RESOURCE BOOMS, INDUSTRIAL BUSTS, AND CROSS-BORDER SPILLOVERS IN POST-COLONIAL AFRICA

by

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To my most splendored partner and relentless cheerleaders:

Monica, Heavenly, and Ethan.

No wordsmith will ever be able to capture who and what you mean to me.

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Resource-rich nations have been found to experience slower economic growth than their resource-scarce peers. This phenomenon is known as the Dutch disease. The theory of the Dutch disease posits that when an economy discovers a marketable natural resource, its tradable sector, led by manufacturing, withers. This withering is because the boom in natural resource rents inspires a shift of capital and labor away from the tradable sector (especially manufacturing) into the natural resources sector. As manufacturing shrinks, the general economy is deprived of the critical benefits of manufacturing, such as learning-by-doing and higher productivity growth, leading to deindustrialization and slower economic growth. However, given growing regional integration and interdependency, this study asks what a resource curse in one country means for its neighbors. That is, does the Dutch disease have a cross-border spillover effect? The dissertation hypothesizes that as manufacturing shrinks, a significant share of the manufacturing high-skill labor will migrate into neighboring countries while low-skill labor shifts focus onto raw material production meant for cross-border exports. Neighboring countries are expected to absorb the migrating labor and cheap raw materials, leading to higher growth of their manufacturing sectors. The hypotheses were tested using Ordinary Least Squares (OLS) regression, spatial regression, and cross-case comparison research methodologies. Significant support was consistently obtained for the *migration* hypothesis, indicating that natural resource curses have a significant positive spillover. The study's contribution is an extension of the resource curse theory and a commencement of a crucial conversation about the cross-border externalities of a resource curse.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

1.1.1 The puzzle

In a Eurocham's economic outlook report published about Senegal, the institution proclaimed this about the country: "Not being a major mining exporter, the country did not benefit from the economic boom of Africa between 2000 and 2012 when the GDP of the countries of the subregion of the region increased by 6% on average." However, while Senegal failed to record an above-average economic growth rate over the period, the country's manufacturing sector expanded significantly above that of its peers, and significantly higher than the continental average.

Contrary to Senegal is its French-speaking African counterpart, Cameroon. Cameroon, much like Senegal, has fewer resource exports per GDP than its immediate regional neighbors such as Gabon, Equatorial Guinea, the Central African Republic, and the Democratic Republic of Congo. During the 2000s, the country's resource-rich neighbors, much like Senegal's, also benefitted significantly from the rising commodity prices in world markets. However, unlike Senegal, Cameroon's manufacturing sector failed to expand above those of its neighbors, or even, above the African average.

So, in reality, even though Senegal's resource-poor economy had nothing to celebrate about during the global resource boom, the country's manufacturing sector, however, enjoyed rapid growth. On the contrary, even though Cameroon's resource-poor economy also had nothing to celebrate about during the global resource boom, the country's manufacturing sector failed to experience rapid growth.

Indeed, manufacturing growth has been significantly linked to natural resources. That is, resource-rich nations have been found to experience slower manufacturing growth compared to their resource-scarce peers. For instance, according to the theory of the Dutch disease, when an economy discovers a marketable natural resource or experiences a resource boom, its tradable sector, led by manufacturing, withers. This withering happens because the boom in natural resource rents inspires a shift of scarce capital and labor away from the tradable sector into the natural resource sector, causing the manufacturing sector to become both domestically and globally uncompetitive.

However, if natural resources are responsible for declines in manufacturing growth – for which reason resource-poor Senegal performed better than its resource-rich neighbors – why then did resource-poor Cameroon fail to perform significantly better than its resource-rich neighbors? Other than the fact that Senegal was resource-poor, were there other factors that enabled it to perform above its neighbors, the lack of which in Cameroon, deprived the county of the opportunity to also perform better than its neighbors?

1.1.2 Existing explanations

Indeed, the existing scholarship on the impact of natural resources on a manufacturing economy has been expanded to include other indicators of growth or human wellbeing. For example, in exploring the Dutch disease theory, Sachs and Warner (1995) discover that nations with higher ratios of resource exports also have lower rates of per-capita income. Other studies find that, ceteris paribus, countries with abundant natural resources rank poorly on measures such as income inequality and human capital development (Gylfason & Zoega, 2002).

Institutionally-related scourges such as rent-seeking (Lane & Tornell 1999), corruption (Vicente, 2010; Caselli & Michaels, 2013), and violence (Ross, 2004; Basedau & Lay, 2009; Lujala, 2010) are more prevalent in resource-abundant states. Also, other indicators of human development such as life expectancy (Bulte et al, 2005), quality of education (Vittorio, 2011), and gender equality (Ross, 2008, 2009; Maurer & Potlogea, 2014) tend to lag in resource-abundant states.

Noticeably, in spite of the expanded scope of the impact of natural resources on growth, the focus has ardently remained on within-country effects. That is, the literature has almost exclusively focused on examining the impact of a country's natural resources on its manufacturing or its other factors. This persistent within-country focus implies that the existing resource-curse literature is unable to explain why resource-poor Senegal is able to outperform its neighbors, yet resource-poor Cameroon is not.

This study, thus, proposes a cross-border spillover element of the resource curse to fill that gap. The study argues that the existing literature has unfortunately ignored a potential positive externality of the resource curse. In the wake of a resource curse, the study explains that the shifting manufacturing capital and labor do not all remain within the country. Instead, a significant share of the mobile labor and capital considers neighboring manufacturing sectors where they can flourish. Thus, with favorable migration and import routes, a non-resource-rich country should experience net positive migration and net positive imports with its neighbors by attracting some of the shifting manufacturing capital and labor from them. Without the net positive migration and net positive imports with its neighbors, a non-resource-rich country will fail to attract some of the shifting capital and labor from its resource-cursed neighbor. Consequently, a non-resource-rich country such as Senegal, with net positive migration and imports with its neighbors, should experience higher manufacturing growth than a non-resource-rich country such as Cameroon, with net negative migration and import routes.

1.1.3 Research questions

Given the puzzle elaborated above, this study will examine two specific research questions. These questions will continuously provide the context against which the potential spillovers of the resource curse will be examined.

Research Question 1: Does the resource curse have a cross-border spillover effect? If natural resource dependence leads to slow economic growth by causing manufacturing industries to shrink, do all the labor and capital stay within the economy?

Research Question 2: If the manufacturing capital and labor of a resource-cursed economy do not all stay within the economy, where do they go, how do they choose their destination, and how do they get there?

1.2 A proposed spillover theory

In this dissertation, I advance a new theoretical framework to test the potential spillovers of a natural resource curse. This new framework extends the current Dutch disease theory by Sachs and Warner, while introducing and highlighting the role of new actors.

Specifically, I draw a new framework that assumes an economy with three main actors – the State, Labor, and Industry. A natural resource boom increases the State's disposable income and thus, inspires further state investment in natural resource exploitation and dependence. The other two actors (Labor and Industry) have a preference for investment in the productive sectors of the economy. These sectors offer higher career advancement for Labor and higher competitive production and exports for Industry. Given that the State controls the investment policy, however, the other two actors are at a disadvantage. Thus, in light of a natural resource curse driven by the state's unfettered focus on the natural resource sector, Labor and Industry are bound to seek more alternatives to survive. Seeking survival outside the local economy entirely, thus, becomes a viable option. Migration for better opportunities and exports of raw materials to growing industries are thus likely to be observed. The manufacturing industries of countries well-positioned to attract the migrating labor and cheap raw materials are therefore expected to expand faster than those that are not. Thus, I hypothesize, first, that countries with higher migration from their resource-cursed neighbors will experience higher manufacturing growth than countries that experience lower migration from their resource-cursed neighbors. Secondly, I also hypothesize that countries that attract higher imports from their neighbors will experience higher manufacturing growth than countries that attract lower imports from their resource-cursed neighbors.

1.3 Preview of findings

Two main research methodologies are used to test the hypotheses of this study – a quantitative strategy and a qualitative examination. The quantitative strategy adopts several statistical and spatial regression techniques to test the relationship between a country's manufacturing and its neighbors' natural resource exploration. The qualitative strategy required choosing four countries and one each of their contiguous neighbors into a 2 x 2 case comparison design. The two competing hypotheses of *migration* and *imports* were thus tested against each other.

Both the quantitative methods generate strong support for the existence of a spillover element of the resource curse. That is, a country's manufacturing growth benefits from its neighbors' natural resource curses. In the quantitative analyses, the results of the OLS and the spatial lag models indicate that an increase of one immigrant per capita from a resource-cursed country is consistently associated with an increase of an amount between \$0.22 and \$0.72 in the manufacturing per capita value of a country. The spatial models also indicate that these amounts are higher the longer the distance traveled.

Contrary to expectations, however, raw material imports from resource-cursed countries do not yield significant positive benefits for a country's manufacturing.

The evidence generated by the qualitative analysis strongly corroborates that of the quantitative analysis. The migration hypothesis is found to significantly explain the existence of a spillover element between a resource curse in one country and manufacturing growth in another. Specifically, when a non-resource-dependent country experiences a net positive flow of migration from its resource dependent neighbor, it is likely to have higher manufacturing growth over a country that experiences a net negative or neutral migration from its resource-dependent neighbor. The process tracing activity discovered several steps taken historically and presently by a country such as Senegal to attract cheap migrant labor and raw material imports from its resource-dependent neighbor, Guinea-Bissau. Examples of these steps include lobbying for the inclusion of its non-French-speaking neighbor to the exclusive French-speaking West African Economic and Monetary Union (WAEMU). The inclusion of its neighbor ensured the free movement of people and goods from Guinea-Bissau to Senegal. The Senegalese government would also go on to sponsor the construction of several roads, bridges, and ports of entry between the two countries to ensure the unfettered flow of goods and people between the two countries. Corporations in Senegal would also seek to attract laborers from Guinea-Bissau by directly sponsoring the teaching of French to potential youth in Portuguese-speaking Guinea-Bissau, preparing them for their eventual migration to Senegal.

1.4 Significance of the Study

1.4.1 Normative significance

Why should countries care if a neighbor is resource-cursed?

Given the sovereignty of nations and their ability to set their own economic agenda, should countries worry about the prevalence of the Dutch disease in a neighbor's economy?

Countries are constantly seeking ways by which to maximize gains from their integration with their neighbors or regional counterparts. Also, ways by which to minimize the negative or maximize the positive externalities emanating from the economic choices of a neighbor should be part of the policy considerations of a government.

On March 21 of 2018, forty-four African heads of state met in Kigali, Rwanda where they signed a framework to establish one of the largest free trade zones in the world – the African Continental Free Trade Area (AfCFTA). The goal of AfCFTA is to hasten economic integration among African countries. According to Signé of the Washington Post, AfCFTA will accelerate industrial development and create competitive manufacturing sectors through economies of scale and tariff-free borders (Signé, 2018). However, before nations open their borders to their neighbors for increased trade interdependence or coordinated investments, it is important to understand the implications of the sudden discovery of a marketable natural resource in a neighbor's economy. In other words, how will the negative externalities of resource production, such as a decline in learning-by-doing, or a reduction in manufacturing R&D in one country, affect the economies of scale of manufacturing in the region?

This study shows that it is not at all doom and gloom. Rather, it shows that open border policies with resource-cursed neighbors would present even higher benefits than open borders with non-resource-cursed neighbors. As such, in integrating with resource-cursed neighbors, policies especially targeted at high-skill laborers would serve to generate higher benefits for a country's manufacturing.

Countries must strive to have vibrant manufacturing sectors if they have any hope of achieving real development. A vibrant manufacturing sector is perhaps the most critical for any country's economy. The manufacturing sector offers the largest platform for learning-by-doing. Learning-by-doing is described as the engine for long-term growth as it enables the growth in skill and productivity necessary for spillovers into other sectors of the economy. Thus, preventing the decline in manufacturing is necessary to prevent the loss of learning-by-doing. The manufacturing sector also positions an economy to take advantage of the externalities of technological and industrial growth from the countries with which it trades. The loss of these critical benefits of manufacturing has long-term consequences as "most learning-by-doing occurs in this sector" (Bunte, 2016, p. 678).

1.4.2 Academic contribution

Academically, the current study contributes to the resource curse literature in substantial ways. First, the study points to the possibility of more survival options for labor and capital in a cursed-resource economy. This revelation widens the scope of the resource curse framework for further exploration. Second, the study commences a crucial conversation about the potential of the resource curse to possess anything other than negative outcomes. The positive spillovers discovered throughout the study indicate that there is more to a resource curse than previously known. Third, and finally, the current study adds a spatial dimension to the study of natural resource policies. The inclusion of space-time dimensions into disciplines such as political science brings us closer to a "science of integration" (Goodchild, 2013, 1073; An et al., 2015). It shows that failed natural resource policies can take on spatial routes, through which they may generate new outcomes several miles away.

1.5 Study plan

In the remainder of this study, chapter 2 chronicles the contribution of the extant literature on natural resource curses. In this chapter, I elaborate on the competing theories and hypotheses undergirding the impact of natural resources on manufacturing and general economic growth. I also point out the limited availability of research on the potential spillovers of natural resource policies. Chapter 3 presents the theoretical framework within which this study's hypotheses and causal mechanisms are derived. It points to the actors, preferences, and basic assumptions upon which proceeding arguments are laid and validated. In chapter 4, the methodological framework is formulated. The models upon which the hypotheses are subsequently tested are laid out. In this chapter, the testing of the hypotheses takes place, after which results are presented and robustness tests shown. In chapter 5, a qualitative study is conducted and evidence is presented to corroborate the arguments of the study. A process-tracing framework comparing Senegal to Cameroon, two countries with highly resource-dependent neighbors, is presented. The two countries are contrasted based upon the benefits they gain from their respective resource-dependent neighbors. Finally, chapter 6 concludes with a recap of the policy relevance of the findings as well as directions for future research.

CHAPTER 2

LITERATURE REVIEW

2.1 General overview of natural resources

There are only fifteen out of 183 countries in the world that do not have any significant sort of income generated from the sale or export of natural resources. Singapore, Hong-Kong, Mauritius, and Lebanon are most notable on the list. On the other hand, natural resources make up at least 10% of the GDPs of about half of the countries in the world. In the most extreme cases, natural resource exports make up about 90% of all merchandise exports in such oil-rich countries as Iraq, Libya, Angola, Algeria, Brunei, and Qatar. At least 50% of merchandise exports of many more countries, including Venezuela, Oman, Russia, Norway, Sudan, Nigeria, Liberia, and Gabon come from resources that include oil, natural gas, minerals, and forests. These resources have enabled many of these economies to build roads as well as provide social infrastructure and health care for their people. However, they have also been the source of conflicts, civil wars, widespread corruption, and severe economic contractions. For instance, when oil prices fell sharply in 2011, the economies of oil-rich countries such as Venezuela, Iran, Nigeria, and Angola severely contracted. This contraction led to heightened economic unrest, political upheavals, and violence in these countries. Governments and cartels such as the Organization of Petroleum Exporting Countries (OPEC) often put in place short-term measures to counter the price instabilities and resolve the temporal inefficiencies in international markets that oil-rich countries regularly grapple with. While these measures may relieve resource-dependent countries from the temporal economic challenges arising from the price shocks and market inefficiencies, the long-term consequences of resource-dependence on the host economies often go unaddressed. These consequences have been captured in the extant literature under variables of human welfare. Some of these variables include per capita income, income inequality, quality of education, infant mortality, life expectancy, corruption, security, conflict, governance, institutions, and democratization.

Beyond the within-country effects of natural resource exploration and use, it is intuitively plausible that externalities may exist. For instance, the literature has documented the conspicuous role of natural resources in several conflicts in Africa and Latin America. Often, these conflicts generate spillovers to other parts of the country. However, often, these conflicts also prompt neighboring countries to divert crucial resources into fortifying their borders to prevent violent spillovers or to cater for refugees from across the border. Indeed, the diversion of critical economic resources from productive activities is an externality that can be attributed to the failure of natural resource policies in the neighboring country.

Thus, the first part of this literature review focuses on studies that trace the effects of natural resource wealth or dependence on the economy, manufacturing, and other measures of human welfare within a country. The second part will examine studies that track the potential spillovers of natural resource use to neighboring countries.

2.2 Within-country effects of natural resources

This section of the review is organized along two lines of seminal political economy and economic hypotheses.

2.2.1 Political Economy Hypotheses of the Resource Curse

Several political economy hypotheses link natural resources to economic development through mechanisms such as the political incentives they present to officeholders, the challenges they present to institutional quality growth, and the ramifications of their exploitation to security and conflict. For instance, on the one hand, natural resource rents may attract low quality political entrants, which allows for incumbents to evade accountability as they are left with weak checks on their discretionary spending power. Incumbents are assumed to have an incentive to utilize resources to prevent or reverse the growth of quality institutions, rule of law, and democratization. On the other hand, natural resources may present officeholders with resources needed to invest in the development of quality institutions and the security of a country, even as the resources may be a flashpoint for civil conflict. Even corrupt incumbents are assumed to have a desire for peace and stability. The mechanisms of these hypotheses are explored further in the proceeding section.

Political Office/Incentive Hypotheses: Political incentive mechanisms explain ways in which incumbent politicians may use resource rents to prolong their stay in office, with long-term repercussions of slow economic growth. Brollo et al. (2013) argue that an increase in non-tax government revenues has two successive effects, a *moral hazard effect* and a *selection effect*. In the *moral hazard* effect, an increase in government revenues implies a bigger spending budget, which masks the effects of corruption and reduces the risk of losing elections. This encourages political incumbents to misbehave more regularly by grabbing more rents for personal gain. The *selection effect* portends that increased government revenues make political office holding more attractive even to lowly educated citizens. As the pool of political candidates gets saturated with low-quality entrants, the ability of incumbents to marginally grab more rents and get away with it magnifies, further perpetuating a cycle of corruption fueled by resource or non-tax revenues.

In Robinson et al. (2006), an incumbent politician facing reelection in a resource-rich country has one of two choices: consume the resource income or use it as patronage to secure reelection. Patronage here refers to the distribution of public sector jobs and other benefits to influence positive attitudes towards an incumbent. Resource booms raise the value of being in power, influencing politicians to choose to "allocate more resource to staying in power" (Robinson et al., 2006, p. 450). By implication, a country with permanent resource booms is going to experience more severe resource misallocation as politicians increase the extent of patronage to stay in power. Persistent resource misallocation leads to inefficient production according to the theory of allocative inefficiency, which guarantees economic un-competitiveness. Acemoglu et al. (2004) argue that higher incomes from natural resources also enable dictators to pay off political challengers. In their model, resource rents enable kleptocrats to impose punitive tax rates on citizens who oppose them and share the gains with others who are likely to join the opposition in a *divide-and-rule* strategy. Robinson et al. (2006), however, find that in countries with strong institutions where accountability and state competence are promoted, the political incentive to patronize with resource rents is nonexistent. This conclusion is ambiguous, however, as it only explains how institutions affect the use of resource rents but not how the use of resource rents affects institutions.

Institutional Quality Hypotheses: On one hand, there are mechanisms by which natural resources undermine economic growth by weakening institutions. The presence of weak institutions in the form of the lack of rule of law, ineffective bureaucracy, and low ethics opens doors to other scourges such as rent-seeking, corruption, and poor policy choices. Obviously, none of these is good for economic development. For instance, Ross (2001) uses a *rentier effect* concept to explain that resource rents enable governments to tax little or not at all. Lower-taxed citizens are less likely to demand representation, eliminating the pressure to improve the quality of institutions in the country. In addition, higher resource rents enable the government to suppress the rise of political pressure groups via a *group formation effect*. Sala-I-Martin and Subramanian (2003) add that natural resource rents have a negative impact on institutional quality measures such as political stability, rule of law, corruption, and government effectiveness. Bulte et al. (2005), Leite and Weidmann (1999), Ades and Di Tella (1999), and Vicente (2010) all find that natural resources increase corruption activity within the state, weakening the quality of economic and political institutions. These conditions all lead to slower economic growth.

On the other hand, there are mechanisms by which natural resources have a non-monotonic impact on economic growth. When the quality of existing institutions determines the impact of resources on economic growth, strong accountable institutions positively impact the economy (Mehlum et al., 2006; Robinson et al., 2006; Boschini et al., 2007). Resource wealth can, in fact, be spent to improve the quality of institutions instead of weakening institutions. Busse and Groning (2011) argue that the negative impact of resource wealth on corruption exists only in developing countries and not in rich countries. Mehlum et al. (2006), for example, divide countries into *producer friendly* and *grabber friendly* institutions. In *grabber friendly* institutions where rule of law is weak and corruption is rife, there are gains for indulgence in “unproductive influence activities” (Mehlum et al., 2006, p. 3). This is bad for growth when a booming natural resource sector attracts entrepreneurs out of production into unproductive behavior. It stalls productive efficiency. However, in *producer friendly* institutions, natural resource wealth encourages more entrepreneurial production, leading to higher economic growth. In an associated study, Alexeev and Conrad (2009) find no negative relationship between natural resource wealth and institutions.

Lying behind the question of the effect of institutionally related factors on economic growth is the issue of endogeneity. This is because institutions are more often endogenous to economic growth (Anderseny & Aslaksen, 2007). Often, the quality of institutions can determine how natural resource rents are used. However, the use of natural resources can also negatively or positively affect the quality of institutions, raising issues of simultaneity. For this reason, Andersen and Aslaksen (2007) argue that institutional design, as against institutional performance, is a better measure for the institutional hypothesis. They argue that natural resource curses are present only in democratic presidential countries but not in democratic parliamentary countries and that economic growth is more negatively affected by natural resources in proportional electoral systems than in majoritarian electoral systems. The mechanism here is the type of constitution.

Conflict Hypotheses: While closely related to institutional mechanisms, conflict-related mechanisms also provide distinctive channels through which natural resources may lead to slow economic growth. The mechanisms often have something to do with factors such as the ability of government to ensure the equitable distribution of resource wealth to avoid conflict (Basedau & Lay, 2009) or to stem attempts by aggrieved groups wanting to violently appropriate resources (Fearon & Laitin, 2006; Ross, 2001). Ross (2001) also outlines the imperativeness of the government's ability to resist the temptation of misappropriating resources and avoiding political upheavals and violence.

In Collier and Hoeffler (2002), peripheral regions are more likely to engage in separatist conflict to claim full ownership of a discovered natural resource. In Le Billon (2001), such a separatist or secessionist movement is more likely when the resource is “physically concentrated, appropriated by locals, and requires foreign investment” (as cited in Ross, 2004, p. 343). In Ross (2003), separatist conflicts are more associated with resources that require a capital-intensive extraction method; this is because such extraction processes offer fewer employment opportunities to the local communities, engendering higher agitation.

There is also the question of whether natural resources engender the onset of war (Collier & Hoeffler, 1998) or merely prolong the duration of it (Fearon, 2004); and whether natural resources are the motivation for conflict, or merely the financiers of conflict (Collier et al., 2004; Baseday & Lay, 2009). Other mechanisms point to the opposite direction, that is, that resource wealth weakens state institutions, opening doors to other malfeasances such as lawlessness, violence, and full-blown conflicts, which all lead to slow economic growth (Reno, 1995; MacGaffey & Bazenguissa-Ganga, 2000). Basedau and Lay (2009), however, point out the contradictions between these mechanisms and the rentier state mechanisms where resource-rich countries are more peaceful because the state spends massive resource wealth on state security to suppress violent groups. Often, the challenge for all these theories is their testability, despite their plausibility (Ross, 2004).

2.2.2 Economic Hypotheses

The two main economic hypotheses relating natural resources to slow economic growth center around a decline in savings and investment (Gylfason & Zoega, 2001) and the Dutch disease.

Decline in Savings and Investment Hypothesis: Gylfason and Zoega (2001, p. 22), borrowing from the institutional hypothesis, posit that natural resources may impede the development of financial institutions (just as it does political institutions), leading to "inefficient allocation of savings across sectors and firms." This situation lowers the marginal productivity of capital and discourages savings and investments. Often, domestic financial institutions may be weakened because savings, especially by oil-rich countries, occur in foreign banks. In addition, the valuation of national wealth in natural capital subdues the importance of financial institutions, further undermining their ability to develop. Their second mechanism posits that "when the share of output that accrues to the owners of natural resources rises, the demand for capital falls and this leads to lower real interest rates and less rapid growth" (Gylfason & Zoega, 2001, p. 34). They test their hypotheses using a Cobb-Douglas endogenous growth model. Both of these mechanisms contradict, however, with Bunte, Gbala, Parks, and Runfola's (2018) assessment that natural resources attract foreign direct investments (FDIs) and leads to local economic growth. They also contradict with the Dutch disease hypothesis where a boom in natural resources induces higher spending and borrowing. One would expect that this flood of spending and borrowing should lead to a rise in interest rates (Cebula & Belton, 1992; Goyal, 2004), not suppress them as Gylfason and Zoega would argue.

Dutch Disease Hypothesis: The Dutch disease hypothesis describes an economy comprising three main sectors: a natural resource sector, a tradable sector, and a non-traded sector (Sachs & Warner, 1995). The natural resource sector consists of resource extraction industries involving oil, minerals, and timber. The tradable sector consists of manufacturing and agricultural industries such as textiles, food processing, and other export-oriented products. The non-traded sector is composed of the construction and service industries (Ross, 2008). A boom in the natural resource sector causes it to crowd out manufacturing, leading to the de-industrialization of the economy and slow economic growth. This impact takes place under two main mechanisms: (1) the *resource movement* effect and (2) *the spending effect.*

The Resource Movement Effect: Under this mechanism, a boom in the natural resource sector causes the sector to expand and wages to rise for its laborers. As the sector expands, it attracts workers and scarce capital from the manufacturing sector, causing a contraction in manufacturing. In order for the manufacturing sector to keep its workers from leaving, it would have to increase its wages to be comparable with those of the natural resource sector, but this will only increase the cost of production for the manufacturing sector, further instigating a collapse (Ross, 2008; Bunte, 2016).

The spending effect: This mechanism of the Dutch disease relies partly on exchange rate theory and partly on the income effect concept to explain the negative impact of natural resource exports on the manufacturing sector. A resource boom can occur either due to an increase in the international market price of the natural resource or in the demand for a newly discovered resource.

Under exchange rate theory, an increase in the international market price or in the international demand for a country's exports (in this case the natural resource) has two effects: (1) an increase in disposable incomes (for both the public and the private sectors) and (2) an appreciation of the country's currency. These two developments present two trends of bad news for the tradable sector. Firstly, increased disposable incomes increase demand for non-tradable sector products such as construction, houses, roads, hotels, and other luxury goods (a manifestation of income effect). This increased spending on the non-tradable sector inspires an expansion of the sector, attracting labor and capital away from manufacturing.

Secondly, appreciation of the local currency makes the country's exports expensive and its imports cheap. A high currency renders domestic manufacturing uncompetitive since manufacturing prices are set internationally. Consequently, the manufacturing sector contracts, causing its labor and capital to move to the booming sectors.

Sachs and Warner (1995) caution that a natural resource such as oil requires very little labor to extract, however, and may not attract any significant number of laborers from manufacturing. Bunte (2016) also argues that in a highly coordinated wage bargaining economy, the disproportionate increase in wages for one sector against others in the face of a resource discovery is unlikely. As such, the incentive for tradable sector workers to leave for other sectors may be nonexistent.

2.3 External impacts of natural resources

When it comes to the study of the impact of natural resources on economic growth, the literature is virtually silent on cross-border spillovers or how natural resource dependences shape growth rates between neighbors. The bulk of the studies choose to demonstrate the impact of natural resources on economic growth within the same country, treating countries as independent units of observation, and often leave us uninformed about their potential cross-border spillover effects. This phenomenon is the source of one of the motivations of this study.

Many of the studies out there that address factors that could cause spillovers of economic growth into neighboring territories focus on civil wars. Murdoch and Sandler (2002, p. 93) argue that "it is unlikely that the economic consequences of civil wars will be solely confined to a nation in turmoil." Neighbors suffer from "disruptions to trade, heightened risk perceptions by would-be investors, severance of input supply lines, collateral damage from nearby battles, and resources spent to assist refugees" (Murdoch & Sandler, 2002, p. 93). De Groot (2010), more formally, groups the causal mechanisms of the spillovers into both *capital* and *labor* channels with an expanded scope of impact.

The *capital* channel entails the withdrawal of investments in a country for fear that a conflict may spill over from a neighboring state. As such, as the economy of a country at war sinks, so do the economies of its neighbors. De Groot (2010) implies, however, that conflict in one country can also generate positive spillovers by incentivizing the movement of capital from that country to neighboring countries, especially secondary neighbors. Thus, as the economy of a warring country sinks, those of its neighbors grow. Most of Africa's trade is with developed nations. Also, many African countries share similar natural resource exports. Thus, in the event that one country experiences an internal conflict, its foreign trade partners are likely to switch trade routes to the warring country's neighbors who have similar resources. In this scenario, conflict, indeed, will attract positive spillovers for neighbors.

The *labor* channel portends that a conflict in one country may prompt the diversion of critical labor into less productive activities such as soldiering and border protection. Further, the spillover of refugees requiring significant transfer of security and economic resources to provide for them can create a net negative effect if those refugees are predominantly unskilled and destitute.

2.4 Discussion of Literature

With reference to the Dutch disease hypothesis, it is the assumption that the manufacturing industry will simply fold up and allow its resources, including capital and labor, to move to the non-traded and natural resource sectors that this study seeks to examine. Particularly, whether, instead of moving in-whole to the other sectors, some of the labor and capital move entirely outside the economy. And if they do, where do they go, how do they choose their destination? These questions hint at a potential for the factors of production to move, not only within the economy but also, across economies. The potential movement across economies also hints at a potential transfer of effects or spillovers of natural resource policies between countries. This study, thus, asks further: what are these potential spillovers? Does the migrating labor and capital contribute positively or negatively to the economies of the destination countries?

As demonstrated from the literature review, the literature currently does not incorporate the potential external impacts of natural resource policies or their outcomes. However, existing studies in other areas indicate that there is sufficient cause to ask questions regarding the spillovers of policies from one country into others.

For example, Franzese and Hays (2006) outline two key channels through which development policies, or their outcomes, may spill over into neighboring countries. There is a *race-to-the-bottom* channel and a *policy free-ride* channel. In the *race-to-the-bottom* channel, new policies adopted in one jurisdiction may generate incentives for the adoption of similar policies in other jurisdictions. For example, a reduction in tax rates in one country may increase the cost of maintaining high taxes in neighboring countries, prompting those neighbors to also lower their tax rates to attract investment. The r*ace-to-the-bottom* dynamics, thus, work as strategic complements across countries. In contrast to this channel, however, is the *policy free-riding* channel, whose dynamics apply to policies that are likely to be strategic substitutes. Under the *policy free-riding* channel, new policies adopted in one jurisdiction generate incentives for neighbors to adopt new policies in the oppositive direction. For instance, increasing defense spending in one jurisdiction may disincentivize further defense spending in neighboring jurisdictions by lowering the marginal security benefit in doing so. That is, the other jurisdictions then choose to free-ride on the first jurisdiction's increased defense spending and security benefits. The authors explored these mechanisms to discuss the impact of French labor policies on the Belgian economy as Belgium free-rides on France's fiscal spending. For instance, active labor market policies in France to train and equip its labor force may spill over into Belgium in the form of skilled Belgian workers in France returning to take jobs in their home country. Not only do the newly trained Belgian workers enhance the productivity of the country's economy, but they also lure firms into the country by enhancing the pool of workers available to multinational firms.

Given these examples, the next chapter will outline a theoretical framework through which natural resource policies and their outcomes are expected to spill over into neighboring countries. This framework closes the existing gap in the natural resource literature by demonstrating the specific channels through which failed natural resource policies – leading to a resource curse - spill over into neighboring countries in the form of positive externalities.

CHAPTER 3

A POLITICAL THEORY OF THE RESOURCE CURSE

3.1 Political economic actors and preferences

The theoretical framework of this study assumes an economy with three primary actors - the State, Labor, and Industry. Based on the extant literature, these distinct actors of an economy also have distinct preferences. Nonetheless, different scholars have proposed different actors, often with significant overlap. For instance, Frieden (1991) groups actors into class interests between Capital and Labor, while Gourevitch and Shinn (2005) propose a differentiation between Owners, Managers, and Workers. In more contemporary actor-differentiation scholarship, Pepinsky (2008) posits a division between Mobile capital, Fixed capital, and Labor, while Bunte (2019) advances a grouping according to Labor, Industry, and Finance lines.

In Bunte (2019), Labor is made up of actors who do not own capital and thus, need to trade their labor for wages. Industry is described as actors who own immobile capital goods. These goods include manufacturing equipment and other capital used to make tangible products. The majority of the actors in Industry are factory owners, manufacturing companies, and infrastructure firms. Finance comprises of actors who own mobile capital goods such as stocks and bonds, and thus, generate their income from interests in investment as well as the provision of financial services.

In my classification, I combine Finance and Industry into one actor – named Industry. Labor remains distinct with its preferences. In a slight deviation from some of the existing scholarship, I also treat the State as an interested actor in the economy. In spite of this treatment, the interest and role of the State in my framework are the same as in other works such as Frieden (1991), Gourevitch and Shinn (2005), and Bunte (2019). In the proceeding paragraphs, I detail the interests of each actor and how the incidence of a resource boom transforms their options.

3.2 How natural resources affect the preferences

The State desires quick-flowing revenues to implement its agenda. A natural resource boom promises those quick revenues. As such, the State likely increases investments in the resource sector to ensure higher flows of quick revenue. This implies that all things being equal, the State may be motivated to postpone investments in industrialization (manufacturing) for the next government. Creating a competitive advantage in manufacturing requires years of learning-by-doing and development or acquisition of specialized human capital and technology. These requirements discourage investments in manufacturing. Instead, and thus, the booming resource sector gets even more attention in the form of increased investment and dependence.

Laborers desire stable jobs and high wages. They also desire economic sectors that allow them to improve upon their human skill for career advancements and to constantly learn new technologies to stay globally competitive. They desire sectors that guarantee multiple job opportunities. This implies that manufacturing sectors would be more preferable for Labor, relative to the resource sector. Resource sectors, especially for oil and other deep-soil minerals, tend to be rather capital- and not labor-intensive. Hence, they offer little in the way of job opportunities or career advancements.

Industry consists of producers who feed the production and manufacturing industries of the economy. They would prefer an economy with rapid industrialization as it guarantees a continuously expanding manufacturing sector to absorb that produce. Thus, unlike the state but more like labor, they would prefer more investments in manufacturing.

Given the differences in the preferences among the actors, the entry of a natural resource boom in the picture transforms the preferences in a cascading form for each actor. As already noted, the natural resources promise quick revenue for government policy implementation. This promise immediately places the promise or prospect of industrialization in jeopardy. Industrializing an economy, building robust manufacturing, and investing in the skills of laborers take longer time, and for that matter, are politically difficult. Labor-force skill development takes time and often requires a learning-by-doing process that takes a significant amount of time. As a result, time-pressed politicians face a choice between exploiting natural resources for quick revenues and risking an electoral defeat by sticking to long-term industrial and labor development investments.

The actor with the upper-hand in this scenario, in all likelihood, is the State – according to the Dutch disease mechanism, a natural resource boom often immediately increases the state's disposal income (spending power). Also, elected politicians control investment policy, as that is what they are elected to do.

Now, the choice to invest in natural resources for quick revenues triggers a shift of preferences for Labor in one of two ways or an ongoing combination of both. Labor either fights for better services or seeks out new destinations for their skills. Both options can also be explored simultaneously. Thus, in more literal terms, laborers either become protestors or migrants, or both. Note that laborers may also eventually become migrants after the fight for better conditions fails. In developing countries where Labor is poorly organized, migration for the highly skilled becomes an expedient undertaking as the personal transactional cost of mobilization may be higher than the expected benefit. Note that even in countries where labor may be strong, a successful political decision to focus on natural resources, and hence inviting a resource curse, automatically weakens the organizational capacity of labor. In Ross (2008), women in resource-rich states often lack formal organizational networks around which to organize and seek political influence or to overcome collective action problems. This is because unearned wages such as household income and government transfers – which are made possible by resource wealth – are often high enough to allow women to stay out of the labor force. The more people that stay out of the labor force in resource-rich countries, the weaker the capacity of Labor to organize.

It is also intuitive to assume that in a resource-rich country, Labor, relative to the political elite who make up the State, is less likely to be organized or have a united front. This is primarily because a resource boom does not immediately or inherently hurt all workers, but only those of the tradable sector, according to the mechanism of Dutch disease theory. Thus, laborers in the resource sector and the non-tradable sector will have less incentive to oppose further investments in natural resource exploration as those investments will directly benefit them, if even only in the short term.

In addition, the *group formation effect* theory states that governments of resource-rich countries spend resource rents preventing the formation of special interest groups likely to demand more rights or influence. According to Gause (1995) and Clark (1997) natural resources give the government the upper hand by enabling it to spend more on national security, often with the intention to suppress the emergence of groups likely to rise and demand more democratic rights and government services. In other words, the political elite in oil-rich states spend money dismantling the organizational capacity of interest groups that threaten their political survival.

Thus, in all likelihood, migration will remain a constant option for this group as conditions deteriorate.

Thus, how will the politician choose? As already elaborated, natural resources do not only promise direct revenues but also, significant control over large sums of funds or a real bank account of funds flowing from sales of resources. This type of revenue is significantly different from the revenue that can be eventually generated through taxes on high-skill workers and a booming trade industry. Thus, the political elite will focus on natural resources for two reasons:

First, resources present easy money. Resource revenues are not tax revenues. Hence, there is no burden of designing complex tax policies and tracking people to pay taxes. Gains from high-value manufacturing exports and a highly skilled labor force accrue to the government through taxes on trade and income. However, gains from natural resources accrue directly to the government through concessions and the government's share in the sales.

Second, resources present a comparative advantage for developing countries. The international trade system has relegated developing countries to the role of providing natural resources or raw materials in the international value chains. More contextually, the dominant world system of international trade, according to dependency theorists, relies on a structural division of labor between the core (rich) and periphery (poor or developing) countries. Within this arrangement, developing countries trade cheap resources and labor for the obsolete technologies of the more advanced economies. Even the premise of the Prebisch-Singer hypothesis – which admonishes developing nations to import-substitute or develop a greater diversity of output – is established on the assumption that developing countries are only naturally competitive as they are if they engage in the production and export of raw materials. It is therefore inferred that the political elite of developing countries have an incentive to double-down on natural resource production as their economies are truly only currently competitive in those sectors. In addition, competing through manufactures and technological exports requires years of investment in research and development, which – given the preferences of incumbent political leaders – is better transferred to the "next government."

Figure 3.1 summarizes a conceptual framework in which the primary actors are the State, Labor, and Industry. A shock to the economy in the form of a resource boom increases revenues for the State as the state's disposable income increases. The increase in spending power incentivizes the State to double down on the sector generating quick revenue, hence more investments in the resource sector, which creates a cycle of increasing resource dependence. A resource boom, however, also weakens Labor and Industry as these two groups are disrupted and moved around. The organizational capacity and bargaining power of labor and industry are disrupted, also, as the state accrues more spending power to *suppress* their influence. As the labor and industry sectors weaken, options to survive out of a resource-trapped economy arise, leading to migration for Labor and exports for Industry.

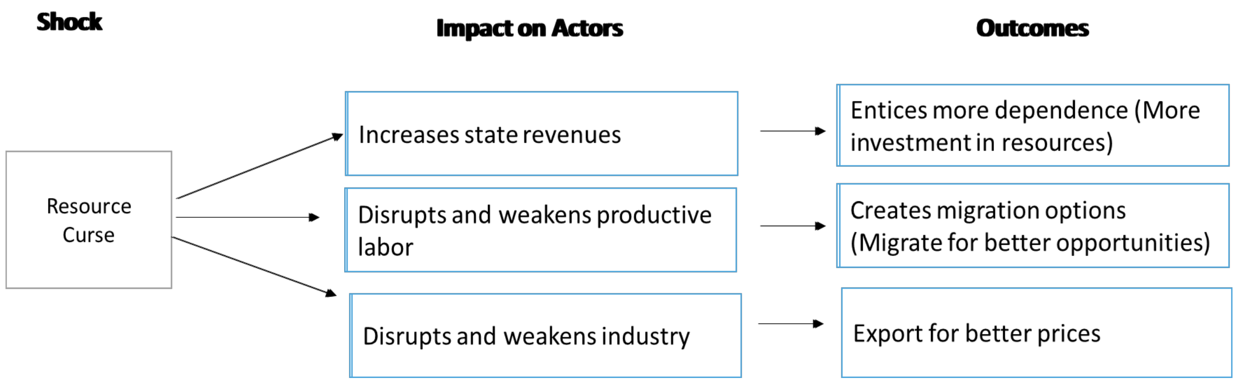

Figure 3.1. A theory of the impact of the resource curse on three actors of an economy

3.2.1 Why neighbors?

The preceding section has established that when an economy experiences a shock of a resource boom and consequently a resource curse, some of the laborers and raw material producers who previously supported the country's manufacturing would leave or re-fashion their produce for export. However, the question remains, where do the laborers go, and where do the producers export their produce? What makes neighboring countries more suitable destinations?

So far, it has been implied that the migrating labor would settle on any neighbor that does not have a resource curse as their manufacturing industry is expected to be doing relatively better, all things being equal. It has also been implied that any neighbor that is not resource-cursed will be attractive to raw material producers in the resource-cursed country. However, other than the fact that more than two-thirds of all migration in Africa occur within the continent (UNIDO), non-resource-cursed neighbors also present a spatial element that offers transportation cost advantages.

According to Vilarrubia (2006), geography introduces a transportation cost element to international trade by compelling neighbors to trade more. Also, according to Berry et al. (1993, 1997), among the technological factors that are inspiring globalization, falling transport costs and advanced telecommunications stand out. Exporters have a profit-maximizing motive, just as laborers have a wage-maximizing objective. Thus, the closest neighbors of a resource-cursed economy are more likely to present lower transportation costs for raw material producers and migrating laborers of the resource-cursed economy. Empirically, "spatial dependency generally occurs based on its geographic proximity" (Chun, et al, 2012, p. 584). This is especially true for spatial mixing mechanisms involving migration and trade. That is, spatial dependency "is expected to be embedded in commodity flows, which are composed of actual freight shipments in industries such as mining, manufacturing, wholesale, and retail. This is due to commodity transactions being highly dependent on the closeness of the spatial units, specifically origins and destinations of the freight movements" (Chun, et al, 2012, p. 584).

3.3 Hypotheses

Given the arguments above, a causal mechanism is established as follows:

> A resource curse in one country leads to an expansion in its resource and non-tradable sectors, but a decline in its manufacturing. This impact forces some of its manufacturing labor to migrate across the border. Current producers also move to focus on raw material production meant for export into a non-resource-cursed neighbor. The influx of labor and raw materials lowers manufacturing costs for firms in the non-resource cursed neighbor, leading to higher manufacturing growth for it. Simply put, a resource curse in one country generates positive spillovers for its non-resource-cursed neighbors.

This causal mechanism enables the drafting of the following hypotheses:

Hypothesis 1: In comparing countries, countries that have resource-dependent neighbors, and that experience higher migration from those neighbors are more likely to have higher manufacturing growth than those that do not.

Hypothesis 2: In comparing countries, countries that have resource-dependent neighbors, and that experience higher imports from those neighbors are more likely to have higher manufacturing growth than those that do not.

In the next chapter, these hypotheses are tested with various statistical and qualitative methodologies.

CHAPTER 4

STATISTICAL ANALYSIS

4.1 Data

In this chapter, I develop a model to empirically test the relationship between a country's manufacturing growth and its neighbors' resource dependence. The data sources and modifications are captured alongside the description of the variables.

4.1.1 The Dependent Variable

The majority of the resource-curse literature has focused on the impact of natural resources on the general growth of the economy. Consequently, economic indicators such as GDP per capita or gross national income have been deployed to the left-hand side of resource curse equations. As justified by Sam Jones (2008, p. 25), "With respect to the resource curse, the critical relationships of interest are between economic growth (G), institutions (I) and natural resource wealth (Ri)." Indeed, the basic resource curse hypothesis traces the impact of natural resources on the general economy. However, in connecting the tenets of the Dutch disease theory, it is impossible to ignore what happens to manufacturing growth, which is a key component of general growth. More directly, there is no sector more directly affected by a resource curse, according to the Dutch disease theory, than the manufacturing sector. Manufacturing represents the tradable sector of the economy and the sector through which high productivity growth takes place.

In view of the argument above, and in keeping with the theoretical mechanisms of this study's thesis, manufacturing is adopted as the dependent variable. Specifically, manufacturing value-added per capita is obtained for this statistical modeling. Manufacturing value-added is described as the annual net output of the manufacturing sector after subtracting its intermediate inputs. “The origin of value added is determined by the International Standard Industrial Classification (ISIC)” (WDIs, 2017). This variable is divided by country-total population to obtain the per capita standardization used in the statistical analysis.

Table 4.1 displays the descriptive statistics of the key variables of the analysis. Manufacturing per capita varies quite widely in Africa. The minimum score of the variable in the data was $0.611 by Rwanda in 2014. The highest recorded value was $14507.03 by Equatorial Guinea in 2006. The mean manufacturing value added per capita for all countries in the data is $277.40.

Table 4.1. Descriptive statistics of key variables for the general sample

Variable	Obs	Mean	Std. Dev.	Min	Max
Manufacturing value added per ca	3190	277.402	937.901	.611	14507.029
Resource Rents (GDP)	4463	14.995	14.151	.001	89.166
Resource Rents (GDP), Neighbor	4438	15.346	14.353	.001	89.166
Immigrants	4305	5.686	8.806	.083	106.691
Imports	4200	.016	.262	0	11.855

4.1.2 The Independent Variables

Two sets of independent variables are required for this study. The first set is the domestic indicators and determinants of a country’s manufacturing growth. Expectantly, these would include a country’s resource dependence as well as its controls. The second set of variables would be the theorized neighboring determinants of a country's manufacturing growth. These, in the theoretical sense, would include the source variable from which the spillovers are expected to emanate, which is neighbors' resource dependence, and the channels through which the spillovers are expected to travel, which are migrants and imports. That is, a country absorbs the spillovers of its neighbors' resource dependence through the migrants and imports it receives from those neighbors. The main control variable in this second set is the length of the land border shared between a country and each one of the neighbors in question (that is, in dealing with contiguous neighbors). In the proceeding section, the prevailing concerns and arguments behind the adoption of these variables will be discussed.

Natural resource dependence: The extant literature has raised key concerns regarding the right way to specify natural resources into growth equations. Two of the main concerns regard whether to consider resource abundance or resource utilization and how to measure either one of these.

Whether in their share abundance (deposits) or utilization (exploration), natural resources are expected to affect economic growth in substantial ways. Often, growth-stifling conflicts over the ownership and control of natural resources are fought over resource deposits that are yet to be mined. That is, the expected gains from natural resource deposits can generate conflicts and activities or even government policies that would have significant bearings on the general growth of the economy. Thus, resource abundance as against resource utilization remains a key source of debate.

In one of the earliest studies on the subject, Elbadawi Ibrahim (1999) adopted resource abundance to investigate the impact of natural resources on manufacturing exports among developing countries. In one of the more recent studies, Aye Alemu (2016) also furthered this line of thought by adopting resource abundance in determining the impact of natural resources on export diversification and structural change among African economies. In operationalizing resource abundance, however, Elbadawi (1999) adopted arable land per labor ratio while Alemu (2016) deployed an arable land ratio incorporating oil rents.

Among studies that adopt resource dependence, Sachs and Warner (1995) chose to proceed with the share of primary natural resource exports in GDP in initial study year. This variable was then used to investigate and explain economic growth over the ensuing periods, sometimes up to thirty years. Arezki and Ploeg (2011) described this as a flawed approach because it is high resource dependence associated with little economic diversification that is associated with poor economic performance. Specifically, if a country is fifty percent dependent on natural resources, a dip in international market prices at the end of the sample period significantly lowers other measures of its economic performance, such as GDP and GDP per capita. Thus, evaluating a country's economic performance by using the ratio of values in the beginning and end periods leaves estimates vulnerable to boom-bust cycles of economic growth and fluctuations in commodity prices. Consequently, estimates of economic performance may be biased, depending on whether there is a peak or trough in the beginning or end-year growth periods.

Manzano and Rigobon (2001) also criticize Sachs and Warner’s (1995) approach, arguing that it raises questions of whether natural resources or macroeconomic policies are responsible for the slow economic growth. For instance, high commodity prices in the 1970s enabled resource dependent countries to pile up massive debts that later produced economic problems in the 1980s when commodity prices fell. Thus, not only might this question whether there is a resource curse but also, whether the failure to account for this policy phenomenon would not constitute an omitted variable bias.

In related studies, Lederman and Maloney (2007) argued for the use of net natural resource exports per worker in a panel system estimator to circumvent the problems associated with Sachs and Warner's approach. Other studies, such as Bunte (2016), implemented the total resource rents per capita for their analyses.

This study's approach is consistent with the approach of the majority of the more recent literature on the subject. Natural resource rents per GDP as measured in the World Bank's WDIs. This variable is calculated as the difference between the price of a commodity and the average cost of producing it. The calibration process first estimates the world price of a unit of the commodity in question. Per-unit estimates of the average cost of extracting the commodity are then subtracted from the estimated world price per unit of the commodity. The obtained unit rents are finally multiplied by the actual number of units extracted by a country and divided by GDP to obtain the final resource rents per GDP indicator. The total resource rents per GDP indicator includes the rents of the commodities: oil, minerals, forests, natural gas, and coal. This variable avoids the common pitfall of Sachs and Warner where production costs, re-exports, and domestic consumption of natural resources are ignored in favor of natural resource exports per GDP.

The highest recorded resource rents per GDP in the data is 89.17% reported by oil-rich Equatorial Guinea in 2000. The lowest value 0.00% by Mauritius in 2014. The mean natural resource dependence level in Africa is 15.00%

Neighbors' resource dependence: As outlined by the main thesis of this study, a country's manufacturing growth is not only a function of its own resource dependence but also the resource dependence of its neighbors. A neighbor's resource dependence is obtained in the same way as a country's resource dependence – as measured by the World Bank. This variable also ranges from a low of 0.00% reported by Mauritius to a high of 89.17% reported by oil-rich Equatorial Guinea.

Migration: Migrants from neighboring countries are hypothesized as a channel through which the spillovers of neighbors' resource dependence are expected to be received. Bilateral migration data was secured from the International Migration database of the United Nations Population Division. The United Nations Population Division gathers this data from population censuses, population registers, and nationally representative surveys (UN Population Division, 2020). In defining the variable for analysis, I standardized the number of migrants from each neighbor by the total population of the host country. This will ensure that the impact of the number of migrants from each neighbor will be understood in the context of the host country.

Using contiguous neighbors, Somalia recorded the lowest share of migrants from its contiguous neighbor, Ethiopia, per its (Somalia's) total population, which was 0.14% in 1998. On the other hand, Djibouti recorded the highest share (106.7%) of migrants per its total population from a neighbor (Ethiopia) in 1997. However, this appeared to be an outlier likely attributable to an influx of refugees at a point in time. This is because, the share of migrants from Ethiopia per Djibouti's total population was only 13% a year before and dropped down to 10% two years later.

Imports: In addition to migrants, a country is also expected to absorb spillovers from its neighbors' resource dependence through its imports from those neighbors. The study postulates that the value of a country's imports from its neighbors as a share of its GDP would determine the level of spillovers absorbed from those neighbors. Thus, data of imports from neighbors is first obtained from the World Integrated Trade Solution website. The version of trade data from this source is also sourced from the UN COMTRADE. The downloaded import data was that of the Standard International Trade Classification, Revision 2 Reported Nomenclature. This variable was then divided by a country's GDP to obtain the imports from neighbors as a share of GDP.

Botswana in 2012 imported the highest value of goods and services as a share of its GDP (11.86%) from a neighbor (South Africa). On the other hand, several countries recorded zero percent or near-zero percent of imports as a share of GDP from their contiguous neighbors. This is not surprising as Africa has been reported to have the lowest (16%) intracontinental trade of all regions of the world. For context, intra-European trade is 69%, while intra-Asian trade is 59% (Songwe, 2020).

Control Variables: Several control variables adorn the statistical analysis. The first control variable of interest is the length of the common border between a country and each one of its neighbors. It is likely that the number of entry points between a country and its neighbor will be impacted by the length of the common border between them. These number of entry points could, in turn, impact the number of migrants and the volume of trade flows between the countries.

The data for this variable was derived from the International Statistics section of the Nation Master website (www.nationmaster.com).

Differences in the size of economies and populations between countries have been found to influence the level of cross-border interactions, and hence the level of cross-border spillovers (Cooray et al, 2013; Headey & Hodge, 2009). Thus, GDP per capita, national population, and neighbor population variables were included in the models. The national labor force participation rate, real inflation rate, trade openness, and foreign direct investment were all accounted for.

The analysis also includes control variables related to the politics and governance of a country. The level of democracy as represented by a country's polity score is included. Other variables such as control of corruption and government effectiveness are controlled for to reflect the impact of the quality of governance and institutions.

4.2 Modeling strategy

4.2.1 What is a resource-dependent country?

The primary thesis of this study posits that non-resource-cursed (also referred to as non-resource-dependent) countries are likely to attract positive spillovers from their resource-cursed (also known as resource-dependent) neighbors. That is because non-resource-cursed countries would have stable, if not booming, manufacturing sectors that serve as favored destinations for laborers and producers looking to escape declining manufacturing conditions in their resource-cursed countries. However, which is a resource-cursed/dependent country, and which is not? How do we differentiate them?

Having high amounts of natural resources or natural resource wealth does not necessarily imply resource dependence or a resource curse. Hailu and Kipgen (2017, p. 253), in agreement with Dobbs et. al. (2013), note this same observation by stating that "not all resource-rich countries are also resource-driven." At the barest minimum, for a country to be resource-dependent or resource-cursed, its revenues and policies must be resource-driven, even as this reasoning is itself transient and endogenous. Proceeding with this caution, nonetheless, Dobbs et. al. (2013) went on to establish three criteria to determine what is a resource-dependent country. The criteria include: 1) a country with total resource exports 20% or more of total exports in 2011, 2) one with resource revenues 20% or more of government revenues on average between 2006 and 2010 inclusive, and 3) one with natural resource rents 10% or more of GDP in 2011.

For similar theoretical and analytical purposes, the International Monetary Fund, through the works of Baunsgaard et al. (2012), classifies any country whose revenues from oil, gas, and mineral resources account for at least 20% of its total fiscal revenues as resource-dependent. The authors also classify any country whose oil, gas, and mineral exports account for 20% or more of its total export revenues as resource-dependent. Haglund (2011), together with the Oxford Policy Management, set the minimum share at 25% even while adopting the same or similar set of resources as Baunsgaard et al. (2012).

By taking into consideration the qualitative contribution of the mining sector to the economy and the subsequent dependence on it, the International Council of Mining and Metals (ICMM) developed the Mining Contribution Index (MCI). The calibration process ranks countries on a set of three indicators that are weighed equally and summed up to obtain an Index. The three indicators include 1) the export contribution of minerals in 2010, 2) the change in mineral export contribution between 2005 and 2010, and 3) mineral revenues as a share of GDP in 2010.

In a critique of the aforementioned measures, Hailu and Kipgen (2017, p. 253) argue that the measures do not provide a "complete account of a country's dependence on the extractive sector." The authors describe the established minimum thresholds for resource dependence from other studies as too arbitrary. That is, what makes those minimum cut-off points the magic number at which a country becomes preoccupied with natural resources such that significant negative or positive implications are expected for other sectors of the economy? The authors also criticize the measures, stating that they do not allow for the ability to track a country's dependence on natural resources over time. They point out that the existing measures lack adjustments for the resource sector's contribution to a country's foreign exchange and fiscal revenues. In lieu of the existing measures, the authors then construct the Extractive Dependence Index (EDI).

The EDI takes into account "the transmission mechanisms by which the resource curse has been found to operate" (Hailu & Kipgen, 2017, p. 253). The authors identify as the transmission mechanisms, the resource sector's contribution to export revenues, fiscal revenues, and its addition of value to GDP. This strategy, they argue, places the focus of the measure not on the factors that cause an increase or decrease in resource dependence but on the outcome of the dependence. This makes the measure suitable for other analyses investigating the outcome of a country's resources dependence on other variables.

Despite the variations in measures of resource dependence among the existing studies, the sample of countries differentiated by the various measures as resource-dependent are nearly always the same. For instance, despite the novel inclusion of indicators to account for non-resource tax revenue and other sources of revenue for the government, Hailu and Kipgen's EDI identified all but two of the same countries identified by the IMF as resource-dependent. This outcome more likely affirms the validity of previous measures of resource dependence, making any of them useful for testing the relationship between resource dependence and manufacturing growth.

This study's objective is to measure the degree to which non-resource-dependent countries attract spillovers from their resource-dependent neighbors. Thus, a criterion is developed where any country whose oil, gas, and mineral rents account for less than 25% of its total GDP in any given year is classified as non-resource dependent for that given year. While this criterion is consistent with that of other existing studies such as Haglund (2011), it is still admittedly arbitrary. For this reason, the current study tests its hypotheses on other minimum thresholds, including 35%, and 10%. The resource rents variable used for this calculation is drawn from the World Bank's WDI database. Details on the calculation of this variable are included in the *data* section of this chapter.

4.2.2 The statistical sample

Do non-resource-dependent countries attract positive spillovers from their resource-dependent neighbors? This research question presupposes the organization of data from non-resource-dependent countries. These countries are, however, expected to have neighbors with various levels of resource dependence. Therefore, the focus of the analysis would be geared towards tracking the type of spillovers that the non-resource-dependent countries attract from both their resource-dependent and non-resource-dependent neighbors.

As such, I first gather data on a panel structure for all fifty-four African countries from 1996 to 2016, inclusive. This initial structure yielded a dataset of 1134 (54 x 21) observations. I then proceeded to expand the data structure by nesting within each country, each one of her neighbors. The average number of neighbors per country in the data is 4.2. The expansion effectively generated a hierarchical panel of fifty-four African countries with an average of 4.2 neighbors each over a period of twenty-one years. A main dataset of 4762 (54 x 4.2 x 21) observations was, thus, obtained. Table 0.1 in the Appendix contains the list of African countries and their neighbors.

Table 4.2. Descriptive Statistics of less than 25% sample

Variable	Obs	Mean	Std. Dev.	Min	Max
Manufacturing value added per ca	2563	212.465	424.05	.611	4526.076
Resource Rents (GDP)	3611	9.208	5.949	.001	24.935
Resource Rents (GDP), Neighbor	3314	14.466	13.581	.001	89.166
Immigrants	3160	4.314	4.619	.083	78.801
Imports	3356	.016	.287	0	11.855

Since the regression equations focus solely on non-resource-dependent countries, a condition was established whereby a country (together with its neighbors) only made an entry into a model for a particular year if the country had less than 25% of resource dependence for that year. Table 4.2 contains the descriptive statistics of the restricted sample. The same strategy was repeated for the *robustness* models, where the analysis was replicated for resource dependence thresholds of 35% or less and 10% or less. Tables A.2 and A.3 in the appendix contain the descriptive statistics of the restricted samples of the robustness models.

4.2.3 Model Specification - Manufacturing and Resource Curse

Various studies have adopted various production-function models to explain the relationship between natural resources and economic growth. Augmented versions of the Solow-Growth Model (Sachs & Warner, 1995; Gylgason & Zoega, 2001) and the Cobb Douglass Function (Gylgason & Zoega, 2001) are common. Sachs and Warner (1995) made improvements to a Barro and Sala-I-Martin (1995) cross-country growth equation, estimating:

$$(1/T)\log(Y^i_T/Y^i_0) = \delta_0 + \delta_1\log(Y^i) + \delta' Z^i + \varepsilon^i$$

where i represents country, T represents time, Y represents initial income, and Z represents other "structural characteristics of the economy" (Sachs & Warner,1995, p. 8). The error term is represented by the term ε. Their modifications were made to include resource dependence, measured as the ratio of primary exports to GDP in initial year, as one of the Zs. The implication is that economic growth is negatively related to initial income and natural resources.

In subsequent modifications to their model, they include variables for economic openness, the ratio of investment to GDP, bureaucratic quality, external terms of trade, and a measure of income inequality.

For this study, first, the left side of the equation is replaced with manufacturing value added per capita. Next, for the basic model, only natural resources (measured as total natural resource rents as a share of GDP) is retained on the right-hand side. The modifications yield:

$$(Y^m_{it} - Y^m_{it-1}).\ (1/P_{it}) = \delta_0 + \delta_1 Z_{it} + \varepsilon_{it} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots. (1)$$

where Y^m represents manufacturing yield, i represents country, t covers the study period annually, and P stands for total population. In this model, Z represents natural resources. Given that the units of analysis are non-resource-cursed countries with possibly resource-cursed neighbors, the interpretation is also altered from that of Sachs and Warner (1995). Sachs and Warner (1995) postulate that manufacturing growth is negatively related to natural resources, regardless of the resource wealth. However, in keeping with the more recent literature, I argue that manufacturing growth is only negatively related to resource rents when a country is resource-dependent – that is, when resource rents account for 25% or more of a country's GDP. Thus, for this model, since the focus is on non-resource-dependent countries, domestic natural resource wealth is expected to either have a positive or neutral relationship with manufacturing growth. In differentiating between resource wealth and resource dependence, Swart and Marrewijk (2009) found that countries that are resource-rich attracted more mergers and acquisitions and FDIs while countries that are resource-dependent did not. These mergers and acquisitions and FDIs boost manufacturing growth and other sectors of the economy.

4.2.4 Model specification – modeling spillovers

One of the earlier attempts to develop a model for estimating the size of cross-border spillovers of economic growth was undertaken by Coe and Helpman (1995). Using a single equation regression model, they estimate the impact of not only a country's R&D but also the R&D of its partners on its total factor productivity (TFP). They stipulate TFP to be a straightforward function of cumulative R&D investment and the proportion of labor applied in manufacturing, measured as LogY – LogL where Y represents the general manufacturing output from all necessary intervening variables while L represents the current labor force. With the assumption that capital is not used in production, a higher TFP is generated with a higher number of R&D inputs, which constitute Y. They stipulate their initial equation as:

$$\mathrm{Log}F_i = \alpha_i^0 + \alpha_i^{d+}\log S_i^{\mathrm{d}} + \alpha_i^f \log S_i^f$$

where the dependent variable, log*F,* represents total factor productivity (TFP), *i* refers to the country index, S^d refers to the domestic R&D capital stock, and S^f refers to the foreign R&D capital stock. Since this is a trade based model, foreign R&D capital stock is calculated as the import-weights of foreign R&D stocks of trade partners. TFP is also calculated as logY – logK – (1-B)logL, with Y representing the general manufacturing output from all necessary intervening variables, K representing the stock of capital, B representing the ratio of capital to GDP, and L representing the labor force. This specification implies that countries that import more from trade partners with higher R&D investments will capture higher foreign R&D spillovers than their peers. A subsequent modification to the model incorporates an interaction between foreign R&D capital stocks and the degree of international trade in the equation:

$$\mathrm{Log}F_i = \alpha_i^0 + \alpha_i^{d+}\log S_i^{\mathrm{d}} + \alpha_i^f \mathrm{m}_i \log S_i^f$$

where *m* represents the ratio of imports to GDP. Given the same level of foreign R&D stock for all countries, the level of a country's TFP will be determined by its share of imports to GDP. Coe and Helpman (1995) support this technique with theories that associate productivity gains to trade volumes.

Following this strategy, along with other recent adoptions (such as McDonough (2017)), this study modifies its basic model to include the spillover variable as follows.

$$(Y^{m}_{it} - Y^{m}_{it-1}).\ (1/P_{it}) = \delta_0 + \delta_1 Z_{it} + \delta_2 Z^{j}_{t} + \varepsilon_{it} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \text{(2)}$$

where j represents country i's neighbor. The model thus interprets manufacturing growth of country i to be a function of the resource dependence of both country i and neighbor j. This time, however, the impact of neighbor j's resource dependence on country i's manufacturing is expected to be positive – indicating a positive spillover.

The two potential channels for the flow of spillovers are identified to be imports and migrants. Imports are those from neighbors and standardized over host country's GDP in the form:

$$I_i^j = \frac{\text{imports of } i \text{ (country) from } j \text{ (neighbor)}}{\text{GDP}(i)}$$

Migrants are also those from neighbors and standardized over host country's total population in the form:

$$M_i^j = \frac{\text{migrants in } i \text{ (country) from } j \text{ (neighbor)}}{population(i)}$$

The two new variables are then inputted into the general model in the form:

$$(Y^{m}_{it} - Y^{m}_{it-1}).\ (1/P_{it}) = \delta_0 + \delta_1 Z_{it} + \delta_2 Z^{j}_{t} + \delta_3 I_i^{j}{}_{t} + \delta_4 M_i^{j}{}_{t} + \varepsilon_{it} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \text{(3)}$$

A final alteration to the model creates an interaction between the channels of spillover (imports and migrants) and the source of spillover (neighbor's resource dependence). This yields a model of the form:

$$(Y^{m}_{it} - Y^{m}_{it-1}).\ (1/P_{it}) = \delta_0 + \delta_1 Z_{it} + \delta_2 Z^{j}_{t} + \delta_3\ I_i^{j}{}_{t} + \delta_4 M_i^{j}{}_{t} + \delta_5 (Z^{j}_{t}\ \text{x}\ I_i^{j}{}_{t}) + \delta_6 (Z^{j}_{t}\ \text{x}\ M_i^{j}{}_{t}) + \varepsilon_{it} \ldots \text{(4)}$$

The above model will be implemented in a regression analysis using the averages of the terms. The interpretation of the impact on the dependent variable would therefore be in the context of all of a country's neighbors combined, and not just one specific neighbor.

4.3 Methodological concerns

An enduring debate in the existing literature is the issue of endogeneity. That is, do natural resources cause slow economic growth or do economic conditions determine the level of resource dependence? Over the years, several researchers have raised this issue in more profound ways. Jones (2008, p. 21), for instance, cautioned that "the volume of resource rents that accrue to the public purse is not manna from heaven. Rather, the level of these resource rents reflect complex endogenous process, some of which include how mining contracts are negotiated.

It has been argued that a boom from natural resources causes extravagant spending of government revenues and inflation (van der Ploeg & Poelhekke, 2009). These consequently lead to slower economic growth as the eventual bust from the boom leaves the economy with more debilitating problems such as debt, fiscal deficit, high cost of borrowing, and high cost of living. However, as stressed by Robinson et. al (2006), it is plausible to believe the reverse. Excessive spending by the government could be the cause of an unnecessarily high level of resource extraction, and hence high resource rents.

In what was one of the first attempts to caution against the issue of endogeneity, Lane and Tornell (1995) discussed what is described as a *feeding frenzy* where a poor or weak government may stand by and allow competing groups to inefficiently exhaust a resource deposit. The rush for the resources may result in more income or more tax revenues from the resource extraction, but it also results from the government's inability to control and safeguard the resource for long-term exploration. In this scenario, the political economy hypotheses, which portends that natural resource rents lead to slow economic growth by weakening economic and democratic institutions, are only as sound as they ignore the initial shock of a poor government and a weak economy. It is along similar lines of argument that Arrezki and Ploeg (2011, p. 505) caution that "It is also unclear whether resources are the cause of bad institutions and bad policies or whether they aggravate the adverse effects of bad institutions and bad policies on growth."

Several attempts have indeed been made to ameliorate the problem of endogeneity in resource curse equations. Sachs and Warner (1995) utilize a fixed historical value of resource dependence to predict growth twenty to thirty years later. Atsushi Iimi (2007) also employs a similar internal instrumentation technique by lagging the values of the resource dependence indicator to shorter periods. However, other researchers have argued that these techniques are inadequate as they leave estimates vulnerable to boom-bust cycles of economic growth as well as to fluctuations in commodity prices.

Arezki and Ploeg (2011) employ an instrumental variable approach that utilizes as instruments, UK legal origin, log of settler mortality, and the fraction of population speaking English. They argue that "colonial empires robbed states of their natural resources in which indigenous diseases were rife and survival prospects were poor, and thus did not invest in good institutions" (p. 508).

A novel approach by Jones (2008) adopts a log-linear modeling strategy that takes the formulation of data into ordinal categories as its starting point. This step essentially eliminates the need to distinguish between dependent and independent variables and allows for one to treat all variables as responses.

A preponderance of evidence approach is adopted in this study whereby different lag periods and different lag combinations together with different disaggregates of the resource dependence variable are tested for consistency. The consistency of findings across several lag combinations and additional supplemental analytical techniques will then be the endogeneity-proof argument for causation.

4.4 Main Findings

The main findings are presented in four different models in Table 4.3. As labeled in column two, the basic model represents the first test of the relationship between a country's manufacturing value-added per capita and its resource dependence as well as its neighbors' resource dependence. The second model, labeled Migration, includes immigrants and the interaction between immigrants and neighbors' resource dependence while excluding the variable for imports. The third model, labeled Imports, includes estimates for imports and an interaction between imports and resource dependence while excluding the variable for immigration. The final model is the Full model, which includes all the variables of the regression analysis.

For the basic model, as expected, a country's manufacturing value-added per capita correlates positively with its neighbor's resource dependence. A country's manufacturing is also positively correlated with its manufacturing. This implies that for non-resource-cursed countries, resource revenues are indeed good for manufacturing growth.

The second model, labeled Migration, displays the results of the first input of immigrants as a potential spillover channel for neighbors' resource dependence. In this model, a country's resource dependence continuous to present positive benefits for domestic manufacturing. However, its manufacturing growth no longer correlates significantly with its neighbors' resource dependence. Instead, Immigrants are shown to have a positive impact on manufacturing both from the main and interaction effects. This buttresses hypothesis one which states that immigrants from resource-cursed countries present positive benefits for domestic manufacturing.

The *Imports* model introduces imports from neighbors as a share of GDP. The variable fails to register a significant effect on domestic manufacturing, both from the main and interaction effects. However, the main effect of neighbors' resource dependence on domestic manufacturing turns positive again.

Finally, the *Full* model introduces all the variables of the analysis. In this final model, first and foremost, a one percent increase in a country's resource dependence boosts manufacturing valued added per capita by $7.66. A one percent increase in neighbors' resource dependence is also positively associated with domestic manufacturing, though the estimate is not statistically significant.

Turning to the spillover channels of the model, the model reveals a statistically significant effect for both the interaction and main effects of Immigrants. The interaction effect also indicates that the impact of immigrants on domestic manufacturing increases at higher levels of neighbors' resource dependence. Specifically, an immigrant per hundred thousand population from a resource-rich country contributes $0.22 to a country's manufacturing value per capita. Based on the result of the interaction, significant support, thus, exists for hypothesis one, which situates migrants from resource-cursed neighbors as carriers of the spillovers. The result, however, does not show support for hypothesis two, which situates imports as a spillover channel.

Figure 4.1 displays the average marginal effect of neighbors' resource rents per GDP on domestic manufacturing at different levels of immigration. The figure shows an increasing relationship between a country's manufacturing valued-added per capita and its neighbors' resource rents per GDP, the higher the share of immigrants. This result strongly supports hypothesis one, which states that the higher the number of immigrants from a resource-cursed neighbor, the higher the manufacturing valued added per capita.

Table 4.3. Regression analyses – Main results

VARIABLES	Basic	Migration	Imports	Full
Resource Rents (GDP)	7.89***	8.03***	10.13***	7.66***
	(1.41)	(1.54)	(1.65)	(1.66)
Resource Rents (GDP), Neighbor	2.81**	1.93	2.87**	0.92
	(1.16)	(1.30)	(1.31)	(1.34)
Immigrants		31.91***		40.59***
		(3.50)		(3.63)
Immigrants x Resource Rents (GDP), Neighbor		0.27***		0.22**
		(0.10)		(0.10)
Imports			360.00	780.25
			(655.52)	(677.64)
Imports x Resource Rents (GDP), Neighbor			-68.58	-161.51
			(92.38)	(98.94)
Trade openness	-2.23***	-3.23***	-2.40***	-2.68***
	(0.62)	(0.74)	(0.70)	(0.79)
GDP pc	0.17***	0.17***	0.17***	0.18***
	(0.01)	(0.01)	(0.01)	(0.01)
Inflation	0.28	-0.14	0.39	0.52
	(0.18)	(0.63)	(0.64)	(0.64)
FDI	5.39**	3.65	4.38*	1.58
	(2.33)	(2.50)	(2.56)	(2.65)
Labor force	1.97	5.50*	2.32	3.54
	(2.83)	(3.09)	(3.16)	(3.19)
Population	-0.00***	-0.00***	-0.00***	-0.00***
	(0.00)	(0.00)	(0.00)	(0.00)
Neighbor population	0.00	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Border length (km)	0.00	-0.01	0.00	-0.01
	(0.02)	(0.02)	(0.02)	(0.03)
Polity	-12.98***	-12.24***	-12.60***	-6.96
	(3.82)	(4.06)	(4.25)	(5.10)
Corruption control	21.38	46.67	23.88	60.88
	(52.24)	(56.49)	(57.83)	(58.91)
Government effectiveness	2.26	83.32	-10.46	-35.47
	(51.84)	(55.85)	(58.71)	(58.04)
Constant	1,924.64***	1,815.58***	1,886.82***	1,707.42***
	(160.55)	(175.24)	(179.75)	(183.81)
Observations	1,391	1,173	1,247	1,110
Adjusted R-squared	0.842	0.858	0.815	0.850
Country FE	YES	YES	YES	YES
Neighbor FE	YES	YES	YES	YES
Year FE	NO	NO	NO	YES

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

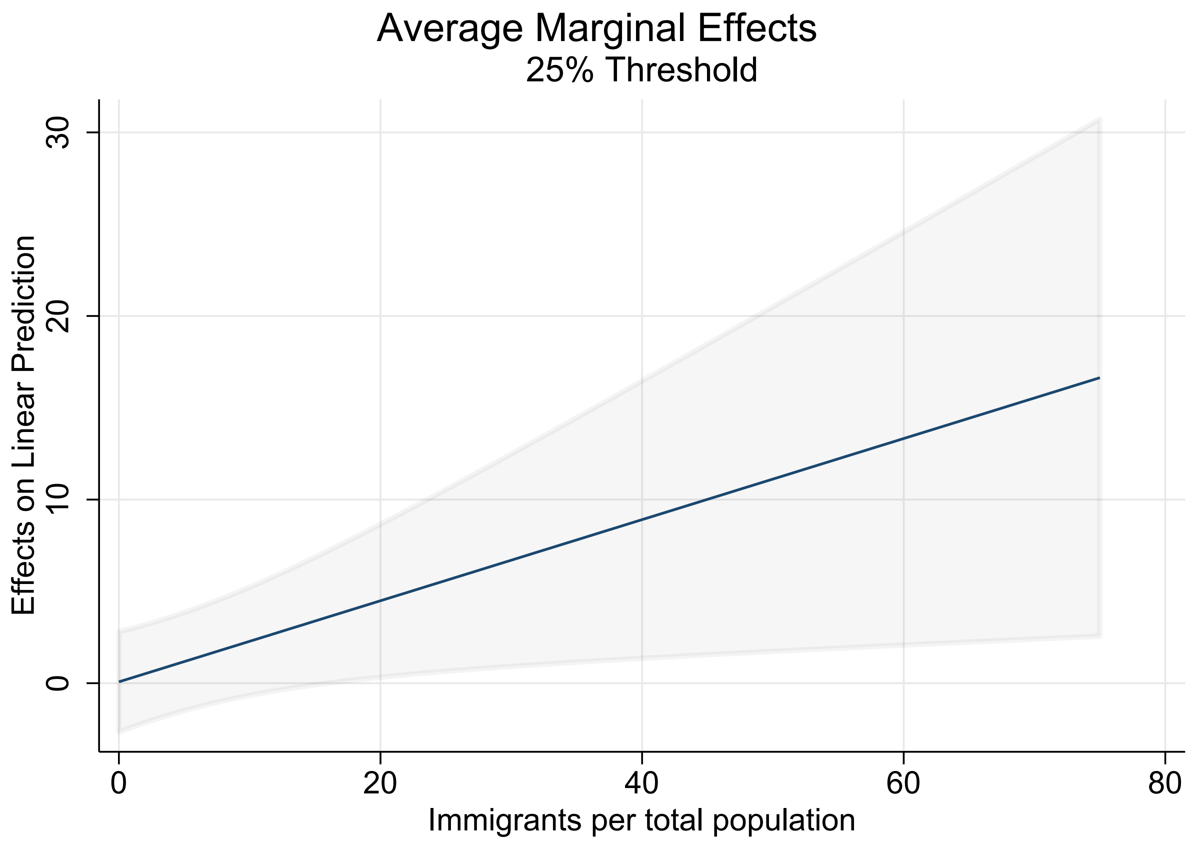

Figure 4.1. OLS 25% sample result
Average marginal effects of neighbors' resource dependence at different levels of immigration.

4.5 Supplemental Analyses

In the proceeding section, several robustness tests are conducted to verify the main findings. A series of variations of the main model are implemented. Some of the supplemental models involve adopting new samples. Consequently, certain parameters may change. For instance, the Hausman test was used to determine whether to run a fixed effects or random effects model. Due to the use of different samples throughout the analyses, the Hausman test suggested the use of fixed effects in some models but random effects in others.

4.5.1 Varying Resource Dependence Thresholds

In this section, I conduct supplemental analyses to show that the relationship between a non-resource-cursed country's manufacturing and its neighbors' resource dependence is not dependent on a restricted definition of the resource curse. In the extant literature, several authors adopt several "arbitrary" thresholds of resource dependence (ranging from 10% to 35%) as levels at which a country's economic and policy environment may be classified as resource-driven. Thus, in order to ensure that the main results of this study are not dependent on a specific definition of the resource curse, I repeat the analysis on two different maximum thresholds, one higher (35%) and the other lower (10%) than that of the main analysis. The descriptive statistics for these samples are presented in the Appendix as Table A.2 and Table A.3, respectively. The results of the two supplemental models are reported in Table 4.4.

The 35% maximum threshold model contains results of the analysis conducted on a sample of cases in which a country's resource dependence was lower than 35%. In this new sample, it is realized, once again, that domestic resource dependence boosts domestic manufacturing. More importantly, however, migrants from neighboring countries where resource dependence is higher continue to present positive benefits for domestic manufacturing. This is consistent with the results of the main analysis and provides strong support for hypothesis one. Figure 4.2 displays the effect of the interaction between migrants and neighbors' resource dependence; that is, the average marginal effects of migrants at different levels of neighbors' resource dependence. The graph indicates that at higher levels of immigration, neighbors' resource dependence presents higher levels of positive spillovers for a country's manufacturing industry. With regard to the impact of imports from neighboring countries that are resource-dependent, insignificant results are, once again, obtained.

The results of the second equation, labeled 10% maximum threshold, are consistent with the results of the 25% and the 35% maximum threshold models. The results continue to indicate that migrants from neighboring countries where resource dependence is higher provide more positive benefits for manufacturing than those from lower resource-dependent neighbors. Figure 4.3 displays this relationship graphically. The graph indicates that at higher levels of immigration, neighbors' resource dependence presents higher levels of positive spillovers for a country's manufacturing industry. In essence, hypothesis one continues to receive significant support across all models.

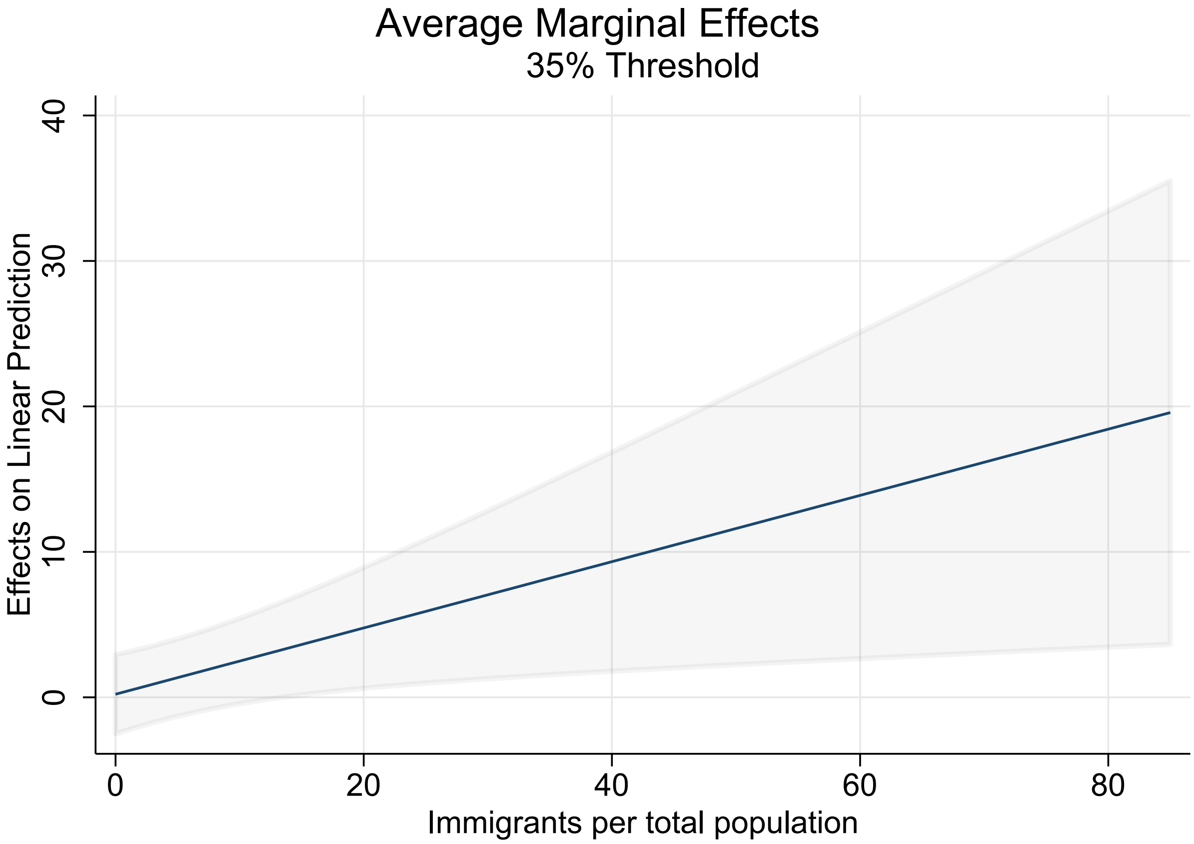

Figure 4.2. Result based on the 35% maximum threshold model.
Average marginal effects of neighbors' resource dependence at different levels of immigration.

Table 4.4. Regression analyses – Different specifications of the dependent variable

VARIABLES	**35% Max Threshold**	**10% Max Threshold**
Resource Rents (GDP)	6.45***	19.32***
	(1.59)	(6.88)
Resource Rents (GDP), Neighbor	1.06	-2.62
	(1.33)	(1.82)
Immigrants	40.70***	38.89***
	(3.63)	(5.67)
Immigrants x Resource Rents (GDP), Neighbor	0.23**	0.48*
	(0.10)	(0.27)
Imports	783.94	-128.45
	(677.26)	(682.93)
Imports x Resource Rents (GDP), Neighbor	-162.69	-18.98
	(98.86)	(102.90)
Trade openness	-2.64***	-2.57***
	(0.79)	(0.89)
GDP pc	0.18***	0.17***
	(0.01)	(0.01)
Inflation	0.34	1.53
	(0.64)	(1.04)
FDI	1.60	-5.96**
	(2.65)	(2.93)
Labor force	2.88	-3.06
	(3.17)	(4.23)
Population	-0.00***	-0.00***
	(0.00)	(0.00)
Neighbor population	0.00	0.00**
	(0.00)	(0.00)
Border length (km)	-0.01	-0.00
	(0.03)	(0.04)
Polity	-8.23*	-3.03
	(4.95)	(7.80)
Corruption control	55.16	-33.29
	(58.81)	(83.05)
Government effectiveness	-28.74	191.39**
	(57.46)	(90.33)
Constant	1,748.16***	1,894.23***
	(182.12)	(283.82)
Observations	1,117	545
Adjusted R-squared	0.849	0.872
Country FE	YES	YES
Neighbor FE	YES	YES
Year FE	YES	YES

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

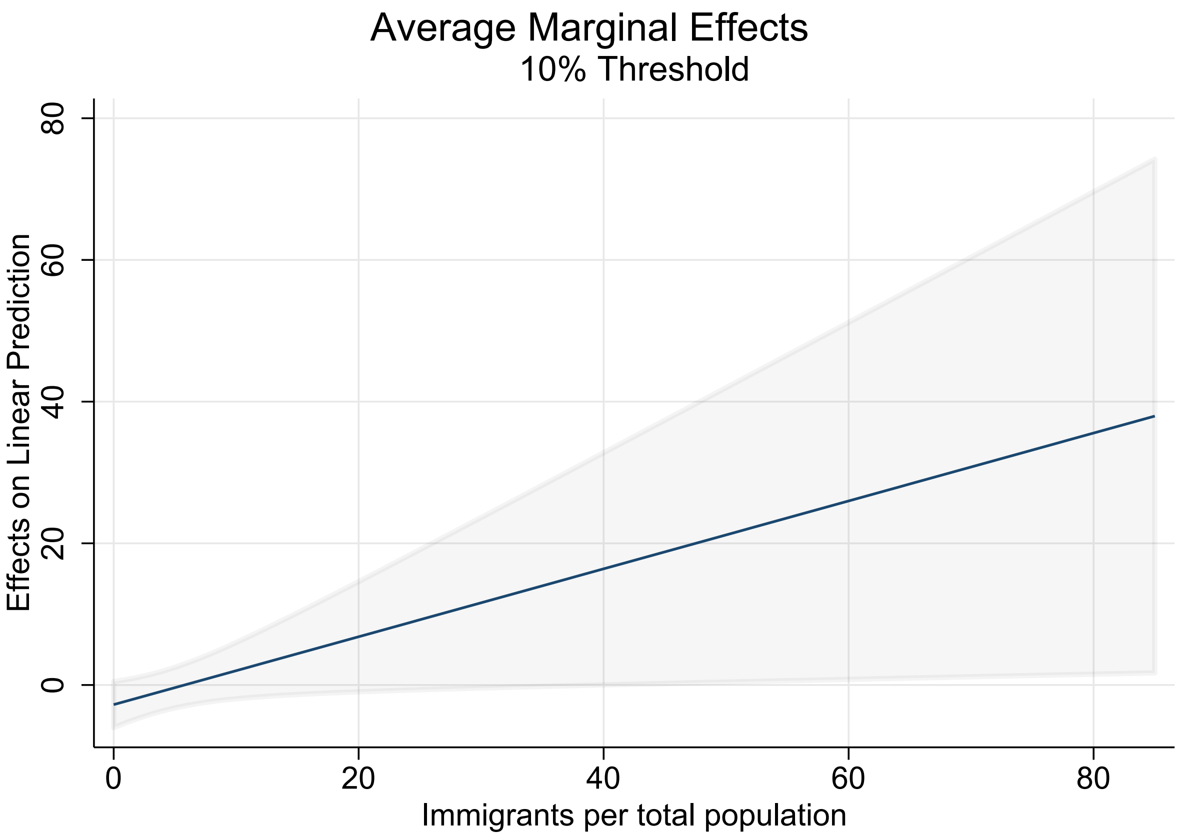

Figure 4.3. Result based on the 10% maximum threshold model.
Average marginal effects of neighbors' resource dependence at different levels of immigration.

4.5.2 Lagging by Different Periods

In this section, I present results from models based on a one-year lag period. Specifically, I attempt to estimate the relationship between a country's current manufacturing and its neighbors' resource dependence level the previous year.

As presented in Table 4.5, the results from the one-year lag period are consistent with those of the main analysis (0-year lag period). That is, migrants from resource-cursed neighbors carry positive benefits for manufacturing, whether currently or one year later. Figure 4.4 depicts the nature of the effect. Figure 4.4 indicates that at higher levels of migration, neighbor's resource dependence has higher levels of positive spillovers for a country's manufacturing industry one year later.

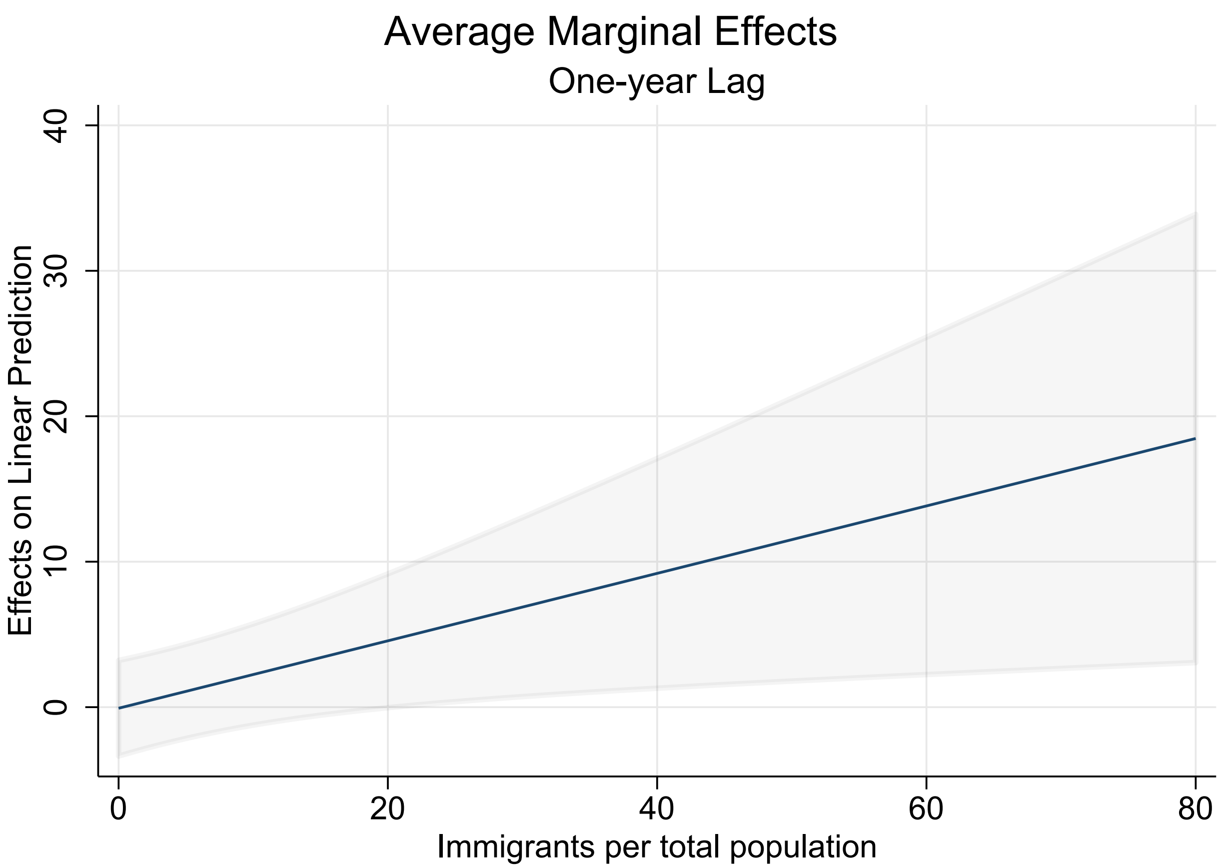

Figure 4.4. Results based on the one-year lag model.
Average marginal effects of neighbors' resource dependence at different levels of immigration

Table 4.5. Regression analyses – Different lag periods of the explanators

VARIABLES	One-Year Lag	No Lag
Resource Rents (GDP)	7.23**	7.66***
	(2.95)	(1.66)
Resource Rents (GDP), Neighbor	0.75	0.92
	(1.91)	(1.34)
Immigrants	-14.65***	40.59***
	(4.61)	(3.63)
Immigrants x Resource Rents (GDP), Neighbor	0.23*	0.22**
	(0.12)	(0.10)
Imports	437.90	780.25
	(898.34)	(677.64)
Imports x Resource Rents (GDP), Neighbor	-144.79	-161.51
	(132.24)	(98.94)
Trade openness	-0.05***	-2.68***
	(0.01)	(0.79)
GDP pc	-2.86**	0.18***
	(1.16)	(0.01)
Inflation	0.53	0.52
	(1.04)	(0.64)
FDI	0.52	1.58
	(4.15)	(2.65)
Labor force	-0.33	3.54
	(4.62)	(3.19)
Population	-0.00	-0.00***
	(0.00)	(0.00)
Neighbor population	0.00**	0.00
	(0.00)	(0.00)
Border length (km)	-0.01	-0.01
	(0.04)	(0.03)
Polity	-11.62	-6.96
	(7.11)	(5.10)
Corruption control	-442.70***	60.88
	(91.27)	(58.91)
Government effectiveness	237.93**	-35.47
	(98.79)	(58.04)
Constant	2,528.35***	1,707.42***
	(266.96)	(183.81)
Observations	903	1,110
Adjusted R-squared	0.742	0.850
Country FE	YES	YES
Neighbor FE	YES	YES
Year FE	YES	YES

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

4.6 Spatial Analysis.

This section conducts spatial analyses of the spillover effects of the resource curse. Results from these analyses are compared to the results of the OLS. Spatial data on longitudes and latitudes were retrieved from the Open Africa website.

4.6.1 Statistical Tests

This section of the statistical analyses conducts spatial regression to ensure that the potential spatial spillovers among countries are accounted for. As noted earlier, spatial mixing mechanisms form an integral part of the hypothesized spillovers of the resource curse. However, before conducting the spatial analyses, I first conduct a Moran's I test of the data to measure the potential for spatial autocorrelation, using the Estat Moran I procedure. This procedure first regresses the dependent variable of your model against your independent variables. The Estat Moran is then ran as a post-estimation technique to detect spatial correlation among the residuals.

Table 4.6. Moran's I test.

Moran test for spatial dependence
Ho: error is i.i.d.
Errorlags: C (Contiguity Weight)
chi2(1) = 6.65
Prob > chi2 = 0.0099

The Estat Moran test was run using spatial weights for different years, with similar results for each year. The spatial connectivity for the weights and all subsequent analyses are based on latitudes and longitudes. The national boundaries of the countries in the sample have remained constant throughout the sample period, except in 2011 when Sudan was split, introducing a new country into the mix. Table 4.6, thus, displays the result of the test based on a spatial contiguity weight matrix for the year 2010. The result indicates a strong rejection of the assumption that the entities within the data are spatially independent. The null hypothesis of the Estat Moran's I test, using chi-square results, is an assumption of spatial independence among entities in the data (Whiting, 2020; Stata, 2020). However, given a statistically significant test as shown in the table, the null hypothesis is rejected, implying that the data are indeed spatially dependent. This necessitates the adoption of appropriate spatial analysis techniques to carefully decompose spatial entities from non-spatial entities in the data.

I also proceeded to plot a map (Figure 4.6) of manufacturing valued added per capita values for all African countries between 1996 and 2016, inclusive. The map graphically depicts a clustering of the data. This clustering suggests that there are spillover effects between countries. For instance, almost all North African and Southern African countries are located in the highest category of manufacturing value added per capita (that is $500 and higher). Interestingly, their neighbors to the south are categorized among the lowest (that is less than $50) in manufacturing valued added over the period from 1996 to 2016. Also, countries along the southern coast of West Africa, beginning from the Ivory Coast to the Central African Republic, have similar values of manufacturing per capita. Finally, almost all East and Central African countries fall within the third category of growth, which is between $50 and $250 per capita.

These scenarios depict a potential presence of both negative and positive spatial autocorrelation (Griffith & Arbia, 2010). A negative spatial autocorrelation indicates that objects with large values have neighbors with small values and vice versa. Positive autocorrelation refers to a distribution where objects with large values have neighbors with large values. In between these two is a distribution in which objects with intermediate values have neighbors with intermediate values. While these scenarios raise an interesting question about the nature of spillovers between different types of neighbors, they indicate, undeniably, that there exist strong spatial dependencies and relationships in the data. Hence, the use of an appropriate spatial modeling technique to decompose the spatial components from the non-spatial entities of the data is strongly recommended.

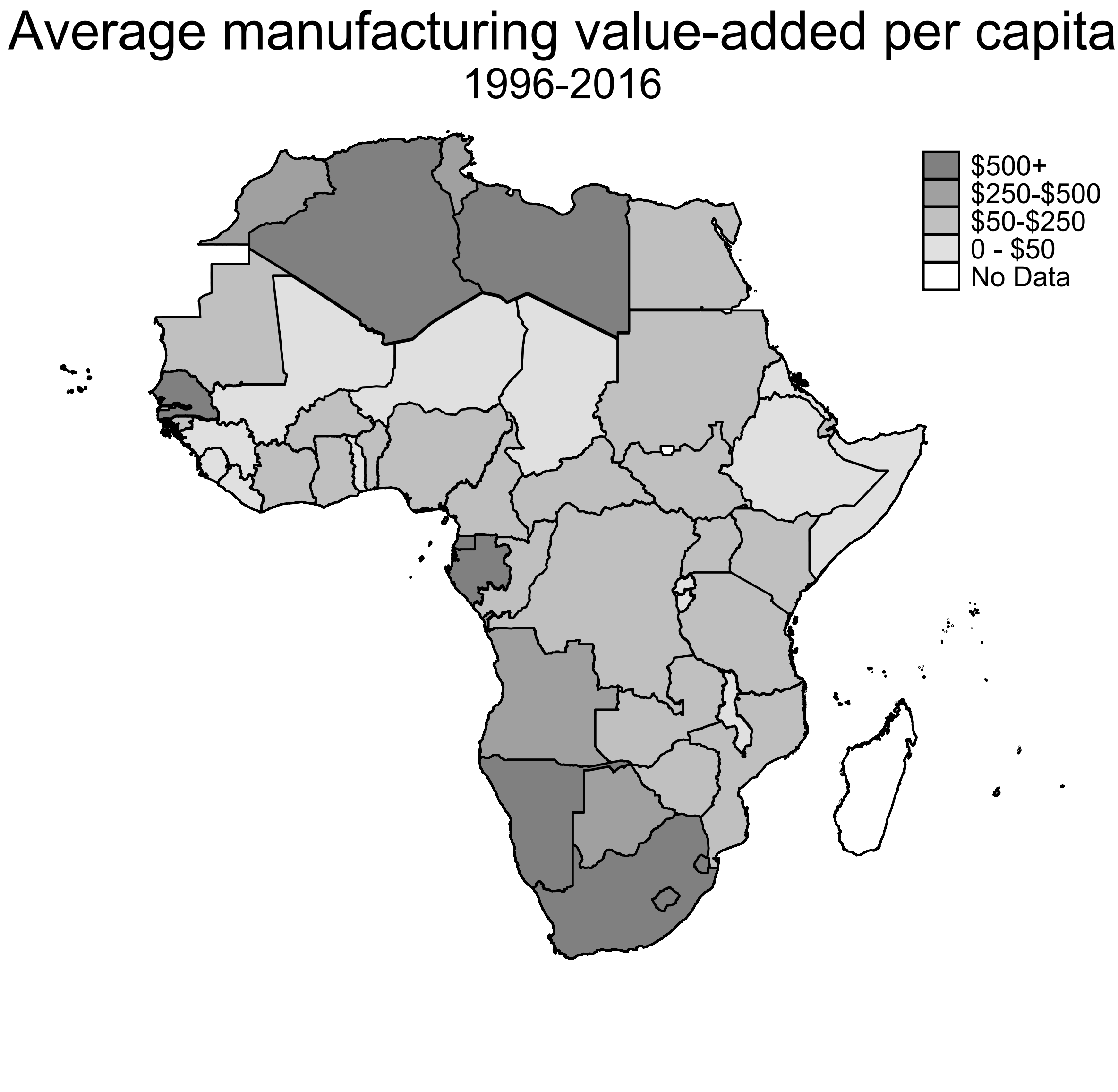

Figure 4.5. Spatial appearance of dependences

4.6.2 Spatial Modelling Strategy

Armed with the knowledge of the presence of spatial autocorrelation in the data, I proceeded to implement two spatial lag regression models. The first is a spatial lag model weighted on a simple binary spatial contiguity weight matrix. The second is an inverse distance-based weight that attempts to capture the nature of the spillover at places furthest from the origin. Using a space-time modeling concept adopted from Chun and Griffith (2011), I adopt the general spatial-time form:

$Y_{it} = x_i\beta + b_i + \varepsilon_{it} = 1,\ldots n,\ t = 1,\ldots.T,$

where Y_{it} represents the observed variable (manufacturing value per capita) for unit i at time t. The term 'x' represents the row of hypothesized regressors and control vectors of the model. The term 'β' is a vector of regression coefficients, b_i is a random effect for unit i, while ε_{it} accounts for the random term.

The model is implemented using weights (W) obtained upon two neighborhood classifications – contiguity and inverse distance. For the contiguous-neighbors specification, the weight matrix is defined simply as $W = W_{ij} = 1$ if location j is adjacent to i and 0 otherwise. For the spatial inverse distance model, the weight is specified as $W = W(d) = 1/d^p$ where d represents distance and p is the power and greater than zero. In this inverse distance specification, the weight is a decreasing function of distance meant to determine whether the effect on the observed variable increases or decreases with distance.

4.6.3 The Spatial Sample

Filling in missing data for the spatial analysis required keeping in mind the presence of spatial autocorrelation already observed from the Moran's I test. A geo-imputation technique was, thus, adopted where the missing values of a variable are imputed with a combination of country-level and neighbor-level values. However, this implied that if there was a neighbor with missing data on a particular variable, the variable of interest to be imputed would be affected. The more neighbors with missing variables, the lower the chance of having observations with not-too-large missing cases to compute for. However, since the analysis was breaking into more non-contiguous neighbors, that implied that the likelihood of running into more neighbors with missing data on key variables was going to be high.

In order to limit the chance of this happening and having biased results, I implemented a geo-imputation technique that, first, filled in missing cases with the mean of the previous and proceeding year for a particular neighbor. After that, I then estimated the values of missing cells using an underlying regression model that took into consideration neighbors' variables. However, I only implemented this for cases where less than 5% of the data was missing. In cases where missing data was more than 5%, the observation was eliminated from the analysis. Whole countries such as South Sudan, Sudan, and Libya were eliminated from the sample. For the spatial analyses, only the 25% maximum threshold of resource dependence was used. The final number of countries were recorded as forty, each with twenty-one years of data. This generated a final dataset of 840 (40 X 21) cases. The descriptive statistics of the final sample for this threshold are displayed in Table 0.4 in the Appendix.

4.6.4 Spatial Regression Results

Table 4.7 reflects the contiguous spatial lag model results, starting with the base model and ending with the full model with all the regressors and interaction terms. Focusing on the interaction terms, which represent the spillover channels, it is affirmed that migrants from neighbors with higher resource dependence bring higher spillover benefits to domestic manufacturing. Imports, as a spillover channel, are once again insignificant. Figure 4.7 depicts the average marginal effect of neighbors' resource dependence at different levels of immigration. The depiction echoes the same narrative as the coefficients.

Table 4.8 displays the results of the inverse distance-based spatial lag model. This model also begins with an estimation of a basic equation and concludes with a full model. The results (as shown in the full model) indicate, substantially, that migrants from neighbors with higher results dependence present higher positive spillovers to domestic manufacturing than migrants from neighbors with lower natural resource dependence. Figure 4.8 shows a graphical depiction of the positive relationship between a country's manufacturing and its neighbor's resource dependence through its migrants.

The coefficient of the weight, however, indicates that this effect decreases with distance. This likely implies that migrants who live closer to their home country contribute more to their destination country's growth than migrants who travel furthest from their home country. More research with migration theories might explain this phenomenon more clearly.

Table 4.7. Spatial Lag Models – Contiguity Weight

VARIABLES	Basic Contiguity	Migration Contiguity	Imports Contiguity	Full Contiguity
Resource Rents (GDP)	2.770*	2.048	2.698*	2.013
	(1.90)	(1.39)	(1.85)	(1.37)
Resource Rents (GDP), Neighbor	0.241	-2.796	0.206	-2.731
	(0.12)	(-1.20)	(0.10)	(1.17)
Immigrants		-0.0905		0.154
		(-0.02)		(0.03)
Immigrants x Resource Rents (GDP), Neighbor		0.724**		0.711**
		(3.03)		(2.98)
Imports			-118.1	316.4
			(-0.51)	(0.76)
Imports x Resource Rents (GDP), Neighbor			6.006	10.19
			(0.23)	(0.40)
GDP pc	0.131***	0.129***	0.130***	0.130***
	(17.59)	(17.32)	(17.19)	(17.37)
Trade openness	-1.307**	-1.453**	-1.322**	-1.438**
	(2.59)	(2.91)	(2.61)	(2.88)
Inflation	-0.910	-1.054	-1.073	-1.005
	(1.25)	(1.44)	(1.44)	(1.37)
FDI	5.417	4.425	4.976	4.565
	(1.81)	(1.49)	(1.65)	(1.54)
Population	-0.000**	-0.000*	-0.000**	-0.000*
	(2.80)	(2.18)	(2.83)	(2.10)
Neighbor population	-0.000	0.000	0.000	0.000
	(0.05)	(0.32)	(0.01)	(0.36)
Labor force	-13.53***	-12.61***	-13.74***	-12.42***
	(5.62)	(4.97)	(5.69)	(4.89)
Constant	1136.7***	1069.1***	1158.5***	995.7***
	(6.43)	(5.73)	(6.52)	(5.03)
Weight _s001				
Manufacturing pc	-0.0987**	-0.0927**	-0.0976**	-0.0927**
	(2.80)	(2.63)	(2.77)	(2.63)
sigma_u				
_cons	224.5***	248.9***	224.4***	249.1***
	(8.04)	(7.97)	(8.03)	(7.98)
sigma_e				
_cons	305.8***	299.7***	305.6***	299.4***
	(39.92)	(39.86)	(39.92)	(39.86)
N	840	840	840	840

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 4.8. Spatial Lag Models – Inverse Distance-based weight

VARIABLES	Basic iDistance	Migration iDistance	Imports iDistance	Full iDistance
Resource Rents (GDP)	2.865*	2.238	2.788	2.140
	[1.46]	[1.48]	[1.46]	[1.48]
Resource Rents (GDP), Neighbor	0.258	-2.752	0.228	-2.833
	[2.09]	[2.34]	[2.09]	[2.34]
Immigrants		0.452		0.247
		[4.42]		[4.42]
Immigrants x Resource Rents (GDP), Neighbor		0.709**		0.719**
		[0.24]		[0.24]
Imports			-120.7	-146.5
			[233.47]	[230.35]
Imports x Resource Rents (GDP), Neighbor			5.712	8.624
			[25.79]	[25.42]
GDP pc	0.132***	0.131***	0.131***	0.130***
	[0.01]	[0.01]	[0.01]	[0.01]
Trade openness	-1.309**	-1.443**	-1.324**	-1.465**
	[0.51]	[0.50]	[0.51]	[0.50]
Inflation	-0.902	-0.858	-1.078	-1.036
	[0.73]	[0.72]	[0.75]	[0.74]
FDI	5.348	4.865	4.871	4.401
	[3.00]	[2.95]	[3.03]	[2.98]
Population	-0.000**	-0.000*	-0.000**	-0.000*
	[0.00]	[0.00]	[0.00]	[0.00]
Neighbor population	0.000	0.000	0.000	0.000
	[0.00]	[0.00]	[0.00]	[0.00]
Labor force	-12.76***	-11.70***	-12.99***	-11.95***
	[2.40]	[2.52]	[2.41]	[2.53]
Constant	1095.0***	1018.7***	1119.3***	1046.1***
	[176.51]	[185.70]	[177.70]	[187.06]
Weight_s001				
Manufacturing pc	-0.184	-0.175	-0.184	-0.175
	[0.12]	[0.12]	[0.12]	[0.12]
sigma_u				
_cons	225.2***	247.8***	225.1***	247.7***
	[28.02]	[31.04]	[28.03]	[31.07]
sigma_e				
_cons	307.0***	301.1***	306.7***	300.9***
	[7.69]	[7.55]	[7.68]	[7.54]
N	840	840	840	840

Standard errors in brackets
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

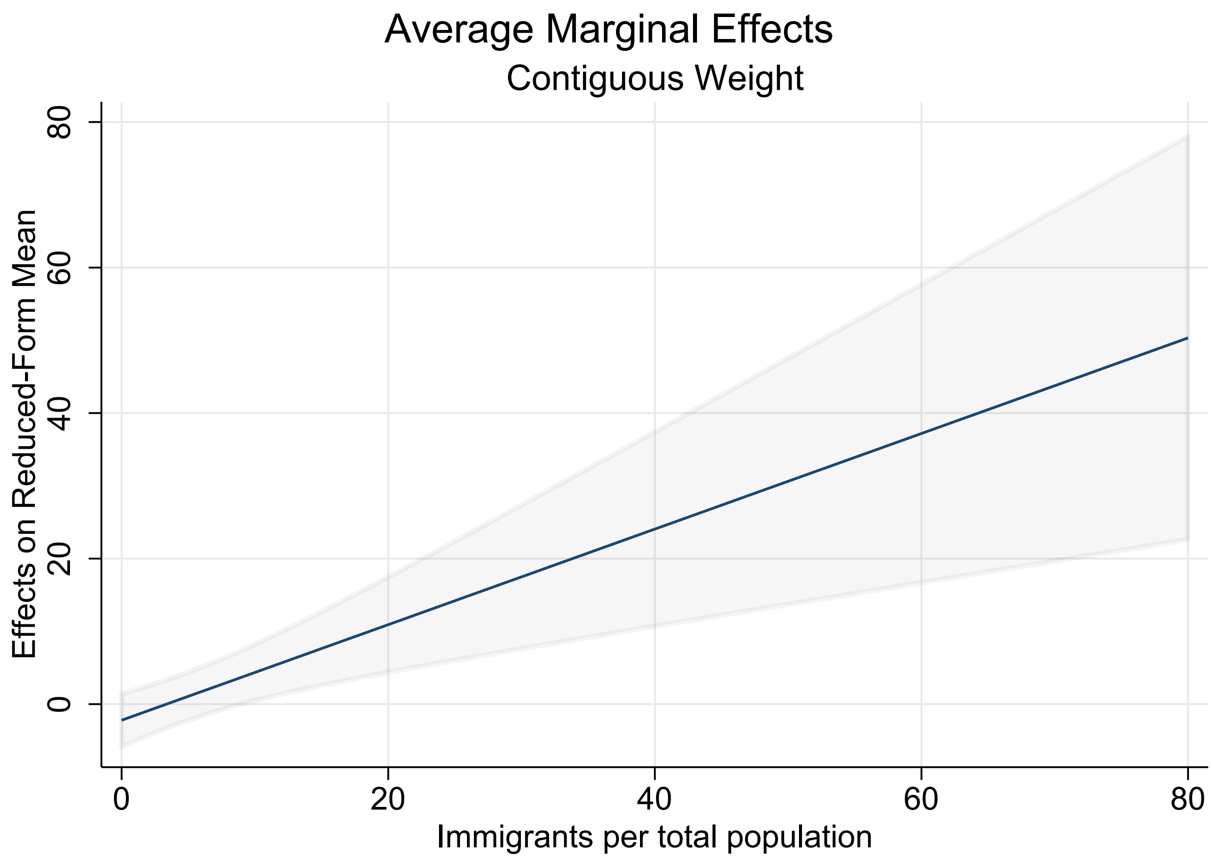

Figure 4.6. Spatial contiguity weight graph
Average marginal effects of neighbors' resource dependence at different levels of immigration

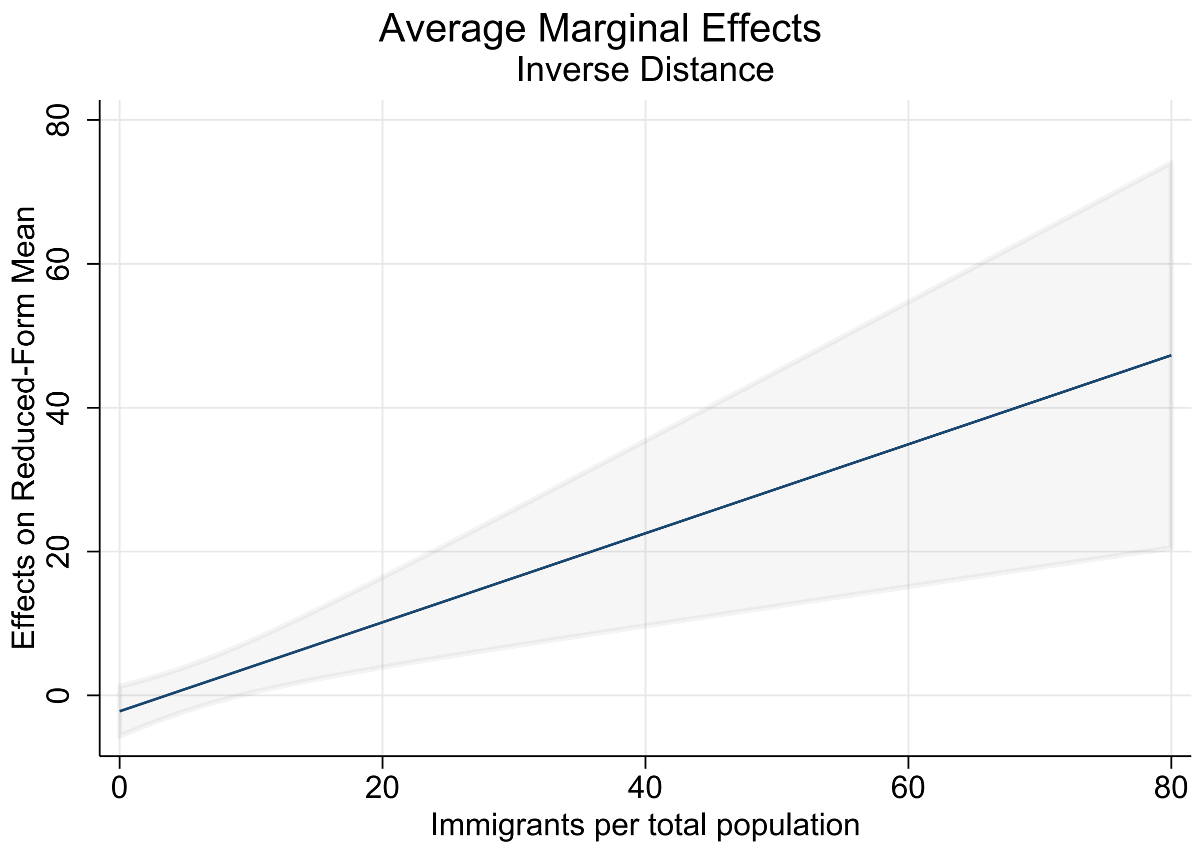

Figure 4.7. Spatial inverse distance model graph.
Average marginal effects of neighbors' resource dependence at different levels of immigration

4.7 Summary of Models

Table 4.9 contains a summary of the full versions of estimates obtained from the main and supplemental analytical strategies. Among all the models, the effect of the interaction between neighbors' resource dependence and migrants remains consistently positive and significant. This consistent outcome bolsters the argument that the estimates are causal; that is, the results are unlikely to be biased by endogenous variables. The robustness of this outcome at multiple specifications points to the enduring impact that neighbors' resource dependence has on a country's manufacturing. In short, all the models support hypothesis 1, which states that countries with stable manufacturing industries will gain positive spillovers through migrants from neighboring countries who are resource-dependent.

Table 4.9. Summary of full models

VARIABLES	**OLS**	**One Year Lag (OLS)**	**Spatial Lag - Contiguity**	**Spatial Lag - Inverse Distance**
Resource Rents (GDP)	7.66***	7.23**	2.013	2.14
	[1.66]	[2.95]	[1.474]	[1.480]
Resource Rents (GDP), Neighbor	0.92	0.75	-2.731	-2.833
	[1.34]	[1.91]	[2.330]	[2.344]
Immigrants	40.59***	-14.65***	0.154	0.247
	[3.63]	[4.61]	[4.411]	[4.423]
Immigrants x Resource Rents (GDP), Neighbor	0.22**	0.23*	0.711**	0.719**
	[0.1]	[0.12]	[0.239]	[0.239]
Imports	780.25	437.9	316.4	-146.5
	[677.64]	[898.34]	[413.9]	[230.3]
Imports x Resource Rents (GDP), Neighbor	-161.51	-144.79	10.19	8.624
	[98.94]	[132.24]	[25.32]	[25.42]
Adjusted Rsquared	0.85	0.74		
Pseudo Rsquared			0.44	0.45
Observations	1,110	903	840	840
Spatial autocorrelation parameter (Contiguity)			-0.09 [2.63]**	-0.18 [0.12]***

Standard errors in brackets
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

4.8 Conclusion

Natural resource dependence is widespread among African countries. For decades, these natural resources have not been transformed into robust economic development for citizens of these resource-rich countries. This phenomenon has been described as a resource curse. However, how do resource-cursed countries affect regional economic growth? Countries are not independent objects located in space. The question, therefore, that this statistical analysis attempted to address is, what then is the impact of a country's unhealthy resource dependence on the economies of its neighbors? The resource curse theory stipulates that resource-cursed countries would experience a decline in manufacturing growth as well as movements in capital and labor. Since countries are not independent objects located in space, the capital and labor are not bound to move within the same economy. However, as they move across economies, what type of impact do they carry with them to the neighboring countries?

Individuals moving across a national boundary as a result of a shrinking manufacturing industry at home are expected to carry with them skills they already accumulated in the home country's manufacturing sector. These skills are expected to help bolster the manufacturing industries of the host economy even further. This argument formed the basis of the first hypothesis. The second hypothesis also stipulated that a resource curse in a neighbor's economy may spillover positively to a country's domestic manufacturing through the acquisition of cheap imports.

Different statistical analytical techniques were adopted to test these hypotheses. First, an ordinary least squares (OLS) regression was used to test the two hypotheses. Additional analyses called for adopting varied sample sizes as well as lagging the explanatory variables by one year. Spatial regression models were also implemented to account for the spatial dependencies in the data. Weight matrices based on a simple binary contiguous neighborhood criterion and an inverse distance criterion were implemented to run spatial lag models. It is important to note that the objective of adopting different models to test the hypotheses is not to compare the models, but to determine whether spillover effects exist, regardless of the neighborhood modeling techniques used. It is also imperative to note that the models may not be directly comparable since they were implemented on usually different samples.

Nonetheless, in all the models, consistent support was obtained for hypothesis one. Migrants from neighbors with higher resource dependence (or curse) presented consistently positive benefits for a country's domestic economy through its manufacturing sector. In essence, countries with robust manufacturing sectors stand to gain from resource-cursed neighbors. The spatial modeling technique also revealed that migrants who travel to close-by neighbors present more positive benefits than those who settle in countries furthest from their home country.

On the other hand, however, no significant support was obtained for imports as a spillover channel for neighbors' resource curse. Thus, the analyses failed to find support for hypothesis two.

This analysis contributes to the existing literature in a substantial number of ways. First, an empirically-driven extension of the resource curse theory extends the conversation about the range of impact of natural resources on economic growth. Secondly, the study introduces a new understanding of the nature of immigration flow between countries. Thirdly, the study helps explain the divergence of economic growth between otherwise similar countries.

CHAPTER 5

QUALITATIVE CASE STUDY

5.1 Introduction

Does the resource curse have a spillover effect? More precisely, how does a country's natural resource curse affect its neighbor's manufacturing growth? This question underpins the primary thesis of this study. In the previous chapter, two hypotheses were advanced to test the theorized mechanisms through which resource curses may spill over to neighboring destinations. From hypothesis one, migrants from resource-cursed countries are expected to present positive benefits to neighboring economies' manufacturing sector through the offer of cheap and available labor. From hypothesis two, increased raw material exports from resource-cursed countries are expected to present cheap production costs for manufacturing industries in neighboring economies and fuel faster growth. In this section, both hypotheses are tested under a structured case comparison methodology.

A two-by-two (N=4) structured case comparison case study is chosen to complement the large-N statistical analyses conducted in chapter 4. Large-N statistical analyses enable the examination of patterns in a large number of cases and, therefore, enhance the external validity of a thesis. However, the standardization of measurements across cases may fail to capture unique conditions in each case. On the other hand, while single-case (N=1) studies allow for the in-depth examination of a chosen case, their generalizability is limited. In contrast to the two study methods, a two-by-two structured case comparison study pits competing explanatory variables against each other over a set of four chosen cases. This technique offers a few important compromises and advantages over large-N statistical analyses and single-case studies.

First, the need to standardize measurements as in a multiple-N study to accommodate a high number of units is reduced and spread only over a few cases. This offers a relatively wider space for the researcher to incorporate the uniqueness of each case into the operationalization of the variables as much as possible. Second, through an incorporated qualitative process tracing procedure, the comparison case study allows for the tracing of processes through which a particular variable shapes an examined outcome. Third, multiple sources of evidence (including interviews, statements by key actors, newspapers, and archival material) are allowed to be examined simultaneously to fortify an argument. Fourth, the structured comparative method intuitively stirs the researcher towards an emphasis on examining causality (Goodrick, 2014). This is because as competing explanations are pit against each other, the insignificant hypotheses are ruled out in favor of the significant hypothesis, representing an important falsification element in the study. Additionally, as cases are chosen into competing cells in the box, the comparison case study automatically creates a comparison or control group for the study. The presence of a comparison group then enhances the researcher's ability to examine causal attribution in the analysis, even if qualitatively.

Two general conditions, whose details will be provided in the operationalization and sample description stages, underpin the selection of cases for this analysis. First, maximum similarity among the cases over a series of factors must be obtained. These factors are also akin to what are referred to as control factors in large-N statistical analyses. Inexhaustively, they include demographic, political, economic, cultural, historical, and environmental factors. A few examples include population size, labor force, institutional quality, corruption levels, political regime, trade openness, inflation, FDIs, GDP per capita, ethnic fractionalization, climate, and geographic location. The second general condition is that maximum variance among the cases over each explanatory variable must be established. That is, it is important that the main variations among the cases are observed only in their scores over the two variables representing the rival hypotheses of the analysis. For the qualitative analysis, the two explanatory variables are simplified as net migration and net imports. It is only in meeting the two stated conditions of the case selection that any observed variance in the dependent variable can be attributed to corresponding variances in the explanatory variables.

5.2 Hypotheses

According to the theoretical mechanism of this study's primary thesis, non-resource-dependent countries are expected to cheaply absorb fleeing manufacturing capital and labor from their resource-cursed neighbors. This implies that non-resource-dependent countries are expected to have higher manufacturing growth over their resource-dependent neighbors, all else constant.

Thus, having held all factors constant, one of two mechanisms must be observed. First, the non-resource-dependent country must experience high (net positive) migration from its resource-dependent neighbor. The net positive flow of migrants then indicates the direction of flow of the spillovers as manufacturing labor, skills, and ideas are transferred from one country (expectedly the resource-dependent neighbor) to the other (expectedly the non-resource-dependent country).

Second, in order for the non-resource-dependent country to experience a net positive advantage in manufacturing over its resource-dependent neighbor, it must have a net positive flow of raw material imports from its resource-dependent neighbor. The net positive flow of imports then indicates the direction of flow of the spillovers as manufacturing raw materials are transported from the resource-dependent country to feed industries in its non-resource-dependent neighbor.

The following propositions are therefore stated:

Proposition 1: In comparing countries, those who are neighbors with resource-dependent countries, and that have net positive migration with them, will have higher manufacturing growth than those who are neighbors with resource-dependent countries, but have net negative migration with them.

Proposition 2: In comparing countries, those who are neighbors with resource-dependent countries, and that have net positive imports with them, will have higher manufacturing growth than those who are neighbors with resource-dependent countries, but have net negative imports with them.

5.3 Operationalization of independent variables

In the statistical analysis in Chapter 4, the independent variables were created as the interaction between resource dependence and migrants as well as between resource dependence and imports. In this qualitative analysis, net migration per capita and net imports per GDP are used for easier and meaningful interpretation. However, the nature of the variables remains the same as in the statistical analyses. This is because, in the selection of cases, each selected non-resource-dependent country is paired with a resource-dependent neighbor. The interaction component between migration and resource dependence and between imports and resource dependence is, thus, maintained.

Substantively, however, the focus of comparison in this analysis is placed on country-pairs rather than the aggregate of all neighbors of a country. As can be deduced from the propositions, this analysis focuses on flows between two paired countries and not from one country to all of its neighbors. Focusing on flows between paired countries is necessary to simplify comparisons while also preventing the unwieldy tracing of an intractable number of cases.

The two competing hypotheses investigate whether migration or imports carry spillovers of natural resource curses from neighboring countries. Thus, the first independent variable is net migration per capita (100,000) between the two countries. It is important to standardize the migration flow variable by the countries' population to eliminate bias posed by population differences between countries. This variable is calculated as:

$$\textit{Net Migration} = \left[\left(\frac{migrants\ in\ i\ from\ j}{population\ of\ j}\right) - \left(\frac{migrants\ in\ j\ from\ i}{population\ of\ i}\right)\right] *100{,}000$$

where the term *i* represents the non-resource-dependent country while *j* represents the resource-dependent neighbor. When net migration with the resource-dependent neighbor is positive for the non-resource-dependent country, manufacturing growth is also expected to be higher if hypothesis one is to be supported.

The second independent variable is measured as the net of imports between the non-resource-dependent country and its resource-dependent neighbor as a percentage share of their GDPs. This variable is calculated as:

$$\textit{Net Imports} = \left[\left(\frac{imports\ of\ i\ from\ j}{GDP\ of\ j}\right) - \left(\frac{imports\ of\ j\ from\ i}{GDP\ of\ i}\right)\right] * 100$$

where the term *i* represents the non-resource-dependent country while *j* represents the resource-dependent neighbor. When a country experiences net positive imports from its resource-dependent neighbor, it is expected to have higher manufacturing growth than a country with net negative imports from its resource-dependent neighbor.

5.4 The Sample

The sample framework requires settling on a set of four non-resource-dependent countries, each of which must have a resource-dependent neighbor. The focus of the analysis is to compare outcomes between pairs of countries. Since each selected country must have a resource-dependent neighbor, it was easier to start the selection process by first identifying resource-dependent countries in Africa. A bar chart of resource dependence was created where countries were ranked in descending order of resource dependence. Figure 5.1 depicts the position of the chosen countries in the ranking, relative to the continental average.

Using aggregate values from 1996 to 2016, the average resource dependence level was observed to be at approximately 15%. For this reason, all countries with scores above the average level were considered resource-dependent, while countries with scores below the average score were considered non-resource-dependent. Note that this alteration does not necessarily violate the 25% minimum threshold used in the statistical analysis. This is because it has been proven in the statistical analyses that the 25% minimum threshold is indeed arbitrary since both the 10% and the 25% minimum thresholds implemented in the supplemental analysis returned similar results. Nevertheless, finding any two countries (one on the high resource dependence side and the other on the low resource dependence side) to pair-up as a case requires adherence to a multitude of ceteris paribus factors between the two countries. For this reason, settling on the average level of resource dependence from the sample increases the probability of finding an adequate number of countries on each side of the threshold that have enough comparable factors in order to make a "reasonable" pair.

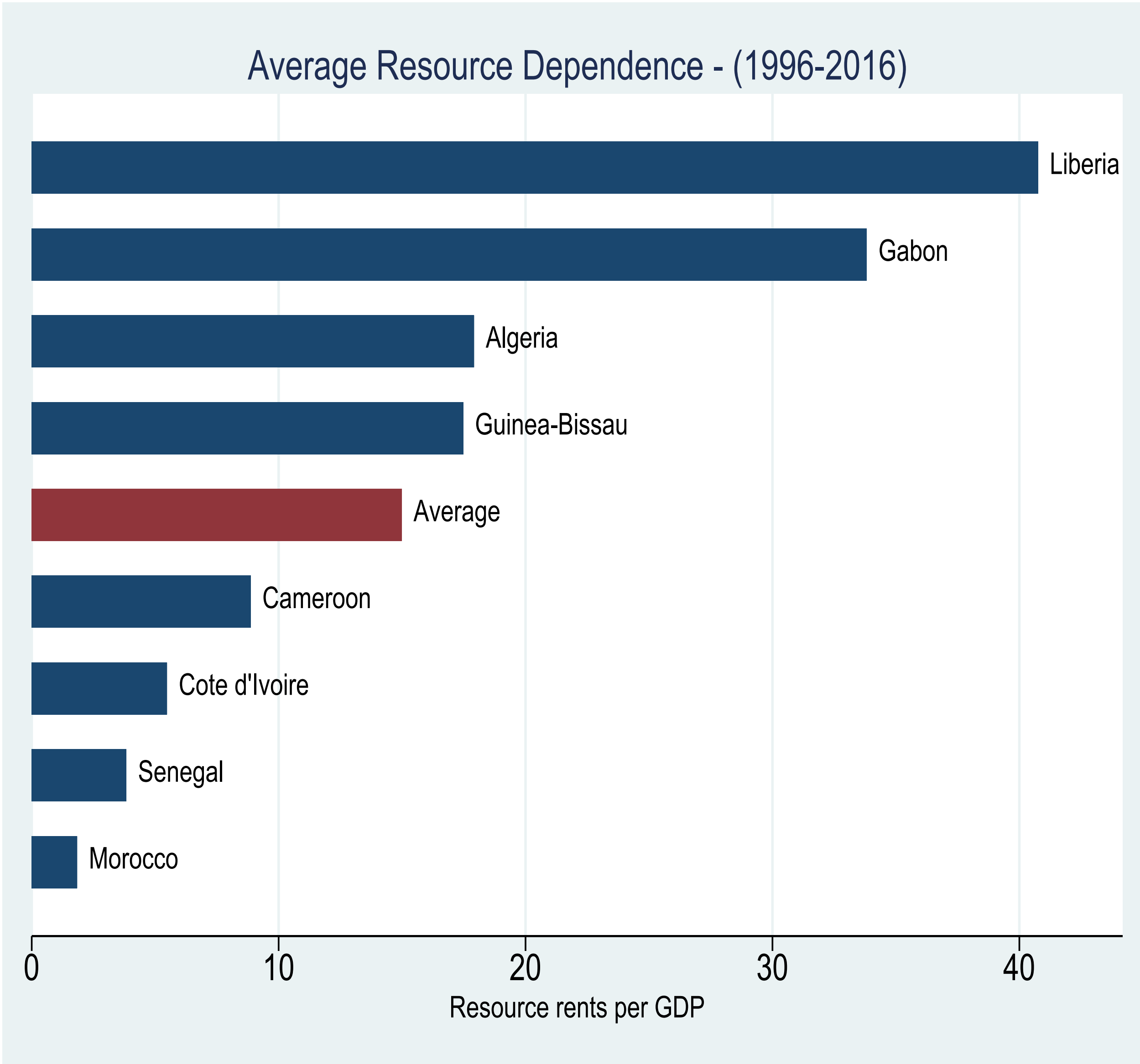

Figure 5.1. Average resource dependence for chosen sample, including continental average.

Thus, the next logical step in the selection process was identifying, for each resource dependent country, a non-resource-dependent neighbor that is nearly comparable in demographic and political characteristics such as population size, labor force size, cultural history, polity, and type of regime. The set of comparable non-resource-dependent neighbors for each country were ranked based on the level of similarity on the identified comparable factors. However, these non-resource-dependent neighbors needed to also be ranked based on how non-dependent they are on natural resources. This was necessary to find sufficient variation in the level of resource dependence between the countries paired up. That is because it would not make statistical sense, for instance, to pair a resource-dependent country having an average resource dependence measure of 16% with a non-resource-dependent neighbor with an average resource dependence measure of 14%.

The final step in the selection process was identifying, among the non-resource-dependent set of neighbors, four neighbors that each fulfilled one of four conditions in relation to its resource-dependent counterpart. These conditions are that it had: 1) both net positive migration and net positive imports, 2) net positive migration but net negative imports, 3) net negative migration but net positive imports, and 4) both net negative migration and net negative imports.

Having gone through these series of steps, the process eventually generated four of the best pairs of countries from the sample as cases for further analysis. These include, as shown in Table 5.1, Cote d'Ivoire and Liberia as Case 1, Morocco and Algeria as Case 2, Senegal and Guinea-Bissau as Case 3, and Cameroon and Gabon as Case 4.

Based on aggregate migration data from 1996 to 2016, there are 968 Liberians in Cote d'Ivoire per every 100,000 Liberian national population. On the contrary, there are only 217 Ivorians in Liberia per every 100,000 Ivorian population. This creates a net positive migration flow of 751 Liberians into Cote d'Ivoire per every 100,000 Liberians. The same criterium produced a net positive migration flow for non-resource-dependent Senegal in relation to its resource-dependent neighbor, Guinea-Bissau. Further, the same criterium produced net negative migration flows for non-resource-dependent Morocco in relation to its resource-dependent neighbor, Algeria and non-resource-dependent Cameroon in relation to its resource-dependent neighbor, Gabon.

Table 5.1. Two-by-two case selection

		Net Migration with Resource Dependent Neighbor	
		+	-
Net Imports with Resource Dependent Neighbor	+	Cote d'Ivoire / Liberia Net migration: +751 Net Imports: +0.65	Morocco / Algeria: Net migration: -308 Net Imports: +0.35
	-	Senegal / Guinea-Bissau Net migration: +2613 Net Imports: -0.2	Cameroun / Gabon Net migration: -183 Net Imports: -0.23

With respect to imports, Cote d'Ivoire imports more from Liberia as a percentage share of Liberia's GDP (0.85%) than Liberia imports from Cote d'Ivoire as a percentage share of Cote d'Ivoire's GDP (0.2%). This represents a net positive difference of 0.65%. State differently, Liberia exports more as a share of its GDP to Cote d'Ivoire than Cote d'Ivoire exports to Liberia as a share of Cote d'Ivoire's GDP. Intra-African trade is generally low, and hence, low trade values between neighbors are widespread. Despite the low level of trade, however, significant differences exist in the trade measure of interest for this analysis. For instance, while trade between Cote d'Ivoire and Liberia is low (often less than 1% of each other's GDP), Cote d'Ivoire's imports from Liberia as a share of Liberia's GDP (0.85%), are four times higher than Liberia's imports from Cote d'Ivoire as a share of Cote d'Ivoire's GDP (0.2%). This phenomenon, in light of the hypothesis, indicates that raw materials meant for manufacturing are four times more likely to be on their way out of Liberia towards Cote' d'Ivoire than they are to be on their way out the opposite direction.

Using the same methodology, none-resource-dependent Morocco has a net positive flow of imports with resource-dependent Algeria. On the other hand, Senegal and Cameroon each have net negative flows of imports with their resource-dependent neighbors, Guinea-Bissau and Gabon, respectively. In context, based on actual values in Table 5.2, imports are twice as likely to flow from resource-dependent Algeria to Morocco than they are in the opposite direction. On the other hand, however, imports are five times more likely to flow from non-resource-dependent Senegal to Guinea-Bissau than in the opposite direction. They are also four times as likely to flow from non-resource-dependent Cameroon to Gabon than in the opposite direction.

5.5 Case Justification

Table 5.2 highlights the similarities of the cases in a two-stage process. First, the paired countries need to be as similar as possible. This implies that the difference, for instance, between Cote d'Ivoire and Liberia on any variable, needs to be as small as possible, or at least, should be the smallest from the subsample of Cote d'Ivoire and all of its neighbors. Second, the cases need to be comparable to one another, such that the net of Case 1 (difference between Cote d'Ivoire and Liberia) should be similar to the net of all other cases. Establishing these similarities ensures that the cases are comparable across one another for the two hypotheses simultaneously.

From the table, each of the eight countries has had a presidential system of governance throughout the sample period, except Liberia, which had three brief years of an assembly-elected president. Thus, generally, the net difference among the pairs and cases on presidential systems is zero. Their net scores on other political variables shown in the table are both the smallest and the most similar.

Culturally, each of the pairs is as close as possible on their respective scores on the ethnic fractionalization index. This variable is measured as the probability that any two randomly drawn individuals from a country's population belong to two different ethnic groups. The highest score, therefore, is 1 and the lowest score is 0. Here, the highest difference recorded between any two countries is 0.2 – recorded between Senegal and Guinea-Bissau. A difference of zero is recorded for both Case 1 and Case 3, while Case 2 has a difference of 0.1.

On economic indicators, the paired countries exhibit high similarities on labor force participation, with the highest difference being 10 – recorded between Senegal and Guinea-Bissau. However, the labor force participation rates between Algeria and Morocco are lower than the other countries in the sample, except Guinea-Bissau. This probably reflects the lower participation of females in the labor force in majority-Muslim countries. Nonetheless, keeping the pair in the sample represents some of the trade-offs that have to be made to arrive at cases that also have the highest maximum variations over the explanatory variables of interest. It is also important to note that high differences on most economic indicators between the pairs are expected. This is because the hypotheses of interest are economic in nature. A resource curse affects the general economy, ensuring that a resource-cursed country is likely to have lower (and not similar) scores on most economic indicators when compared to a non-resource-cursed neighbor.

Finally, to capture the similarities in demographic changes, the countries are compared on their urban population growth rates. The range of urban growth rates in the general sample is given as 1.4 (minimum growth rate recorded by Mauritius) and 8.5 (maximum growth rate recorded by

Botswana). However, from the sample of paired countries, the range is much smaller, indicating higher similarities. In the sample of paired countries, the minimum growth rate is recorded by Morocco at 3.1, and the maximum growth rate is recorded by Cote d'Ivoire at 5.4.

Table 5.2. Two-by-two case justification

Variables	Case 1			Case 2		
	Cote d'Ivoire	Liberia	Net	Morocco	Algeria	Net
Political system	Presidential	Presidential	0	Presidential	Presidential	0
Polity	1	3	2	-5	0	5
Political stability / absence of violence	-1.3	-1.2	0.1	-0.4	-1.2	0.8
Ethnic Fractionalization Index	0.6	0.6	0	0.8	0.7	0.1
Labor force participation	66	69	3	49	43	6
FDI net inflow (% of GDP)	2	29	27	2	1	1
Trade openness	72	128	56	54	60	6
Urban population growth rate	5.4	4.1	1.3	3.1	4	0.9
Migrants from neighbor per 100000	968	217	751	39	347	-308
Imports from neighbor (% of GDP)	0.85	0.2	0.65	0.74	0.39	0.35

Table 5.2, continued. Two-by-two case justification

	Case 3			**Case 4**		
	Senegal	**Guinea-Bissau**	**Net**	**Cameroon**	**Gabon**	**Net**
Political system	Presidential	Presidential	0	Presidential	Presidential	0
Polity	5	4	1	-4	-2	2
Political stability / absence of violence	-0.3	-0.7	0.4	-0.6	0.2	0.8
Ethnic Fractionalization Index	0.4	0.6	0.2	0.4	0.4	0
Labor force participation	52	42	10	57	56	1
FDI net inflow (% of GDP)	2	2	0	2	2	0
Trade openness	61	49	12	48	90	42
Urban population growth rate	4	3.8	0.2	5	4.7	0.3
Migrants from neighbor per 100000	2771	158	2613	118	301	-183
Imports from neighbor (% of GDP)	0.05	0.25	-0.2	0.07	0.3	-0.23

5.6 The dependent variable

A non-resource-dependent country that experiences net positive migration or imports from its resource-dependent neighbor is expected to have higher manufacturing growth, all things being equal. On the contrary, a non-resource-dependent country that experiences net negative migration or imports from its resource-dependent neighbor is expected to have lower manufacturing growth, all things being equal.

Given this theoretical expectation, the dependent variable is simply calculated as the average manufacturing growth for each country over the sample period, 1996 to 2016.

This variable, like most others, is obtained from the World Bank's World Development Indicators. Missing cells were filled in with data from the Knoema World Data Atlas.

With all things being equal, it is expected that, should hypothesis 1 (*migration* hypothesis) be supported, a pattern will be observed as captured in Table 5.3. That is, the non-resource-dependent countries of Case 1 and Case 3 will each have higher manufacturing growth rates over their counterparts in Case 2 and Case 4. On the contrary, should hypothesis 2 (*imports* hypothesis) be supported, a pattern represented in Table 5.4 should be observed. Under such a scenario, the non-resource-dependent countries of Case 1 and Case 2 should have higher manufacturing growth over their counterparts in Case 3 and Case 4.

Table 5.3. Hypothesis 1 expected outcome

		Net Migration with Resource Dependent Neighbor	
		+	-
Net Imports with Resource Dependent Neighbor	+	Cote d’Ivoire / Liberia: Manufacturing growth: Higher	Morocco / Algeria: Manufacturing growth: Lower
	-	Senegal / Guinea: Manufacturing growth: Higher	Cameroon / Gabon: Manufacturing growth: Lower

Table 5.4. Hypothesis 2 expected outcome

		Net Migration with Resource Dependent Neighbor	
		+	-
Net Imports with Resource Dependent Neighbor	+	Cote d’Ivoire / Liberia: Manufacturing growth: Higher	Morocco / Algeria: Manufacturing growth: Higher
	-	Senegal / Guinea: Manufacturing growth: Lower	Cameroon / Gabon: Manufacturing growth: Lower

5.7 Main results

The average level of manufacturing growth for Africa is recorded at 4.09 percent. Table 5.6 captures the pattern of the dependent variable across the four cases.

From table 5.6, it can be observed that the pattern is representative of significant support for hypothesis one. The non-resource-dependent countries of Case 1 and Case 3 (which are Cote d'Ivoire and Senegal) each have higher manufacturing growth than the non-resource-dependent countries of Case 2 and Case 4 (which are Morocco and Cameroon). Also, in light of the African average (4.09), both Cote d'Ivoire (5.45) and Senegal (4.76) score higher while Morocco (3.51) and Cameroon (3.31) score lower. In essence, the observed outcome from the qualitative analysis is consistent with that of the statistical analysis. Figure 5.2 also depicts the manufacturing conditions of the respective countries, relative to the continental average.

Contrary to the expectation of hypothesis 2, the non-resource-dependent country of Case 2 (Morocco) does not have higher manufacturing growth over that of case 3 (Senegal).

Table 5.5. The observed pattern of the dependent variable

<table>
<tr><td colspan="2" rowspan="2"></td><td colspan="2">Net Migration with Resource Dependent Neighbor</td></tr>
<tr><td>+</td><td>-</td></tr>
<tr><td rowspan="2">Net Imports with Resource Dependent Neighbor</td><td>+</td><td>Cote d'Ivoire
Manufacturing growth: Higher (5.45)</td><td>Morocco
Manufacturing growth: Lower (3.51)</td></tr>
<tr><td>-</td><td>Senegal
Manufacturing growth: Higher (4.76)</td><td>Cameroon
Manufacturing growth: Lower (3.31)</td></tr>
</table>

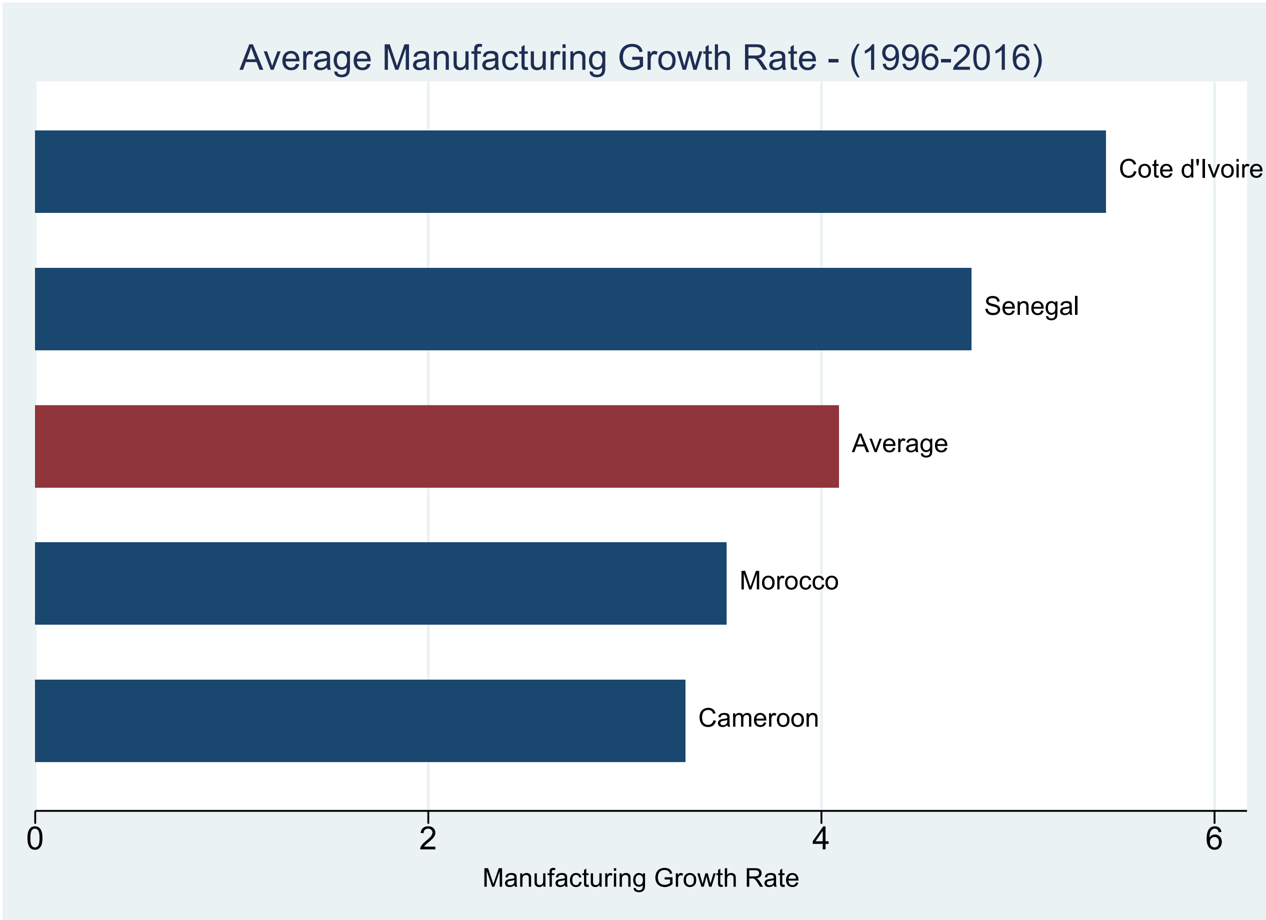

Figure 5.2. Manufacturing growth for sampled countries and the African average.

5.8 Process tracing

In this section, I shall trace the process by which a resource-curse spillover exists between Senegal and Guinea-Bissau. I will also outline how and why the same process is missing between Cameroon and Gabon. Through this process, the resulting difference between Senegal and Cameroon on the dependent variable (manufacturing growth) will be observed as an outcome of the differences in the spillover mechanisms between the two respective countries and their resource-dependent neighbors.

5.8.1 Senegal and Guinea-Bissau

The territories that make up the countries of Senegal and Guinea-Bissau today share a common cultural, political, and economic history. This history dates back beyond the coastal colonial invasion of the Portuguese in the fifteenth century. According to Vincent Foucher (2013, p. 6), ties between Senegal and Guinea-Bissau have always been "nourished by Senegal's relatively dynamic economy" even as they progressed from their colonial masters. Specifically, and historically, "Immigrants from Portuguese Guinea provided cheap labor for French Senegal."

Guinea-Bissau has experienced a series of conflicts post-independence. However, in the decade following the year 2000, a year after the violent events of 1998-1999, the country started to thaw into the West African regional economic space. No economy, other than "the dynamic economy of Senegal was the most important single factor in this process," according to Foucher (2013). Senegal's economy, became "the main driver of commercial and human traffic in the region" as laborers from its resource-dependent neighbors sought greener pastures in its growing industries.

Resource dependence and migration dynamics: Throughout the late 1990s, all of 2000s, and early 2010s, Guinea-Bissau's dependence on natural resources fluctuated between a low of 11% of GDP and a high of 32% of GDP. Specifically, only during a brief three-year period (2000, 2001, and 2002) did the country record resource dependence levels slightly lower than the African average. The country's primary natural resource earners include bauxite, phosphates, granite, limestone, gold, and clay. Other primary commodities supporting the backbone of the economy include groundnuts, cashew nuts, and fish.

Contrary to Guinea-Bissau, Senegal's resource dependence during the same period fluctuated between a low of 2.4% in 2005 and a high of 6.3% in 2011. These levels meant that Senegal consistently had significantly lower natural resource dependence than its neighbor Guinea-Bissau.

Given that Guinea-Bissau exploited more natural resources per GDP than Senegal, it is theoretically expected that the flow of laborers between the two countries would favor Guinea-Bissau as workers migrate for job opportunities. Instead, the data points to the opposite as there are more Bissau-Guineans per capita trekking across the border to Senegal than Senegalese trekking across the border to Guinea-Bissau.

This phenomenon above, I argue, is the outcome of the resource curse of Guinea-Bissau. Given the resource curse, manufacturing industries in the country shrink or are crowded out by increasing dependence on natural resources, causing capital and labor fashioned for the manufacturing industry to seek more favorable spaces in Senegal. This condition is known as the spillover of the resource curse, and it is expected to lead to higher manufacturing growth in Senegal. Thus, in the proceeding section, this spillover mechanism in action is chronicled in support of the hypothesis. Also, while the imports hypothesis emerged insignificant relative to the migration hypothesis, it can be seen in the proceeding analysis, nonetheless, that the country of Senegal took steps to exploit both routes to expand its manufacturing industry.

The spillover mechanism – attracting fleeing capital and labor: In a bid to attract traffic, Senegal invests in routes that facilitate movement and exchange with its neighbors far and beyond, but with a significant pull from Guinea-Bissau. As explained by Foucher (2013), the business enterprises in Senegal expand their links into Guinea-Bissau to take advantage of the economic imbalance between the two countries. Senegal's "seaport and the Dakar international airport, its relatively large business enterprises and markets, as well as its universities and training centers, all went to make Senegal accessible, influential and attractive."

Historically, the government of Senegal started implementing liberalization and foreign investment policies soon after independence. The country particularly needed to develop its manufacturing sector as it had no natural resources to depend on. Senegal's resource-dependent neighbor, Guinea-Bissau, on the other hand, had faced years of isolation due to protracted internal conflicts.

However, in the latter part of the 1990s, Senegal undertook extensive sacrifices and diplomatic steps to assist Guinea-Bissau's integration into the West African regional economic space, an integration that would primarily benefit Senegalese industries.

For instance, due to its relationship and attraction to Senegal, Guinea-Bissau in 1997 became the first and only non-French-speaking member of the African Financial Community of the West African Economic and Monetary Union (WAEMU). This meant that Guinea-Bissau became the first and only non-French-speaking country to adopt the CFA franc as its currency, thanks to the advocacy of its neighbor, Senegal. Figure 5.3 displays a map of the countries of the union.

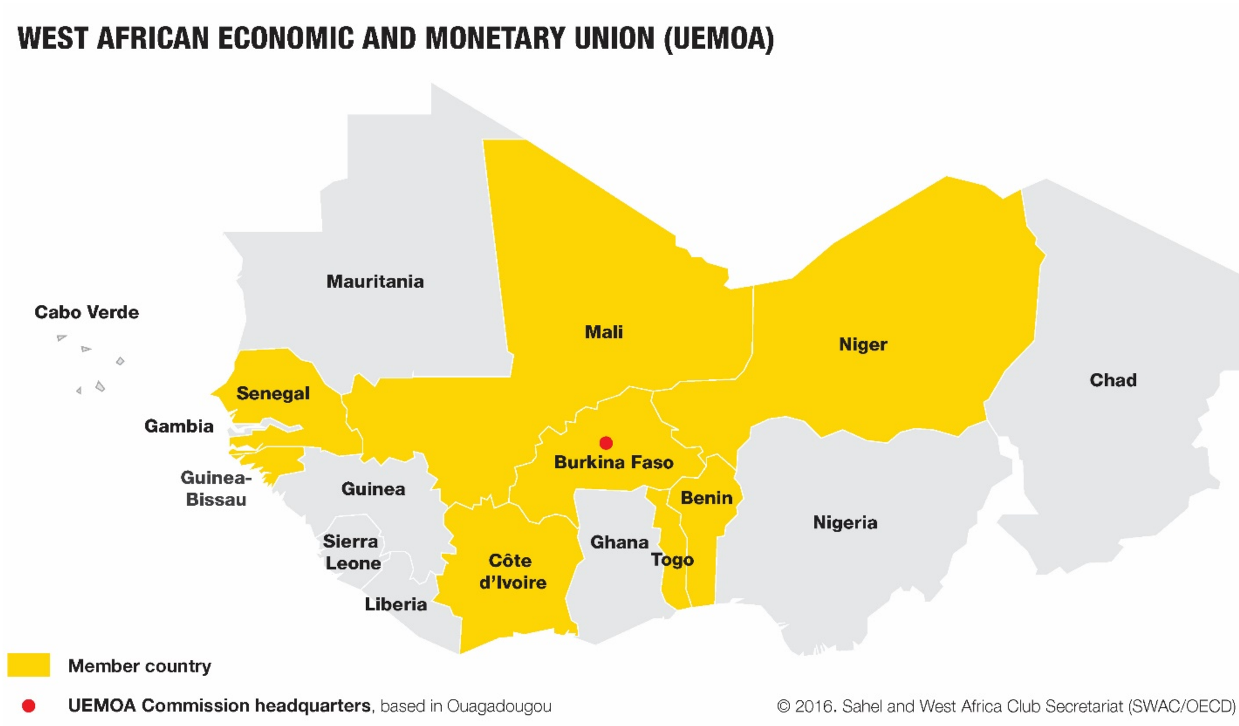

Figure 5.3. WAEMU (UEMOA) member countries.
Source: http://www.west-africa-brief.org/content/en/west-african-economic-and-monetary-union-uemoa

Interestingly, not long after Guinea-Bissau's entry into the West African Economic and Monetary Union as its eighth member, the organization established the Common External Tariff (CET) program which was fully implemented by 2000. Fascinatingly, a primary condition of the program was "the movement of raw materials and goods from small-scale producers, free of tariffs or taxes among WAEMU member states" (Cisse et al., 2016). This provision ensured that Senegalese manufacturing businesses would continue to get fed by a free flow of cheap raw materials from Guinea-Bissau, which were already on a one-way route between the two countries.

Also, for instance, as captured by Foucher (2013), one of the most remarkable foreign policy schemes ever taken by Senegal was to use military force to intervene in the political and economic affairs of Guinea-Bissau during the latter part of the 1990s. President Leopold Senghor of Senegal, from 1998 to 1999, deployed 2000 soldiers into Guinea-Bissau to stave off an attempted rebel take-over of the government of João Bernardo. An ongoing military cooperation at the border between the two countries had protected trade between them and kept long-time rebels along the Casamance river at bay. A successful coup by the rebels would have significantly disrupted economic activity along the border between the two countries and slowed the movement of migrant workers from Guinea-Bissau to Senegal.

In the years following the integration of Guinea-Bissau into the regional economy, the government of Senegal swooped in to invest in the reinforcement of the role of the migration routes between the two countries. Bridges were built on the Ziguinchor – Bissau route and new routes extended to the Guinea-Bissau city of Joao Landim (which was completed in 2004). The Senegalese government also sponsored the reinforcement of the port of Ziguinchor, which primarily handles trade from Guinea-Bissau. Foucher (2013) notes that the city of Sao Domingos on the border between Senegal and Guinea-Bissau also experienced its fastest growth in the 2000s in light of the investments in the free flow of traffic between the two countries.

Moreover, "for the young citizens of Guinea-Bissau, critical of their own national heritage, Senegal was in many ways a model country. The phrase 'Dakar, little Paris!' was often heard in Bissau, and Senegalese immigrants became role models for many youngsters in Guinea-Bissau hoping to emigrate" (Foucher, 2013, p. 16). In fact, in order to attract more of the cheap labor from Guinea-Bissau, Senegalese business enterprises started to train Bissau-Guinean youths on French language skills to prepare them for their eventual migration to Senegal.

In order to continue to establish Senegal as the preferred destination for fleeing manufacturing capital and labor from Guinea-Bissau, the government of Senegal in 2009 conducted cross-border trade and exchange reforms to reduce the time and documentation requirements for exporting and importing. The number of checkpoints was reduced, port and road infrastructures were expanded, and the number of operating hours for customs at the post was extended. In 2015 and 2016, the country also continued to implement reforms such as reducing the minimum capital for setting up limited liability companies from CFA 1 million to CFA 100,000 (World Bank, 2016).

Resulting manufacturing growth: As explained in the Eurocham's 2021 economic outlook report for Senegal, "not being a major mining exporter, the country did not benefit from the economic boom of Africa between 2000 and 2012 when the GDP of the countries of the subregion of the region increased by 6% on average." Surprisingly, however, Senegal's manufacturing sector expanded at an average of 4.76%, beating that of its resource-dependent neighbor Guinea-Bissau (2.0%) and African comparator in the qualitative sample, Cameroon (3.31%). While the service sector contributes the most to GDP, the manufacturing sector expanded to overtake the agricultural sector as the second-largest contributor to the country's GDP, a position it has maintained since the 1990s. Precisely, after services (which contribute 51.4% of GDP), the industrial sector comes next with a contribution of 24.4% of GDP and employs 13% of the workforce. This contribution significantly overshadows that of the agriculture sector, which is 14.8% of GDP. Major manufacturing activities include textiles, chemicals, food processing, wood processing, construction materials, machinery, equipment, and electricity (Santander, 2021).

In comparison with its case comparator in the sample, Senegal also has higher manufacturing growth (4.76%) than the African average, while Cameroon has lower growth (3.31%) than the African average.

Certain clear correlations can be observed among the actions taken to bolster migration, expand the manufacturing sector, and the resultant manufacturing growth. For instance, in 2006, Senegal established a special economic zones (SEZ) program and formed the Dakar Integrated Special Economic Zone (DISEZ). In 2012, the country built on the program to introduce a new industrialization plan known as Sénégal Emergent. Several SEZs at various locations across the country were established in the ensuing years. These include the Diamniadio, the Diass, and the Sandiara SEZs. The Diamniadio SEZ alone was projected to employ 23,000 workers at the end of the second phase of the project. The country also begun the construction of the Thiès-Touba highway. Described as one of the largest road projects in West Africa, the highway was specifically planned to "pass close to major industrial areas," according to Scott Lewis of the Engineering News-Record (2019).

Coincidentally, the number of migrants per thousand population from Guinea-Bissau to Senegal jumped from two in 2005 to five in 2006, and eventually peaking at seven in 2008, right before the 2009 global financial crises. The two factors (the establishment of new industrial zones and the influx of migrants) would combine to bolster Senegal's manufacturing from a low of 1.16% in 2004 to an enviable high of 6.11% in 2008. A similar trend emerged in 2012 after the new government of President Macky Sall implemented the Sénégal Emergent industrial program. Migration from Guinea-Bissau once again picked up from a respite of two migrants per thousand population in 2012 to a high of eight in 2016. Resultantly, Senegal's manufacturing value added per capita, which had fallen to $15 per person during the 2009 global financial crises, slowly climbed back up to a new high of $17.34 in 2015 according to World Bank data.

In 2017, having realized the importance of migration to its industrialization drive, Senegal opened its largest airport yet, the Blaise Diagne International Airport (BDIA). While the current traffic in-and-out of Senegal at all of its airports is at 1.9 million people per annum, the BDIA alone was constructed to accommodate 3 million passengers of traffic a year (Shaban, 2017). This grand size of the new airport, which was constructed at a sum of $600 million dollars, signaled an ambitious agenda and an extraordinary expectation of travel increase.

At the opening ceremony of the airport, present alongside President Macky Sall of Senegal was none other than the president of Guinea-Bissau, Jose Mario Vaz. The invitation of the president of Guinea-Bissau is revelatory, quite clearly, of Senegal's motive of letting travelers in Guinea-Bissau know that Senegal was open for them.

5.8.2 Cameroon and Gabon

Resource dependence and migration dynamics: Gabon and Cameroon are both central African countries. Gabon is rich in natural resources such as petroleum, gold, diamond, uranium, natural gas, niobium, phosphate rock, manganese, and iron ore. Natural resources make up, on average, 34% of its GDP. This makes Cameroon a neighbor to one of the natural resource most highly dependent countries in Africa.

On the other hand, Cameroon has had an average natural resource dependence of 9%, consistently lower than the African average. Services make up about 57% of its economy, with industry and agriculture following suit. In spite of its proximity to a highly resource-dependent country, Cameroon's average manufacturing growth (3.31%) is lower than the African average (4.09%). That is, compared to Senegal, which also has a resource-dependent neighbor, Cameroon fails to attract a resource curse spillover. This phenomenon raises questions about what pertains between Cameroon and its neighbors and why the spillover is missing.

Spillover mechanism: missing in action: The first central African organization formed to foster economic and industrial collaboration among the region's seven countries was known as the Central African Customs and Economic Union (UDEAC), established in 1966. The UDEAC, however, collapsed by 1994 after the countries persistently failed to arrive at common goals for collaboration. The UDEAC was then replaced by the Economic and Monetary Community of Central Africa (CEMAC) for the seven members of the region. The CEMAC was formed as a central African version of the WAEMU, of which Senegal and Guinea-Bissau are members.

However, more than two decades after CEMAC's formation, the union, much like the UDEAC, has also failed to achieve its objectives (Kevin Kewir, 2014). According to Kewir (2014), in comparison to its West African version, the CEMAC failed to achieve its objectives of strengthening relations and building solidarity among member states. This failure, the author attributes to years of animosity between the two expected leaders of the region, Cameroon and Gabon. Figure 5.4 shows countries of the CEMAC union.

Figure 5.4. CEMAC member countries.
Source: https://mapscompany.com/collections/central-africa.

Even though Cameroon is a neighbor to a high resource-dependent country, Gabon, the relationship between the two countries has soured since the death of former leader, President Leon Mba in 1967. As captured by Kewir (2014), the relationship has soured up to the extent that even now, citizens of Cameroon need visas to enter Gabon. In fact, attempts by Cameroon to introduce the CEMAC passport have been vehemently resisted by its neighbors, Gabon and Equatorial Guinea, leading to high travel restrictions among the countries. Communication between the leaders of the two countries is virtually non-existent. Former Gabonese president, Omar Bongo, once declared that “I have been to Yaoundé on several occasions; Paul Biya never pays me a visit. I will not visit him again” (Kewir, 2014).

In 2019, after a failed coup d’état to overthrow the president of Gabon, Ali Bongo, the government closed its border crossings with Cameroon. According to Moki Kindzeka of Voice of America, goods and passengers destined for Gabon became stranded in the Cameroonian border town of Kiossi. Truckloads of raw materials such as groundnuts, cocoyam, and plantains as well as hundreds of people got stuck by the border. Surprisingly, no such ordeal was reported at the other side of the border, indicating that the flow of goods and services is much more likely to be observed out of Cameroon towards Gabon than in the opposite direction.

During the border closures, business owners who had come to depend on receiving raw materials from Cameroon started to express their frustration. Gabonese businessman, Luc Eyene, explained to journalists that “It is known by everyone that Gabon depends on Cameroon for food. The poor are already suffering after just 24 hours of the border being closed.” Other traders, such as Caroline Ndifor, complained about having to reroute their raw produce to Equatorial Guinea for fear that “their perishable goods will not last until the border reopens” (Kindzeka, 2019).

The grandiose establishment of large-scale industrial zones and highly publicized construction of cross-border highways and airports with overtures towards Guinea-Bissau contributed significantly to attracting migrant labor from the country to Senegal, which eventually boosted Senegal’s manufacturing growth. However, while Cameroon also has special economic zones, the presence of hostilities between it and Gabon means that the kind of cross-border cooperation needed to ensure the free flow of people across the borders is absent. Consequently, migration from Gabon into Cameroon is lower, relative to the level of migration from Guinea-Bissau into Senegal.

Consequently, while Senegal has attracted about 2771 Bissau-Guinean migrants per hundred thousand population, Cameroon has attracted, rather, only 118.

According to Franzese and Hays (2006), there are three core mechanisms through which migrating labor from France enhanced Belgium's labor force – quantity, diversity, and quality. Whereas Senegalese firms invested in the training of Bissau-Guinean youths and prepared them for jobs in Senegal, Cameroon industries could not do so in Gabon. The hostilities between Cameroon and Gabon placed severe limitations on cross-border multinational-firm cooperation between the two countries. Consequently, according to a World Bank (2015, p. 68) Competitiveness report for Cameroon, the country's "supply of and demand for workforce development (especially training) encounter labor market rigidities such as pricing and the quantity of the workforce." The lower influx of migrants also implies that Cameroonian industries would be privy to a less diverse labor force than Senegalese industries.

Also, according to the United States Department of State's 2020 Investment Climate Report for Cameroon, "a lack of skilled workers tends to be the norm across the country."

Resulting manufacturing growth: The restricted movements of people and goods between the two countries has undoubtedly kept the proportion of migrants between the two countries low and complicated the ability to track the impact of migrant workers on each other's manufacturing sector. Nevertheless, as the limited data shows, migrants are more likely to be on their way out of

Cameroon to Gabon than in the other direction. This phenomenon indicates that though Cameroon is less resource-dependent than Gabon, the country fails to attract cheap labor and resources to fuel its manufacturing industry. Consequently, Cameroon (3.31%) fails to have higher manufacturing growth than its resource-dependent neighbor, Gabon (3.21%). More importantly, Cameroon has lower manufacturing growth than its African comparator in the qualitative case sample, Senegal (4.76%)

In summary, Cameroon's fragile, and sometimes hostile, relationship with its resource-dependent neighbor, Gabon, prevents it from attracting the spillovers that Senegal is able to attract from Guinea-Bissau.

CHAPTER 6

CONCLUSION, POLICY IMPLICATIONS, AND FUTURE RESEARCH

6.1 Theoretical development

Natural resources have been one of the primary sources of revenue for governments of several African countries since independence. As countries became more and more independent of their colonial masters, they became more and more dependent on natural resources. This excessive and persistent dependence on natural resources has, however, come at other costs. Primarily, it has discouraged the development of the industrial sector of the continent. For instance, while African countries contributed over 3% to global manufacturing in the 1970s, today, they contribute less than 1%. This phenomenon has been described widely in the economic and political economic literature as a resource curse, or the Dutch disease, where countries rich in natural resources inadvertently grow slower due to a decline in the growth of other valuable sectors of the economy, such as manufacturing.

In spite of this declining manufacturing growth, however, some African countries have shown persistently positive signs of growth, often maintaining steady manufacturing growth above global averages.

The primary goal of this study, therefore, has been to determine the impact of the resource curse from one country to another. It is worth knowing whether the non-resource-dependent countries have done better in manufacturing than their resource-dependent neighbors. If they have done better, has the fact that they are neighbors to resource-dependent countries been a boon or a drag?

The existing literature on the resource curse theory makes two critical omissions in the explanation of the various outcomes of the resource curse.

First, the general literature assumes that when countries experience a resource curse, for which their manufacturing labor and capital start to flee, the fleeing labor is confined to the local economy from which they emanate. However, as globalization has reached unprecedented levels, the number of options available to mobile capital and labor has expanded beyond national boundaries. Subsequently, there is sufficient reason to consider the fact that some or even all the fleeing manufacturing capital and labor of a resource-cursed country can consider destinations beyond the local economies from which they emanate.

Second, the extant literature treats countries as independent objects whose causes and effects of growth are isolated from others. However, the growing literature in other disciplines continues to show that spatially, economically, and even politically, countries increasingly depend on or influence each other, both deliberately and instinctively in a plethora ways.

This study addresses these two identified problems in the literature and advances an extension of the resource curse theory. The study theorized that in light of a resource curse, some fleeing manufacturing capital and labor would attempt to seek favorable destinations across the border to attractive manufacturing sectors. Thus, the study hypothesized that countries that are neighbors of resource-cursed countries would experience higher migration flow of cheap labor, which would then lead to higher manufacturing growth than countries that are not neighbors to resource-dependent countries or do not experience high migration flows from them. The study also hypothesized that countries that are neighbors of resource-cursed countries would experience higher imports of cheap raw materials, which would then lead to higher manufacturing growth than countries that are not neighbors to resource-dependent countries or do not experience high import flows from them.

Results from several statistical tests and a qualitative examination revealed a consistently significant outcome as hypothesized for the *migration* hypothesis. That is, countries that are neighbors to resource-dependent countries, and which have high in-migration from those countries consistently perform higher in manufacturing growth than countries that do not have highly resource-dependent neighbors or do not experience high in-migration from them.

On the other hand, the *imports* hypothesis failed to generate significant support in both the quantitative and qualitative analyses. Nonetheless, the qualitative analysis revealed that countries that attempt to attract the positive spillovers of a resource curse do not explicitly stick with only the migration mechanisms. Rather, both channels are regularly explored to attract the positive benefits of a resource curse, even if only migration mechanisms generate significantly positive results.

6.2 Policy implications

Globalization has impacted Africa in a nmber of ways, often through trade, migration, colonial master relations, international organizations, and international financial institutions (Taden & Kamau, 2020). However, internally, African countries are also getting increasingly integrated. The recent signing and ratification of the African Continental Free Trade Area (AfCFTA) is a significant step towards eliminating any forms of trade and migration barriers between countries. What this implies is that countries with more and more attractive manufacturing sectors are going to become more and more attractive to laborers, investors, and capital movers looking to move their resources to growing manufacturing economies. As such, in practice, the current scope of the resource curse theory (which is limited within the local economy) is going to become more and more blurred and distorted. This study thus makes a timely contribution to understanding the dynamics of resource dependence on the continent. Policy-wise, a few important factors stand out:

First, as countries eliminate trade and migration barriers, concerns over what they could benefit from some of their neighbors may arise. For instance, countries such as Botswana, South Africa, and Nigeria had initially displayed reluctance in signing the agreement. However, this study's findings reveal additional benefits that were hitherto unknown. That is, countries could exploit cheap raw materials and labor from neighboring countries if those countries are resource-cursed.

Second, the increasing levels of integration between countries imply that politicians overseeing the long-term growth of countries rich in natural resources cannot take other sectors of the economy for granted. Given the increasing number of survival options, policymakers who ignore the problems of other sectors such as labor and industry are likely to increasingly lose these factors of production to other countries in the region – as is already happening to Guinea-Bissau.

Third, the making of natural resource policies must incorporate the input of labors and members of industry groups who may be negatively affected by a resource curse. Natural resource policies must also incorporate mechanisms to disincentivize brain drain sch that high-skill laborers would continue to invest their skills within the economy.

Fourth, and finally, for non-resource-rich countries, maintaining open borders with resource-rich neighbors may generate positive spillovers by attracting high-skill laborers who would diversify the skill base and lower the labor cost of the manufacturing industry.

6.3 Future research

Three primary challenges from this study require future redress. First, the analyses conducted in this study have been limited to country-level data. This condition fails to account for the potential sub-national movement of labor and capital in light of a resource curse. While a resource curse might affect the general economy, there might still be some parts of the country doing better than others. These better-performing parts of the country could attract a significant share of the fleeing manufacturing capital and labor, though national-level resource policies could still present limitations to how large they can expand.

Second, the analysis fails to account for the potential cross-continental movement of capital and labor in light of a resource curse. While seventy percent of all migration in the continent has destinations within the continent, a quarter of migrants still seek greener pastures in Europe, North America, and Asia. This implies then that the full impact of the spillovers of a resource curse may not be tracked with a study limited to African countries. Future research in this direction could enhance our understanding of the expanded scope of the resource curse theory.

Third, and finally, it is important to state that fleeing manufacturing capital and labor from one country does not have to stay within the manufacturing industries of the countries they relocate to. It is possible that this fleeing capital and labor could end up in other sectors of the neighboring economy, such as service, construction, and agriculture. Future research could, thus, expand the tracking of the positive spillovers of the resource curse into other sectors of the neighboring economy.

APPENDIX

DESCRIPTIVE STATISTICS

Table A.1. African countries and their neighbors

Country	**Neighbors**	**Country**	**Neighbors**	**Country**	**Neighbors**
Algeria	Libya	Eritrea	Djibouti	Niger	Nigeria
Algeria	Mali	Eritrea	Ethiopia	Nigeria	Benin
Algeria	Mauritania	Eritrea	Sudan	Nigeria	Cameroon
Algeria	Morocco	Eswatini	Mozambique	Nigeria	Chad
Algeria	Niger	Eswatini	South Africa	Nigeria	Equatorial Guinea
Algeria	Tunisia	Ethiopia	Djibouti	Nigeria	Niger
Angola	Congo, DR	Ethiopia	Eritrea	Nigeria	Sao Tome and Principe
Angola	Congo, Rep.	Ethiopia	Kenya	Rwanda	Burundi
Angola	Namibia	Ethiopia	Somalia	Rwanda	Congo, DR
Angola	Zambia	Ethiopia	South Sudan	Rwanda	Tanzania
Benin	Burkina Faso	Ethiopia	Sudan	Rwanda	Uganda
Benin	Niger	Gabon	Cameroon	Sao Tome and Principe	Equatorial Guinea
Benin	Nigeria	Gabon	Congo, Rep.	Sao Tome and Principe	Gabon
Benin	Togo	Gabon	Equatorial Guinea	Sao Tome and Principe	Nigeria
Botswana	Namibia	Gabon	Sao Tome and Principe	Senegal	Cabo Verde
Botswana	South Africa	Gambia, The	Cabo Verde	Senegal	Gambia, The
Botswana	Zambia	Gambia, The	Senegal	Senegal	Guinea
Botswana	Zimbabwe	Ghana	Burkina Faso	Senegal	Guinea-Bissau
Burkina Faso	Benin	Ghana	Cote d'Ivoire	Senegal	Mali
Burkina Faso	Cote d'Ivoire	Ghana	Togo	Senegal	Mauritania
Burkina Faso	Ghana	Guinea	Cote d'Ivoire	Seychelles	Comoros
Burkina Faso	Mali	Guinea	Guinea-Bissau	Seychelles	Madagascar
Burkina Faso	Niger	Guinea	Liberia	Seychelles	Mauritius
Burkina Faso	Togo	Guinea	Mali	Seychelles	Tanzania
Burundi	Congo, DR	Guinea	Senegal	Sierra Leone	Guinea
Burundi	Rwanda	Guinea	Sierra Leone	Sierra Leone	Liberia
Burundi	Tanzania	Guinea-Bissau	Guinea	Somalia	Djibouti

Cabo Verde	Gambia, The	Guinea-Bissau	Senegal	Somalia	Ethiopia
Cabo Verde	Mauritania	Kenya	Ethiopia	Somalia	Kenya
Cabo Verde	Senegal	Kenya	Somalia	South Africa	Botswana
Cameroon	CAR	Kenya	Sudan	South Africa	Eswatini
Cameroon	Congo, Rep.	Kenya	Tanzania	South Africa	Lesotho
Cameroon	Chad	Kenya	Uganda	South Africa	Mozambique
Cameroon	Equatorial Guinea	Lesotho	South Africa	South Africa	Namibia
Cameroon	Gabon	Liberia	Sierra Leone	South Africa	Zimbabwe
Cameroon	Nigeria	Libya	Algeria	South Sudan	CAR
CAR	Cameroon	Libya	Chad	South Sudan	Congo, DR
CAR	Chad	Libya	Egypt, Arab Rep.	South Sudan	Ethiopia
CAR	Congo, DR	Libya	Niger	South Sudan	Kenya
CAR	Congo, Rep.	Libya	Sudan	South Sudan	Sudan
CAR	South Sudan	Libya	Tunisia	South Sudan	Uganda
CAR	Sudan	Madagascar	Comoros	Sudan	CAR
Chad	Cameroon	Madagascar	Mauritius	Sudan	Chad
Chad	CAR	Madagascar	Mozambique	Sudan	Egypt, Arab Rep.
Chad	Libya	Madagascar	Seychelles	Sudan	Eritrea
Chad	Niger	Malawi	Mozambique	Sudan	Ethiopia
Chad	Nigeria	Malawi	Tanzania	Sudan	Libya
Chad	Sudan	Malawi	Zambia	Sudan	South Sudan
Comoros	Madagascar	Mali	Algeria	Tanzania	Burundi
Comoros	Mozambique	Mali	Burkina Faso	Tanzania	Comoros
Comoros	Seychelles	Mali	Cote d'Ivoire	Tanzania	Congo, DR
Comoros	Tanzania	Mali	Guinea	Tanzania	Kenya
Congo, DR	Angola	Mali	Mauritania	Tanzania	Malawi
Congo, DR	Burundi	Mali	Niger	Tanzania	Mozambique
Congo, DR	CAR	Mali	Senegal	Tanzania	Rwanda
Congo, DR	Congo, Rep.	Mauritania	Algeria	Tanzania	Seychelles
Congo, DR	Rwanda	Mauritania	Cabo Verde	Tanzania	Uganda
Congo, DR	South Sudan	Mauritania	Mali	Tanzania	Zambia
Congo, DR	Tanzania	Mauritania	Senegal	Togo	Benin
Congo, DR	Uganda	Mauritius	Madagascar	Togo	Burkina Faso
Congo, DR	Zambia	Mauritius	Seychelles	Togo	Ghana

Congo, Rep.	Angola	Morocco	Algeria	Tunisia	Algeria
Congo, Rep.	Cameroon	Mozambique	Comoros	Tunisia	Libya
Congo, Rep.	CAR	Mozambique	Eswatini	Uganda	Congo, DR
Congo, Rep.	Congo, DR	Mozambique	Madagascar	Uganda	Kenya
Congo, Rep.	Gabon	Mozambique	Malawi	Uganda	Rwanda
Cote d'Ivoire	Burkina Faso	Mozambique	South Africa	Uganda	South Sudan
Cote d'Ivoire	Ghana	Mozambique	Tanzania	Uganda	Tanzania
Cote d'Ivoire	Guinea	Mozambique	Zambia	Zambia	Angola
Cote d'Ivoire	Liberia	Mozambique	Zimbabwe	Zambia	Botswana
Cote d'Ivoire	Mali	Namibia	Angola	Zambia	Congo, DR
Djibouti	Eritrea	Namibia	Botswana	Zambia	Malawi
Djibouti	Ethiopia	Namibia	South Africa	Zambia	Mozambique
Djibouti	Somalia	Namibia	Zambia	Zambia	Namibia
Egypt, Arab Rep.	Libya	Niger	Algeria	Zambia	Tanzania
Egypt, Arab Rep.	Sudan	Niger	Benin	Zambia	Zimbabwe
Equatorial Guinea	Cameroon	Niger	Burkina Faso	Zimbabwe	Botswana
Equatorial Guinea	Gabon	Niger	Chad	Zimbabwe	Mozambique
Equatorial Guinea	Nigeria	Niger	Libya	Zimbabwe	South Africa
Equatorial Guinea	Sao Tome and Principe	Niger	Mali	Zimbabwe	Zambia

Table A.2. Descriptive Statistics of the 10% max threshold sample

Variable	Obs	Mean	Std. Dev.	Min	Max
Manufacturing value added per ca	1498	256.59	402.683	.611	2373.129
Resource Rents (GDP)	2170	5.235	2.805	.001	9.958
Resource Rents (GDP), Neighbor	1984	13.47	12.942	.001	89.166
Immigrants	1782	4.641	3.853	.083	26.133
Imports	2052	.024	.367	0	11.855

Table A.3. Descriptive Statistics of the 35% max threshold sample

Variable	Obs	Mean	Std. Dev.	Min	Max
Manufacturing value added per ca	2755	220.775	470.016	.611	5336.66
Resource Rents (GDP)	4003	11.198	8.32	.001	34.892
Resource Rents (GDP), Neighbor	3678	14.901	14.075	.001	89.166
Immigrants	3454	4.573	5.344	.083	78.801
Imports	3596	.015	.277	0	11.855

Table A.4. Descriptive statistics of the spatial analysis sample

Variable	Obs	Mean	Std. Dev.	Min	Max
Manufacturing value added per ca	840	296.516	523.722	.611	5701.751
Resource Rents (GDP)	840	12.087	11.76	.001	24.935
Resource Rents (GDP), Neighbor	840	14.928	9.026	1.723	57.211
Immigrants	840	5	6.716	.149	67.04
Imports	840	.031	.202	0	3.324

REFERENCES

Acemoglu, D., Robinson, J. A. and Verdier, T. (2004). Kleptocracy and divide-and-rule: a theory of personal rule, *Journal of the European Economic Association*, vol. 2

Ades, A. and Di Tella, R. (1999). Rents, competition, and corruption. American Economic Review, vol. 89, pp. 982–93.

Alemu, A. M. (2016). The impact of natural resource abundance on export diversification and structural change in African economies. *Journal of Economic Development, Management, IT, Finance and Marketing,* 8(2), 1-15

Alexeev, M. and Conrad, R. (2009). The elusive curse of oil. *The Review of Economics and Statistics*, Vol. 91, No. 3.

An, L. Tsou, M. H. Crook, S.E.S., Chun, Y., Spitzberg, B., Gawron, J.M. & Gupta, D.K. (2015). Space–time analysis: Concepts, quantitative methods, and future directions. *Annals of the Association of American Geographers*, 105 (5), 891-914

Anderseny, J. J. and Aslaksen, S. (2007). Constitutions and the resource curse. *Journal of Development Economics*, 87(2): 227-246

Arezki, R., & Ploeg, F. van der. (2011). Do natural resources depress income per capita? *Review of Development Economics*, *15*(3), 504–521. https://doi.org/https://doi.org/10.1111/j.1467-9361.2011.00623.x

Barro, R. J., & Sala-i-Martin, X. (1995). *Economic growth*. McGraw-Hill.

Basedau, M. and Lay, J. (2009). Resource Curse or Rentier Peace? The Ambiguous Effects of Oil Wealth and Oil Dependence on Violent Conflict

Baunsgaard, T., Villafuerte M., Poplawski-Ribeiro, M., & Richmond, C. (2012). Fiscal Frameworks for Resource Rich Developing Countries. *IMF Fiscal Affairs Department*. International Monetary Fund

Berry, B. J. L., Conkling E. C., and Ray M. D. (1993*). The global economy. Resource use, locational choice, and international trade*. NJ: Prentice-Hall

Berry, B. J. L., Conkling E. C., and Ray M. D. (1997). *The global economy in transition*. 2nd Edition. Upper Saddle River, NJ : Prentice Hall

Boschini, A.D., Pettersson, J., and J. Roine (2007). Resource Curse or Not: A Question of Appropriability, *Scandinavian Journal of Economics*

Brollo, F., Nannicini, T., Perotti, R., and Tabellini, G. (2013). The Political Resource Curse. *The American Economic Review,* 103(5), 1759–1796. doi:10.1257/aer.103.5.1759

Bulte, E.H., Damania, R. and Deacon, R.T. (2005) Resource intensity, institutions, and development. *World Development*, 33(7), pp. 1029–1044.

Bunte, J. B. (2016). Wage bargaining, inequality, and the Dutch disease. *International Studies Quarterly*, 60(4), 677-692.

Bunte, J. B. (2019). *Raise the Debt : How Developing Countries Choose Their Creditors* . New York, NY: Oxford University Press. DOI:10.1093/oso/9780190866167.001.0001

Bunte, J. B., Desai, H., Gbala, K., Parks, B., and Runfola, D. M. (2018). Natural resource sector FDI, government policy, and economic growth: Quasi-experimental evidence from Liberia. *World Development*. Vol 107. 151-162

Busse, M. and Gröning, S. (2011). The resource curse revisited: governance and natural resources. *Public Choice* (2013) 154:1–20

Caselli, F., & Michaels, G. (2013). Do oil windfalls improve living standards? Evidence from brazil. *American Economic Journal: Applied Economics*, *5*(1), 208–238. https://doi.org/10.1257/app.5.1.208

Cebula, R. & Belton, W. (1992). Deficits and real interest rates in the United States: a note on the Barro Theory versus the Cukierman-Meltzer Theory of government debt and deficits in a Neo-Ricardian framework. *Economia Internazionale*. Vol. 45 No. 3-4.

Chun, Y. & Griffith, D. A. (2011). Modeling Network Autocorrelation in Space–Time Migration Flow Data: An Eigenvector Spatial Filtering Approach. *Annals of the Association of American Geographers,* 101(3), 523–536. https://doi.org/10.1080/00045608.2011.561070

Chun, Y., Kim, H., & Kim, C. (2012). Modeling interregional commodity flows with incorporating network autocorrelation in spatial interaction models: An application of the US interstate commodity flows. *Computers, Environment and Urban Systems,* 36 (6), 583-591

Cisse, F., Choi, J. E., & Maurel, M. (2016). Industrial policy in senegal. In C. Newman, J. Page, J. Rand, A. Shimeles, M. Söderbom, & F. Tarp (Eds.), Manufacturing Transformation (pp.

136–154). Oxford University Press. https://doi.org/10.1093/acprof:oso/9780198776987.003.0007

Clark, J. (1997). Pretro-politics in Congo. *Journal of Democracy*, *8*(3), 62–76.

Coe, D. T., & Helpman, E. (1995). International R&D spillovers. *European Economic Review*, *39*(5), 859–887. https://doi.org/10.1016/0014-2921(94)00100-E

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

Collier, P., & Hoeffler, A. (2002). *Greed and grievance in civil wars* (No. 2002–01; CSAE Working Paper Series). Centre for the Study of African Economies, University of Oxford. https://ideas.repec.org/p/csa/wpaper/2002-01.html

Collier, P., Hoeffler, A., & Söderbom, M. (2004). On the duration of civil war. *Journal of Peace Research*, *41*(3), 253–273. https://doi.org/10.1177/0022343304043769

Cooray, A., Paradiso, A., & Truglia, F. (2013). Do countries belonging to the same region suggest the same growth enhancing variables? Evidence from selected South Asian countries. *Faculty of Business - Papers (Archive)*, 772–779. https://doi.org/10.1016/j.econmod.2013.06.015

De Groot, J. O. (2010). The spillover effects of conflict on economic growth in neighboring countries in Africa, *Defence and Peace Economics*, 21:2, 149-164

Dobbs, R., Oppenheim, J., Kendall A., Thompson, F., Bratt, M., & van der Marel, F. (2013). Reverse the curse: Maximizing the potential of resource-driven economies. *McKinsey Global Institute*

Eurocham. (2021). Economy of Senegal. Retrieved May 8, 2021, from https://www.eurocham.sn/Economy+of+Senegal

Elbadawi, I. A. (1999). Can Africa export manufactures? The role of endowment, exchange rates, and transaction costs. *World Bank policy Research Working Paper*, No. 2120, Washington Dc. World Bank Economic Development Institute. https://doi.org/10.1596/1813-9450-2120

Fearon, J. D. (2004). Why do some civil wars last so much longer than others? *Journal of Peace Research*, *41*(3), 275–301. https://doi.org/10.1177/0022343304043770

Fearon, J.D. and Laitin, D. (2006) Ethnicity, insurgency and civil war. American Political Science Review, 97(1), pp. 75‑90.

Foucher, V. (2013). Wade's Senegal and its Relations with Guinea-Bissau: Brother, Patron or Regional Hegemon? South African Foreign Policy and African Drivers Programme, Occasional Paper No 132. Retrieved from: https://media.africaportal.org/documents/saia_sop_132_foucher_20130218.pdf

Franzese, R. J. & Hays, J. C. (2006). Strategic interaction among EU governments in active labor market policy-making: Subsidiarity and policy coordination under the European employment strategy. *European Union Politics*, 7(2), 167–189. https://doi.org/10.1177/1465116506063705

Frieden, J.A. (1991). *Debt, Development, and Democracy: Modern Political Economy and Latin America, 1965-1985*. Princeton University Press.

Gause, G. (1995). Regional influences on experiments in political liberalization in the Arab world. In R. Brynen, B. Korany, & P. Noble (Eds.), *Political liberalization and democratization in the Arab world, Vol. 1: Theoretical perspectives* (pp. 283–306). Boulder: Lynne Rienner.

Goodchild, M. F. (2013). Prospects for a space–time GIS. *Annals of the Association of American Geographers* 103 (5): 1072–77.

Goodrick, D. (2014). Comparative case studies. *Methodological briefs - impact evaluation no. 9 (*No. innpub754; Papers). Methodological Briefs. https://ideas.repec.org/p/ucf/metbri/innpub754.html

Gourevitch, P. A. & Shinn, J. (2005). *Political power and corporate control: the new global politics of corporate governance.* Princeton University Press.

Goyal, R. (2004). Does Higher Fiscal Deficit Lead to Rise in Interest Rates? An Empirical Investigation. *Economic and Political Weekly*. Vol. 39, No. 21 (May 22-28, 2004),

Griffith, D. A., & Arbia, G. (2010). Detecting negative spatial autocorrelation in georeferenced random variables. *International Journal of Geographical Information Science*, *24*(3), 417–437. https://doi.org/10.1080/13658810902832591

Gylfason, T. and Zoega, G. (2001). Natural resources and economic growth: the role of investment. Economic Policy Research Unit. Institute of Economics.

Gylfason, T. and Zoega, G. (2002). Inequality and Economic Growth: Do Natural Resources Matter? (April 2002*). CESifo Working Paper Series* No. 712.

Haglund, D. (2011). Blessing Or Curse?: The rise of mineral dependence among low and middle-income countries. *Oxford Policy Management*.

Hailu, D., & Kipgen, C. (2017). The extractives dependence index(Edi). *Resources Policy*, *51*(C), 251–264.

Headey, D., and Hodge, A. (2009). The Effect of Population Growth on Economic Growth: A Meta-Regression Analysis of the Macroeconomic Literature. *Population and Development Review.* Vol 35(2) 221-248

Iimi, A. (2007). Escaping from the resource curse: Evidence from Botswana and the rest of the world. *IMF Staff Papers*, *54*(4), 663–699.

International Council on Mining and Metals. (2012). In Brief: The Role of Mining in National Economies. Retrieved from: http://www.icmm.com/the-role-of-mining-in-nationaleconomies

Jones, S. (2008). *Sub-Saharan Africa and the "resource curse": Limitations of the conventional wisdom*. Danish Institute for International Studies. https://www.jstor.org/stable/resrep13465

Kewir, K. J. (2014). Leadership and Economic Integration: the case of the Cameroon-Gabon couple, *Journal of Conflict Transformation & Security* | Vol. 4 | No. 1-2

Kindzeka, M. (2019, January 8). Gabon closes border with cameroon after failed coup attempt. *Voice of America—English*. Retrieved May 7, 2021, from https://www.voanews.com/africa/gabon-closes-border-cameroon-after-failed-coup-attempt

Knoema World Atlas. (2018). Retrieved from: https://knoema.com/atlas

Lane, P. and Tornell, A. (1995). Power Concentration and Growth, *Harvard Institute of Economic Research Discussion Paper* No. 1720

Le Billon, P. (2001). The Political Ecology of War: Natural Resources and Armed Conflicts, *Political Geography* 20(5): 561–584.

Lederman, D. & Maloney, W.F. (2008) In search of the missing resource curse. *Policy Research Working Paper*, no. 4766, World Bank.

Leite, C.A. & Weidmann, J. (1999). Does mother nature corrupt? Natural resources, corruption, and economic growth. *IMF Working Papers*, No. 99/85, International Monetary Fund.

Lewis, S. (2019). Best project, road/highway: Thies-touba toll expressway project. Retrieved June 1, 2021, from https://www.enr.com/articles/47612-best-project-roadhighway-thies-touba-toll-expressway-project?v=preview

Lujala, P. (2010). The spoils of nature: Armed civil conflict and rebel access to natural resources. *Journal of Peace Research*, *47*(1), 15–28. https://doi.org/10.1177/0022343309350015poe

MacGaffey, J & Bazenguissa-Ganga, R. (2000). Congo–Paris: Transnational Traders on the Margins of Law. Bloomington, IN: Indiana University Press.

Manzano, O. & Rigobon, R. (2001) Resource curse or debt overhang? NBER Working Paper, No. w8390, National Bureau of Economic Research.

Maps Company. (2021). *Central Africa* - travel maps and hiking maps. Retrieved April 8, 2021, from https://mapscompany.com/collections/central-africa

Maurer, S. E. & Potlogea, A. V. (2014). Fueling the gender gap? Oil and women's labor and marriage market outcomes. *CEP Discussion Paper*.

McDonough, M. D. (2017). *The effects of defense r&d on technological progress: Resource diversion versus spillover benefits*. https://utd-ir.tdl.org/handle/10735.1/5390

Mehlum, H., Moene, K. & Torvik, R. (2006), Institutions and the Resource Curse. *Economic Journal* 116, 1–20.

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

Nation Master, Global Industry Market Sizing. (2020). Retrieved May 14, 2020, from https://www.nationmaster.com/

Nation Master. (2020). Countries compared by geography, land boundaries, border countries Retrieved April 27, 2020, from http://www.nationmaster.com/country-info/stats/Geography/Land-boundaries/Border-countries

Openafrica. (2020). Africa shapefiles. Retrieved January 8, 2021, from https://africaopendata.org/

Pepinsky, T. B. (2008). Capital mobility and coalitional politics: authoritarian regimes and economic adjustment in Southeast Asia. *World Politics* 60(03):438–474.

Ploeg, F. van der, & Poelhekke, S. (2009). *The volatility curse: Revisiting the paradox of plenty* (No. 206; DNB Working Papers). Netherlands Central Bank, Research Department. https://ideas.repec.org/p/dnb/dnbwpp/206.html

Reno, W. (1995). Corruption and State Politics in Sierra Leone. New York: Cambridge University Press.

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

Ross, L. M. (2001). Does Oil Hinder Democracy?, *World Politics* 53(3): 325–361.

Ross, L. M. (2003). Oil, Drugs and Diamonds: The Varying Role of Natural Resources in Civil War, in Karen Ballentine & Jake Sherman, eds, *The Political Economy of Armed Conflict: Beyond Greed and Grievance*. Boulder, CO: Lynne Rienner (47–70).

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

Ross, L. M. (2008). Oil, Islam, and Women. *American Political Science Review*, 102(01):107{123}

Sachs, J. & Warner, M. (1995). Natural resource abundance and economic growth. NBER Working Paper 5398.

Sala-i-Martin, X. & Subramanian, M. A. (2003). *Addressing the natural resource curse: An illustration from Nigeria*. International Monetary Fund.

Santander Trade. (2021). Senegalese Economic Outline. Retrieved from: https://santandertrade.com/en/portal/analyse-markets/senegal/economic-outline

Shaban, A. R. (2017, December 8). Senegal opens new $600m airport built over 10 years. *Africa News*. https://www.africanews.com/2017/12/08/senegal-opens-new-600m-airport-built-over-10-years/

Signé, L. (2018, March 29). Africa's big new free trade agreement, explained. *The Washington Post*

Songwe, V. (2019, January 11). Intra-African trade: A path to economic diversification and inclusion. *Brookings*. https://www.brookings.edu/research/intra-african-trade-a-path-to-economic-diversification-and-inclusion/

Stata. (2020). Estat Moran — Moran's test of residual correlation with nearby residuals. Retrieved from: https://www.stata.com/manuals/spestatmoran.pdf

Swart, J., & van Marrewijk, C. (2009). Cross-border mergers & acquisitions: A piece of the natural resource curse puzzle. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.1418568

Taden, J and Kamau, C. (2020). Globalization and customary law adoptions in Sub-Saharan Africa. In M. M. Kithinji & O. E. Anyanwu (Eds.), Africana World in Perspective: An Introduction to Africa and the African Diaspora. Kendall Hunt Publishing Co.

UN COMTRADE, International Trade Statistics Database. (2020). Retrieved June 8, 2020, from https://comtrade.un.org/pb/

UNIDO. (2009). Industrial Development Report.

United Nations Population Division. (2020). International Migrant Stock. Retrieved August 27, 2020, from https://www.un.org/en/development/desa/population/migration/data/estimates2/estimates19.asp

United States Department of State. (2020). 2020 Investment Climate Statements: Cameroon. Retrieved June 14, 2021, from https://www.state.gov/reports/2020-investment-climate-statements/cameroon/

Van der Ploeg, F. & Poelhekke, S. (2009). The volatility curse and financial development: revisiting the paradox of plenty. Working Paper 024. Oxford Centre for the Analysis of Resource Rich Economies, University of Oxford. https://ideas.repec.org/p/oxf/oxcrwp/024.html

Vilarrubia M. J. (2006). Neighborhood effects in economic growth. *Banco de España Working Paper* 0627

Vicente, P. C. (2010). Does oil corrupt? Evidence from a natural experiment in West Africa. *Journal of Development Economics*, 92(1), 28–38. https://doi.org/10.1016/j.jdeveco.2009.01.005

Vittorio, D. (2011). Natural resources and the 'quality' of economic development. *Journal of Development Studies*, *47*(4), 545–573. https://doi.org/10.1080/00220388.2010.506915

West African Economic and Monetary Union (UEMOA). (2021). West Africa gateway. *Portail de Afrique de l'ouest*. Retrieved January 27, 2021, from http://www.west-africa-brief.org/content/en/west-african-economic-and-monetary-union-uemoa

Whiting, L. (2020). The Estat Moran command: Linear regression post-estimation. Retrieved from: https://www.techtips.surveydesign.com.au/post/the-estat-moran-command

World Bank Data: World Development Indicators (2017)

World Bank Open Data. (2020). Data. Accessed February 26, 2020. https://data.worldbank.org/.

World Bank. (2016). Doing Business Reforms in Senegal. Retrieved from: https://www.doingbusiness.org/en/reforms/overview/economy/senegal

World Bank. (2016). Doing Business Report. *Africa Research Bulletin: Economic, Financial and Technical Series*, *53*(10), 21451A-21451B. https://doi.org/10.1111/j.1467-6346.2016.07330.x

World Bank Group. (2015). Republic of Cameroon: Fostering skills for inclusive workforce development, competitiveness, and growth a framework for action. Report No: ACS13117

BIOGRAPHICAL SKETCH

John Taden was born and raised in Saboba, a town in Northern Ghana where he had his basic education. He obtained his Bachelor of Science from the Kwame Nkrumah University of Science and Technology, an MBA from Texas A&M University, Commerce and an MSc in Social Data Analytics and Research from The University of Texas at Dallas. Throughout his time at UT Dallas, Taden has taught multiple courses as the instructor of record and attended multiple conferences around the country. He hopes to continue to be a resourceful academic to students and policymakers in the U.S. and to his country Ghana.

CURRICULUM VITAE

Education

Expected 2021	**The University of Texas at Dallas (UT Dallas)** Ph.D. in Public Policy and Political Economy Master of Science in Social Data Analytics and Research
2015	**Texas A&M University-Commerce, Commerce, Texas** Master's in Business Administration
2009	**Kwame Nkrumah University of Science and Technology, Kumasi, Ghana** BSc Urban Planning

Peer Reviewed Publications

Taden, John and Kamau, Casper. (2020). Globalization and customary law adoptions in Sub-Saharan Africa. In M. M. Kithinji & O. E. Anyanwu (Eds.), *Africana World in Perspective: An Introduction to Africa and the African Diaspora.* Kendall Hunt Publishing Co.

Taden, John. Is African religiosity a hinderance to development? In W. G. Moseley & K. M. Otiso (Eds.), *Under the Palaver Tree: Debating Enduring and Contemporary African Issues*. (*Forthcoming with Taylor and Francis*)

Under Review

Taden, John. "Analyzing the incentives and constraints presented by trade liberalization for domestic policymaking."

Bunte, Jonas and Taden, John. "Loans, Grants, and Taxes: How foreign aid shapes domestic institutions in developing countries."

Research Impact, Policy Publications, and Media

JoyNews TV, Ghana. Re-election of Nana Akufo-Addo: Economists urge government to reduce assertive borrowing

JoyNews TV, Ghana. Economist warns of implication for ROPAA not implemented

TED Talk. Localizing Justice and Privatizing the Right to Punish. TEDX (Video)

Medium. Myths versus reality: What the data tell us so far about COVID-19

Selected Works in Progress

Taden, John. "Global Trade Integration and Domestic Tax Reforms"

Taden, John. "Resource Booms, Industrial Busts, and Cross-Border Spillover Effects in Post-Colonial Sub-Saharan Africa," *(Dissertation)*

Taden, John and Kamau, Casper. "Constitutional Bargaining and the Emergence of Customary Law Provisions"

Databases

Mob (In)justice: This database tracks violent mob attacks often carried out under circumstances regularly described as instant justice. I use a host of computerized natural language processors to track attacks from social media and mainstream news sources. This project's goal is to provide security agencies and policymakers data needed to fight mob justice.

Teaching

Spring 2021	Instructor, Research Design for Policy Scientists, EPPS 2301. UT Dallas - *Students gain a solid foundation for further study of research methods. Topics: philosophy of science, logic of inquiry, qualitative approaches, producing data, and assessing validity of conclusions*
Fall 2020	Instructor, Political Economy of Developing Countries, IPEC 4302. UT Dallas. - *Students test hypotheses from seminal political and economic theories and attempt to explain the underlying causes of the divergent paths of development between countries*
Spring 2020	Instructor, Quantitative Analysis in the Social and Policy Sciences, EPPS 2302, UT Dallas - *Students are introduced to statistical analysis in social and policy science research. They also learn to apply software to data visualizations and cause-effect interactions with regression models*
Summer 2019	Instructor, Political Economy of Africa, IPEC 4308. UT Dallas - *Students review and apply political and economic theories to development in Africa, including on institutions, conflict, democratization, natural resources, industrialization, debt, trade, and China*
2016 - 2020	Teaching Assistant, UT Dallas - *Political Economy of Industrialized Countries, Politics of International Finance, PE of Developing Countries*