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MASTER THESIS

Universal Basic Income as an Alternative to Existing Benefit System:
Results for India from a Microsimulation Approach

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GLODEP 2021



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Declaration

I, Karina Narbikova, hereby, declare that the Thesis entitled ‘Universal Basic Income as an Alternative to Existing Benefit System: Results for India from a Microsimulation Approach’, submitted to the GLODEP Consortium 2021, is my original work, and any theoretical and empirical literature and dataset used in the proceedings of this study have been duly cited and referenced.

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Zásady pro vypracování

In the recent literature Universal Basic Income is viewed as an alternative to the existing net of social programs. UBI aims to decrease inequality, eradicate poverty and to increase efficiency of public spending. During the COVID-19 pandemic developed and developing countries have remarkably increased both the amount and the coverage of the social transfers in order to mitigate the consequences of the shock on the wellbeing of people. Based on the available data of social transfers in the developing countries, the study intends to explore how introduction of UBI could reduce the negative impacts of the shock on poverty.

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Abstract

Increased public spending in times of sanitary crisis presents a challenge for the budget and calls for more efficient solutions to address poverty and inequality. The study reviews the case for Universal Basic Income and applies a microsimulation model on the latest dataset of India Human Development Survey-II to assess efficiency of the simulated Basic Incomes and the existing programs. The results demonstrate inferior capabilities of Basic Income to combat poverty and inequality compared to the social programs both in budget-neutral settings and within a feasible budget increase. Only one type of Basic Income shows significant results in poverty reduction and performs better than other social schemes: Basic Income that targets the poor. Additionally simulated scenario reveals that a new transfer in the form of Negative Income Tax that brings everyone to the poverty line is able to completely eradicate poverty and decrease inequality in a budget-neutral setting. Adoption of the new forms of social transfers aims to provide security to the most vulnerable part of the population contributing to a more equal and redistributive society.

Keywords: poverty; inequality; universal basic income; social transfers; microsimulation.

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List of Abbreviations

| | |
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| BI | Basic Income |
| CCT | Conditional Cash Transfer |
| CEQ | Commitments to Equity Institute |
| DBT | Direct Benefit Transfer |
| EAP | East Asia and Pacific |
| ECA | Europe and Central Asia |
| GDP | Gross Domestic Product |
| GMI | Guaranteed Minimum Income |
| IFS | Institute for Fiscal Studies |
| IHDS | India Human Development Survey |
| LAC | Latin America and the Caribbean Region |
| MENA | Middle East and Northern Africa |
| MGNREGS | The Mahatma Gandhi National Rural Employment Guarantee Scheme |
| NIT | Negative Income Tax |
| PDS | Public Distribution System |
| PPP | Parity Purchasing Power |
| TBI | Temporary Basic Income |
| UBI | Universal Basic Income |
| UCT | Unconditional Cash Transfer |
| UII | Universal Independent Income |
| UN | United Nations |
| UNDP | United Nations Development Programme |
| VAT | Value Added Tax |

Introduction

Due to the pandemic the problems of poverty and inequality have intensified significantly. While for the majority of the well-offs lockdowns and Covid-19 restrictive measures represented just a neglectable fall in income, for the poor reduced earnings meant severe and fatal losses in terms of human development. Reductions in income inflicted a serious damage on the most deprived households that is likely to be felt long after the crisis is over.

To confront the devastating effects of the Covid-19 pandemic and to support the population in times of crisis, governments all over the world have considerably increased the amounts of social benefits. In the developed countries the amount of social support was palpable: the states provided one-time payments to their residents to mitigate the negative shocks by partially offsetting the incurred losses. Developing countries that are much more limited in fiscal resources had to provide financial support to their population within the visible budgetary constraints. This determined the increasing relevance of alleviating poverty and inequality through provision of more cost-effective social transfers.

This study aims to analyse whether the Universal Basic Income can become a viable alternative to the existing social safety net within the budgetary limits in India, one of the world's biggest developing country. The assessment of the Universal Basic Income efficiency was performed based on the microsimulation model that used India's nationally representative dataset and analysed 310 potential scenarios of adopting Basic Income and replacing some of the existing social programmes in different budget-settings.

This study is organized as follows. Chapter 1 reviews the disadvantages of the existing social transfer system and explores theoretical justifications of desirability of Universal Basic Income. Chapter 2 covers the review of empirical literature that uses microsimulation approach to assess comparative effects of replacing current social schemes with UBI. Chapter 3 presents the context of India, explains the data, methodology and microsimulation model used in the study. Chapter 4 describes the main results of the study while Chapter 5 discusses these results by putting them into India's context. Chapter 5 also provides author's proposals aimed at eradicating poverty and decreasing inequality. The study closes with the concluding remarks.

Chapter 1. What is wrong with the social transfer system and why do we need a Universal Basic Income?

Why should we care about poverty and inequality?

One of the root problems of the modern society is poverty and inequality. In 2019 around 10% of global population lived on \$1.90 a day in 2011 PPP (World Bank, 2019) while the richest decile of adult population owned 82% of global wealth (Credit Suisse, 2019). The disparities are even more highlighted in the developing countries with most of the extreme poor living in Sub-Saharan Africa (Nigeria – 78,5 mil people, Congo – 53,3 mil) and in South Asia (India – 284,6 mil) (PovcalNet, 2017). As a result of the pandemic it has been assumed that the number of extreme poor will increase by 1,4% in 2020 with 82% of the new poor living in the middle income developing countries (World Bank, 2020).

Why does equality and reducing poverty matter?

Contemporary political theorists view eradication of poverty as an obligatory condition for justice and claim that each and every person should have enough of resources to live decently (Frankfurt, 1987; Van Parijs, 1995). Primary goods should be available to all people if they are to fulfil their roles as citizens and co-operating members of society (Rawls, 2001). The most vulnerable part of the population experiences the most hurdles on their way on becoming full-fledged members of the society e.g.: participating in political life, cooperating with others, contributing to global peace and development (Lamb, 2015).

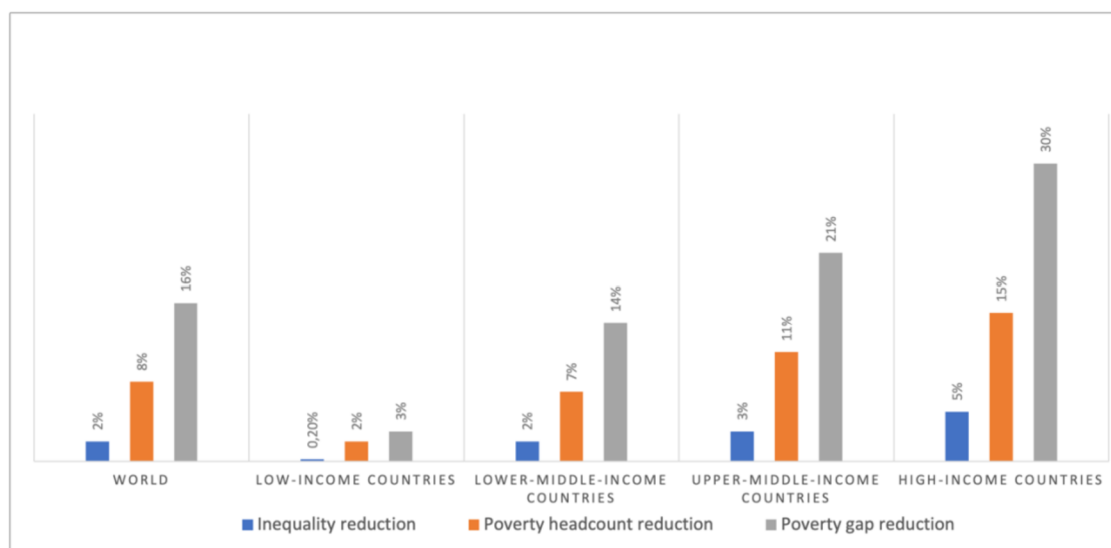
Furthermore, there is a strong empirical evidence that societies with more redistributive institutions help to produce sustainable economic growth (World Bank, 2006; Dabla-Norris et al, 2015). Narrowed inequality is associated with political and social stability (World Bank, 2006) while high inequality within the country evokes crime and brings about excessive political influence of the better-off (Ravallion, 2018). Policies aimed at reducing inequality in the low-income countries have positive impact on education and health in these countries that in turn boost economic growth (Sen, 1981).

Recognizing importance of narrowing inequality for future peace and prosperity, in 2015 United Nations adopted two goals within the Sustainable Development Goals framework that directly call for elimination of extreme poverty and combatting inequality. To achieve these goals UN introduced number of targets for designing resilient social protection systems that reduce vulnerability of the poorest part of the population and promote welfare by ensuring the equal rights for all women and men to economic resources.

What is wrong with the current social protection system?

In the meantime social protection systems are based on social transfers. On average countries spend 1,6% of GDP on social protection systems. The amount is relatively stable in both developed and developing countries and covers 44% of their total population. (World Bank Group, 2018). The average coverage rate of the poorest quintile of the population is 56% that leads to significant coverage gaps. On average social transfers reduce absolute poverty by 36% whereas relative poverty is reduced by 8%. In the high and upper-middle-income countries the numbers are more promising with relative poverty being reduced by 13% as a result of cash transfers while in low-income countries it is only 3% effective. Reduction of inequality is modest in all of the countries: social safety nets transfers reduce it by 2% on average, maximum by 5% in the most developed countries. (World Bank Group, 2018). Thus the statistics illustrates that the current social protection system is functioning not perfectly and with huge exclusion errors.

Fig. 1 Reductions in poverty and inequality from Social Safety Net transfers by country income group.



Source: Prepared by the author based on World Bank Group report “The State of Social Safety Nets 2018”.

Issues with targeting

Existing social transfers programs are targeted and use different criteria to assess eligibility for social assistance. The idea behind targeting social transfers is clear: in absence of infinite resources it may seem more reasonable to provide financial support to a small group of vulnerable population than to all members of the society irrespective of their level of income. This argument

seems to be appealing to the public due to its perception of fairness, it is easier to justify handing out limited resources to the people in need than to distribute it universally.

Nevertheless, targeting has hidden indirect costs in its nature that are not always taken into consideration. In order to target efficiently government has to incur huge administrative expenses to ensure that transfer system is functioning. (Ferreira-Coimbra & Forteza, 2005; Dutrey, 2007; Samson et al, 2006). But even the high cost of administration and bureaucracy cannot secure that social transfer will reach the targeted group due to the exclusion and inclusion errors. Moreover, getting into the targeted group and applying for social assistance takes time, determination and certain skills in filling out the obligatory forms to prove eligibility that people in extreme poverty often do not possess. (Sluchynsky & Palacios, 2009; Coady & Parker, 2009). Number of steps that the poor households have to take to be selected often entails internal stigmatization and shame instead of empowerment. When the beneficiaries of the social assistance are perceived by non-recipients as undeserving, it can deteriorate community cohesion and decrease benefits from closed social ties between the households (Hochfeld & Plagerson, 2011).

Furthermore, targeting that is mostly means-tested often leads to work disincentives and further poverty trap as recipients are unwilling to take jobs with higher income if it means losing the social benefits. The beneficiaries' perception of social assistance as a gift provided by the government rather than their right as citizens can increase mental dependency on the state and its current political leader.

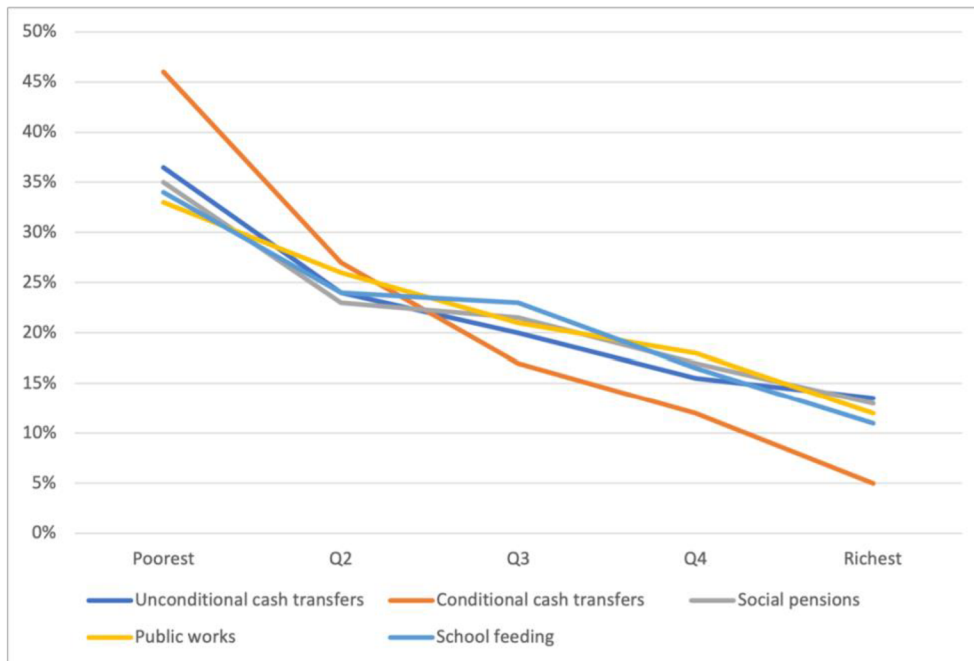
Issues with conditionality

All of the existing social transfer programs in one way or another embody targeting, however among them there are also conditional programs that in fact make them squared targeted. The social transfers in question are conditional cash transfer (CCT) and they are widely used by the policy makers to target the poorest households with 46% of coverage on average. (World Bank Group, 2018).

Under CCT framework cash is provided to the eligible households upon fulfilling specific conditions such as school attendance of children, vaccination, engagement in public works, etc.

Conditionality of cash transfers might seem like a reasonable approach due to the attitude of the taxpayers towards the free rider problem. In societies with high income inequality and large social distance the idea of transferring benefits unconditionally can be rejected by the taxpayers (Carriero & Filandry, 2019) since it violates the principle of reciprocity that implies that every income should be earned and cannot be distributed to the poor for nothing (Forde et al, 2009).

Fig. 2. Global Distribution of Beneficiaries by Type of Social Safety Net Instrument by Quintile of Pretransfer Welfare



Source: Prepared by the author based on World Bank Group report “The State of Social Safety Nets 2018”.

From the ethical perspective, however, the concept of conditionality is controversial. It has been criticized as paternalistic and immoral (Standing, 2011; Freeland, 2009). Imposed conditions nudge people to behave in a way that the state considers to be right, assuming that people do not possess the capacity to decide what is good for them (Devereux & McGregor, 2014). In case of non-compliance with the defined conditions, beneficiaries are penalized or suspended from the program. Thus, conditionality is bound to compromise dignity and freewill of the recipients who are constantly screened by the state and whose benefits are removed once they become ineligible due to the unpleasant circumstances of their daily lives. (Ladhani & Sitter, 2020). Moreover, the design of CCT programs often does not take into account various shocks the poor are experiencing leaving them even more vulnerable and unsure about the future (Samson et al, 2006).

Limitations in coverage and hidden cost of targeting and conditionality undermine the impacts of the social transfers on the wellbeing of its recipients. Current social transfer system does not meet the targets set by UN in terms of resilience: it is not adaptive to the negative shocks and does not provide security to the most vulnerable part of the population. Thus another approach should be

taken to the reformation of the social safety nets to achieve elimination of poverty and reduction of inequality for the future growth and prosperity.

Universal basic income - alternative?

The idea of Universal Basic Income (UBI) is not new and derives from the humanistic concepts of social assistance and insurance for everyone that dates back to the 16th century (More, 1516). In the end of 18th century a universal individual unconditional life-time cash payment project was proposed by the political theorist Thomas Paine that led to many other proposals from the political activists related to redistribution of the national welfare between all members of the society that ensured minimum income for all (Spence, 1797; Fourier, 1836; Charlier, 1848; Mill, 1848). The term UBI was coined only in the of the 20th century when it got in the middle of the remarkable public discussions first in post-war Britain and then North America. For the first time the idea that the right to leisure should be available to all people irrespective of their income or employment status was publicly introduced (Russell, 1932). English political economists G.D.H. Cole (1935) and James Meades (1989) consistently advocated for public dividend that should cover the basic needs of every citizen. In 1960-s in the United States political debates concerning UBI was led by the economist Robert Theobald who regarded UBI as inevitable measure due to inevitable automatization and labor abundance. Another point of view on UBI was offered by Milton Friedman with his project of Negative Income Tax, a technical solution to redistribution of taxes, an alternative to the complexity of the system of social safety nets. Other proposals to reform the tax system were made by Robert Lampman (1965), James Tobin (1967). Around the same time Martin Luther King made the statement supporting stable and predictable guaranteed basic income that will give necessary tools to the vulnerable individuals to reclaim their dignity and take their lives back into their hands (Van Parijs & Vanderborght, 2017).

As a result of public discussions, live experiments of introducing UBI started to emerge. Several trials took place in Denver and Seattle, a five-year pilot got launched in the town of Dauphin, Canada. In 1976 Alaska established a fund that consists of the oil revenue and that to this day continues to pay out modest dividends to all Alaska residents once a year.

Variations of UBI are actively being tested around the globe. In the meantime there are 14 on-going experiments of Universal Basic Income in its different modality with 10 more under discussion. The experiments are scheduled to last 2-3 years on average and in majority of cases mean to complement other social programs with modest sums of UBI.

Fig. 3. Map of Basic Income experiments



Source: Stanford Basic Income Lab (2020). Global Map of Basic Income Experiments. Retrieved from <https://basicincome.stanford.edu/research/basic-income-experiments/>

Amidst global pandemic the debates around the adoption of UBI or at least a quasi-UBI once again started to heat up between advocates of universality and proponents of targeting. UBI sceptics claim that emergency support in forms of temporary cash transfers should be provided only to the poorest part of the population since they are the ultimate victims of the Covid-19 outbreak (Prabhakar, 2020). While long standing advocates of basic income for all call for its immediate implementation to mitigate the negative outcomes brought by deteriorated health conditions, prolonged lockdowns, stalling of the global economy that pushed many people below the poverty line. (Standing, 2020).

But what makes UBI different from the social transfers?

Universal Basic Income has five overarching main principles: it is universal, individual, unconditional, paid in cash and is of periodic nature.

Basic income is provided on the basis of unconditionality that is in line with the ideas of justice and freedom to behave independently without being patronized. Regular cash payments complement this principle by ensuring that people can buy with its help what they need and not what others claim they should need. Individual basis for payment makes the sum of the transfer independent from the size of the household and becomes more and more important in today's world where informal partnerships and cohabitation are widespread. Universality of the basic

income makes sure that every citizen is covered, favours the poorest due to the highly redistributive nature of its funding, helps them escape the unemployment trap that prevents them from getting a job when they are afraid to lose unemployment benefits and provides security and confidence in the future.

Combined, these principles make UBI a tempting solution for market and government failures, a unique tool of social security system that elevates poverty, promotes equality and human dignity and aims for sane and sustainable economy.

Issues and critics

Out of all of the above mentioned traits of UBI the principle of universality is challenged the most. (Gentilini et al, 2020). The case against coverage for all is founded on political infeasibility of UBI due to its high cost. The estimates of the cost vary largely depending on the amount of the income proposed by political theorists and policymakers. A thorough comprehensive analysis needs to be undertaken to assess this amount in different scenarios (more on that in paragraph 2 and 3) but one thing remains clear: policymakers will have to make a trade-off between a high cost of the universality of individual income (which is most likely to be funded through introduction of new taxes on the rich that presents a political challenge in itself) and a modest amount of the UBI that might compromise the aim of poverty elimination due to its insufficiency.

Other types of UBI – more realistic?

Since the cost of Basic Income appears to be the most pressing issue, policymakers might turn to quasi UBI solutions to find a better compromise between the fiscal constraints, public opinion and the ideas that Basic income represents.

Basic income for certain groups of the population

One of the quasi UBI solutions is based on targeting the population based on different criteria and thus sacrificing the principle of universality but preserving the idea of individuality of Basic Income. By targeting different age groups, universal children allowance and universal pensions might be introduced (St John, 2016; Abe et al, 2014). Later it would be possible to expand the age group and gradually include young adults in the project (Bidadanure, 2013). Instead of the age criterium, group with the low income can be chosen for targeting. This approach will imply moving the current social transfer system towards the unconditional cash transfers and decrease the role of CCT in poverty reduction.

Universal Independence Income

UII exists in the form of a regular monthly income that is set around the median income in the country (Bezzo, 2021). It is proposed that every person at the end of the high school begins to receive UII. As soon as the person starts working, he stops receiving UII and pays taxes according to the following structure: no tax area up to a gross market income equal to UII with a continuous increasing marginal tax rates for incomes above UII. People are entitled to receive the sum for the entire life-time span, i.e. pensions are replaced by the UII itself.

Negative Income Tax

Another proposed solution is based on the reform and improvement of the existing social security net through integration of social benefits with tax allowances into universal tax system. As a result of this reform Negative Income Tax (NIT) will be introduced. Upon filling the income declaration, households that find themselves below the poverty line instead of paying the income taxes will receive a payment from the government. The sum of such payment will vary and amount to the gap the households need to reach the poverty line. Adopting NIT does not mean, however, that other social programs must be abandoned: it should be a supplement to the social net system in order to eradicate poverty and reduce inequality (Lampman, 1968).

NIT plans vary depending on the chosen income cut-off (a point where households start paying income taxes), negative income tax percentage (percentage of the difference between the income and an income cut-off) and coverage (people above the income cut-off might still receive entitlements in the form of a tax exemption).

Partial basic income

Partial basic income is a basic income that does not cover all of the basic needs. It might exist in the form of individual tax deduction for all within a certain sum per year. This idea will allow for more space for experiments since the costs of partial UBI can be relatively low and would allow for complimenting the current social protection systems with a modest sum of UBI.

Temporary basic income

Amidst pandemic another proposed form of quasi UBI emerged: Temporary Basic Income (TBI). Proposed form of TBI is emergency cash transfer that targets the most poor and vulnerable people for a year with the aim to mitigate the long-lasting impact of the sanitary crisis. (UNDP, 2020). As per UNDP estimations, the cost of such project for a duration of 9 month with the size of the vulnerability threshold in this country (\$3.20 a day in South Asia and SSA, \$5.50 a day in EAP and

MENA, \$13 a day for countries in ECA and LAC) will amount to 2,4% of the developing world GDP translated into 1,3% of the global GDP. In South Asia this scenario of topping up would require just 1,89% of the GDP region (UNDP, 2020).

In order to be able to assess UBI viability and its potential to replace current social safety nets, evidence on its cost and efficiency should be collected. Due to the fiscal limitations of conducting experiments with UBI on a large scale, one of the ways to provide some estimates on its affordability is to design a microsimulation model. (Widerquist, 2018).

Chapter 2. Microsimulation of UBI cost and efficiency: literature review

Approximate cost of UBI and its efficiency at elevating poverty can be assessed by introducing microsimulations. In general these simulations help to establish and analyse various scenarios in which UBI can replace social transfer programs and its potential impact on poverty and inequality.

Recently a number of research papers emerged with an aim to better assess Basic Income's cost and efficiency under different conditions. To present a brief overview on the methods used and results obtained, seven studies were selected. Two research papers carried out microsimulation for countries with different income level in order to compare the results between them and to propose the most preferred options of UBI implementation given the countries' level of development (Gentilini et al, 2020; IMF, 2017). These papers are considered to be the most influential and highly cited research works done in the field due to the preliminary performed comprehensive analyses of the countries, detailed methodology, presented and justified results. To widen the research scope, it was decided to include other scientific papers that focus on UBI's efficiency in different income-level setting. One research paper¹ tested multiple UBI scenarios on four high income countries (Finland, France, Italy, United Kingdom), two other studies² focused on two high middle income countries (Brazil and China): one assessing BI scenarios, another estimating efficiency of unconditional cash transfers. One paper³ conducted assessment on the efficiency of UBI both in low income countries (Ghana and Senegal) and middle income countries (Zambia and Ethiopia) while another paper⁴ selected one middle income country (India) for their analysis in order to estimate the possibility of replacing existing subsidies with Universal Basic Income.

2.1. Basic Income simulations in countries with different income level

Upon conducting a research based on microsimulations for 10 developing countries⁵ Gentilini et al (2020) concluded that a UBI is less effective at reducing poverty than current programs since in budget-neutral scenario its implementation will decrease the amount of money per person compared to the current social net system due to the universal coverage. The negative impact is even higher if the majority of the social transfers are already targeting the poorest quintile of the population. Another finding states that introducing UBI that has a significant effect on poverty is

¹ Browne & Immervoil (2017)

² Siqueria & Nogueira (2021) and Golan et al (2015)

³ Goldman et al, Commitment to Equity (CEQ) Institute (2018)

⁴ Coady & Prady (2018)

⁵ The Russian Federation, Chile, Brazil, Kazakhstan, South Africa, India, Indonesia, Haiti, Mozambique, Nepal.

not politically viable in certain countries since in majority of the countries it can only be funded through considerable rise in taxes. The calculations show that in India for instance the cost of completely eradicating poverty will amount to 22% of GDP and the direct taxes on the rich would need to increase from 2,2% to 68,4%. In Brazil and Russia UBI that does away with poverty will cost 13% and 17% of GDP respectively and the rise in taxes will be lower: from 7,2% to 24,5% in Brazil and from 9% to 13,2% in Russia. In order to reach these conclusions and to perform taxation and UBI simulations the Commitment to Equity dataset and ASPIRE household survey database were consulted. For the UBI simulation household's income/expense was subtracted from the total amount of the cash benefits received under the social programs that were later replaced with UBI. The social benefits programs chosen for replacement concern only cash transfers (UCT and CCT) and subsidies that were recalculated for harmonization purposes. The number of programs to be replaced with UBI vary among the countries. For instance, in India only subsidies under Public Distribution System (kerosene and staple food) were considered with the total cost of 1,2% of GDP according to the administrative data, while in Russia the variety of programs to be replaced is larger including UCTs, child allowances, maternal capital, transportation discounts, unemployment benefits, etc. with the total cost amounting to 2,75% of GDP. In Brazil two sets of programs were selected (Programa Bolsa Família and Benefício de Prestação Continuada for Disabled and Elderly) of 1,1% of GDP.

Despite its complexity and well-designed methodology, the research does not consider another scenario where the budget for the existing social programs is expended and becomes equal to the cost of UBI under which poverty is completely eradicated. It might be of interest to evaluate the obtained results for performing a better assessment of targeting programs and universal transfers. It might also be relevant to see different scenarios of UBI by experimenting with coverage in the microsimulation and to include more social programs chosen for replacement to adequately assess the impact of Basic Income compared to the baseline scenario. For financing mechanisms other options rather than rise in taxes might also be considered. Another possible solution may include roll-back of subsidies that go to the non-poor: in some countries they might account to a significant share of GDP. For instance, in India's case their share can amount up to 9% of GDP. (Ghatak, 2016).

IMF Fiscal Monitor (2017) conducted the empirical assessment of adoption of UBI in nine countries⁶ with different income levels. For the simulations the study uses Luxembourg Income

⁶ United States, United Kingdom, France, Poland, Brazil, Mexico, Bolivia, South Africa and Egypt.

study microdata. In the model UBI was calculated as 25% of the country's median income and three variations of UBI were presented: full, given to children only and given to the children and the population over 65 years old. The findings demonstrate that the poverty reduction is higher in the developing countries compared to the developed countries with the lower cost of the UBI amounting to 3,8% of GDP. In the developing countries there is no significant difference in the scenarios where UBI is restricted just to children or to the elderly as well. Study also simulates various means of financing UBI: UBI is substituted by the system of cash transfers in the country, increase of direct taxes, introduction of the flat tax on the disposable income. The findings of the study show that in the countries with high coverage and progressivity, substituting existing safety nets with UBI will result in losses for the poorest part of the population. Countries that do not possess well-developed transfer system, introduction of UBI might be preferable if financed by direct taxes or abolishment of the energy subsidies. In the countries where transfer system performs poorly, gains from increased coverage might be cancelled out by significant losses of the poorest households. The study concludes that perfectly tailored targeting that is implemented without inclusion and exclusion errors would always perform better than universally provided lump-sum transfers.

2.2. Basic Income simulations in high income countries

Browne & Immervoil (2017) used comprehensive UBI scenario applying EUROMOD, tax-benefit microsimulation model based on data of four Member States of the European Union⁷ to analyse fiscal and distributional effects of a radical change in the social protection systems. In the simulated scenario UBI is progressively taxed and set on GMI level abolishing the existing benefits that generally are targeted on the working-age individuals and their children e.g.: social assistance, family benefits, unemployment benefits, etc. Household benefits for accommodation and the difference between current disability benefits and proposed amount of UBI are retained under this scenario. In all tested countries additional tax revenue is needed to finance BI at GMI level. In Finland it will amount to 10% of GDP, in United Kingdom and France – to 6,1% and 5,6% respectively while in Italy UBI would cost just 2% of GDP. The winners and losers in UBI are different across the countries: in Italy a majority of citizens would benefit from UBI introduction, in United Kingdom the lower-income group would benefit from the enlarged coverage, while in France and Finland the winners will be found in the middle-income group thanks to the abolishment of means-testing. Introduction of flat BI would decrease inequality by 2% in France and around 1% in United Kingdom and Italy but increase the Gini coefficient by 1% in Finland.

⁷ Finland, France, Italy, United Kingdom

One of the proposals presented by authors is to introduce a modest BI to cover some exclusion gaps that arise from targeting while keeping most of the social protection systems in place. Time-limited BI or BI with mild eligibility conditions are proposed to decrease the overall cost of the new social benefits system. The paper mostly focused its analysis on comprehensive BI scenario that replaces most of the existing social benefits. However, determining the least effective social benefit schemes and simulation its replacement with a budget-neutral UBI might also bring interesting evidence and allow to observe new gains and losses from such a transition.

2.3. Basic Income simulations in upper middle income countries

Siqueria & Nogueira (2021) used static tax-benefit microsimulation model BRAHMS to analyse an impact of introducing different UBI scenarios in Brazil which are to replace the existing tax-transfer system. BRAHMS calculates tax paid and transfers received for a national representative sample. In the first scenario UBI is combined with a flat rate income tax on all incomes and exists in the form of Negative Income Tax (NIT). The level of UBI is set at \$5.50 a day consistent with the World Bank Estimates of poverty line for upper-middle-income countries and equals to 51% of the median income in Brazil in 2017. Cash transfers in this scenario are abolished completely, pension benefits reduced by the amount of UBI. In the second scenario UBI is adjusted according to the age being smaller for children and higher for the elderly. In the third scenario there is a lower tax rate for the incomes that are twice as low as the median household income per capita. Under the Scenario 1 inequality would be reduced by 25,5%, under Scenario 2 and 3: 19,4% and 26,3% respectively compared to the current system. The gross cost of the UBI is estimated as 15% of the country's GDP, cancellation of the current non-pension benefits will upset 35% of its cost under for the second and third scenario while total removal of the existing benefits would allow the government to pay for 80% of the UBI under the first scenario. The findings show that the majority of the people would benefit from the introduction of any of the above-mentioned scenarios. To further investigate the efficiency of Basic Income, it might also be advisable to calculate the effect of the total removal of the existing programs and estimate its impact on the poverty and inequality. It would also be of interest to calculate potential scenarios for financing UBI since the paper suggests that after elimination of the current non-pension benefits UBI would still cost quite a significant amount around 9,5% of GDP and would have to be funded through the additional sources.

Golan et al (2015) examined the efficiency of the China's rural minimum living standard guarantee programme (the largest unconditional cash transfer programme in the world) by conducting a

targeting analysis with conventional and propensity score approaches. Their findings show that the targeting errors tend to be significant making the impact of the program on poverty reduction relatively small. Using the microsimulation models and alternative targeting scenarios, authors found that higher coverage of the program can be more efficient at combatting poverty than more generous transfers per household. The authors simulated scenarios that adopted uniform transfer amount and uniform threshold criteria but did not evaluate the impact of the universal nature of the transfer on poverty and did not perform comparative analysis of substituting the rural minimum living standard guarantee with UBI.

2.4. Basic Income simulations in low and middle income countries

In Goldman et al. (2018) another approach to microsimulation methods was presented. The authors analyse the effect of the reduced VAT rates of some primary products on the poverty and inequality and compare it to the impact of the existing targeted cash transfers and UBI. In this scenario UBI would be funded by eliminating the reduced VAT rates and VAT exemptions. The research is based on the data of four low and middle income countries such as Ghana, Senegal, Zambia and Ethiopia. Microsimulation models for Ethiopia and Ghana were created in partnership with IFS and the Ministry of Finance in the two countries, for Senegal and Zambia analyses was performed by the CEQ Institute and the World Bank.

The findings show a pattern that suggests that existing VAT exemptions are not completely pro-poor and that the rich receive substantial benefit from it. The finding concerning the efficiency of CCT and UCT reveal that cash transfers are often targeted based on demography or region and thus lead to exclusion errors. Replacing VAT exemptions and substituting them with targeted cash transfers would not offset the losses the poor households would incur with VAT increase. The simulation of UBI demonstrates increase in net benefits in the consumption value for the bottom deciles in each country. The size of such gain, however, varies from country to country depending on the inequity of VAT rates. Overall, the inequality decreases (even though insignificantly) due to the fact that the rich will enjoy less benefits with UBI introduction compared to the ones they received from the VAT exemptions. The authors also indicate that it might be possible to fund UBI only with 75% of the revenue from dismantlement of VAT exemptions.

Coady & Prady (2018) performed analysis of the possible adoption of a UBI instead of the current Public Distribution System that exists in the form of subsidies on several primary food items and energy. They base their estimates on the Indian 2011-12 National Sample Survey and consider a budget-neutral scenario of UBI. Authors conclude that replacement of the food subsidies with

UBI would lead to significant losses of the poorest quintiles of the population since the existing PDS on primary food items are already pro-poor. At the same time substituting energy subsidies with UBI would bring about gains for the low-income households due to more distributive nature of these transfers. The study does not analyse impact of UBI on poverty and inequality in the budget-increase settings and does not consider quasi-UBI variants and scenarios where existing social benefit system is complemented with some form of Basic Income.

2.5. Literature gap

The performed literature review aimed to cover studies that used microsimulation approach to analyse efficiency of the existing social benefits and the proposed alternatives in different income level setting. The studies gave different assessment towards Basic Income's performance compared to the existing social programs even though the majority of the reviewed studies agreed that Basic Income's superiority over traditional schemes is only observed with the significant budget increase in all of the income level settings.

It was noticed that the analysed papers tend to focus on a few scenarios and imitate a limited amount of combinations of Basic Income and the existing social schemes. In order to fill the gap and to contribute to the scientific discussion, this study is set to design microsimulation models with an expanded number of scenarios. This would allow to compare efficiency between the multiple scenarios and to observe patterns that might reveal the optimal proportion between BI and the existing social transfers in order to achieve better results at eliminating poverty and fighting inequality.

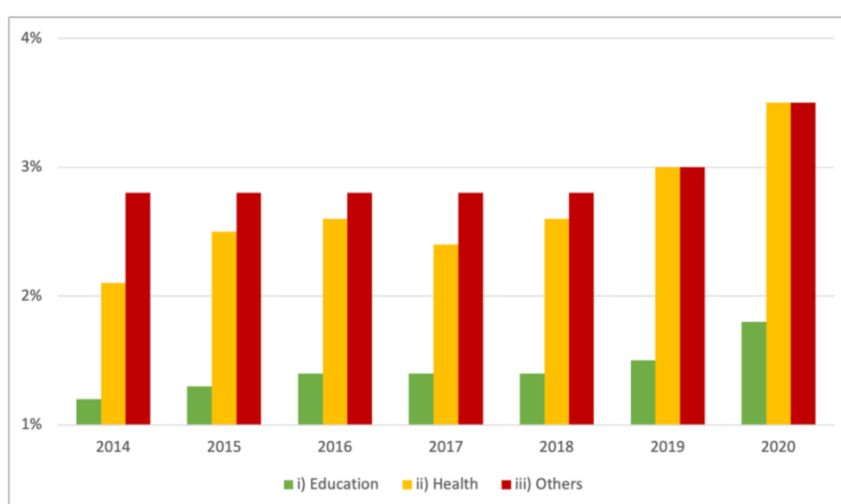
Chapter 3. Microsimulation of Basic Income in India: data and methodology

3.1. Country profile

Despite being a fast growing emerging economy, India still continues to be home to 284,6 millions of the extreme poor. (Povcal net, 2017). Before 2020 the extreme poverty rates in India were gradually declining but the COVID-19 pandemic reversed the trend. The studies suggest that after the first lockdown the number of the poor population has almost doubled (Pew Research Centre, 2021) and the impact of the second year of pandemic could be even worse than expected with the infection spreading and India reporting highest death tolls in a single day. The gap between the rich and everyone else is also on the rise due to the sanitary crisis: wealth of Indian billionaires was increased by 35% during the period of the lockdown (Oxfam, 2021).

To address extreme poverty and inequality, drastic steps should be taken. Traditionally India has provided healthcare and educational public services to its residents complementing them with targeted cash transfers and public works program. The budgetary expenditure in the social service sector has been increasing over the years (from 6,2% in 2014 to 8,8% in 2020) focusing mostly on the social security and welfare compared to the other services related to education and health (Reserve Bank of India; 2021). Pensions are also playing a major role in the social safety net in India: it is estimated that for 2020-21 pensions will account up to eight percent of the overall public expenditures (Economic Survey 2020-21; 2021).

Fig. 4. Trends in Expenditure on Social Sector in India as % of GDP.



Source: prepared by the author based on Budget Documents of Union and State Governments, Reserve Bank of India (2021)

According to the latest budget report there are 125 major centrally sponsored schemes and around 800 minor programmes implemented across the country (Budget at a Glance 2021-22; 2021). The most wide-spread social security programs are Public Distribution System (including Right to Food) and Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS).

Public Distribution System (PDS) is a targeted food security program that subsidizes food and energy items such as wheat, sugar, rice and kerosine. Each Indian citizen that belongs to the poorest 60% of the population can benefit from the five kilograms of food grains per month at significantly subsidised prices. The state of the implementation of PDS is highly discussed by the economists due to the massive leakages and fraudulent actions of reselling the subsidized items at a higher price in the open market.

Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) constitutes a self-targeted public work programme that guarantees additional work to anyone who earns below the minimum wage and is willing to work more. The number of employment days under this programme is limited to 100 days per year. The programme has been criticised for the violations of workers' rights, delayed payments and exclusion errors (Ravallion, 2019).

In the recent years there is a trend towards providing more direct benefit transfers to the citizens with the adoption of a sophisticated biometric identification system that comprises of a bank account, a phone and a unique identity number and is provided to everyone in the country (Srinivas & Kapur, 2017). In 2013 Direct Benefit Transfer (DBT) initiative was launched with a scope to transfer cash and in-kind benefits directly to the beneficiary bank account. As a result, benefits from the National Social Assistance Programme⁸, Scholarships and Fellowships Schemes, MGNREGS and various other schemes were included into the system. During the pandemic DBT system proved to be especially useful: following the outbreak of the sanitary crisis it successfully provided relief to the millions of citizens who found themselves in need of immediate assistance. (India's National Informatics Centre, 2021).

The idea of introduction of Universal Basic Income (or at least a quasi UBI) as a logical extension of Direct Benefit initiative is circulating among the economists and policymakers and is a subject of the heated debate. In 2017 the Ministry of Finance of India proposed the adoption of the modest Basic Income that would be provided to 75 % of the population except for the richest quartile (Economic Survey 2016-17, 2017). In the proposed reform UBI is to be funded by the

⁸ National Assistance Programme includes Old age, Widow and Disability Pensions Schemes, National Family Benefit Scheme (a lumpsum assistance to the household in the event of the bread-winner's death) and Annapurna Scheme (food security for the eligible elderly persons).

replacement of the existing subsidies and other social welfare schemes that are known for their underperformance and exclusion errors. Despite being widely appraised for bringing the discussions of UBI into a political discourse, the Ministry's ambitious proposal was also heavily criticized by the economists and civil activists. The main points of criticism include disassembling the social welfare programs that despite their drawbacks and leakages still bring value to the most vulnerable part of the population and help to combat poverty. In certain cases replacing the social programs with Basic Income will result in inefficiency and will create more losers than winners among the poorest part of the population (Khosla, 2018).

This research intends to contribute to the discussions around adoption of UBI and its variants in India while also exploring the possibilities of finding a balance between the amount of UBI, budget neutrality and replacement of certain social programs. It analyses different replacement schemes with an aim to reduce poverty and inequality among the population.

3.2. Data

The main source of information for the research is India Human Development Survey-II (IHDS-II), a most recent nationally representative multi-topic panel survey conducted in 2011-12 that covered 42,152 households in 1,420 villages and 1,042 urban neighbourhoods across India (Desai & Vanneman; 2014). The aim of the survey was to merge a broad range of topics concerning socio-economic status and human development indicators into a single study. The topics include detailed information on income, social capital, education and health. The IHDS-II was mostly conducted in the form of the hourly interviews with the heads of the household that provided information on socio-economic conditions of the respective household. The India 2011-12 Human Development Survey is the second IHDS that revisited the same households that were first selected for the IHDS-I conducted in 2005-06. The third round of IHDS was planned to be carried out in 2020-22 but given the constraints of the COVID-19 pandemic, the precise dates of the IHDS-III are difficult to predict.

The welfare indicator and a proxy for income used in the research is total household consumption per capita. For the purposes of the research information presented in the survey was adjusted from the household to the individual level by dividing household expenditure by the number of household members. To assess poverty, the research uses the monthly consumption per capita and the Tendulkar poverty line variable that was adjusted for the rapid inflation during 2012 when the interviews were taking place. The poverty line variable depends on the state and the area where a household lives: urban or rural.

The research also uses other constructed variables presented in the dataset such as number of children, teenagers, adults and elderly persons in the household, number of working people, number of people who participated in the Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS), income received from the MGNREGS and the amount of social benefits received by the households (scholarships, old age pension, widows pension, maternity benefit, disability pension, etc.). The study does not analyse possible substitution of another social benefit program such as Public Distribution System, a subsidy that is established to contain the prices for staple food and kerosine, with a Basic Income. The impact of the replacement of this scheme with UBI was sufficiently analysed by various studies (Coady & Prady, 2018; Gentilini et al, 2019). Given the repetitive negative microsimulation results of replacing food subsidies with UBI on poverty and inequality, those variables were not included in this study.

Number of people in different age groups and in different employment status is used for the calculation of various types of Basic Income. The amount of social benefits is included in calculations of various benefit replacement scenarios and in the BI calculations as well. The social programs analysed separately in the microsimulation scenarios were selected based on their total amount, coverage of the poor households and their potential to combat poverty. According to the dataset the amount of benefits provided through cash transfers (scholarships, old age pension, widows pension, maternity benefit, disability pension, etc.) accounts for 60% of the analysed social benefits system. The other 40% is attributed to the income the households receive through MGNREGS. The old age pensions has the biggest budget out of all cash benefits: they constitute 34% of the total cash benefits amount. The scholarships is the second most funded social program accounting for 32% of the total cash benefits. The maternity benefit budget is more modest, it constitutes only 3% of the total cash transfers paid.

It should be also noted however that only 58% of the poor receive at least some kind of social support (either cash benefits or MGNREGS). When it comes to cash transfer only, number of poor that receive at least some benefits is even more modest: 47% of the all poor households. At the same time old-age pensione is paid to the 13% of the poor, while only eight percent of the non-poor benefit from this transfer. Scholarship transfer is paid to the 28% of the poor and to the 17% of the non-poor households. Five percent of the poor households receives maternity benefits, the number of the non-poor households is even lower: only three percent of the non-poor benefits from this transfer. Participation in MGNREGS is more common among the poor: on average 24% of the poor households participate in public works compared to 13% of the non-poor ones.

The main limitation of the research is linked to the data availability. The study is pegged to 2011 given the availability of microdata on the socio-economic status of the households and does not reflect the changes of the expanded social safety net of the last years and the reforms made in this regard. For instance, since 2014 the efficiency of MGNREGS in terms of targeting the poor households has improved significantly with overall participation rate increasing and corruption level falling. (Sukhtankar, 2016; Khosla, 2018). However 2011 data is sufficient for the aim of this research that only seeks to illustrate the effect of introduction of various types of Basic Income on poverty and inequality and to reignite the discussion about potential ways of its integration into the public benefit system in a post-pandemic era.

3.3. Methodology and microsimulation model

In four different budget settings nine hypothetical types of Basic Income have been simulated. All of the BIs are unconditional and are paid on the individual basis. Other characteristics of the simulated BIs vary: only one of the proposed BI can be considered as a pure form of UBI since it is given to every resident independent of his demographic or socio-economic status.

In the simulations five types of BI are given out based on the age of the recipient. One type of BI is given to everyone except for children (under 14 years) that is in line with the major trend in the UBI discussions: most of the BI proposals include only adults due to the fiscal limitations of the completely universal BI. To complement for the potential benefit loss of households with children, this BI was tested with the scenario where maternity benefits are kept and are not replaced with BI. Another type of BI covers everyone except for the ones who reached the retirement age (above 60 years). The idea behind including this type of demographic targeting in the research was to increase the amount of BI by excluding the elders and at the same time to test the efficiency of the scenario where old age pension is not substituted with BI. BI for everyone except for children and people above 60 years was chosen as a combination of the previous two scenarios and targets adults and young adults only. Fourth type of BI is reserved for the children only and is considered as a universal child allowance payment. Evidence from the multiple studies suggests that such transfers can reduce poverty of the families with children in the short-term and increase labour-market productivity in the long-term (Almond et al, 2017; Evans et al, 2017). Another proposed form of BI is supposed to serve the children and teenagers (under 20 years) and is called independence income. It increases the number of recipients of the BI compared to the child allowance payment but at the same time it also increases the amount of transfers to the households with the underage dependants who at this young age are unlikely to provide for themselves or bring significant income to the households if any. It also encourages education attainment and

improves health outcomes that are crucial for the growing nation of India, where nearly 41% of the population belongs to the age group below 20 years old (15th Census of India, 2011). Moreover, 81% of the poor households in the dataset have children below 20 years that means that these transfers have potential to decrease the number of poor.

The remaining three types of BI are targeting socio-economic status of the recipients. In the research BI for everyone except for working adults represents a quasi-unemployment benefit. 28% of the poor in the dataset do not work and hence do not have a regular monthly mean for survival. A modest quasi-unemployment benefit will not bring most of the unemployed out of poverty but might save lives and has a chance at reducing income inequality. A similar type of BI included in the research covers everyone but working adults who do not participate in MGNREGS. This type of BI was selected to assess the impact of this quasi-unemployment benefit on poverty but at the same time keeping the benefits for the ones who participate in MGNREGS since they do not possess a decent disposable income. Finally, the research proposes BI that directly targets poverty and is provided only to the people below the poverty line.

Additionally, a Negative Income Tax (NIT) was simulated with the aim to bring everyone to the poverty line. In this scenario NIT is only paid to the households below the poverty line and amounts to 100% of the difference the poor need to reach the poverty line. The alternative budget increase to fund NIT was calculated respectively.

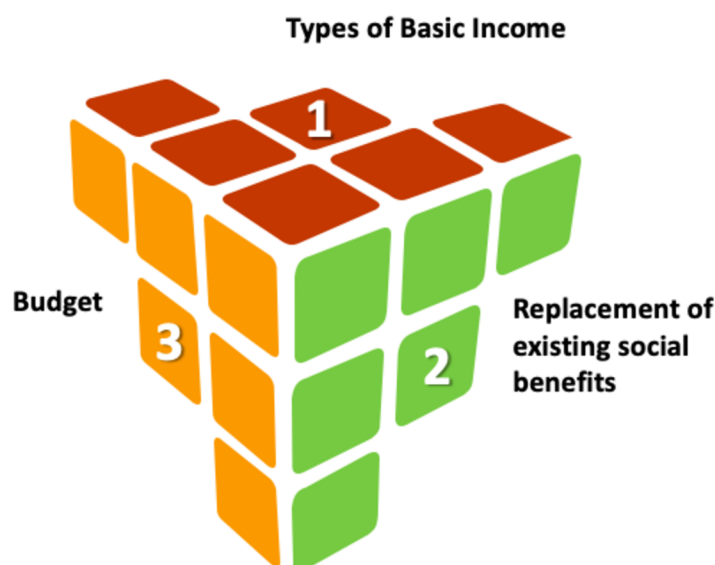
All types of Basic Income are funded by the replacement of the existing social benefits that are presented in eight different scenarios. In the majority of the proposed scenarios the research differentiates between cash benefits and income received from participation in MGNREGS to observe their impact on poverty and inequality separately since MGNREGS benefit is attributed to public works that has a different nature than the considered cash transfers.

In the Scenario 1 all of the cash benefits received by the households in the baseline scenario are replaced with different types of BI. In the Scenario 2 total income received from MGNREGS by the household are abolished and replaced with the BI. In the Scenario 3 cash benefits and income from MGNREGS are replaced. Scenario 4 replaces all of the cash benefits except for old age pensions. Old age pensions are considered to be a replacement for income for the elderly and represent 34% of the total cash benefits received by the households. The scenario aims to supplement the BI that is paid to everyone but elderly and analyse the co-existence of various Bis with old age pensions. In Scenario 5 replacement of all cash transfers except for maternity benefits are presented. This scenario was chosen to supplement the BI that is paid to all but children to compensate for the potential losses for households with children that might occur due to the

exclusion of children from the list of the BI recipients. Scenario 6 merges the Scenarios 4 and 5 by replacing all cash benefits except for old age pensions and maternity benefits and supplements a form of the BI that is paid to all but children and elderly to compensate the potential losses for households with old age persons and children. In Scenario 7 all cash benefits are replaced but scholarships. Since the scholarship budget amounts to 32% of the total cash benefits, it was decided to test whether it would be efficient to keep the fellowships in addition to the introduction of the BI. In Scenario 8 all of the benefits (cash benefits and incomes from MGNREG) are abolished but old pensions benefits are kept. The rationale for this scenario is to test the efficiency of old pensions with an increased amount of BI that comes from the replacement not only of other cash benefits but also from termination of MGNREGS. The additional scenario 9 where all existing benefits are kept and additional transfer in the form of NIT is introduced was simulated to calculate how many additional funds is needed to eradicate poverty while also keeping all of the current social benefits.

Four budget scenarios were simulated for all types of the BIs: budget-neutral scenario, 5% budget increase scenario, 10% budget increase scenario and 15% budget increase scenario. One additional scenario of 20% budget increase was analysed only for BI that targeted the poor in order to compare it with NIT. In every non-budget neutral setting baseline scenario with the static proportional redistribution of the social benefits with the increased budget was calculated.

Fig. 5. Dimensions of the applied microsimulation model.



Source: prepared by the author.

To summarize, 310 different scenarios⁹ were analysed in the microsimulation model.

For every scenario (type of BI, replacement strategy, budget amount) the sum of Basic Income was calculated per capita with the principle of budget neutrality (i.e. the total amount of social benefits in every budget and replacement scenario does not change with the introduction of BIs).

To compare the scenarios, indicators of poverty and inequality were computed. As stated in the Data section poverty was estimated using the Tendulkar poverty line. The use of this poverty line brings about its own limitations since Tendulkar poverty line that was used in the dataset and analysed in the research has been criticised by being set at a very low level, hence another methodology for estimation of the poverty line emerged over time (Rangarajan, 2014). Even though, the estimated headcounts of the poor significantly increased with the use of the new poverty line, the changes in methodology of poverty line estimation do not affect the results and conclusions from the perspective of this research which views the poverty line as a tool for monitoring the poverty reduction with the introduction of a new social transfer policy.

In order to assess the level of inequality for each of the selected scenarios, Palma ratio was calculated by dividing the total household consumption of the top 10% by the 40% of the bottom. For the purposes of the research the Palma ratio was chosen as the indicator of inequality over the Gini Index since the Palma ratio is more sensitive to the changes in income/consumption at the bottom of the distribution (Trapeznikova, 2019) and Gini Index does not capture the impact of various social benefits on income/consumption inequality (Chitiga, 2014).

⁹ Five baseline scenarios with different budget setting (budget neutral, 5% increase, 10% increase, 15% increase and 20% increase), 288 scenarios that simulated introduction of nine types of BI that were funded by eight replacement of different social transfers in four budget settings (budget neutral, 5% increase, 10% increase, 15% increase), nine scenarios of introduction of NIT and eight scenarios with 20% budget increase for the BI that targets only the poor.

Chapter 4. Results

The study analysed the impact that the various types of Basic Income under different replacement strategies and budget settings had on poverty and inequality.

4.1. Basic Income in budget-neutral setting

Table 1 shows the percentage of poverty rate change estimated for the households with the introduction of the simulated scenarios in budget-neutral setting. Table 2 in its turn presents the results of inequality reduction with the adoption of different types of Basic Income in budget-neutral scenario. Table 3 shows the amount of a monthly Basic income per capita in Indian rupees that was distributed to the individuals under different scenarios of current benefit replacement strategies in budget-neutral setting.

From Tables 1 and 2 it can be observed that in a budget-neutral setting the levels of poverty and inequality slightly increased with the adoption of Basic Income in almost every scenario except for the scenario in which Basic Income was targeting the poor only.

Tab. 1. Impact of various types of BI on poverty in different scenarios of social benefits replacement strategy in budget-neutral setting.

| Impact on Poverty | | | | | | | | |
|--|-----------------------------------|-------------------------------------|-------------------------------|--|--|---|--|---|
| Poverty reduction with UBI as a percentage of baseline budget-neutral scenario | replacement of cash benefits only | replacement of total MGNREGS income | replacement of total benefits | replacement of all cash benefits except for old age pensions | Replacement of all cash benefits except for maternity benefits | replacement of all cash benefits except for old age pensions and maternity benefits | replacement of all cash benefits except for scholarships | replacement of total benefits except for old age pensions |
| UBI for all | 101% | 102% | 104% | 100% | 101% | 100% | 102% | 103% |
| UBI for all (except for children) | 101% | 103% | 105% | 101% | 101% | 101% | 102% | 103% |
| UBI for all (except for elder) | 102% | 103% | 104% | 100% | 101% | 100% | 102% | 103% |
| UBI for all (except for children and elder) | 102% | 103% | 105% | 101% | 102% | 101% | 102% | 104% |
| UBI (only children) | 101% | 102% | 102% | 100% | 101% | 100% | 102% | 102% |
| UBI (children allowance and young adults) | 101% | 102% | 103% | 100% | 101% | 100% | 102% | 102% |
| UBI (for everyone but working adults) | 102% | 103% | 104% | 101% | 102% | 100% | 102% | 103% |
| UBI (for everyone but working adults who do not work for MGNREGS) | 102% | 102% | 104% | 100% | 101% | 100% | 102% | 103% |
| BI only for the poor (using Poverty line 2012) | 83% | 89% | 78% | 86% | 83% | 86% | 88% | 81% |

Source: Author's calculation using IDHS-II dataset and the author's microsimulation model.

Tab. 2. Impact of various types of BI on inequality in different scenarios of social benefits replacement strategy in budget-neutral setting.

| Impact on Inequality | | | | | | | | |
|---|-----------------------------------|-------------------------------------|-------------------------------|---|---|--|---|---|
| Inequality reduction with UBI as a percentage of baseline budget neutral scenario | replacement of cash benefits only | replacement of total MGNREGS income | replacement of total benefits | replacement of all cash benefit except for old age pensions | replacement of all cash benefit except for maternity benefits | replacement of all cash benefit except for old age pensions and maternity benefits | replacement of all cash benefit except for scholarships | replacement of total benefits except for old age pensions |
| UBI for all | 101% | 101% | 102% | 100% | 101% | 100% | 101% | 101% |
| UBI for all (except for children) | 101% | 101% | 102% | 100% | 101% | 100% | 101% | 101% |
| UBI for all (except for elder) | 101% | 101% | 102% | 100% | 101% | 100% | 101% | 101% |
| UBI for all (except for children and elder) | 101% | 101% | 102% | 100% | 101% | 100% | 101% | 102% |
| UBI (only children) | 100% | 101% | 101% | 100% | 100% | 100% | 101% | 101% |
| UBI (children allowance and young adults) | 100% | 101% | 101% | 100% | 100% | 100% | 101% | 101% |
| UBI (for everyone but working adults) | 101% | 101% | 102% | 100% | 101% | 100% | 101% | 101% |
| UBI (for everyone but working adults who do not work for MGNREGS) | 101% | 101% | 101% | 102% | 100% | 101% | 100% | 101% |
| BI only for the poor (using Poverty line 2012) | 98% | 99% | 98% | 98% | 98% | 98% | 99% | 98% |

Source: Author's calculation using IDHS-II dataset and the author's microsimulation model.

Tab. 3. Monthly Basic Income per capita proposed for various types of BI in different scenarios of social benefits replacement strategy in budget-neutral setting (in Indian rupees).

| Amount of monthly BI per capita (in Indian rupees ₹) | | | | | | | | |
|---|-----------------------------------|-------------------------------------|-------------------------------|---|---|--|---|---|
| Types of BI/Replacement of existing social benefits | replacement of cash benefits only | replacement of total MGNREGS income | replacement of total benefits | replacement of all cash benefit except for old age pensions | replacement of all cash benefit except for maternity benefits | replacement of all cash benefit except for old age pensions and maternity benefits | replacement of all cash benefit except for scholarships | replacement of total benefits except for old age pensions |
| UBI for all | 22,03 | 14,68 | 36,71 | 14,55 | 21,28 | 13,80 | 14,96 | 29,23 |
| UBI for all (except for children) | 30,62 | 20,41 | 51,02 | 20,22 | 29,58 | 19,18 | 20,79 | 40,62 |
| UBI for all (except for elder) | 24,68 | 16,45 | 41,12 | 16,29 | 23,84 | 15,46 | 16,76 | 32,74 |
| UBI for all (except for children and elder) | 35,97 | 23,98 | 59,95 | 23,76 | 34,76 | 22,54 | 24,43 | 47,73 |
| UBI (only children) | 78,57 | 52,36 | 130,93 | 51,88 | 75,90 | 49,22 | 53,36 | 104,24 |
| UBI (children allowance and young adults) | 55,27 | 36,83 | 92,10 | 36,50 | 53,40 | 34,62 | 37,54 | 73,33 |
| UBI (for everyone but working adults) | 35,72 | 23,81 | 59,53 | 23,59 | 34,51 | 22,38 | 24,26 | 47,40 |
| UBI (for everyone but working adults who do not work for MGNREGS) | 34,57 | 23,04 | 57,62 | 24,40 | 33,40 | 21,66 | 23,48 | 45,87 |
| BI only for the poor (using Poverty line 2012) | 101,63 | 67,95 | 161,23 | 68,69 | 98,48 | 65,36 | 69,89 | 130,71 |

Source: Author's calculation using IDHS-II dataset and the author's microsimulation model.

When a pure UBI was tested against different replacement strategies, the number of poor increased compared to the baseline budget-neutral scenario. The increase, however, is found to be insignificant, being on average less than two percent. The highest increase in poverty occurred with the replacement of the total current benefits with a very modest amount of UBI. The lowest increase of less than 0.5 percent is observed in the scenarios where most of the cash benefits were substituted with UBI but the old age pensions were kept. The results of the inequality test for a pure UBI are in line with the observed findings for the poverty test. On average, inequality increased by less than one percent with the highest increase (two percent) in the scenario where all current benefits were substituted with UBI and the lowest increase (0.4%) where all cash benefits were replaced but the old age pensions stayed.

The poor performance of a pure UBI can be attributed to the following reasons. First, the amounts of Basic Income that were calculated for the scenarios in order to respect the budget limitations are very modest: on average the individuals received 21 Indian rupees per month that approximately corresponds to 30 US cents. Given that Tendukular poverty line used in the research is on average 940,67 Indian rupees per person (that is roughly equivalent to \$13), it is hard to imagine that such a small amount provided to all individuals instead of the specifically designed transfers can significantly impact poverty and inequality. In the baseline scenario the poor received 37,27 rupees per month per person that is more than they started receiving with the introduction of pure UBI transfers that aimed to cover all individuals in the population irrespective of their income. The second reason lies in the relative effectiveness of current social programs to address poverty and inequality in a given budget setting. The evidence shows that in the scenario 3 (where all current benefits were substituted with UBI) despite the amount of UBI being higher than in other scenarios, the increase in poverty and inequality was also the highest. It proves that the adoption of a full UBI in the given budget setting creates more losers than winners among the poor even though the problems of leakages and exclusions that tantalised the current social schemes are now inexistent.

Almost every other type of proposed Basic Income follows the same pattern. The highest increase in poverty numbers and inequality level in comparison with the baseline scenario (even though insignificant) is observed in the scenario 3 where all current social programs are substituted with Basic Income no matter the type (BI for all but children, BI for children only, BI for children and young adults only, BI for all but the elderly, BI for all but the elderly and children, etc.)

Even in the scenarios where Basic Income amount is higher than the benefits that the individuals receive under the current social system net, it does not manage to offset the losses the poor incur

with the introduction of the new social protection system. Interestingly, introduction of BI for children in the form of a universal children allowance does not reduce overall poverty in a budget-neutral scenario (the reduction is around 0.05 percent when all of the cash benefits are replaced except for old age pensions or except for old age pensions and maternity benefits). It means that the number of children in the households cannot be considered as a proxy for poverty in India's case. In the dataset 68% poor households have children compared to the 44% of the non-poor households. On average in the highly deprived households the number of children is three while in the non-poor households there are two children. The poor do have more children on average but the difference is not striking given that the poor constitutes around 20% of the total population.

Another important finding relates to the scenario where Basic Income is introduced to everyone but the elderly. As mentioned in the Methodology section, this scenario was chosen to test the capability of the existing old age pension transfer to be an efficient substitute to the BI. The Basic Income amount in this scenario is one of the lowest among the other variants and translates to 16,29 India rupees per month per person. At the same time the average amount received by the elder person from the existing old age pension transfer accounts to 16,08 rupees making both transfers approximately equal in size. This means that the old age pension transfer despite its non-universality (only 13% of the poor households receive this benefit) performs as good as the UBI for all in the same replacement strategy scenario in terms of poverty and inequality reduction in a budget-neutral scenario.

Targeting the population by their employment status and providing “quasi unemployment benefits” also did not prove to be an effective way to decrease poverty and inequality: on average poverty increased by 2% and inequality by 0,9%. The observed variances between scenarios that either include or exclude MGNREGS participants in the list of BI beneficiaries are found to be insignificant given its small effect. The largest sums of Basic Income in both scenarios were paid when all of the existing schemes were replaced, however it did not achieve positive results: poverty and inequality increased the most demonstrating once again the comparative efficiency of the existing social safety net versus universal cash benefits that target everyone but working residents.

Imitating combinations of Basic Income with various social programmes did not achieve the desired results of determining their efficiency compared to other social schemes: no striking variance in poverty and inequality between the different replacement strategies was observed. The only conclusion to be drawn from the testing is that elimination of MGNREGS results in more poverty and inequality compared to other social schemes and that combination of Basic Income

with old-age pensions is more preferable than replacing cash pensions with Basic Income and scholarships. This hints at the superior capacity of MGNREGS and old-age pensions at alleviating poverty and inequality.

However, one type of the tested BI stands out from the rest. When Basic Income that is distributed to the poor only (including the ones who became poor after disassembling the current social schemes), the significant reduction of poverty is observed. On average poverty was reduced by 16% with the highest reduction of 22% occurring in the scenario where all benefits (including MGNREGS income) were substituted with the BI. The most moderate but still significant reduction of 11% is found when only income from MGNREGS is replaced with the Basic Income. It allows to make a suggestion that MGNREGS programme is more efficient in terms of combatting poverty than other social programmes given that the difference in budget between cash transfers and MGNREGS is almost equal (60% and 40% respectively). To summarise, the findings from the BI for the poor only scenario confirm the fact that the current social safety net suffers from a lot of leakages that results in under coverage of the most vulnerable part of the population. If the aim of the social programmes is to lower poverty, the coverage for poor should become universal and the social transfer schemes - more targeted. In terms of inequality, a tendency to its decline with the adoption of pro-poor BI was observed. The impact is found to be very low and insignificant: approximately one percent on average. This occurs due to the reduced income of non-poor households of a modest income that are denied a new pro-poor Basic Income and that at the same time lose the additional social benefits they used to receive in the past to supplement their earnings.

4.2. Basic Income in budget increase settings

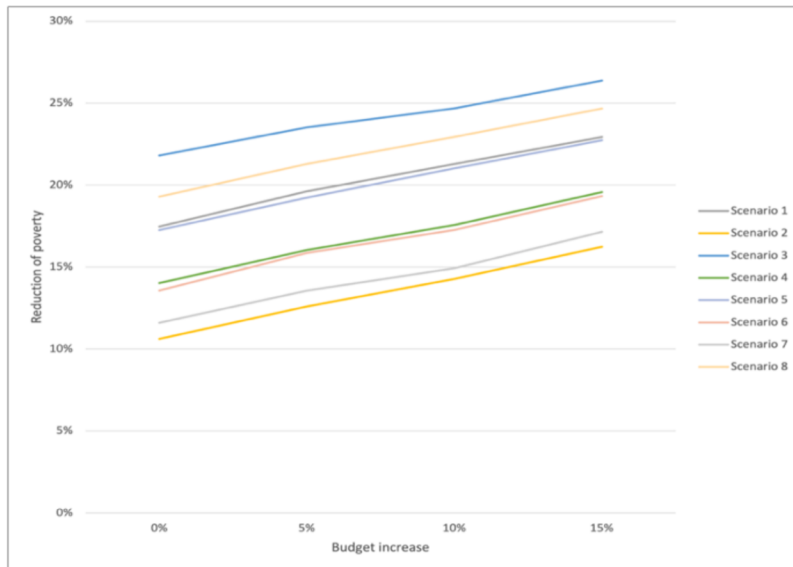
To test how the results will change with a more generous budget, three budget settings were simulated. For this simulation 5%, 10% and 15% budget increase settings were selected. The same BI variants and replacement strategies were analysed under more generous budgets and later compared to the baseline social programmes with a proportionally increased budget.

The conducted microsimulation revealed very similar results among all of the budgets settings (neutral and increased) independent of their size. All of the BI variants were found to be less efficient¹⁰ than the current social system in combatting poverty and inequality except for the scenarios where the only recipients of Basic Income were poor. Every increase in budget by 5%

¹⁰At the same time the difference between the impacts of Basic Income and current social programmes on poverty and inequality is found to be insignificant being less than 3% on average.

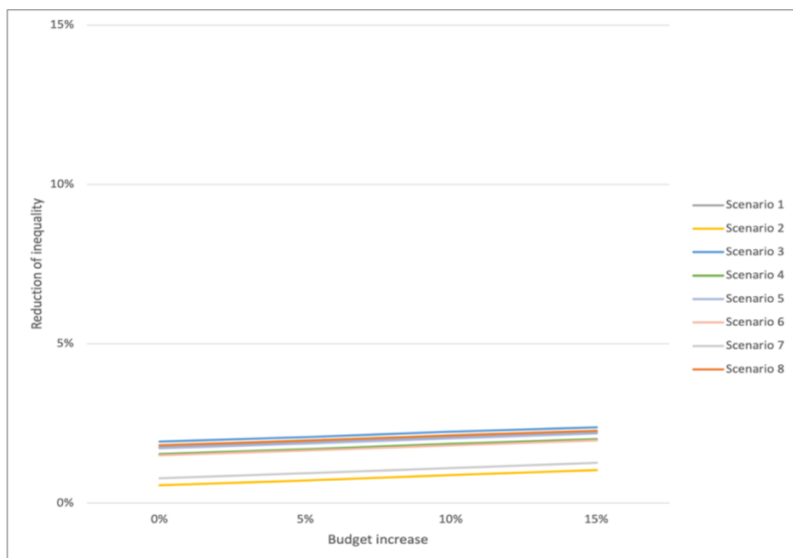
resulted on average in 1,5% decrease in poverty. The highest reduction of poverty was achieved with 15% budget increase in the scenario where all benefits are replaced with Basic Income for the poor only: it resulted in 26,37% of poverty reduction.

Fig. 6. Poverty decline after the introduction of Basic Income for the poor in eight scenarios of social benefits replacement



Source: prepared by the author using IDHS-II dataset and the author's microsimulation model.

Fig. 7. Inequality decline after the introduction of Basic Income for the poor in eight scenarios of social benefits replacement



Source: prepared by the author using IDHS-II dataset and the author's microsimulation model.

The inequality, however, did not change with the budget increase and continued to be lower than baseline scenarios just by one-two percent on average. The rationale for this effect is the same as for the budget-neutral scenario: non-poor households of a modest income lose out the most on the benefits they previously received and on average their financial situation become less promising.

The detailed results of the microsimulations of these scenarios including their impact on poverty and inequality compared to the proportionally increased baseline scenario are presented in the Appendix.

4.3. Negative Income Tax

When an alternative form of transfer (NIT) that supplements the poor's income in order to bring all of the people to the poverty line is simulated, the poverty rate in every scenario drops to zero. Every person in need is now covered with the amount of money that elevates him/her to the poverty line and hence, provides everyone with an absolute minimum that allows to survive the hardships of everyday life. Designed to eradicate poverty, NIT is also efficient at reducing inequality, on average the inequality is reduced by six percent that is more than in any other analysed scenario. Majority of tested NIT scenarios are not budget neutral and require on average around six percent of budget increase. In the scenario 3 (when all of the benefits are replaced with NIT), however, a reduction in the required funds is observed: NIT turned out to be cheaper than the current social transfers by two percent. The highest budget increase occurs when the MGNREGS income is replaced and all other benefits are kept and when all cash benefits are replaced but MGNREGS and old age pensions are kept: in both cases the required funds increase by 10%. Additional scenario 9 was simulated in order to test how much additional funds would be required in order to keep all of the existing benefits and introduce NIT at the same time. The results show that the budget increase in this case would amount to 17,4%.

Tab. 4. Impact of NIT on poverty and inequality in different scenarios of social benefits replacement strategy and a respective budget increase.

| Impact of Negative Income Tax on poverty and inequality in various scenarios of social benefits replacement strategy | | | | | | | | | |
|--|-----------------------------------|-------------------------------------|-------------------------------|---|---|--|---|---|---|
| NIT | replacement of cash benefits only | replacement of total MGNREGS income | replacement of total benefits | replacement of all cash benefit except for old age pensions | replacement of all cash benefit except for maternity benefits | replacement of all cash benefit except for old age pensions and maternity benefits | replacement of all cash benefit except for scholarships | replacement of total benefits except for old age pensions | all of the current social benefits are kept |
| Number of poor | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Additional funds required compared to the baseline scenario | 5% | 10% | -2% | 9% | 6% | 10% | 9% | 2% | 17% |
| Inequality level compared to the baseline scenario with respective budget increas | 94% | 94% | 94% | 93% | 93% | 93% | 94% | 94% | 93% |

Source: Author's calculation using IDHS-II dataset and the author's microsimulation model.

Compared to the Basic Income, NIT is more efficient both in terms of combatting poverty and inequality and the required level of funding. Even when budget is increased by 20%, Basic Income for poor shows underperformance compared to NIT scenarios: poverty decreases by 23% and inequality is reduced just by two percent on average.¹¹

¹¹ Appendix Table A.1.7.

Chapter 5. Discussion

5.1. Basic Income: is equality within the reach?

Universal Basic Income emerged from the ideas of equality, social justice and freedom for all and is often considered to be a possible substitute to the existing social programmes that are flawed with inefficiency. Adoption of Basic Income that aspires for equality and seeks to provide a minimum income to everyone, however, does not necessarily bring the desired effect of poverty and inequality reduction. Due to the fiscal constraints and expanded coverage, the amount of monthly budget-neutral UBI is not enough to cover the basic needs and cannot guarantee a decent life to everyone. Given the budget limits, analysed social programmes in India's case are found to be more efficient at reducing poverty and inequality compared to the majority of the proposed Basic Incomes. A feasible budget increase (up to 15%) also does not make Basic Income more attractive than current social transfers: poverty and inequality still increase with its adoption in the majority of the tested scenarios.

These findings are in line with other microsimulation studies that demonstrate limitations of BI at tackling poverty and inequality in relation to the existing programmes (Gentilini et al, 2020; Coady & Prady, 2018; IMF, 2017; Brown & Immervoil; 2017). The studies also show similar results in terms of winners and losers of the BI introduction: everyone will be covered with Basic Income but the amount of loss for the losers (the poorest quintile) will be higher than the amount of gain for the winners (the richest quintile). Another important finding relates to the design of the existing social programmes: the more pro-poor they are, the more efficient they would be at reducing poverty compared to the proposed variants of BI that do not target poor households (Gentilini et al, 2020; IMF, 2017). The research provided similar evidence: substituting pro-poor social programmes such as MGNREGS with Basic Income would always result in a higher poverty increase compared to the replacement of other social benefits.

At the current moment Universal Basic Income despite all of its potential benefits seems to be more of a utopian dream than a realistic policy option. To have a chance at lessening poverty and inequality the Basic Income cannot exist in budget-neutral or moderate budget-increase settings. Generosity of Basic Income correlates with its capability to end poverty and reduce disparities between the population and at the same time raises questions about its political feasibility since it would require significant additional sources of funding. The proposed ways of financing Basic Income typically include expenditure savings (dismantlement of existing social safety nets) and revenue-raising measures (increase in taxes on income, wealth, consumption, etc.) (Ter-Minassian, 2020). Depending on the type of Basic Income, choice of funding, winners and losers of such

reform, different political challenges would emerge. In some political contexts implementation of Basic Income can lead to polarization of the society instead of its equalisation making the social reform unfeasible. (De Wispelaere & Yemtsov, 2020).

5.2. Basic Income but only for the poor?

The research demonstrates that universality of Basic Income in terms of combatting poverty and inequality is rather a disadvantage than a merit. In order to achieve better results at lifting households out of poverty, a targeting mechanism should be integrated in the structure of Basic Income. In India's context and given the fiscal constraints, Basic Income that is distributed only to the households below the poverty line can be considered as one of the possible cash transfer tools that tackles poverty more effectively than the existing social programs and other tested BI variants.

Dismantlement of all of the existing social programs except for the old-age pensions can achieve 19% poverty reduction and at the same time be more politically preferable than replacing all of the existing social safety system since some benefits will be kept for the retired population no matter the income. However, in terms of inequality Basic Income only for the impoverished performs less effectively and almost does not contribute to the inequality reduction. The reason for this lies in the observed redistributive effect: social benefits previously received by some households slightly above the poverty line are redistributed to the poor households the majority of whom still find themselves below the poverty line due to the insufficient amount of the proposed Basic Income¹².

Due to the described effect, adoption of this variant of Basic Income in India can encounter political challenges: since the impoverished households (that are the main winners of this reform) constitute only 20% of the total population, it might be difficult to justify introduction of this new social benefit system to other income groups. Income targeted BI would also suffer from the implementation issues that are common among the existing targeted transfers: to receive benefits, some households might provide fraudulent information about their financial situation, hiding their income and falsifying income statements in order to become eligible for the entitlements.

¹² The sum of the BI was calculated as 130,71 Indian rupees, around 14% of the Tendulkar poverty line 2012.

5.3. Fighting poverty with Negative Income Tax

Both Negative Income Tax and Basic Income aim to achieve similar goals in terms of poverty and inequality reduction. However, given the inability of Basic Income to reduce poverty and inequality within the fiscal limits, NIT might be considered to be a more realistic and feasible form of BI.

Intending to provide a guaranteed minimum amount for survival, NIT seeks to ensure that regardless of personal circumstances no one would be left behind and everyone would enjoy cash assistance in times of dire need. The design of NIT is different from the one of BI: it does not distribute a uniform lump sum of money to everyone (or to the eligible households in quasi-UBI scenarios), it aspires to supplement the households whose declared incomes fall behind the poverty line with the additional funds. Traditionally NIT is viewed as a part of a developed but simple and clear tax system that unifies public benefits and income tax. (Mirrlees, 2011; Granell & Fuenmayor, 2019). Under this tax system every resident would have to complete a tax return to declare their incomes that would contribute to the overall transparency of the received benefits. To ensure that the most vulnerable households receive NIT without major time lags, filing tax declarations monthly should be allowed with further adjustments done later in the year.

The conducted microsimulation for India produces strong evidence on NIT's efficiency to eliminate poverty and to shrink inequality in the budget-neutral settings funded by the dismantled social programs. Within the feasible budget limits that require from 2% to 10% budget increase it becomes viable to retain some of the existing social programs. Policymakers can choose which social program to keep based on their cost-benefit efficiency, capability to eradicate poverty, its impact on inequality, its coverage and on the electorate's approval and perception of the program, etc.

Moreover, it can be possible to introduce NIT that completely eradicates poverty and at the same time to keep all of the existing social benefits (MGNREGS, old age pensions, scholarships, maternity benefits, etc) by increasing the budget for the social programs just by 17%. This increase can be achieved by reforming the tax system and its administration: widening and deepening the tax base.

5.4. NIT's implementation issues in India

Developed tax administration is one of the major requirements for NIT's successful implementation. In India's case the overall tax administration performance seems to improve. In the recent years the growth in tax revenue and overall number of taxpayers is observed (Singh, 2019). This was achieved with improved tax administration: introduction of e-payments, e-filing

of tax returns and on-going digitalisation of the country. Rapid development of biometrical identity system that covers 88% of the total population also contributes to the enhancement of the tax system: linking identity number to tax return boosted the overall tax compliance (Statista, 2019). The tax administration costs in India are among the lowest in the world amounting to 0,6% of collected tax revenue. (Singh, 2019). With adoption of NIT the administration costs are expected to increase but given the relatively cheap and coordinated tax administration mechanism it should not become a barrier towards this ambitious social benefits reform.

Another possible implementation obstacle relates to the control of the declared income. As a result of NIT adoption and compulsory income declarations, households might understate their income to receive additional benefits. As a possible solution to this problem it can be advised to establish automatic computation of the Negative Income Tax by tax authorities based on the individual bank transactions. The beneficiaries would be notified about their personalised computed amounts that later would be automatically transferred to their account. Automation of tax processes would eliminate the obligation of going through the struggles of filling the tax returns (thus boosting the coverage of the eligible participants), reduce the potential fraudulent actions from the household's side and at the same time lift the burden of stigmatisation around self-identification as a poor and undeserved.

Such automation can only be effectively performed in the countries where well-developed infrastructure of digital economy is in place. In 2016 India made a significant step towards the cashless economy by demonetising 86% of the cash in circulation in order to incentivize its residents to move to electronic payments. As a consequence of this intervention, the number of adults with bank accounts skyrocketed from 53% in 2014 to 80% in 2017. The volumes and number of cashless transaction are also forecasted to rise. (ACI Worldwide, 2020). By 2024 72,2% of the total transactions in India will be operated in electronic and immediate payments contributing to the further digitalisation of the economy. Cashless economy might bring a lot of new possibilities for enhancement of the social protection system allowing to identify the deprived households and to target poverty better.

Adoption of NIT can also be hindered by political challenges. NIT can encounter political opposition at some stage of its implementation depending on the social programs that will be dismantled to fund it. Thus it is highly recommended to perform further analysis on the efficiency of the social program chosen for replacement by simulating how well the social programs can perform without exclusion and inclusion errors that more digitalized economy can bring. It is also advisable to keep the existing efficient social transfers and to develop better targeting tools in

addition to NIT that will provide the needed coverage to the other parts of the population who might not live in the dire poverty but whose conditions are still far from decent.

NIT might be an optimal solution for ending extreme poverty but it is still not enough to significantly decrease inequality. A sophisticated social security net should be developed in order to address other pending issues such as protection of children, women empowerment, quality education and healthcare access for all.

Conclusion

During the Covid-19 pandemic developed and developing countries have remarkably increased both the amount and the coverage of the social safety nets in order to mitigate the consequences of the shock on the well-being of people. Now more than ever efficiency of public spending and existing social programs need to be reevaluated and compared to other possible alternatives in order to provide a better social support in times of crisis.

Most of the existing social benefits are based on the targeting criterion. Due to the imperfection of targeting administration and other flaws relating to the ethics behind it, the potential of social transfers to eliminate poverty and decrease the gap between the poor and the rich cannot be realised to its full extent. Universal Basic Income and its variants constitute an alternative social protection system that is based on the principles of freedom and social justice for all and by design possesses the required capacities to end poverty in its extreme forms and reduce the disparities within the population.

Upon conducting microsimulation based on the India's representative sample dataset, it was revealed that UBI and its variants have limited ability to lessen poverty and inequality given the feasible budget constraints and a very modest universal cash transfer to produce a significant redistributive impact. In the given budget-settings current social protection system was found to be more effective at reducing poverty and inequality when tested against the majority of the Basic Income variants.

It was concluded that the most efficient form of the simulated BI is the one that uses targeting criterion: only poor households are considered to be eligible for this cash transfer. With the adoption of BI that targets the poor, decrease in both poverty and inequality is observed even in the budget-neutral setting. Under this scenario poverty reduction is found to be significant (on average it is reduced by 16%) while inequality is decreased less visibly: only by 1% on average. Every increase in budget by 5% resulted on average in 1,5% decrease in poverty while the level of inequality remained almost unchanged despite further budget increases.

The research findings also revealed a superior efficiency of another quasi-BI transfer in its ability to impact poverty and inequality: Negative Income Tax that was designed to supplement the households whose declared incomes fall behind the poverty line with the additional funds. With introduction of NIT the poverty is eliminated by design and inequality is decreased by six percent on average. Depending on the social program chosen for dismantlement the cost of NIT varies from two percent decrease (when all of the existing programmes are replaced) up to 17% increase (when all of the existing programmes are kept). The implementation of NIT, however, can only

be achieved in countries with a well-developed tax administration system and an overall digitalised economy. In analysed India's context a potential for NIT's adoption was observed given its transition towards cashless economy and automation of tax processes.

Despite the possible implementations problems that present a significant challenge for the tax and social benefits systems, the positive effects of NIT prevail. It was concluded that Negative Income Tax might become an efficient tool in smoothening negative shocks such as Covid-19 and ensuring that everyone in need is covered with social support in the unstable and turbulent times. However, it was also assumed that NIT cannot be a solution to all of the existing social programmes given its limited ability to reduce inequality. Thus, it should be combined with the existing and potential social transfers that would aim to create a universal social safety net filling the remaining gaps that hinder human development. Universal Basic Income alone might not be a viable social policy option due to the budget constraints but it has the right values at heart. Universal Basic Income is the idea that economists and policymakers should keep in mind when designing new approaches to the social programming since it aspires for a more equal and safe world for all.

More research is required to evaluate the relationship between the social protection policy and poverty and inequality reduction due to its complex nature that is dependent on multiple variables. A more comprehensive assessment of the social system reforms such as adoption of NIT should be proposed in the further studies. The potential research questions should go beyond analysis of poverty and inequality impacts and include assessment of both macroeconomic and non-economic consequences of NIT's/BI's adoption with the changed behaviour of both NIT beneficiaries and NIT donors that fund these benefits through the increased taxation. Such an assessment would allow to study the effects of NIT's/BI's introduction in a more dynamic setting and might produce interesting findings that can completely change the approach to the social programme design.

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Appendix

A.1. Impact of various types of BI on poverty and in equality in different scenarios of social benefits replacement strategy in feasible budget increase settings.

Table A.1.1. Impact of various types of BI on poverty in different scenarios of social benefits replacement strategy in 5% budget increase setting

| Impact on Poverty | | | | | | | | |
|---|-----------------------------------|-------------------------------------|-------------------------------|--|--|---|--|---|
| Poverty reduction with UBI as a percentage of baseline 5% increase scenario | replacement of cash benefits only | replacement of total MGNREGS income | replacement of total benefits | replacement of all cash benefits except for old age pensions | Replacement of all cash benefits except for maternity benefits | replacement of all cash benefits except for old age pensions and maternity benefits | replacement of all cash benefits except for scholarships | replacement of total benefits except for old age pensions |
| UBI for all | 101% | 102% | 104% | 100% | 101% | 100% | 102% | 103% |
| UBI for all (except for children) | 101% | 102% | 105% | 100% | 101% | 100% | 102% | 103% |
| UBI for all (except for elder) | 101% | 102% | 104% | 100% | 101% | 100% | 102% | 103% |
| UBI for all (except for children and elder) | 102% | 103% | 105% | 100% | 102% | 100% | 102% | 104% |
| UBI (only children) | 100% | 102% | 101% | 100% | 100% | 100% | 101% | 101% |
| UBI (children allowance and young adults) | 101% | 102% | 103% | 100% | 101% | 100% | 102% | 102% |
| UBI (for everyone but working adults) | 101% | 102% | 104% | 100% | 104% | 100% | 102% | 103% |
| UBI (for everyone but working adults who do not work for MGNREGS) | 101% | 102% | 104% | 100% | 101% | 100% | 102% | 103% |
| BI only for the poor (using Poverty line 2012) | 80% | 87% | 76% | 84% | 81% | 84% | 86% | 79% |

Table A.1.2. Impact of various types of BI on inequality in different scenarios of social benefits replacement strategy in 5% budget increase setting

| Impact on Inequality | | | | | | | | |
|---|-----------------------------------|-------------------------------------|-------------------------------|---|---|--|---|---|
| Inequality reduction with UBI as a percentage of baseline budget 5% increase scenario | replacement of cash benefits only | replacement of total MGNREGS income | replacement of total benefits | replacement of all cash benefit except for old age pensions | replacement of all cash benefit except for maternity benefits | replacement of all cash benefit except for old age pensions and maternity benefits | replacement of all cash benefit except for scholarships | replacement of total benefits except for old age pensions |
| UBI for all | 101% | 101% | 102% | 100% | 101% | 100% | 101% | 101% |
| UBI for all (except for children) | 101% | 101% | 102% | 100% | 101% | 100% | 101% | 102% |
| UBI for all (except for elder) | 101% | 101% | 102% | 100% | 101% | 100% | 101% | 101% |
| UBI for all (except for children and elder) | 101% | 101% | 102% | 100% | 101% | 100% | 101% | 102% |
| UBI (only children) | 100% | 101% | 101% | 100% | 100% | 100% | 101% | 101% |
| UBI (children allowance and young adults) | 100% | 101% | 101% | 100% | 100% | 100% | 101% | 101% |
| UBI (for everyone but working adults) | 101% | 101% | 102% | 100% | 101% | 100% | 101% | 103% |
| UBI (for everyone but working adults who do not work for MGNREGS) | 101% | 101% | 102% | 100% | 101% | 100% | 101% | 101% |
| BI only for the poor (using Poverty line 2012) | 98% | 99% | 98% | 98% | 98% | 98% | 99% | 98% |

Table A.1.3. Impact of various types of BI on poverty in different scenarios of social benefits replacement strategy in 10% budget increase setting

| Impact on Poverty | | | | | | | | |
|--|-----------------------------------|-------------------------------------|-------------------------------|--|--|---|--|---|
| Poverty reduction with UBI as a percentage of baseline 10% increase scenario | replacement of cash benefits only | replacement of total MGNREGS income | replacement of total benefits | replacement of all cash benefits except for old age pensions | Replacement of all cash benefits except for maternity benefits | replacement of all cash benefits except for old age pensions and maternity benefits | replacement of all cash benefits except for scholarships | replacement of total benefits except for old age pensions |
| UBI for all | 101% | 103% | 104% | 100% | 101% | 100% | 102% | 103% |
| UBI for all (except for children) | 102% | 103% | 105% | 101% | 102% | 100% | 102% | 104% |
| UBI for all (except for elder) | 102% | 103% | 104% | 100% | 102% | 100% | 102% | 103% |
| UBI for all (except for children and elder) | 102% | 103% | 105% | 101% | 102% | 101% | 102% | 104% |
| UBI (only children) | 100% | 102% | 102% | 100% | 100% | 100% | 101% | 101% |
| UBI (children allowance and young adults) | 101% | 102% | 103% | 100% | 101% | 100% | 102% | 102% |
| UBI (for everyone but working adults) | 102% | 103% | 104% | 100% | 101% | 100% | 102% | 103% |
| UBI (for everyone but working adults who do not work for MGNREGS) | 101% | 103% | 104% | 100% | 101% | 100% | 102% | 103% |
| BI only for the poor (using Poverty line 2012) | 79% | 86% | 75% | 82% | 79% | 83% | 85% | 77% |

Table A.1.4. Impact of various types of BI on inequality in different scenarios of social benefits replacement strategy in 10% budget increase setting

| Impact on Inequality | | | | | | | | |
|--|-----------------------------------|-------------------------------------|-------------------------------|---|---|--|---|---|
| Inequality reduction with UBI as a percentage of baseline budget 10% increase scenario | replacement of cash benefits only | replacement of total MGNREGS income | replacement of total benefits | replacement of all cash benefit except for old age pensions | replacement of all cash benefit except for maternity benefits | replacement of all cash benefit except for old age pensions and maternity benefits | replacement of all cash benefit except for scholarships | replacement of total benefits except for old age pensions |
| UBI for all | 101% | 101% | 102% | 100% | 101% | 100% | 101% | 101% |
| UBI for all (except for children) | 101% | 101% | 102% | 100% | 101% | 100% | 101% | 102% |
| UBI for all (except for elder) | 101% | 101% | 102% | 100% | 101% | 100% | 101% | 101% |
| UBI for all (except for children and elder) | 101% | 101% | 102% | 100% | 101% | 100% | 101% | 102% |
| UBI (only children) | 100% | 101% | 101% | 100% | 100% | 100% | 101% | 101% |
| UBI (children allowance and young adults) | 100% | 101% | 101% | 100% | 100% | 100% | 101% | 101% |
| UBI (for everyone but working adults) | 101% | 101% | 102% | 100% | 101% | 100% | 101% | 103% |
| UBI (for everyone but working adults who do not work for MGNREGS) | 101% | 101% | 102% | 100% | 101% | 100% | 101% | 101% |
| BI only for the poor (using Poverty line 2012) | 98% | 99% | 98% | 98% | 98% | 98% | 99% | 98% |

Table A.1.5. Impact of various types of BI on poverty in different scenarios of social benefits replacement strategy in 15% budget increase setting

| Impact on Poverty | | | | | | | | |
|--|-----------------------------------|-------------------------------------|-------------------------------|--|--|---|--|---|
| Poverty reduction with UBI as a percentage of baseline 15% increase scenario | replacement of cash benefits only | replacement of total MGNREGS income | replacement of total benefits | replacement of all cash benefits except for old age pensions | Replacement of all cash benefits except for maternity benefits | replacement of all cash benefits except for old age pensions and maternity benefits | replacement of all cash benefits except for scholarships | replacement of total benefits except for old age pensions |
| UBI for all | 102% | 103% | 104% | 100% | 102% | 100% | 102% | 103% |
| UBI for all (except for children) | 102% | 103% | 105% | 101% | 102% | 101% | 102% | 104% |
| UBI for all (except for elder) | 102% | 103% | 104% | 101% | 102% | 100% | 102% | 104% |
| UBI for all (except for children and elder) | 102% | 103% | 105% | 101% | 102% | 101% | 103% | 105% |
| UBI (only children) | 101% | 102% | 102% | 100% | 100% | 100% | 101% | 101% |
| UBI (children allowance and young adults) | 101% | 102% | 103% | 100% | 101% | 100% | 102% | 102% |
| UBI (for everyone but working adults) | 102% | 103% | 104% | 101% | 102% | 101% | 102% | 104% |
| UBI (for everyone but working adults who do not work for MGNREGS) | 102% | 103% | 104% | 100% | 102% | 100% | 102% | 103% |
| BI only for the poor (using Poverty line 2012) | 77% | 84% | 74% | 80% | 77% | 81% | 83% | 75% |

Table A.1.6. Impact of various types of BI on inequality in different scenarios of social benefits replacement strategy in 15% budget increase setting

| Impact on Inequality | | | | | | | | |
|--|-----------------------------------|-------------------------------------|-------------------------------|---|---|--|---|---|
| Inequality reduction with UBI as a percentage of baseline budget 15% increase scenario | replacement of cash benefits only | replacement of total MGNREGS income | replacement of total benefits | replacement of all cash benefit except for old age pensions | replacement of all cash benefit except for maternity benefits | replacement of all cash benefit except for old age pensions and maternity benefits | replacement of all cash benefit except for scholarships | replacement of total benefits except for old age pensions |
| UBI for all | 101% | 101% | 102% | 100% | 101% | 100% | 101% | 101% |
| UBI for all (except for children) | 101% | 101% | 102% | 100% | 101% | 100% | 101% | 102% |
| UBI for all (except for elder) | 101% | 101% | 102% | 100% | 101% | 100% | 101% | 101% |
| UBI for all (except for children and elder) | 101% | 101% | 102% | 100% | 101% | 100% | 101% | 102% |
| UBI (only children) | 100% | 101% | 101% | 100% | 100% | 100% | 101% | 101% |
| UBI (children allowance and young adults) | 100% | 101% | 101% | 100% | 100% | 100% | 101% | 101% |
| UBI (for everyone but working adults) | 101% | 101% | 102% | 100% | 102% | 100% | 101% | 103% |
| UBI (for everyone but working adults who do not work for MGNREGS) | 101% | 101% | 102% | 100% | 101% | 100% | 101% | 101% |
| BI only for the poor (using Poverty line 2012) | 98% | 99% | 98% | 98% | 98% | 98% | 99% | 98% |

Table A.1.7. Impact of BI only for the poor on poverty in different scenarios of social benefits replacement strategy in 20% budget increase setting

| Impact on Poverty | | | | | | | | |
|--|-----------------------------------|-------------------------------------|-------------------------------|--|--|---|--|---|
| Poverty reduction with UBI as a percentage of baseline 20% increase scenario | replacement of cash benefits only | replacement of total MGNREGS income | replacement of total benefits | replacement of all cash benefits except for old age pensions | Replacement of all cash benefits except for maternity benefits | replacement of all cash benefits except for old age pensions and maternity benefits | replacement of all cash benefits except for scholarships | replacement of total benefits except for old age pensions |
| BI only for the poor (using Poverty line 2012) | 75% | 82% | 72% | 78% | 76% | 79% | 81% | 74% |

Table A.1.8. Impact of BI only for the poor on inequality in different scenarios of social benefits replacement strategy in 20% budget increase setting

| Impact on Inequality | | | | | | | | |
|--|-----------------------------------|-------------------------------------|-------------------------------|---|---|--|---|---|
| Inequality reduction with UBI as a percentage of baseline budget 20% increase scenario | replacement of cash benefits only | replacement of total MGNREGS income | replacement of total benefits | replacement of all cash benefit except for old age pensions | replacement of all cash benefit except for maternity benefits | replacement of all cash benefit except for old age pensions and maternity benefits | replacement of all cash benefit except for scholarships | replacement of total benefits except for old age pensions |
| BI only for the poor (using Poverty line 2012) | 98% | 99% | 98% | 98% | 98% | 98% | 99% | 98% |