



Development aid and infant mortality. Micro-level evidence from Nigeria

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ABSTRACT

While there is a vast literature studying the effects of official development aid (ODA) on economic growth, there are far fewer comparative studies addressing how aid affects health outcomes. Furthermore, while much attention has been paid to country-level effects of aid, there is a clear knowledge gap in the literature when it comes to systematic studies of aid effectiveness below the country-level. Addressing this gap, we undertake what we believe is the first systematic attempt to study how ODA affects infant mortality at the subnational level. We match new geographic aid data from the AidData on the precise location, type, and time frame of bilateral and multilateral aid projects in Nigeria with available georeferenced survey data from five Nigerian Demographic and Health Surveys. Using quasi-experimental approaches, with mother fixed-effects, we are able to control for a vast number of unobserved factors that may otherwise be spuriously correlated with both infant mortality and ODA. The results indicate very clearly that geographical proximity to active aid projects reduces infant mortality. Moreover, aid contributes to reduce systematic inter-group, or horizontal, inequalities in a setting where such differences loom large. In particular, we find that aid more effectively reduces infant mortality in less privileged groups like children of Muslim women, and children living in rural, and in Muslim-dominated areas. Finally, there is evidence that aid projects are established in areas that on average have lower infant mortality than non-aid locations, suggesting that there are biases resulting in aid not necessarily reaching those populations in greatest need.

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1. Introduction

Foreign aid has been the subject of increasing critique since the 1980s and there has been extensive research on aid effectiveness,¹ particularly focusing on the impact of aid on aggregate economic growth (Arndt, Jones, & Tarp, 2014; Bigsten & Tengstam, 2015). Despite massive efforts, the scholarly literature remains inconclusive when it comes to the question to what extent development aid actually works (Qian, 2015). This is true both for the general studies of aid effectiveness for overall economic growth, but also for studies on the impact of aid on non-growth outcomes, such as education and health.

One reason for the inconclusive results of the aid effectiveness studies can be that the large majority of the empirical investiga-

tions have relied on cross-country analyses. First, such analyses may fail to control for differences across countries, leading to spurious effects between aid and various outcomes (Odokonyero, Alex, Robert, Tony, & Godfrey, 2015). Second, the lack of robust results regarding the effects of aid on development could arguably be a result of the effects of aid being too small and localized to affect aggregate outcomes (Briggs, 2017; Dreher & Lohmann, 2015). Starting from the premise that the country-level may be a too highly aggregated unit of analysis to clearly identify effects of development aid, this study addresses within-country effects across a very extensive empirical material, and focusing on an outcome that has received much policy interest, but less attention in studies of aid effectiveness, namely infant mortality.

In general, the lack of systematic studies of aid effectiveness on health indicators below the country-level represents a clear gap in the literature. Existing databases on foreign aid – the OECD's Creditor Reporting System and now AidData (Tierney et al., 2011) – do in fact contain information at the project level. Yet, the large majority of empirical analyses of aid effectiveness using these data aggregate to the country-year level, thereby losing project specific

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¹ By aid effectiveness we understand the ability of aid in achieving stated development goals (e.g. reduced poverty, increased income, social improvements) in the recipient countries relative to the resources spent.

information (Findley, Powell, Strandow, & Tanner, 2011). A few exceptions exist. Using the geographically disaggregated AidData containing information on the exact location of aid projects, scholars have found a positive effect of aid on development (Dreher & Lohmann, 2015), as well as a conflict-reducing effect of aid (van Weezen, 2015), while Briggs (2017) finds that aid is not distributed to the poorest regions, suggesting that aid is not as effective as it could be in reducing poverty. For the health sector in Malawi specifically, De and Becker (2015) find that aid is associated with reduced prevalence and severity of diarrhea, while Marty, Dolan, Leu, and Runfola (2017) find that aid contributed to reducing the prevalence of malaria as well as improved quality of self-reported health care. Odokonyero et al. (2015) find that aid has reduced the overall disease severity and burden in Uganda.

Our study makes several contributions to the small but rapidly growing body of literature focusing on the local effects of aid.² First, to the best of our knowledge, we are the first to investigate the effects of aid on infant mortality, a key development outcome, using both a sound identification strategy and a local level design. By spatially linking new data from the AidData on the precise location, type, and time frame of bilateral and multilateral aid projects in Nigeria to micro-level information on infant mortality from household surveys, we provide a systematic attempt at studying how Official Development Aid (ODA) affects infant mortality at the subnational level. Investigating infant mortality has the advantage over other outcomes that we are able to investigate a long period at a local level, controlling for a wide array of possible confounders. While a primary rationale for selecting Nigeria as a case study was data availability, due to coverage both by AidData and through several successive and extensive Demographic Health Surveys, Nigeria is a major aid recipient with great local variation in economic, social and demographic conditions, including the most extensive group inequalities documented on the continent (Østby & Urdal, 2014). Second, we find that geographical proximity to aid projects indeed reduces the risk of infant mortality, as well as child and neonatal mortality. Third, we explore heterogeneous effects and find that the mortality-reducing potential of aid seems to be particularly strong for children of Muslim women, in rural areas, and in Muslim areas. Aid thereby seems to reduce horizontal inequalities in a setting where such inequalities loom large. Fourth, we also demonstrate that aid is allocated to areas with less infant mortality to start with. At the very least, this implies that the possibility of aid to reduce vertical inequalities has not reached its full potential, adding to an emerging literature indicating that aid not necessarily reaches those who need it the most. Finally, we assess other effects of aid, and find effects on wealth, female employment, and female education for Muslim mothers, but not for Christian mothers. These factors are likely to explain the heterogeneity in effects that we observe.

The remainder of the article proceeds as follows: The next section provides a brief literature review of the aid effectiveness literature, including the impact of aid for health outcomes. In the third section, we outline a framework for how official development aid is expected to impact infant mortality. The fourth section presents the data, the fifth section outlines our empirical strategies, the sixth section presents our results, and in the seventh section, we investigate some possible mechanisms. The final section concludes.

² For other prominent examples, see Francken, Minten, and Swinnen (2012) on relief aid allocation in Madagascar; Powell and Findley (2012) on donor coordination; Briggs (2014) and Jablonski (2014), both on political capture of aid in Kenya; Öhler and Nunnenkamp (2014) on factors determining the allocation of World Bank and African Development Bank aid; Dreher et al. (2016), on allocation of Chinese aid to the birth regions of African leaders; Isaksson and Kotsadam (2016), on the effects of Chinese aid on corruption; and Kelly, Samuel, and Elkind (2016), on the relationship between Chinese aid and perceptions of corruption in Tanzania.

2. Aid effectiveness: a brief review of the literature

Over the years, the empirical literature on aid effectiveness has yielded unclear and ambiguous results, and to date, there appears to be no consensus as to whether aid plays a positive role for growth and development in recipient countries.

In a set of meta-analyses surveying the aid effectiveness literature, Doucouliagos and Paldam (2009) concluded that aid has not been effective. The main critique centers around the failure to significantly improve growth and reduce poverty. Furthermore, some have argued that official development aid may be effective only under certain conditions, such as e.g. only in democracies (Boone, 1996; Burnside & Dollar, 2000), or when aid is outsourced to non-state actors in countries with bad governance (Dietrich, 2016). But even in the presence of these conditions, aid may still be ineffective (e.g. Hansen & Tarp, 2000), or be hindered by weak institutions in recipient countries (Kosack, 2003). Bourguignon and Platteau (2017) argue that donors should consider the tradeoff between need and governance capacity when allocating aid.

As a contrast to the above studies there is also an increasing amount of macro-level evidence for a positive impact of aid on economic growth, possibly shifting the weight of evidence to a positive (albeit moderate) contribution of aid (e.g. Arndt et al., 2014; Clemens, Radelet, Bhavnani, & Bazzi, 2012; Juselius, Møller, & Tarp, 2014; Mekasha & Tarp, 2013).

Another strand of the aid effectiveness literature focuses on the impact of aid on non-growth outcomes. Proponents of this approach have argued that focusing exclusively on the effect of aid on growth may overlook important benefits from aid on other outcomes, such as health (Mishra & Newhouse, 2009). Systematic evidence on how aid affects health outcomes in particular is surprisingly scarce. This limited literature can be divided into three categories: Macro-level studies that look at the impact of aggregate aid on aggregate health outcomes (such as e.g. country level infant mortality); meso-level studies that focus on the effects of health aid specifically on aggregate health outcomes, and micro-level studies that look at the effectiveness of health aid to a specific health program (e.g. maternal health) or disease (such as e.g. HIV/AIDS) and on outcomes in that particular health program or disease (Gyimah-Brempong, 2015).

When it comes to the two first categories of studies, there is little consensus in the literature on how aggregate aid (both in general and to the health sector) affect health outcomes. For example, Kosack (2003) study the impact of aid on human development indicators and find that aid is only effective in democracies; Ndikumana and Pickbourn (2017) investigate the effect of aid on access to water and sanitation using panel data and find that increased aid to the sectors increase service provision, albeit non-linearly (see also Salami, Stampini, Kamara, Sullivan, and Namara (2014)).

Murdie and Hicks (2013) find that when health services are provided by international nongovernmental organizations, they also increase the governmental spending on health services, and Savun and Tirone (2012) suggest that foreign aid can help mitigate conflict risk in low-income countries during periods of economic depression. The relationship between institutions and health aid may also differ from the relationship between institutions and aid in general. Dietrich (2011) argues that health aid need not be ineffective in corrupt countries as compliance in this sector is cheap and the countries may therefore strategically comply. Han and Koenig-Archibugi (2015) argue that aid fragmentation up to a certain extent is beneficial for health aid as there is more possibilities to select the programs that work. Mishra and Newhouse (2009) find no effect of aggregate aid on infant mortality rates, but they find that health-specific aid indeed reduces infant mortality.

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