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Mitigating the consequences of a health condition: The role of intra- and interhousehold assistance☆,☆☆

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ABSTRACT

The behavior of noncoresident family members motivates much of the literature on consumption smoothing, risk-sharing, and informal networks, yet little is known empirically on the topic due to a lack of data simultaneously observing multiple households in an extended family. This study utilizes genealogically linked longitudinal data to examine how extended family networks insure against financial risks from severely limiting health conditions. We find that nonhealth consumption of unmarried households declines in response to worsening health, whereas married households smooth expenditures in a way that is consistent with full insurance. Families mitigate losses by reallocating home production, drawing down home equity, holding formal health insurance, collecting social security, and receiving transfers from noncoresident relatives. We illustrate that the costs of health shocks are transmitted throughout family networks, and that noncoresident children draw down their assets and consumption when responding to a parent's health decline.

1. Introduction

Deteriorating health can have serious short- and long-term economic consequences for those most at risk. While previous literature has examined the extent to which individuals rely on formal and informal insurance channels to overcome health risk, little is known empirically about the full set of mechanisms extended families in developed settings use to respond to health shocks. This is despite the fact that the behavior of noncoresident family members motivates much of the literature on risk-sharing and informal insurance. Beginning from a well-established consumption-smoothing framework, we exploit genealogically linked data from the 1999 to 2011 waves of the Panel Study of Income Dynamics (PSID) to examine how severely limiting health conditions impact individuals, their households, and their noncoresident family members. The results emphasize the connectedness of families across space and highlight the importance of informal family support.

The framework for this study is based on models of family interaction and informal insurance (e.g. Mace, 1991; Cochrane, 1991; Altonji et al., 1992). Where past work has focused on testing the ability of households to fully insure consumption against income shocks, we extend the literature by also examining how particular coping mechanisms respond to health risk. These mechanisms include formal labor supply, home production, depletion of specific assets, and receipt of public and private transfers. The analysis serves to connect evidence of the important role of intergenerational exchange in the United States (e.g. Cox, 2003; Wiemers et al., 2017) with a rich literature from developing-country settings that documents a relationship between health shocks and informal insurance from one's noncoresident family (e.g. Fafchamps and Lund, 2003; Genoni, 2012).

Our work contributes to the literature in a number of ways. We benefit from the longitudinal design and detailed health data of the PSID to identify plausibly exogenous health transitions that carry significant financial risk. We focus on the severity of limitations to daily activities measured through a series of questions that elicit

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the incidence and level of limitations from each of eleven different acute, chronic, and psychosocial conditions. Due to the survey's long-running nature, we are able to track individuals who experience severely limited health as well as observe those who recover in subsequent periods.

Second, we utilize the PSID's genealogical following rule that retains and interviews split-off family members after they move out of root households to provide new evidence on the nature of informal insurance provided by both coresident and noncoresident family members. We directly examine responses of genealogically related households to characterize how providing informal insurance might vary within an extended family by gender and relationship.

The results reveal that the onset of a severely limiting health condition leads to an approximate 15 percent reduction in individual labor income and a 20 percent increase in health expenditure. Income losses are partially passed through to consumption, which falls by approximately 10 percent, suggesting that households are only able to partially insure nonhealth expenditures against poor health. The ability to smooth consumption is improved, but still incomplete, for those covered by formal health insurance. However, we find stark heterogeneity in consumption insurance by marital status and fail to reject that married households are able to smooth expenditures across health declines while unmarried households experience 16 percent reductions in nonhealth expenditures.

The stark heterogeneity linked to marital status motivates a further exploration of the different responses between married and unmarried households. For married households experiencing a severely limiting condition, we find evidence of responses in home production, depletion of home equity, and increases in social security receipt. In contrast, while unmarried households draw from home equity as well, they appear to have a wider range of insurance channels outside of the household, including increases in receipt of social security and monetary transfers from extended family members. We find that drawing from home equity and formal health coverage appear to be the primary sources of partial consumption insurance.

Due to the connectedness of families, it is possible that the cost of a shock to one member are borne throughout one's family network. Drawing on the tracking design of the PSID, we illustrate that outcomes from child[1] households respond to the declining health of their parents, and find differential effects by gender. Households headed by male children reduce home equity and savings while female children reduce their own consumption and increase health expenditure. The results suggest the economic costs of health shocks spread far beyond an individual's household, and that informal networks play an important, but incomplete, role in covering gaps left by formal insurance.

Our approach is consistent with the large literature examining the impact of health status on outcomes related to risk sharing and consumption smoothing that defines health through self-reported symptoms, new diagnoses, or limitations on daily activities.[2] This includes work examining the onset of physical disabilities (e.g. Currie and Madrian, 1999; Stephens, 2002; Charles, 2003; Meyer and Mok, 2013; Ball and Low, 2014; Low and Pistaferri, 2015). Severely limiting health conditions and reduced physical ability are similar in that there are formal insurance systems in place to deal with anticipated and unanticipated realizations of the events, and both can negatively impact labor supply and earnings while increasing health expenditures. By focusing on diagnosis-linked limitations, we avoid some concerns related to confounding labor supply and health present in measures of health shocks linked to work-limiting disabilities. Due to the nature of the representative sampling of the PSID, we are also able to extend our analysis beyond health shocks to prime-age males that have been the focus of much of this literature.

The following section motivates the empirical analysis that follows by outlining a conceptual framework for studying financial risks, informal consumption insurance, and the behavioral responses of family members. Throughout the paper we discuss threats to identification and the implications of viewing the results through a lens of incomplete insurance versus state-dependent preferences. The patterns we show are consistent with insurance interpretations in all cases and provide rich insights on the impact of health shocks to individuals, their households, and families.

2. Conceptual framework and empirical strategy

In standard models of full insurance, permanent household resources determine contemporaneous consumption rather than idiosyncratic fluctuations in income (e.g. Deaton, 1992). Households have access to state-contingent means of insurance to equate marginal utility across time despite facing a number of stochastic states with varying potential consumption realizations. Under separable preferences that ensure the marginal utility of consumption does not change with the onset of a health shock, income fluctuations brought on by poor health are smoothed away and have no effect on the realized change in consumption between periods.

Given the large literature detailing the testing and rejecting of the full-insurance model, we utilize the framework as a starting point for a more nuanced analysis of how households and family networks respond to declining health.[3] This approach is in line with prior work that examines the formal and informal mechanisms used as insurance against deteriorating health in Indonesia (Gertler and Gruber, 2002; Genoni, 2012) and China (Liu, 2016).

2.1. Empirical implementation

The regression analog to the baseline test of full insurance examines how a change in health status for a given individual impacts a series of outcomes. Given longitudinal data for individual i in household h and survey-wave t, we estimate the following within-person model:

$$Y_{iht} = \beta\theta_{iht} + X_{iht}\gamma + \mu_i + \varepsilon_{iht} \quad (1)$$

where Y_{iht} is the outcome of interest, including financial resources and nonhealth percapita expenditure. Health status of individual i is captured by θ_{iht}, and measures the severity of limitations in daily activities due to specific acute, chronic, and psychosocial conditions. Respondents are classified into severe, moderate, little, or no limitations. Time-varying factors related to the individual and household are controlled in X_{iht} and include flexible controls for age and education of the household head and spouse, household size and composition, survey-wave fixed effects, an indicator for whether the interview was provided by a proxy respondent, and indicators for if the individual is covered by health insurance in the current interview and the previous interview.[4] As age and the

[1] References to noncoresident children specifically refer to financially independent children living in a household separate from their parent. In the PSID, both the parent and the child will be sample members.

[2] Examples include Cochrane (1991), Townsend (1994), Smith (1999), Gertler and Gruber (2002), Fafchamps and Lund (2003), Wu (2003), de Weerdt and Dercon (2006), Wagstaff (2007), Islam and Maitra (2012) and Sparrow et al. (2014).

[3] For early tests of the independence of consumption growth and income fluctuations in the United States see Hall and Mishkin (1982), Cochrane (1991), Mace (1991), and Hayashi et al. (1996).

[4] Results from models excluding contemporaneous insurance coverage due to concerns of simultaneity bias are consistent with those shown below.