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Susmita Baulia

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University of Turku

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To my parents

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ABSTRACT

This doctoral dissertation explores the challenges that lead to underutilisation of welfare products and policies in credit and health, among the poor in developing countries. The essays in the area of Applied Microeconomics included herein shed light on whether resources in welfare policies for the poor are channelised along the right path, and if not, how they could be improved.

The first essay studies take-up issues of microcredit loans. In a decision-making experiment in the laboratory, I find that the take-up increases when prospective borrowers are offered a flexible choice between joint and individual liability loans. Results suggest that more risk-averse borrowers are less willing to take up individual liability loan, and less selfish borrowers are more inclined to take up joint liability loan. The results collectively imply that microloan contracts must be designed according to heterogeneous preferences of borrowers in order to increase take-up; furthermore, there should be enough flexibility in the offered choice-set that leads to better self-selection.

In the second essay, I conduct an empirical investigation of Ugandan households and find that while facing a negative income shock or an adverse health shock, poor households are more prone to take their children for immunisation. The findings highlight that adults in low-income households engage more in their children's preventive healthcare when the opportunity cost of being away from work is low. Therefore, concerning policy, either price subsidies to offset the opportunity cost or strict mandates on healthcare practices are necessary.

The final essay investigates the role of demand-side incentives to mothers and supply-side incentives to community health workers (ASHAs) in improving maternal and child health, in a nationwide health intervention in India. The programme entitled socio-economically backward mothers with cash assistance if they chose to give birth at public health institutions, and simultaneously employed ASHAs to act as a direct link between a pregnant woman and the public healthcare delivery system. Eligible mothers with both cash transfer and ASHA's guidance outperformed the eligible mothers receiving only cash transfer in various maternal and neonatal outcomes. This validates that direct monetary incentives to the mother can improve her uptake of maternal healthcare. Nevertheless, the stronger effect of the ASHA's presence ascertains that information on the importance of health and healthcare can bridge the gap to the low use of healthcare by the poor and that it can be effectively addressed by incentivising the supply-side.

KEYWORDS: Development policy, take-up, microcredit, household shocks, preventive healthcare, time allocation, conditional cash transfer, maternal health, child health

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TIIVISTELMÄ

Tämä väitöskirja tutkii kehittyvissä maissa asuvien köyhien kohtaamia haasteita, jotka johtavat hyvinvointipolitiikan ja -tuotteiden puutteelliseen hyödyntämiseen. Väitöskirja sisältää johdantokappaleen sekä kolme esseetä soveltavan mikrotaloustieteen alalta. Jokaisen esseen kohdalla tarkastellaan sitä, ohjautuvatko köyhiin kohdistetut hyvinvointipolitiikat oikein, ja jos eivät, miten hyvinvointipolitiikkaa voitaisiin tehdä paremmin.

Ensimmäinen essee käsittelee mikroluottojen puutteellista hyödyntämistä. Päätöksentekoa tarkastelevan laboratoriokokeen tulosten mukaan luottoja hyödynnetään enemmän, mikäli lainanottajille tarjotaan mahdollisuus valita joustavasti yhteis- tai yksilövastuullinen laina. Riskiä karttavat lainanottajat ovat haluttomampia ottamaan lainan, josta he ovat yksin vastuussa. Lisäksi itsekkäämmät lainanottajat välttävät ottamasta lainoja, joista he ovat vastuussa yhdessä muiden kanssa. Nämä tulokset yhdessä tarkoittavat, että mikroluottosopimukset tulisi suunnitella huomioimalla lainanottajien yksilölliset preferenssit, jotta niiden hyödyntäminen kasvaisi. Lisäksi tarjotuissa lainoissa tulisi olla riittävästi joustavuutta, joka johtaisi parempaan itsevalikoitumiseen.

Toinen essee käsittelee sitä, miten köyhät ugandalaiset kotitaloudet investoivat ennaltaehkäisevään terveydenhuoltoon kohdatessaan yksilökohtaisia shokkeja. Tulosten mukaan vanhemmat vievät lapsensa rokotettavaksi todennäköisemmin, mikäli kotitalous kohtaa negatiivisen tulo- tai terveysshokin. Löydökset korostavat sitä, että matalatuloiset kotitaloudet käyttävät enemmän aikaa lasten ennaltaehkäisevään terveydenhuoltoon, kun työstä poissaolon vaihtoehtoiskustannus on matala. Politiikan kannalta hintoihin kohdistuvat tuet vaihtoehtokustannuksen tasoittamiseksi tai tiukka sääntely terveydenhuoltoon liittyen näyttäisi olevan välttämätöntä.

Viimeinen essee käsittelee kysyntäpuolelle (äidit) ja tarjontapuolelle (terveydenhoitajat) kohdistettujen kannustimien vaikutuksia äitien ja lasten terveyteen. Intiassa tehty terveydenhuoltoreformi tarjosi huonossa sosioekonomisessa asemassa oleville äideille rahallista avustusta, mikäli he päättivät synnyttää julkisessa terveydenhuoltolaitoksessa. Samanaikaisesti palkattiin terveydenhoitajia ohjaamaan äitejä synnyttämään julkisen terveydenhuollon palveluita hyödyntäen. Ne äidit, jotka avustusten lisäksi saivat ohjausta terveydenhoitajilta, pärjäsivät paremmin useilla mittareilla. Äideille kohdennetut suorat rahalliset kannusteet voivat siis lisätä äideille suunnattujen terveydenhuoltopalveluiden käyttöä. Tämän lisäksi informaatiolla voidaan todeta olevan tärkeä rooli, sillä terveydenhoitajien läsnäollessa reformin vaikutukset voimistuivat, eli informaatio voi lisätä köyhien terveyspalveluiden käyttöä. Informaatiota voidaan myös lisätä tehokkaasti tarjontapuolen kannusteilla.

ASIASANAT: Kehittämispolitiikka, palveluiden hyödyntäminen, mikroluotto, kotitalouden shokit, ennaltaehkäisevä terveydenhuolto, ajankäyttö, ehdollisen rahansiirron järjestelmät, äitien terveys, lasten terveys

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"Everything comes to us that belongs to us if we create the capacity to receive it."
– Rabindranath Tagore

Today, at these crossroads of bidding farewell to one chapter of my professional life and moving on to the next, I reminisce on those moments that summed up to here. A six-years long bittersweet journey - there were times when I feared that I would never be able to arrive at this point, and yet there were moments that propelled me forward to see it to the end. Without any doubt, this endeavour would have been impossible if not for some individuals, who guided me, inspired me and assured me in their own extraordinary ways along this journey. This dissertation is a culmination of their faith in me, and they deserve my deepest gratitude.

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Along the way, I have been fortunate enough to be able to learn and discuss my work with Professor Topi Miettinen of Hanken School of Economics and Dr Nadine Chlass of the University of Jena. Their incredible knowledge and curious questions have helped me immensely to learn my way around experiments. Workshops organised by our Aboa Centre of Economics (now, updated to Turku School of Economics Research) and the Finnish Doctoral Programme in Economics at HECER were beneficial to discuss my work with fellow doctoral students and senior researchers. These rigorous training sessions were indeed instrumental in my development as an economist. I have also been privileged to be able to present my research on various occasions in international workshops and conferences. I deeply value those opportunities since they have given me a better understanding of good research. I have always returned from those places with a positive mind, be it with a new research topic brewing in my head or another method to try.

No PhD journey is complete without trying one's mettle in teaching. I am glad to have had the opportunity to be a teaching assistant to Professor Hannu Salonen and Professor of Practice Ritva Reinikka of Aalto University. Their trust in me with assisting them in advanced courses have trained me to pay attention to details and hone my teaching skills. Professor Salonen has always been patient to discuss with me even the most laborious problem sets, which helped to keep my fundamentals clear. Professor Reinikka came in with remarkable knowledge and experience in the field of development policy. In a short time, she gave me the courage and inspiration to continue my research as a development economist.

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simply lamented together at how mundane our lives as doctoral students are, and sometimes we have revelled together in new research ideas and accomplishments. Especially in these last few months of remote work, I have realised how much of a positive influence they can otherwise have on my work quality and me. In this regard, I extend my deepest gratitude to the entire Department of Economics in Turku School of Economics for their solidarity and for the pleasant academic home they have provided me along these years.

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Finally, I thank my greatest asset Debanga, for loving me unconditionally and believing in me boundlessly. His relentless enthusiasm and undaunted companionship give me the courage in life and teach me perseverance. I am thankful to have grown up with him, discovering life together. In a parallel world, I am probably still hopelessly lost without him.

Turku/Åbo, October 2020
Susmita Baulia

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List of Original Research Articles

This dissertation is based on the following original research articles, which are referred to in the text by their Roman numerals:

I Baulia, Susmita. Take-up of joint and individual liability loans: An analysis with laboratory experiment. *Journal of Behavioral and Experimental Economics*, 2019; 82: 101456.

II Baulia, Susmita. Is household shock a boon or bane to the utilisation of preventive healthcare for children? Evidence from Uganda.

III Baulia, Susmita. Cash incentives to mothers or to community health workers - what contributes better to the health of the mother and the newborn? Evidence from India.

1 Introduction

1.1 Background

The combined wealth of the 26 richest people in the world was the same as the combined wealth of the world's poorest 3.8 billion people in 2018.[1] Since the 2008 financial crisis, the wealth of the billionaires has grown by 12%, whereas over the same period, the wealth of the world's 3.8 billion poorest people declined by 11%. According to the World Bank's most recent estimates in 2015, 10% of the world's population, that is, about 734 million people were living on less than $ 1.90 per day during that time. Although this number has gone down by 26 percentage points since 1990, the share of the poor according to the *multidimensional*[2] definition that includes consumption, education, health and access to basic amenities, is about 50% higher than what the monetary poverty threshold states. For example, in Sub-Saharan Africa, over one-fifth of children between ages 6-11 years are out of school, followed by one-third of youth between the ages of 12-14 years. These are the highest rates for education exclusion in the world.[3] In terms of health, Sub-Saharan Africa and South Asia still have the neonatal mortality rates at least over 25, child mortality (5-14 years) being the highest in the former.[4]

1 Source: Oxfam Report in World Economic Forum, 2019

2 The move from *unidimensional* to *multidimensional* concept of poverty evolved as the approaches such as *basic needs* (as opposed to the increase in income), *social exclusion* and Amartya Sen's *capability approach*, together called for understanding the actual satisfaction of basic needs. In contrast to the income method of measuring poverty, Sen advocated the 'direct method' of poverty identification, which assesses human deprivation in terms of shortfalls from minimum levels of basic needs *per se*. The reasoning for this being - while an increase in purchasing power allows the poor to achieve their basic needs better, markets for all basic needs may not always exist. Alongside, empirical findings that income does not correctly proxy non-monetary deprivations for identifying the poor, have ushered in the importance of having multidimensional measures of poverty (Sen, 1981; Alkire et al., 2015).

3 Source: UNESCO Institute of Statistics, 2020

4 Source: United Nations Inter-agency Group for Child Mortality Estimation (UNIGME), 2019

Even more unsettling than the sheer population size below the monetary poverty line and in all-round deprivation, is that these people do not have the tools to climb out of poverty by themselves. However, what is inspiring is that, with an external positive push, they do stand a chance to do better. Although much has been done in the past few decades by the policy-makers and researchers worldwide, to help them out of poverty through various welfare policies, the goal is still quite far from achieved. Some welfare policies work, many fail. So the question that arises here is that are we doing enough to fight the issue? Or, is it so that the resources are not being channelised in the right path? This dissertation aims to delve into the latter question.

The take-up of new products and services lies where demand and supply meet. Individuals decide on whether to borrow money, open a savings account or buy health insurance based on their needs and preferences, as well as the products and services offered (Karlan et al., 2010). Often the take-up of a particular policy is low because various intrinsic costs exceed its benefits. This dissertation lies at the crux of that issue for the poor. Through the three essays in this dissertation, I explore the challenges that often lead to sub-optimal take-up or underutilisation of welfare products and policies among the poor. While the first two essays investigate some facets of the demand-side challenges, the third essay also highlights a supply-side challenge in parallel. The first essay concerns the take-up of microcredit loans, which has been a prominent credit policy for the poor in developing countries; the next two essays are about the take-up of healthcare.

In this introductory section, I present an overview of the states of credit and health in developing countries and the response of the poor towards some related policies. Then, I discuss what the existing literature says on the utilisation of those policies. In Section 2, I summarise the three essays, present their results and discuss their contributions to the existing literature.

1.2 Credit and Health in Developing Countries

While the need for credit can be considered as the *means* in the resource-constrained poor households, health can be regarded as the *end*. Therefore, ideally, if the means are addressed, they should trickle down to the end. However, it is not easy arithmetic. Research shows that while microcredit only has moderate effects that often do not go beyond business creation for a short term, health investment also does not come that easy for the poor, not at least in their long-term decision-making.

1.2.1 Credit

In this subsection, I discuss the evolution of microfinance in the past few decades. Although different welfare policies on financing the poor have been used in the policy frontier, microfinance is the primary one so far. In what follows, is a review of it.

With the help of financial products such as loans, savings and insurances, individuals can allocate consumption efficiently. However, the absence of functional financial markets for the poor is an obstacle. While in a traditional loan contract, a borrower uses collateral, a poor individual hardly has such resources. Thus, uncollateralised loans to the poor put the burden of loss on the lender in case of defaults, and furthermore, the interest revenue from small loans is not enough to compensate for the costs spent on screening, monitoring and enforcement. Consequently, the poor are pushed into a vicious cycle of poverty and have little chance to smooth the income shocks that they otherwise face frequently. Here came in the revolutionary concept of microfinance to help the "unbanked", initiated by Muhammad Yunus of Bangladesh, who later won the Nobel Prize for Peace for his work.

The concept of microfinance was pioneered by Bangladesh's Grameen Bank in the '80s. Within the framework of microfinance, small loans, also called microcredit loans, were given out to the poor.[5] The main objective of these loans was to help the small and informal firms to expand their businesses.

An innovative feature used in microcredit was the *joint liability* in repayment, by which loans were given to poor borrowers in groups, and the latter were jointly liable for the repayment. This liability structure implied that if one failed to repay, the other members in the group had to pay on behalf of the defaulter. In this way, it reduced the risk of loss due to default for the lending institutions. Through the joint liability mechanism, the borrowers did not necessarily have to provide any collateral, and it incentivised the borrowers in the group to monitor each other against any moral hazard and free-riding issues. The joint liability structure joined with a *fixed repayment* schedule with frequent instalments, and a *dynamic incentive* (whereby the incentive to repay is generated by the promise of access to future loans), gained an impetus around the world in the '90s. Following the successful footsteps of the Grameen Bank, a flourishing microfinance industry emerged across the developing countries, following the Grameen format. In the frontline of that industry were, BancoSol and ACCION in South America, ADIE in Europe and the Mediterranean

[5] *Microfinance* means the broad spectrum of financial services such as loans, insurance, savings provided to the people of low-income groups. However, *microcredit* implies a small loan provided at a low interest rate, to the poor to make them self-employed, i.e. to help the small entrepreneurs start their businesses.

Basin and a dozen MFIs in India. By 2003, the number of borrowers was about 120,000 with a gross loan portfolio of 30 million dollars in Asia, 21,000 borrowers with 22 million dollars portfolio in Latin America and the Caribbean (Helms, 2006).

In theoretical economics research, various mechanisms of the joint liability gained prominence (e.g. peer screening (Ghatak, 1999), peer monitoring (Stiglitz, 1990) and peer enforcement (Besley and Coate, 1995). The general idea of all these models was to shift the burden of default from the lender to a borrowing group that would give them the incentive to use local information and social ties for ensuring repayment. Although this structure helped in the expansion of loan markets in the developing countries, empirical evidence on which theoretical mechanism actually works is relatively thin. In addition to that, field studies that have directly compared default rates and repayment rates in joint liability structure *vis-à-vis* the conventional individual liability structure, have not necessarily found any significant difference (Giné and Karlan, 2014).

Moreover, when it comes to the general impact of microcredit loans, empirical evidence shows only a moderate effect. For example, Banerjee et al. (2015b) summarise from six large-scale studies across different countries that the effects of these loans neither spill over on consumption (not just in the short run, but also in the long run) nor on human capital investment, beyond some business creation.

However, another side observation comes up in all these studies, and that is the low take-up of these credit products. To give some perspective, one of the first field studies in the urban slums of India found that take-up after a study-period of three years was only nine percentage points more among the households that were offered loans in comparison to those who were not (the general take-up rate being 33% in control areas). Moreover, no significant difference in business creation was seen in the treatment and control areas (Banerjee et al., 2015a).

Since the starting point of my research on microcredit is from these consistent findings on low take-up, I discuss in detail in the following subsection, the various insights that recent literature has offered on this issue.

1.2.2 Why the low take-up of credit?

In the body of work on take-up of microcredit, some patterns stand out. The reasons for the low take-up can be broadly classified through the following channels – (a) insufficient information on availability, (b) constraints to entrepreneurial ability, and (c) lack of demand-driven product design.[6]

[6] Note, here I discuss the take-up of loans only. The take-up of other microfinance products, such as insurance, could be affected by another channel, such as liquidity constraint (Cole et al., 2013).

Targeting the poorest of the poor with microfinance products is the most difficult challenge, and this could be partially due to the significant information gap that exists between potential borrowers and lending institutions. Johnston and Morduch (2008) find in the Indonesian context that a large share of creditworthy borrowers is devoid of any loan. To bridge the gap to financial use, dissemination of information through marketing drives is crucial. In addition, on-site assessment of the potential borrowers by the lending institution personnel can reduce information asymmetry by a large extent. However, in reality, the problem lies in the fact that these borrowers bring so limited profit potential through these small loan amounts, that the banks find it too costly to introduce these additional marketing drives. Thus, the absence of information and marketing on credit products is one of the critical reasons that reduce take-up by the target groups. Cole et al. (2013) provide evidence from rural villages in India that receiving a product flyer or getting a visit from a finance educator can significantly increase the take-up rate of credit products. Finally, the passing of information through village networks about existent microloan programmes has also been useful in increasing take-up (Banerjee et al., 2013).

As loans come with liability, not everyone, particularly those who are not keen on expanding a business, are willing to take it. In a study with Tanzanian microentrepreneurs, Berge et al. (2015) find no effect on investment by giving them substantial grants. It is because these small businesses are more often constrained in consumption than in production, and therefore, using the money for consumption purposes is more optimal. On another note, often some microentrepreneurs who could otherwise make profits from the expansion of their existing businesses, have a job or housework which creates frictions for business expansion. Under such circumstances, they might invest if they get a grant but are unwilling to borrow and pay interest in order to invest (Banerjee, 2013). Risk-motivated voluntary withdrawal from the credit market (in other words, "risk-rationing") (Binswanger and Sillers, 1983; Giné and Yang, 2009) is also one of the reasons that uninsured borrowers are deterred from taking loans. It is the risk of high default costs when they are unable to repay, which discourages them. These findings starkly uncover the fact that the borrower's concerns often lie far away from the offered loans. To make things worse, most often these loans are offered with strict purposes, e.g. to be invested in business only, which further inhibits take-up. The above examples identify that these targeted potential borrowers are actually often devoid of the abilities to run a business successfully.

Low take-up of microloans also points out that they may not be tailored as per the client's needs and preferences. The welfare gains from taking a microcredit loan are subjective. Therefore, it is plausible that the take-up rate could be improved if we consider a potential borrower's risk preferences as well as other preferences

discussed in the behavioural science literature. For example, a risk-taking and dynamic individual may prefer not to get involved with a group (e.g. so as not to have to waste time monitoring neighbours) (Banerjee, 2013). This argument indicates that having different contract structures with different criteria of risk and repayment could attract borrowers of heterogeneous preferences. Evidence shows that a strict repayment schedule can discourage illiquid and risky investment (Field et al., 2013) or repel high-revenue borrowers (Barboni, 2017). Such findings prove that a grace period or a variable repayment schedule helps increasing take-up by borrowers with diverse business interests.

While varying certain features of the loan contracts has proven to have a positive effect on take-up rate, in doing so, risk preferences are found to be vital in determining the type of loan chosen. For example, Attanasio et al. (2018) find that subjective risk perceptions on the expected profit affect the demand for loans. They further find that a joint liability loan is preferred over an individual liability one as it encourages risk-sharing among members and reduces the risk involved in any project (particularly, for new business starters). Furthermore, Bertrand et al. (2010) find evidence from South African credit markets that *framing* has a substantial effect on the take-up of loans. For example, having a dominated alternative in the choice-set can drive take-up of the dominating one. Moreover, framing in terms of loss can have a more significant impact on take-up than comparable gain frames (*à la* Kahneman and Tversky (1979)). Finally, time preferences also drive take-up, e.g. individuals with hyperbolic discounting (Laibson, 1997) are more prone to take up microcredit, as difficulty in saving today makes them credit-constrained in future (Bauer et al., 2012). These results summarise that loans need to be personalised according to the preferences of borrowers, and that could be a way of increasing take-up.

All the channels discussed above broadly point out that the lack of take-up can be substantially addressed if the information gap between the lender's offer and the borrower's interests is minimised. Given the intricacies in demand from the borrower's point of view, actively studying take-up with rigorous research designs can provide more definitive answers and help understand how to design better contracts that attract more clients and serve them better. Designs that are more efficient would not only help in having diverse borrowers successfully using their contract types, but also be more profitable for the lenders in terms of spreading their risks over default. In the first essay of this dissertation, I explore how changes in the loan offerings can affect take-up due to the heterogeneity in preferences of borrowers.

In the following subsections, I shift the focus on the topic of health. The following subsection sketches the health status of the poor in developing countries and their approach to healthcare. Then follows a discussion on the insights provided by the existing literature on healthcare utilisation by the poor in these countries.

1.2.3 Health

The brunt of infectious diseases is enormous in developing countries. In 2018, there were an estimated 228 million cases of malaria worldwide, with Africa being home to 93% of the cases. An estimated 49.8 million DALYs[7] occurred from diarrhoeal diseases in 2016, equivalent to 60% of all diarrhoeal deaths, again the developing countries being the major contributors of the statistics.[8] Many of these infectious diseases can be averted by simple and cost-effective investments, e.g. using insecticide-treated bed nets, chlorinating drinking water. While these poor statistics suggest that there is room for tremendous improvement through preventive healthcare technologies, they simultaneously point out how disproportionately high the economic and social impact of these deadly diseases would be if not prevented earlier.

According to the revealed preference interpretation of the human capital theory (Grossman, 2000), a consumer will invest in health if the expected discounted private benefit, including the utility benefit, is higher than the cost, both financial and in utility terms. Therefore, not investing in healthy practices – such as vaccinating the child or chlorinating water, reflects the disutility from preventive actions, or high discount rates (due to *present bias*, or high expected mortality rates), or merely low valuation of life (Kremer and Glennerster, 2011). Empirical evidence from developing countries portrays two distinctly stylised facts in the health behaviour of poor households. First, they spend enormous amounts in curative healthcare, and second, they do not spend enough on preventive healthcare (Dupas, 2011b). It is only logical that the second stylised fact is a precursor of the first. Although in theory, it is easier to address preventive healthcare investment with an affordable solution, it is puzzling as to why it does not happen in reality for the poor. As a result, recent empirical literature is more focussed in its investigation of preventive healthcare behaviour.

In the following subsection, I focus mostly on the literature that concerns take-up or optimal utilisation of preventive healthcare, which inspires the second and third essays of this dissertation by a large extent.

[7] DALY, i.e. *Disability-Adjusted Life Year* is a metric in health statistics. DALYs for a disease or health condition are calculated as the sum of the Years of Life Lost (YLL) due to premature mortality in the population and the Years Lost due to Disability (YLD) for people living with a health condition or its consequences. For example, one DALY can be thought of as one lost year of "healthy" life.

[8] Source: World Health Organization

1.2.4 Why the low take-up of preventive healthcare?

The studies interested in the low adoption of preventive healthcare in developing countries have explored several channels through which the take-up of a range of low-cost public health products (e.g. mosquito nets, vaccinations, chlorine treatment, deworming) could be increased. In those studies, some distinct channels stand out. These channels can be broadly categorised as follows: (a) lack of information, (b) financial constraints, and (c) non-standard (behavioural) channels.

The first factor that affects take-up is information. Information related to individual and local risk factors has been useful in changing health behaviour. For example, informing households that their well water is concentrated in arsenic, can increase the chances that they move to a safer water source (Madajewicz et al., 2007; Bennear et al., 2013), or that their drinking water is contaminated with faecal bacteria can affect their adoption of purification techniques (Jalan and Somanathan, 2008). Similarly, informing adolescent girls on the risks of contracting HIV can change their sexual behaviour (Dupas, 2011a). Social learning (or, the spread of information through peers and neighbours) have also shown a positive impact on take-up behaviour. In particular, when health behaviour comes at a cost (a costly tool or technology), individuals prefer to first know from their peers about the higher returns and then invest themselves. For example, Oster and Thornton (2011) find evidence from Nepal, that having more friends who also received personal hygiene products for free, increased the likelihood of self-adoption of the product by adolescent girls. In a similar example, Dupas (2014) finds from a randomised experiment in Kenya that the individuals exposed to earlier adopters of anti-malarial bed nets, showed a higher inclination in adopting them.

The second factor to the low take-up of health-improving technologies is the financial barrier. In that, the imperfect financial market and subsequent liquidity constraints play a significant contributing role. Often investing in a new water purification technology or an insecticide-treated bed net would require lumpy investments, which the low-income households cannot always necessarily afford. Therefore, access to credit or safe saving technology is crucial for disciplining preventive health behaviour. This credit constraint becomes prominent through the findings that the take-up of preventive tools increases if the poor are allowed time to accumulate funds (Dupas, 2009), or given cash before they are offered the product/technology (Hoffmann et al., 2009), or allowed to use microfinance loans to get those (Tarozzi et al., 2014).

In a similar vein, households that do not have access to credit through borrowing, should still be able to save to acquire these technologies. However, due to the presence of imperfect financial markets, poor households cannot afford reliable saving technologies, which in turn never takes them out of the poverty trap. Dupas and Robinson (2013b) find evidence that individuals would invest more

in health if they had access to better saving technology. Finally, the fact that they respond positively to monetary (or even non-monetary) incentives also bears testimony to the fact that they are liquidity constrained.

The final contributing factors, which have also proven to drive take-up, can be explained only through the channel of specific models based in behavioural theory. In the standard economic model, individuals discount the future at a constant rate. However, in the behavioural paradigm, even though individuals would like to adopt healthy behaviour in the future, they may not yet want to sacrifice any pleasure/resources today (Laibson, 1997). This theory could explain a similar *procrastinating behaviour* while taking up preventive healthcare. While the use of commitment devices can help individuals save up for something, sometimes small nudges or incentives can also help them change this procrastinating behaviour (Dupas and Robinson, 2013b; Tarozzi et al., 2014).

Some other behavioural theories have found empirical validation in this area. For example, that take-up rises right after a promotion campaign and then subsides over time, is borrowed from the *limited attention* model. Kremer et al. (2011b) find some validation of this model in their study on the distribution of dilute chlorine solution to mothers in Kenya. Banerjee et al. (2011) find evidence in a similar vein, in a study on the use of fortified flour in India. Furthermore, Hoffmann et al. (2009) find validation of the *endowment effect* through their finding that individuals put more value to a product that they directly receive than obtaining enough money to buy it. Here, on a slightly different note, one could expect that after getting the products for free for some time, individuals might not be willing to pay to buy them next time. This argument is based on the *price anchoring effect* in the behavioural literature. However, no adverse effect of price anchoring has been found in the related empirical literature, and individuals still show interest in investing in those health technologies after receiving them for free in the past. In this case, *learning* proves to be a more vital channel of effect (Kremer et al., 2011b; Dupas, 2014).

The studies mentioned above, have applied reliable and rigorous methodologies (mostly, randomised controlled trials) in order to explore the importance of the fundamental channels that can substantially affect adoption of preventive healthcare measures. Many of the factors highlighted here have been recognised to be overcome by direct nudges and incentives to poor beneficiaries. These are endeavours to improve demand from the poor. Nonetheless, there are also supply-side drawbacks that can lead to sub-optimal take-ups, such as failed infrastructure and management. In those situations, it is imperative to incentivise the supply providers. The second essay of this dissertation delves into some challenges on the demand-side, and the third essay also highlights a supply-side challenge alongside demand.

2 Overview of the Essays

In this section, I present the summaries of the three essays that constitute this dissertation. While discussing the essays in detail, I highlight the empirical methods used, the findings, and finally, underline their main contributions to the scientific literature.

2.1 Take-up of joint and individual liability loans: An analysis with laboratory experiment

This essay draws its primary motivation from the consistent finding of low take-up of microcredit in earlier literature (Banerjee et al., 2015b). The central argument of this work is that loan selection happens from the borrower-side and thus can be affected by her preferences. Therefore, in this study, I focus on borrowers' heterogeneity in preferences and thereby try to understand if allowing borrowers to self-select into their desired loan-type is a way of increasing take-up.[9] In a laboratory microfinance experiment, I test whether the take-up rate increases when borrowers are offered a flexible choice-set with both joint liability (JL) and individual liability (IL) loans, in contrast to an offer of one loan-type only. This set-up is distinctly different from previous experiments (in lab or field) with microcredit loans where the borrowers were unable to choose between different loan-types (Giné and Karlan, 2014; Banerjee et al., 2015b).

I argue that certain features of JL and IL loan-types could be advantageous or disadvantageous to borrowers according to their preferences. One of the main features of these loans is the dynamic incentive, i.e. the promise of further loans

[9] One might argue that it is not necessarily surprising in itself that offering more loan options in the choice-set would increase the take-up rate. However, a growing body of literature on *cognitive load* in psychology confirms that an increased number of choices can often impair optimal decision-making (Iyenger and Lepper, 2000; Schwartz, 2004). Especially in this study's context, when the prospective borrowers have to choose between profit-making loan options, they might end up making poor and irrational choices, possibly be even discouraged to take any loan at all. In light of this, it is worth checking whether my hypothesis of an increased take-up rate holds for an elaborate choice-set.

from the lender in case of full repayment. With this feature, JL excels over IL because the former ensures a higher probability of repayment through a jointly liable peer-group, which in turn increases the chances of getting more loans in future. Joint liability thus reduces the risk of non-repayment after every period of a loan. Therefore, a borrower who is risk-averse regarding repayment would prefer this loan-type.

On the other hand, as the future time horizon for the availability of future loans (through dynamic incentive) is unknown, the discount factor of the borrower is likely to drive her choice. The borrower, who discounts the future less and values the long-run benefit of receiving further loans, would have a higher willingness to take up JL loan. However, for the borrower who discounts the future heavily, the short-run cost of repaying on behalf of an unsuccessful partner might surpass the fruits of receiving more loans with higher chances in the long run; this would make her prefer individual liability. Therefore, given these features, the *ex-ante* optimisation by borrowers should be influenced by their risk preferences and discount factors.

In addition to that, the taker of JL could also be willing to bear the cost of a partner's burden because she enjoys higher utility from not only her own the expected gains but also her partner's. This possibility originates from the behavioural foundations of preferences which validate that it is not uncommon for an individual to derive additional (positive/negative) utility from other's outcome, i.e. social or *other-regarding* preferences (Levine, 1998). To sum up, the possible differences in risk, discounting and other-regarding preferences incite my hypothesis that when the choice-set of loan-types is constricted, there might not be as many takers as would be with a flexible choice-set.

First, I sketch a theoretical model that includes parameters for risk, time discounting and other-regarding preferences, to analyse the borrower's decision-making when offered a choice of the two loan-types for investment in a business. I keep the model parsimonious to allow the least possible confoundments. The JL structure is designed for a two-person group, with information symmetry between each other; all other features on loan size, interest rate and business risk are kept the same across the two loan-types. Furthermore, in a JL loan, each member gets a loan for herself and can invest in her own business; it is only the repayment where they are "jointly liable", i.e. if one cannot repay, the other has to repay on behalf of the former. The repayment ability is determined by the sole success in business investment of the IL loan borrower, and at least one successful business investment of the group that borrows JL loan. Inability to repay by herself (with IL) or as a group (with JL) indicates the availability of no future loans. To summarise, the fundamental structure of the model is in line with the previous theoretical literature (Armendáriz de Aghion, 1999). Additionally, I introduce an "outside option" for

the non-takers, by designing an employment opportunity (EMPL) which has lesser risk and lesser return compared to what a successful business investment has.

The experiment was conducted with 220 university student subjects in the decision-making lab in Turku, Finland. Three treatment variations were implemented - one group was offered a choice-set of IL, JL and EMPL, another group was offered a choice-set of IL and EMPL, and the last group was offered a choice-set of JL and EMPL. Comparison of the first group with the other two groups helps evaluate whether the flexibility of being able to self-select from a bigger choice-set increases overall take-up or not. I further elicited each subject's risk, social and time preferences through auxiliary choice tasks.

I find statistically significant evidence in favour of my hypothesis that when offered a choice-set with the two loan-types, the take-up proportion is higher than an offer of just one type. With respect to IL-JL-EMPL, take-up was lower by 15.99 percentage points ($p = 0.033$) in IL-EMPL and by 13.42 percentage points ($p = 0.072$) in JL-EMPL. These are equivalent to 20% and 17% lower take-ups than in the flexible choice-set with both loans. I also find interesting effects of heterogeneous preferences, thus confirming their association with the choice-making by the borrower. The willingness to take up IL loan decreases with risk aversion; but in general, the willingness to take up *any* loan decreases with risk aversion. By testing the association between altruism and the chosen loan-type, I find that subjects choosing JL also donated more in a one-shot dictator game.[10] Finally, the findings on heterogeneous preferences validate my theoretical predictions through a reduced-form analysis.

To my knowledge, this study is the first of its kind to have aimed to examine the intertwined channels of different types of preferences that could affect take-up of microloans. To see whether at all multiple preferences are in action, only a controlled experimental set-up in a laboratory could help. Although this methodology implies a trade-off with external validity by not having the natural set-up with a contextual sample, this study's scientific contribution is adequately vital in the empirical literature of microcredit. Firstly, it contributes to the literature of low take-up through the channel of strict contract structures (or, lack of demand-driven loan structures). The finding that a flexible choice-set can increase take-up rate bears validation to that. Secondly, I prove that risk and time preferences matter in the take-up of different loan-types, and thus contribute to the growing literature

[10] The dictator game represents a workhorse in experimental economics to assess how individuals respond to situations where self-interest and equality are opposed to each other (Kahneman et al., 1986). It provides insights into the social preferences of individuals. It could be 'one-shot' or with repetitive rounds, depending on what sort of social preferences we want to learn, *altruism* or *reciprocity*.

on how the take-up of loan-types varies with preferences (Barboni, 2017; Attanasio et al., 2018; Ahlin et al., 2020). I also establish that often controlled lab experiments can successfully provide insights into how to effectively design complex policies that are hard to understand in field experiments due to various confounding factors. Finally, one side-contribution of this study is the detailed sample size and power calculation. It is a crucial yet often unpublished part of experiments, which tremendously helps in replication studies.

In essence, the outcome of this study suggests that based on borrowers' preferences, both loan-types would be valuable to offer. Nevertheless, it is important to reflect a little on how these findings fit the current scenario on microfinance loans across the world. Although my study, along with the related new line of literature, brings out the nuances of various contract structures and how those can primarily drive the take-up rate and welfare of the borrowers, there has been a prominent downward trend in the use of joint liability microloans, in general. This trend has mostly to do with the lender's digression in interest in joint liability since the early years of microfinance. With the flourish of the microfinance industry, growing commercialisation among the lending organisations has led to this shift in interest from JL loan to IL loan (Cull et al., 2009; De Quidt et al., 2018).[11] Ahlin and Suandi (2019), on the other hand, explain that joint liability works in situations where overcoming obstacles in lending, e.g. information asymmetry is problematic. According to them, this phasing out of joint liability structure is the result of an evolution of the best practices in lending, and joint liability structure being superseded by other lending innovations that are fit for a changing lending environment. With the repeated practice of lending, institutions have become experienced in overcoming the impediments like information asymmetries, enforcement limitations and weak social capital. Thus, they have shifted away from group lending with joint liability. Nevertheless, the authors agree that the JL structure could still be an efficient tool for new lending organisations, or even old ones venturing into new areas fraught with information asymmetries and limitations, as it was in the movement's early decades. This view by Ahlin and Suandi (2019) offers a

[11] In a formal analysis, with data from MIXMarket for 2008-2014, De Quidt et al. (2018) show that the shift from non-profit to for-profit organisations, along with rising competition all over the world, has led to this current status. A for-profit organisation essentially targets a different objective function than a non-profit one. The authors further argue that joint liability contracts, in general, maximise borrower's welfare, so non-profits offer JL contracts whenever they can break even while doing so. On the other hand, for-profits require not only to breakeven but also more profitability than IL. It is a strict condition, and hence the latter often end up offering a few JL contracts only.

positive aspect that research on different loan structures, including the joint liability type, still has something to offer.

On a more serious note, some critical incidents resulting from the shift in focus from *non-profit* to *for-profit* nature of organisations over the past years have left policy-makers worried about the welfare consequences of microcredit loans. For example, in India, the unregulated growth of for-profit lending organisations under the umbrella of the flourishing microfinance industry, along with coercive loan-recovery practices, resulted in suicides by hundreds of debt-trapped poor farmers at the end of the last decade. Such usurious practices resulting from the profit-driven nature of lenders defeat the supposed purpose of microcredit of improving the lives of the poor. While these outcomes suggest extreme caution in the use of microcredit loans as welfare products, they also usher in need for innovation in cash policies or alternative ways of financial inclusion of the poor.[12]

2.2 Is household shock a boon or bane to the utilisation of preventive healthcare for children? Evidence from Uganda

This essay is motivated by the second stylised fact in the health behaviour of the poor in low-income households, as highlighted earlier in Section 1.2.3. In this study using secondary panel survey data on Ugandan households, I investigate how their preventive healthcare behaviour changes in times of health and income shocks. First, I aim to understand if the take-up of preventive healthcare varies with the type of shock suffered, be it health or income-related. (Note that, by 'shock' I mean a negative shock that causes a decrease in the current level of health or income.) Second, I explore the channels through which the shocks affect take-up.

The hypothesis that take-up of preventive healthcare may react differently to a health shock *vis-à-vis* an income shock is driven by various economic as well as behavioural theories. For example, Grossman's model recognises that the demand

[12] For instance, Dupas and Robinson (2013a) already find evidence from rural Kenya that helping the poor in opening non-interest-bearing bank accounts improved their savings and then increased their productive investments. Quite interestingly, Dupas and Robinson (2013a) already point out the efficiency of such an intervention over loans; almost 87% of people took up the offered savings account, while less than three per cent of individuals initiated a loan application even after receiving assistance with the collateral requirement as found in another related study.

for healthcare is a *derived* demand, from the demand for health.[13] This means that households with reduced health stock will gain higher marginal utility from health, and hence utilise preventive healthcare more. On the other hand, an increase in preventive healthcare investment could also be related to *salience* after a health shock (Kahneman and Thaler, 2006; Seymour et al., 2007). Perhaps one could even argue through simple *economies of scale* approach that while visiting the health centre to get remedial care for the health shock, the additional cost of receiving some preventive healthcare alongside, is relatively low. All these well-founded theories indicate that a health shock could increase the take-up of preventive healthcare. On the contrary, an income shock could be expected to have a substantial income effect on credit-constrained households and subsequently reduce investment in preventive healthcare.

To test this hypothesis, I take the context of Ugandan households and their take-up behaviour of immunisation for their children. When it comes to preventive healthcare for small children, the best outcome variables to discuss are those related to immunisation. To give some perspective to the general healthcare condition in Uganda, the country holds a rank of 158/189 in the Human Development Index.[14]

The Ministry of Health recognises that 75% of the disease burden could be averted by immunisation, hygiene and sanitation, nutrition and other preventive healthcare practices. The Ugandan National Expanded Programme on Immunisation has been functional for over four decades with a goal that every Ugandan child should be fully vaccinated. Moreover, since 2001, the Ugandan National Minimum Healthcare Package entitles every Ugandan a free basic healthcare coverage at public healthcare facilities. Despite the availability of these programmes, the outcomes on child health have not been promising. In 2011, only 52% of children aged 12-23 months were fully immunised and only 40% of children aged 12-23 months were immunised before their first birthday.[15] According to the Uganda Demographic and Health Survey (2011), the rate of Vitamin A deficiency, which

[13] Michael Grossman's 1972 model is a seminal work in health economics. The model views each individual as both a producer and a consumer of health. Individuals inherit a stock of health that depreciates over time and can be augmented with investments; thus, health is viewed as a sort of capital. The model further acknowledges that improved health has both consumption and investment qualities. As a consumption, it makes us feel better. As an investment, it provides the opportunity to work more hours, more years until retirement, or more productively, either in the market or at home (Grossman, 1972).

[14] Source: United Nations Development Programme, 2018

[15] Source: Uganda Bureau of Statistics, 2012

can threaten overall immunity and cause blindness, was as high as 33% among children under five, despite the availability of immunisation doses.

Using four waves of panel data (2009-2010, 2010-2011, 2011-2012, 2013-2014) from the Uganda Nation Panel Survey, I study 1500 nationally and regionally representative households and their response to preventive healthcare for their children in times of shocks. As the outcome variable on immunisation (or, preventive healthcare), I use the receipt of Vitamin A Supplementation (henceforth, VAS) by children.[16] I further use the incidence of flood or drought as the proxy for an income shock,[17] and illness of any household member as the indicator of a health shock.

I resort to a household fixed effects regression analysis to control for a number of observable and unobservable time-invariant characteristics of the household that could potentially affect the shock incidence as well as the VAS intake by eligible children in the household. A fixed-effects analysis at household level absorbs all the across-household variations and compares children of the same household. Alongside, the effect of idiosyncratic risk is investigated, and while doing so, the time-invariant household risk factors are removed. Finally, the additional use of survey wave fixed effects allows controlling for heterogeneity arising across the survey waves. Besides using several individual-specific covariates in the model, I further examine less-parsimonious versions of the model where I control for time-varying health supply-related variables as well as geographical locations and distances to other amenities, that could confound the effect.

Main results show that the probability of taking a child to get VAS increases by 14 percentage points if an adverse health shock hits the household. Similarly, a negative income shock increases the probability of VAS intake by about nine percentage points. Given an overall sample mean of 73% VAS intake, these increases are 19.7% due to a health shock and 12.9% due to an income shock. However, these findings are statistically significant only at 10% in almost all model-variants; therefore, further research in similar settings is required in order to draw a strong conclusion.

In the Ugandan context, no direct cost is incurred by the households in getting their children immunised; however, they could face indirect costs (e.g. from transportation to healthcare facilities) and/or opportunity cost of time which they

16 The Ugandan Health Ministry and UNICEF strictly recommend that all caretakers of children between 6-59 months should take them to healthcare facilities to receive VAS every six months, as a part of their immunisation schedule.

17 More than 50% of the households in the sample have agriculture as their primary source of income. Therefore, flood and drought are central in determining their income shock.

spend in accessing healthcare services. In the event of a health shock, the latter cost (in other words, time spent away from labour market activities) seems to drive my primary findings. Evidence shows that a typical member of a household hit by a health shock spends significantly less time in labour market activities than one in a shock-free household. Thus, it could mean that the inability to be at work due to illness reduces the opportunity cost of this 'forced' time away from the labour market, which is then used for remedial care and other health-promoting activities for their children. It indeed hints to the economies of scale argument, that the additional cost of getting preventive healthcare for children is low when they already visit the healthcare facility for remedial purposes.

In case of an income shock, it is not easy to pin down the underlying mechanism. The study is able to confirm a positive average effect of the adverse income shock on time spent in the labour market. However, I further find a confirmation that a relatively wealthy household spends lesser time on average in labour activities during the shock. Such an increase in leisure hours is justified, if the household draws down assets, or borrows credit, or receives transfers to insure away the negative income shock, and also, finds it cheaper to substitute time away from the labour market.[18] With the limitation of being able to confirm this channel directly, the study only suggests that the positive effect found on the intake of VAS could be driven by the wealthier households substituting preventive healthcare activities for labour (as their opportunity cost of time away from work decreases).

Essentially, shocks are a way of identifying the *ex-ante* constraints in resources of the household. In Section 1.2.4, mostly the issue of liquidity constraints came up, while discussing the financial barriers to the adoption of preventive healthcare practices. However, this study points out yet another financial barrier. It is the opportunity cost of time spent on accessing health services instead of being spent on income-generating activities. Therefore, this study identifies that low take-up due to high demand on time could also be categorised under the financial constraint challenges in the adoption of preventive healthcare for poor households.[19] In a slightly different vein, several other studies with low-income households have highlighted that it is the distance to availing the healthcare technologies which negatively affects the take-up (Banerjee et al., 2010; Banerjee et al., 2011; Kremer et al., 2011a). I believe that while transportation in itself could impose a cost, the opportunity cost of time could also be valid in explaining their findings. In this regard, the findings of this study give a different perspective on those results.

[18] For example, previous literature already highlights that households offset transitory income shocks by using asset-holdings (either as buffer or as collateral for credit) (Deaton, 1992; Beegle et al., 2006).

[19] Previously, Miller and Urdinola (2010) have found similar results in Columbia.

Since health investment is costly as individuals must trade off time and other resources related to health, it affects the optimal demand for health. Thus I add to the literature that acknowledges that time is a crucial health input (Grossman, 1972; Gronau, 1977; Vistnes and Hamilton, 1995; Miller and Urdinola, 2010). Finally, from the finding that the adults in low-income households engage more in preventive healthcare activities for their children when the opportunity cost of being away from work is low, we could also interpret that it is not in their primary interest. Therefore, concerning policy contribution, either price subsidies to offset the opportunity cost of accessing healthcare or strict mandates on healthcare practices is necessary.

2.3 Cash incentives to mothers or to community health workers – what contributes better to the health of the mother and the newborn? Evidence from India

While financial constraint is one of the primary reasons for low take-up of preventive healthcare practices in low-income households, monetary (and, also non-monetary) incentives provide some relaxation to that constraint. Conditional Cash Transfers (henceforth, CCTs) could be an effective solution. In CCT, a lumpsum monetary incentive generates a short-run income effect. On the other hand, the conditionality of it in adopting good behaviour in health or education can positively affect the well-being, and possibly break the cycle of poverty, in the long run.[20] This essay explores such a health-related CCT in India, the *Janani Suraksha Yojana* (“Safe Motherhood Programme"). In this programme, mothers received cash benefits conditional on giving birth at public healthcare facilities. This incentive was to improve the demand-side challenges in maternal and neonatal healthcare in India. However, the main thrust of the programme lay in that it also recognised the supply-side challenges. To address the supply-side inefficiencies, the programme incentivised community health workers to improve health service

[20] While microcredit has been controversial as a credit welfare programme, CCT is relatively more successful. CCTs started in Latin America, and by the ’90s every country there was running its cash transfer programme. *PROGRESA* in Mexico is the most significant example, which started with approximately 300,000 beneficiary households in 1997 and then spread across almost 5 million households after a decade (Fiszbein et al., 2009). CCT is better and less strict than microcredit loans in the sense that it does not expect everyone to be an entrepreneur and run successful businesses, but gives the money without any repayment liability. However, it does expect the households to send children to school or get them immunised, which is naturally easier.

delivery to the beneficiary mothers. In this essay, I disentangle several intricacies in the programme eligibility and attempt to shed light on the effective channels that induce good health practices among new mothers, for themselves and their newborns. For that purpose, I use data from secondary surveys on mothers with newborns around the programme's timeline and implement a difference-in-difference identification strategy.

In the early '90s India, maternal mortality ratio (MMR) per 100,000 live births was 556 which accounted for almost 19.7% of deaths of women in their reproductive age due to issues related to pregnancy (in absolute terms, this number was as high as 152,000 maternal deaths). In addition to this, the neonatal mortality ratio (NMR) per 1000 live births was 57.4. A decade later, MMR had reduced to 374, which was equivalent to 13% of women's deaths due to maternity, and NMR was still 45.1. Between years 2001-2005, while 48.5% expecting mothers received the three WHO-recommended antenatal care check-ups, only 7.3% Indian women gave birth in the presence of any trained health professional, almost 3% did not give birth at a health facility due to lack of transportation. Only 10% of the new mothers received a postnatal visit by the health worker within two weeks of giving birth. In order to tackle this dire status of maternal and child health, the Government of India introduced this nationwide reform. The JSY programme took effect from April 2005. Its objective was to promote institutional delivery among poor pregnant women. Simultaneously, incentives were offered to village-based health workers, known as the *Accredited Social Health Activists* (ASHAs), to act as an immediate link between the beneficiary mothers and the public health system. The ASHA's primary duties lay in helping expecting mothers in the community with antenatal care, birth and postnatal care.

In its initial years of implementation, the programme underwent a few rounds of revision in terms of the mother's eligibility for the cash assistance and the ASHA's employment across states. However, broadly, eligible mothers for cash assistance were particularly the socio-economically disadvantaged ones. The JSY scheme divided the states into the high-focus and non-high focus ones, which were officially termed as the low-performing states (LPS) and high- performing states (HPS). The ASHAs were only employed in the LPS in the initial few years. I use a difference-in-difference identification strategy, where I incorporate variations across the eligibility of mothers and the presence of ASHAs, to distinctly identify the causal effects along the channel of the mother's incentive *vis-à-vis* the ASHA's incentive.

For empirical analysis, I use repeated cross-sections from the District Level Household Survey of India, which gives a sample of over 300,000 mothers. The survey provides detailed information on antenatal care, delivery (including details of receipt of JSY cash assistance) and postnatal care of the mother's most recent

birth during 2001-2008. Additionally, the survey contains information on the demographic composition and socio-economic characteristics of her household - including caste, religion, and wealth status.

Primary results of this study show that the mothers receiving both cash transfer and ASHA's counselling outperformed the mothers receiving only cash transfer, in outcomes like giving birth at public health facilities and early breastfeeding. To put the difference in perspective, an eligible mother in the high-performing state experienced 2.9 percentage points greater increase in institutional births than the ineligible mother. In contrast, for an eligible mother in a low-performing state, this increase in the difference with the ineligible mother was 7.1 percentage points. These are equivalent to changes of about 11% and 28% in institutional birth rates compared to what an ineligible mother experienced in the pre-intervention period. A similar impact is found for antenatal care and BCG vaccination for the child too. For the rural mothers with up to two births, the ASHA's channel is found to be distinctly more effective for all outcomes. However, the overall implication is that only receiving a cash transfer for giving birth at a public health facility might not be sufficient for a mother to get motivated or to overcome the costs. Continual guidance pre and post-birth by the health worker would lead to better all-round health of the mother and the newborn.

To summarise, this essay investigates a unique quasi-experimental cash transfer policy that recognises both demand-side and supply-side challenges to optimal utilisation of healthcare by the poor. The existing literature consists of studies separately looking at demand-side issues and supply-side issues, and they prove that there are obstacles to take-up on both sides.[21] The other big social welfare programmes in the format of CCT have mostly catered to the demand-side issues (e.g. *PROGRESA* in Mexico, *Bolsa Família* in Brazil). However, then, it is hard to truly understand the effectiveness of the programme if we cannot see how functional the supply-side has been. For example, in several African countries, where the health service delivery system suffers from a severe lack of organisation and management, CCTs to low-income families would not be effective at all (WHO, 2007). Now, in such a situation, experimental set-ups, such as randomised controlled trials, can give better freedom to the researcher in simulating an environment in which the supply-side can also be controlled. For example, Banerjee et al. (2010) implemented a

[21] While the entire Section 1.2.4 is dedicated to studies on demand-side barriers to take-up of healthcare, a body of literature also confirms the supply-side obstacles. For example, issues such as inadequacy of medical equipment in healthcare facilities, absenteeism of health professionals are prevalent in developing countries. In addition, the rate of usage of public healthcare is strongly correlated with absenteeism of health professionals from health facilities (Banerjee et al., 2004; Banerjee and Duflo, 2007).

randomised experiment in rural India to investigate both demand and supply-side issues of child immunisation. They set up immunisation camps in one group of villages (as supply incentive), and they provided food incentives to parents besides setting up immunisation camps in another group (as supply and demand incentives). Then they compared the mean outcomes in the two groups with a control group of villages with no incentive. However, though randomised controlled trials as by Banerjee *et alia* provide the advantage of design and rigour, they are often small-scale and hence, limited in external validity. In that regard, the quasi-experimental nature of the study in this essay gives the most robust external validation possible.[22] Moreover, in terms of findings, this study offers an improvement over the other impact evaluations of the JSY programme through its rigorous inspection of the two distinct channels of effect, namely the mother's incentive vs the ASHA's incentive.[23]

Furthermore, in terms of the channels that affect take-up in the first place, this study underlines the prevalence of financial constraints to the new mother (and her family) which often puts a barrier to the access of better healthcare and health-promoting practices. These costs could arise due to travelling across long distances in order to avail proper healthcare, or through the opportunity cost due to lost wages of the family members who have to help the mother during her pregnancy. Here, we see an example of a direct monetary incentive to the mother, which can redeem this financial barrier. Finally, the positive impact through the ASHA's counselling also ascertains that information on the importance of health and healthcare can bridge the gap to low use of healthcare. Not only that, but it also points out that the problem of low take-up arising through the channel of lack of information, can be addressed by active engagement (and incentivisation) of the supply-side. Particularly in this design, the information channel through the ASHA happens to be stronger than the relaxation of the financial constraint channel through cash assistance to the mother.

22 I acknowledge that quasi-experiments are inferior to randomised experiments in terms of internal validity (due to the lack of random assignment), but then again identification strategies like difference-in-difference are used essentially to bypass the problems arising from non-randomisation.

23 Thus, it complements nascent literature on the JSY programme that examines the two channels of incentives (e.g. (Debnath, 2018)).

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