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Do different types of assets have differential effects on child education? Evidence from Tanzania

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ABSTRACT

This analysis is motivated by recognition that anti-poverty interventions often affect both the level and composition of assets held by beneficiaries. To assess the conventional view that assets uniformly improve childhood development through wealth effects, we use three waves of panel data from Tanzania and test whether different types of assets have differential effects on children's educational outcomes. Our results indicate that household durables and housing quality have positive effects, but agricultural assets have adverse effects on children's highest grade completed and exam performances. We use a Hausman-Taylor instrumental variable (HTIV) panel data estimator to identify the effects of both time-varying and time-invariant endogenous variables. We find that the negative effect of agricultural assets is driven by large agricultural equipment and livestock ownership and the negative effect is more pronounced among rural children, poor children, and children from farming households, presumably due to the higher opportunity cost of schooling.

1. Introduction

While poverty is typically defined by whether someone has sufficient daily income or consumption to meet basic needs, wealth creation through asset ownership is generally viewed as the principal pathway out of poverty. For example, an asset transfer program targeted to poor households is at the core of poverty-reduction programs run by BRAC, the largest nongovernmental development agency in the world. (Banerjee et al., 2015) present evidence from randomized controlled trials from several countries that shows asset transfer programs similar to the BRAC programs had significant and long-lasting effects on poverty reduction.[1] These programs raise the stock of assets in a household and also tend to shift the composition of those assets directly, by delivering a specific asset such as an animal, or indirectly by promoting a specific type of activity.

Owning more assets increases household wealth, and greater wealth can improve well-being in many different ways. One path is through increased investment in human capital, which can break cycles of poverty. A large body of evidence has established that having more physical assets results in greater investment in children's education, particularly in richer countries (Chowa, Masa, Wretman, & Ansong, 2013; Conley, 2001; Deng, Huang, Jin, & Sherraden, 2014; Elliott & Sherraden, 2013; Elliott, Destin, & Friedline, 2011; Huang, 2011, 2013; Kim & Sherraden, 2011; Loke, 2013; Shanks, 2007; Zhan & Sherraden, 2003).[2] There is also a fairly extensive body of research on the 'asset-child education' relationship in developing countries. Deng et al. (2014) and Filmer and Pritchett (2001) construct a measure of wealth based on assets and examine child education outcomes; others, like Chowa et al. (2013) and Cockburn and Dostie (2007), construct measures of asset ownership and examine educational outcomes. Chowa et al. (2013)

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[1] Their experiment had six elements, including asset transfer, training, and short-run support, but they consider the asset transfer to be the core component of the program. They found that the positive effects continued three years after receipt of the asset transfer, and the positive effects are seen in all six countries where the experiment was carried out (Ethiopia, Ghana, Honduras, India, Pakistan, and Peru).

[2] For a survey of the literature, see Elliott et al. (2011).

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find that Ghanaian children in households that own at least one of five assets – TV, refrigerator, electric iron, electric or gas stove, and kerosene – outperformed the control group in English test scores. Similarly, Filmer and Pritchett (2001) find a rich-poor gap of more than 30 percent for school enrollment rates in India based on their asset-based wealth indicator.

A common aspect of the studies establishing a positive link between owning more assets and better child educational outcomes is the implicit assumption that the type of asset does not affect this relationship. Most studies either monetize or count asset holdings, converting all assets into a singular wealth scalar, and find a positive relationship between wealth and child education. The main question we explore in this analysis is whether an undifferentiated view of assets ignores the potential for different types of assets to have varying effects on child education. More specifically, we explore 1) whether some types of productive assets (such as livestock, land holding etc.) discourage education investment, possibly by increasing the returns to child labor, while other assets (such as electricity, bicycle, or good quality housing) could contribute to child education by heightening the returns to schooling or raising the efficiency of time spent studying, and 2) whether different types of agricultural assets have differential effects on child educational outcomes.

If different classes of assets have differential effects on educational outcomes, there may be significant scope to improve the design of asset transfer and public investment programs. Such programs usually transfer income-generating assets, such as livestock (Jodlowski, Winter-Nelson, Baylis, & Goldsmith, 2016; Kafle, Winter-Nelson, & Goldsmith, 2016; Rawlins, Pimkina, Barrett, Pedersen, & Wydick, 2014); agricultural inputs (Denning et al., 2009); and other in-kind physical assets (Banerjee et al., 2015; Muralidharan & Prakash, 2013). Although physical asset transfers may provide a practical approach for programs to improve livelihoods, some assets could influence the returns to child labor in ways that discourage investment in formal education and thus hurt longer-term economic development or at least the prospects of a specific cohort of children.

We contribute to the literature by providing evidence that different types of assets have differential effects on child education. Specifically, we show that household durables and housing quality indicators have the expected positive effects but agricultural assets affect child education negatively. We also demonstrate that the negative effect of agricultural assets is driven by large agricultural equipment and livestock but land holding size and small agricultural tools have no significant influence on child educational outcomes. In addition, we show that the negative effect of agricultural assets is more pronounced among, girls, rural children, poor children and children of crop producers, which we argue stems from the higher opportunity cost of their schooling. We also find that home ownership, increased access to public schools, access to electricity, improved access to safe drinking water, and improved housing quality can neutralize the negative effects of agricultural assets, implying that, despite discouraging child education initially, the income generated through productive assets could fund eventually public and private investments to support education.

In what follows, Section 2 sets out our conceptual framework. In Section 3, we describe our data – three waves of the Tanzania National Panel Survey (NPS)[3] – and empirical model. In Section 4, we discuss both the descriptive and the empirical results. Section 5 discusses the policy implications and conclusions.

[3] The Tanzania NPS is part of the LSMS-ISA program which aims to marry complex consumption-based household surveys with plot-crop detailed agricultural surveys. The Tanzania NPS data, along with details on the sample and instrument design, are publicly available in the LSMS webpage http://go.worldbank.org/oolzl0uir03.

2. Conceptual framework

A large body of existing literature has examined the effects of specific assets (such as land) on child education but existing studies do not distinguish wealth effects from substitution effects. In addition, these studies have typically demonstrated the 'asset – child education' relationship by using the relationship between child labor and schooling; and for example, showing that an increase in farm size increases child labor and therefore decreases child schooling. The negative association between child labor and land holding emerges mostly from market imperfections. It has been shown that imperfect land or labor market conditions are the main cause for child labor in agriculture and other household enterprises (Basu, Das, & Dutta, 2010; Bhalotra & Heady, 2003; Cockburn & Dostie, 2007; Dumas, 2007).

Another strand of literature which considers imperfect credit markets as a driver for poor child schooling also uses child labor as a mediation through which access to credit (or lack of it) affects child education (Ranjan, 2001). Beegle, Dehejia, & Gatti (2009) and Maldonado and González-Vega (2008) show that an increase in access to credit decreases child labor through positive income effects. Conversely, imperfections in labor and credit markets, reduces access to outside labor and increases child labor (Bruce Wydick, 1999), especially in the season of peak labor demand (Hazarika & Sarangi, 2008), and among farming households that are otherwise credit constrained (Maldonado & González-Vega, 2008). Overall, these studies have concluded that if land, labor, or credit markets are imperfect, increase in productive asset holding (such as land) or provision of micro-credit increases child labor and decreases child schooling in agrarian settings.

That child labor adversely affects child education is a common finding (Basu et al., 2010; Haile & Haile, 2012). In addition, a finding that an increase in productive assets holding or provision of micro-credit can decrease child educational outcomes through increased child labor demand is also demonstrated in the literature. However, there has been little considerations of whether different types of assets might have differential effects on child educational outcomes. In this analysis, we provide an intuitive and empirically testable conceptual framework to demonstrate how different types of assets can have differential effects on child educational outcomes. We explicitly allow for multiple pathways for different types of assets to have differential effects on child education, in addition to widely recognized wealth and substitution effects.

Table 1 presents the classes of assets used, specific assets in each group, pathways through which these assets can affect child education, and the existing evidence to support any hypothesis regarding impacts on education. While considering all assets as wealth is a commonplace, productive assets incur labor to be operational and can increase child labor demand, especially in agrarian settings where both labor and credit markets are imperfect. On the other hand, non-productive assets such as housing quality and household durables represent household wellbeing and may be part of household's consumption decisions, but may not affect child labor. Although productive assets such as agricultural tools, livestock, and land holding size can have adverse effects on child education through increased child labor demand, the net effects depends on the size of positive income effects and negative substitution effects. Non-productive assets, however, likely have positive effects on child educational outcomes because such assets are labor neutral or labor saving and reduce parental stress through enhanced wellbeing.

3. Method and data

The initial focus of our empirical analysis is to unpack the differential effects of different assets on child education. Our empirical