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Are Publicly Financed Health Insurance Schemes Working in India?[§]

ABSTRACT Since 2003, various government-sponsored health insurance schemes have been implemented in India to offer financial protection against catastrophic health shocks to the poor. Several state governments took the initiative to roll out their own state-financed health insurance schemes and these were followed by the national government, rolling out the largest of such schemes, the Rashtriya Swasthya Bima Yojna (RSBY) in 2008. These schemes provide fully subsidized cover for a limited package of secondary and tertiary inpatient care, targeting the population below poverty line. This paper analyzes the impact of these state-sponsored health insurance schemes through a literature review and some illustrative empirical work. We find limited impact of these government-sponsored health insurance schemes and provide rationales for this. We also discuss the policy implications of these findings.

Keywords: *Publicly Financed Health Insurance Schemes, Health Reforms, Health Financing, RSBY*

JEL Classification: *I18, G22, H43*

1. Introduction

What will India's healthcare system look like in the next two decades? Depending on policies undertaken over the next few years, we could end up spending 18 percent of our gross domestic product (GDP) on health, like the US, or 4 percent, like Singapore (or somewhere in between), while achieving the same outcomes. Most agree that we need

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a strong primary care system that is publicly funded and focuses on preventive and public health measures. Beyond this fundamental agreement, there are divergent views on financing methods to adopt. Our current system is largely out-of-pocket (OOP) payments, with tax breaks provided for health insurance. Between 2003 and 2010, several state governments in south India adopted publicly funded insurance models for secondary and tertiary care for the poor. The national government followed with the Rashtriya Swasthya Bima Yojana (RSBY) in 2008. Toward the end of the term, the United Progressive Alliance (UPA) government's favored instrument was a single-payer Universal Health Coverage (UHC), free care at all levels to everybody, mainly through entitlements backed by government funding and purchasing of health services.

Insurance is widely recognized as a poor model for healthcare financing because it suffers from severe information asymmetries. In a voluntary insurance market, there is an adverse selection problem, which means that people who buy insurance on average are more likely to be sicker than the rest of the population. This makes the pool of insured riskier than the average population, thereby making pricing and functioning of insurance market difficult. Most developed countries such as the US have, therefore, made health insurance mandatory to overcome this problem. The other big tension that arises due to information asymmetry is moral hazard. Neither patients nor physicians have the incentives to control costs and therefore overuse. This makes the insurance system unsustainable, leading to massive cost inflation. The example here is the US, which spends 18 percent of its GDP on healthcare, close to double of what most developed countries spend.

UHC proponents recognize these shortcomings and point to developed countries that adopted tax-funded, pay-as-you go single-payer systems that depend on governments to pay healthcare costs for citizens. While most of these countries have well-run public systems, they are currently facing a crisis of sustainability. As their population ages and there are fewer young people to pay into the system, there are more elderly who need care. On the contrary, India's poor record of governance and managing healthcare systems inspires little confidence in its ability to successfully pull off a universal healthcare system with the government as the single payer. Even if we were to attempt this, while a large majority of population is young and thus relatively healthy, with dropping fertility rates, we must look to the future and prepare for a time when our demographics will not be favorable.

To offer financial protection against catastrophic health shocks to the poor, various government-sponsored health insurance schemes have been implemented in India since 2003. Several state governments took the

initiative to roll out their own state-financed health insurance schemes and these were followed by the national government, rolling out the largest of such schemes, the Rashtriya Swasthya Bima Yojna (RSBY) in 2008. These schemes provide fully subsidized cover for a limited package of secondary and tertiary inpatient care, targeting the population below poverty line (BPL). This paper analyzes the impact of these state-sponsored health insurance schemes.

The Government of India is now reviewing options for health financing reforms and these recent experiments with publicly financed health insurance schemes (PFHIS) are being debated by policymakers. The intention of this paper is to inform and contribute to this policy debate, with a literature review and analysis of the impact of these insurance programs. We use nationwide sample survey data on household consumption expenditure from the National Sample Survey Organisation (NSSO) to study their effect on impoverishment, catastrophic headcount, and poverty gap index.

Although government-funded health insurance schemes existed earlier, this latest push that started in early 2000s is seen as a new form of government resource allocation to healthcare in India. Almost all public financing of healthcare in India was directed toward government-owned and government-operated health service delivery system. This new surge of health insurance schemes is, therefore, being seen as paradigm shift in the way public resources are allocated for healthcare in India. Nearly, all these schemes target the BPL population, but their intent is to reach universal coverage eventually. The BPL lists, however, vary across schemes. The state schemes use a more extensive BPL list and in Andhra Pradesh, e.g., the Aarogyasri covers nearly 80 percent of the population, whereas the central government scheme, the RSBY, uses the BPL set by the Planning Commission of the Government of India.

2. Understanding the Context for Publicly Financed Health Insurance in India

India has traditionally been spending low on healthcare and stands significantly below the global average as well as other comparable countries. India's performance in improving health outcomes is also below most of its neighbors (World Bank 2010), whether in reductions in maternal mortality, adult mortality, or the prevalence of communicable diseases. Infant mortality rates have improved in the last 10 years, but not at the same rates as in Bangladesh and Nepal (Deolalikar et al. 2008).

Healthcare in low- and middle-income countries is often paid for OOP by the people. It is well known that high OOP expenditure for health brings financial burden on families and it also influences the health-seeking behavior with delayed treatments. In recent years, several countries have expanded the coverage of national insurance programs with the aim to improve access to healthcare services and reduce the OOP expenditures. Some countries, such as Thailand and Colombia, underwent reforms more than a decade ago, and research has found improvements in the financial protection. The long-term success of state-financed health insurance schemes, however, would depend on their integration in to the broader health delivery system and the financial system in a country.

Most countries are far from UHC and reforms are currently underway to improve the coverage. In India, there has been a new wave of government-financed health insurance schemes since 2003, starting with the Universal Health Insurance Scheme (UHS) and Yeshasvini in Karnataka. Despite its name, the UHS had poor enrollment and only covered 3.7 million lives in 2009–10, and Yeshasvini in Karnataka was also a limited scheme that only covered members of rural cooperative societies in the state.

Major experimentation with publicly financed health insurance programs in India started from 2007 with the launch of Aarogyasri in Andhra Pradesh and the subsequent introduction of RSBY across the country in 2008. Despite the large number of such schemes being rolled out, the private burden of healthcare spending remains significant, as India still has a much higher OOP expenditure in comparison with most other low-income and middle-income countries (Table 1). Health financing reforms must, therefore, be a high priority on the policy agenda of the new government.

TABLE 1. Share in Healthcare Spending in 2010

<i>Countries with national health insurance programs</i>	<i>Out-of-pocket expenditure as % of total health expenditure</i>
Ghana	27
Indonesia	38
India	61
Kenya	43
Mali	53
Nigeria	59
Philippines	54
Rwanda	22
Vietnam	58

Source: See <http://apps.who.int/nha/database/DataExplorerRegime.aspx> for the most recent updates.

Note: The World Development Indicators, The World Bank Data sources: World Health Organization National Health Account database.

The role of private health insurance system in India also remained small until early 2000s. Only 2 percent of total hospitalization expenditure in India was covered through private health insurance. By 2008–09, with introduction of third party administrators and a massive expansion of networked hospitals, private health insurance covered 10 percent of all hospitalization expenditure in India (La Forgia and Nagpal 2012). Many publicly financed health insurance schemes (PFHIS) tapped into this network to improve access and treatment for beneficiaries.

The coverage of overall health insurance in India increased from around 6 percent to 25 percent of the population in three years, between 2007 and 2010. The Employees State Insurance Scheme (ESIS) was the largest program in 2007. Government-sponsored health insurance programs for BPL people were then introduced and have accounted for the major increase in insurance coverage of the population (Table 2).

TABLE 2. Health Insurance Coverage in India (millions)

<i>Year</i>	<i>Publicly funded insurance schemes</i>	<i>Private insurance</i>	<i>ESIS</i>	<i>Total</i>
2004–05	2.12	10.91	32.9	45.9
2009–10	191.7	553	50.1	296.8

Sources: 1. Estimated by author based on IRDA reports, 2.Yeshasvini, and 3. La Forgia and Nagpal, 2012.

The fundamental aim of the new PFHIS is to provide financial protection from catastrophic health shocks, but these are specifically focused only on inpatient care. The central government scheme, the RSBY, puts emphasis on secondary care, while all state schemes are focused on tertiary care. There are also significant variations across these schemes in the nature of coverage. Most schemes have an annual cap per household that ranges from ₹30,000 (RSBY) to ₹150,000 (Aarogyasri in Andhra Pradesh).

The new programs can be divided in two categories as schemes initiated by state governments and schemes initiated by the central government. The Aarogyasri Health Insurance program, launched in 2007 by the state government of Andhra Pradesh, was introduced as a response to the many farmer suicides and the understanding that one of the main reasons for these was indebtedness caused by healthcare expenditure. The Chief Minister's Relief Fund had, every year, financially supported thousands of people requiring hospitalization and the Chief Minister decided to create a formal scheme to address this issue. The Aarogyasri Health Insurance scheme now covers 938 procedures for an amount up to ₹200,000 per family per year for tertiary care services and some secondary care procedures.

Karnataka and Tamil Nadu adopted similar programs in 2009, and the governments of Kerala and Maharashtra have also introduced similar coverage using state funding. We refer to these schemes as PFHIS. In 2008, the Ministry of Labor and Employment developed RSBY that was rolled out in 18 states of India. The RSBY represents the second category of insurance programs which is at the national level. The central aim of the RSBY is to reduce healthcare expenditure and improve access to care with a focus on the poorest households. Recently, the RSBY has been expanded to cover all rickshaw drivers, rag pickers, sanitation workers, auto-rickshaw and taxi drivers, and mine workers. It was decided that the scheme should provide cashless secondary care treatment, as more people require secondary care than tertiary care. The coverage is up to ₹30,000 per year per family. An overview of the main insurance programs launched by the central and state governments is provided in Table 3.

Despite the rapid expansion of the PFHIS in India, their utilization is significantly lower than private voluntary insurance in India. RSBY and Yeshasvini cover secondary and tertiary inpatient care, similar to most private voluntary health insurance schemes in India, but their frequency of utilization at 25 and 22 admissions, respectively, per 1000 beneficiaries per year is a fraction of 64 admissions per 1000 beneficiaries per year, for private insurance.

3. Are the PFHIS Working? A Literature Review

Given the rapid expansion of health insurance schemes by the national and state governments in India, it is important to analyze their impact on financial risk protection and health outcomes. The need for evaluation is also crucial as the Government of India is reviewing options for health financing reforms. The aim of our study is to review the existing literature and to inform this debate by complementing these findings with some empirical analysis of health insurance schemes over time that might lead to specific policy recommendations for health financing reforms in India.

The PFHIS are designed as demand-side financing by focusing on the split between service provisions and financing, where the financing is left to the state, healthcare service is provided by both private and public institutions. Such demand-side financing is based on the philosophy of “money follows the patients” approach, as was outlined by Hsiao (2007). In financially underdeveloped economies with poor health infrastructure, information asymmetries are exacerbated by lack of facilitating institutions such as

TABLE 3. Details of Various Publicly Funded Insurance Schemes in India

	<i>Rashtriya Swasthya Bima Yojna</i>	<i>Yeshasvini Cooperative Farmers Healthcare Scheme</i>	<i>Rajiv Aarogyasri Health Insurance Scheme</i>	<i>Chief Minister Kalaignar's Insurance Scheme</i>	<i>Vajpayee Arogyashri Scheme</i>
Starting year	2008	2003	2007	2009	2009
Geography	18 states	Karnataka	Andhra Pradesh	Tamil Nadu	Karnataka, 6 districts
Benefit package	Mainly secondary care	Tertiary care	Mainly tertiary care	Tertiary care	Tertiary care
Families covered (millions)	22.7	3 (individuals)	20.4	13.4	1.43
Amount covered	₹30,000	₹200,000	₹150,000+50,000	₹100,000 over four years	₹150,000+50,000
Premium	₹440-750 per family	₹144	₹299-439 per family	₹469	₹300 per family
Frequency of hospitalisation	1-42 hospitalisations per 1,000 beneficiaries (diff by state)	21.76 hospitalisations per 1,000 beneficiaries	4.56 hospitalisations per 1,000 beneficiaries	5 hospitalisations per 1,000 beneficiaries	0.53 hospitalisations per 1,000 beneficiaries

Source: La Forgia and Nagpal, 2012 and Ministry of Labor, RSBY, Government of India.

health management information system (MIS) or credit bureaus. Together these lead to severe market failures and cost escalations in health insurance.

There are several studies on the impact of the new health insurance schemes on financial risk protection in India. Most careful studies (Bergkvist et al. 2014; Fan et al. 2011; Selvaraj and Karan 2012) have indicated that the share of healthcare expenditure of households has declined marginally since the PFHIS were introduced. This decline, however, is largely due to significant fall in outpatient expenditure. Table 4 below shows the disaggregated data for household healthcare expenditure in India from NSSO 2009–10. As the data indicates, most healthcare expenditure is for outpatient care and mainly to cover the cost of drugs. The recently introduced PFHIS, however, predominantly focus on tertiary and secondary healthcare services. This is a critical point of dissonance between the recent health financing reforms and the source of true health burden on average Indian households.

The RSBY covers a limited package of secondary care hospitalization, and the state health insurance schemes overwhelmingly focus on high-end tertiary care expenses. These interventions are designed to tackle low-frequency but high-value hospitalization expenses that often result in catastrophic health expenditure and impoverishment of poor households. Borrowing from informal sources for health expenses is often cited as a leading cause of impoverishment in low-income communities. These PFHIS are essentially targeting such episodes to provide financial protection against health shocks.

An excellent review of early experiences of RSBY rollout is available in Palacios et al. (2011) and in a study by Nandi et al. (2013), which discusses the socioeconomic and institutional determinants of participation in RSBY. The success of RSBY in achieving high enrolment rates is impressive, in comparison to much lower enrolment rates typically seen in other developing countries. There are, however, enormous variations in the enrolment of RSBY across districts in India and this is shown using official enrolment data in a useful map of India by Nandi et al. (2013). They analyze the data on RSBY enrolment, socioeconomic data from the District Level Household Survey 2007–08, and additional state-level information on fiscal health, political affiliation, and quality of governance. They find inequities in participation, and in particular, districts with socially backward communities (scheduled castes and scheduled tribes) experience lower participation and enrolment rates. These results reveal the weak nature of the pro-poor targeting mechanism of RSBY. Their results from multivariate probit and ordinary least squares (OLS) analyses suggest that political and institutional factors are among the strongest

TABLE 4. Household Expenditure on Healthcare in India, 2009–10

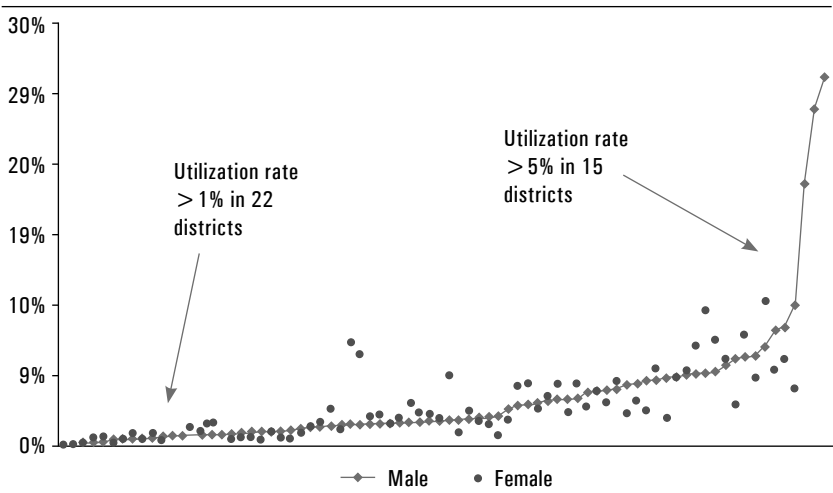
Item	Non-institutional				Institutional			
	Per capita expenditure in 30 days (₹)		% of households incurring expenditure in 30 days		Per capita expenditure in 30 days (₹)		% of households incurring expenditure in 30 days	
	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
Medicine	32.27	48.36	66.8	63.4	8.32	13.69	12.4	13.7
X-ray, pathological tests	1.95	3.78	4	4.9	1.9	4.12	7.9	9
Doctor's fee	4.26	8.94	26.1	31.6	2.27	5.8	8.7	10.4
Hospital charges	—	—	—	—	3.62	9.97	7.4	9.4
Other medical expenses	1	1.62	—	—	1.31	2.79	5.7	5.8
Medical Total	39.49	62.69	68	64.6	17.42	36.37	12.9	14.4

Source: National Sample Survey Organization, 2009–10.

determinants explaining the variation in participation and enrolment in RSBY. In particular, districts in state governments that are politically affiliated with the opposition or neutral parties at the Centre are more likely to participate in RSBY and have higher levels of enrolment. Districts in states with a lower quality of governance, a pre-existing state-level health insurance scheme, or with a lower level of fiscal deficit as compared to GDP are significantly less likely to participate or have lower enrolment rates. Among socioeconomic factors, they find some evidence of weak or imprecise targeting. Districts with a higher share of socioeconomically backward castes are less likely to participate, and their enrolment rates are also lower.

Moving beyond enrolment, if we look at the utilization rate of PFHIS, we note that it is significantly lower than the utilization rate in the private health insurance market. On average, for every 1000 beneficiaries enrolled, utilization rate is 64 admissions per year in private voluntary health insurance products but only 25 admission per year for RSBY and 22 admissions per year for Yeshasvini in Karnataka. Figure 2 from Palacios et al. (2011) shows the utilization rates for RSBY across 78 districts for male and female beneficiaries. They show that 22 districts have less than 1 percent utilization rates, and there are only 15 districts that have utilization rate above 5 percent. These point to a serious problem with the implementation of RSBY even amongst districts where the scheme has been rolled out.

FIGURE 1. Utilization for RSBY



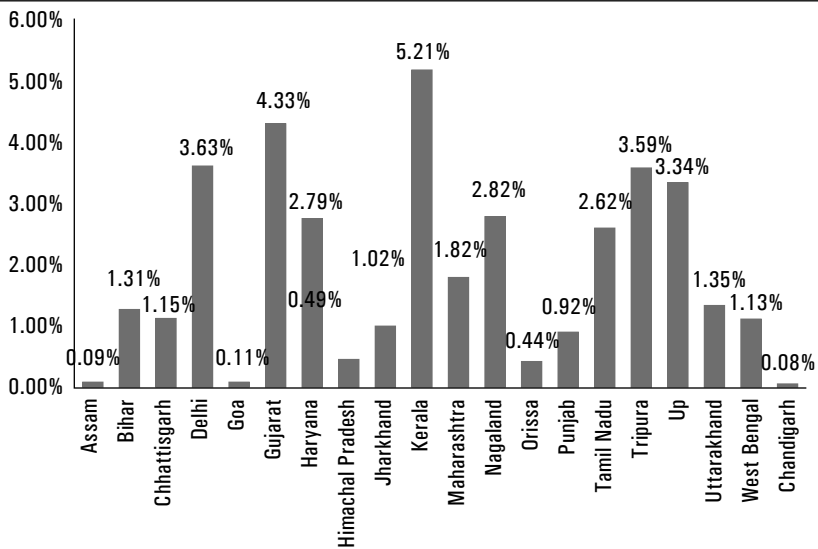
Source: Palacios, Das, and Sun (2011).

Note: Seventy-eight districts sorted by male utilization rate. Female utilization rates shown by dots.

An IFMR study (Jain 2011) put together data for hospitalization ratio for 229 districts that completed one year of RSBY. In Figure 2, it is shown that the overall hospitalization ratio is 2.4 percent with large variations across states, where Assam has 0.1 percent hospitalization ratio and Kerala has 5.1 percent. Hospitalization ratio looks at the percentage of covered beneficiaries who filed at least one insurance claim in the year. While the early utilization numbers are low, they also find that over time, the hospitalization ratios increase in most states. On average, the hospitalization ratio for RSBY rose from 4 percent in the first year to 6.3 percent in second year, once again with great variations across states. Nine districts (out of 47 that completed two years of RSBY) have hospitalization ratio of 10 percent by the second year of RSBY, with the highest utilization from UP, Gujarat, and Kerala.

Empirical evidence shows that PFHIS have been unable to meet their main objective to provide financial protection against health shocks (Wagstaff 2009). These demand-side financing models of health finance reforms are critically dependent on identifying the right target groups. These PFHIS target the BPL population but evidence from Andhra Pradesh shows that more than 80 percent of the population is enrolled under Aarogyasri

FIGURE 2. Hospitalization Ratio across States (At least one claim/total beneficiaries covered)



Source: N. Jain, 2011.

scheme. Mistargeting is a serious problem with these PFHIS. Surprisingly, a study by Bergkvist et al. (2014) found significant negative excess growth in expenditure on inpatient care for nonpoor population. Another study by Fan et al. (2011) found a significant reduction in OOP expenditure but no difference in catastrophic expenditure. The studies of the catastrophic healthcare expenditure have used different thresholds ranging from 10 to 25 percent of total expenditure. Selvaraj and Karan (2012) concluded that there has not been any significant impact on financial protection of households and dismissed the reform initiatives of PFHIS.

Another point of dissonance between the design of the PFHIS and the actual healthcare burden for average Indian households is that while these schemes are targeted toward high-value, low-frequency inpatient episodes, the evidence on catastrophic payments and impoverishment is that only 2.3 percent and 3.1 percent of rural and urban population, respectively, are hospitalized at a point in time. The population that accesses outpatient health services at a point in time is 8.8 percent and 9.9 percent for rural and urban areas, respectively. And in terms of expenditure share, the outpatient department (OPD) expenses dominate the total health spending for average Indian household, as shown in Table 4.

The analysis carried out in most studies, including ours, use data from the consumption survey of NSSO. The limitation of this data prohibits us from including two important measures that make us believe that the results are underestimated. Firstly, the new health financing reforms in India were developed to reduce the indebtedness with families taking loans to finance healthcare and ending up in a debt trap of interest payments in consecutive periods. The evaluations of the reforms have, to date, not considered the changes in indebtedness and the means of financing healthcare.

Secondly, there is evidence of how financial protection influence health-seeking behavior; people without protection are less likely to seek care. An assessment of financial protection must, therefore, consider changes in use of healthcare services (Moreno-Serra et al. 2011). The impact on use of services has only been assessed for one insurance program and major increase in inpatient care was found (Bergkvist et al. 2014; Rao et al. 2014). No evaluation of the recent health financing reforms in India has considered the impact on expenditure taking the change in access to care into consideration.

Yet another limitation of these evaluations is that they do not take into consideration changes in the likelihood of being hospitalized for free care. A major objective of the insurance schemes is that no expenditure is incurred on inpatient care while being hospitalized. Unfortunately, it is not captured

in any of the evaluations that are based on NSSO expenditure data analysis, thereby reinforcing that the impacts are underestimated.

4. Some New Analysis of PFHIS Using NSSO Data

Selvaraj and Karan (2012) used the “reported” date of coverage to identify the treated districts and have 247 districts in their sample. We refine the analysis by only considering districts where the schemes actually existed and have significantly fewer districts in our sample. The data on actual dates of scheme implementation were collected by filing Right to Information (RTI) with the government. We further extend the analysis by restricting the sample to those districts where the schemes existed for at least a year, to see if utilization improved with time. It is important to see the long-term trends within the context of rising hospitalization ratio over time. As Jain (2011) notes, average hospitalization ratio for RSBY rose from 4 percent in the first year to 6.3 percent in the second year, and this increase is noted in 36 out of the 47 districts that completed two years of RSBY. Nine districts have hospitalization ratio of 10 percent by the second year of RSBY, with the highest utilization of 25 percent.

The insurance schemes were rolled out gradually in different months of the years 2007 through 2009, so we have 1–3 years lag period to capture the impact of the PFHIS. The implementation of RSBY began across districts in India from April 1, 2008, and we have the actual dates of implementation of the scheme for each district. We further divide the districts into two samples (i) where the scheme was implemented before July 2010 (end of NSSO survey) and (ii) where the scheme was implemented before July 2009 (beginning of NSSO survey). We ended up with 194 districts in sample 1 and 118 in sample 2, both of which are significantly smaller than Selvaraj and Karan’s treatment sample of 247. These are outlined in Table 5.

We find that despite the modest beginning, there are some gains in outcome from these schemes over time. This could be due to supply side factors, such as improved implementation, or demand side factors, such as awareness of the scheme and financial literacy amongst users. To test this, we run the analysis by varying the treatment group to only include districts that have schemes actually running and districts that have the schemes running for at least a year. The basic motivation is to understand if outcomes are changing with time. We do the analysis for various outcomes of interest such as average impoverishment, catastrophic healthcare expenditure, and poverty

TABLE 5. District Coverage of Treatment Samples

<i>State</i>	<i>Total Districts 2004–05</i>	<i>Total districts 2009–10</i>	<i>RSBY districts: If policy started before Jul 10</i>	<i>RSBY districts: If policy started before Jul 09</i>	<i>Districts under State schemes 2007–10</i>
Andhra Pradesh	23	23	–	–	23
Arunachal Pradesh	13	16	–	–	–
Assam	23	27	–	–	–
Bihar	37	38	4	–	–
Chhattisgarh	16	16	7	5	–
Delhi	7	7	7	7	–
Goa	2	2	–	–	–
Gujarat	25	25	10	10	–
Haryana	19	20	21	21	–
Himachal Pradesh	12	12	2	2	–
Jammu and Kashmir	10	11	–	–	–
Jharkhand	18	22	6	–	–
Karnataka	27	27	–	–	22
Kerala	14	14	14	14	–
Madhya Pradesh	45	45	–	–	–
Maharashtra	34	34	5	–	–
Manipur	9	9	–	–	–
Meghalaya	7	7	1	–	–
Mizoram	8	8	–	–	–
Nagaland	8	11	3	3	–
Orissa	30	30	2	–	–
Punjab	17	18	16	14	–
Rajasthan	32	32	–	–	–
Sikkim	4	4	–	–	–
Tamil Nadu	30	31	–	–	31
Tripura	4	4	–	–	–
Uttar Pradesh	70	70	29	15	–
Uttarakhand	13	15	2	2	–
West Bengal	18	19	5	2	–
Union Territories	10	12	1	–	–
Total	585	609	135	95	76

Source: Based on date of actual implementation of the respective schemes, RSBY, Ministry of Labour, Government of India.

gap change, in response to publicly provided health insurance schemes in India.

Given the nature of our data, we are unable to identify the exact pathways of improved outcomes over time. Therefore, we extend our discussion to incorporate some of the possible explanations for our results from the recent literature on PFHIS in India. In particular, we discuss the role of information,

awareness, and financial literacy (Das and Leino 2011; Rai and Ravi 2011) in improving utilization of health insurance products amongst microfinance clients who belong to similar socioeconomic strata that these government-sponsored schemes target.

The NSSO surveys collect detailed information on various categories of household expenditure on monthly or annual recall period. OOP spending on health is covered under both recall periods: Monthly for outpatient expenditure and annual for hospitalization. For calculating total OOP expenditure, we combine the monthly recall period for outpatient expenditure with the (scaled to monthly) annual expenditure on hospitalization. The poverty lines that we make use to calculate both impoverishment and the poverty gap index are defined by the Planning Commission of India and are state specific, thus implicitly taking into account price differences across states.

As all previous literature in this area, we use difference-in-differences methodology to study the impact of PFHIS on likelihood of impoverishment, catastrophic health expenditure, and the poverty gap index. Two of these measures look at the household expenditure relative to an externally defined benchmark. Impoverishment is defined as the monthly per capita consumption expenditure of the household falling below a specified poverty line while the poverty gap index measures the average distance from the poverty line. The specified poverty line that we use is at the state level because there are significant variations in the poverty line across states. We consider these outcome variables independently and also net of total OOP health expenditure, hospitalization expenditure, outpatient expenditure, and expenditure on drugs. The other outcome variable that we analyze, namely catastrophic health expenditure, attempts to measure the extent of the impact of health spending relative to the household's own aggregate consumption expenditure. The ratio of the household's health-related expenditure to aggregate expenditure is compared against a predefined threshold to determine if it is "catastrophic."

Table 6A shows that there has been a reduction in impoverishment due to health expenditure for hospitalization, outpatient care and drugs in the treatment as well as the control groups. Impoverished households are defined as those that consume less than their state-specific poverty line. OOP impoverishment occurs if the household's consumption net of its health expenditure falls below the state poverty line. Table 6B presents the changes in the average catastrophic headcount with a threshold of 40 percent of nonfood expenditure. In other words, this is the probability of having health expenditure account for 40 percent or more of the total nonfood expenditure

of the household. The numbers indicate that this probability has been broadly going up for both treatments and the control group, over time. The result indicates similar findings as estimated by Selvaraj and Karan (2012) where the means of number of households incurring catastrophic expenditure as a result of hospitalization has increased while the means of number of households with catastrophic expenditure for outpatient care and drugs has decreased. Table 6C presents the changes in poverty gap index over time and between the treatment and control districts in India. These are consistent with the changes in impoverishment over time and across the two samples.

Similar to all previous literature in this area, we recognize that the implementation of the PFHIS was not random and that there might be significant selection concerns in picking the early adopters from the later ones. We also recognize that treatment groups include state health insurance schemes that might have strong “state effects.” The economic growth, e.g., has been relatively higher in the treatment group in comparison to the control districts. We, therefore, refine these average effects further by conducting a regression analysis including state-fixed effects and control vector of household covariates commonly used in the literature. Some of the control variables have been described in Table 7.

The results of the regression analysis using state-fixed effects are presented in tables 8A through 8C for the overall sample of districts with PFHIS. The results in Table 8A indicate that for the overall sample of treatment districts, PFHIS had no effects on impoverishment. So, the publicly funded health insurance schemes did not provide the financial protection against healthcare shocks, as was intended. This has been the broad result that other recent researches have highlighted, advocating dismissal of these schemes for their apparent uselessness.

To explore long-term impacts of PFHIS, we limit our focus to only those districts that had a PFHIS running for at least a year and the results are shown in Table 9A. The coefficients on the interaction term are all negative and strongly significant. This indicates that over a longer period of time, the PFHIS are reducing the incidence of impoverishment due to various forms of health shocks including OOP, hospitalization, outpatient, and expenses on drugs.

Similar results emerge when we study the impact of PFHIS on the probability of households spending more than 40 percent of their total nonfood expenditure on various healthcare expenses. Table 8B suggests that the PFHIS are leading to greater catastrophic headcount in the population. It is disturbing that the long-term impact (Table 9B) broadly mimics the results

TABLE 6 A. Means of Outcome: Impoverishment

	Overall Impoverishment			ODP Impoverishment			Hospitalisation		
	Pre	Post	Diff.	Pre	Post	Diff.	Pre	Post	Diff.
Overall sample									
Treatment	0.281	0.207	-0.074	0.321	0.24	-0.081	0.287	0.213	-0.074
Control	-0.003	-0.004	-0.005	-0.003	-0.004	-0.005	-0.003	-0.004	-0.005
Diff.	0.357	0.276	-0.081	0.401	0.312	-0.089	0.362	0.283	-0.079
	-0.003	-0.004	-0.005	-0.003	-0.004	-0.005	-0.003	-0.004	-0.005
	-0.076	-0.069	0.007	-0.08	-0.072	0.008	-0.075	-0.07	0.005
	-0.004	-0.006	-0.007	-0.004	-0.006	-0.007	-0.004	-0.006	-0.007
Long-term Sample									
Treatment	0.273	0.169	-0.104	0.306	0.193	-0.113	0.277	0.173	-0.104
Control	-0.004	-0.005	-0.007	-0.004	-0.006	-0.007	-0.004	-0.005	-0.007
Diff.	0.335	0.266	-0.069	0.38	0.303	-0.077	0.342	0.273	-0.069
	-0.002	-0.003	-0.004	-0.002	-0.003	-0.004	-0.002	-0.003	-0.004
	-0.062	-0.097	-0.035	-0.074	-0.11	-0.036	-0.065	-0.1	-0.035
	-0.005	-0.006	-0.008	-0.005	-0.007	-0.008	-0.005	-0.006	-0.008

(Table 6A Contd)

(Table 6A Contd)

	Outpatient			Drugs		
	Pre	Post	Diff.	Pre	Post	Diff.
Overall sample						
Treatment	0.313	0.232	-0.081	0.309	0.229	-0.08
Control	-0.003	-0.004	-0.005	-0.003	-0.004	-0.005
Diff.	0.394	0.394	-0.09	0.392	0.394	-0.088
	-0.003	-0.004	-0.005	-0.003	-0.004	-0.005
	-0.081	-0.072	0.009	-0.083	-0.075	0.008
	-0.004	-0.006	-0.007	-0.004	-0.006	-0.007
Long-term Sample						
Treatment	0.299	0.188	-0.111	0.293	0.184	-0.109
Control	-0.004	-0.006	-0.007	-0.004	-0.006	-0.007
Diff.	0.373	0.295	-0.078	0.371	0.294	-0.077
	-0.002	-0.003	-0.004	-0.002	-0.003	-0.004
	-0.074	-0.107	-0.033	-0.078	-0.11	-0.032
	-0.005	-0.006	-0.008	-0.005	-0.006	-0.008

Source: Authors' calculations.

Note: Impoverished households are defined as those who consume less than their state-specific poverty line. OOP impoverishment occurs if the household's consumption net of its health expenditure falls below the poverty line. Clustered standard errors are in parentheses.

TABLE 6 B. Means of Outcomes, Catastrophic Headcount Threshold—40% of Non-food Expenditure

	ODP				Hospitalisation				Outpatient				Drugs			
	Pre	Post	Diff.		Pre	Post	Diff.		Pre	Post	Diff.		Pre	Post	Diff.	
Overall sample	0.0486	0.0448	-0.0018	0.0104	0.0117	0.0013	0.0397	0.0309	-0.0089	0.0179	0.0167	-0.0012	0.0179	0.0167	-0.0012	
Treatment	-0.0013	-0.0018	-0.0022	-0.0006	-0.0009	-0.0011	-0.0012	-0.0016	-0.002	-0.0008	-0.0011	-0.0014	-0.0008	-0.0011	-0.0014	
Control	0.0453	0.036	-0.0093	0.0085	0.0094	0.0009	0.0439	0.0254	-0.0185	0.0231	0.0151	-0.008	0.0231	0.0151	-0.008	
Diff.	-0.0013	-0.0017	-0.0021	-0.0005	-0.0008	-0.001	-0.0013	-0.0015	-0.002	-0.0009	-0.0012	-0.0015	-0.0009	-0.0012	-0.0015	
	0.0013	0.0088	0.0075	0.0019	0.0022	0.0003	-0.0042	0.0054	0.0096	-0.0052	0.0016	0.0068	-0.0052	0.0016	0.0068	
	-0.0018	-0.0025	-0.0031	-0.0008	-0.0012	-0.0014	-0.0018	-0.0022	-0.0028	-0.0012	-0.0016	-0.002	-0.0012	-0.0016	-0.002	
Long-term Sample																
Treatment	0.0389	0.0367	-0.0022	0.0087	0.0093	0.0006	0.0332	0.0282	-0.005	0.011	0.0095	-0.0015	0.011	0.0095	-0.0015	
Control	-0.0018	-0.0026	-0.0032	-0.0008	-0.0013	-0.0015	-0.0017	-0.0025	-0.003	-0.001	-0.0013	-0.0016	-0.001	-0.0013	-0.0016	
Diff.	0.0479	0.0411	-0.0067	0.0096	0.0108	0.0012	0.0444	0.0279	-0.0165	0.0234	0.0176	-0.0058	0.0234	0.0176	-0.0058	
	-0.001	-0.0014	-0.0018	-0.0005	-0.0007	-0.0008	-0.001	-0.0012	-0.0016	-0.0007	-0.001	-0.0012	-0.0007	-0.001	-0.0012	
Diff.	-0.009	-0.0044	0.0046	-0.0009	-0.0015	-0.0006	-0.0112	0.0003	0.0115	-0.0124	-0.0082	0.0042	-0.0124	-0.0082	0.0042	
	-0.0021	-0.003	-0.0037	-0.0009	-0.0014	-0.0017	-0.002	-0.0027	-0.0034	-0.0012	-0.0016	-0.002	-0.0012	-0.0016	-0.002	

Source: Authors' calculations.

Note: Clustered standard errors are in parentheses.

TABLE 6 C. Means of Outcomes by Treatment Group

Poverty Gap Index

	Overall PGI			OOP PGI			Hospitalisation			Outpatient			Drugs		
	Pre	Post	Diff.	Pre	Post	Diff.	Pre	Post	Diff.	Pre	Post	Diff.	Pre	Post	Diff.
Overall sample	0.059	0.04	-0.019	0.07	0.048	-0.022	0.061	0.042	-0.019	0.068	0.046	-0.022	0.067	0.046	-0.021
Treatment	-0.0009	-0.001	-0.0013	-0.0009	-0.001	-0.0014	-0.0009	-0.001	-0.0013	-0.0009	-0.001	-0.0014	-0.0009	-0.001	-0.001
Control	0.079	0.056	-0.023	0.091	0.066	-0.025	0.08	0.058	-0.022	0.089	0.064	-0.025	0.089	0.063	-0.026
Diff.	-0.0008	-0.0011	-0.0013	-0.0009	-0.0011	-0.0014	-0.0008	-0.0011	-0.0014	-0.0009	-0.0011	-0.0014	-0.0009	-0.0011	-0.0014
	-0.02	-0.016	0.004	-0.021	-0.018	0.003	-0.019	-0.016	0.003	-0.021	-0.018	0.003	-0.022	-0.017	0.005
	-0.001	-0.001	-0.002	-0.001	-0.002	-0.002	-0.001	-0.001	-0.002	-0.001	-0.002	-0.002	-0.001	-0.002	-0.002
Long-term Sample															
Treatment	0.058	0.032	-0.026	0.065	0.038	-0.027	0.059	0.033	-0.026	0.064	0.037	-0.027	0.062	0.036	-0.026
Control	-0.0014	-0.0013	-0.0019	-0.0014	-0.0014	-0.002	-0.0014	-0.0013	-0.0019	-0.0014	-0.0014	-0.0019	-0.0014	-0.0013	-0.0019
Diff.	0.073	0.053	-0.02	0.086	0.063	-0.023	0.075	0.055	-0.02	0.084	0.061	-0.023	0.083	0.061	-0.022
	-0.0007	-0.0008	-0.0011	-0.0007	-0.0009	-0.0012	-0.0007	-0.0009	-0.0011	-0.0007	-0.0009	-0.0012	-0.0007	-0.0009	-0.0011
	-0.015	-0.021	-0.006	-0.021	-0.025	-0.004	-0.016	-0.022	-0.006	-0.02	-0.024	-0.004	-0.021	-0.025	-0.004
	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002

Source: Authors' calculations.

Note: Clustered standard errors are in parentheses.

TABLE 7. Descriptive Statistics of Other Control Variables

Variable	<i>Treatment 1: All districts with PFHIS</i>		<i>Treatment 2: All early adopter districts (long-term)</i>		<i>Control districts</i>	
	<i>Before</i>	<i>After</i>	<i>Before</i>	<i>After</i>	<i>Before</i>	<i>After</i>
	% of rural households	68.4	65.4	67.9	62.9	76
Mean household composition						
% aged 0–4 years	7.8	6.6	6.8	5.8	9.3	7.9
% aged above 60 years	9.7	10.2	10.3	10.7	8.5	9.1
% female	48.7	48.1	50	49.4	47.3	47.2

Source: NSSO data.

Notes: T is treatment, C is control; Treatment 1 includes all those districts where publicly financed health insurance schemes (PFHIS) were launched before December 2010; Treatment 2 includes all those districts where PFHIS were launched before December 2009, therefore existed for at least two years before end-line survey.

of the overall sample. This implies that while catastrophic headcount goes up immediately on introduction of PFHIS, they tend to stay up even after a year or so.

These broad findings are supported by previous studies where introduction of insurance for tertiary care services brought about an increased utilization of the tertiary care services covered by insurance, as well as outpatient services that are not covered. The introduction of insurance can, therefore, increase the expenditure on outpatient services there (Wagstaff, 2009). It may appear strange that there is a significant increase in catastrophic expenditure for outpatient care and drugs, but the results show a significant decrease in impoverishment as a result of the same. One explanation for this can be that people have a higher income and are not as close to the poverty line as earlier but that a relative increase in drug and outpatient expenditure, as compared to the nonfood expenditure, is high enough to result in an increase in catastrophic expenditure.

Tables 8C and 9C present the changes in poverty gap index caused by the introduction of the PFHIS in the short run and over a one year period, respectively. Once again, the broad short-term and long-term results are in the same directions as for the other outcomes of interest. In the short-term, PFHIS seem to have raised the intensity of poverty as captured by the poverty gap index. The long-term effect suggests that overall poverty gap has been reduced due to PFHIS and the disaggregated analysis shows that this is particularly the case for poverty gap arising due to hospitalization expenses.

TABLE 8 A. Impoverishment Effects in Overall Sample

	<i>Overall impoverish- ment</i>	<i>Impoverish- ment net of OOP</i>	<i>Impoverish- ment net of hospitalisation</i>	<i>Impoverish- ment net of outpatient</i>	<i>Impoverish- ment net of drugs</i>
Treatment*Post	0.0082 -0.0065	0.0089 -0.0067	0.0063 -0.0065	0.0107 -0.0067	0.0094 -0.0067
Treatment	0.0203*** -0.0057	0.0242*** -0.0059	0.0222*** -0.0057	0.0224*** -0.0058	0.0204*** -0.0058
Post	-0.0724*** -0.0047	-0.0795*** -0.0048	-0.0708*** -0.0047	-0.0810*** -0.0047	-0.0791*** -0.0047
Constant	-0.0380*** -0.0082	-0.0383*** -0.009	-0.0417*** -0.0082	-0.0366*** -0.0089	-0.0356*** -0.009
Control	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes
Observations	225499	225499	225499	225499	225499
R ²	0.101	0.111	0.103	0.109	0.109

Source: Authors' calculations.

Note: Clustered standard errors in parentheses * p < 0.10, ** p < 0.05, *** p < 0.01.

TABLE 8 B. Catastrophic Headcount, Overall sample—Threshold 40% of Non-food Expenditure

	<i>Due to OOP</i>	<i>Due to hospitalization</i>	<i>Due to outpatient</i>	<i>Due to drugs</i>
Treatment*Post	0.0075** -0.003	0.0004 -0.0014	0.0096*** -0.0028	0.0069*** -0.002
Treatment	-0.0032 -0.0027	0.0006 -0.0012	-0.0069*** -0.0025	-0.0035* -0.0019
Post	-0.0084*** -0.0021	0.0011 -0.001	-0.0179*** -0.0019	-0.0077*** -0.0015
Constant	-0.0110** -0.0048	0.0001 -0.0035	-0.0120*** -0.0028	-0.0097*** -0.002
Control	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes
Observations	225499	225499	225499	225499
R ²	0.018	0.003	0.02	0.014

Source: Authors' calculations.

Note: Clustered standard errors in parentheses * p < 0.10, ** p < 0.05, *** p < 0.01.

5. Discussion and Policy Implications

The existing literature finds very limited short-term impacts of PFHIS on financial protection of households in India (and for certain outcomes, they seem to make matters worse). Our analysis corroborates these short-run results. When we extend the analysis, we find that over time, some small but

TABLE 8C. Poverty Gap Index, Overall Sample

	<i>Poverty gap index</i>	<i>PGI net of OOP</i>	<i>PGI net of hospitalization</i>	<i>PGI net of outpatient</i>	<i>PGI net of drugs</i>
Treatment*Post	0.0037**	0.0047**	0.0036**	0.0049***	0.0048**
	-0.0018	-0.0019	-0.0018	-0.0019	-0.0019
Treatment	0.0044***	0.0049***	0.0049***	0.0043**	0.0044***
	-0.0016	-0.0017	-0.0016	-0.0017	-0.0017
Post	-0.0208***	-0.0233***	-0.0205***	-0.0234***	-0.0231***
	-0.0013	-0.0014	-0.0013	-0.0014	-0.0014
Constant	-0.0098***	-0.0135***	-0.0108***	-0.0124***	-0.0122***
	-0.0019	-0.0021	-0.002	-0.0021	-0.0021
Control	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes
Observations	222525	222525	222525	222525	222525
R ²	0.082	0.093	0.083	0.091	0.091

Source: Authors' calculations.

Note: Clustered standard errors in parentheses* p < 0.10, ** p < 0.05, *** p < 0.01.

TABLE 9A. Impoverishment, Long-term Sample

	(1)	(2)	(3)	(4)	(5)
	<i>Overall impoverishment</i>	<i>Impoverishment net of OOP</i>	<i>Impoverishment net of hospitalization</i>	<i>Impoverishment net of outpatient</i>	<i>Impoverishment net of drugs</i>
Treatment*Post	-0.0308***	-0.0316***	-0.0313***	-0.0293***	-0.0275***
	-0.0077	-0.008	-0.0077	-0.0079	-0.0079
Treatment	0.1590***	0.1709***	0.1635***	0.1681***	0.1587***
	-0.0089	-0.0097	-0.009	-0.0096	-0.0097
Post	-0.0619***	-0.0684***	-0.0610***	-0.0695***	-0.0686***
	-0.0038	-0.0039	-0.0038	-0.0038	-0.0038
Constant	-0.0436***	-0.0442***	-0.0469***	-0.0427***	-0.0411***
	-0.008	-0.0089	-0.0081	-0.0087	-0.0089
Control	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes
Observations	225499	225499	225499	225499	225499
R ²	0.101	0.11	0.102	0.109	0.109

Source: Authors' calculations.

Note: Clustered standard errors in parentheses * p < 0.10, ** p < 0.05, *** p < 0.01.

significant improvements were gained due to PFHIS. In this section, we discuss these broad results by exploring potential factors that can explain low impact of PFHIS in India. Some of these factors have been highlighted in the literature and can form the basis for future policy experimentation in health financing reforms in India.

TABLE 9B. Catastrophic Headcount, Long-term Sample—Threshold 40% of Non-food Expenditure

	(1) <i>Due to OOP</i>	(2) <i>Due to hospitalization</i>	(3) <i>Due to outpatient</i>	(4) <i>Due to drugs</i>
Treatment*Post	0.0048 -0.0036	-0.0006 -0.0017	0.0120*** -0.0033	0.0045** -0.002
Treatment	0.0217*** -0.005	0.0066* -0.0037	0.0130*** -0.0029	0.0024 -0.0017
Post	-0.0060*** -0.0017	0.0014* -0.0008	-0.0161*** -0.0016	-0.0055*** -0.0012
Constant	-0.0123*** -0.0048	-0.0001 -0.0035	-0.0130*** -0.0027	-0.0109*** -0.002
Control	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes
Observations	225499	225499	225499	225499
R ²	0.017	0.003	0.02	0.014

Source: Authors' calculations.

Note: Clustered standard errors in parentheses * p < 0.10, ** p < 0.05, *** p < 0.01.

TABLE 9C. Poverty Gap Index, Long-term Sample

	(1) <i>Poverty gap index</i>	(2) <i>PGI net of OOP</i>	(3) <i>PGI net of hospitalization</i>	(4) <i>PGI net of outpatient</i>	(5) <i>PGI net of drugs</i>
Treatment*Post	-0.0047** -0.0021	-0.0035 -0.0022	-0.0047** -0.0021	-0.0035 -0.0022	-0.0032 -0.0022
Treatment	-0.0109*** -0.0015	-0.0156*** -0.0016	-0.0114*** -0.0015	-0.0149*** -0.0016	-0.0155*** -0.0016
Post	-0.0177*** -0.0011	-0.0201*** -0.0011	-0.0176*** -0.0011	-0.0201*** -0.0011	-0.0198*** -0.0011
Constant	0.0326*** -0.0013	0.0369*** -0.0014	0.0330*** -0.0013	0.0363*** -0.0014	0.0359*** -0.0014
Control	Yes	Yes	Yes	Yes	Yes
Observations	222525	222525	222525	222525	222525
R ²	0.053	0.064	0.055	0.061	0.062

Source: Authors' calculations.

Note: Clustered standard errors in parentheses * p < 0.10, ** p < 0.05, *** p < 0.01.

A recent randomized controlled trial by Mahal et al. (2013), in *The Lancet*, found that people with an insurance card that permitted cashless visits to the community health workers (CHWs) had different outcomes compared with people who visited the CHWs without insurance (paying a modest ₹12 per visit). Households assigned to the treatment group in the study had a substantially higher number of visits to the covered provider

and more referrals to the doctor and to hospitals. More significantly, they also found that the insurance-only group spent fewer days in a hospital bed and spent less OOP on hospitalization expenses. Their interpretation is that the insurance product incentivized more frequent visits to the CHWs, leading to earlier identification of illnesses and more timely referrals to a hospital where the patient could get treated at an earlier stage and hence at a lower cost. The important implication of this finding is that insurers, as well as government agencies deploying hospitalization insurance schemes, can benefit if inpatient insurance was bundled with outpatient insurance, as it could improve financial viability. This suggestion is particularly relevant for policymakers in India, where the focus of private and public insurance products has overwhelmingly been on inpatient cover. This finding is particularly relevant for PFHIS that are solely focused on inpatient care.

Given the narrow focus on inpatient financial support from PFHIS, there are serious escalations, given the lack of incentives to cut costs from both health seekers and healthcare providers. Insurance has proved to be a poor model for healthcare, famously leading to the extremely expensive and distortionary US healthcare system, which holds important lessons for healthcare financing reforms in India.

Rai and Ravi (2011) have explored the usage of health insurance scheme by microfinance clients that comprise men and women. The context of this study is relevant for our findings because microfinance clients are mostly around the poverty line and have very similar healthcare concerns and general expenditure patterns as the intended beneficiaries of these large PFHIS in India. This study looks at the probability of filing health insurance claims by people who are compulsorily covered by a health insurance program. The findings suggest that the claims to coverage for microfinance clients are significantly lower in comparison to overall private health insurance sector. This is despite the fact that morbidity rates are quite high in the target population. This is the case for PFHIS as well. Moreover, the single biggest determinant of a family filing insurance claim was literacy level of the women household member. This is also a proxy for minimum skill and awareness level that is required for filing health insurance claims. Just as in the microfinance context, our results also suggest that adverse selection concerns that are present in developed insurance markets are less of a concern in these markets because the results show significantly lower utilization in the short-term.

Insurance is a sophisticated financial instrument that requires some degree of skill and literacy. Improvement in the impacts over a longer term implies that greater awareness and access to information could promote higher

utilization of the PFHIS which is necessary for the success of these schemes. For example, fixing enrolment/targeting mechanisms with an eventual aim of universalization of such PFHIS; establishing a robust data gathering and use process with repeat impact evaluations and close monitoring through a strong health management information system; and establishing an autonomous institution to govern, monitor, coordinate, and set policies and guidelines for all PFHIS in India, giving operational autonomy to individual states.

Another recent study by Das and Leino (2011) discusses the impact of RSBY on financial risk protection of households using an experimental information and education campaign and household survey carried out in the first year of the program in Delhi. Their findings suggest that, first, the experimental information campaign (EIC) had no impact on enrolment, but households that were part of the household survey sample and therefore received information closer to the enrolment period were 60 percent more likely to enroll. Second, they show that there is little evidence that the insurance company selectively enrolled healthier households. Instead, hospital claims were lower for households that received the EIC and for households that received both the survey and the EIC, suggesting that the marginal household enrolled was in fact healthier. The program is bound to have limited immediate impact if healthier households are targeted rather than those that are more likely to use the PFHIS.

As policy recommendations (some of these have also been included in La Forgia and Nagpal 2012), therefore, we suggest extending coverage of PFHIS beyond the current secondary and tertiary care, since a significantly larger share of the household expenditure is borne on outpatient and drugs in India. These could include standard ambulatory package that is linked to publicly provided primary care. This is currently not included in any PFHIS in India, but given the nature of household expenditure, extending coverage to include ambulatory care would have direct impact on utilization and poverty outcomes: a contributory package for nonpoor (non-BPL households) who are termed as “vulnerable” to health shocks. This could be a form of co-payment and would reduce moral hazard problems and fraudulent filing of claims. It is important to include a standard package of maternity care, which is common cause for financial catastrophe for poor households. Extending coverage for this would have immediate effect on utilization and subsequently impoverishment of households.

The common experience of health insurance markets in low-income countries can be explained as a coordination problem between scale and quality of the health insurance product. To provide high-quality product, it is important to attain a certain scale. Take up, however, is low primarily

due to poor quality of product. So, it is a bad equilibrium that can be difficult to get out of unless some external shock is applied to the system. This external shock is usually in the form of government investment in healthcare infrastructure that can lower the cost of delivery and hence improve the quality of the health insurance products. This would lead to higher take up and utilization. Some practical implementation concerns that arise could be overcome by investing in technology and robust health MIS.

Given the experience of PFHIS, it might even be the opportune time to propose a different paradigm for health financing in India in the form of medical savings accounts (MSAs). It definitely deserves policy experimentation, given its theoretical strengths as a financial instrument for healthcare. These are individual savings accounts that can be used only for spending on medical care of the individual or his/her immediate family. Deposits into these accounts can be similarly structured as Provident Fund, which is a defined contribution receiving tax breaks. This can only be allowed to use for medical payments or as a voluntary contribution receiving deferred tax breaks if used for medical purposes. MSAs enlist healthcare consumers in keeping costs low and avoid the issues of both consumer moral hazard and adverse selection. They also mitigate the problem of borrowing across generations that arise when a larger part of the population is older since everyone saves for their healthcare costs when they are younger. With a largely young population, MSAs could be an important opportunity for India, as these would incentivize saving for future healthcare costs. These mobilized funds would help create the health infrastructure needed to deliver the future costs.

Singapore is one country that adopted MSAs in 1984, and it presents a significant success story. Its healthcare outcomes are comparable to developed countries, while its spending is significantly lower. Following its success, China too adopted MSAs for urban areas in 2010. China's experience is recent so we cannot draw long-term lessons, but its size and complexity must serve as an example for India, since we are often quick to dismiss Singapore as "too small" to compare with. MSAs are no panacea of course. In Singapore itself, MSAs are complemented by high deductible insurance (after a large amount has already been paid from the MSA) and a government fund to pay for the poor. India too has serious concerns of equity in access to healthcare, particularly for those who would find it impossible to make defined benefit contributions. This can be overcome by designing a system of government-supported MSA for poor and vulnerable segment of the society, for whom MSAs will help overcome problems of adverse selection and moral hazard keeping costs low. Overall MSAs present an attractive

alternative for financing healthcare. With a young population and a health-care system still in flux, India has a unique opportunity to experiment with.

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Comments and Discussion

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This is an interesting paper on an important topic. The background to the analysis, as discussed in the paper, is that there has been a massive expansion of health insurance in India. We now have substantial public funding of this health insurance, but the new policies also introduce the possibility of private provision of healthcare. So, the poor, rather than having to go to low-cost, low-quality public facilities, can go to private providers and have their costs covered by the new insurance schemes. The insurance is itself provided by private companies in some cases, so this is a significant policy innovation in terms of mixing public and private provisions. This new mix feeds into a broader set of issues of efficiency and equity in academic and policy debates about the provision of healthcare and health insurance.

Healthcare provision is a very emotive topic. The Selvaraj and Karan (2012) work that is referred to in the Ravi–Bergkvist paper, and which provides some of the basis for the paper under discussion, reached the conclusion that these publicly funded health insurance schemes do not work. If you read the Selvaraj–Karan paper, what they really seem to be objecting to is involving the private sector at all, their concerns being that the private sector will cherry-pick, and that there are administrative and other costs associated with private sector involvement. So, what they argue for is basically government-provided, taxpayer-funded universal healthcare. The broader literature on this topic gives one a sense that there is a great deal of complexity in terms of implementation and coverage for different groups, with various effects on supply and demand, cherry-picking of patients and other complications. So, this is a very complicated topic and this paper is important as part of an analytical literature that needs to expand rapidly, in order to provide a firmer basis for policymaking.

Before going into my comments, I will summarize the paper. The analysis uses NSS household data for two years 2004–05 and 2009–10. The paper employs a standard difference-in-differences methodology, exploiting the difference in changes in outcome variables between districts with the treatment, that is, some version of PFHIS, and districts without such schemes, which are the control group. The paper examines multiple outcome variables,

such as impoverishment and hospitalization, to get a sense of what the different possible impacts are, of access to these PFHIS. The main result is in comparison to the Selvaraj and Karan paper, and the Ravi–Bergkvist analysis suggests that allowing for the length of time of operation of these PFHIS leads to a finding that the impacts are more positive than the previous paper had found.

I first provide some specific comments on the details of the analysis and then go into some general comments. Very specifically, the details of the econometric techniques could have been made more explicit, e.g., there is no discussion of possible heteroskedasticity in the error terms¹ or of possible checks for endogeneity or selection bias, and the discussion of the control variables is also very brief and uninformative. The major point to be made is that the regression controls seem to be quite weak. The regressions use district-level variables as controls but they seem to capture very little of the possible exogenous district-level variation and they certainly do not capture household-level variation. The latter point is important because the analysis is performed with household-level data, but is not done in a way that adequately captures the household-level variation. The district-level heterogeneity is very important and needs to be taken into account better than is done in the paper. Even though the set of districts is smaller than in Selvaraj–Karan paper, with the shrinking criterion designed to ensure that the members of the treatment group properly satisfy that designation, there is an enormous amount of heterogeneity even in the smaller treatment: I will illustrate that later in these comments. One very obvious point with respect to this heterogeneity is that the authors should have checked whether their results are robust in excluding the Andhra Pradesh scheme from the regressions. This is a state scheme rather than the national-level RSBY. The paper acknowledges that “One likely explanation for why the effect of PFHIS is stronger over a long-term is because this sample includes Aarogyashri of Andhra Pradesh,” and goes on to discuss the specific differences in the implementation of the Andhra Pradesh scheme. In fact, the paper by Rao et al. (2014) compares the Andhra Pradesh state-level scheme with Maharashtra that has RSBY, and finds that there is a large difference in terms of the impacts: The Andhra Pradesh scheme does a lot better, presumably because the parameters of the scheme as well as its implementation are very different. It is worth noting that although the regressions include state-fixed effects,

1. In my initial comments, I had asked whether the standard errors were clustered, and the revised version clarifies that they are.

these merely allow constant terms to differ across states, and do not allow for possible differences in impact across states, measuring those would require including interaction terms of the state-fixed effects with other variables.

Turning to more general comments, a concern I have is that the paper describes the impacts of PFHIS from the difference-in-difference regressions, but then states that we really do not know what the mechanisms are. The discussion then relies totally on completely different studies to guess the mechanisms and make policy recommendations. It would have been much better to try use the available data to directly address the issue of the mechanisms through which the PFHIS leads to the estimated impacts. This also goes back to my earlier point about looking at the controls more carefully and the need for addressing the district-level heterogeneity in characteristics and in policy implementation. I think there is quite a gap between the evidence and the policy recommendations. For the India Policy Forum, one is obliged to have some observations on policy, but one has to be more careful in terms of going from empirical analysis to policy recommendations if the analysis has significant gaps, as is my view. In this regard, the addition of a discussion of MSAs to the revised conclusion of the paper is even more speculative and unsatisfactory; it has no connection at all to the empirical analysis of the paper.

I also think that there is a considerable literature that is not referenced and could have been useful for this paper, if it were serious about empirical analysis and policy conclusions. For example, there is an excellent collection of studies (Palacios et al. or PDS 2011), which has a great deal of institutional detail, including discussion of some of the problems of implementation. I will give some illustrations later in these comments. This also is a very useful paper by Nandi et al. (2013), which does a very nice job of looking at the determinants of enrolment. Presumably, all the data that they use are publicly available and would have enabled a much more detailed analysis. For example, Figure 2 in Nandi et al. (2013, p. 5) shows that among districts that had RSBY, enrolment rates varied from as little as 20 percent to over 80 percent. That is a large difference, which presumably is present among the districts in the treatment group, without being accounted for in the regression analysis.

Another example of data that should matter but is not taken account of in the paper's empirical analysis is the utilization rate, which varied dramatically across districts (Figure 3, Robert Palacios, in Palacios et al. 2011, Chapter 1, p. 20). Some of this difference could be reflecting the fact that health conditions are different across states, reflecting other exogenous factors, but it also could be because the schemes are being implemented

very differently in different states. The analysis of the paper has nothing to say about these issues. There are yet more examples, which reinforce the point of available data that is neglected in the paper. The conversion ratios of BPL families enrolled (Nishant Jain, in Palacios et al. 2011, Chapter 2, p. 49) display large difference in conversion ratios across states, going from as little as 11 percent to over 80 percent. Similarly, hospitalization ratios (as opposed to the hospitalization expenditure used as an outcome variable in the paper) are very different across the states: The rate in Kerala is 10 times that in Himachal Pradesh (Nishant Jain, in Palacios et al. 2011, Chapter 2, p. 55). I do not think this is because people in Himachal Pradesh are healthier than those in Kerala, something else is going on. There are also data at the village level, e.g., on enrollment rates (Figure 1, Changqing Sun, in Palacios et al. 2011, Chapter 4, p. 94). So intra-district heterogeneity could have been incorporated in the controls for regressions with household-level data.

To conclude, there is a large amount of rich data available that could have been exploited much more fully. The paper is a useful specific contribution and the topic is extremely important. However, the policy conclusions are premature, and much more empirical analysis needs to be done. Again, I want to reiterate that providing affording health insurance is an important social goal, the question is really how we are going to do it in terms of the public–private mix as well as the details of implementation.

General Discussion

T.N. Srinivasan (Chair) said he had similar concerns as Abhijit about the districts chosen for control and treatment and asked if there would be a selection problem that might affect the inferences drawn by the paper. Second, by catastrophic, we commonly understand events that would destroy the earning capacity of the household for a very long time. The temporary slipping into and out of poverty that is used in the paper, he felt, does not capture this notion of catastrophic risk in the context of insurance. Finally, Srinivasan noted that the paper uses the phrase “long-term” interchangeably with programs that have been in place for a somewhat “longer” time. These notions are not the same, and it was not clear whether the paper could make inferences about the long-term consequences or implications of PFHIS from the data it was looking at.

Ashok Lahiri said that he was surprised that the Philippines had a lower ratio of OOP expenditure to total health expenditure than India: Manila, e.g., has no public hospitals to speak of. He was unclear why the paper was

recommending that health insurance covers primary and preventive health care, since health insurance really is intended for catastrophic risk, which would typically require hospitalization and inpatient care.

Rohini Somanathan asked how one is to judge whether a utilization rate is high or low without a contrafactual and without knowing how many people actually get sick. Rohini was also worried about sample size if the take up is really low. This was a 2 percent NSS Sample and with only some 0.5–2 percent take up of the schemes, the number of observations would be really small.

Rajnish Mehra said that in insurance, there is lot of idiosyncratic risk at the level of individual but if you aggregate across the entire population, then by the law of large numbers, idiosyncratic risk does not remain that important and one can price group insurance at a much cheaper rate. He suggested a framework that first looked at individuals smoothing out lifetime consumption and what reduction in consumption they would be willing to bear as an insurance premium and then to do this at the aggregate level where the answer would be quite different because of the pooling of risk and the premium would be much smaller.

Vijay Joshi asked who fixed insurance prices and caps because one issue that the paper did not address was the cost escalation observed in insurance schemes globally. Joshi felt that the suggestion the health insurance covers primary care needed a lot of thought because it was not clear what would prevent the patient and the doctor getting together and bankrupting the scheme by abusing the system for primary care costs, which would be easy to do since treatment would all be outpatient.

Sandeep Sukhtankar suggested that it would be valuable to separate the RSBY from the other state schemes. Two of the three states considered by the paper had almost no within state variation, so it was hard to see how we could have state-fixed effects. The second suggestion was to cluster the standard errors by district, which should be fairly straightforward to do if it was not being done.

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