**Electrifying Nigeria: The impact of Access to Electricity on Kids’ Education**

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## Overview

## This paper aims at providing a better understanding of the causal effect of electricity access on kids’ education at the household level in rural Nigeria. The country hosts the second largest population without access to electricity in the world after India, but has received so far very little attention in this respect from the academic community. The literature also does not generally agree on the impact of access to electricity on the aforementioned outcomes. I find positive short-medium run effects of access to electricity on both school enrolment and school output, with quality of electricity positively impacting only the latter.

## Methods

I study the impact on both school enrolment (extensive margin) and grade-for-age gap (intensive margin) of kids aged between 5 and 15 years old employing panel regression methods which control for household and year fixed effects. I instrument access to electricity with lightning strikes intensity in the area surrounding the household, an instrument which has never been employed in this field to study development outcomes at the micro level. I measure outcomes at the household level to incorporate intra-household dynamics and access to electricity at village level to incorporate spillover effects. I quantify the effects of the the quality of electricity received (proxied by the frequency of blackouts) controlling for sample selection with a Heckman selection model and in all specification I control for both demographics, other household-level, geographic and meteorological variables.

## Results

I find that access to electricity at the village level increases the proportion of household kids enrolled at school by ~28-56% and decreases the grade-for-age gap by about 2.8 years. The point estimates are larger for girls, but are only significant for boys, and the estimated impact is larger when focusing on households that are actually connected. The enrolment effects are larger for poorer household, but no heterogeneous estimates are reported for the grade-for-age gap along the wealth axis. Blackout frequency negatively impacts school output (the grade-for-age gap) but not enrolment (extensive margin). Both lightning strikes intensity and a higher distance from the nearest powerplant negatively affect both access and quality of electricity.

## Conclusions

Electricity is still a big concern in developing countries such as Nigeria. Having electricity access does make a difference for kids’ education, even in the short-medium term (2-4 years), after controlling for both time-invariant specific effects and endogeneity bias. The impact reported on both school enrolment (positively) and the grade-for-age gap (negatively) are consistent, with larger effects for girls but only significant for boys. The results are robust to varying the instrument’s radius and to the use of a second instrumental variable (the distance to the nearest powerplant). I report evidence in favor of the presence of spill over effects from neighbors having access to electricity, but the results are larger for households which are actually connected to electricity. Moreover, access to electricity favors everybody, but it seems to be a pro-poor policy along the wealth axis, particularly for enrolment. The quality of the electricity received (proxied by blackout frequency) plays a key role mainly for school output.