.7
Contiguity	26,317	0.0699	0.255	0	1
Common language	26,317	0.251	0.434	0	1
Same country	26,317	0.0212	0.144	0	1
Colonial relationship	26,317	0.0840	0.277	0	1
Number of years	11	11	11	11	11

Table 3. Regression results

VARIABLES	(1) ln(Natural Resource Investment) Controls	(2) ln(Natural Resource Investment) Hypothesis 1	(3) ln(Capital Investment) Hypothesis 2 Resource Dependence<25%	(4) ln(Capital Investment) Hypothesis 2 Resource Dependence>25%	(5) ln(Natural Resource Investment) Hypothesis 3
Institutional quality (destination)			-0.119	-0.436***	
			(0.0902)	(0.148)	
Institutional quality (source)					-0.382*
					(0.228)
ln(GDP per capita source)	0.324***	0.301***	0.299**	0.249***	0.472***
	(0.0836)	(0.0878)	(0.118)	(0.0788)	(0.0895)
ln(Population source)	0.263***	0.228***	0.239***	0.311*	0.195**
	(0.0641)	(0.0752)	(0.0482)	(0.172)	(0.0797)
Trade openness source	0.000535	-4.22e-05	0.00397**	0.0126*	-0.000939
	(0.00110)	(0.00130)	(0.00156)	(0.00658)	(0.00174)
ln(Distance)			-0.0119	-0.0617	
			(0.0447)	(0.0870)	
ln(GDP per capita destination)			-0.142***	0.00364	
			(0.0499)	(0.0580)	
ln(Population destination)			0.0875***	0.181***	
			(0.0292)	(0.0563)	
Trade openness destination			0.000150	0.00122	
			(0.000679)	(0.00150)	
Contiguity			0.236**	-0.137	
			(0.0935)	(0.203)	
Common language			0.158	0.329**	
			(0.108)	(0.153)	
Same country			-0.117	-0.0436	
			(0.135)	(0.218)	
Colonial relationship			0.270	-0.137	
			(0.266)	(0.129)	
Dependency (source)		-0.00511*			-0.00951**
		(0.00263)			(0.00373)
Dependency*Institutional quality (source)					0.00159
					(0.00396)
Constant	-2.409	-1.424	-4.285**	-7.684*	-2.115
	(1.911)	(2.206)	(2.021)	(4.533)	(2.000)
Observations	436	436	22,211	4,106	428
Number of years	11	11	11	11	11

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 4. Regression results with country and time fixed effects

VARIABLES	(1) ln(Natural Resource Investment) Controls	(2) ln(Natural Resource Investment) Hypothesis 1	(3) ln(Capital Investment) Hypothesis 2 Resource Dependence<25%	(4) ln(Capital Investment) Hypothesis 2 Resource Dependence>25%	(5) ln(Natural Resource Investment) Hypothesis 3
Institutional quality (destination)			0.544***	0.944***	
			(0.182)	(0.357)	
Institutional quality (source)					-2.407**
					(1.165)
ln(GDP per capita source)	0.511	0.541	0.176	0.262	0.878*
	(0.437)	(0.422)	(0.202)	(0.309)	(0.531)
ln(Population source)	-0.284	-0.198	2.013	1.712***	0.237
	(1.909)	(1.872)	(1.257)	(0.444)	(1.568)
Trade openness (source)	0.000214	0.00203	0.00178	0.00350	0.00649
	(0.00601)	(0.00617)	(0.00400)	(0.00725)	(0.00506)
ln(Distance)			-0.169***	-0.0384	
			(0.0246)	(0.0517)	
ln(GDP per capita destination)			-0.618***	-0.138	
			(0.191)	(0.119)	
ln(Population destination)			-0.830***	-0.636*	
			(0.162)	(0.369)	
Trade openness (destination)			-0.00161	0.000412	
			(0.00182)	(0.00207)	
Contiguity			0.118***	0.0777	
			(0.0414)	(0.170)	
Common language			0.0811	0.287**	
			(0.0852)	(0.140)	
Same country			-0.0736	-0.478	
			(0.0818)	(0.370)	
Colony			0.0104	-0.0994	
			(0.0614)	(0.132)	
Dependency		0.0481**			0.0471**
		(0.0225)			(0.0198)
Dependency* Institutional quality (source)					-0.0168
					(0.0254)
Constant	5.786	-0.677	-7.954	3.880	-14.27
	(31.93)	(31.11)	(17.70)	(13.31)	(25.93)
Country fixed effects	Yes	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes	Yes
Observations	436	436	22,211	4,106	428
Number of years	11	11	11	11	11

Robust standard errors in parentheses
*** p<0.01, ** p<0.05,* p<0.1

Table 5. Robustness check excluding Norway

VARIABLES	(1) ln(Natural Resource Investment) Controls	(2) ln(Natural Resource Investment) Hypothesis 1	(3) ln(Capital Investment) Hypothesis 2 Resource Dependence<25%	(4) ln(Capital Investment) Hypothesis 2 Resource Dependence>25%	(5) ln(Natural Resource Investment) Hypothesis 3
Institutional quality (destination)			0.544***	1.118***	
			(0.182)	(0.361)	
Institutional quality (source)					-2.423**
					(1.169)
ln(GDP per capita source)	0.497	0.529	0.176	-0.0548	0.876*
	(0.440)	(0.425)	(0.202)	(0.525)	(0.532)
ln(Population source)	-0.229	-0.143	2.013	1.359**	0.271
	(1.908)	(1.870)	(1.257)	(0.540)	(1.546)
Trade openness source	-0.000388	0.00141	0.00178	0.000646	0.00618
	(0.00594)	(0.00612)	(0.00400)	(0.00827)	(0.00496)
ln(Distance)			-0.169***	0.00200	
			(0.0246)	(0.0586)	
ln(GDP per capita destination)			-0.618***	-0.264*	
			(0.191)	(0.139)	
ln(Population destination)			-0.830***	-0.183	
			(0.162)	(0.455)	
Trade openness destination			-0.00161	-0.000925	
			(0.00182)	(0.00269)	
Contiguity			0.118***	0.0645	
			(0.0414)	(0.164)	
Common language			0.0811	0.354**	
			(0.0852)	(0.140)	
Same country			-0.0736	-0.435	
			(0.0818)	(0.365)	
Colonial relationship			0.0104	-0.198	
			(0.0614)	(0.122)	
Dependency (source)		0.0480**			0.0469**
		(0.0233)			(0.0204)
Dependency*Institutional quality (source)					-0.0179
					(0.0262)
Constant	4.966	-1.502	-7.954	-13.20	-14.90
	(31.90)	(31.04)	(17.70)	(12.02)	(25.55)
Country fixed effects	Yes	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes	Yes
Observations	425	425	22,211	3,737	417
Number of years	11	11	11	11	11

Robust standard errors in parentheses
*** p<0.01, ** p<0.05,* p<0.1

Table 6. Regression results with alternative dependency variable

VARIABLES	(1) ln(Natural Resource Investment) Controls	(2) ln(Natural Resource Investment) Hypothesis 1	(3) ln Capital Investment) Hypothesis 2 Resource Dependence<25%	(4) ln(Capital Investment) Hypothesis 2 Resource Dependence>25%	(5) ln(Natural Resource Investment) Hypothesis 3
Institutional quality (destination)			0.609***	0.601	
			(0.179)	(0.584)	
Institutional quality (source)					-2.852***
					(1.026)
ln(GDP per capita source)	0.511	0.643	0.154	0.0215	1.077**
	(0.437)	(0.443)	(0.204)	(0.552)	(0.527)
ln(Population source)	-0.284	-0.0622	2.263*	2.065***	0.423
	(1.909)	(1.710)	(1.263)	(0.668)	(1.539)
Trade openness source	0.000214	-0.00100	0.00175	-0.00388	0.00351
	(0.00601)	(0.00645)	(0.00413)	(0.0121)	(0.00599)
ln(Distance)			-0.159***	0.0931	
			(0.0239)	(0.133)	
ln(GDP per capita destination)			-0.544***	-0.322	
			(0.200)	(0.369)	
ln(Population destination)			-0.826***	-0.197	
			(0.141)	(0.833)	
Trade openness destination			-0.00111	0.00962*	
			(0.00190)	(0.00565)	
Contiguity			0.119**	0.183	
			(0.0538)	(0.204)	
Common language			0.0810	0.402	
			(0.0999)	(0.257)	
Same country			-0.0543	-0.0612	
			(0.0874)	(0.622)	
Colonial relationship			0.0227	-0.367	
			(0.0712)		
Dependency (source) (alternative)		0.0505**			0.0448**
		(0.0241)			(0.0227)
Dependency (alternative)*Institutional quality (source)					0.00405
					(0.0418)
Constant	5.786	-1.035	-11.84	-26.87	-15.00
	(31.93)	(28.39)	(17.89)	(22.56)	(25.75)
Country fixed effects	Yes	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes	Yes
Observations	435	435	24,797	1,520	427
Number of years	11	11	11	11	11

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1