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The Effects of Natural Resources on Urbanization, Concentration, and Living Standards in Africa

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Summary. — This paper examines the effects of natural resource abundance on urbanization and living standards in Africa. Our central hypothesis is that the exploitation of natural resources in a context of poor governance quality creates the conditions for rapid urbanization and urban concentration, and ultimately lowers living standards in primal cities. Using a large panel of African countries, our results show that an increase in the share of natural resources leads to a rapid increase in urbanization and urban concentration, even after taking into account endogeneity issues, or after using more exogenous measures of resource dependency. The paper also establishes a negative association between the resource abundance, the quality of life in large cities and the degree of informality via the increase in urbanization rate and urban concentration. Importantly, we have established that these results mostly hold in the context of bad governance records. Furthermore, poor governance quality is associated with a more detrimental effect of urbanization and urban concentration on the quality of life in African cities. These results suggest that ongoing transformations experienced by these countries call for complementary policies to ensure a more balanced and efficient urbanization process. © 2017 Elsevier Ltd. All rights reserved.

Key words - natural resources, urbanization, governance quality, living, standards, informal sector

1. INTRODUCTION

Urbanization in Sub-Saharan Africa has rapidly increased over the past decade (United Nations, 2014). Africa has increasingly become an urban continent with the average urbanization rate reaching 37% in 2014 (World Development Indicators dataset), an increase of about 10 percentage points since 1990. During 1990–2000, the average annual growth rate of the number of urban dwellers was 3.3%, the highest in the world (Pieterse, 2010). Labor has rapidly moved away from traditional sectors and rural areas to take job opportunities in urban zones in a manner that has not always led to an improvement in living standards, nor to economic growth in general. One of the main consequences of rapid urbanization has been the rapid development of the informal service sector in many African economies (Obeng-Odoom, 2011).

Another direct implication of the rapid urbanization process in Africa has been the growing size of primal cities (i.e. largest city in a country). As discussed by Brückner (2012), the average primacy in Africa is much higher than in other regions; in particular, it is much higher than in industrialized countries. Several authors have highlighted that a high incidence of dictatorship and political instability is associated with large primal cities (Ades & Glaeser, 1995). The urbanization literature has also demonstrated the negative effect of large primal cities on aggregate economic growth (Henderson, 2003; Brückner, 2012). This is consistent with negative externalities from increases in squatter settlements in large primal cities.

Another study by the World Bank's World Development Report (2013) indicated that not all countries experienced higher levels of GDP when a larger share of the population moved to urban areas. In a recent paper, Brückner (2012) found that decreases in the share of agricultural value added have led to a significant increase in the urbanization rate in Sub-Saharan Africa. Henderson (2005) finds no econometric evidence linking the extent of urbanization to either economic or productivity growth or levels. Importantly, Henderson (2003) finds that large primal cities exert a negative impact on aggregate growth. In a multivariate analysis of crosscountry panel data from 1970 to 2000, Bloom, Canning, and Fink (2008) found no evidence that the level of urbanization affects the rate of economic growth. Brülhart and Sbergami (2009) investigate the impact of agglomeration on growth and find that agglomeration boosts GDP growth only up to a certain level of economic development. Brückner (2012) finds that increases in the urbanization rate had a significant average negative effect on GDP per capita growth in Africa.

Other studies have also raised concerns about the rapid acceleration of the urbanization process in developing countries with implications for long-term development (Rondinelli, 1985; United Nations, 2014). Gollin, Jedwab, and Vollrath (2016) distinguish between two types of urbanization developments, which have distinct developmental implications. One pattern is that urbanization can occur with structural transformation and cities are "production cities", with a mix of workers in tradable and non-tradable sectors. The other pattern is associated with an increase in urbanization not associated with structural transformation. In these countries, urbanization takes place in "consumption cities" where the mix of workers is heavily skewed toward nontradable and low productive service sectors. The author developed a standard model of structural transformation to possibly explain why natural resource exporters and Sub-Saharan Africa in particular, have experienced urbanization without structural transformation but with depressed growth. They also show a strong positive relationship between total natural resource exports and urbanization in a large sample of countries and a non-statistically significant relationship

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between total resource exports and quality of life in urban cities.

Our paper enters this literature by focusing on the effect of natural resource abundance on urbanization rate in Africa, and by examining empirically its various implications for living standards and the size of the informal sector in cities. The paper tests for the effects of various types of resource dependency (e.g. by investigating whether there is a differential effect of "point resources" such as fuels and minerals, versus "diffuse resources" such as food and agricultural products). ¹ The paper therefore examines to what extent resource abundance triggers a rapid increase in urbanization (including an increase in the size of primal cities), which in return reduces living standards in cities and increases the share of people in the informal sector in urban areas.

Our paper contributes to the literature in several ways. It provides a different angle on the understanding of the possible adverse consequences of a high resource abundance in Africa. The paper also takes into account the heterogeneity of resource-rich countries in Africa, based on the type of resource that is extracted, to better understand the link between urbanization and living standards.

Instead of focusing on aggregate variables, such as GDP growth, to measure well-being, our paper proposes a more granular approach, which consists of directly examining the changes in living conditions in African cities measured by several variables (share of slums, access to clean water and sanitation, and degree of urban informality). The paper therefore expands on previous works looking at urbanization and its contribution to economic development with a focus on Africa.

How can resource abundance foster rapid urbanization, urban concentration and lower living standards? There are several possible channels, mostly linked to the quality of institutions. First, it is now well established that institutional quality is a key factor behind the so-called "resource curse", i.e. the inability of the exploitation of natural resources to promote economic development. The exploitation of natural resources in a context of poor institutional quality may ultimately lead to rent-seeking behaviors, increased corruption, and higher government spending on wages and transfers (in contrast to productive investments) that make urban regions hosting central administrations more attractive to populations. For example, Ebeke, Omgba, and Laajaj (2015) showed that oil rents lead to a widening of the wage gap between the public administration and the private sector, mainly in badly governed countries. Bulte et al. (2005) also show that resourceintensive countries tend to suffer from lower levels of human development indirectly through lower institutional quality.

Second, as documented by Ades and Glaeser (1995), poor governance is associated with large primal cities with very low living standards. To the extent that natural resource abundance weakens institutional quality, this can lead to a rapid urban concentration and lower living standards. Weak governance can therefore trigger an increase in the number of urban poor who find insecure shelter in overcrowded slums where lack of water, sanitation, electricity, employment, security, and social exclusion are the norm. As most of the migrants from rural areas are uneducated and/or unskilled, they also end up in the informal sector (Berger, 2006). In presence of poor governance quality and abundant natural resources, the rise of poor megacities creates profound challenges. Davis and Henderson (2003) show that political capitals in Africa are larger in size than what it is expected from other countries. Recent research also shows that the wave of democratization in sub-Saharan Africa since the 1990s reduced population concentration and led to a significant catch-up growth in non-capital cities (Fetzer & Shanghavi, 2015). Another study finds that autocratic governments across the world had 50% larger primate cities than democracies (Ades & Glaeser, 1995). As an example, primal cities in resource-rich but poorly governed countries, such as Lagos and Kinshasa, constitute already urban agglomerations of over 10 million residents ("megacities"), while Dar-es-Salaam, Johannesburg, and Luanda are only projected to reach that size by 2030.

Third, the income surge that follows a natural resource boom may lead to an increase in the relative prices in the economy (especially for non-tradable goods and services), fueling the movement of labor from traditional sectors (e.g. agriculture) to cities (and in the service sector). If this rapid urbanization triggered by the exploitation of resources is not well planned because of poor institutional quality, the ultimate implication would be a faster increase in the size of cities and a rapid deterioration of living standards in cities. Gollin et al. (2016) show how the urbanization rate soared in a number of African countries after the exploitation of the country's chief primary natural resource. Interestingly, the paper also documents how movements in commodities prices in Zambia (a major slump in copper prices in 1975) led to "counter-urb anization" in Zambia, whereas appreciation in copper prices led to higher urbanization rates more recently.

An important contribution of our paper is to test to what extent governance quality shapes the effect of resource abundance on urbanization, urban concentration and living standards. We investigate whether in presence of bad governance, the exploitation of natural resources accelerates the urbanization rate and the urban concentration, which can ultimately deteriorate living standards in urban areas.

Our findings show a strong, positive, and significant effect of point resources on urbanization, and that they tend to be associated with a deterioration of living standards in urban areas. The effects are stronger in presence of bad governance, consistent with previous works having emphasized the key role played by governance quality in the resource curse literature. These results remain robust to a large number of robustness checks that include alternative measures of resource dependency (oil reserves, oil discoveries) and the instrumentation of the resource rent variable using exogenous variations in international oil prices (similar to Acemoglu, Finkelstein, & Notowidigdo, 2013).

The rest of the paper is organized as follows. Section 2 discusses the econometric strategy and the results. Section 3 focuses on the role of governance quality, and concluding remarks are provided in Section 4.

2. EMPIRICAL FRAMEWORK

(a) Baseline specification

We follow the previous literature on the cross-country determinants of urbanization rate for the econometric investigations (Becker & Morrison, 1988; Barrios, Bertinelli, & Strobl, 2006; Annez, Buckley, & Kalarickal, 2010). The basic econometric specification linking the degree of urbanization to resource abundance is as follows:

$$U_{i,t} = \theta R_{i,t} + \mathbf{X}'_{i\,t}\beta + u_i + \eta_t + \varepsilon_{i,t} \tag{1}$$

where U is the urbanization rate in country *i* and year *t*. Depending on the specifications, the dependent variable is measured either as the share of total population living in urban areas, or measured as the population in urban agglomerations of more than 1 million as a percentage of total popu-

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