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The impact of social action funds on child health in a conflict affected country: Evidence from Angola

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ABSTRACT

Although recent evidence shows significant and long-lasting detrimental effects of armed conflict on child health, there is lack of studies rigorously assessing the effectiveness of different social and economic development interventions aiming to mitigate the impact of armed conflict on child health. In order to fill this knowledge gap, this study assesses the impact of health projects and water, sanitation, and waste management interventions financed by the Angola Social Action Fund (ASAF) from 1994 to 2001 on child health. I use data from *Inquérito aos Agregados Familiares sobre Despesas e Receitas 2000/2001* (IDR 2001), a household survey on expenditures and incomes conducted between February 2000 and February 2001 in Angola. IDR 2001 uses a stratified sampling design in which 12 households were surveyed in a random fashion in each aldeia (village) in rural areas and bairro (neighborhood) in urban areas. Using propensity score matching, a fixed effects model, and propensity-based weighted regression, I find that ASAF leads to a statistically significant increase of the height-for-age *Z*-scores (HAZ) by 0.335 standard deviations of children less than 5 years. This finding is robust to different implementations of the propensity score model specification and when conducting the sensitivity analysis of hidden bias. The main result that emerges from an analysis of heterogeneous effects shows that ASAF has no impact on children living in war displaced households. Despite many challenges faced by conflict affected countries, social funds which are one the key instruments of the World Bank used to promote development at the local level can be used to mitigate the impact of armed conflict on child health. For children living in war displaced households, specific interventions should be designed to mitigate the impact of armed conflict.

Introduction

During the past 30 years, armed conflict defined as "a contested incompatibility which concerns government and/or territory where the use of armed force between two parties, of which at least one is the government of a state, results in at least 25 battle-related deaths" (Wallensteen & Sollenberg, 2001, p. 643) affected almost 60% of all countries in sub-Saharan Africa (Themnér & Wallensteen, 2012). In addition to the large cross-country literature on the causes and consequences of civil war (Collier, 1999; Collier & Hoeffler, 1998; Miguel, Satyanath, & Sergenti, 2004), there is a growing body of microeconomic research that examines the impact of armed conflict on child health as measured by nutritional status (Arcand & Djimeu, 2010; Bundervoet, Akresh, & Verwimp, 2009; Bundervoet, Akresh, & Verwimp, 2011; Guerrero-Serdán, 2009; Minoiu & Shemyakina, 2012; Parlow, 2012).

However, despite strong evidence of significant and long-lasting detrimental effects of armed conflict on child health, there is little evidence of proven effective social and economic development interventions to mitigate these impacts. Epidemiological literature suggests a mix of therapeutic and social interventions to decrease infant and children mortality in conflict settings. These interventions include preventive measures (Babille, De Colombani, Guerra, Zagaria, & Zanetti, 1994; Graham et al., 2002; Marfin et al., 1994; Peterson, Roberts, Toole, & Peterson, 1998; Roberts et al., 2001), provision of effective health care (Mason, 2002; Medecins Sans Frontieres, 1997; Perrin, 1996; Toole & Waldman, 1988), management of communicable disease (Medecins Sans Frontieres, 1997), and management of traumatic events (World Health Organization & United Nations High Commissioner for Refugees, 1996). In fact, except for a study conducted in a Malawi refugee camp assessing the impact of water containers with a cover and spout as a means to prevent household contamination of water and using randomized controlled trial (Roberts et al., 2001), none of these social interventions suggested

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by the epidemiologic literature has been rigorously evaluated using experimental or quasi-experimental methods. Moreover, most of these interventions have been implemented and evaluated in emergency settings or in refugee camps, hence reducing their external validity.

In order to fill this knowledge gap, in this paper I examine the impact of the Angola Social Action Fund (ASAF) on child health. To the best of my knowledge, this is the first paper that rigorously examines the impact of social funds on child health in a conflict affected country in sub-Saharan Africa. Social funds which are one of the key instruments of local level development implemented by World Bank, finance small projects in health, education, water and sanitation, and income generating activities using a demand-driven process (Jorgensen & Van Domelen, 1999). While a majority of Community Driven Development (CDD) interventions and social funds have been implemented in non-conflict-affected countries, the approach has also been applied in conflict or post-conflict countries. According to one account (World Bank, 2006), 94 CDD and social fund projects were in operation in 2006 in countries characterized by violent armed conflict or post-conflict reconstruction.

Thus, quantifying the impact of ASAF on child health is important to policy for at least three reasons. First, it enables policy makers to ascertain if social funds work in conflict affected countries. Second, if social funds work, it enables us to measure the extent (magnitude) to which social funds mitigate the impact of civil conflict in order to establish whether they should be used as the primary intervention or to complement other activities. Third, it allows evaluation of the heterogeneous impacts of social funds which can be used to design specifically targeted interventions for certain subgroups. Angola provides a unique opportunity to assess social funds because of the length of the Angola civil war (27 years) and the extent of its detrimental effects (Arcand & Djimeu, 2010; World Bank, 1995).

Because the assignment of ASAF was not random and only post-intervention data are available, I rely on a non-experimental method, propensity score matching (PSM) to evaluate the effect of ASAF on child health. Thus, I exploit the richness of the *2000/2001 Inquérito aos agregados familiars sobre despesas e receitas* ("national household survey on expenditures and incomes", henceforth, IDR 2001) data to create a reasonable counterfactual group based on propensity score and address the issue of observed selection bias. I also check the robustness of PSM results by estimating a fixed effects model (FEM) and a weighted least square (WLS) with propensity score as the weights (Hirano, Imbens, & Ridder, 2003).

My main finding is that children living in ASAF communities have a height-for-age *Z*-scores 0.335 standard deviations higher that children living in non-ASAF communities. Put differently, the average height-for-age *Z*-scores for children living in ASAF communities is 20.2% higher than that of children living in non-ASAF communities. Furthermore, the treatment has minor heterogeneous effects. More precisely, ASAF has no impact on children living in war displaced households and its effect is greater on children living with a head of household who is illiterate. The result is robust to different implementations of the propensity score model specification. Additionally, I employ a bounding approach proposed by Rosenbaum (2002) to determine how strongly the unobservables must influence to make the estimated treatment effects null. The PSM results remain significant and insensitive to selection on unobservables. The remaining sections of the paper are organized as follows. Section 2 reviews the literature of the impact of social funds on child health. Section 3 presents the context and rollout of ASAF. Section 4 discusses the methodology and data. Section 5 presents the findings and Section 6 concludes.

The impact of social funds on child health in non-conflict affected countries

To the best of my knowledge, this is the first study that evaluates the impact of social funds on child health in conflict affected countries in Africa. Thus, the following literature review relies on studies that investigate the impact of social funds on child health in non-affected countries. This provides only an indication of what might be the impact of social funds on child health in conflict-affected countries. Indeed, in light of the many challenges faced by conflict affected countries, the impact of social funds might be more important given the extreme poverty that prevails in these settings.

A review of the literature on the impact of social funds reveals mixed results. Only two studies find desirable long-term impacts such as reduction of child mortality and improvement of height-for-age *Z*-scores (HAZ). Meanwhile, studies using short-term outcomes such as the proportion of households with ill children find almost no impact from social funds. Newman et al. (2002) consider the impact of small-scale health investments and water infrastructure funded by the Bolivian Social Investment Fund (SIF) over the period 1994–1998. Using PSM and difference in differences estimation (DID), they find that SIF-funded projects increased infrastructure usage and significantly reduced child mortality. Chase & Sherbume-Benz (2001) evaluate the impact of health and water supply projects financed by the Zambia Social Fund (ZSF) between 1991 and 1998. Using household-level data collected in 1998, pipeline and PSM methods, they find that health and water supply projects increase the incidence of Diphtheria and Polio vaccinations. In addition, there was heterogeneity of the impact of ZSF on child anthropometric measures. In urban areas, there was no significant impact of ZSF on the long-term nutrition indicator of HAZ, whereas in rural areas there was evidence of less stunting in social fund communities.

In contrast to the two preceding papers, other studies find almost no impact of social funds on short-term outcomes. Chase (2002) uses pipeline and PSM to analyze the impact of potable water projects financed by the Armenian Social Investment Fund during the period 1996–2000. He finds that potable water projects had no impact on the proportion of households with ill children in conflict zones. Pradhan and Rawlings (2002) consider the impact of health infrastructure, water, sewerage, and latrines funded by the Nicaragua Emergency Social Investment Fund between 1991 and 1998. Using household data collected in 1998, pipeline and PSM, they find that such infrastructure had no impact on the incidence of diarrhea in the past month in children under age 6, incidence of cough or other respiratory disease, vaccination coverage (DPT, Polio), prevalence of stunning, or wasting. More recently, Parajuli, Acharya, Chaudhury, and Bahadur (2012) examined the impact of income generating activities and small-scale village and community infrastructure funded by the Nepal Poverty Alleviation Fund between 2004 and 2011. Using data collected in 2011 and DD combined with an instrumental variable estimation method in the context of a randomized phase-in approach, they find that PAF had no impact the proportion of children less than 5 years of age who were underweight. Overall, the existing literature suggests the need to focus on desirable long-term effects when assessing social funds.

Background

The context after civil war

After its independence in 1975, Angola went through a 27 year civil war that only came to an end in 2002. Despite its oil and diamond resources, and supply of arable land, in 1994 the GDP per capita was estimated at U.S. $ 420 by *Instituto Nacional de Estatistica*