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Natural resources, institutions and economic development in Africa

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Abstract

This article, first, examines the association between resource rents, institutions and economic growth in Africa, as well as the performance of resource-rich and non-resource-rich countries on institutional quality and political governance. The findings suggest that resource rents failed to contribute to long-term growth on the continent. Additionally, higher resource rents are associated with relatively weak institutions. Second, using historical data, the study tests the validity of the resource-curse hypothesis in two resource-rich countries, namely, Nigeria and Botswana. Although both countries have derived substantial revenues from their natural resource sectors, the distributed-lag results show that Nigeria may have experienced a natural resource curse, while Botswana has not. These findings are presumed, based on the extant literature, to be explained by differences in the level of institutional quality.

Keywords: Natural resources; Institutions; Africa.

1. Introduction

Africa, or sub-Saharan Africa (SSA)[1], has a considerable endowment in both renewable and non-renewable natural resources. The export of non-renewable resources represents a major source of earnings for its economies (Lundgren *et al*., 2013). According to IMF (2016), there has been an increasing dependence on and a growing importance of extractive industries in the region since the 1990s. Nonetheless, taking advantage of natural resources to finance growth and development continues to remain a challenge, particularly in resource-intensive countries.

To explain the paradox of the 'resource-rich, and yet poor-performing countries', the well-known 'resource curse' hypothesis (RCH) stipulates that natural resource abundance hampers economic growth. Recent evidence suggests that natural resources create incentives for rent-seeking activities, which may also exert a corrosive influence on institutions and governance, and hence, growth (Isham *et al*., 2005). Others also argue that the detrimental effect of natural resources on growth is mitigated by strong institutional settings (Sachs and Warner, 1995; Mehlum *et al*., 2006; Robinson *et al*., 2006; O'Reilly and Murphy, 2017). While the former view suggests that institutions tend to be weaker in resource economies, based on the latter it is expected that strong institutions would represent a safeguard against the resource curse. In the present paper, we shed light on the likely role of institutions in transforming natural resource wealth into economic development in SSA.

Using World Bank data, the paper first presents evidence on the association between resource rents, institutions and economic growth, as well as on the performance of resource-rich (RR) and non-resource-rich (NRR) countries on institutional quality (IQ). Secondly, the study empirically checks the validity of RCH by estimating the effect of terms of trade (TOT) on growth in two RR countries with different development paths, namely, Nigeria and Botswana. Indeed, historical evidence suggests that Botswana's GDP grew considerably, with a notable impact on economic development, while Nigeria's performance has been relatively poor. The results suggest that Nigeria may have experienced a natural resource curse while Botswana has not. These findings are attributed to the dichotomy of the IQ in these countries, suggesting that in RR countries good institutions may mitigate the resource curse. The rest of the paper is organized

[1] 'SSA' and 'Africa' are used interchangeably in the present article. Although the focus is on SSA, the analysis is applicable to Africa generally.

as follows. The next section provides a brief review of the literature on the 'resource curse'. Section 3 presents some evidence on the importance of natural resources in SSA, as well as on its association with economic growth and IQ. The case studies of Botswana and Nigeria are then presented in section 4, with section 5 concluding the paper.

2. Brief theoretical review on the resource curse

Starting from the idea of a 'big-push' effect of natural resources, which was informed by the work of Rosenstein-Rodan (1943) and Murphy *et al*. (1989), it was globally believed that natural resource discovery or boom would provide the needed capital to ignite industrialization and sustained economic growth (Sachs and Warner, 1999). The historical evidence from especially developing countries, however, reveals that RR countries do not necessarily outperform NRR countries; indeed, the contrary tends to be the case.

One of the early theories on the relative performance of resource economies is the Prebisch-Singer hypothesis (PBH). The hypothesis predicts a long-term decline in primary commodity prices, resulting from a fall in the relative demand for such products. Thus, countries that are predominantly primary-product exporters are expected to experience decreasing TOT which, in turn, results in lower growth, in the long-run (Prebisch, 1950; Singer, 1950). However, in reality many resource economies have actually enjoyed higher terms of trade, at least in the medium term, but the improvement has been accompanied by lower growth. Under PBH, it is primarily the reductions in externally generated net revenues caused by TOT deterioration that are believed to engender deterioration in growth. Paradoxically, however, it now appears that it is the *improvements* in such revenues in resource economies that reduce growth: the 'resource curse' (Auty, 2000; Sachs and Warner, 2001).

More generally, resource curse connotes the notion that resource abundance tends to result in such ills as: poor economic performance, particularly via growth collapses; endemic corruption; ineffective governance; and political upheavals (Sachs and Warner, 1995, 2001). The resource curse hypothesis (RCH) stipulates that natural resources have a detrimental effect on economic performance through various channels including, the 'Dutch disease', income inequality, human capital, governance and institutional quality.

First, according to the 'Dutch disease' argument, the discovery or exploitation of natural resources has a harmful effect on other sectors of the economy, especially manufacturing. Resource extraction causes a transfer of productive

resources from the non-resource tradable sector, such as manufacturing, to the resource sector. In addition, the appreciation of the exchange rate from increased resource inflows would increase the cost of production in the less productive non-resource sector, while increasing the relative price of non-tradables, as more resources are transferred to this sector (Gylfasson *et al*., 1999). Thus, there is a structural shift toward the resource and non-tradable sectors. Further, since manufacturing, rather than primary, exports have tended to be the more potent engine for long-term growth in developing economies (Fosu, 1990, 1996), there is a tendency for resource economies to experience relatively low growth.

Second, natural resource abundance can adversely affect growth through exacerbating inequality and reducing investment in human capital. For example, according to Leamer *et al*. (1999), the resource sector tends to be relatively capital-intensive, resulting in less demand for labor and in the redistribution of income toward the owners of physical capital. Furthermore, the manufacturing sector in general requires relatively high-skilled labor, so that a transfer of resources away from the sector into the resource sector could lead to decreasing investment in human capital (Gylfason *et al*., 1999; Gylfason, 2001).

Third, natural resources may affect growth indirectly via its effect on institutions (Isham *et al*., 2005). This relationship is attributed to the incentives that resource rents create for unproductive rent-grabbing activities as well as for illegal behaviors in the form of bribery and corruption (Baland and Francois, 2000; Torvik, 2002). These rent-seeking activities can also corrode existing institutions (Sachs and Warner, 1995). Given, further, that good institutions are primordial in ensuring long-term growth, resource wealth tends to be growth-reducing (Acemoglu *et al*., 2001, 2005). However, the effect of natural resources on economic performance is conditional on the quality of existing institutions. Mehlum *et al*. (2006), for instance, argue that countries with relatively weak IQ are more prone to the resource curse, because poor institutions create a favorable environment for rent-seeking activities, which degrade institutional quality.

Acemoglu *et al*. (2004) also argue that the abundance of resource rents can induce a political change from a democratic to a more autocratic system, and sustain dictatorial regimes through inefficient redistributive policies that quell or weaken existing opposition. Moreover, according to Auty (2000) and Sachs and Warner (2001), the rise of a "predatory state", which focuses on the appropriation of natural resource gains rather than development, results in government ineffectiveness and distortions in public policies. Furthermore,

tensions among social and political groups over the control of rents can spur elite political instability (Kimenyi and Mbaku, 1993; Acemoglu *et al*., 2004), with adverse implications for growth in SSA (Fosu, 1992, 2001, 2002a, 2003), and for the transformation of SSA's growth into development (Fosu, 2002b, 2004).

3. Natural resources in Africa

Lundgren *et al*. (2013) defines RR countries as those whose exports of natural resources represent over 25 per cent of total merchandise exports. Based on this criterion, 27 SSA countries are identified as RR (for further details, see Lundgren *et al.* 2013 and Oxfam, 2015).[2] These are: Angola, Botswana, Central African Republic (CAR), Cameroon, Chad, Congo Rep., Congo Dem. Rep., Equatorial Guinea, Gabon, Ghana, Guinea, Mali, Namibia, Niger, Nigeria, South Africa, Sierra Leone, Tanzania, Zambia, Zimbabwe, Burkina Faso, Côte d'Ivoire, Liberia, Mauritania, Mozambique, Sudan and South Sudan.

Among these countries, seven are mainly oil exporters (Cameroon, Chad, Congo Rep., Gabon, Côte d'Ivoire, South Sudan and Sudan) while six, in addition to oil, primarily export natural gas (Angola, Equatorial Guinea and Nigeria), gold (Ghana), iron (Mauritania), or uranium (Niger). The SSA non-oil economies mainly export precious stones (Botswana, CAR, Guinea, Liberia, Zimbabwe), iron (Liberia, Mauritania, Mozambique, Sierra Leone, South Africa), gold (Burkina Faso, Mali, Tanzania, South Africa), and other metals and minerals such as bauxite and copper (Congo Dem. Rep., Guinea, Madagascar, Mozambique, Namibia, Niger, Sierra Leone and Zambia).

The economic contribution of natural resources in SSA largely accrues in the form of rents. These rents represent about 16.0 per cent of the region's GDP compared with a world average of about 11.6 percent (see Table 1). For a sample of 47 SSA countries[3], Table 1 reports the share of total natural resource rents in GDP. Total natural resource rents include oil rents, natural gas rents, coal rents (hard and soft), mineral rents, and forest rents (World Bank, 2015).[4] For each country, an average is computed over the period 2005-2014, when

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[2] Lundgren *et al*., (2013), using data between 2005 and 2010, identified 20 countries as being RR in SSA. These countries are: Angola, Botswana, Central African Republic, Cameroon, Chad, Congo Rep., Congo Dem. Rep., Equatorial Guinea and Gabon.

[3] This list includes 26 RR countries and 21 NRR countries. South Sudan does not appear on this list due to missing data.

[4] A resource rent is the surplus revenue derived from the extraction of a natural resource. It is obtained by deducting the total cost of extraction and normal returns on investment from the total revenue.

commodity prices were considered quite favorable compared to more recent years. The share of resource rents in GDP gives a picture of a country's resource rent abundance relative to the size of its economy, with higher resource rents creating greater incentives for rent-grabbing, erosion of institutional quality, generation of political instability, all of which, in turn, negatively affect growth and development.

Table 1: Total Natural Resource Rents [RR] (% of GDP) – SSA, 2005-2014

Rank	Country	RR (% of GDP)	Rank	Country	RR (% of GDP)	Rank	Country	RR (% of GDP)
1	Congo, Rep.	64.6	17	Mozambique	14.5	33	Rwanda	6.7
2	Equatorial Guinea	58.8	18	Uganda	13.3	34	Botswana	5.9
3	Angola	47.3	19	Mali	13.2	35	Eritrea	5.4
4	Gabon	47.1	20	Niger	13.2	36	Gambia	5.4
5	Mauritania	43.4	21	Burkina Faso	13.0	37	Lesotho	4.9
6	Chad	36.1	22	Zimbabwe	13.0	38	Benin	4.8
7	Congo, Dem. Rep.	34.1	23	Cameroon	11.6	39	Senegal	4.1
8	Liberia	32.9	24	CAR	10.3	40	Kenya	3.4
9	Nigeria	27.9	25	Sierra Leone	10.0	41	Sao Tome & Prin.	3.0
10	Guinea	25.3	26	Malawi	10.0	42	Comoros	2.9
11	Burundi	24.3	27	Côte d'Ivoire	9.7	43	Namibia	2.8
12	Zambia	19.0	28	South Africa	9.6	44	Swaziland	2.6
13	Ethiopia	17.6	29	Togo	9.0	45	Cape Verde	0.5
14	Guinea-Bissau	15.9	30	Sudan	8.1	46	Seychelles	0.1
15	Somalia	14.9	31	Madagascar	7.8	47	Mauritius	0.0
16	Ghana	14.7	32	Tanzania	7.6			

SSA Avg.= 16.0, World Avg.=11.6

Source: World Bank (2016b)

As expected, RR countries had a greater contribution of resource rents to

GDP compared to their NRR neighbors, with the exception of Burundi, Zambia and Uganda. Among the SSA countries considered, for 13 countries, including 7 oil-rich countries, the share of resource rents in GDP was higher than that of SSA as a whole in 2005-2014 (Table 1). Congo Republic is ranked first on the list with its resource rents representing 64.6 per cent of GDP; followed by Equatorial Guinea, where about 59.0 percent of the country's GDP accrued in the form of rent over the period. Angola ranks third, followed successively by Gabon, Mauritania, Chad, Congo Dem. Rep., Liberia, Nigeria, Guinea, Burundi, Zambia, and Ethiopia. Interestingly, Botswana is in the bottom 20 countries on the list with resource rents, accounting for only about 6 per cent of GDP. This could, however, be explained by a problem of underestimation of the resource rents rather than an actual low share of rents per se (Lee and Gueye, 2015, p. 5). Conversely, the contribution of resource rents to GDP in NRR countries was minimal, with Cape Verde, Seychelles and Mauritius having relatively negligible shares of resource rents in GDP (less than 1.0 per cent).

3.1. Natural resources and economic growth

We now examine the association between resource rents and economic growth in the African region. Although we are aware that economic growth does not necessarily measure 'economic development', it is presumably the greatest contributor. For example, in SSA, it has been critical to human development (Fosu, 2002b, 2004) and to poverty reduction (Fosu, 2015).

In Tables 2 and 3, zero-order correlation coefficients between resource rents, on the one hand, and GDP growth and per capita GDP growth, on the other, are reported. These are computed over 1970-2014 and 2002-2014 in order to capture the short-run and the long-run relationships, respectively. The results in Table 2 reveal that between 2002 and 2014, countries with higher resource rents experienced faster GDP growth (but not per capita GDP growth) than those with lower rents. The evidence supports the view that in the short-run, GDP growth in SSA has been positively associated with high rents as a result of favorable commodity prices. This finding however does not hold for the longer 1970-2014 period (Table 3), where the correlation coefficients are insignificant. The results are based on simple correlations and do not take into account other relevant growth factors. The point of this exercise, however, is not to estimate growth equations per se, but to have a rough idea of an association between resource rents and growth performance.

Table 2: Zero-Order Correlation Coefficient: Total Natural Resource Rents (% of GDP) vs. Growth, 2002-2014 (short-run)

	GDP Growth	Per Capita GDP Growth
Total natural resource rents (% of GDP)	0.0963	0.0409
	(2.29)	(0.97)
	[0.022]	[0.332]

Source: World Bank (2016b)
Note: t and *p* values in parentheses and brackets, respectively.

Table 3: Zero-Order Correlation Coefficient: Total Natural Resource Rents (% of GDP) vs. Growth, 1970-2014 (short-run)

	GDP Growth	Per Capita GDP Growth
Total natural resource rents (% of GDP)	0.0104	-0.0085
	(0.44)	(-0.36)
	[0.6605]	[0.7195]

Source: World Bank (2016b)
Note: t and *p* values in parentheses and brackets, respectively.

3.2. Natural resources and institutional development

We now explore the relationships between the various IQ measures and resource rent for the same 2002-2014 period above, in order to shed light on possible institutional channels through which the observed economic performance might have occurred. Zero-order correlation coefficients are reported in Table 4 for the six IQ variables: rule of law, government effectiveness, control of corruption, regulatory quality, political stability, and voice and accountability. Remarkably, for each of the IQ measures, the correlation coefficient is negative and highly significant, suggesting that a higher resource rent is associated with a lower IQ value in SSA (Table 4). This finding seems to support the view that countries with more abundant resource rents tend to have weaker institutions (Arezki and Bruckner, 2011; Leite and Weidmann, 2002; Arezki and Gylfason, 2013).

Further qualitative evidence on IQ and natural resources is provided in Figures 1 through 6, using data for 1996-2014 for which the IQ data are available.

[5] Globally, each of these IQ measures has a mean of zero and a range of -2.5 to +2.5.

First, SSA as a whole exhibits lower IQ measures than the respective global average[5]; this observation holds for all the IQ measures. Second, RR countries as a group fall considerably below their NRR counterparts. Third, the gap has actually widened over the last decade or so for government effectiveness and control of corruption. Indeed, while the two measures show improvements since about 2005 for the NRR group, the reverse appears to hold in the case of RR countries. This is a consequential observation, given that these IQ variables are important components of growth-enhancing 'developmental governance', defined as: 'economic policy coherence (free-market policies), public-service effectiveness, and limited corruption' (Alence, 2004).

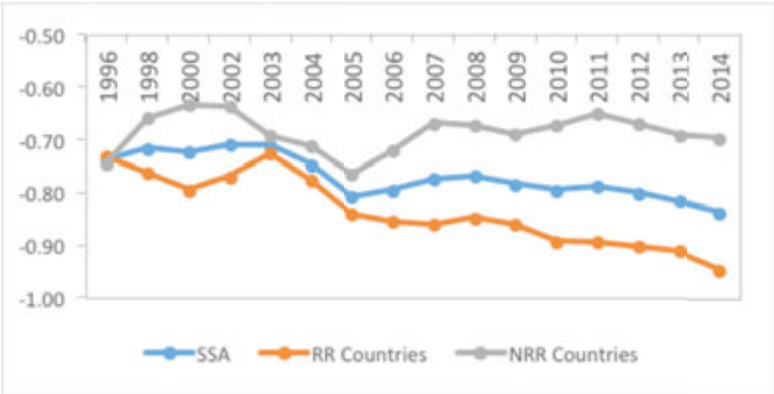
TABLE 4: ZERO-ORDER CORRELATION COEFFICIENT: TOTAL NATURAL RESOURCE RENTS (% OF GDP) VS. MEASURES OF INSTITUTIONAL QUALITY, 2002-2004

	Control of Corruption	**Government Effectiveness**	**Political Stability and Absence of Violence**	**Rule of Law**	**Regulatory Quality**	**Voice and Accountability**
Total natural resource rents (% of GDP)	-0.4834	-0.4304	-0.3353	-0.3817	-0.4572	-0.4208
	(-13.1)	(-11.3)	(-8.4)	(-9.8)	(-12.2)	(-11.0)
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]

Source: World Bank (2016b, c)

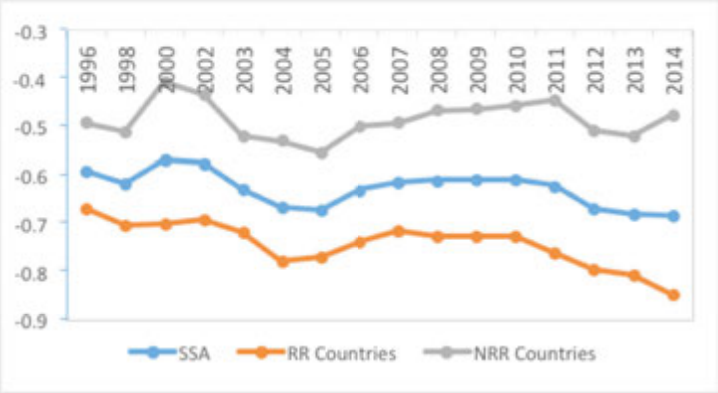
Note: t and *p* values in parentheses and brackets, respectively.

FIGURE 1: GOVERNMENT EFFECTIVENESS (-2.5 TO 2.5), 1996-2014



Source: World Bank (2016b)

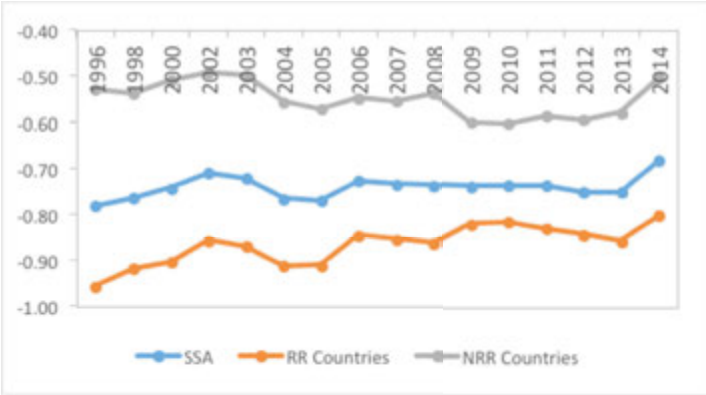
FIGURE 2: CONTROL OF CORRUPTION (-2.5 TO 2.5), 1996-2014



Source: World Bank (2016b)

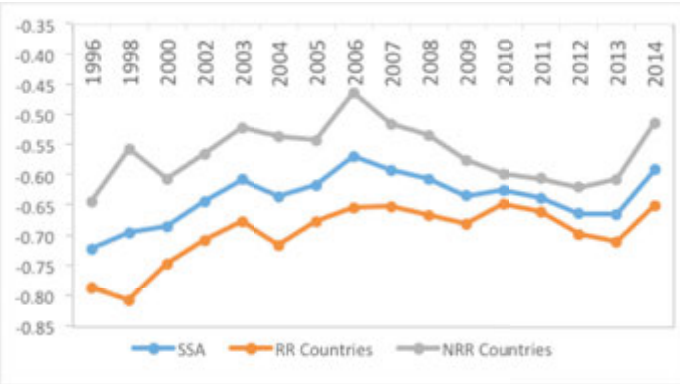
However, Figure 3 shows that the gap between the RR and NRR countries in terms of rule of law progressively narrowed over the 1996-2009 period. This narrowing resulted from both the weakening of the rule of law in NRR countries (from -0.53 to -0.60) and an overall improvement in RR countries (from -0.96 to -0.82). In the more recent 2010-14, however, there has been an improvement in NRR, but a slight decline in RR countries. Similar observations apply to voice and accountability where the gap between RR and NRR countries narrowed progressively from about 2006 until 2010, but then appears to have widened thereafter (Figure 4).

FIGURE 3: RULE OF LAW (-2.5 TO 2.5), 1996-2014



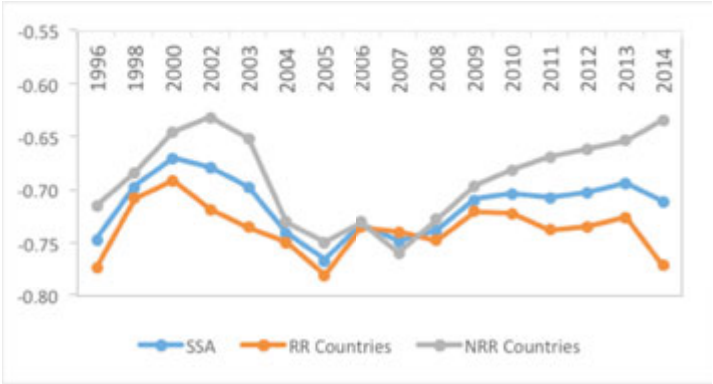
Source: World Bank (2016b)

FIGURE 4: VOICE AND ACCOUNTABILITY (-2.5 TO 2.5), 1996-2014



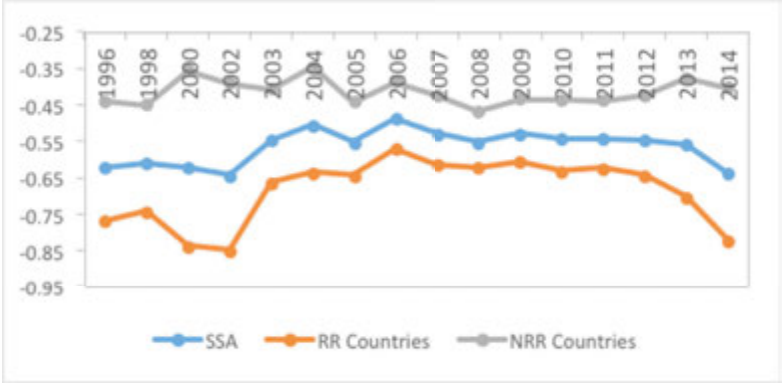
Source: World Bank (2016b)

FIGURE 5: REGULATORY QUALITY (-2.5 TO 2.5), 1996-2014



Source: World Bank (2016b)

FIGURE 6: POLITICAL STABILITY AND ABSENCE OF VIOLENCE (-2.5 TO 2.5), 1996-2014



Source: World Bank (2016b)

Figure 5 shows that both RR and NRR countries experienced a similar pattern of regulatory quality until the mid-to-late 2000s, both falling until the mid-2000s following an initial increase. Then, more recently, while the NRR group experiences steady increases as of the late 2000s, RR's trend has been downward, leading to a widening gap. Finally, Figure 6 shows that there has not been a significant change in political stability in NRR. However, for RR, this IQ first decreases in the early 2000s, increases in the mid-2000s, and has been falling thereafter, thus resulting in a widening NRR-RR gap since about 2009.

In sum, we have observed that RR countries as a group have performed worse than their NRR counterparts in SSA on all the six IQ measures presented here. In addition, the respective gaps have generally been widening, particularly most recently. The observation that the gap seems to be widening for especially government effectiveness, control of corruption, and political stability is particularly troubling, mainly because such widening tends to result appreciably from worsening IQ for the RR group. Thus, the abundance of resource wealth might have represented, and may continue to constitute, a key constraint to the institutional development in resource-intensive countries in SSA.

3.3. Natural resource, political governance and growth

A further transmission channel for 'resource curse' is political governance, which is indicated here by the index of electoral competitiveness (IEC) and executive constraint (XCONST). IEC measures the level of competition in the electoral process while XCONST is an indicator of the extent of checks and balances in countries with regards to the power of the executive branch of government. Both measures range from 1 to 7, with 7 being the highest level and 1 the lowest, and they are selected here due to the existing evidence on their implications for economic growth. For example, Fosu (2008) finds that 'advanced-level' democratisation in SSA tends to be growth-enhancing, in contrast with 'intermediate-level' democratisation.[6] In the case of XCONST, Fosu (2013) finds that higher levels of this variable tend to be associated with increasing prevalence of growth-enhancing 'syndrome-free' (SF) regimes.[7] SF is a necessary condition for sustaining growth and constitutes 'virtually a sufficient condition for avoiding short-run growth collapses' (Fosu and O'Connell, 2006: 31; see also Collier and O'Connell, 2008). In addition, SF is found to raise the

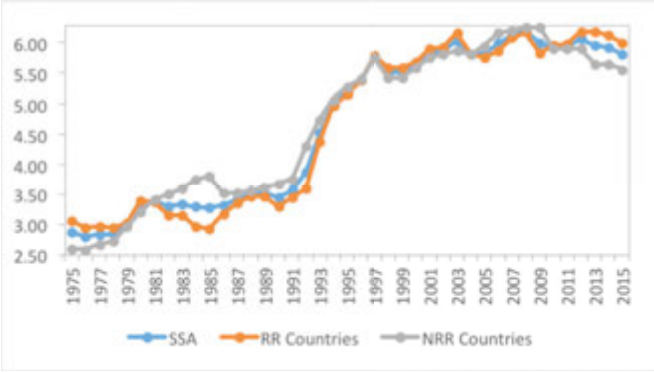
[6] The relevant threshold estimated by Fosu (2008) is an IEC value of 4.4.

[7] An SF regime constitutes a 'combination of political stability with reasonably market-friendly policies' (Fosu and O'Connell, 2006: 54). For further details on SF regimes, see Ndulu *et al.*, 2008a, b.

incidence of SF either independently or via its ability to mitigate the potential pernicious effect of ethnicity (see Fosu, 2013).

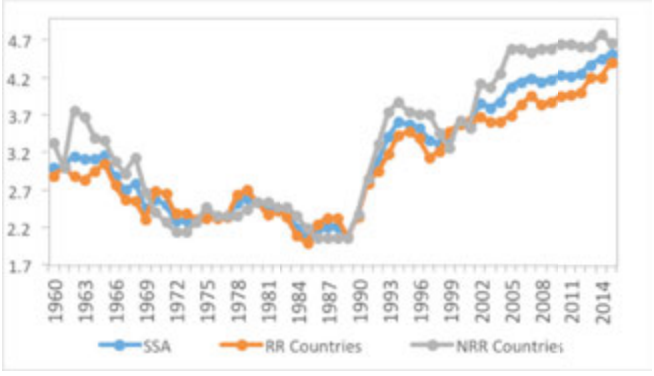
As shown in Figures 7 and 8, there have been considerable increases in IEC and XCONST in SSA overall since about 1975 and 1989, respectively. And, interestingly, unlike the case of IQ, RR and NRR countries have followed similar trends. However, while it is difficult to differentiate between RR and NRR generally on either IEC or XCONST, NRR has dominated RR since about 2002 on XCONST, while the reverse seems to have occurred in the case of IEC most recently since 2012.

FIGURE 7: INDEX ELECTORAL COMPETITIVENESS (IEC) [1-7], 1975-2015



Source: The Database of Political Institutions (DPI), Cruz *et al*. (2015).

FIGURE 8: EXECUTIVE CONSTRAINT (XCONST), [1-7] 1960-2015



Source: Polity IV Project (2015)

4. Terms of Trade and Growth

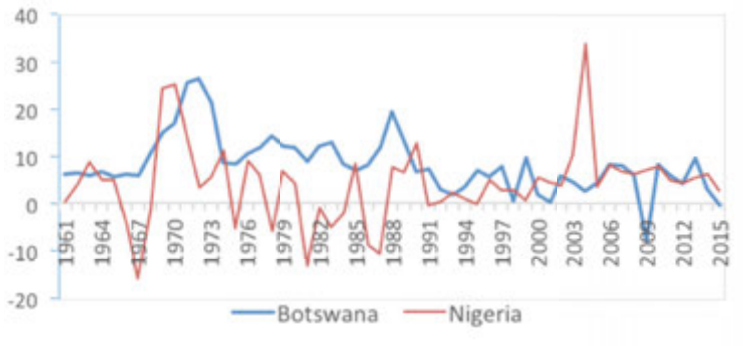
We now test the RCH that resource wealth is not positively associated with economic growth. Following Fosu (2011), we observe how the barter terms of

trade (TOT) improvements in a given resource country with a history of poor institutions are transformed into growth, in contrast with its good-institutions counterpart. TOT is selected because it represents the most likely exogenous variable with respect to growth in this regard, since a given country would generally not be able to exert monopoly power on the supply of the resource.

4.1. An Illustration from Botswana and Nigeria

As RR countries, Botswana and Nigeria have both derived substantial revenues from their resource endowment. On the one hand, Botswana exploits diamonds which represent about 85 per cent of export revenue and a third of the country's public revenue (US Government, The World Factbook, 2015). On the other hand, Nigeria is one of the biggest oil producers in Africa with over 90 per cent of its total export earnings generated from the sector and estimated total accumulated oil revenues of about US$350 billion at 1995 prices since 1965 (Sala-i Martin and Subramanian, 2013). Nevertheless, the economic performance of these two countries differ considerably. For instance, with respect to GDP growth, Figure 9 shows that Botswana has historically outperformed Nigeria, until about 2002. Moreover, Botswana ranks low on poverty with high rates of investment in health and education (Robinson, 2013); while more than a half of Nigeria's population lives with less than US$1.25 a day in 2005 prices (World Bank, 2016a).

Figure 9: Historical Comparison (GDP Growth), Botswana vs. Nigeria,1961-2015



Source: World Bank (2016b)

In terms of institutional development, Botswana has historically displayed stronger institutions and better political governance than Nigeria. As depicted in Table 5, Botswana has consistently ranked high on all the indicators of governance between 1975 and 2014. The country has a historical record of mature democracy, political stability and good governance (Lewin, 2011; Robinson, 2013). And although Botswana's economy has been dependent on

its natural resource sector, primarily diamonds, since the 1970s, its institutional setting has remained among the strongest in SSA (ibid.).

Meanwhile, until recently, Nigeria's historical performance on governance and institutional quality has been poor. Even though Table 5 shows that electoral competiveness has tremendously improved in recent years, the levels of executive constraint, political rights and civil liberties remain relatively low. In addition to the recurrent occurrence of civil unrest during the early post-independence period, successive dictatorships and political upheavals in the form of coups d'état (McGowan, 2003; Collier and Hoeffler, 2004), weak governance and mismanagement of oil windfalls have contributed to the dismal historical economic performance (Sala-i-Martin and Subramanian, 2013).

Table 5: Governance Indicators, Botswana vs.Nigeria, 1975-2014

	Botswana				**Nigeria**				**SSA**			
	75-79	**95-99**	**00-04**	**10-14**	**75-79**	**95-99**	**00-04**	**10-14**	**75-79**	**95-99**	**00-04**	**10-14**
EIEC	6.0	7.0	7.0	6.0	2.0	2.0	7.0	7.0	2.9	5.4	5.6	6.0
LIEC	6.0	7.0	7.0	6.0	1.0	1.0	7.0	7.0	2.8	5.6	6.0	6.1
XCONST	5.0	6.6	7.0	7.0	2.5	2.0	5.0	5.0	2.4	3.4	3.7	4.3
Civil Liberties	5.2	6.0	6.0	6.0	4.2	2.8	3.6	3.8	2.6	3.5	3.7	3.7
Political Rights	6.0	6.0	6.0	5.0	3.2	1.8	4.0	4.0	2.2	3.3	3.5	3.5

Notes: LIEC is the Legislative Index of Electoral Competitiveness, EIEC is Executive Index of Electoral Competitiveness and XCONST is Degree of Constraint on the Government Executive.

Political Rights and Civil Liberties are computed by the authors as unweighted averages, using data from Freedom House (2016). Note that the numbers, which range from 1.0 to 7.0, are transposed here so that 1.0 indicates the lowest level of freedom and 7.0 the highest level. LIEC and EIEC, whose values range from 1.0 to 7.0 (highest level to lowest level of democracy), are unweighted averages using data from the Database of Political Institutions (DPI), Cruz et al. (2015). XCONST ranges from 1.0 to 7.0 (1.0="unlimited authority"; 7.0="executive parity") and are unweighted averages of data from the Polity IV Project (2015).

As discussed earlier in this paper, unless strong institutions are put in place, RR countries are more likely to experience 'resource curse', which can be channeled through, inter alia, rent-seeking, corruption (Arezki and Gylfason, 2013), political instability (Kimenyi and Mbaku, 1993), high risk of conflict (Collier and Hoeffler, 2004), poor governance and mismanagement (Acemoglu *et al*., 2004), and low investment in human capital (Gylfason, 2001). Thus, based on the historical evidence, symptoms of the resource curse are likely to be identified in the case of Nigeria, but not in Botswana. This notion is tested in

an empirical analysis of the RCH in these two countries. RCH is upheld if the effect of TOT is non-positive, but rejected if it is positive.

Using GDP and TOT World Bank data (see Table 6 for specific sources), a distributed-lag model is estimated for Nigeria and Botswana.[8] Although different sample periods are considered for the two countries, they both lie between 1966 and 2002. From the mean values of GDP growth and growth of TOT (TOTG) reported in Table 6, it is observed that the average GDP growth of Botswana is three times higher than that of Nigeria, even though the latter experienced higher growth of TOT (9 times larger). It therefore appears that compared to Botswana, higher TOTG in Nigeria has not been growth-enhancing.

Table 6: Mean GDP Growth and TOTG (Annual Average), Botswana vs.Nigeria

	Botswana	**Nigeria**
Mean TOTG	0.9	6.3
Mean GDPG	10.2	3.2

Notes: TOTG= Growth rate of Net Barter Terms of Trade; GDPG= GDP Growth.
Data are for 1966-2002, except TOTG for Botswana, which is for 1976-2002. GDP and TOT data are obtained from World Bank, WDI (2005) and World Bank Africa Database CDROM 2004, respectively.

Table 7: Distributed-LAG Regression Results: GDPG and TOTG, Botswana vs.Nigeria

	Botswana	**Nigeria**
Sum of lags coefficient (t-value)	2.26 (5.00)	-0.36 (-1.70)
Number of lags	10	15
Degree of polynomial	3	4
Sample period	1976-2002	1966-2002
Adjusted sample period	1986-2002	1981-2002
R-squared	0.87	0.51
Adjusted R-squared	0.83	0.40
F statistic [p value]	28.4 [0.00]	4.48[0.01]
Durbin-Watson	2.09	2.30
Akaike information criterion	4.16	5.81
Schwartz criterion	4.36	6.06

Notes: t-statistics in parentheses ( ) and p-values are in brackets [ ].

[8] For details on the estimation procedure see Fosu (2011).

The results of the distributed-lag regression for both countries are presented in Table 7.[9] It is apparent from these results that TOTG has a positive long-term effect on GDPG for Botswana. The long-run cumulative effect is quite large and highly significant. The results show that a 1 percent increase in TOTG induced an increase in GDPG by about 2.3 percent, representing 23 percent of the mean GDPG rate reported in Table 6.

In contrast, in the case of Nigeria, the long-run effect of an increase in TOTG is negative, though weakly significant. Thus, when TOT improved, the country's GDP growth would actually fall. The cumulative effect of TOTG on GDPG for Nigeria is -0.35; and it constitutes roughly 10 percent of the mean growth rate over the sample period.

The above findings are that the growth outcomes of TOT appreciation differ between the two countries. In Botswana, TOT improvements led to an increase in long-run growth, while the reverse was the case in Nigeria. These results suggest that over the sample period considered, Nigeria experienced a resource curse and Botswana did not. Consistent with theory, the contrasting outcomes in the two RR countries may be explained by the nature of their institutional settings. Fosu (2017), in the context of Ghana, empirically shows that democracy and high degree of restraint on the executive can help mitigate the negative effect of TOT on economic growth. Hence, high quality institutions might assist RR countries in harnessing natural resources wealth for economic development. The weak political institutions and governance in Nigeria might have created a favorable environment for rent-seeking activities and led to the poor economic performance; meanwhile, relatively good institutions in Botswana helped avoid the resource curse.

5. Conclusion

SSA has historically been associated with natural-resource wealth. The recent discoveries of oil, gas and other natural resources on the continent, particularly in the eastern and western parts of Africa,[10] have deepened this view even further. Are these natural resources a 'curse' or a 'blessing'? An appropriate response to this question would apparently depend on how much the emerging resource countries learn from the experience of their resource-rich neighbors in terms of their historical experiences.

[9] Refer to Fosu (2011) for a detailed discussion of these results.

[10] Recently, oil and/or gas discoveries have been announced for Uganda, Tanzania, Kenya, Mozambique and Senegal.

The preliminary evidence presented in this paper suggests that there has been no significant contribution of natural resource rents to the long-term growth of SSA. The study found further that resource rents are associated with relatively poor institutional quality, and also with weak inter-temporal institutional development.

The rest of the paper then focused on two country-specific historical experiences, Botswana and Nigeria, in order to illustrate two contrasting cases of economic performance of resource economies. Using available data covering roughly 1966-2002 for Nigeria and 1976-2002 for Botswana, periods when Nigeria's institutional quality was generally poor in contrast with Botswana's, the RCH that improvements in terms of trade (TOT) would result in lower long-term growth was tested. The results from distributed-lag analysis rejected RCH for Botswana but upheld it for Nigeria.

These contrasting outcomes are presumed to be attributable to the difference in the quality of institutions. Such a finding may be considered as preliminary, in that non-institutional factors might have also played a role. For example, one could argue that the much larger population size and ethnic diversity of Nigeria might account for the differences in results observed here. But that would be begging the question; in the final analysis, the quality of institutions would mediate the potency of non-institutional variables, consistent with the New Institutional Economics (see e.g., Rodrik *et al*., 2004). However, such variables could also influence the nature and quality of institutions, an issue that is beyond the scope of the present paper.

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