



## Parental health and child schooling<sup>☆</sup>



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### ABSTRACT

This paper provides new empirical evidence on the impact of parental health shocks on investments in children's education using detailed longitudinal data from Bosnia and Herzegovina. Our study controls for individual unobserved heterogeneity by using child fixed effects, and it accounts for potential misreporting of self-reported health by employing several, more precise, health indicators. Results show that co-living children of ill mothers, but not of ill fathers, are significantly less likely to be enrolled in education at ages 15–24. Moreover, there is some evidence that mother's negative health shocks are likely to raise the employment probability of children due to the need to cover higher health expenditures.

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## 1. Introduction

The degree to which human capital is transmitted across generations has assumed great importance among both social scientists and policy makers because of its key implications for economic growth and inequality. Among different dimensions of human capital, the enjoyment of good health is crucial for wellbeing in directly

contributing to both individual utility and economic performance (Grossman, 1972; Strauss and Thomas, 1998; Deaton, 2007; Currie, 2009; Case and Paxson, 2011). Major illness, though, remains one of the most sizable and unpredictable shocks households may face, especially in less developed countries where many individuals are not covered by formal insurance and out-of-pocket payments are the main way to access health care (World Bank, 1993, 1995). The burden of ill health may be even higher if its economic and non-economic consequences are transferred to future generations' human capital. This paper addresses this issue by examining the impact of maternal and paternal health on children's education. While evidence on the parent-child transmission of health is accumulating (see, among others, Currie and Moretti, 2007; Bhalotra and Rawlings, 2011) the extent to which parental health shocks affect investments in offspring's education has received very little empirical attention.

We examine the role of parental health in children's schooling by using the detailed Bosnia and Herzegovina (BiH) Living Standards Measurement Survey (LSMS), one of the few household panel datasets available for transition countries, conducted by the World Bank between 2001 and 2004. The longitudinal nature of the BiH LSMS and its richness of health-related information allow us to tackle two important problems which commonly arise when

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estimating the effect of parental health on children's education: unobserved heterogeneity and measurement error.

A first challenge is to disentangle spurious correlation, due to unobserved heterogeneity, from causality. Parents with high intertemporal discount rates, for instance, are likely to engage in health-damaging behavior, have worse health, and at the same time invest less time and money in their children's human capital. In order to address this endogeneity concern, we employ longitudinal data and, for the first time in this literature, a child fixed effects estimator. This allows us to identify the effect of parental health by considering *changes* in parents' health status overtime, that is health shocks. A key advantage of the latter approach is that health shocks are less likely to reflect long-term parental illnesses or health-related behavior than health status.

A second difficulty in the identification of the treatment effect of interest is related to the subjective nature of self-reported health, which is commonly used in the literature. Indeed, if true and self-declared health differ due to a misclassification error, an attenuation bias will affect both the OLS and the fixed effects estimators, leading to a lower-bound estimate of the parental illness effect. We address this issue by employing a detailed set of alternative indicators of parental health status, which are available in the BiH LSMS and are generally considered as less subject to reporting bias.

Besides these important features of the BiH panel survey, which help the identification of the causal effects of interest, we focus on a particularly interesting setting in which to study the impact of parents' health shocks on children's human capital. Before the 1992–1995 war BiH enjoyed an economy, health status, and health care of a middle-income country, but the conflict left the country's physical and human resources devastated. Health services, especially those supporting women and children, were severely disrupted, with over 35% of facilities destroyed or heavily damaged (DFID, 2003). Half of the country's schools were destroyed during the conflict, decreasing access to education (World Bank, 2005). Thus, due to the pervasive destruction of both the health and education systems, the effect of parental health on child schooling is of particular concern.

Our benchmark child fixed effects estimates show that children with mothers with self-reported poor health are about 7 percentage points less likely to be enrolled in education at ages 15–24 compared to children with healthier parents. We do find much lower but statistically insignificant effects for paternal illness. Similar results are obtained when using less subjective measures, such as an index of limitations in activity of daily living: children of mothers with severe limitations are 9 percentage points less likely to be in school, and no significant effects are found for fathers. Thus, it appears that—contrary to the common wisdom that shocks to the primary household earner should bear more negative consequences for children's education—it is especially maternal health that makes a difference as far as child schooling is concerned. The negative effect of maternal poor health on child school enrollment is very robust to a number of sensitivity checks, including municipality by time fixed effects to capture the state of local health and education facilities, controlling for the child's and her siblings' health status, and estimating a discrete time duration model which accounts for duration dependence. Moreover, when investigating potential heterogeneous effects, we find the impact of mother's health to be larger on the likelihood of enrolling in tertiary education, and that health shocks have asymmetric effects, i.e. negative health shocks reduce the likelihood of child school enrollment while positive shocks do not significantly raise it.

Conditional on data availability, we further explore the main pecuniary and non-pecuniary channels through which maternal health shocks are transferred to children's education. Our results show that children of ill mothers, but not of ill fathers, are more

likely to work, and this effect seems to be driven by higher health expenditures of mothers, rather than forgone income.

The structure of the paper is as follows. Section 2 discusses the role of parental health in determining children's human capital acquisition, as explored in the existing literature, and Section 3 provides some background information on Bosnia and Herzegovina. Section 4 presents the econometric strategy and challenges to identification. Section 5 describes the data and reports some descriptive statistics. Results using parental self-reported poor health status and presumably more objective measures of health are presented in Section 6. Section 7 includes robustness checks by changing the econometric specification and the set of control variables. Section 8 discusses the main causal pathways which may be behind our results. Section 9 summarizes our main findings and concludes.

## 2. Background literature

In the absence of an adequate system of social protection, illness can take a large and unexpected toll on household well-being, leaving little scope for ex-ante income smoothing strategies (Morduch, 1995; Gertler and Gruber, 2002). Adverse health events impose to household members current pecuniary costs, both direct, in terms of the price of accessing health care, and indirect, in terms of the loss of income associated with reduced labor supply and productivity. As a result, having a major health shock may make a family experience both a short-term income fall and a prolonged poverty trap (Wagstaff, 2007; Sun and Yao, 2010). Based on the theory of full insurance, Gertler and Gruber (2002) test and reject the hypothesis of consumption smoothing in the context of Indonesia, showing that households significantly reduce both labor supply and consumption patterns when hit by an adverse health event. Similarly, Asfaw and von Braun (2004) show that in Ethiopia illness has a significant negative impact on the stability and the level of household consumption. Focusing on the direct monetary costs of health, Wagstaff (2007) finds evidence that the financial implications of ill health in Vietnam can be catastrophic, being associated with a significant reduction in consumption in households with no access to insurance (see also Dercon and Krishnan, 2000; Baeza and Packard, 2005; Bredenkamp et al., 2010).

In countries with poor systems of social protection, ill health may have significant economic consequences for both current and future generations (Hamoudi and Sachs, 1999; Wagstaff, 2007). Drawing from the economic theory of the household, if families with ill members are not able to access formal insurance markets—as it is likely to be the case in less developed or poor contexts—they may be compelled to rely on other coping mechanisms such as trading the future welfare of all or some of their members against current access to health care or forgone income (Strauss and Thomas, 1995). This is to say that when hit by an adverse health event, households may increase their use of child labor, by having children substitute for adult labor supply, thus decreasing school attendance. In the absence of adequate health insurance, children may also be asked to take care of the sick parent, reducing the time they can devote to work or schooling.

Furthermore, parents' illness may have non-pecuniary, e.g., psychological, costs on children, which negatively impact on their school achievement (Pedersen and Revenson, 2005; Sieh et al., 2010). Last but not least, as parents not only contribute monetary inputs but also time inputs into the production of child quality, their poor health status may reduce both the quantity and the quality of their time contributions, and negatively affect a child's quality, in our specific case, education (Guryan et al., 2008; Gayle et al., 2011)

In the conclusion to their well known survey on the determinants of children's attainments Haveman and Wolfe (1995)

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