



Child mortality, commodity price volatility and the resource curse



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ABSTRACT

Given many developing economies depend on primary commodities, the fluctuations of commodity prices may imply significant effects for the wellbeing of children. To investigate, this paper examines the relationship between child mortality and commodity price movements as reflected by country-specific commodity terms-of-trade. Employing a panel of 69 low and lower-middle income countries over the period 1970–2010, we show that commodity terms-of-trade volatility increases child mortality in highly commodity-dependent importers suggesting a type of ‘scarce’ resource curse. Strikingly however, good institutions appear able to mitigate the negative impact of volatility. The paper concludes by highlighting this tripartite relationship between child mortality, volatility and good institutions and posits that an effective approach to improving child wellbeing in low to lower-middle income countries will combine hedging, import diversification and improvement of institutional quality.

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1. Introduction

The Millennium Development Goals (MDG) of the United Nations targeted a reduction by two thirds, between 1990 and 2015, in the global under-five mortality rate. The latest report (UN, 2015) states ‘Every day in 2015, 16,000 children under five continue to die, mostly from preventable causes. Child survival must remain the focus of the post-2015 development agenda.’ In 2015, there were a shocking 6 million deaths of under-fives worldwide, of which 3 million occur in Sub-Saharan Africa (86 deaths per 1000 live births) and 1.8 million in Southern Asia (50 deaths per 1000 live births); compare these mortality rates with the 6 deaths per 1000 live births in developed countries. The same regions appear to be commodity-dependent low and lower-middle income countries, see Fig. 1. This suggests a link between commodity-dependence and child mortality, the subject of investigation in this paper.

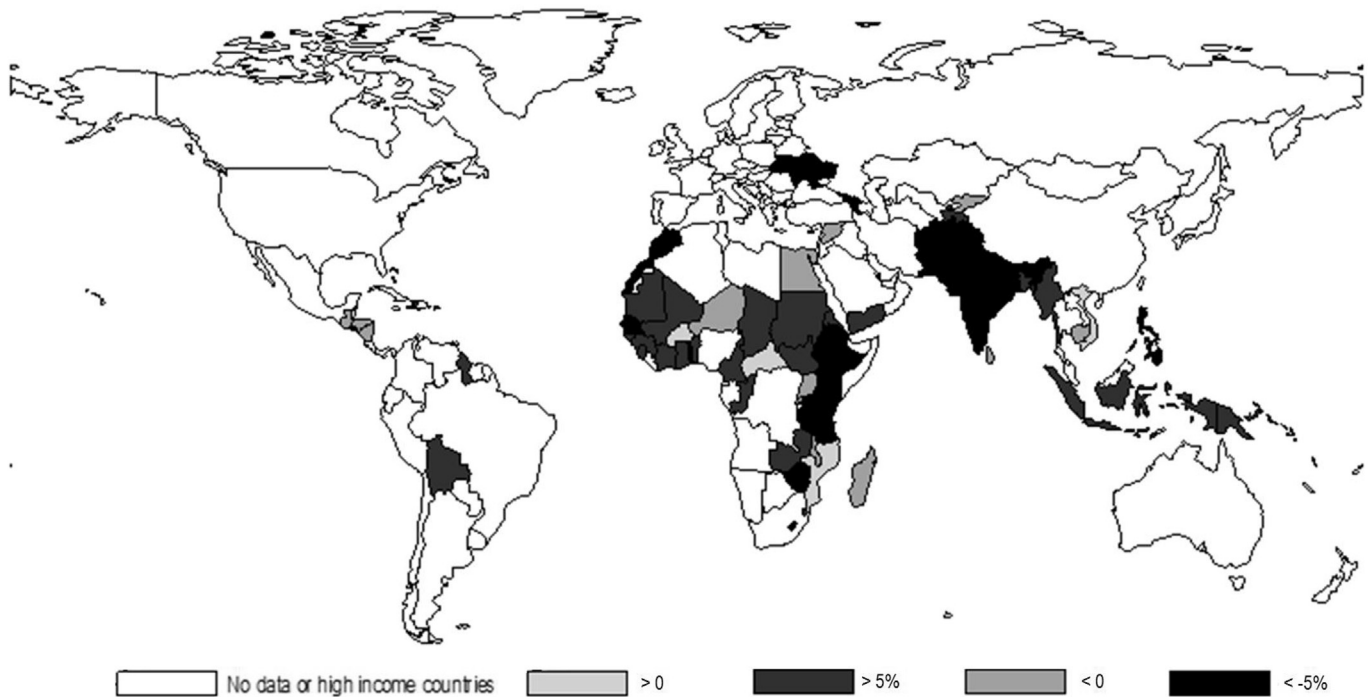
Specifically, we study the impact of the growth and volatility of commodity prices on child mortality and, in doing so, extend previous work examining (i) the relationship between economic growth and natural resource endowments (e.g., Sachs and Warner, 2001) – the so-called resource curse and (ii) the linkages between

such endowments and serious health conditions (de Soysa and Gizelis, 2013, 2016; Sterck, 2016). Our focus on young children has a twofold rationale: firstly, improving child survival rates in the developing world is of the utmost importance as recognised by the UN and secondly, children are particularly vulnerable to diseases and other health risks related to either the quality of nutrition, or the quality of life more generally (see Galiani et al., 2005), both of which can be partially traced back to the global commodity market.

Surprisingly, the relationship between commodity prices and child mortality remains underexplored in the extant literature, although a plethora of signs point to a potential link: for example, booms in food prices are theorised to lead to malnutrition (Christian, 2010; Darnton-Hill and Cogill, 2010), and more broadly, commodity prices affect macroeconomic conditions (Céspedes and Velasco, 2014), which in turn determine infant mortality rates (Baird et al., 2011). The few exceptions include Miller and Urdinola (2010) who examine the case of Columbia using three episodes of sharp coffee price movements in 1975, 1985 and 1989–90. More recently, Lee et al. (2016) employing a panel method over the period 2001–2011, suggest that food price inflation impacts developing country infant mortality. However, in a wider context, the literature reports that both the level (or growth) and the volatility of macroeconomic variables can affect economic growth and other measures of welfare (Mendoza, 1997; Blattman et al., 2007; Ramey and Ramey, 1995; Van der Ploeg and Poelhekke, 2009; Bansal et al., 2014). Our paper adopts the methodological

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Note. For sources of data, see Section 4.

Fig. 1. Commodity dependence of low and lower-middle income countries (average net commodity export to GDP, 2005–10).

approach of this latter literature to investigate the determinants of infant mortality, and in particular focuses on the role of the global commodity market. Section 2 explains our theoretical framework in more depth.

To isolate the specific effect of commodity trade, we examine for the first time the effect of ‘commodity terms-of-trade’ (CTOT) on child mortality in a large panel of poor developing countries. CTOT is a country-specific index that allows us to account for the effect of a number of commodities simultaneously. This index reflects an individual country’s position in the commodity market by measuring national commodity trade structures; therefore movements in global commodity prices differently affect CTOT across countries (Spatafora and Tytell, 2009; Ricci et al., 2013; Cavalcanti et al., 2015). Since we are interested in evaluating the effect of commodity prices on child mortality, the CTOT index is preferred to the traditional TOT because the latter includes not only primary commodities but also manufactured and high value-added goods. Some recent studies reveal that the CTOT index exhibits a significant impact on economic growth (Spatafora and Tytell, 2009; Cavalcanti et al., 2015) and the real exchange rate (Aizenman et al., 2012; and Ricci et al., 2013).

We consider a sample of 69 low and middle-low income countries over the period 1970–2010. Of these, 25 countries are net commodity exporters and 44 are net commodity importers. To assess the impact of the degree of commodity dependence, we compare these groups with two smaller sub-samples consisting of the most commodity-dependent countries. Panel least-squares estimations show the main driver through which commodity prices can affect child mortality is their volatility, not the growth rate. As an explanation for the latter, we show that the CTOT of developing countries exhibits either no or weak trend, an outcome consistent with the observations of Harvey et al. (2010) for individual long-run commodity prices and Blattman et al. (2007) for

countries’ TOT. Subsequently, we demonstrate that the volatility effect operates primarily in heavily commodity-dependent importers. These countries tend to suffer from higher levels of commodity volatility than heavily commodity-dependent exporters. This not only illustrates the adverse impact of high commodity dependence on child survival but also reveals a ‘scarce’ resource curse. In other words, the typical resource curse applies where countries have an abundance of a natural resource, whereas volatility is particularly harmful when countries have a lack of essential resources and are forced to import them. Importantly we show that good institutions, for example as proxied by political regime data, can shield importers from the detrimental effects of volatility.

Given the aforementioned consequences of volatility, using financial hedging and reducing commodity dependence through import substitution and/or diversification of the commodity basket in commodity-importing nations, appears critical to decreasing child mortality. Improving the quality of institutions must also be a priority. The rest of the paper is set out as follows. Section 2 discusses the theoretical framework whilst section 3 presents the methodology. Section 4 includes discussion of the data sources and sample construction whilst section 5 presents the empirical results and their interpretation. Finally, section 6 concludes.

2. Theoretical framework

Several channels transmit changes in global commodity prices to child mortality rates, and these are schematically represented in Fig. 2, and discussed below. We distinguish here between channels that rely on the level of commodity prices (e.g. food price inflation), and those triggered by their volatility (representing the uncertainty of future price movements).

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