Assessing the impact of tax and transfer reforms
- estimates and model predictions

Peter Benczur

EC JRC Ispra, CEU and IE-CERS, HAS

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The views expressed are those of the authors and do not necessarily reflect the official view of the European Commission.
Three main purposes for government intervention (Musgrave 1959)

- Allocation: private outcome is Pareto inefficient because of market failures
- Distribution: private outcome leads to a “socially undesirable division of economic goods
- Stabilization: private outcome leaves some resources underutilized (recent interpretation: labor market allocation)
- Welfare effects described in terms of efficiency and incidence
Taxation

- Standard approach: need to generate some revenue
  - Collect taxes on various economic transactions like sales, corporate and personal income
  - Ideal setup: "lump sum taxation" - regardless of individual choice
  - Reality: taxes influence prices, thus choices - a source of potential inefficiency
  - How to minimize the efficiency loss?

- Variant 2: want to redistribute income
  - Again a loss due to distorted individual choices
  - Need to tradeoff efficiency vs equity

- The sensitivity of individual behavior to taxes is always a key ingredient of the evaluation

Assessing the impact of tax and transfer reforms
Elasticities and efficiency losses

\[ p_0 = p_1^{\text{producer}} \]

Lost consumer surplus

\[ \text{Revenue gain} \]

= Welfare loss

\[ q_0 \]

\[ q_1 \]

\[ p_1^{\text{consumer}} \]
Model objectives

- Assessing the impact of tax and transfer reforms:
  - Static effects (impact on incomes and the income distribution...)
  - Long run effects on:
    - Labor markets
    - GDP
    - Government budget
- With a microsimulation model
  - ...with a labor supply extension
  - ... both on the extensive and the intensive margin
  - embedded into a small macro model
- The model is long run, so it is supply determined
  - and not demand driven (short run “consumption effect”)

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Overview of the model

- Calculate pre- and post-reform net wages
  - Observed wage for the employed
  - Predicted wage for the unemployed

- Calculate pre- and post-reform transfers
- Assess the pre- and post-reform “probability of activity” and “effective hours given employed” using empirical estimates
- We add these up to get the aggregate “labor supply shock”
- Which we then feed into a small macromodel
The macro model

- A small neoclassical model
  - Able to capture general equilibrium effects:
    - ... the adjustment of capital stocks and factor prices ($w, r$)
    - ... to equalize their prices and marginal products

- Firms are represented by an estimated/calibrated CES production function

- Small open economy: capital supply is “very” elastic
  - In case of infinite elasticity...
  - ... the capital stock changes and factor prices return to their original levels
The macro model – underlying dynamics

- For the perfectly elastic case:
  1. gross wage drops, the rental rate goes above the required rate of return
  2. capital flows in, increased labor demand, gross wage starts to reverse
  3. a bit more labor supplied, further capital inflow
  4. gross wage gradually returns to its original level
A graphical representation of the micro-macro model

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Assessing the impact of tax and transfer reforms
Labor supply elasticities

At the intensive and extensive margin

Intensive margin results:
- Bakos, Benczúr and Benedek (2008)
- Kiss and Mosberger (2011)
- Benczúr, Kiss and Mosberger (2013)
- Mostly the top 10-20% responds

Extensive margin results:
- Benczúr, Kátay, Kiss and Rácz (2012)
- Substantial adjustment, mostly for...
- ... the low skilled and the elderly,
- ... a bit less so for women in child-bearing age
Actual measures 2008-2010 and 2010-2012(3)

- Both periods:
  - Increase in (employee-side) contributions
  - Increase in VAT (20 to 25 to 27%)
  - Measures to postpone retirement

- 2008-2010:
  - PIT cut for middle-income individuals
  - Cut in employer-side contributions
Actual measures cont.

- **2010-2012(3):**
  - PIT cut for high-income individuals
  - PIT increase for low income earners, cut for families w. children
  - Corporate tax cut
  - Extraordinary (temporary?) “crisis” taxes on banks, telecom, retail
  - Cut in unemployment benefits (12 months to 3 months)
  - Transaction taxes, new small business taxes
  - Selective contribution cuts for certain subgroups (pre-retirement, youth, mothers with infants, low-skill)
Displaying the results

▶ Effect on the distribution of incomes (of recent reforms)
  ▶ At the household level
  ▶ Winners/losers
  ▶ Gini coefficient, p90/p10

▶ One table with labor and GDP effects

▶ Revenue effect:
  ▶ Static – immediate effect (no behavioral response, extra income is all spent)
  ▶ Dynamic: long run, behavioral response also turned on

▶ Another table with robustness to some (a) key parameters
Effect on the income distribution

- Substantial redistribution (static effect)
  - Tax changes favored the high-income (mostly: top 5-10%)
  - The elimination of wage tax credit and changes in transfers hurt low-income households

- Income inequality measures (the Gini coefficient, p90/p10 etc. ratios):
  - Move from a low level similar to Denmark and Austria to a medium level similar to Germany (EU average)
  - This is the dynamic effect
The impact on the Gini coefficient

Slovenia  Slovenia
Slovakia  Slovakia
Sweden  Sweden
Czech Republic  Czech Republic
Denmark  Denmark
Hungary  Hungary
Austria  Austria
Finland  Finland
Belgium  Belgium
Netherlands  Netherlands
Luxembourg  Luxembourg
Malta  Malta
Cyprus  Cyprus
France  France
Ireland  Ireland
Germany  Germany
EU-27  EU-27
Italy  Italy
Spain  Spain
Poland  Poland
Greece  Greece
United Kingdom  United Kingdom
Lithuania  Lithuania
Portugal  Portugal
Bulgaria  Bulgaria
Romania  Romania
Latvia  Latvia
### 2008-10 and 2010-13

<table>
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<tr>
<th></th>
<th>2008-10</th>
<th></th>
<th>2010-13</th>
<th></th>
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<tbody>
<tr>
<td></td>
<td>static</td>
<td>w/o pension</td>
<td>w/</td>
<td>static</td>
</tr>
<tr>
<td>Effective labor</td>
<td>1.7%</td>
<td>4.8%</td>
<td></td>
<td>4.6%</td>
</tr>
<tr>
<td>Employment</td>
<td>2.3%</td>
<td>5.8%</td>
<td></td>
<td>2.6%</td>
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<tr>
<td>Capital stock</td>
<td>1.9%</td>
<td>4.4%</td>
<td></td>
<td>3.7%</td>
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<tr>
<td>GDP</td>
<td>1.7%</td>
<td>4.7%</td>
<td></td>
<td>4.3%</td>
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<tr>
<td>Average gross wage</td>
<td>4.3%</td>
<td>4.2%</td>
<td></td>
<td>2.3%</td>
</tr>
<tr>
<td>Disposable income</td>
<td>3.6%</td>
<td>2.8%</td>
<td></td>
<td>1.7%</td>
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<tr>
<td>Δ budget balance</td>
<td>-530</td>
<td>-84</td>
<td>342</td>
<td>-20</td>
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2010-13 and the required rate on investment

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<th>Hypothetical shock affecting the risk premium</th>
<th>0</th>
<th>50 bp</th>
<th>100 bp</th>
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<tr>
<td>Effective labor</td>
<td>4.6%</td>
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<td>3.0%</td>
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<tr>
<td>Employment</td>
<td>2.6%</td>
<td>1.5%</td>
<td>0.9%</td>
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<tr>
<td>Capital stock</td>
<td>3.7%</td>
<td>-5.5%</td>
<td>-15.4%</td>
</tr>
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<td>GDP</td>
<td>4.3%</td>
<td>0.9%</td>
<td>-3.5%</td>
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<td>-1.6%</td>
<td>-5.4%</td>
</tr>
<tr>
<td>Disposable income</td>
<td>1.7%</td>
<td>-1.1%</td>
<td>-4.5%</td>
</tr>
<tr>
<td>Change of budget balance</td>
<td>463</td>
<td>117</td>
<td>-290</td>
</tr>
</tbody>
</table>

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Conclusions from the exercises

- GDP, effective labor and employment effects often go in opposite directions.
- In case of income taxes:
  - In general: more important effects on the intensive margin
  - Smaller effects on the extensive margin
  - Many of the 2012 measures would have a negative impact on the extensive margin!
- 2010-12: moving from the bottom 25% to the median in terms of income inequality
- An increase in the required rate of return can undo most of the benefits of a tax reform!
- A useful and ready-to-use tool for evaluating tax and welfare reforms
The suggested research agenda – a “checklist” for Hungary

- Labour supply and tax price elasticities
  - Through the income distribution
  - Top of the income distribution
  - Margins of adjustment?
  - Extensive and intensive margin

- Analyzing labor income underreporting
- A microsimulation tool combining all these behavioral responses and a macro side as well

Advertisement: The Hungarian Labor Market Yearbook, 2013
- Its section on “Taxes, transfers and the labour market” summarizes all these developments
- See: http://econ.core.hu/english/publications/lmyb.html