



When solidarity fails: Heterogeneous effects on children from adult deaths in Senegalese households[☆]

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ABSTRACT

The consequences of orphanhood have been an important topic on the research agenda in recent years, particularly against the backdrop of the AIDS epidemic in Sub-Saharan Africa. Previous literature has highlighted negative effects on children from prime-age adult deaths in the household. Some authors have however pointed out that the effects are small, possibly as a result of well-functioning coping mechanisms prevailing in the region. Furthermore, previous literature has not focused on the role of household living and budgetary arrangements. In this article, we investigate the links between deaths in the household and subsequent economic outcomes of children. Exploiting an unusually rich dataset from Senegal that permits us to precisely identify the main caregiver of a given child in the household, we test whether impacts on children differ according to their relationship with the deceased. We find robust evidence that this is the case: deaths in the household are not associated with diminished school presence for those children who are not under the direct responsibility of the deceased. They however have a strong significant negative effect for those children who are. On the basis of our results, which include effects on child labor, we argue that in large and complex households, intra-household inequality in access to resources are an essential part of the story that may well lead to a heterogeneous absorption of shocks among family members. As such, there may be important limits to African informal safety nets.

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1. Introduction

The Western literature of the nineteenth century is full of novels in which orphans face a terrible destiny. Cosette in Victor Hugo's famous novel *Les Misérables* is entrusted to an innkeeper and his wife, the Thénardiens, who abominably exploit her and treat her no better than a dog. Oliver Twist in Charles Dickens' eponymous novel lives in a workhouse where he and other orphaned boys are forced to work and fed very little. Charlotte Brontë's Jane

Eyre, following the death of her parents from typhus, lives with her aunt who dislikes her and treats her as a burden. And Charles Perrault's famous fairy tale *Cinderella* tells the story of a young girl who has lost her mother and who is enslaved by her stepmother. The Western African oral tradition is also full of tales about children who lost their mother and who are abused by their stepmother (see Leguy & Diarra (2015)). All these stories convey the idea that the loss of a parent, when it occurs at a young age and in poor households, is likely to be an event with terrible consequences. However, it seems reasonable to ask whether these consequences arise as the result of the loss of a close relative, or as the simple result of a loss of an adult contributing to household income. In other words, the question is one of intra-household solidarity, which carries a certain weight in the West African context where complex intergenerational and polygamous household arrangements are the norm.

In Africa orphanhood has received much attention in recent years following the spread of the AIDS epidemic and the multiplication of armed conflicts. It is widely assumed that the extended family network normally provides a fairly efficient safety net where institutions fail to assist people in need (Foster, 2000). However, in countries badly struck by the AIDS epidemic, the system

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may have found its limits, being overwhelmed by the number of people, especially orphans, in need of assistance (see [Chirwa \(2002\)](#) and [Kuo and Operario \(2010\)](#) for opposing views on this issue). Extended and/or polygynous households imply a form of risk sharing: often, adult members of an extended family may share the task of running the day-to-day life of the household, including a shared responsibility for childcare. As such they should be able to expect that their children will be cared for by other adult members, should they not be in a position to do so themselves. However, this does not mean that children are all treated in the same way, and in particular that those who have lost one or both of their parents have the same access to resources as others. Concerning for instance educational investment, it could be that for some reason orphaned children have a lower return to education than others ([Case, Paxson, & Ableidinger, 2004](#)), inducing a lower level of schooling attainment. This could occur if parental investment is an input into the human capital production function, and thus linked to the actual human capital gain from schooling. It may also be the case that orphaned children are discriminated against, like Jane Eyre is because her genetic relatedness is too weak with her aunt, who then prefers to reserve her love and caring capacity for her own children. This conforms to the so-called *Hamilton hypothesis* ([Hamilton, 1964](#)) implying that altruistic behavior between two individuals is closely related to their genetic proximity, so that one prefers one's own children to one's grandchildren and nephews or nieces who are in turn preferred to cousins etc. [Kazianga and Wahhaj \(2017\)](#) study the intra-household allocation of resources in Burkina Faso from this angle, finding evidence for Pareto efficient allocation in household with strong family ties, but inefficient allocation in households with weaker family ties (extended households).

If either of these mechanisms (discrimination, differential returns) are at play one could expect to observe that in extended families, and outside the context of an epidemic or a civil war that puts a heavy strain on informal social safety nets, children who have lost one or both of their parents are not treated in the same way as other children in the household, receiving a lower level of human capital and being asked to contribute more to household income or to take on a higher share of domestic chores. This is what we examine in this paper. Using data from an unusually rich household panel survey in Senegal, we examine whether children whose main care giver dies receive a lower level of educational investment, work more or provide more domestic work. Through this lens, our work also provides an opportunity to examine the extent of intra-household solidarity in the West African context, in a country relatively untouched by the AIDS epidemic and with a stable political situation.

Our paper is in line with the work that [Case et al. \(2004\)](#) have conducted, analyzing the impact of a parent's death on children's schooling, using data from eleven DHS surveys. We differ from it in four ways: first, while Case, Paxson and Ableidinger have limited their analysis to school enrollment, we also examine labor market participation and hours of domestic work as outcomes likely to be impacted by the death of a parent; second, we do not limit our analysis to parents' death and examine the impact of the death of any member (adult, youth, elderly, men or women) in the household. We then focus on caregivers (in the sense of having a budgetary responsibility for the child), and distinguish between children under the responsibility of the deceased caregiver and children under the responsibility of another caregiver; third, as we have individual panel data, we are able to check that our results are not driven by unobserved heterogeneity, through the use of child and household fixed effects estimates; fourth, as we are interested in the comparison of children within households, our article focuses on extended households, the most relevant household type for West African countries.

Our first set of results shows rather modest associations between death and work patterns of children, and even more modest associations between death and education. When we take into account the position of the child, focusing on caregivers, we find negative impacts on school enrollment and positive impacts on market and domestic work, that are much larger and significant when the adult who dies is the main caregiver of the child. These results are robust to alternative specifications and are slightly reinforced when we control for attrition in the last section. The remainder of the paper is organized as follows: in the next section we provide a review of the related literature. Section 3 presents the data and our empirical strategy. Section 4 shows some descriptive statistics regarding our main variables of interest. The results are presented in Section 5, and their robustness to alternative specifications and attrition is tested in Section 6. Section 7 concludes.

2. Related literature

The seminal model of allocation of educational investment to children was laid out in [Becker and Tomes \(1976\)](#). This model shows that, under strong assumptions—nuclear family, perfect capital markets, parents caring equally about each child and education being valued solely for its future income generative properties—the investment in a child's education is unaffected by income shocks to the household, such as the death of a parent ([Gertler, Levine, & Ames, 2004](#)). In the context of developing countries, many—if not all—of these assumptions are questionable.

In Western Africa large households and extended family systems often prevail, and multiple spouses often live under the same roof. In a polygamous society, the responsibilities of members extend to children of other partners ([Lloyd & Blanc, 1996](#)). In such contexts, allocative theories based on the nuclear family are less relevant and intra-household decisions must be conceptualized taking this into account. This is not the case in the unitary household model, which assumes one decision maker and the pooling of income from different household members. An important result of the unitary model is that a change in the distribution of income between household members does not affect household spending patterns, something that has been strongly questioned in the literature ([Hoddinott & Haddad, 1995](#); [Hoddinott, Alderman, & Haddad, 1997](#); [Vermeulen, 2002](#)). In a polygamous setting, the rationale for income pooling is arguably even weaker. In our context, polygamy is widespread and it is common to live with brothers, parents and other members of the extended family. According to [Tabutin and Schoumaker \(2004\)](#), 46% of women between 15 and 49 years of age were in polygamous unions in Senegal in 1999. Of the 29 African countries for which they have data, only Guinea and Burkina Faso exceed this rate. More recent data show that 32.4% of women between 15–49 years and who are in some form of union have at least one co-wife.¹ Anthropologists have noted that rivalry exists among wives in polygamous unions, and that this rivalry is primarily related to fecundity ([Lesthaeghe, 1989](#); [Strassmann, 1997](#)). Using the same data as this paper, [Rossi \(2016\)](#) explores co-wife rivalry, finding evidence of strategic birth behavior among co-wives. She argues that in a polygamous setting, fertility decisions are a way of establishing and maintaining bargaining power among co-wives. Given the Senegalese context, there is hence a rationale for testing the hypothesis that adjustments to household deaths (in particular maternal deaths) are distributed equally among remaining members. This is what we do in this paper.

It is well known that households resort to a number of coping mechanisms in the case of income and health shocks. Evidence

¹ Enquête Démographique et de Santé Continue, 2014. Agence Nationale de la Statistique et de la Démographie (ANSD), Dakar, Sénégal.

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