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Oil dependency, political institutions and urban-rural disparities in access to electricity in Africa

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OUTLINE

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INTRODUCTION (1)

- Abundance of the resource curse literature following the pioneers studies by Sachs and Warner's (1995, 1997, 1999)
- Only few studies specifically focus on development outcomes (instead of growth) and demonstrate that resource dependency has a negative impact on development outcomes (Bulte et al., 2005; Carmignani and Avom, 2010; Daniele, 2011; Carmignani, 2013; Ebeke and Etoundi, 2017).
- They do not bring answer to the question: to what extent such impact varies from one region to another within a same country. In other words, does resource dependency have the same detrimental effect on people living in different regions?
- Our study addresses this issue by investigating the impact of oil dependency on urban-rural disparities in access to electricity in Africa, with relation to the quality of political institutions.

INTRODUCTION (2)

- Motivations of our investigation for African countries:
- - Access to electricity power constitute a key development factor (Toman and Jemelkova, 2003; Stern et al., 2016)
- - Low access to electricity (43% of the population) and unequal access between urban and rural areas (less than 25% in rural and 71% in urban areas) (IEA, 2017).
- - Higher urban-rural gap in access to electricity in resource-rich countries (49%) than in low resource endowed countries (39 %) (World Development Indicators dataset).
- - A strand of the literature considers that resources interact with the quality of institutions such that resource abundance is a blessing when institutions are good and a curse when institutions are bad (mehlum et al., 2006)

INTRODUCTION (3)

- Following Gadam et al. (2018) and Smith and Wills (2018) weIt is reasonable to believe that resources generate more detrimental effects in rural than urban areas
- Transmission mechanism of resource dependency to urban-rural gap in access to electricity: Resource intensity increases urbanization (Gollin et al., 2016; Ebeke and Etoundi, 2017) which in return may cause a reallocation of government expenditures on public infrastructures towards urban areas because of:
 - - need of a critical mass of solvent subscribers to ensure their economic viability
 - increasing pressure on the governments to satisfy social and economic goals given the expected higher voice and accountability in cities (Ebeke and Etoundi, 2017).

INTRODUCTION (4)

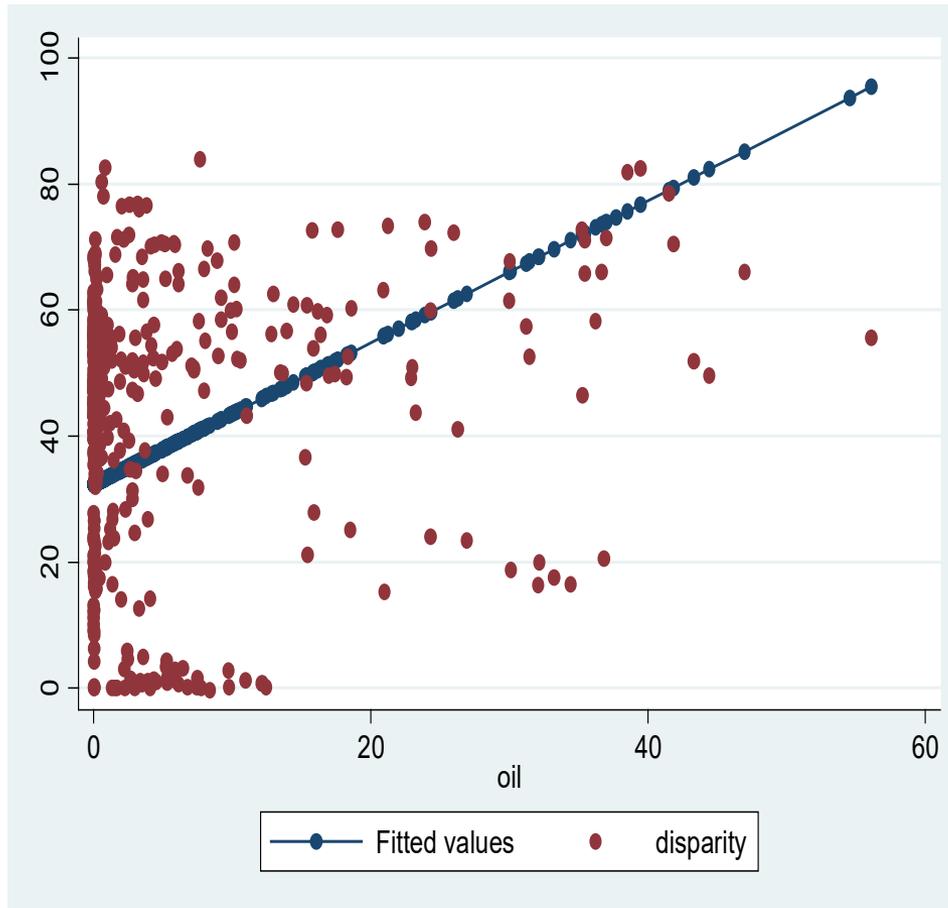
- Contribution of the study:
- - contribution to the still short resource curse literature that goes beyond the traditional resource-growth nexus to focus on development outcomes.
- - By assuming that the resource curse can manifest itself differently in urban and rural areas, the study helps in the understanding on how oil dependency affects urban-rural disparities in living standards. To our knowledge, no such study has been conducted in the past
- - Finally, the study concerns African countries. Although the analysis of resource dependency on development outcomes has important policy implications for Africa, only a few studies such as Ebeke and Etoundi (2017) and Atangana Ondoua (2019) specifically focus on the region.

DATA

- The study concerns 19 oil-producing countries in Africa over the period 1998-2017
- The urban-rural disparities in access to electricity are given by the percentage of urban population with access to electricity minus the percentage of rural population with access to electricity (World Development Indicators)
- Oil dependency is given by the oil rents as a share of the GDP (World Development Indicators)
- Political institutions are given by the Polity 2 democracy index from the Polity IV dataset
- GDP per capita, urbanization rate, urban population growth (annual %), GDP per capita growth (annual %) and trade openness (World Development Indicators)

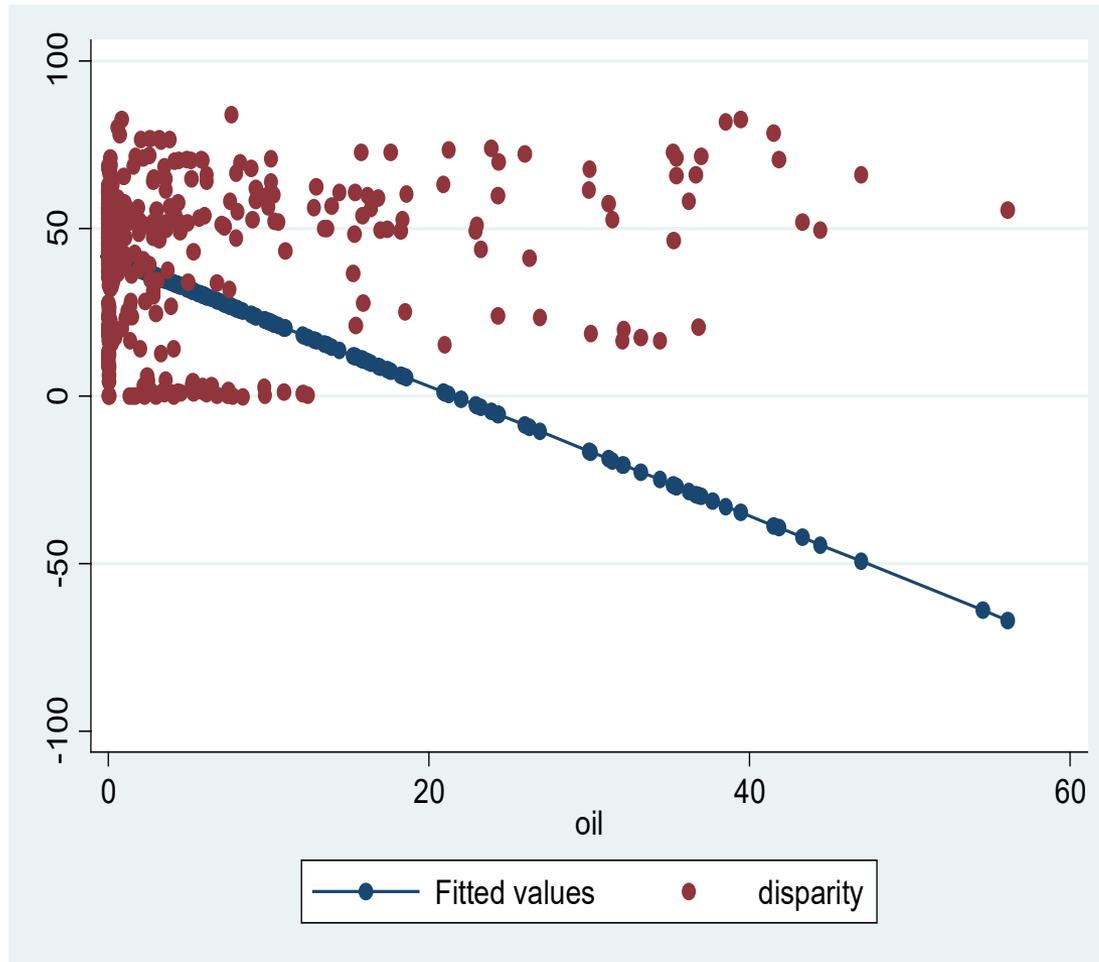
DATA

- Scatter plot: Urban-rural gap and oil rents in the bottom quartile of institutional quality



DATA

- Scatter plot: Urban-rural gap and oil rents in the top quartile of institutional



ECONOMETRIC STRATEGY

- Baseline econometric specification that we estimate with the fixed effects-Ordinary Least Squares:
- $Gap_{it} = a_0 + a_1 Oil_{it} + a_2 Oil_{it} * IQ_{it} + a_3 IQ_{it} + X'_{it}\beta + \mu_i + \tau_t + \varepsilon_{it}$
- It could have inertia in the dynamics of the urban-rural disparities in such a way that their current level is explained by their past level. To account for that, we further estimated a dynamic panel model that we estimate with the system and the difference generalized method of moments (GMM) :
- $Gap_{it} = \sigma_0 + \sigma_1 Gap_{it-1} + \sigma_2 Oil_{it} + \sigma_3 Oil_{it} * IQ_{it} + \sigma_4 IQ_{it} + X'_{it}\beta$
- $+ \varepsilon_{it}$

RESULTS (1)

- Table 1. OLS baseline estimates on environmental efficiency

Variables	(1)	(2)	(3)
Oil rents	0.564***	0.598***	0.428**
Institutional quality	-0.0825**	-0.079*	-0.0857**
Oil rents*Institutional quality	-0.013***	-0.012***	-0.01***
GDP/capita	-0.012***	-0.012***	-0.012***
Urbanization rate	-0.126	-0.0642	-0.06
GDP growth rate		-0.302*	-0.354**
Urbanization growth rate		0.774	-0.997
Openness			0.148**
Constant	99.500***	91.650***	90.450***
Observations	370	370	370
Number of countries	19	19	19
R-squared	0.831	0.832	0.838

RESULTS (2)

- From table 1:
- - democratic institutions reduce urban-rural gap in access to electricity
- - Confirmation of previous studies (Mehlum et al., 2006; Boschini et al., 2007, 2013; Adams et al., 2018): the higher the quality of institutions, the fewer resource rents increase the urban-rural disparities
- - threshold of the quality of institutions for which the negative effect of resources on disparities is reversed: 7.57% (Cote d'Ivoire, Egypt, Mauritania, Morocco, Niger and Sudan experienced an institutional scores above this threshold)

RESULTS (3)

- **Table 2.** FDI interacted with income quartile dummies

Variables	(1)	(2)	(3)	(4)
Oil rents	0.064	0.196	0.198*	0.174
Institutional quality	-0.098**	-0.147***	-0.103***	-0.131***
Oil rents*Bottom quartile dummy of Institutional quality	0.436***			
Oil rents*Second quartile dummy of Institutional quality		-0.050		
Oil rents*Third quartile dummy of Institutional quality			-0.492***	
Oil rents*Top quartile dummy of Institutional quality				-1.799
GDP/capita	-0.012***	-0.010***	-0.012***	-0.010***
Urbanization rate	-0.139	-0.138	-0.114	0.0162
Constant	102.600***	96.400***	98.670***	85.200***
Observations	370	370	370	370
Number of countries	19	19	19	19
R-squared	0.830	0.825	0.829	0.827

RESULTS (4)

- From table 2:
- The interaction terms reflecting the difference in the impact of oil rents on urban-rural disparities between the specific quartile and the overall benchmark is positive for the bottom quartile and increasingly (in absolute value) negative for the three remaining quartiles (however, the coefficients are insignificant for the second and top quartiles). This confirms our finding that the negative effect of resources on disparities decreases with the quality of institutions.

RESULTS (5)

- **Table 3:** Estimates on different samples

Variables	SSA	Outliers removed	Lowly oil dependent countries	Highly oil dependent countries
Oil rents	0.513***	0.422**	1.148*	0.341*
Institutional quality	-0.108**	-0.072*	-0.002	-0.127***
Oil rents*Institutional quality	-0.012***	-0.011***	-0.022*	-0.008**
GDP/capita	-0.007**	-0.012***	-0.024***	-0.004
Urbanization rate	-0.196	-0.160	-0.615**	0.123
Constant	86.15***	88.540***	84.230***	71.720**
	16	19	17	18
Observations	310	358	280	278
R-squared	0.732	0.844	0.848	0.894

RESULTS (6)

- From table 3:
- Robustness of our previous results: Oil rents have a negative impact on urban-rural disparities when the country has poor political institutions. The higher the institutional quality, the less oil rents encourage urban-rural disparities.

RESULTS (7)

- Table 4: Dynamic panel estimates

Variables	System GMM	Difference GMM
Lag of urban-rural disparity	0.818***	0.979***
Oil rents	0.460***	1.190**
Institutional quality	-0.0506**	0.176
Oil rents*Institutional quality	-0.009***	-0.029**
GDP/capita	-0.004*	-0.018*
Urbanization rate	0.688***	1.252***
Constant	-12.540**	
Observations	351	332
Number of countries	19	19
Number of instruments	18	11
Arellano-Bond test for AR(1), p-value	-2.770***	-2.470**
Arellano-Bond test for AR(2), p-value	1.570	1.540

RESULTS (8)

- From table 4:
- - The coefficient on the lagged dependent variable is 0.818 in column 1 and 0.979 in column 2 and statistically significant, implying conditional convergence of urban-rural disparities in access to electricity.
- - Confirmation of the negative effect of resource rents on urban-rural disparities when institutions are bad. This negative effect is offset when institutions are of good quality.

Recommendations

- Promotion of broad-based and inclusive growth process within resource dependent countries. Allocated oil rents in the development of the rural economy and the supply of basic social infrastructures to reduce resource-led urbanization which most of the time results in the reallocation of government expenditures on public infrastructures towards urban areas, increasing urban-rural disparities.
- Implementation of strategic institutional reforms for efficient use of the oil rents, especially in countries with weak institutions.
- Strong need for diversification of African economies in order to reduce their overdependence on oil rents that might translate into more inequalities.

END

THANKS FOR YOUR ATTENTION!