The Digital Revolution and Targeting Public Expenditure for Poverty Reduction

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Introduction

- One cannot help but feel the panacea syndrome in any discussion of the digital revolution.
- This is particularly the case in the discourse on targeting anti-poverty programs to the poor.
- The great stylized fact that is in everybody's mind is that these programs are very badly targeted, with large "leakages" to the non-poor.
- The former Indian Prime Minister Rajiv Gandhi famously said that only 15% of the outlay on the public food distribution system reached the poor.
- The move to cash transfers together with use of digital technology is now being presented, in India and elsewhere, as the solution to this problem. New technology like biometrics is meant to help in identifying the poor, and electronic banking in transferring resources to them.

Introduction

- This paper takes a somewhat contrarian stance.
- Contrarian and cautious, but not Luddite.
- It accepts the undoubted benefits of new technology but nevertheless urges caution and a deeper examination of the fundamental tradeoffs in fine targeting for poverty reduction.
- The role of digitization in impacting these tradeoffs needs to be examined carefully, with due reference to institutions and social norms which structure society.

Outline

- Introduction
- Fundamentals Of Targeting
- Implications of the Digital Revolution
- Conclusion

Some Writings

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Fundamentals of Targeting

- Consider a distribution of income, with incomes y_i ranging from lowest to highest as i = 1, 2,….n:

- $y_1 \leq y_2 \leq \ldots\ldots y_q < z < y_{q+1} \leq \ldots\ldots \leq y_n$

where z is the poverty line, and q people are below this cutoff

- Suppose there is a budget B for Poverty Alleviation. How should it be spent?

Fundamentals of Targeting

$$y_1 \leq y_2 \leq \ldots\ldots y_q < z < y_{q+1} \leq \ldots\ldots \leq y_n$$

Fundamentals of Targeting

- Perfect and Costless targeting will give enough to every income below the poverty line to bring it just above the poverty line, no more and no less.
- If there is a budget

$$B = \sum_{i=1}^{q} [z - y_i]$$

then perfect and costless targeting can eliminate poverty.

Fundamentals of Targeting

- But, of course, perfect targeting is not costless. There are at least three types of costs and their associated tradeoffs:
  - Information Costs
  - Incentive Effects
  - Political Economy Consequences
- Let us look at each of these in turn.

Fundamentals of Targeting

$$y_1 \leq y_2 \leq \ldots\ldots y_q < z < y_{q+1} \leq \ldots\ldots \leq y_n$$

Fundamentals of Targeting

- Information Costs
- In principle every single income in the population has to be verified every transfer period.
- What to do?
- A very well developed literature on
  - Contingent or Indicator Targeting
  - Self-Targeting

Fundamentals of Targeting

- Indicator Targeting uses easily observable but unchangeable characteristics to differentiate transfers across groups, while treating all individuals within each group identically. The statistical properties of within group distributions, derived from a sample survey, are used to target. Groups can be regions, land holdings, gender, ethnicity, etc.
- Self targeting sets up an incentive structure so that only those in the target group will come forward for the proposed benefit, eg employment guarantees, subsidizing coarse grain rather than fine grain, etc.
- Both economize in their own way on the costs of assessing every single income in the population.

Fundamentals of Targeting

- Incentive effects.
- A little reflection on the perfect targeting scheme should convince you that it imposes a 100% marginal tax rate on the poor.
- In a standard labor supply model this would lead to zero labor supply, zero pre-transfer income, and thus raise the cost of poverty elimination significantly.
- The balance between high marginal tax rates and targeting can be assessed in optimal income taxation models—the optimum does not involve perfect targeting.
- Notice, however, that if we are allowed to use indicator information to implement different transfer schedules for different groups, this alleviates the tradeoff somewhat by providing more instruments to the policy maker.

Fundamentals of Targeting

- Political Economy.
- The analysis so far assumes a given budget B. But what if this budget is itself endogenous to the political economy of the society?
- A conventional argument in favor of “universalism” is that it ties together the interest of the poor and the middle classes. On the other side, perfect targeting creates a break in interests at the poverty line.
- These considerations can be modeled formally. But they are also reflected in observations of reality eg food subsidies in the Middle East, Rice ration subsidy in Sri Lanka etc.
- The bottom line is that fine targeting, perfect targeting in the extreme, could come with smaller budgets for poverty reduction, with the result that “more for the poor is less for the poor”

Implications of the Digital Revolution

- Thus fine targeting, while obviously a good thing if it can be implemented costlessly, is not in fact costless.
- There are a number of tradeoffs which we have discussed under the headings of information, incentives and political economy.
- Given these tradeoffs, what are the implications of the digital revolution—can it enhance the benefits of targeting while reducing the costs?
- But first, what does the digital revolution mean in the specific context of targeting of anti-poverty transfer programs (as opposed to the general implications for state capacity)?

Implications of the Digital Revolution

- There are (at least) three ways in which digitization is thought to be helpful.
- The first is ease of payment of cash:
- “The link between payment access and fuel subsidy reform was powerfully demonstrated by Iran’s reform efforts in 2010-11. …..To make the reform possible, the Iranian Government had to deliver monthly payments to every Iranian household….Today, 67 percent of Iranian adults receive a government payment—higher than any country in the world—and 92 percent of these payments are delivered digitally into an account.” (Radcliff, 2016)

Implications of the Digital Revolution

- The second is biometric identification:
- “Biometric re-registration of over 20 million social grant recipients was completed in 2013 by the South African Social Security Agency (SASSA)…. Even though the system had been able to draw on an extensive identity infrastructure initiated during the apartheid period re-registration enabled SASSA to remove 650,000 social grants going to non-eligible individuals which resulted in savings of over $65 million annually…..” (Gelb and Diafosi, 2015)

Implications of the Digital Revolution

- The third is keeping track of payments at the next level up, in the government system itself.
- “In collaboration with the Government of Bihar, India, we conducted a large-scale experiment to evaluate whether transparency in fiscal transfer systems can increase accountability and reduce corruption in the implementation of a workfare program. The reforms introduced electronic fund-flow, cut out administrative tiers, and switched the basis of transfer amounts from forecasts to documented expenditures. Treatment reduced leakages along three measures…..” (Banerjee et. al., 2016)

Implications of the Digital Revolution

- There are thus clear benefits from introducing digital technology in social programs.
- But notice that the three examples are all orthogonal to anti-poverty targeting as presented in the previous section—ensuring that transfers flow to those, and only those, who are below the poverty line.
- In Iran the problem in the reform was how to make the cash transfer to every household, not how to restrict the transfer to only poor households.
- The issue in South Africa is how to identify those who meet pension eligibility requirements (basically, age and gender), not how to target flows to the poor.
- And in the Indian case targeting to the poor is being taken care of by the self-targeting nature of the public works programs; the issue addressed by digitization is the standard one of public sector corruption.

Implications of the Digital Revolution

- So we return then to the fundamentals of targeting, with its issues of (i) the need for information on income or consumption of individuals for fine targeting; (ii) the incentive effects of fine targeting; and (iii) the political economy of fine targeting.
- How, if at all, can the digital revolution help ease the tradeoffs identified in the previous section?

Implications of the Digital Revolution

- Information Costs.
- Biometrics and identification of individuals is often put forward as the solution to the information problem in targeting.
- However, what fine targeting needs is not just unique identification of individuals, but detailed information which allows computation of their income or consumption, on the basis of which they are to be identified as being poor or not.

Implications of the Digital Revolution

- Further, this computation needs to be updated annually if the program is to continue to be finely targeted.
- In a small developed highly formalized economy such as Finland, such income information is already digitized and linked in to other national data bases, and the use of such information is not a problem. But in a developing country with a large informal untaxed sector it is not clear how exactly digitization can help, at least not for many years to come.
- And, it does not seem that informality is declining sharply, or at all, in many developing countries (Kanbur, 2015).

Implications of the Digital Revolution

- In the absence of detailed income or consumption data at the individual or household level, correlates derived from household surveys can be used to fashion a “proxy means test” as previously described.
- Clearly digitization can help enormously in maintaining and updating these data sets at the local level, to implement the proxy means test.
- But verification and validation of some of this information, going beyond births and deaths where digitization of vital statistics is a complementary input, is not a simple straightforward technical exercise.
- Quality of housing is often an element in proxy means tests—whether or not the house has a tin roof, for example. But this is a subjective assessment--how is a tin roof with holes in it to be counted? Whether the man in a household is employed is another typical criterion, an ambiguous one in rural and agricultural settings.
- And so on. These are not amenable to easy resolution by digitization.

Implications of the Digital Revolution

- Incentives.
- The basic tension is between the level of the benefit and the “claw back” marginal tax rate needed to make sure no one above the poverty line benefits. This tension will not go away just because there is digitization.
- However, to the extent that we can use many tax-transfer schedules, one for each group identified by indicator targeting, the tension is reduced. In effect, we now have more instruments.
- So, to the extent that digitization can help identify and separate individuals into indicator targeting groups, it can smooth this tension. But see earlier discussion on whether it can in fact do this quite so easily.

Implications of the Digital Revolution

- Political Economy.
- The resources needed for poverty reduction, even with fine targeting, will have to come from somewhere.
- The question then is at what income level does the switch between net recipient and net contributor occur?
- With perfect targeting, the answer is obvious—it occurs at the poverty line.
- With no targeting at all, the switch point will be above the poverty line. Thus with a high enough universal benefit, the poor and the lower middle classes have a common cause.

Implications of the Digital Revolution

- The key question is—at what income level is the switch point between net beneficiaries and net payers?
- Suppose now that over and above the costs of the transfer there are operational costs, and that somehow the costs of the whole transfer operation are lowered by digitization—the leaky buckets are plugged better, so that fewer resources need to be extracted from the net payers.
- Then the switch point will rise and more of the middle income groups will be brought into solidarity with the poor.
- But much more work is needed here on analytics and assessment of actual experience.

Implications of the Digital Revolution

- Consider now proxy means tests, which we have accepted will be made easier with digitization. Thus proxy means test scan be elaborated and sharpened, with more proxies and finer classification of population.
- But what are the political economy consequences of this?
- A political economy framework would see advantage in a coalition of those with common observable characteristics, combined with agitation by this coalition for increased transfers to those characteristics.
- The politics of caste coalitions, and the demands for reservations of government posts and state transfers, are of this nature in India.
- Thus while the new information technology makes it easier to develop ever more sophisticated proxy means tests, it may at the same time introduce new and perhaps unintended elements to the political economy of a country, by intensifying the logic of group coalitions, fueled now by the prospect of transfers to the group from anti-poverty programs.
- Such political economy models need further development and exploration.

Implications of the Digital Revolution

- Finally, there is another aspect of the political economy dimension of fine targeting which is perhaps less well understood in the analytical economics literature.
- The complicated proxies, derived by technocrats, are not easy to explain to ordinary people, who put down non-receipt versus receipt of transfer across households to political and ethnic connections, thereby undermining solidarity at the local level.
- Such tensions are often revealed by qualitative rather than by conventional quantitative analysis.

Implications of the Digital Revolution

- Nicaragua CCT evaluation:
- “The survey found that the program was well targeted, with under-coverage rates of 3 to 10 percent. The qualitative research found, however, that people saw themselves as “all poor” and did not understand why households were selected into or out of the program, resulting in several types of stress and tension in the communities.” (Adato, 2011)

Implications of the Digital Revolution

- Indonesia “PKH” program:
- “…she was originally selected via a household survey where she was asked her name, house condition, how much land she owned and her employment. However, she said others got bigger allowances, some as much as IDR 1 million, *‘because it was unfairly decided by the last kepala desa - you had to be connected to him’.* The last elections she has voted for a family member to ensure that she will benefit in the future.” (Reality Check Analysis, 2015)

Implications of the Digital Revolution

- Thus if new technology drives implementation of ever more complicated proxy means tests they may end up worsening tensions at the local level even as they satisfy “better targeting” from a technocratic perspective.

Conclusion

- The large literature on targeting of anti-poverty transfers has identified significant tradeoffs in aiming for fine targeting of these transfers to the poor, and only to the poor.
- Can the digital revolution help mitigate these tradeoffs?

Conclusion

- Clearly, new information technology can help mitigate some of the informational and administrative costs of targeting. But the system is only as good as the information put into it and digitization is only a part, perhaps a small part, of the whole.
- To the extent that digitization can allow better use of observable individual characteristics to segment the population into groups, this can help to mitigate the tension between fine targeting and high implicit marginal tax rates.
- If digitization lowers the administrative costs of a transfer program, the switch point between net gainers and net payers can be raised, thereby aligning more of the middle class with the poor. But proxy means testing and group based targeting can create new forms of tensions on the ground.

Conclusion

- Thus I hope I have not shown myself to be a Luddite so far as digitization is concerned.
- Rather, I hope have shown myself to be cautious, and only somewhat contrarian!

Thank You!