

## RESEARCH SUMMARY

# Aid and Growth at the Regional Level

---

Standard country-level estimates of economic growth could obscure or miss the impacts of many aid projects experienced by a subset of regions or communities within a country. One way to examine whether the focus on country- rather than regional-level outcomes also explains the absence of robust effects of aid on growth in the empirical literature is to analyze aid effectiveness at the sub-national level. Using project-level data on World Bank aid in 130 countries during 2000-11, the study finds no evidence that this aid causes regional growth as measured by growth in nighttime light intensity.

---

### Academic Citation:

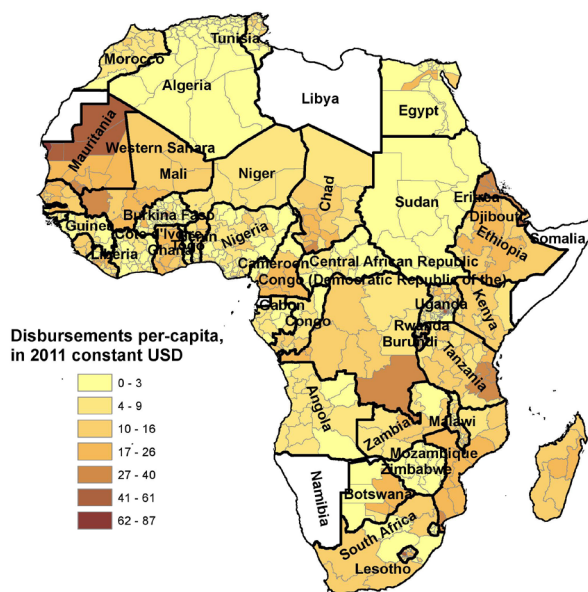
Dreher, Axel and Steffen Lohmann. 2015. Aid and Growth at the Regional Level. AidData Working Paper #9. Williamsburg, VA: AidData. Accessed at <http://aiddata.org/aiddata-working-paper-series>. A modified version is published in the *Oxford Review of Economic Policy* 31: 420-446 (2015).

## Context

Does aid increase economic growth? A variety of researchers have studied this age-old question using a range of methods. Looking at individual projects, the World Bank's Independent Evaluation Group (IEG) rates around 75% of the Bank's projects as successful. However, there is a striking disparity between this seeming micro-level effectiveness and the lack of robust effects of aid on growth persistent in the empirical literature – a phenomenon known as the micro-macro paradox in foreign aid.

One explanation for this paradox could possibly be that the rise in incomes at the local level is not large enough to show up in country-level estimates. Thus, even as many aid projects may increase the incomes of people in some of the targeted areas (for example, at the village or district level), they are unlikely to lead to an increase in incomes that is sufficiently large to be measurable in GDP figures at the country level. This is simply because the allocation of aid is not uniform across a country (see Figure 1). For instance, if regions in the south receive far more aid than the north, then the effects on growth might only manifest

**Figure 1:** Location-specific World Bank Disbursements in Africa, ADM1 Regions (2000-11)



at a regional level. This then calls for analyzing the effects of aid at an intermediate level such as regions within a country. Among other challenges, such as the difficulty in establishing a causal relationship between aid and growth, the paucity of evidence at this level can be attributed to the lack of geo-coded data on aid or on relevant development outcomes.

## Research Question and Methodology

This paper investigates the effectiveness of World Bank project aid in promoting regional growth for a large sample of recipient countries. This analysis requires two types of data: (i) disbursements of aid projects that can be attributed to specific regions (ii) a measure of regional growth.

The first is captured in a geo-coded dataset for 1,662 World Bank aid projects that were approved over the 2000-2011 period in 2,221 first-level administrative regions (ADM1) and 54,167 second-level administrative regions (ADM2) in 130 countries. ADM1 regions are governmental units directly below the nation state such as regions, provinces or districts. ADM2 regions are directly below the ADM1 level, and typically include municipalities and communes. The independent variable is annual per-capita aid disbursements in constant 2011 US\$ or alternatively the number of active projects per region. As a measure of regional growth the paper relies on satellite images from the National Oceanic and Atmospheric Administration providing information on nighttime light activity for 1992-2012. This is used as an approximation of regional economic activity. The dependent variable is a region's average annual growth rate in nighttime light intensity.

The analysis controls for a wide array of variables at the region level: initial levels of development (proxied by nighttime lights in the year 2000), population size and population growth rate, the size of the administrative region and the shortest distance from the region's center to the country's capital. The authors utilize two empirical models. The first includes country-period fixed effects, allowing comparison across regions and over time, and the second includes region fixed effects and thus assesses variation within a region over time exclusively.

The main identification strategy to address the endogeneity of aid is an instrumental variable approach. Dreher and Lohmann instrument aid flows with a variable that interacts the indicator of whether or not a country has crossed the International Development Association's (IDA) income threshold for receiving the World Bank's concessional aid with a recipient region's probability to receive aid. This probability of receiving aid is calculated as the number of years in all years that a region has received any World Bank aid prior to when it is assumed that the IDA-threshold effect has taken place.

This is akin to a difference-in-difference approach, whereby the comparison is between regular aid recipients and irregular recipients as the recipient's IDA status changes. Since this approach only includes those countries that crossed the IDA-threshold at a point in time covered by the sample, the resulting number of countries is much smaller: 21 countries, 478 ADM1 and almost 8,400 ADM2 regions.

## Main Findings

There seems to be a strong correlation between aid and regional growth, which is even more evident at the ADM2 level. However, moving beyond correlation into the realm of causality, the study finds that there is no effect of World Bank aid on regional growth at either the ADM1 or ADM2 levels. This result holds irrespective of whether aid is measured in amounts or as number of World Bank projects.

## Policy Lessons

The finding that aid does not affect growth at the regional level could be attributed to the following characteristics of the data and methodology that are unique to this study. These pave the way for further research in this area:

**Aid Coverage:** The study only analyzes a share of World Bank's project aid, and it could be the case that these region-specific aid amounts are too small to measurably affect growth even at the regional level. The analysis also focuses on project aid that could be attributed to specific regions with sufficient precision. Other forms of aid like budget support to the central government are not covered and might have a different impact on growth outcomes. This calls for expanding the region-level analysis to a larger number of donors, comprising larger amounts than the World Bank alone.

**Heterogeneous Effects:** Even as this study attempted to analyze the effects of aid by continent and income level of countries, at this level of analysis only correlations could be drawn, given methodological limitations and a small number of countries. Where a large sample size allows it, analyzing these heterogeneous effects might be a promising area to investigate in the future, as the effects of aid might be more visible in certain groups of countries.

**Growth and Development Outcomes:** This study looked at the effect of aid on one particular measure of development – regional growth proxied by nighttime light intensity. The effects might be different on broader indicators of social development, which is another potential area of further research.

*This research summary was prepared by Tanya Sethi, Policy Specialist at AidData*