This presentation

• General material about SOUTHMOD
• Ghana paper
  – One dynamic step: formality
SOUTHMOD project

• Social protection and DRM increasingly important

• Developing countries need suitable tools to plan ahead

• Microsim and EUROMOD offer such a tool

• EUROMOD, SASPRI and KU Leuven senior developing country partners

• Country teams
SOUTHMOD country models as of 2018

- Ecuador
- Ethiopia
- Ghana
- Mozambique
- Tanzania
- Viet Nam
- Zambia
- Uganda – work in progress

plus updates of existing models for Namibia and South Africa
Activities

• Models maintained: data, policy updates
• Training sessions, users group: policy uptake
• 1 Special issue from the 1st batch of work
• An RFRP and WP:s from it (approximately 10 papers) by end 2019
• Software development
  – Sum stats tool
SOUTHMOD in numbers

1. Special issue forthcoming in the International Journal of Microsimulation
2. Policy updates per country model
3. Software updates
4. Research papers, feasibility studies, technical notes, country reports
5. Training participants, government officials, researchers
6. Average number of policies modelled per country
7. Team members

Total:
- 48 research papers
- 342 team members
- 3 software updates
- 12 average number of policies modelled per country
- 45 team members
- 2 policy updates per country model
Please do get engaged

https://www.wider.unu.edu/project/southmod-simulating-tax-and-benefit-policies-development

Mixing Nordic and developing country public economics researchers is a match made in heaven!
Quantifying the Impacts of Expanding Social Protection on Efficiency and Equity: Evidence from a Behavioral Microsimulation Model for Ghana

Robert Osei (ISSER, University of Ghana)
Jukka Pirttilä (University of Helsinki and UNU-WIDER) and
Pia Rattenhuber (UNU-WIDER)
Motivation

- Developing countries are in the process of scaling up their social protection systems
  - necessary to achieve SDGs
- Increasingly, these policies need to be financed by domestic revenue mobilization
- At the same time, these countries need to worry about the extent of formal sector jobs. Higher taxes can lead to a reduction in the size of the formal sector
  - How severe is the possible trade off between better social protection and economic efficiency?
This study

- This paper uses GHAMOD, the new tax-benefit microsimulation model for Ghana (Adu-Ababio, Osei, Pirttilä, and Rattenhuber, 2017), to simulate the impacts of expanding social protection on poverty and inequality.

- This is done via increasing the scope and the generosity of the existing main Ghanainan transfer programme, the LEAP.

- We consider both the impacts of expanding social protection alone and those of a revenue-neutral scheme, where the programme expansion is funded via an increase in the flat payroll tax rate.

- The estimates are combined with evidence on the elasticity of the formal work with respect to the tax burden on the formal sector labour.

  - We are able also take into account, we would argue, the key distortionary impacts of taxes in a country like Ghana = behavioural microsimulation.
Where do the elasticities come from?

- There is some quasi-experimental evidence on the impacts of tax-and-benefit systems on formal work in the Latin American context, see for instance Alzúa, Cruces, and Ripani (2012); Garganta and Gasparini (2015); Bergolo and Cruces (2014).
- Such evidence has not been available, to our knowledge, from African countries until work by McKay, Pirttilä, and Schimanski, 2018.
- That paper provides evidence on a the formality elasticity for a number of African countries; and we use the estimates for Ghana from those.
- Their method builds on applying the repeated cross-section estimator by Blundell, Duncan, and Meghir (1998), which was used in a cross-country setting by Jäntti, Pirttilä, and Selin (2015).
- In this talk, the estimations are skipped in the interest of time.
The existing LEAP transfer system is extended and made more generous as follows:

- The eligibility threshold is raised from consumption per adult equivalent of 446 to twice that amount, i.e. 892 Cedi.
- The amounts are further raised by 100% for those below the initial threshold (i.e. the 446 line)
- Instead of caregivers of OVCs, all household with under-age children who fall below the consumption threshold are eligible

Introduction of a universal old-age pension, where the amounts per recipients are the same as in the LEAP transfer system, and the pension is given to all persons who are 65 years-of-age or older and who do not collect any pensions yet.
We also consider a fully financed scheme by raising the payroll tax of the employees sufficiently (8 %‐points).

Assuming (as always in microsimulation) full incidence on workers, we can calculate the impact of this on net pay in the state of formal work.

We combine this with an estimated elasticity (0.1) of the share of formal work with respect to the difference in net pay between formal and informal work.

%‐change in the share of formal sector work = formality elasticity * %‐change in the net pay between formal and informal work

Implemented in the microsimulation by changing the sample weights so that the new share of formal work is reached and the sum of weights is retained.
## Results: Government revenue

<table>
<thead>
<tr>
<th></th>
<th>Status quo (I)</th>
<th>Non-revenue neutral extension of social protection (II)</th>
<th>Revenue-neutral reform (III)</th>
<th>Revenue-neutral reform with behavioral impacts (IV)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LEAP transfer</td>
<td>3</td>
<td>274</td>
<td>274</td>
<td>274</td>
</tr>
<tr>
<td>Pension reform</td>
<td>0</td>
<td>437</td>
<td>437</td>
<td>437</td>
</tr>
<tr>
<td>Employee SSC</td>
<td>486</td>
<td>486</td>
<td>1192</td>
<td>1179</td>
</tr>
<tr>
<td>Employer SSC</td>
<td>1067</td>
<td>1067</td>
<td>1067</td>
<td>1055</td>
</tr>
<tr>
<td>Income tax revenue</td>
<td>2060</td>
<td>2060</td>
<td>2060</td>
<td>2038</td>
</tr>
<tr>
<td>Change in costs vz. status quo</td>
<td>707</td>
<td>4</td>
<td>4</td>
<td>45</td>
</tr>
</tbody>
</table>

Notes: The budgetary implications are expressed in millions of Ghanaian Cedi.

**Table:** Simulation results of expanding social protection on government budget.

Source: Authors’ calculations using GHAMOD.
## Results: Poverty and Inequality

### Table: Simulation results of expanding social protection on poverty and inequality.

<table>
<thead>
<tr>
<th></th>
<th>Status quo (I)</th>
<th>Non-revenue neutral extension of social protection (II)</th>
<th>Revenue-neutral reform (III)</th>
<th>Revenue-neutral reform with behavioral impacts (IV)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Poverty</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>All</strong></td>
<td>24.9</td>
<td>24.1</td>
<td>24.3</td>
<td>24.4</td>
</tr>
<tr>
<td><strong>Households with children</strong></td>
<td>27.4</td>
<td>26.7</td>
<td>26.9</td>
<td>27.0</td>
</tr>
<tr>
<td><strong>Households with older persons</strong></td>
<td>33.7</td>
<td>29.3</td>
<td>29.3</td>
<td>29.4</td>
</tr>
<tr>
<td><strong>Gini</strong></td>
<td>0.417</td>
<td>0.408</td>
<td>0.408</td>
<td>0.408</td>
</tr>
</tbody>
</table>

Notes: Poverty rates measured using consumption-based absolute poverty line of 1314 Ghanaian Cedi per adult equivalent per year. The Gini index is also for consumption.

Source: Authors’ calculations using GHAMOD.
Conclusion

- Because of the narrow tax base, the tax rate increase needed to finance the social protection expansion is sizable.
- The distributional benefits of the programme expansion remain even in the revenue-neutral case.
- Because of the modest estimated formality elasticity, taking into account behavioural changes does not erode the distributional gains of the reform.
- Caveats:
  - the actual monetary amounts need to be interpreted cautiously, since the model does not exactly match the revenue numbers by the tax authority.
  - extensive margin alone, impact on taxable income at the intensive margin?
  - no leakage in programme implementation.
**References I**


