Crisis, Austerity and Automatic Stabilization

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Understanding Changes in Inequality in the Austerity Period  
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Tax benefit systems provide (temporary) income insurance through build-in automatic stabilizers in times of crisis
  ▶ progressive tax system
  ▶ (unemployment) benefits

Great Recession / sovereign debt crisis followed by policy reforms (austerity measures) potentially affecting AS in many countries

Aim of this paper: analyze effects of policy changes on AS 2007-2013
  ▶ update previous results (Dolls/Fuest/Peichl, 2012) to EU-27
  ▶ (account for behavioral responses)
  ▶ (effects on income distribution)
Macroeconometric studies:

- Theory: ambiguous; Empirics: neg. corr. btw gov. size & GDP volatility
- Issues: discretionary and automatic fiscal stabilization

Microeconometric studies:

- Figari et al. (2011): stress testing European welfare systems
1. Introduction

2. Data and methodology

3. Results

4. Conclusion
Microsimulation models (MSM) = tools to compute how a gross income shock translates into changes of disposable income

- EUROMOD: static tax-benefit MSM for EU-27
- MSM calculate (cash) benefit entitlements and (direct) tax liabilities for a representative micro-data sample of households for each country
- Assume full benefit take-up, no tax evasion, no behavioral responses

MSM allow for exogenous variation in key parameters $\implies$ disentangle automatic stabilizers from discretionary fiscal policy and behavioral responses

- Use pre-crisis data for decomposition

Note: This is NOT a forecasting exercise nor an ex-post evaluation but a “what-if” analysis!
Data and methodology

Measurement of stabilization (1/2)

- Market income $Y_i^M$ of individual $i$:
  - $Y_i^M = E_i + Q_i + I_i + P_i + O_i$
  - where $E_i$: earnings, $Q_i$: business income, $I_i$: capital income, $P_i$: property income, and $O_i$: other income

- Disposable income $Y_i^D$:
  - $Y_i^D = Y_i^M - G_i = Y_i^M - (T_i + S_i - B_i)$
  - with $T_i$: direct taxes, $S_i$: employee social insurance contributions, $B_i$: benefits (i.e. negative taxes)
**Income stabilization coefficient**: How much of a given shock is absorbed by the tax and transfer system?

\[
\tau^I = 1 - \frac{\sum_i \Delta Y_i^D}{\sum_i \Delta Y_i^M} = \frac{\sum_i (\Delta Y_i^M - \Delta Y_i^D)}{\sum_i \Delta Y_i^M} = \frac{\sum_i \Delta G_i}{\sum_i \Delta Y_i^M}
\]

\(\tau^I\) resembles average effective marginal tax rate (EMTR)

Example: \(\tau^I = 0.4\): 40\% of an income shock absorbed by t-b system

Determinants: government size, structure of tax benefit system

Contribution of different components:

\[
\tau^I = \sum_f \tau_f^I = \tau_{Tax} + \tau_{SIC} + \tau_{Ben} = \frac{\sum_i \Delta T_i}{\sum_i \Delta Y_i^M} + \frac{\sum_i \Delta S_i}{\sum_i \Delta Y_i^M} - \frac{\sum_i \Delta B_i}{\sum_i \Delta Y_i^M}
\]
2 types of shocks:

- *Proportional reduction* in household gross income by 5% for each household (*income shock*)
- *Increase of the unemployment rate* such that aggregate total household gross income decreases by 5% (*unemployment shock*)
  - modelled through reweighting
- combination: “average crisis shock” in EU (same for all con.)
1 Introduction

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4 Conclusion
Results

Plus 5% Unemployment & Minus 5% Income shock 2007

Income Stabilization Coefficient

Direct Tax
SIC
Benefits
Automatic Stabilizers after -5% income & +5% unemployment shock 2007 vs. 2008-2013
Change in TAU after -5% income & +5% unemployment shock 2007 vs. 2008-2013
Change in TAU after -5% income & +5% unemployment shock 2007 vs. 2007/2008-2013

Dolls/Fuest/Peichl/Wittneben (ZEW)  Crisis and Automatic Stabilization
Change in TAU after -5% income & +5% unemployment shock 2007 vs. 2008-2013

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Change in TAU after -5% income & +5% unemployment shock 2007 vs. 2008-2013

Delta TAUSIC 2007-2008

Delta TAUSIC 2007-2009

Delta TAUSIC 2007-2010

Delta TAUSIC 2007-2011

Delta TAUSIC 2007-2012

Delta TAUSIC 2007-2013
Change in TAU after -5% income & +5% unemployment shock 2007 vs. 2008-2013

Delta TAUBUN 2007-2008

Delta TAUBUN 2007-2009

Delta TAUBUN 2007-2010

Delta TAUBUN 2007-2011

Delta TAUBUN 2007-2012

Delta TAUBUN 2007-2013

TAUBUN 2007

TAUBUN 2008

TAUBUN 2009

TAUBUN 2010

TAUBUN 2011

TAUBUN 2012

TAUBUN 2013

Change in TAU after -5% income & +5% unemployment shock 2007 vs. 2008-2013
Results

Change in redistribution

Differences in Gini coefficients before and after -5% income & +5% unemployment shock 2007 vs. 2008-2013


Delta Gini 2007 vs. Delta Gini 2010

Delta Gini 2007 vs. Delta Gini 2011


Delta Gini 2007 vs. Delta Gini 2013

Dolls/Fuest/Peichl/Wittneben (ZEW)

Crisis and Automatic Stabilization

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4 Conclusion
Large heterogeneity within the EU ...

... both in levels and (policy) changes in AS

Budgetary consolidation required in many countries, but...
  ▶ should not weaken automatic stabilizers (unemployment benefits)
  ▶ Countries with stronger AS were relatively resilient during the crisis,
  ▶ while those with weak AS experienced major economic contractions
    and increases in unemployment (correlation, no causation!)

But: insurance vs. incentives: no 100% insurance desirable

EU level stabilization? EU-UI ...

TODO: Policy vs. data (Philippe’s talk)...

Dolls/Fuest/Peichl/Wittneben (ZEW)
Thank you for your attention!

Comments? Questions?

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Change in TAU TAX after -5% income & +5% unemployment shock 2007 vs. 2008-2013
Change in TAU SIC after -5% income & +5% unemployment shock 2007 vs. 2008-2013
Reweighting

- vs. probability of becoming unemployed: results are similar
- vs. random draws: depending on assumptions effect on level, but not (much) on cross-country differences

Different scenarios: results surprisingly linear

Symmetric results for shocks: proportional income increase yields equivalent results as decrease

⇒ difference between income and unemployment shock can be interpreted as the different size of automatic stabilization in good and bad times
## Correlation with macro measures

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Macroeconometric studies

  - Theory: ambiguous results
  - Empirical analysis: large governments have large automatic stabilizers
  - Empirical analysis: negative correlation between government size and GDP volatility

- Issues:
  - no distinction between discretionary and automatic fiscal stabilization
  - volatility and government size are jointly determined
  - little or no information as to which elements of the revenue and expenditure system drives stabilization
Auerbach and Feenberg (2000)

- Microsimulation analysis to measure automatic stabilization through the US federal income tax
- Main result: US federal income tax absorbs 15% of a shock to gross income on demand
Decomposition: **Tax benefit rules** and not the demographic characteristics **main determinants of stabilization coefficient**

- More open economies have larger automatic stabilizers (and larger governments)
- Countries with lower automatic stabilizers have engaged in more discretionary fiscal policy action (Dolls et al. 2012b)
- Automatic stabilizers increase the redistributive effects of the tax benefit systems (Dolls et al. 201)