



Natural Resources and Economic Growth in sub-Saharan Africa: Does Corruption Matter?

Pierre Christian Tsopmo¹ and Martin Ambassa MEssy²

October 2021 / No.781

Abstract

The existing literature on the relationship between natural resources (NRs) and growth is inconclusive. To enrich this debate, some studies have investigated the role of institutions in the NRs-growth nexus. Unlike most previous work, which mostly consider the interactive effect of institutions, notably corruption, on the relation between NRs and growth, this paper determines the optimal threshold

1 Faculty of Economic Sciences and Management, University of Yaoundé II, Cameroon; mail: christiantsoptmo@gmail.com/azerty_tsopmo@yahoo.fr

2 Faculty of Economic Sciences and Management, University of Maroua, Cameroon; mail: martin_amb@yahoo.fr

of corruption below and above which NRs affect economic growth differently. The aim of this paper is to investigate the effect of NRs on economic growth conditioned by the level of corruption in SSA. Using a panel data on 26 Sub-Saharan Africa (SSA) countries over the period of 1985 to 2014, this paper uses the Panel Smooth Transition Regression (PSTR) model developed by Gonzalez et al. (2005). Firstly, we found evidence of the existence of corruption thresholds that change the effect of NRs on economic growth. These thresholds are 0.94, 0.40, 2.33, 1.16 and 0.48 for public, executive, legislative, judicial, and political corruption, respectively. Secondly, the relation between NRs and economic growth below and above each type of corruption gives mixed results. The sensitivity analysis, which led to the decomposition of NRs into forest and oil resources, confirms the divergence of the results found by the baseline specification. These results have significant implications for policy sequencing in SSA. To benefit from NRs-led growth, improvement of the institutional framework, including different political corruption reducing, should precede NRs management policies. Also, a certain diversification of the economy of SSA countries leads to a better efficiency of the NRs on economic activity.

Introduction

Does corruption really matter when trying to assess the relationship between natural resources (NRs) and economic growth in Sub-Saharan Africa (SSA)? Available literature mainly demonstrates that NRs tend to adversely affect growth in NRs-rich countries, notably in SSA. Therefore, the theory of “resource curse” has become a well-established finding in literature. Since the pioneering papers of Sachs and Warner (1995, 1997, 2001), resources’ endowments are paradoxically associated with poor economic performance, while it is expected that revenue from NRs should increase investment and economic growth in a country. However, the rise in prices of NRs at the international market is a fundamental driver of the SSA region Gross Domestic Product (GDP), which exceeded an average of 5% between 2000 and 2010 (Devarajan and Fengler, 2013). But this economic performance is far from the potential of SSA’s economies. In fact, according to the IMF (2012), NRs account for at least 65% of their exports. IDEA (2015) also shows that the SSA region has 30% of the world's mineral resources, 15% for oil, 12% for natural gas, and it is the second largest region in forest endowment in the world. Moreover, SSA countries rich in NRs exhibit the poorest economic growth while countries poor in NRs, notably in Asia, are among the fastest growing economies. Empirically, the effect of NRs on growth is still inconclusive, the most literature highlighting a negative effect. At least two main arguments can be put forward to explain why NRs turn to be counterproductive.

The first explanation is the “Dutch disease” theory. The theory was developed by Corden and Neavy (1982), Corden (1984) and van Wijnbergen (1984), following Netherlands’ experience of a declining manufacturing sector after the discovery of

natural gas. The Theory shows that when a country experiences a resource boom, it normally undergoes a real appreciation of exchange rate. This appreciation reduces the international competitiveness of other tradable sectors because resource-based exports crowd out commodity exports produced by those sectors (Krugman, 1987). Finally, the real appreciation of exchange rate reduces national income via adverse effects on factors in the manufacturing sector. In the first paper devoted to the empirical analysis of the Dutch disease theory, Sachs, and Warner (1995) demonstrated that a 13% increase in primary exports to GDP decreases annual growth by about 1%. The second explanation for the resource curse is related to the quality of institutions. It is well documented that the bad performances of NRs-rich countries are explained by weak quality of institutions (Gylfason, 2001; Mehlum et al., 2006; Torres et al., 2013). From this perspective, scholars agree that resource curse arises because resource abundance tends to weaken political institutions and especially fosters corruption, which consequently hampers economic growth (Leite and Weidmann, 1999; Zhan, 2017). In fact, the fragility of political institutions is exacerbated by revenues generated from NRs' sector. Through corruption, this fragility guarantees supplementary revenues to leaders at the expense of macroeconomic performance.

Corruption is defined by Jain (2001) as an act by which a public service is used by a public official for personal purposes to alter the rules of the game. In World Bank (2010) view, corruption means “the misuse or the abuse of public office for private gain”. It is characterized by the illegal transfer of public resources to private (Andvig et al., 2000) and in this vein, it is referred to as bribes that officials receive in the exercise of a public service. Philippot (2009) affirms that corruption is generally associated with a low efficacy of bureaucracy due to high transactions costs; for instance, corruption leads to an important economic cost.

According to Transparency International (2018), Sub-Saharan Africa (SSA) is ranked as the most corrupted region in the world. A report from QOG³ (2015) also asserts that the five most corrupted countries in the world are in SSA. More specifically, the Democratic Republic of Congo (DRC) is ranked as the most corrupted country. It is followed by Somalia, Central African Republic, South Sudan, and Equatorial Guinea. All these countries are heavily endowed with NRs. Furthermore, corruption is rampant in Nigeria and Angola, which are the two largest oil-producing countries in SSA. Nigeria's Economic and Financial Crimes Commission agency has estimated that more than US\$ 380 billion of public funds have been stolen or wasted by various governments since their independence in 1960. In Angola, more than US\$ 1 billion of oil revenue disappeared due to corruption each year in the early 2000s (McMillan, 2005).

3 Quality of Government (QOG) Institute of Gotherburg is an international organization that gives the performance of the countries of the world in the quality of governance every year.

From the above stylized facts, corruption seems to be linked to NRs. However, empirical analysis on the relation between NRs and corruption leads to controversial findings. Corruption is said to be associated with NRs curse. For instance, Zhan (2017) showed that resource curse is linked to corruption. Ades and Tella (1999) found a positive relationship between NRs abundance, corruption and rent-seeking. In a related study, Sala-i-Martin, and Subramanian (2003) demonstrated that the slow growth experienced by Nigeria after the discovery of oil is due to the emergence of corruption. Similarly, Kolstand and Soreide (2009) argued that corruption plays an important role in explaining resource curse in Least Developed countries (LDCs). Corruption can “*sand the wheels*” or “*grease the wheels*” of an economy. Therefore, it has been asserted that the presence of large resource dividends creates enormous economic opportunities and corruption (Leite and Weidman, 1999; Caselli and Michaels, 2013). The higher the level of corruption in an economy, the more the loss in terms of growth and vice versa (Kolstand and Soreide, 2009). Therefore, an eventual curse of NRs could be linked to a certain level of corruption in the economy.

The objective of this study is to investigate the effect of NRs on economic growth conditioned by the level of corruption in SSA. The study determines the optimal threshold of corruption that allows a blessing of NRs. It analyses the effects of NRs on growth below and above this threshold. The study complements the existing literature on four aspects. Firstly, in contrast with previous studies on the topic (Erum and Hussain, 2019), we do not limit the study to assess the positive and/or the negative effect of corruption on the relation between NRs and growth. Therefore, to reconcile the “*greasing the wheels*” and the “*sanding the wheels*” theories, we highlight that both effects could exist by defining a corruption threshold. Secondly, most of the studies use an aggregate measure of corruption and consider NRs. Considering the measure of corruption, we disaggregate corruption following Jain (2001)’ classification into four indicators, namely: judicial corruption, executive corruption, public corruption and legislative corruption⁴. The aim is to have more specific results on the effect of corruption to achieve more focused recommendations. Relatively to NRs, it is well known that they include renewable (forest, food...) and non-renewable (oil, minerals...). For Leite and Weidman (1999), NRs do not affect economic activity in the same way. Based on this conclusion, our study evaluates the effect of NRs by distinguishing forest, oil and mineral resources.

Finally, our econometric investigation is based on the Panel Smooth Transition Regression (PSTR) model. The PSTR model allows us to highlight the heterogeneity of the NRs-growth relationship given the level of corruption. Also, previous studies (Mehlum et al., 2006; Arezki and Van Der Ploeg, 2007) generally use interaction terms,

4 The definitions of judicial corruption, executive corruption, public corruption and legislative corruption are given in the subsection devoted to the presentation and description of the data.

implying a linear interaction between corruption, NRs and growth. By using a PSTR model, we can demonstrate that an increase in corruption does not have the same impulse on the marginal effect of NRs over the distribution of corruption. Furthermore, the PSTR method also allows us to derive endogenous threshold values for corruption associated with a shift in the NRs-growth relationship, which a linear model cannot do. Indeed, Jude and Levieuge (2016) showed that PSTR corrects the loss of information associated with the estimation of linear models. Also, linear estimation techniques such as Ordinary Least Squares (OLS) generally exhibit an endogeneity bias that limits the model's convergence; this is corrected by the PSTR (Fouquau et al., 2008).

Effect of corruption on NRs and growth relationship : What channels ?

(a) Corruption and public investment allocation

One of the channels through which corruption can affect economic activity is through public investment. Indeed, corruption affects public investment through public spending in at least two fronts. First, corruption may ensure an increased and unproductive allocation of government resources, as corrupt officials seek to maximize their personal rent-extraction potential, which in turn may affect public investment. Moreover, political corruption or “grand” corruption, distorts the entire decision-making process connected with public investment projects (Tanzi and Davoodi, 1997). Indeed, in the different countries, public investment projects tend to be very large. Their accomplishment is often contracted out to domestic or foreign private companies. There is thus a need to select the enterprises that will be responsible for undertaking the project. For a private company, getting a contract to execute a project, and especially a large one, can be very profitable. Therefore, the managers of these companies may be willing to pay a bribe to government officials that help them win the contract. In some countries, commissions paid by entrepreneurs to foreign politicians are both legal and tax deductible. Such "commissions" are often calculated as percentages of the total cost of the project (Montinola and Jackman, 2002). In this context, Haque and Kneller (2008) showed that corruption increases public investment. However, Mauro (1995) found that this effect is inconclusive. Secondly, corrupt public officials could take a different way and maximize their rents by limiting the amount of public consumer spending. They may also do this by under-reporting public funds available for consumption or by redirecting public funds to private (often secret, offshore) bank accounts. In this way, corruption could potentially reduce government size. For example, Johnson et al. (1999) also showed that bribery has been found to reduce State revenue. In the same vein, Elliot (1997) reports that the size of government budgets relative to GDP decreases with levels of corruption. These results have been theoretically explained by governments distorting savings (Barro, 1991).

(b) Corruption and competitiveness

Another channel through which corruption helps to understand the relationship between NRs and economic growth is trade openness. Hodge et al. (2011) suggested the potential for corruption to counteract arrangements towards greater trade openness. For instance, Southgate et al. (2000) showed that restrictions on trade in the form of quotas or licenses provide public officials substantial sources of rents. Since the move towards free trade removes the opportunity to obtain at least some bribes, corrupt officials have a greater incentive to limit trade openness arrangements. Such a situation could reduce the competitiveness of local firms seeking larger market shares. It is therefore reasonable to assume that existing domestic firms possess certain local knowledge necessary to minimize bribe expenses. Potential foreign entrants lack this advantage and suffer disproportionately from corruption, which thereby acts as a brake on increased foreign investments (Southgate et al., 2000). Although Hodge et al. (2011) found that prevention of corruption could reduce trade volumes by increasing the international competitiveness of firms that are engaged in corruption, the corrupt firm will only be able to gain some competitive advantage in trade negotiations if all countries do not apply the same rules. Thus, it is not clear that corrupt economies will be competitive. In general, due to increased market competition, technological transfers and access to larger markets are expected to increase economic growth (Wacziarg and Welch, 2008).

The data

The study focuses on both renewable and non-renewable NRs and takes into consideration countries rich in NRs. The sampled countries were divided into two groups following Bulte et al. (2005). The first group is composed of countries rich in forest resources while the second group consists in countries rich in oil resources. Bulte et al. (2005) emphasize that the effect of institutional variables and more precisely corruption on NRs depends on the type of resources.

Our sample includes twenty-six (26) SSA countries over the period 1985-2014. The traditional growth drivers used, and the NRs variable are obtained from the World Development Indicators (WDI). We use the political corruption (corrupt), which is based on four indicators, namely: executive, legislative, judiciary and public corruption. The corruption of the executive concerns the corruption of the members of the executive. This indicator includes bribes collected by members of the executive, embezzlement of public funds or other state resources for personal or family use. Legislative corruption refers to that which occurs in the activities of the legislative system; it considers the financial gains perceived by members of Parliament because of their powers. Judicial corruption captures undocumented additional payments or bribes paid by companies or individuals to speed up court proceedings or to obtain

court rulings in their favour. As for public corruption, it formalizes the extent of favours granted by employees of the sector in exchange for bribes, thumb costs and material incentives. It also considers the misappropriation of public funds and the appropriation of public resources for personal use or for family use. The average of these four indicators forms the political corruption index obtained from the Varieties of Democracy data book (2017). The values of corruption are evolving increasingly (from a situation of low corruption to a situation of high corruption).

Conclusion and policy implications

This paper investigates the effect of NRs on economic growth conditioned by the level of corruption in SSA. This objective is divided into two specific ones: (i) the paper determines the optimal threshold of corruption that allows a blessing of NRs; (ii) the paper analyses the effects of NRs on growth below and above this threshold. Applying a PSTR model on a panel of twenty-six (26) SSA countries over the period 1985 to 2014, the paper gives many interesting results. The threshold value is 0.486 for political corruption. Below it, NRs have a non-significant effect on growth, but above the threshold, NRs have a positive effect on growth. By examining each component of political corruption, we observe that the threshold values are 0.948, 0.402, 2.330 and 1.162 for public, executive, legislative and judiciary corruption, respectively. As far as the effect of NRs on growth is concerned, when each component of corruption is taken as an institutional variable, the study reaches to the following results. Above the threshold, a variation of 1% of NRs induces an increase of 0.209 and of 0.157 point of growth for public corruption and executive corruption, respectively. Below the threshold, a 1% change in NRs leads to an increase of 0.094% and 0.781%, and above to a decrease of 0.182% and 0.069% on economic growth for legislative and judicial corruption, respectively. The sensitivity analysis results obtained by decomposing NRs into oil resources (ORs) and forest resources (FRs) also show that the relation between ORs or FRs and economic growth in SSA is non-linear; that is, this relation is conditioned on the existence of a corruption threshold. The channels through which this non-linearity can occur are the competitiveness of economies and the channel of public expenditure and investment.

Two main policy implications can be derived from the preceding results. As far as the first implication is concerned, the existence of a corruption threshold that conditions the growth effect of NR casts doubt on the effectiveness of policies to ensure NR blessing. Precisely, these policies do not benefit host countries if they are not preceded by an improvement in their institutional framework. Therefore, it is necessary to establish an order in the implementation of economic policies, giving priority to policies against public, executive, legislative, judicial, and political corruption to benefit from NR. Furthermore, due to the endogenous nature of corruption which, in a context of abundant NR, is combined with several social challenges (conflicts,

bureaucratic instability...), it should be noted that reduction of corruption requires to build strong institutions that ensure compliance with the laws or social policies previously established.

Regarding the second implication, although our results also imply the implementation of public policies to encourage corruption in countries with low levels of corruption, this is not an effective alternative for reducing the natural resource curse, given the significant costs in terms of legitimacy and government instability associated with high levels of corruption. Thus, reforms in the field of legislative, judicial and political corruption will likely result in a gradual increase of benefits from NRs, even for countries situated far below the threshold. On the contrary, reforms focused on public and executive corruption are only effective for countries close to the threshold value. Nevertheless, due to institutional complementarities, reforms targeting specific corruption can in fact bring other characteristics closer to their respective thresholds, thereby leading to a potential long-run incremental effect on growth.

References

- Acemoglu D., Johnson S., Robinson, J., Yared, P. 2004. "Income and democracy". *American Economic Review*, 98(3): 808–842.
- Acemoglu D. and Verdier T. 2000. "The choice between market failures and corruption". *American Economic Review*, 90:194–211.
- Ades A. and Tella R. 1999. "Rents, competition, and corruption". *American Economic Review*: 89 (4): 982–993.
- Andvig J., Fjeldstad O., Amundsen I. and Soreide T. 2000. Research on corruption: A Policy oriented survey. Michelin Institute and Norwegian Institute of International Affairs.
- Arezki R. and van Der Ploeg F. 2007. Can the natural resource curse be turned into a blessing? The role of trade policies and institutions. IMF Working Paper 07/55, Washington, DC: International Monetary Fund.
- Avom D. and Carmignani F. 2010. « L’Afrique Centrale peut-elle éviter le piège de la malédiction des produits de base ? ». *Revue D’économie Du Développement* : 18(2) : 47–72.
- Barro R. 1991. "Economic growth in a cross section of countries". *Quarterly Journal of Economics*, 106(2): 407–43.
- Barro R., Sala-i-Martin X. 1995. *Economic growth*. New York, McGraw Hill.
- Brunnschweiler N. 2008. "Cursing the blessings? Natural resource abundance, institutions, and economic growth". *World Development*, 36 (3): 399–419.
- Bulte E., Damania R. and Deacon T. 2005. "Resource intensity, institutions and development". *World Development*, 33(7): 1029–1044.
- Caselli F. and Michaels G. 2013. "Do oil windfalls improve living standards? Evidence from Brazil". *Applied Economics*, 5 (1): 208–238.
- Collier P. and Hoeffler A. 2005. "Resources rents, governance, and conflict". *Journal of Conflict Resolution*, 49(4): 625–633.

- Corden W. 1984. "Booming sector and Dutch disease economics: Survey and consolidation". *Oxford Economic Papers*, 36(3): 359–380.
- Corden W. and Neary P. J. 1982. "Booming sector and deindustrialization in a small open economy." *Economic Journal* 92: 825–48.
- Davis G. 1995. "Learning to love the Dutch disease: evidence from the mineral economies." *World Development*, 23: 1765–1779.
- Dzhumashev R. 2016. "The role of income uncertainty in the corruption–growth nexus". *The BE Journal of Economic Analysis and Policy*, 16(2): 1169–1201.
- Elliott K. 1997. "Corruption as an international policy problem: Overview and recommendations". In Elliott, K.A. (eds), *Corruption and the global economy*. Washington, DC: 175–233.
- Erum N. and Hussain S. 2019. "Corruption, natural resources and economic growth: Evidence from OIC countries". *Resources Policy*, 63: 1–10.
- Fischer S. 1993. "The role of macroeconomic factors in growth," *Journal of Monetary Economics*, 32(3): 485–512.
- Frankel J. and Romer D. 1999. "Does trade cause growth?". *American Economic Review*, 89(3): 379–399.
- Fouquau J., Hurlin C., Rabaud I. 2008. "The Feldstein–Horioka puzzle: A panel Smooth transition regression approach". *Economic Modelling*, 25(2): 284–299.
- Gonzalez A., Teräsvirta T., Van Dijk D. and Yang Y. 2005. Panel smooth transition regression models. Revised and updated version of the Working Paper No. 604 (2005) in the Working Paper Series of Economics and Finance, Stockholm School of Economics.
- Granger C. and Terasvirta T. 1993. *Modelling non-linear economic relationships*. New York: Oxford University Press.
- Gylfason T. 2001. "Natural resources, education, and economic development". *European Economic Review*, 45: 847–859.
- Havranek T., Horvath R. and Zeynalov A. 2016. "Natural resources and economic growth: A meta-analysis". *World Development*, 88: 134–151.
- Haque M. and Kneller R. 2008. "Public investment and growth: The role of corruption". *Centre for Growth and Business Cycle Research Discussion Paper Series 098*.
- Hodge A., Shankar S., Rao D. and Duhs A. 2011. "Exploring the links between corruption and growth". *Review of Development Economics*, 15(3): 474–490.
- IDEA. 2015. "Voter turnout website", Institute for Democracy and Electoral Assistance, www.idea.int/vt/index.cfm (accessed 4 January 2015).
- IMF. 2012. Sub-Saharan Africa: Sustaining growth amid global uncertainty. Regional Economic Outlook. Washington DC: International Monetary Fund.
- Jain A. 2001. "Corruption: A review". *Journal of Economic Surveys*, 15(1): 71–121.
- Johnson S., Kaufmann D. And Zoido-Lobaton P. 1999. "Corruption, public finances, and the unofficial economy". World Bank, Policy Research Working Paper Series: 2169.
- Jones C. 1995. "R&D-based models of economic growth". *Journal of Political Economy*, 103(4): 759–784.
- Jude C. and Levieuge G. 2016. "Growth effect of FDI in developing economies: The role of institutional quality". *World Economy*, 40(4): 715–742.

- Krugman P. 1987. "The narrow moving band, the Dutch disease, and the competitive consequences of Mrs Thatcher: Notes on trade in the presence of dynamic scale economies". *Journal of Development Economics*, 27(1): 41–55.
- Kolstad I., and Soreide T. 2009. "Corruption in natural resource management: Implications for policy makers". *Resources Policy*, 34: 214–226.
- Leite C. and Weidman J. 1999. Does mother nature corrupt? natural resources, corruption, and economic growth; IMF Working Paper 99/85, Washington, DC.
- Levine R. and Renelt D. 1992. "A sensitivity analysis of cross-country growth regressions". *American Economic Review*, 82(4): 942–963.
- McMillan J. 2005. "Promoting transparency in Angola". *Journal of Democracy*, 16 (3): 155–168.
- Mauro A. 1995. "Corruption and growth". *Quarterly Journal of Economics*, 109: 681–71.
- Mehlum H., Moene K. And Torvik R. 2006. "Cursed by resources or institutions?" *The World Economy*, 29 (8): 1117–1131.
- Méon P. and Weill L. 2010. "Is corruption an efficient grease?" *World Development*, 38(3): 244–259.
- Montinola G., Jackman R. 2002. "Sources of corruption: A cross-country study". *British Journal of Political Science*, 32: 147–170.
- Philippot L. 2009. "Rente naturelle et qualité des institutions". *Centre d'études et de recherches sur le développement international (Cerdi), Études et Documents*, ISSN 2114–7957.
- Qiang Q. and Jian C. 2020. "Natural resource endowment, institutional quality and China's regional economic growth". *Resources Policy*, 66: 1–9.
- Rose-Ackerman S. 1999. *Corruption and government: Causes, consequences, and reform*. Cambridge: Cambridge University Press.
- Sachs J. and Warner A. 1995. "Sources of slow growth in african economies". *Journal of African Economies*, 6(3): 335–376.
- Sachs J. and Warner A. 1997. "Natural resources abundance and economic growth", *Harvard Institute for International Development*.
- Sachs J. and Warner A. 2001. "The curse of natural resources". *European Economic Review*, 45 (4): 827–38.
- Sala-i-martin X. and Subramanian A. 2013. "Addressing the natural resource curse: An illustration from Nigeria". *Journal of African Economies*, 22(4): 570–615.
- Sala-i-Martin X. 1997. "I just ran two million regressions". *American Economic Review*, 87(2): 178–183.
- Seghir M. and Damette O. 2018. "Natural resource curse: A non-linear approach in a panel of oil exporting countries". *International Economics*, 156: 231–246.
- Solow R. 1956. "A contribution to the theory of economic growth". *Quarterly Journal of Economics*, 71: 65–94.
- Southgate, Slazar-Canelos P., Caracho-Saa C., and Stewart R. 2000. "Markets, institutions, and forestry: The consequences of timber trade liberalization in Ecuador". *World Development*, 28(11): 2005–12.
- Swan T. 1956. "Economic growth and capital accumulation". *Economic Record*, 32(2): 334–361.
- Tanzi, V. and Davoodi H. R. 1997. "Globalization and the future of social protection". *Scottish Journal of Political Economy*. 49(1):116–127.

- Torres N., Afonso O. and Soares I. 2013. "Oil abundance and economic growth-a panel data analysis". *Energy Journal*, 33(2): 119–148.
- Transparency International. 2018. "Corruption perception index 2018". Annual report.
- Varieties of Democracy data. 2017. Quality of government institute of Gotherburg is an international.
- Vasilyeva O. and Libman A. 2020. "Varieties of authoritarianism matter: Elite fragmentation, natural resources and economic growth". *European Journal of Political Economy*, 63. June.
- Wacziarg R. and Welch K. H. 2008. "Trade liberalization and growth: new evidence". *World Bank Economic Review*, 22 (2): 187–231.
- World Bank. 2010. Strengthening bank group engagement on governance and anticorruption. Development Committee (Joint Ministerial Committee of the Boards of Governors of the Bank and the Fund on the Transfer of Real Resources to Developing Countries).
- Zallé O. 2019. "Natural resources and economic growth in Africa: The role of institutional quality and human capital". *Resources Policy*, 62: 616–624.
- Zhan J. 2017. "Do natural resources breed corruption? Evidence from China". *Environmental and Resource Economics*, 66(2): 237–259.



Mission

To strengthen local capacity for conducting independent, rigorous inquiry into the problems facing the management of economies in sub-Saharan Africa.

The mission rests on two basic premises: that development is more likely to occur where there is sustained sound management of the economy, and that such management is more likely to happen where there is an active, well-informed group of locally based professional economists to conduct policy-relevant research.

www.aercafrica.org

Learn More



www.facebook.com/aercafrica



www.instagram.com/aercafrica_official/



twitter.com/aercafrica



www.linkedin.com/school/aercafrica/

Contact Us

African Economic Research Consortium
Consortium pour la Recherche Economique en Afrique
Middle East Bank Towers,
3rd Floor, Jakaya Kikwete Road
Nairobi 00200, Kenya
Tel: +254 (0) 20 273 4150
communications@ercafrica.org