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**July 15–16, 2014**

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## **Abstract**

Our analysis shows that it is premature to dismiss the publicly financed health insurance initiatives based on the existing analysis because these schemes perform better with 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 (a) that have schemes actually running and (b) schemes running for at least a year. The outcomes that we analyze are impoverishment, catastrophic healthcare expenditure and poverty gap change.

The NSSO expenditure data reveals that Indian households spend significantly more on OPD than on institutional healthcare, and medicines account for nearly 80 percent of such OPD expenses. The publicly financed health insurance schemes, however, focus exclusively on secondary and tertiary care services. The analysis reveals modest impact of these schemes in the beginning year, but a significant improvement over time. Lessons from microfinance strongly suggest that unlike other financial instruments, health insurance is a more sophisticated product where utilization improves with financial literacy and awareness.

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## 1. Introduction

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. This paper analyzes the impact of these state sponsored health insurance schemes.

Though government funded health insurance schemes existed earlier, this latest push which 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 towards 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 population Below Poverty Line (BPL), 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 AP, for example, the Aarogyashri 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.

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 debate, with analysis of the impact of these insurance programs. Exploiting the variation in the implementation of these schemes across districts, over time, we use nationwide sample survey data on household consumption expenditure from the NSSO to study their effect on impoverishment, catastrophic headcount and poverty gap index.

There is some research on the impact of the new health insurance schemes on financial risk protection (Fan, Mahal, & Karan, 2011)(Selvaraj & Karan, 2012)(Bergkvist et al, 2014)(Rao et al, 2014) but, these studies have looked at the catastrophic healthcare expenditure and found that most healthcare expenditure is for outpatient care and mainly to cover the cost of drugs. The recent health financing reforms with the insurance programs, however, focus on tertiary and secondary care services. These studies also vary crucially in their findings. One study found significant increase in use of hospital services among the poorest people and negative excess growth in expenditure on in-patient care while this impact on expenditures was only significant for the non-poor (Bergkvist et al, 2014). One study found a significant reduction in out-of-pocket expenditure for in-patient care but no difference in catastrophic expenditure (Fan, Mahal, & Karan, 2011), while a different study concluded that there has not been any significant impact on financial protection and the reform initiatives were dismissed (Selvaraj & Karan, 2012).

Our analysis shows that it is premature to dismiss the health insurance initiatives based on the existing analysis because these schemes perform better with time. Despite the modest beginning, there are significant gains in outcome from these schemes. 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 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. What we do therefore, is to extend our discussion to incorporate some of the possible explanations for our results from the recent literature on publicly financed health insurance schemes in India. In particular, we discuss the role of information, awareness and financial literacy (Rai and Ravi, 2011; Das and Leino, 2011) in improving utilization of health insurance products amongst microfinance clients who belong to similar socio economic strata that these government sponsored schemes target.

The paper is organized in the following manner. Section 2 details the background and context within which government financed health insurance schemes were introduced in India. We describe India's international standing in burden of health spending and the spread of health insurance in India over last decade. Then we provide descriptions of the various state sponsored health insurance schemes that are currently operational in India. Section 3 also includes details of the National Sample Survey data that we use in the analysis. Section 4 is on the empirical specification that we use to identify the impacts of government health insurance schemes in India. Section 5 describes and discusses the results from our analysis and section 6 concludes.

## **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 are also below most of its neighbors<sup>1</sup>, whether in reductions in maternal mortality, adult mortality or the prevalence of communicable diseases. Infant mortality rates have improved in the last ten 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 out-of-pocket by the people. It is well known that high out-of-pocket 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 out-of-pocket expenditures. Some countries, such as Thailand and Colombia, underwent reforms more than a decade ago and research has found improvements in the financial protection. 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.

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<sup>1</sup> World Bank, 2010

Most countries are far from universal health coverage 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 which 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 Aarogyashri 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 out-of-pocket 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**

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

*Notes: The World Development Indicators, The World Bank.*

*Data sources: World Health Organization National Health Account database.<sup>2</sup>*

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 (TPAs) 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 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 people living below the poverty lines were then introduced and have accounted for the major increase in insurance coverage of the population (Table 2).

<sup>2</sup> see <http://apps.who.int/nha/database/DataExplorerRegime.aspx> for the most recent updates

**Table 2: Health insurance coverage in India (millions)**

	<b>Publicly funded insurance schemes</b>	<b>Private insurance</b>	<b>ESIS</b>	<b>Total</b>
2004-05	2.1 <sup>2</sup>	10.9 <sup>1</sup>	32.9	45.9
2009-10	191.7	55 <sup>3</sup>	50.1	296.8

Notes: 1. Estimated by author based on IRDA reports.

2. Yeshasvini.

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 which ranges from Rs.30, 000 (RSBY) to Rs. 1, 50,000 (Aarogyashri in AP).

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 INR 200,000 per family and 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 state insurance schemes. In 2008, the Ministry of Labor and Employment developed Rashtriya Swasthya Bima Yojna (RSBY) which was rolled out in 18 states of India. The RSBY represents the second category of insurance programmes 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 INR 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, like 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.

**Table 3: Details of various publicly funded insurance schemes in India**

	<b>Rashtriya Swasthya Bima Yojna</b>	<b>Yeshasvini Cooperative Farmers Healthcare Scheme</b>	<b>Rajiv Aarogyasri Health Insurance Scheme</b>	<b>Chief Minister Kalaingar's Insurance Scheme</b>	<b>Vajpayee Arogyashri Scheme</b>
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	INR 30,000	INR 200,000	INR 150,000+50,000	INR 100,000 over four years	INR 150,000+50,000
Premium	INR 440-750 per family	INR 144	INR 299-439 per family	INR 469	INR 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 & Nagpal, 2012 and Ministry of Labor, RSBY, Government of India.

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 rigorous evaluation is also crucial as the Government of India is reviewing options for health financing reforms. Some recent research in this area (Fan, Mahal, & Karan, 2011) (Selvaraj & Karan, 2012) has led to much debate on the relevance and efficacy of these experiments in publicly financed health insurance schemes in India. The aim of our study is to complement the existing literature and to inform this debate by rigorously analyzing impacts of the health insurance initiatives over time, which might lead to specific policy recommendations for health insurance reforms in India.

The studies of the catastrophic healthcare expenditure in India have used different thresholds ranging from 10 to 25 percent of total expenditure and found that most healthcare expenditure is for outpatient care and mainly to cover the cost of drugs (Fan, Mahal, & Karan, 2011) (Selvaraj & Karan, 2012). The new health insurance schemes implemented by the states and central government in India, however, have focused on tertiary and secondary care services. The study by Fan, Mahal and Karan (2011) found a significant reduction in out-of-pocket expenditure for in-patient care but no difference in catastrophic expenditure. The study by Selvaraj and Karan (2012) dismissed the reform initiatives by concluding that there has not been any significant impact on financial protection. We aim to improve the understanding by using accurate intervention data and rigorous methodology. Our finding gives us a nuanced view of the

impact of publicly financed health insurance schemes in India and explores potential explanations.

### 3. Data

The intention of this paper is to contribute to the existing research with additional analysis and evidence of the impact of the insurance programs, and to highlight areas in need of further research. We use nationwide sample survey data on household consumption expenditure from the NSSO surveys conducted in 2004-05 and 2009-10 as the baseline and endline years, to evaluate the impact of PFHIS in India. Where we differ from earlier approaches to analyzing the impact of these schemes is in the definition of treatment districts. We only include those districts in the treatment group where the health insurance schemes actually existed. We further refine our study by looking at those districts where the schemes existed for at least a year.

It is important to highlight that the endline survey (NSSO 66<sup>th</sup> round) was conducted from July 2009 until June 2010. The implementation of RSBY began across districts in India from April 1, 2008. We have the actual dates of implementation of the RSBY scheme for each district but we do not have the actual date of NSSO survey. We have therefore bifurcated the treatment sample of RSBY districts into two based on (i) the scheme was implemented before July 2010 (end of NSSO survey) and (ii) the scheme was implemented before July 2009 (beginning of NSSO survey)

Table 4 shows the coverage details of the treatment and control sample of districts that we use in our analysis. Treatment 1 comprises of all districts where PFHIS existed before the conclusion of the NSSO endline survey. So this group includes all RSBY districts where policy started before July 2010. This group includes 135 RSBY districts across India, 23 districts under Aarogyashri in AP, 7 Gulbarga districts under Vajpayee Aarogyashri in Karnataka and 29 districts in TN under the Chief Minister's 'Kalaingar' Health Insurance Scheme .

Treatment 2 comprises of all districts where PFHIS existed before the start of the endline NSSO survey. This group, therefore includes all the districts across India where the RSBY policy started before July 2009 and the 23 districts under Aarogyashri in AP. It is important to note that there are several other PFHIS which started before 2004-05, our baseline year of NSSO data. These includes Yeshasvini Health Insurance Scheme for cooperative farmers in Karnataka implemented since 2003 and the two other schemes of the central government, ESIS since the 1940s as well as the CGHS schemes since 1950s. Because these schemes appear before the baseline, their effect is likely to get cancelled over time so our analysis is limited to the new wave of PFHIS in India. It is possible, however, that the earlier schemes have interactions with the new schemes but given the nature of our data, we are unable to isolate these interactions over time.

The variations in the treatment group (over time) distinguishes our analysis from Selvaraj and Karan (2012) who use the 'reported coverage' of health insurance scheme to identify their treatment sample. Our treatment group of districts is therefore more accurate, nuanced and significantly different from theirs. Our Treatment 1 group has 194 districts and Treatment 2 group has 118 districts. Both are considerably smaller than 247 treatment districts used by Selvaraj and Karan.

The interventions that we analyze are the health insurance schemes which include the central government run RSBY as well as the various state health insurance schemes. As Table 4 shows, there were 135 districts under RSBY before July 2010; 95 districts under RSBY before July 2009 and 76 districts under state schemes in Andhra Pradesh, Tamil Nadu and Karnataka. The remaining 398 districts that did not have any of the recent publicly funded health insurance schemes implemented before July 2010 form our control group. In the first cut, we study whether the government financed health insurance schemes have had any significant impact. After this, we do a refinement by analyzing whether impacts have improved with time.

The NSSO conducts annual household consumption surveys with relatively small sample sizes. However, every five years it also conducts what it calls the quinquennial surveys which have considerably larger sample sizes and provide more generally acceptable estimates. Both the 2004-05 and 2009-10 were such 'quinquennial surveys'. The 2004-05 survey collected data from 124,644 households spread throughout India, and the 2009-10 survey covered 100,855 households. Both surveys used a stratified multi stage sampling design with probability weights assigned to each household, and we incorporate these probability weights in our regression.

The NSSO surveys collect detailed information on various categories of household expenditure on monthly or annual recall period. Out of pocket spending on health is covered under both recall periods – monthly for outpatient expenditure and annual for hospitalization. For calculating total out of pocket 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.

**Table 4: District coverage of treatment samples**

State	Total Districts 2004-05	Total districts 2009-10	RSBY districts: If policy started before July 2010	RSBY districts: If policy started before July 2009	Districts under State schemes 2007-2010
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 Labor, Government of India.

## 4. Empirical specification

As discussed in previous sections, publicly provided health insurance in India expanded massively from 2007 onwards. This expansion was limited to certain states and districts in India, and we rely on this variation in implementation to obtain an estimate of the impact of publicly funded health insurance. We create two groups of households - the treatment group and the control group. The treatment group consists of those households located in districts that were covered under a public health insurance scheme, and control group of those districts that were not covered. For our estimation, we use household consumer expenditure data from the National Sample Survey Organization (NSSO) for the years 2004-05 (pre-expansion) and years 2009-10 (post expansion).

Our econometric model is a difference-in-differences analysis where we look at the 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 out of pocket health expenditure (OOP), hospitalization expenditure, outpatient expenditure and expenditure on drugs. The other outcome variable that we analyze, viz. 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 pre-defined threshold to determine if it is 'catastrophic'.

We compare these outcome variables in the treatment group with households in the control group, before and after the expansion in publicly funded health care. We can write this equation as:

$$y_{jt} = \alpha + \beta_1 \cdot d_t + \beta_2 \cdot d_i + \gamma \cdot d_t \cdot d_i + X_{jt} + \epsilon \quad (1)$$

where  $y_{jt}$  denotes the outcome variable of interest for household  $j$  in time period  $t$ .  $d_t$  is a dummy variable that is equal to 0 for the *pre* time period (2004-05) and 1 for the *post* time period (2009-10). This variable captures the factors that would cause changes to the outcome variable over time.  $d_i$  is the dummy variable that identifies the treatment group, for which it takes the value 1, and is 0 otherwise. It captures the time-invariant differences between the two groups.  $d_t \cdot d_i$  is the interaction term which is 1 for those observations that are in the treatment group after the expansion of publicly funded health insurance and 0 otherwise.  $X_{jt}$  represents the control vector of household covariates commonly used in the literature. These controls include whether the household was rural or not, and the household composition in terms of the percentage of women, children (aged 0-4) and senior citizens (60 above).

changes in means of outcomes over time for the different samples. Tables 6a through 6c present the changes in means of the three outcomes of interest that we analyze. Table 6a shows changes in impoverishment, Table 6b shows the changes in catastrophic

healthcare expenditure and Table 6c shows the poverty gap change, between treatment and control districts, before and after the introduction of the insurance programs. In each Table, the results are presented for both the specifications of treatment groups.

Table 6a presents show 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. Out of pocket impoverishment occurs if the household's consumption net of its health expenditure falls below the state poverty line. When we compare the overall sample of districts with PFHIS with the control districts, we note that the reduction was larger for the control group districts than for the treatment group districts. However, when we focus on the treatment group of early adopter districts which capture longer term effects of the PFHIS, we note that treatment group has higher reduction in impoverishment than the control group districts. The changes in average over time, therefore shows that effects have been higher over a longer term than immediately after roll out of the PFHIS. When we look at the disaggregated data, we note that these overall trends also hold for the different factors of health spending that impact impoverishment; impoverishment due to out of pocket expenses, due to hospitalization, due to outpatient expense as well as impoverishment due to expenditure on medicines. The estimated reduction in the proportion of households impoverished as a result of hospitalization was 0.104 in the treatment group compared to 0.069 in the control group; a significant difference of 33 percent, in the long term.

Table 6a: Means of Outcome: Impoverishment

	Overall Impoverishment			OOP Impoverishment			Hospitalisation			Outpatient			Drugs		
	Pre	Post	Diff.	Pre	Post	Diff.	Pre	Post	Diff.	Pre	Post	Diff.	Pre	Post	Diff.
<i>Overall sample</i>															
Treatment	0.281	0.207	-0.074	0.321	0.24	-0.081	0.287	0.213	-0.074	0.313	0.232	-0.081	0.309	0.229	-0.08
	(0.003)	(0.004)	(0.005)	(0.003)	(0.004)	(0.005)	(0.003)	(0.004)	(0.005)	(0.003)	(0.004)	(0.005)	(0.003)	(0.004)	(0.005)
Control	0.357	0.276	-0.081	0.401	0.312	-0.089	0.362	0.283	-0.079	0.394	0.304	-0.09	0.392	0.304	-0.088
	(0.003)	(0.004)	(0.005)	(0.003)	(0.004)	(0.005)	(0.003)	(0.004)	(0.005)	(0.003)	(0.004)	(0.005)	(0.003)	(0.004)	(0.005)
Diff.	-0.076	-0.069	0.007	-0.08	-0.072	0.008	-0.075	-0.07	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)	(0.004)	(0.006)	(0.007)	(0.004)	(0.006)	(0.007)	(0.004)	(0.006)	(0.007)
<i>Long term Sample</i>															
Treatment	0.273	0.169	-0.104	0.306	0.193	-0.113	0.277	0.173	-0.104	0.299	0.188	-0.111	0.293	0.184	-0.109
	(0.004)	(0.005)	(0.007)	(0.004)	(0.006)	(0.007)	(0.004)	(0.005)	(0.007)	(0.004)	(0.006)	(0.007)	(0.004)	(0.006)	(0.007)
Control	0.335	0.266	-0.069	0.38	0.303	-0.077	0.342	0.273	-0.069	0.373	0.295	-0.078	0.371	0.294	-0.077
	(0.002)	(0.003)	(0.004)	(0.002)	(0.003)	(0.004)	(0.002)	(0.003)	(0.004)	(0.002)	(0.003)	(0.004)	(0.002)	(0.003)	(0.004)
Diff.	-0.062	-0.097	-0.035	-0.074	-0.11	-0.036	-0.065	-0.1	-0.035	-0.074	-0.107	-0.033	-0.078	-0.11	-0.032
	(0.005)	(0.006)	(0.008)	(0.005)	(0.007)	(0.008)	(0.005)	(0.006)	(0.008)	(0.005)	(0.006)	(0.008)	(0.005)	(0.006)	(0.008)

Notes: 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 poverty line. Standard errors are in parentheses.

Table 6b present the changes in the average catastrophic headcount with a threshold of 40 percent of non-food expenditure. In other words, this is the probability of having health expenditure account for 40 percent or more of the total non-food 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 indicate similar findings as estimated by Selvaraj and Karan (Selvaraj & 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. One possible explanation may be that expenditure on hospitalization is progressive. Households may have avoided hospital care as a result of financial barriers, but as the household income increases they spend relatively more on hospital care. Expenditures on outpatient care and drugs are generally smaller amounts over longer periods of time which allow families to use the disposable income they have. It is causing catastrophic expenditure to a greater extent than hospitalisations when households are poor but as the income increases, the relative expenditure on outpatient care and drugs generally decreases as they can afford other, less prioritized, goods and services. Another plausible reason could be the increase in hospital care. Some conditions that were previously treated as outpatient are probably now treated as inpatient. That means that the more severe outpatient cases (hence more costly) are now being treated as inpatient, bringing down the average cost on outpatient care. It is also likely that people may perhaps be healthier with higher income, thereby reducing the common outpatient cases such as fever and diarrhea. These will be the focus of some of our future research to understand the complex implications of PFHIS on individual spending pattern and the impacts on broad health outcomes.

Table 6c presents estimates of the impact on the average poverty gap which is a measure of intensity of poverty. We define it as the average poverty gap in the population as a proportion of the state poverty line. The broad results are consistent with the results on impoverishment presented in Table 6a. The estimates using the overall sample do not show any impact while the results for the early adopters indicate a reduction in poverty gap over time, as compared to the control districts.

**Table 6 b: Means of outcomes - Catastrophic headcount threshold – 40% of non food expenditure**

	OOP			Hospitalisation			Outpatient			Drugs		
	Pre	Post	Diff.	Pre	Post	Diff.	Pre	Post	Diff.	Pre	Post	Diff.
<i>Overall sample</i>												
Treatment	0.0466	0.0448	-0.0018	0.0104	0.0117	0.0013	0.0397	0.0309	-0.0089	0.0179	0.0167	-0.0012
	(0.0013)	(0.0018)	(0.0022)	(0.0006)	(0.0009)	(0.0011)	(0.0012)	(0.0016)	(0.0020)	(0.0008)	(0.0011)	(0.0014)
Control	0.0453	0.0360	-0.0093	0.0085	0.0094	0.0009	0.0439	0.0254	-0.0185	0.0231	0.0151	-0.0080
	(0.0013)	(0.0017)	(0.0021)	(0.0005)	(0.0008)	(0.0010)	(0.0013)	(0.0015)	(0.0020)	(0.0009)	(0.0012)	(0.0015)
Diff.	0.0013	0.0088	0.0075	0.0019	0.0022	0.0003	-0.0042	0.0054	0.0096	-0.0052	0.0016	0.0068
	(0.0018)	(0.0025)	(0.0031)	(0.0008)	(0.0012)	(0.0014)	(0.0018)	(0.0022)	(0.0028)	(0.0012)	(0.0016)	(0.0020)
<i>Long Term Sample</i>												
Treatment	0.0389	0.0367	-0.0022	0.0087	0.0093	0.0006	0.0332	0.0282	-0.0050	0.0110	0.0095	-0.0015
	(0.0018)	(0.0026)	(0.0032)	(0.0008)	(0.0013)	(0.0015)	(0.0017)	(0.0025)	(0.0030)	(0.0010)	(0.0013)	(0.0016)
Control	0.0479	0.0411	-0.0067	0.0096	0.0108	0.0012	0.0444	0.0279	-0.0165	0.0234	0.0176	-0.0058
	(0.0010)	(0.0014)	(0.0018)	(0.0005)	(0.0007)	(0.0008)	(0.0010)	(0.0012)	(0.0016)	(0.0007)	(0.0010)	(0.0012)
Diff.	-0.0090	-0.0044	0.0046	-0.0009	-0.0015	-0.0006	-0.0112	0.0003	0.0115	-0.0124	-0.0082	0.0042
	(0.0021)	(0.0030)	(0.0037)	(0.0009)	(0.0014)	(0.0017)	(0.0020)	(0.0027)	(0.0034)	(0.0012)	(0.0016)	(0.0020)

Notes: Standard errors are in parentheses.

Table 6c: Means of outcomes by treatment group (cont'd)

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.
<i>Overall sample</i>															
Treatment	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
	(.0009)	(.0010)	(.0013)	(.0009)	(.0010)	(.0014)	(.0009)	(.0010)	(.0013)	(.0009)	(.0010)	(.0014)	(.0009)	(.0010)	(.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
	(.0008)	(.0011)	(.0013)	(.0009)	(.0011)	(.0014)	(.0008)	(.0011)	(.0014)	(.0009)	(.0011)	(.0014)	(.0009)	(.0011)	(.0014)
Diff.	-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
	(.001)	(.001)	(.002)	(.001)	(.002)	(.002)	(.001)	(.001)	(.002)	(.001)	(.002)	(.002)	(.001)	(.002)	(.002)
<i>Long term Sample</i>															
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
	(.0014)	(.0013)	(.0019)	(.0014)	(.0014)	(.0020)	(.0014)	(.0013)	(.0019)	(.0014)	(.0014)	(.0019)	(.0014)	(.0013)	(.0019)
Control	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
	(.0007)	(.0008)	(.0011)	(.0007)	(.0009)	(.0012)	(.0007)	(.0009)	(.0011)	(.0007)	(.0009)	(.0012)	(.0007)	(.0009)	(.0011)
Diff.	-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
	(.002)	(.002)	(.002)	(.002)	(.002)	(.002)	(.002)	(.002)	(.002)	(.002)	(.002)	(.002)	(.002)	(.002)	(.002)

Notes: Standard errors are in parentheses.

We recognize that the implementation of the PHFIS 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 which might have strong 'state effects'. The economic growth, for example, 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 5.

The results of the regression analysis using state fixed effects are presented in tables 7a through 7c for the overall sample of districts with PFHIS and 8a through 8c for the sample of early adopters. The results in Table 7a indicate that impoverishment seems to be reducing significantly over time due to all factors – out of pocket expenses, hospitalization, outpatient expenses as well as due to expense on drugs. However, the coefficients on 'treatment' dummy shows that impoverishment for this group of districts which has PFHIS, has gone up significantly – due to all factors. The coefficients on the interaction term which picks up the impact of the PHFIS are small, positive and insignificant. This means 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. Households continue to get as impoverished due to healthcare shocks as before. This has been the broad result that other recent researches have highlighted, advocating dismissal of these schemes for their apparent uselessness.

**Table 7a: Impoverishment Effects in Overall Sample**

	<b>Overall Impoverishment</b>	<b>Impoverishment net of OOP</b>	<b>Impoverishment net of Hospitalisation</b>	<b>Impoverishment net of Outpatient</b>	<b>Impoverishment net of Drugs</b>
Treatment* Post	0.0082	0.0089	0.0063	0.0107	0.0094
	(0.0065)	(0.0067)	(0.0065)	(0.0067)	(0.0067)
Treatment	0.0203***	0.0242***	0.0222***	0.0224***	0.0204***
	(0.0057)	(0.0059)	(0.0057)	(0.0058)	(0.0058)
Post	-0.0724***	-0.0795***	-0.0708***	-0.0810***	-0.0791***
	(0.0047)	(0.0048)	(0.0047)	(0.0047)	(0.0047)
Constant	-0.0380***	-0.0383***	-0.0417***	-0.0366***	-0.0356***
	(0.0082)	(0.0090)	(0.0082)	(0.0089)	(0.0090)
Control	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes
Observations	225499	225499	225499	225499	225499
R <sup>2</sup>	0.101	0.111	0.103	0.109	0.109

Notes: Standard errors in parentheses\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

**Table 8a: Impoverishment, Long Term sample**

	(1)	(2)	(3)	(4)	(5)
	Overall Impoverishment	Impoverishment net of OOP	Impoverishment net of Hospitalisation	Impoverishment net of Outpatient	Impoverishment net of Drugs
Treatment*Post	-0.0308***	-0.0316***	-0.0313***	-0.0293***	-0.0275***
	(0.0077)	(0.0080)	(0.0077)	(0.0079)	(0.0079)
Treatment	0.1590***	0.1709***	0.1635***	0.1681***	0.1587***
	(0.0089)	(0.0097)	(0.0090)	(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***
	(0.0080)	(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 <sup>2</sup>	0.101	0.110	0.102	0.109	0.109

Notes: Standard errors in parentheses\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

If we explore longer term impacts of these health insurance schemes, by limiting our focus to only those districts that have had a PFHIS running for some time, the results look drastically different. As Table 8a indicates, the coefficient 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 out of pocket, hospitalization, outpatient and expenses on drugs.

Next we move to the impact of PFHIS on the probability of households spending more than 40 percent of their total non-food expenditure on various healthcare expenses. As Table 7b suggests, the broad results that we saw in the simple averages still hold after doing regression analysis with state fixed effects. In the overall sample of treatment districts, the interaction term strongly suggests that the catastrophic headcount has gone up due to out of pocket expenses, outpatient expenses and expenses on drugs. This suggests that the PFHIS are leading to greater catastrophic headcount in the population. What is disturbing is also the fact that when we study the longer term impact of these schemes, as indicated by results in Table 8b, they broadly mimic the results of the overall sample. This means that while catastrophic headcount goes up immediately on introduction of PFHIS, they tend to stay up even after a year or so. Table 8b shows that while there are no effects of these schemes on catastrophic headcount due to out of pocket and hospitalization expenditure, they tend to raise catastrophic headcount due to outpatient and drug expenses.

**Table 7b: Catastrophic headcount, Overall sample - Threshold 40% of non-food expenditure**

	Due to OOP	Due to Hospitalisation	Due to Outpatient	Due to Drugs
Treatment*Post	0.0075** (0.0030)	0.0004 (0.0014)	0.0096*** (0.0028)	0.0069*** (0.0020)
Treatment	-0.0032 (0.0027)	0.0006 (0.0012)	-0.0069*** (0.0025)	-0.0035* (0.0019)
Post	-0.0084*** (0.0021)	0.0011 (0.0010)	-0.0179*** (0.0019)	-0.0077*** (0.0015)
Constant	-0.0110** (0.0048)	0.0001 (0.0035)	-0.0120*** (0.0028)	-0.0097*** (0.0020)
Control	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes
Observations	225499	225499	225499	225499
R <sup>2</sup>	0.018	0.003	0.020	0.014

Notes: Standard errors in parentheses\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

**Table 8b: Catastrophic headcount, Long Term sample - Threshold 40% of non food expenditure**

	(1) Due to OOP	(2) Due to Hospitalisation	(3) Due to Outpatient	(4) Due to Drugs
Treatment*Post	0.0048 (0.0036)	-0.0006 (0.0017)	0.0120*** (0.0033)	0.0045** (0.0020)
Treatment	0.0217*** (0.0050)	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*** (0.0020)
Control	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes
Observations	225499	225499	225499	225499
R <sup>2</sup>	0.017	0.003	0.020	0.014

Notes: Standard errors in parentheses\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

These broad findings are supported by previous studies where introduction of insurance for tertiary care services brought about an increased utilisation 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 to 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 non-food expenditure, is high enough to result in an increase in catastrophic expenditure.

**Table 7c: Poverty gap index, Overall sample**

	<b>Poverty Gap Index</b>	<b>PGI net of OOP</b>	<b>PGI net of Hospitalisation</b>	<b>PGI net of Outpatient</b>	<b>PGI net of Drugs</b>
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)	(0.0020)	(0.0021)	(0.0021)
Control	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes
Observations	222525	222525	222525	222525	222525
R <sup>2</sup>	0.082	0.093	0.083	0.091	0.091

Notes: Standard errors in parentheses\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

**Table 8c: Poverty gap index, Long Term sample**

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

Notes: Standard errors in parentheses\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Tables 7c and 8c present the changes in poverty gap index caused by the introduction of the PFHIS immediately and over the longer term 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. Once again, all the coefficients on “post” indicate that the poverty gap is falling over time due to various forms of health expenses. But the “treatment” dummies as well as the interaction terms indicate that the effect of PFHIS in the short term led to a rise on the poverty gap in the country. When we study the longer term effect, they suggest 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. PFHIS do not have any effect on PGI due to other forms of healthcare expenses, even after a longer period.

There can be many explanations for why the effect of PFHIS has stronger effects over a longer term. First of all this sample includes Aarogyashri of AP along with early adopters of RSBY across the country. Aarogyashri was introduced with strong political motive and promotions. Major campaigns to raise people’s awareness were carried out in all districts before and after the elections. The awareness and hence utilisation of the program can be expected to be higher than for overall RSBY. The districts with Aarogyashri had also, on average, been active for a longer time than RSBY. One limitation with the analysis and also a potential explanation to the differences in the results between the short term overall sample and a more focused longer term sample is that RSBY only covers people living below the poverty line while the AP state program Aarogyashri covers close to 80 percent of the population of the state. Greater coverage, more awareness and greater utilization will naturally lead to improved outcomes of financial protection against health shocks to the population.

It is also well known from the NSSO household expenditure data (Table 9) that the out of pocket health expenditure in India, is mainly for outpatient care and drugs. As these expenditures are high and often exceed the threshold for catastrophic expenditures, we can expect these to decrease with increasing income of households when the relative expenditure on outpatient care decreases. The expenditures on hospital care, on the other hand, are progressive and can be expected to increase as households get a higher income. The insurance schemes covering tertiary care seem to have reduced the impoverishment and the poverty gap as a result of healthcare expenditure on hospitalisation.

**Table 9: Household Expenditure on Healthcare in India, 2009-10**

Item	Non-institutional				Institutional			
	Per capita expenditure in 30 days (INR)		% of households incurring expenditure in 30 days		Per capita expenditure in 30 days (INR)		% 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	4.0	4.9	1.90	4.12	7.9	9.0
Doctor's fee	4.26	8.94	26.1	31.6	2.27	5.80	8.7	10.4
Hospital charges	-	-	-	-	3.62	9.97	7.4	9.4
Other medical expenses	1.00	1.62	-	-	1.31	2.79	5.7	5.8
Medical Total	39.49	62.69	68.0	64.6	17.42	36.37	12.9	14.4

Source: National Sample Survey Organization, 2009-10.

This analysis carried out here and in many other studies 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, Millet, & Smith, 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 which are based on NSSO expenditure data analysis, thereby reinforcing that the impacts are underestimated.

## 5. Discussion and Policy Recommendations

Our broad results indicate that while immediate impacts of the publicly financed health insurance schemes are limited in India (and for certain outcomes, they seem to make matters worse), in the longer term they lead to significant improvement in financial protection of households due to health shocks. Our results for impoverishment, catastrophic headcount and poverty gap index all suggest the same line of impact. We, therefore explore some potential factors that been highlighted in the literature as likely explanations for these trends and also as basis for future policy recommendations.

Rai and Ravi (2011) have explored the usage of health insurance scheme by microfinance clients who comprise of men and women. The context of that 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 publicly financed health insurance schemes 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 lower in comparison to overall health insurance sector. This is despite the fact that morbidity rates are quite high in the population. This is the case for PFHIS as well. Moreover, the single biggest determinant of a household filing claim was financial literacy. This is also a proxy for minimum skill and awareness level which is required for filing health insurance claims. Just as in the microfinance context, our results too suggest that adverse selection concerns which are serious in developed markets are less of a concern in these markets because the usage is lower in the short term.

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 programme in Delhi. Their findings suggest that first, the IEC had no impact on enrolment, but households who were part of the household survey sample and therefore received information closer to the enrolment period were 60 percent more likely to enrol. Second, they show that there is little evidence that the insurance company selectively enrolled healthier households. Instead, hospital claims were lower for households who received the IEC and for households who received both the survey and the IEC, 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 which are more likely to use the PFHIS.

As policy recommendations<sup>3</sup>, therefore, we suggest the following:

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<sup>3</sup> Some of these have also been included in La Forgia and Nagpal (2012)

1. 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 the following:
  - Standard ambulatory package which 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 non-poor (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.
  - Standard package of maternity care. Maternity care is a frequent and financially catastrophic for poor households. Extending coverage for this would have immediate effect on utilization and subsequently impoverishment.
2. Insurance is a sophisticated financial instrument which 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.
3. Fixing enrolment/ targeting mechanisms with an eventual aim of universalization of such PFHIS.
4. Establishing a robust data gathering and use process with repeat impact evaluations and close monitoring through a strong health management information system.
5. Establish an autonomous institution to govern, monitor, coordinate and set policies and guidelines for all PFHIS in India, giving operational autonomy to individual states.

## 6. Conclusion

Different state governments in India have rolled out state financed health insurance schemes since 2003, and the national government rolled out the largest of such schemes, the Rashtriya Swasthya Bima Yojna (RSBY) in 2008. The intention of this paper is to carefully analyze whether these publicly financed health insurance schemes have worked in India. We use nationwide sample survey data on household consumption expenditure from the NSSO surveys conducted in 2004-05 and 2009-10.

The existing studies have looked at catastrophic healthcare expenditure and found that most healthcare expenditure is for outpatient care and mainly to cover the cost of drugs. The health financing reforms with the insurance programs have however focused on tertiary and secondary care services. These existing studies have also thrown up conflicting findings. While three studies found a significant reduction, or negative excess growth, in out-of-pocket expenditure for in-patient care (Bergkvist et al, 2014) (Rao et al, 2014) (Fan, Mahal, & Karan, 2011), another concluded that there has not been any significant impact on financial protection and therefore dismisses the reforms (Selvaraj & Karan, 2012).

Our analysis shows that it is premature to dismiss the health insurance initiatives based on the existing analysis because these schemes perform better with 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 definition of treatment group to only include districts that have (a) schemes actually running and (b) schemes running over a longer period. We do the analysis for various outcomes of interest such as average impoverishment, catastrophic healthcare expenditure and poverty gap change, in response to publicly provided health insurance schemes in India.

As the Government of India is calling for state governments to pilot models for Universal Health Coverage it is important to further assess the impact of the major health financing experiments that already have been carried out since 2007 (Planning Commission, 2013). We found that these programs perform better over time. New data is on primary healthcare sensitive ailments, quality of healthcare services and details of how households finance their healthcare expenditures are required for detailed understanding of the impact of these programs on utilization of such PFHIS as well as health seeking behavior of households in India. Existing research point to the strong complementary role played by factors such as financial literacy and skill in utilization of health insurance products, especially amongst low income households.

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