Comparing the poverty-reduction efficiency of targeted versus universal benefits amid crises

Jukka Pirttilä and Adnan Shahir
Background

- Vast analytical literature on social protection policies in developing countries
- Redistributive effects examined e.g. by World Bank (Gentilini et al. 2020) and CEQ (Inchauste and Lustig 2017)
- Very little formal analysis on tax/benefit systems as an insurance against crises
  - Informal discussion by World Bank (Bowen et al. 2020)

⇒ This paper: examines how different targeting approaches perform when crises hit
  - Analytically and by using microsimulation for the case of Ethiopia
Tax-benefit system goals

• One key objective: offer social protection to alleviate (chronic) poverty

• But also: offer social insurance
  – Cushioning against negative shocks, e.g., unemployment

• Can also be examined via the lens of automatic stabilization
  – Increase in benefits and reduction in taxes paid when incomes decline
Little automatic stabilization

• Adu-Ababio (2022) shows that only a small fraction (1-20%) of income losses compensated for households

• Three key reasons
  1. Government size (and hence the level of taxes and benefits) smaller in developing countries
  2. Large share of workers in the informal sector; do not pay income taxes
  3. Many benefits not means tested
     • Rather: based on proxy means test (PMT)
PMT systems

• Based on household-level indicators, a score calculated

• If score < threshold, HH eligible for a lump-sum subsidy

• HH retains the subsidy until the score collected anew
Targeting or not when crises occur?
Targeted or more universal benefits?

• Should policies be
  – Targeted (proxy means tested, PMT) transfers
  – More universal
    • To certain demographic groups: categorical
    • Everyone: universal basic income, UBI

• Trade-off:
  – Targeting to minimize poverty in ”normal” circumstances
  – Shocks: the profile of the needy may change => A case for more universalism?
Theoretical points

• If benefits appropriately targeted before the crisis
  – They may not remain to be so if the shock disproportionately affects the initially non-poor group

• Link between social protection budget and poverty reduction
  – Greater poverty increase in universal shock in targeted systems
The relation between poverty and social protection resources

• Takeaways
  – Poverty reduction the same with no resources
  – Poverty lower in targeted
  – Curve steeper in targeted:
    • Loss of income => greater pov incr in targeting
Predictions

• With small budget, targeting matters relatively little

• Poverty *levels* higher in uniform systems

• *Increase* in poverty smaller in uniformal systems
Simulations for Ethiopia
Ethiopian context

• The Productive Safety Net Programme (PSNP) the main social assistance programme.
• PSNP is a hybrid variant of PMT
  – Combination of community targeting and PMT
• Modelling conducted using ETMOD, tax-benefit microsimulation model for Ethiopia
• Covers policy years until 2022, underpinned by Ethiopia socioeconomic survey
Our simulations

• Two shocks investigated: Covid-19 and an agricultural shock

• Three systems compared
  – Existing PMT
  – Categorical benefit (hh with >4 kids / older members)
  – UBI

• Existing budget vs 10X larger budget financed via indirect taxes
Simulations for Ethiopia

• Baseline poverty
  – (Agg gap 140bn, social assistance spending 3bn)

• 10X benefit amounts, budget neutral expansion

<table>
<thead>
<tr>
<th></th>
<th>PMT</th>
<th>CB</th>
<th>UBI</th>
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<tbody>
<tr>
<td>Headcount ratio</td>
<td>43.36</td>
<td>43.35</td>
<td>43.42</td>
</tr>
<tr>
<td>Diff</td>
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<td>-0.01</td>
<td>0.06</td>
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<thead>
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<th></th>
<th>PMT</th>
<th>CB</th>
<th>UBI</th>
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<tbody>
<tr>
<td>Headcount ratio</td>
<td>41.45</td>
<td>42.73</td>
<td>43.13</td>
</tr>
<tr>
<td>Diff</td>
<td>1.28</td>
<td>1.68</td>
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Incidence of (5X-magnified) Covid shock

<table>
<thead>
<tr>
<th>Population</th>
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<tbody>
<tr>
<td><strong>Poor in baseline</strong></td>
<td><strong>41 900 000</strong></td>
</tr>
<tr>
<td><strong>Job lost due to shock</strong></td>
<td><strong>277 086</strong></td>
</tr>
<tr>
<td><strong>Ratio</strong></td>
<td><strong>0.66</strong></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Population</th>
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</thead>
<tbody>
<tr>
<td><strong>Non-poor in baseline</strong></td>
<td><strong>54 700 000</strong></td>
</tr>
<tr>
<td><strong>Job lost due to shock</strong></td>
<td><strong>1 037 095</strong></td>
</tr>
<tr>
<td><strong>Ratio</strong></td>
<td><strong>1.90</strong></td>
</tr>
</tbody>
</table>

Correlation coefficient for job loss and base poverty gap: -0.0194
## Poverty implications, magnified Covid shock

<table>
<thead>
<tr>
<th>Indicators</th>
<th>PMT</th>
<th>Higher PMT</th>
<th>CB</th>
<th>Higher CB</th>
<th>UBI</th>
<th>Higher UBI</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Base crisis</td>
<td>Base crisis</td>
<td>Base crisis</td>
<td>Base crisis</td>
<td>Base crisis</td>
<td>Base crisis</td>
</tr>
<tr>
<td>Poverty rate</td>
<td>43.36</td>
<td>45.99</td>
<td>43.35 45.97</td>
<td>42.73 45.32</td>
<td>43.42 46.05</td>
<td>43.13 45.64</td>
</tr>
<tr>
<td>Difference in poverty rate between the baseline and crisis</td>
<td>2.63</td>
<td>2.52</td>
<td>2.63 2.58</td>
<td>2.63 2.51</td>
<td></td>
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</tr>
</tbody>
</table>

(just) smaller
Conclusion

• Social assistance budget in Ethiopia is very small compared to poverty rate
• Poverty reduction efficiency, during crisis, across benefit systems is quite similar with small budget
• Perfect targeting works less well if the profile of the poor changes due to the shock.
• The UBI system provides better protection for households slightly above the poverty line before crisis
Extra slides
Modelling of shocks

• Shocks considered:

1. Actual COVID shock
   - By randomly transiting individuals from paid employment to unemployment with no market income based on deviation of sectoral GDP growth for 2020 from its recent trend.
   - The pandemic had a lower effect on Ethiopian economy in 2020, shrinking GDP growth by 3.7 percentage points.

2. Magnified COVID shock
   - 5 times higher COVID shock

3. Counterfactual agricultural shock
   - 10 % reduction in agricultural income.

Figure 2: Industry-level GDP shocks due to COVID in 2020, Ethiopia

-10%  -8%  -6%  -4%  -2%  0%  2%  
-8,0%  -6,4%  -5,8%  -5,7%  -5,5%  -5,2%  -4,3%  -3,7%  -3,1%  -1,8%  -0,5%  -0,6%  -0,2%  +0,2%  

All sectors
Transport and communication
Hotels and restaurants
Public administration and defence
Construction
Other services
Wholesale and retail trade
Education
Private households
Financial intermediation
Agriculture
Electricity and water
Real estate and business
Manufacturing

Health and social work
Benefit scenarios

A. Overall expenditure on social assistance remain the same
   I. Existing PSNP benefit (PMT)
      • The benefit is provided exclusively to households whose PMT score in pre-crisis period were below the threshold value.
   II. Categorical benefit (CB)
      • The benefit targets households with more than four children and individuals over 65 years of age.
   II. Universal basic income (UBI)
      • The system distribute equal benefit amount for all individuals regardless of income or demographic criteria.
Continue…

B. 10 times higher expenditure on social assistance
• Overall budget for the three alternative benefit arrangements increased by equal amount.
• The VAT rate was raised from 15 to 17.8 percent to ensure benefit expansion maintain budget neutrality condition.
• An income shock is reflected in VAT revenue through modeling a constant budget share assumption.
• Higher benefit scenarios: Higher PMT, Higher CB, and Higher UBI.
Findings: Actual COVID shock

Table 1: Change in poverty due to COVID 19 with and without benefit

<table>
<thead>
<tr>
<th>No benefits</th>
<th>With benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.47</td>
<td>0.37</td>
</tr>
</tbody>
</table>

- The pandemic ended up less severe than what was forecast
- Existing benefit system has insignificant coverage and lower role in reducing poverty both in normal times and crisis.
• A CB system would lead to a slightly lower poverty headcount in both the baseline and the crisis situation.
• Poverty would be higher under UBI.
• With small budget, the difference in poverty reduction across benefit systems is trivial.
• PMT perform better with higher budget.

### Table 2: Poverty rate for baseline and COVID-19 crisis, under different benefit scenarios

<table>
<thead>
<tr>
<th>Indicators</th>
<th>PMT Base</th>
<th>Crisis</th>
<th>Higher PMT Base</th>
<th>Crisis</th>
<th>CB Base</th>
<th>Crisis</th>
<th>Higher CB Base</th>
<th>Crisis</th>
<th>UBI Base</th>
<th>Crisis</th>
<th>Higher UBI Base</th>
<th>Crisis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poverty rate</td>
<td>43.36</td>
<td>43.83</td>
<td>41.45</td>
<td>41.92</td>
<td>43.35</td>
<td>43.82</td>
<td>42.73</td>
<td>43.20</td>
<td>43.42</td>
<td>43.89</td>
<td>43.13</td>
<td>43.62</td>
</tr>
<tr>
<td>Difference in poverty rate between baseline and crisis</td>
<td>0.47</td>
<td>0.47</td>
<td>0.47</td>
<td>0.47</td>
<td>0.47</td>
<td>0.47</td>
<td>0.47</td>
<td>0.47</td>
<td>0.47</td>
<td>0.47</td>
<td>0.49</td>
<td></td>
</tr>
</tbody>
</table>
PMT is best in targeting the poor, resulting in lower poverty gaps both at baseline and higher budget scenario.

Table 3: Poverty gaps for baseline and COVID-19 crisis, under different benefit scenarios

<table>
<thead>
<tr>
<th>Indicators</th>
<th>PMT Base</th>
<th>PMT Crisis</th>
<th>CB Base</th>
<th>CB Crisis</th>
<th>UBI Base</th>
<th>UBI Crisis</th>
<th>Higher UBI Base</th>
<th>Higher UBI Crisis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poverty gap</td>
<td>0.236</td>
<td>0.241</td>
<td>0.223</td>
<td>0.227</td>
<td>0.238</td>
<td>0.243</td>
<td>0.231</td>
<td>0.236</td>
</tr>
<tr>
<td>Difference in poverty gap between the baseline and crisis</td>
<td>0.005</td>
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Table 4: Mean monthly benefit, by quintiles of consumption expenditure

<table>
<thead>
<tr>
<th>Quintiles</th>
<th>PMT</th>
<th>Higher PMT</th>
<th>CB</th>
<th>Higher CB</th>
<th>UBI</th>
<th>Higher UBI</th>
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<tr>
<td>1</td>
<td>11.82</td>
<td>118.19</td>
<td>3.16</td>
<td>31.6</td>
<td>2.05</td>
<td>20.48</td>
</tr>
<tr>
<td>2</td>
<td>2.65</td>
<td>26.54</td>
<td>2.79</td>
<td>27.89</td>
<td>2.38</td>
<td>23.82</td>
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<tr>
<td>3</td>
<td>-</td>
<td>-</td>
<td>2.82</td>
<td>28.24</td>
<td>2.56</td>
<td>25.57</td>
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<tr>
<td>4</td>
<td>-</td>
<td>-</td>
<td>2.65</td>
<td>26.53</td>
<td>2.96</td>
<td>29.64</td>
</tr>
<tr>
<td>5</td>
<td>-</td>
<td>-</td>
<td>2.69</td>
<td>26.89</td>
<td>3.99</td>
<td>39.89</td>
</tr>
</tbody>
</table>
Findings: Magnified COVID shock

Table 5: Poverty rate for baseline and magnified COVID-19 crisis, under different benefit scenarios

<table>
<thead>
<tr>
<th>Indicators</th>
<th>PMT Base Crisis</th>
<th>PMT Crisis</th>
<th>CB Base Crisis</th>
<th>CB Crisis</th>
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<td>2.63</td>
<td>2.51</td>
<td></td>
<td></td>
</tr>
<tr>
<td>between baseline and crisis</td>
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- Since the incidence of job loss is higher for the non-poor in the baseline, UBI with higher budget results in a smaller increase in the poverty rate.
Findings: agricultural shock

Table 6: Poverty rates for baseline and agricultural crisis, under different benefit scenarios

<table>
<thead>
<tr>
<th>Indicators</th>
<th>PMT Base</th>
<th>Poverty Rate</th>
<th>Crisis</th>
<th>Higher PMT Base</th>
<th>Poverty Rate</th>
<th>Crisis</th>
<th>CB Base</th>
<th>Poverty Rate</th>
<th>Crisis</th>
<th>Higher CB Base</th>
<th>Poverty Rate</th>
<th>Crisis</th>
<th>UBI Base</th>
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<th>Higher UBI Base</th>
<th>Poverty Rate</th>
<th>Crisis</th>
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<tbody>
<tr>
<td>Poverty rate</td>
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<td></td>
<td>43.42</td>
<td>46.33</td>
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<td>43.13</td>
<td>46.07</td>
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<tr>
<td>Difference in poverty rate</td>
<td>2.93</td>
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<td>2.95</td>
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<td>2.91</td>
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<td></td>
<td>2.94</td>
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- Like the COVID-19 crisis, CB deliver the lowest headcount poverty rate under the baseline budget.
- With higher budget:
  - Headcount poverty is lower with PMT system
  - UBI offers the smallest increase in poverty rate due to agricultural shock.

Table 7: Poverty gaps for baseline and agricultural crisis, under different benefit scenarios

<table>
<thead>
<tr>
<th>Indicators</th>
<th>PMT Base</th>
<th>Poverty Gap</th>
<th>Crisis</th>
<th>Higher PMT Base</th>
<th>Poverty Gap</th>
<th>Crisis</th>
<th>CB Base</th>
<th>Poverty Gap</th>
<th>Crisis</th>
<th>Higher CB Base</th>
<th>Poverty Gap</th>
<th>Crisis</th>
<th>UBI Base</th>
<th>Poverty Gap</th>
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<th>Higher UBI Base</th>
<th>Poverty Gap</th>
<th>Crisis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poverty gap</td>
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<td></td>
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<td>0.262</td>
<td></td>
<td>0.238</td>
<td>0.278</td>
<td></td>
<td>0.231</td>
<td>0.271</td>
<td></td>
<td>0.238</td>
<td>0.279</td>
<td></td>
<td>0.235</td>
<td>0.275</td>
<td></td>
</tr>
<tr>
<td>Difference in poverty gap</td>
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<td>0.039</td>
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<td>0.040</td>
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