Does Social Health Insurance Reduce Financial Burden? Panel Data Evidence from India

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Summary
Indian government launched the Rashtriya Swasthya Bima Yojana (RSBY), a national health insurance scheme, in 2008 that provides cashless health services to poor households in India. We evaluate the impact of RSBY on RSBY beneficiary households' average treatment impact on treated, ATT utilization of health services, per capita out-of-pocket (OOP) expenditure, and per patient OOP expenditure on major morbidities. To address the issue of non-randomness in enrollment into the scheme, we exploit the longitudinal aspect of a large nationally representative household survey data to implement difference-in-differences with matching. We find that RSBY beneficiary households are more likely to report and receive treatment for long-term morbidity in rural areas; however, the differences in reporting and treatment of long-term morbidity is not statistically significant in urban areas. We do not find strong evidence that the RSBY reduced per person OOP expenditure for RSBY beneficiary households in both rural and urban areas. Conditional on having received medical treatment, we find that RSBY beneficiary patient spend less on medicine in rural areas but no statistically significant impact in urban areas. We also conduct a placebo experiment to support the parallel trend assumption of DID.

1. Introduction

Access to health services, education, food, water, housing, sanitation, and information as well as enjoyment of a basic level of income security are, human rights enshrined in the Universal Declaration of Human Rights. Social protection is an important factor in enabling people to exercise these rights (UNDP, 2011). In recent past, Indian Parliament has passed many legislations toward achievement of these rights, such as National Rural Employment Guarantee Act (NREGA) that guarantees 100 days of work at minimum wage per household in a year, Right to Education Act that provides free and compulsory education for children between 6 and 14 till completion of elementary education in a neighborhood school. In the same spirit, Government of India (GOI) introduced a National Health Insurance Scheme known as Rashtriya Swasthya Bima Yojana (RSBY) in early 2008 that was initially designed to target the Below Poverty Line (BPL) households, but has been expanded to cover other defined categories of unorganized workers.

Health care in India is financed through various sources, including individual out-of-pocket (OOP) payments, central and state government tax revenues, external aid and profits of private companies. National Health Accounts data from 2004–2005 show that central, state and local governments together account for only about 20 per cent of India's total health expenditure. More than 78 per cent of the health expenditure comprised OOP expenditures—one of the highest rates in the world. External aid to the health sector accounted for a negligible 2 per cent of the total health expenditure (Swarup & Jain, 2011). Given the large share of OOP payments in health care in India, RSBY is considered a very innovative scheme that relies on providing cashless health services to the beneficiary households without any paperwork with the use of smart cards (more details are provided in Section 2) with only a marginal enrollment/renewal cost of 30 Indian Rupees (INR) (about $0.5) per year.1 It covers up to five members of family.

In this paper, we evaluate the impact of RSBY on RSBY beneficiary households' average treatment impact on the treated, ATT utilization of health services, per capita in-patient, out-patient, and total OOP expenditure. We distinguish between utilization of health services for short-term morbidity and long-term morbidity, and also consider different components of health expenditure such

1 The World Bank hailed RSBY as a model of good design and implementation with important lessons for other programs in India.http://pib.nic.in/newsite/efeatures.aspx?efld=69262.
as hospitalization cost, medicine cost, and transportation cost. In addition, we provide impact of RSBY on an individual’s utilization of health services and expenditure conditional on having received medical treatment (i.e. actual patient) for long-term morbidity. Using a nationally representative longitudinal survey, we combine difference-in-differences with matching to mitigate the self-selection issue that induces biases in impact evaluation of health insurance. Difference-in-differences with matching should take care of selection issue as long as the macro trend observed between treated and non-treated households remain same. Since we use the non-treated households from same area, and our propensity score matching does a good job in balancing the characteristics in base-line across RSBY and non-RSBY households, the assumption is likely to be satisfied. We also provide suggestive evidence in favor of similar trend between RSBY and non- RSBY households by carrying out a placebo exercise.

The Indian experiment with social health insurance is not new, and several developing countries have recently used tax revenues to subsidize health insurance for informal-sector (usually rural) workers and their families, or at least the poorer ones among them (Wagstaff, Lindelow, Jun, Ling, & Juncheng, 2009). For example, Indonesia launched a health insurance scheme for the poor in 2004 with the ultimate objective of bringing all Indonesians (including those who are currently enrolled in social insurance schemes for formal sector workers) under one cover (Rocks, Schieber, Harimurti, Tandon, & Somanian, 2009). In 2003, China adopted a new health insurance system, the New Cooperative Medical Scheme (NCMS), in rural areas where 80% of people were without health insurance of any kind (Wagstaff et al., 2009). The WHO (2010) and the World Bank (Hsiao & Shaw, 2007) have endorsed the restriction of OOP expenditures for health care at the time of use through the prepayment of insurance as an important step toward averting the financial hardship associated with paying for health care (Acharya et al., 2013). Acharya et al. (2013) present a systematic review of the literature on the extent to which social health insurance schemes enhance access to care and offer protection from financial risk to households in the informal sector.2

There is a growing interest and literature on RSBY.3 Some studies examine the enrollment into RSBY (Das & Leino, 2011; Rajasekhar, Berg, Ghatak, Manjula, & Roy, 2011; Nandi, Ashok, & Laxmiranayan, 2013). Rathi, Mukherjee, and Sen (2012) and Devadasan, Seshadri, Trivedi, and Criel (2013) use data from families enrolled in RSBY from one district (Amaravati district in the state of Maharashtra and Patan district in the state of Gujarat, respectively), and find that a large proportion of families enrolled in RSBY continue to incur OOP spending despite that RSBY is a cashless scheme with no co-payment or fees at point of service. Johnson and Krishnaswamy (2012) use cross-section consumption surveys conducted by National Sample Survey (NSS) in 1999–00, 2004–05 and 2009–10. They matched districts based on the characteristics, and use difference-in-differences strategy across RSBY districts vs non-RSBY districts. They find a small decrease in out-of-pocket household out-patient expenditure, and limited evidence of increase in the number of households that have had a hospitalization case. Similar to Johnson and Krishnaswamy (2012), Karan, Yip, and Mahal (2017) use NSS cross-section consumption expenditure data from 1999–00, 2004–05, and 2011–12, and study the impact of RSBY on per household member monthly OOP spending, share of the OOP expenditure in households’ total monthly consumption expenditure, and whether a household experienced catastrophic healthcare payments (defined as OOP spending greater than 10% of the total consumption expenditure). Their identification strategy also relies on treating all eligible households residing in RSBY districts as treated and all eligible households residing in non-RSBY districts as non-treated. They proxy eligibility of the households by restricting their sample to bottom two quintiles of consumption expenditure.4 They do not find significant impact of RSBY on OOP expenditure. Similarly, Ravi and Bergkvist (2015) also use NSS cross-section consumption expenditure data from 2004–05 and 2009–10 and implement difference-in-differences across insurance districts vs. not covered districts to study the impact of publicly provided health insurance schemes in India on the likelihood of impoverishment, catastrophic health expenditure, and the poverty gap index.5 In essence, Johnson and Krishnaswamy (2012), Ravi and Bergkvist (2015), and Karan et al. (2017) provide estimates for “intention-to-treat” (ITT) effect, and not the average treatment effect on the treated (ATT).6 Although ITT is a useful policy parameter, in case of low uptake of the program it has limited usefulness. In addition, given that medical insurance are targeted toward specific households, the impact on beneficiary households is warranted.

We add to the literature in following way. We evaluate a large SHI from a densely populated large country with a large share of OOP expenditures and provide ATT estimates which are comparable to the SHI evaluation studies from other countries that also provide ATT estimates (e.g., Lei & Lin, 2009; Wagstaff et al., 2009). Unlike, Johnson and Krishnaswamy (2012) and Karan et al. (2017) who provide ITT estimates comparing RSBY districts with non-RSBY districts using cross-section data, we can actually identify the RSBY beneficiary households and use longitudinal data. We also consider many additional outcomes in addition to OOP expenditure such as different components of health expenditure (hospitalization cost, medicine cost, and transportation cost) and utilization of health services. Moreover, in addition to the household level observations, we also use individual specific utilization

2 Ekman (2004) provides a review of the literature on community based health insurance (CBHI) schemes.
3 There exists literature that evaluates community-based health insurance (CBHI) and state governments’ health schemes in India. For example, Aggarwal (2010) evaluates the CBHI scheme “Yeshasvini health insurance” for cooperative rural farmers and informal sector workers implemented in the state of Karnataka. Using a one-time survey of 4109 households and propensity score matching, she finds that the CBHI scheme increased the use of health services, reduced OOP spending and improved health outcomes. Fan, Karan, and Mahal (2012) evaluate the impact of “Aarogyasri health insurance” implemented in the state of Andhra Pradesh. They exploit variation in program roll-out over time and districts to evaluate the impacts of the scheme using difference-in-differences methodology.
4 They also report that the bottom two quintiles account for 65% of the households who reported having BPL card in the 2004–05 and 2011–12 NSS data. They choose to proxy by consumption quintiles as BPL card status is not reported in the 1999–2000 NSS data.
5 In addition to RSBY, their sample also include the three states Andhra Pradesh, Karnataka, and Tamil Nadu which also have simultaneous more generous state government health schemes. Both Johnson and Krishnaswamy (2012) and Karan et al. (2017) drop these three states from their sample to study only impact of RSBY.
6 The ITT interpretation also remains a subject given the difficulty in identifying the eligible population in the NSS data used in these studies. As discussed later, although the initial target population was BPL families, the coverage of NREGA workers in late 2009 expanded the program to some non-BPL families also. Authors’ calculations from the IHDS 2012 suggest that at all India level, about 42% of the NREGA families do not have BPL status at all India level. Johnson and Krishnaswamy (2012) restrict their sample to households reporting BPL status. Although the NSS 2004–05 data contain BPL status information, the 1999–00 and 2009–10 do not. Johnson and Krishnaswamy predict BPL status in all three datasets using a model of BPL status fitted in 2004–05 data. Since Johnson and Krishnaswamy use 2009–10 as post program data, their sample comes much closer to the eligible sample for the program ignoring the inclusion/exclusion errors from the model. Karan et al. (2017) proxy BPL status by restricting their sample to households in the bottom two quintiles of consumption distribution. Nonetheless, authors calculations from NSS 2011–12 data (68th round consumption expenditure. Type 1) suggest that about 48% of the households in bottom two quintiles of consumption distribution at the all India level do not report BPL status. Similarly, Ravi and Bergkvist (2015) sample include the entire population of the treatment and control districts which means that a large proportion of their sample is ineligible (or never offered) for the program.
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