



# Crowding out of solidarity? Public health insurance versus informal transfer networks in Ghana

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## ABSTRACT

This paper delivers empirical evidence on how transfers that serve as an informal insurance mechanism are affected by a formal and country-wide health insurance scheme. Using the fifth and fourth waves of the Ghanaian Living Standard Household Survey, we investigate the extent to which the implementation of the National Health Insurance Scheme affects health-related outcomes and making or receiving informal transfers. Our findings suggest that there is a reduction of out-of-pocket expenditures for health services and a significant crowding out of informal transfers. We conclude that the provision of formal health insurance does not only relieve ill individuals from out-of-pocket expenditures, but also their network partners from making informal transfers.

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## 1. Introduction

In the developing world individual access to health services is largely determined by income. In order to be able to afford treatment costs in the case of illness, many poor households rely on informal transfers within networks of relatives or neighbors. These support schemes are important and beneficial since the risk to become sick can be shared with other members of the network (Fafchamps, 2008). The individual engagement in an informal transfer network is usually determined by two main motives, altruism and reciprocity (Leider, Möbius, Rosenblat, & Do, 2009). Altruism can be described as a preference for contributing without expectations to be rewarded, whereas reciprocity is based on an exchange motive with the prospect of future benefits (Ligon & Schechter, 2012). The theoretical literature has emphasized that such non-altruistic sharing arrangements should be self-enforcing. Individuals are willing to help others facing a temporary shock because of the credible promise of reciprocity in the future. Thus, these support schemes can be a crucial mechanism of insurance in times of severe hardship (Tsai & Dzorgbo, 2012), and support individuals regularly during weaker stages of their life, e.g. when they are young or very old (Kabki, 2007).

However, these networks can provide inadequate protection if many members are suffering from economic hardships or refuse to contribute because of personal conflicts (Morduch, 1999; Townsend, 1994). Furthermore, as especially kinship networks are often characterized by strong sharing obligations, productive network members are confronted with the demand for transfers by less productive relatives (Di Falco & Bulte, 2011; Hoff & Sen, 2005; Platteau, 2000). This implies that redistributive pressure can adversely affect incentives of network members that own an enterprise to invest in their business (Grimm, Hartwig, & Lay, 2016) or to save beyond a certain amount (Brune, Giné, Goldberg, & Yang, 2015; Duflo, Kremer, & Robinson, 2011; Wahhaj, 2010). Thus, adverse incentives prevent members from improving their economic situation and may be an important obstacle in the process of economic transition.

In order to overcome the imperfections of informal transfer networks and to help productive individuals such as enterprise owners to develop their full economic potential, formal health insurance schemes or micro-insurances are recognized as an important remedy (Landmann, Vollan, & Frölich, 2012). In recent years, some developing countries introduced country-wide health insurance schemes, while in other developing countries many micro-insurance initiatives were launched with the aims to improve access to health care services and to complement informal insurance mechanisms (Shigute, Strupat, Burchi, Alemu, & Bedi, 2017). While there is already some empirical evidence that

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suggests a crowding out of informal mechanisms after receiving public transfers (Dercon & Krishnan, 2003; Oruč, 2011; Pavan & Colussi, 2008), only few studies exist on the relationship between formal insurance and informal transfer networks.<sup>1</sup>

Attanasio and Rios-Rull (2000) provide theoretical and empirical evidence that formal insurance crowds out informal insurance and potentially increases welfare in Mexico. Landmann et al. (2012) implement an experiment in the rural Philippines and show that formal insurance can lead to lower voluntary transfers among network members. In a laboratory experiment, Lin, Liu, and Meng (2014) find that the introduction of formal insurance significantly crowds out private transfers and reduces income inequality. In a lab-in-the field experiment in Cambodia, Lenel and Steiner (2017) find a reduction in transfers, driven by availability of insurance, even when recipients do not become formal insurance members. They conclude that solidarity can potentially be crowded out by the mere existence of insurance. Cecchi, Duchoslav, and Bulte (2016) explore how the implementation of a micro-health insurance affects the results of a public good game in rural Uganda. They find that average contributions to the public good are lower in areas with access to formal insurance and conclude that formal insurance schemes have the potential to crowd out social capital.

As none of these studies have investigated the effect of a formal and country-wide health insurance, this paper delivers the first empirical evidence on whether informal transfers are affected by such scheme. Closing the knowledge gap on the effects of a health insurance scheme at scale is of critical importance because the vast majority of people in the developing world will fall under such schemes in the future. The launch of the Ghanaian National Health Insurance Scheme (NHIS) in 2003, coupled with differences in the implementation between local districts, makes Ghana an ideal setting for examining the relationship between formal health insurance and informal transfer networks. Furthermore, we can investigate the detailed mechanism behind household's decision to engage in informal transfer networks and use data on health-related outcomes such as health status and out-of-pocket payments for health purposes.

For our analysis, we collect the exact NHIS implementation dates of 90 districts and find that the health insurance scheme has been implemented by most district authorities at the end of 2005.<sup>2</sup> We combine this information on implementation dates with the 1998/1999 and 2005/2006 waves of the Ghanaian Living Standard Household Survey (GLSS) that cover the same 90 districts. The districts in this cross-sectional household surveys contain enumeration areas (which we call sub-districts in the following) that were interviewed in different months during a 12 month survey period.<sup>3</sup> Thus, we are able to observe the districts in the 2005/2006 wave before and after the implementation of the NHIS which allows us to observe different individuals from the same districts at three points in time: before the NHIS implementation in 1998/1999 (round 1), before the NHIS implementation in 2005/2006 (round 2) and after the implementation of the NHIS in 2005/2006 (round 3).<sup>4</sup> Hence, in our empirical approach we exploit the panel dimension of the data by estimating a district fixed effects model that controls for

time-invariant unobserved characteristics of the districts. Furthermore, we are able to employ placebo regressions by using the first two rounds of our data, in order to check whether there are any differences in outcome variables between districts with and without the NHIS over time before the implementation of the NHIS.

We find that the introduction of the country-wide formal health insurance scheme leads to a substantial crowding out of informal transfers. The implementation of the NHIS decreases the probability and the amount of made and received transfers. These results are consistent with the empirical literature we discussed and corroborate our theoretical framework (outlined below). Turning to the analysis of health-related outcomes, we find that the NHIS reduces out-of-pocket expenditures of the respondents. Thus, our results suggest that not only sick individuals benefit financially from the NHIS, but also network partners are financially relieved after the implementation of the NHIS.

The remainder of this paper is organized as follows. Section 2 introduces the theoretical framework of our study and provides information about the National Health Insurance Scheme in Ghana. In Section 3 we describe the data and give details on our identification strategy. Section 4 presents the results and further robustness checks before Section 5 concludes with a summary of the main findings and a research outlook.

## 2. Theoretical framework and the National Health Insurance Scheme in Ghana

### 2.1. Theoretical framework

In Ghana, reciprocity is widely practiced and often necessary in order to reduce economic insecurity, building trust and solidarity within transfer networks (Udry & Conley, 2004). From an economic point of view, reciprocity can be described as an exchange motive with respect to future benefits (Ligon & Schechter, 2012) which drives the formation of transfer networks as an informal institution and provides signals for being trustworthy and also can foster someone's social status. In Ghana transfer networks consist to a large extent of relatives, forming kinship networks in which reciprocal transfers are used to constitute responsibility and obligations between network members. These networks can be a crucial mechanism of insurance in times of severe hardship (Tsai & Dzorgbo, 2012), but also can support individuals regularly during weaker stages of their life, e.g. when they are young or very old (Kabki, 2007). Thus, reciprocity is an important driver for participating in informal transfer networks in Ghana, either due to direct financial benefits (risk sharing) or indirect benefits by an increased social status within a community.

Against this background, our theoretical framework assumes that an individual's engagement in an informal transfer network is determined by the exchange motive (reciprocity). In line with Morduch (1999), the model contains two individuals that form a transfer network within a framework of repeated interactions over time. Both individuals will contribute to the network until one individual reneges on the arrangement. Hence, a trade-off between leaving the network today and future benefits from further participation exists. A rational individual will make a cost-benefit analysis considering components, that affect the decision to stay in the network such as (future) benefits of the reciprocal arrangement in terms of received transfers, and costs that are determined by (current) transfer payments to the network partner. Furthermore, the decision to stay in the network depends on opportunity costs: On the one hand, a formal insurance scheme can be interpreted as a possible (partial) substitute to informal insurance. Potential exit costs of leaving the network as discussed by Hoff and Sen (2005) & Di Falco and Bulte (2011) contribute negatively to opportunity costs of staying in the network, on the other hand.

<sup>1</sup> Although solidarity can be seen as a prerequisite for the existence and functioning of a public health insurance scheme, this is not the focal point of our paper. Instead, we solely analyze informal transfer networks on a micro level which are known to be driven by sharing motives such as reciprocity.

<sup>2</sup> Membership in the health insurance scheme is voluntarily for all adults (age 18–69) that work in the informal sector and enrollment rates increased substantially between 2005 and 2007 from 6 to 37 percent of the population (NHIA, 2009).

<sup>3</sup> In the 2005/2006 wave of the GLSS every district consists on average of four sub-districts.

<sup>4</sup> As most of the treatment districts implemented the NHIS at the end of 2005 and the survey period ends in September 2006, the average exposure to the scheme is 8 months.

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