Crisis, Austerity and Automatic Stabilization – Long vs. Short Term Effects

Mathias Dolls
(ZEW)
Clemens Fuest
(ifo Institut & University of Munich)
Andreas Peichl
(ZEW, University of Mannheim & ISER)
Christian Wittneben
(ZEW)

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Motivation

- Sovereign debt crisis in Europe led to budget consolidation measures in many EU countries
  - Fundamental changes in tax and transfer systems
- Tax increases and spending cuts aimed at keeping government budgets at balance
  - Additional burden on Household incomes, in the presence of declining GDP
- However, long term:
  - Higher fiscal stabilization effect (automatic stabilizers)
  - Higher redistributive effect

Motivation

- Tax benefit systems provide (temporary) income insurance through built-in **automatic stabilizers** in times of crises
  - elements of the tax and transfer system that mitigate fluctuations in output without discretionary government action:
  - progressive taxation
  - (unemployment) benefits
- Great Recession + sovereign debt crisis
  $\Rightarrow$ followed by **policy reforms** (austerity measures) potentially affecting AS in many countries
- But: Magnitude of stabilization effect depends on changes to the tax and transfer system the government may make

We ask:

- How did automatic stabilizers change from 2007 to 2014?
- Did governments let automatic stabilizers work?

1. Introduction
2. Data and Methodology
3. Results
4. Conclusion

Microsimulation Models (MSM)

- Most studies on AS rely on Macro data. Recent work also uses structural models (e.g. Mckay & Reis 2016)

What we do:

- Employ a Microsimulation Model
  - Tool to compute how a gross income shock translates into changes of disposable income

- allow for **exogenous variation** in gross income
- $\Rightarrow$ **disentangle automatic stabilizers** from **discretionary** fiscal policy and **behavioral responses**

Microsimulation Models (MSM)

EUROMOD

- static tax-benefit MSM for the EU-27
- MSM to calculate (cash) benefits and (direct) tax liabilities...
- ...for a representative micro-data sample for each country

Data: 2007 EU-SILC

- use pre-crisis (2007) micro-data for analysis
- this allows us to single out the policy effect

Scenarios

Currently we model:

- **Proportional reduction** in household gross income by 5% for each household (income shock)

Later also consider:

- **Increase of unemployment rate** by 5 percentage points (unemployment shock)
  - modeled through reweighting
- Combined Shock
- Actual Changes in GDP 2007-2014

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 are 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)

Measurement of Stabilization 2/2

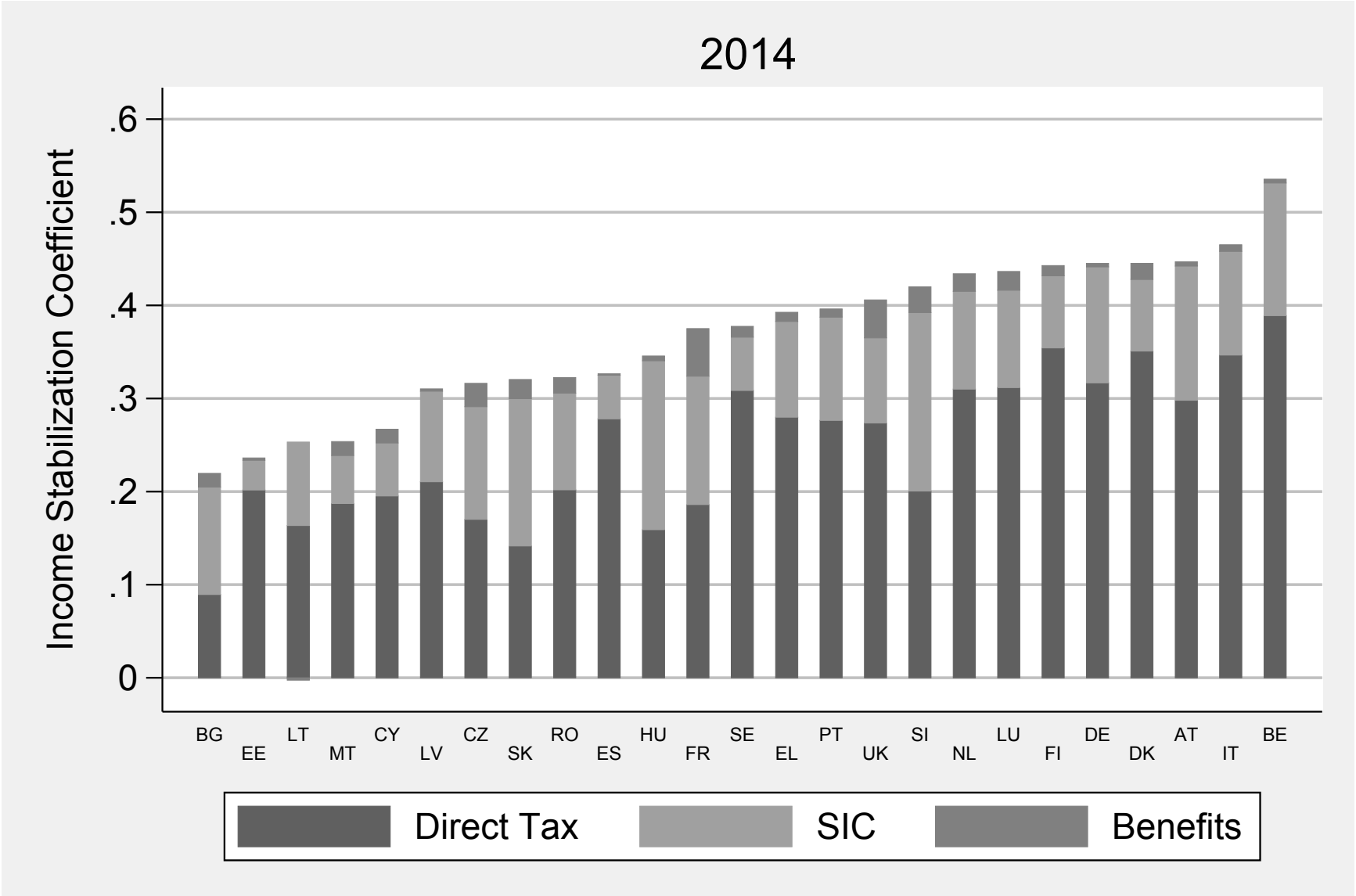
Income Stabilization Coefficient

How much of a given shock is **absorbed** by the tax and transfer system?

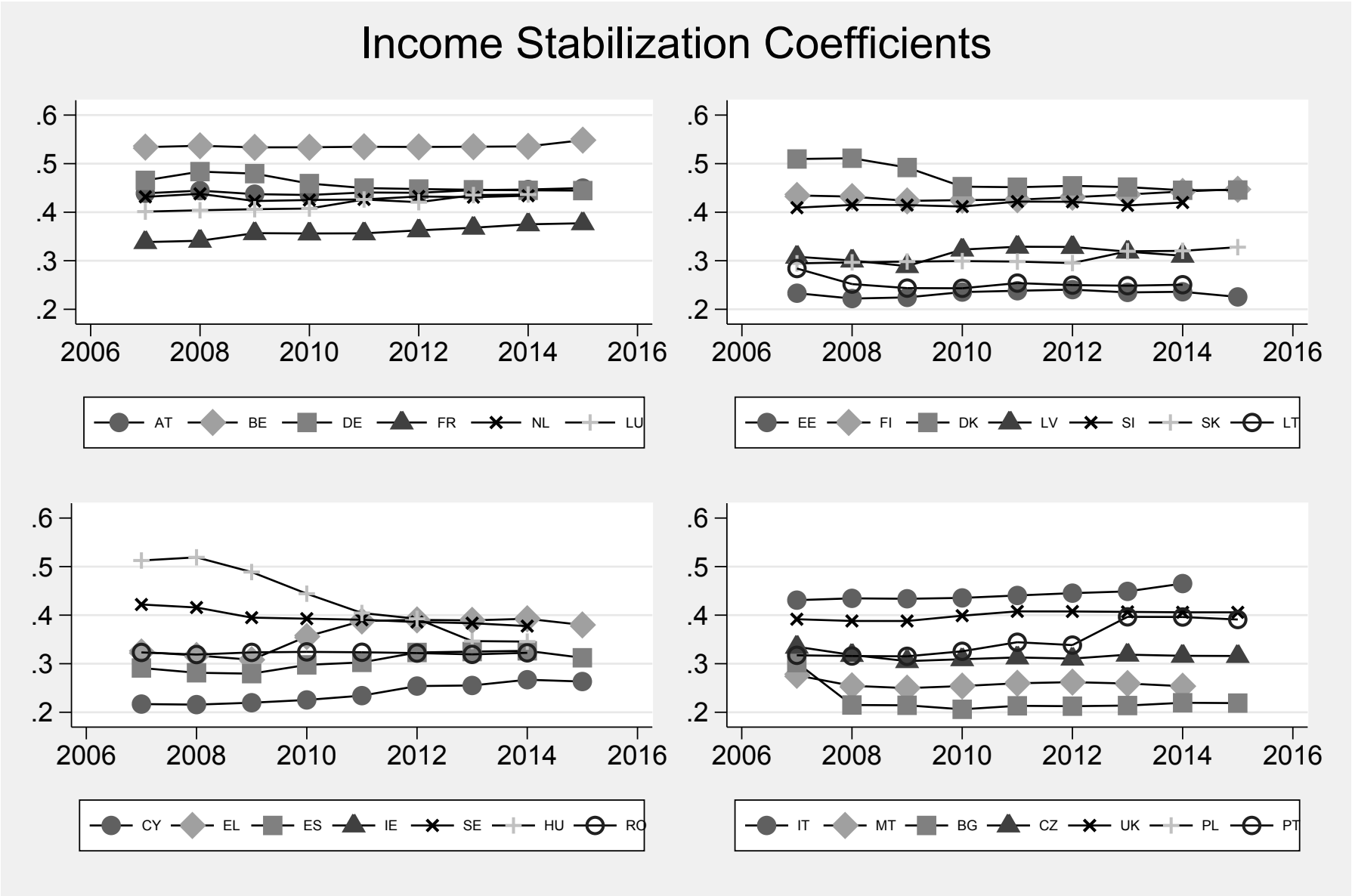
- $\tau^I = 1 - \frac{\sum_i \Delta Y_i^D}{\sum_i \Delta Y_i^M} = \frac{\sum_i (\Delta Y_i^M - \Delta Y_i^D)}{\sum_i \Delta Y_i^M} = \frac{\sum_i \Delta G_i}{\sum_i \Delta Y_i^M}$

- τ^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:
  - $\tau^I = \sum_f \tau_f^I = \tau_{Tax} + \tau_{SIC} + \tau_{Ben} = \frac{\sum_i \Delta T_i}{\sum_i \Delta Y_i^M} + \frac{\sum_i \Delta S_i}{\sum_i \Delta Y_i^M} - \frac{\sum_i \Delta B_i}{\sum_i \Delta Y_i^M}$

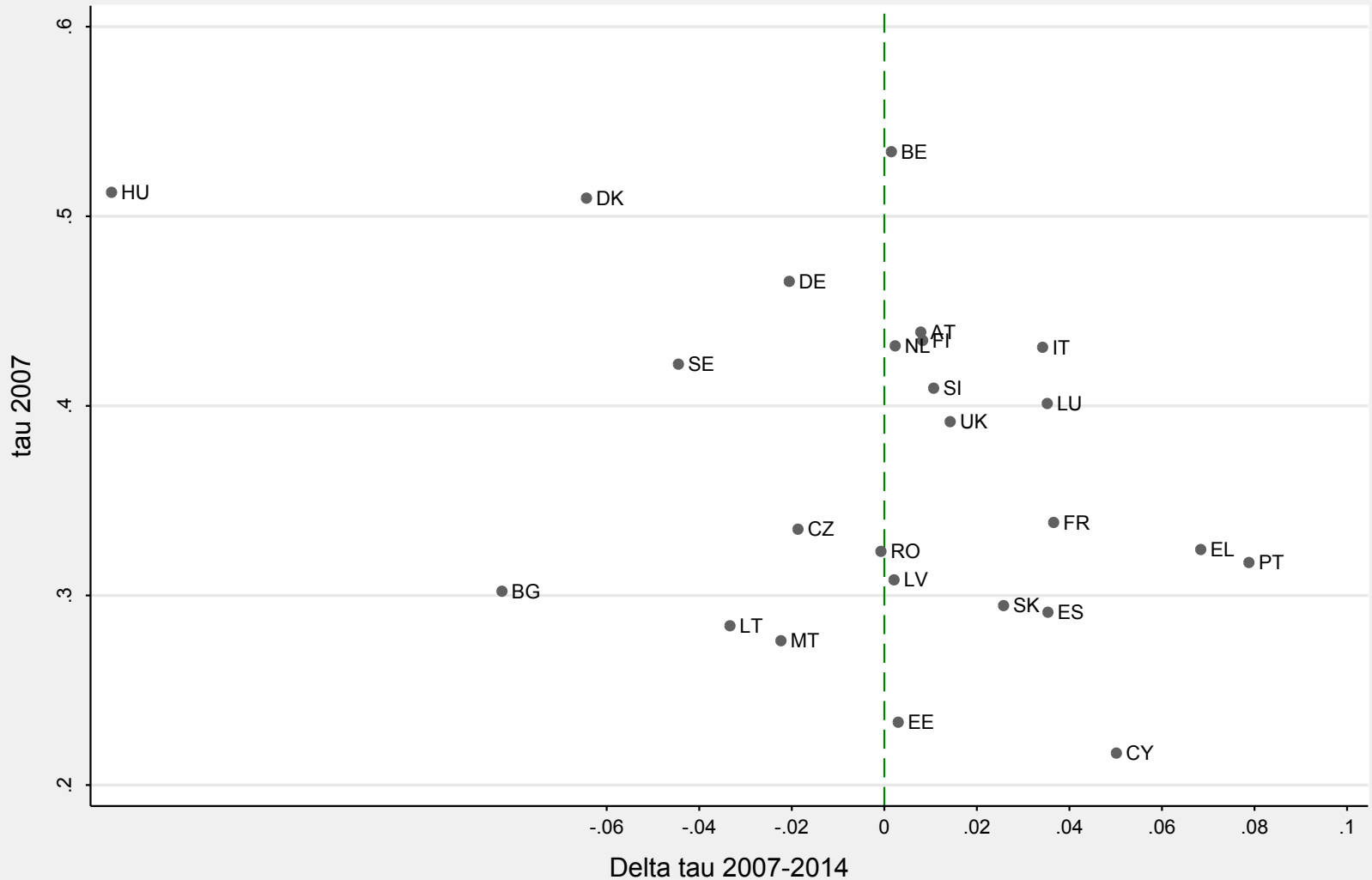
AS Levels 2014



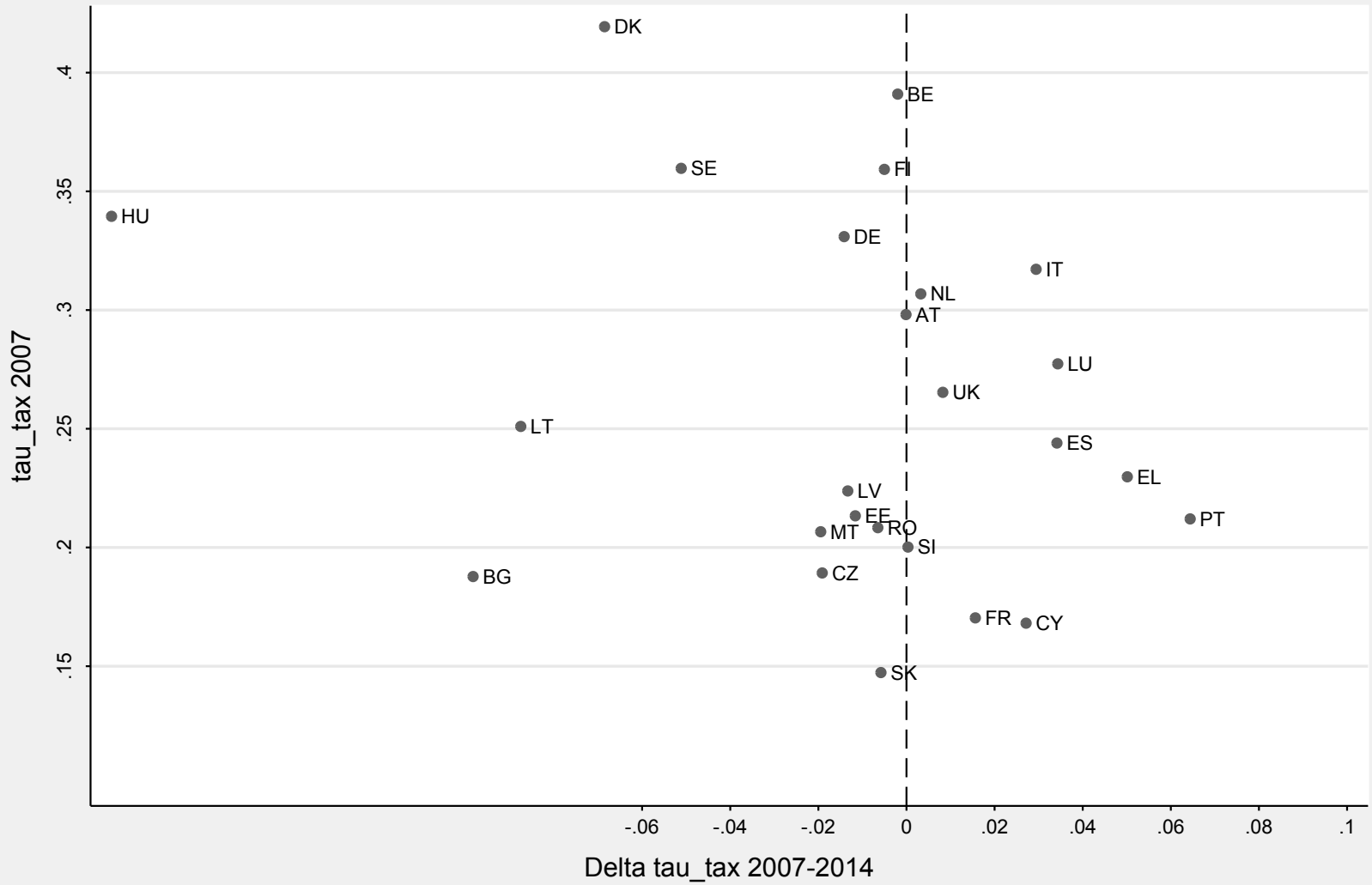
AS Over the Crisis



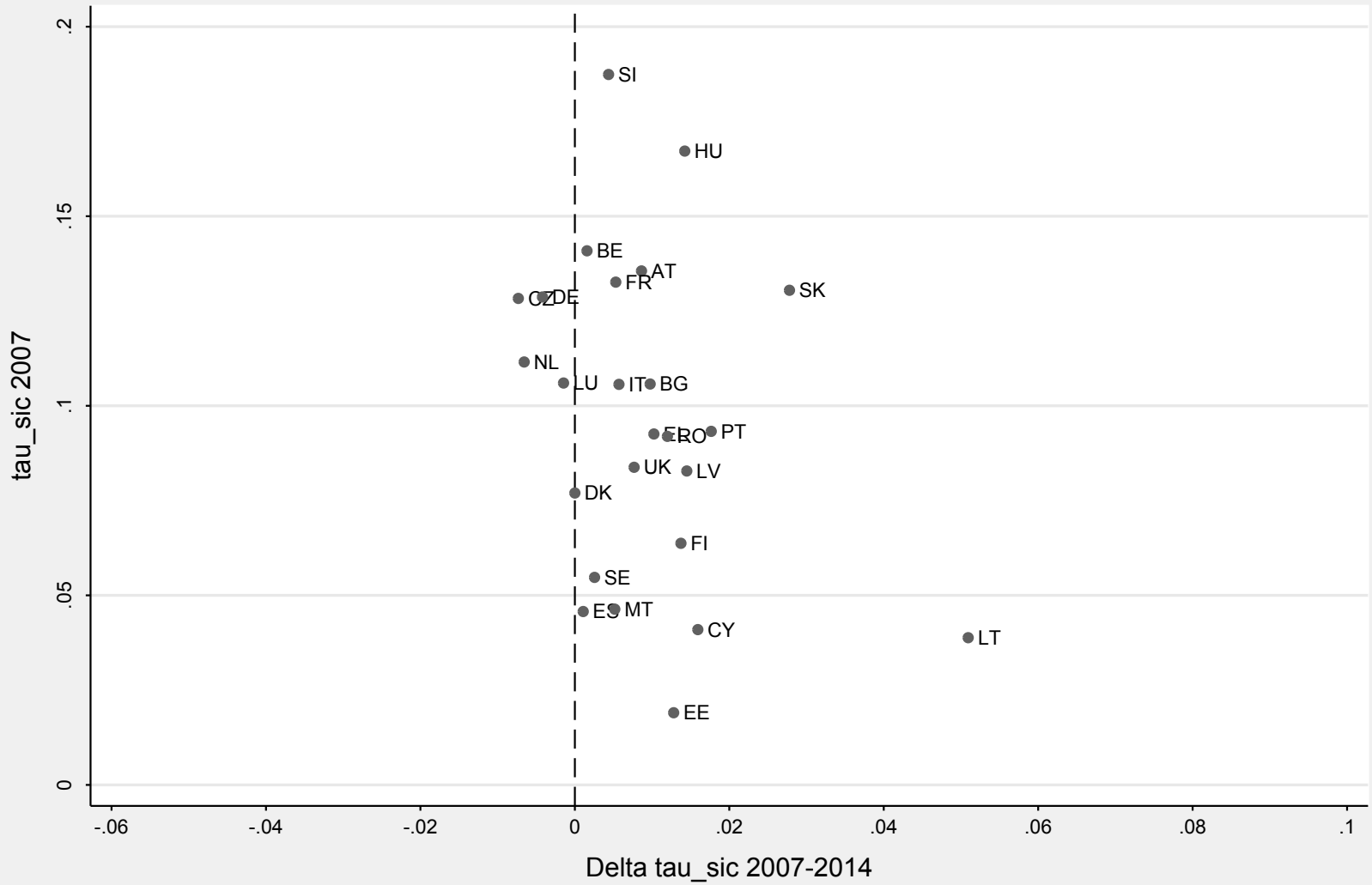
AS Changes: Difference 2007-2014: τ



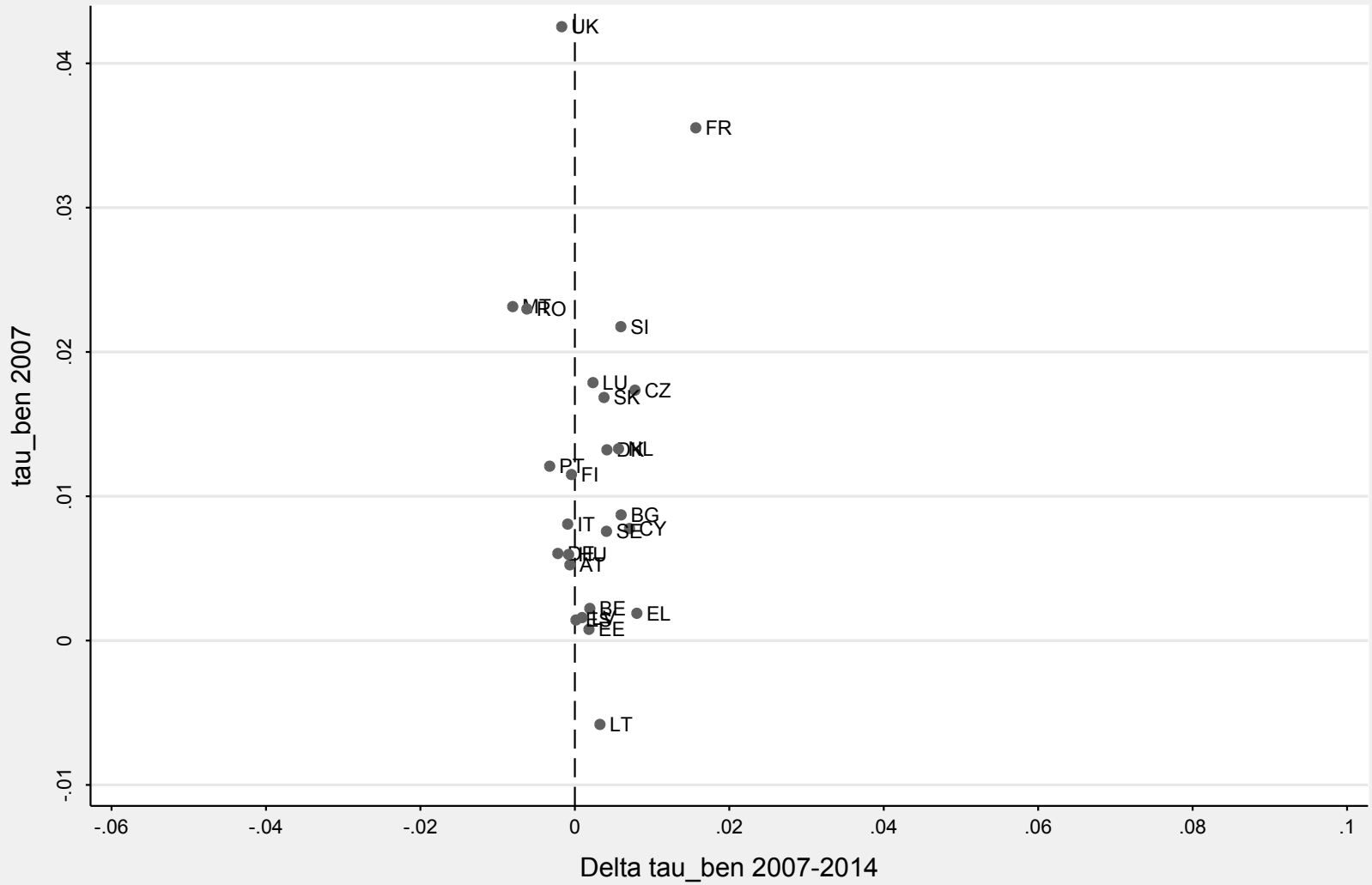
AS Changes 2007-2014: τ_{TAX}



AS Changes 2007-2014: τ_{SIC}



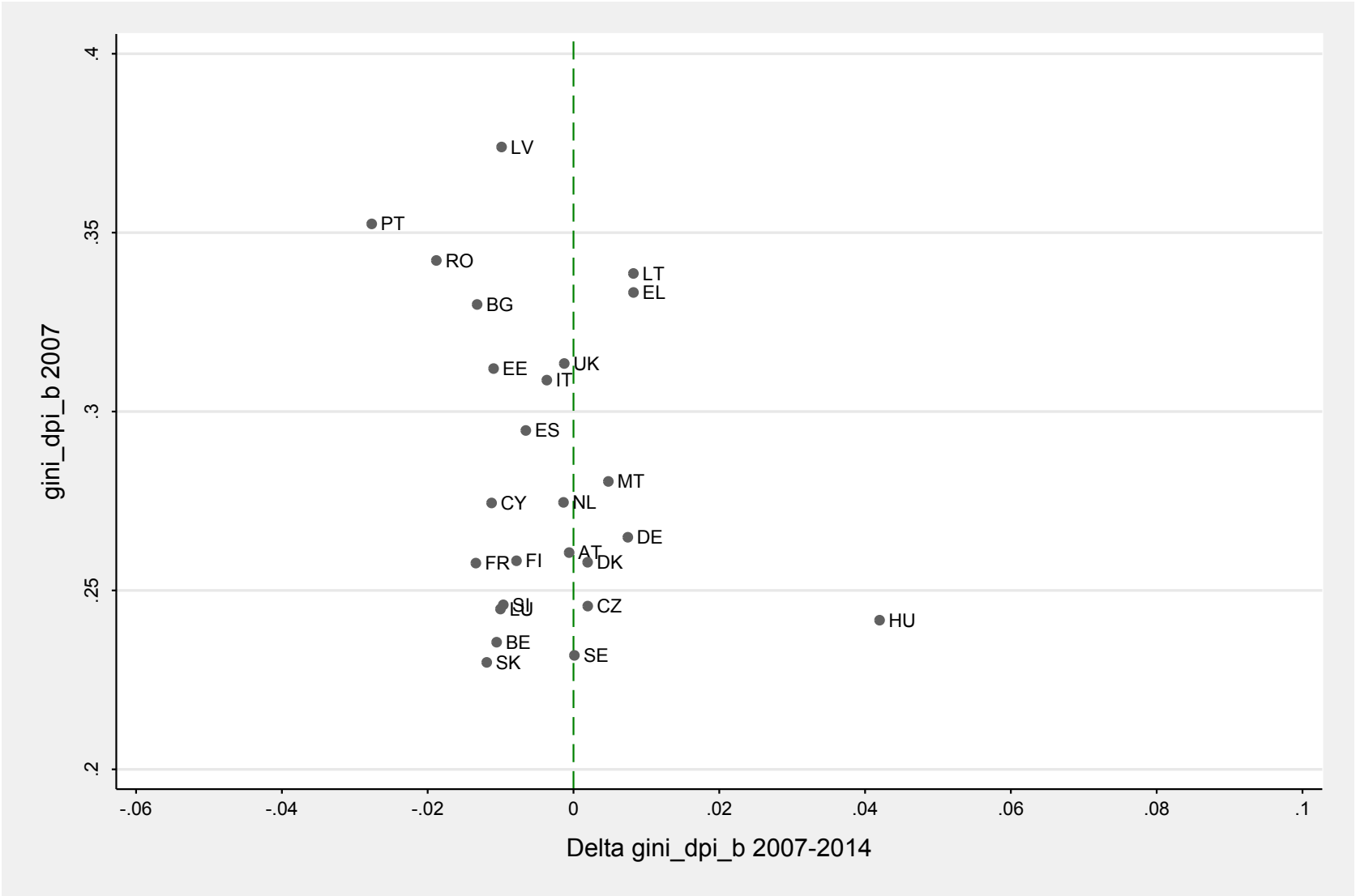
AS Changes 2007-2014: τ_{BEN}



Changes in Redistributive Effect: DPI Gini 2007-2014

- Look at changes in the redistributive effect of tax reforms
- Compare Gini-coefficients 2007 and 2014, holding incomes fixed (at 2007 levels)
- The effect is only due to tax changes

Changes in Redistributive Effect: DPI Gini 2007-2014



Changes in Redistributive Effect: DPI Gini 2007-2014

- Tax increases lead to lower after-tax income Gini
- More redistribution through tax and transfer system

Short Term Effect

- previous AS measures assume economy in (long-run) equilibrium
- However, "austerity" measures might not work in the short run, when governments adjust the tax and transfer system (discretionary changes)
- short-run measure: construct difference in disposable incomes for household i when subject to tax policy in period t and when subject to tax policy in period $t+1$:

$$\theta_{t+1}^{I,T} = \frac{\sum_i \left(T(0.95\, Y_i^M, X_i, \chi_{t+1}) - T(Y_i^M, X_i, \chi_t) \right)}{\sum_i \Delta Y_i^M}$$

Short Term Effect

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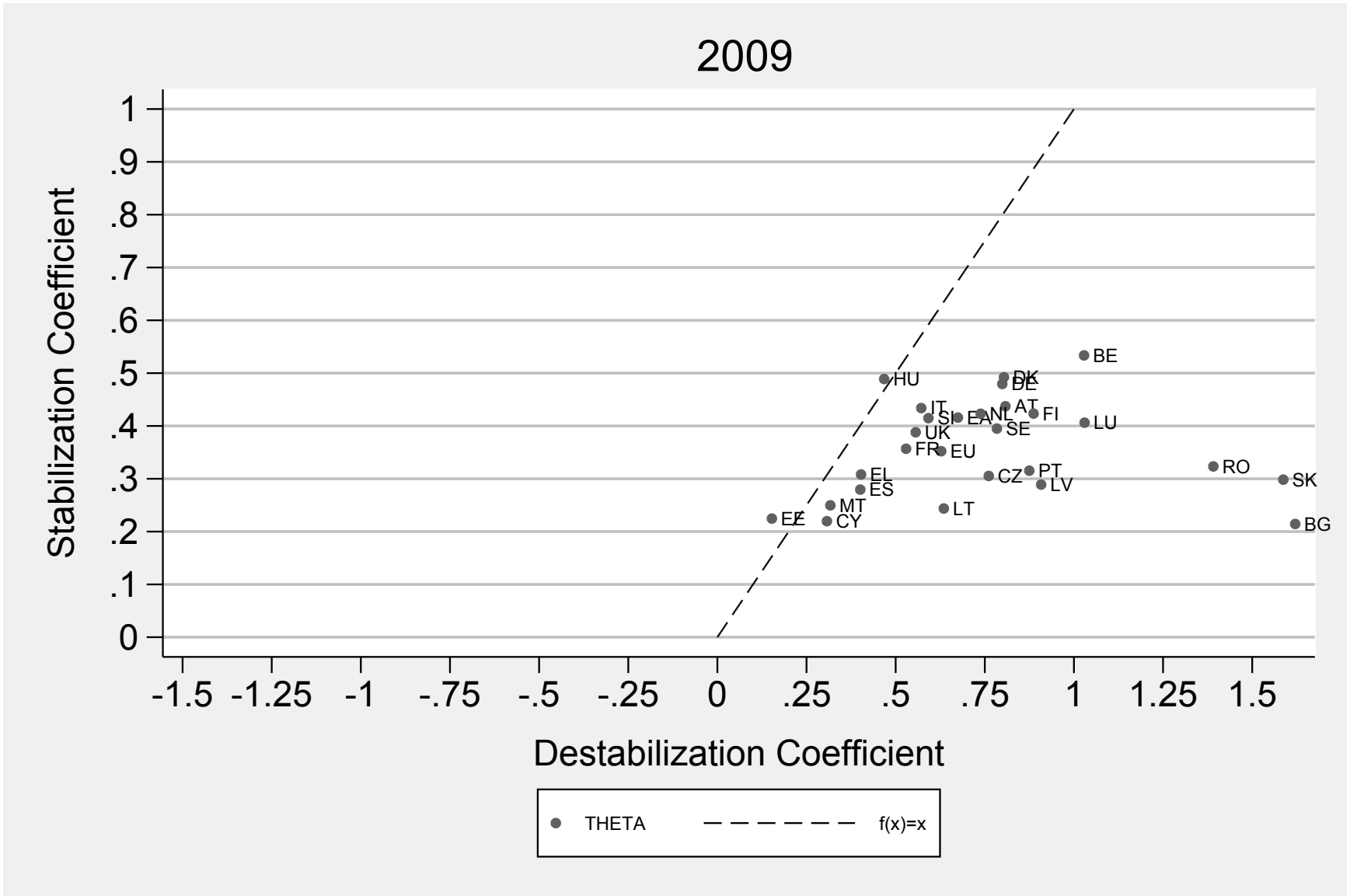
- coefficient measures the change in the tax and transfer system relative to hypothetical 5% change in the gross income
- compare the tax burden of the household under the new system at the reduced income to the hypothetical shock
- Example: $\theta = 1$. Then the increase in taxes even after a decline in income is as large as a 5% loss in gross income


2009
Stabilization Coefficient
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Destabilization Coefficient
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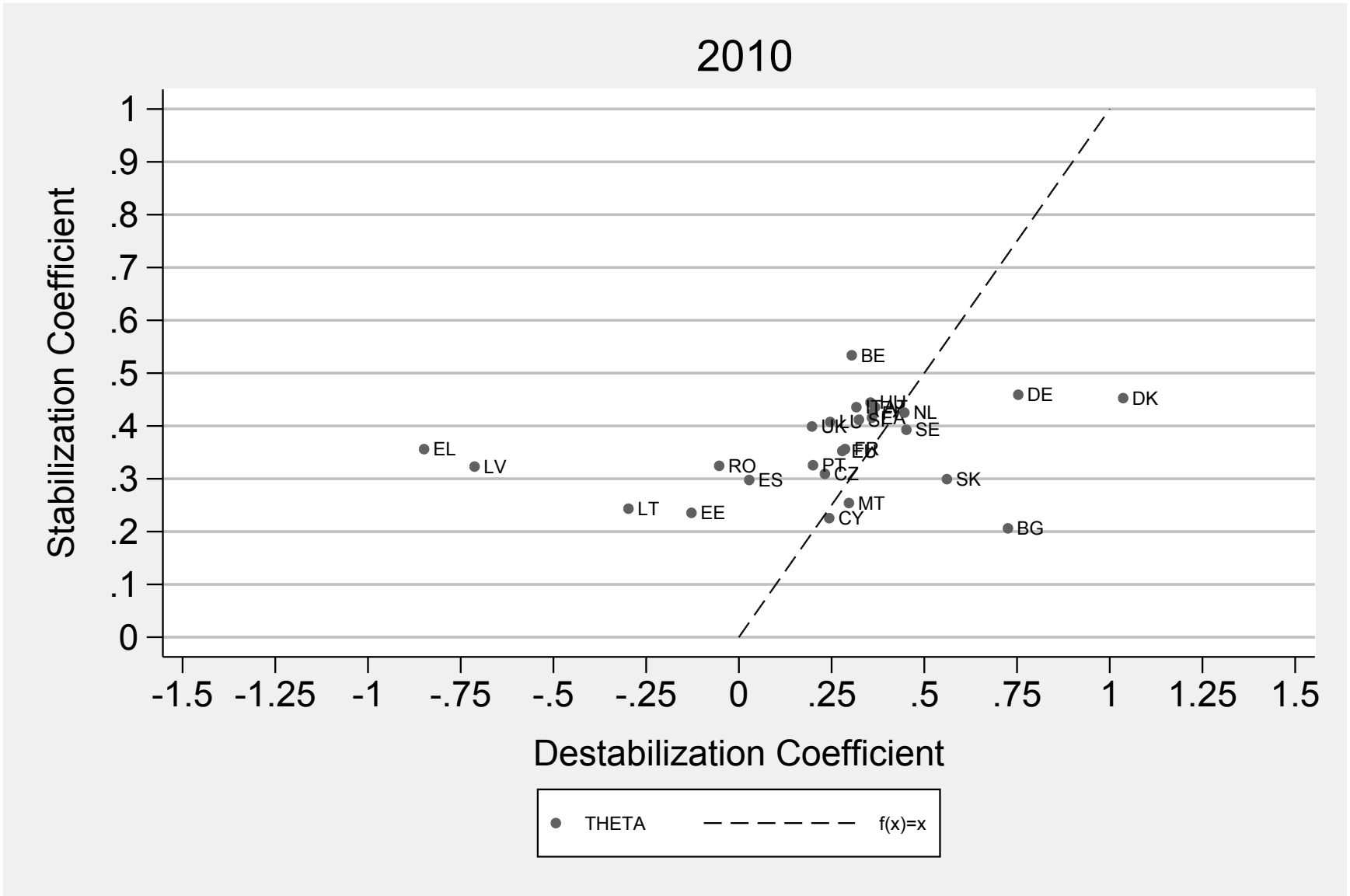
THETA
f(x)=x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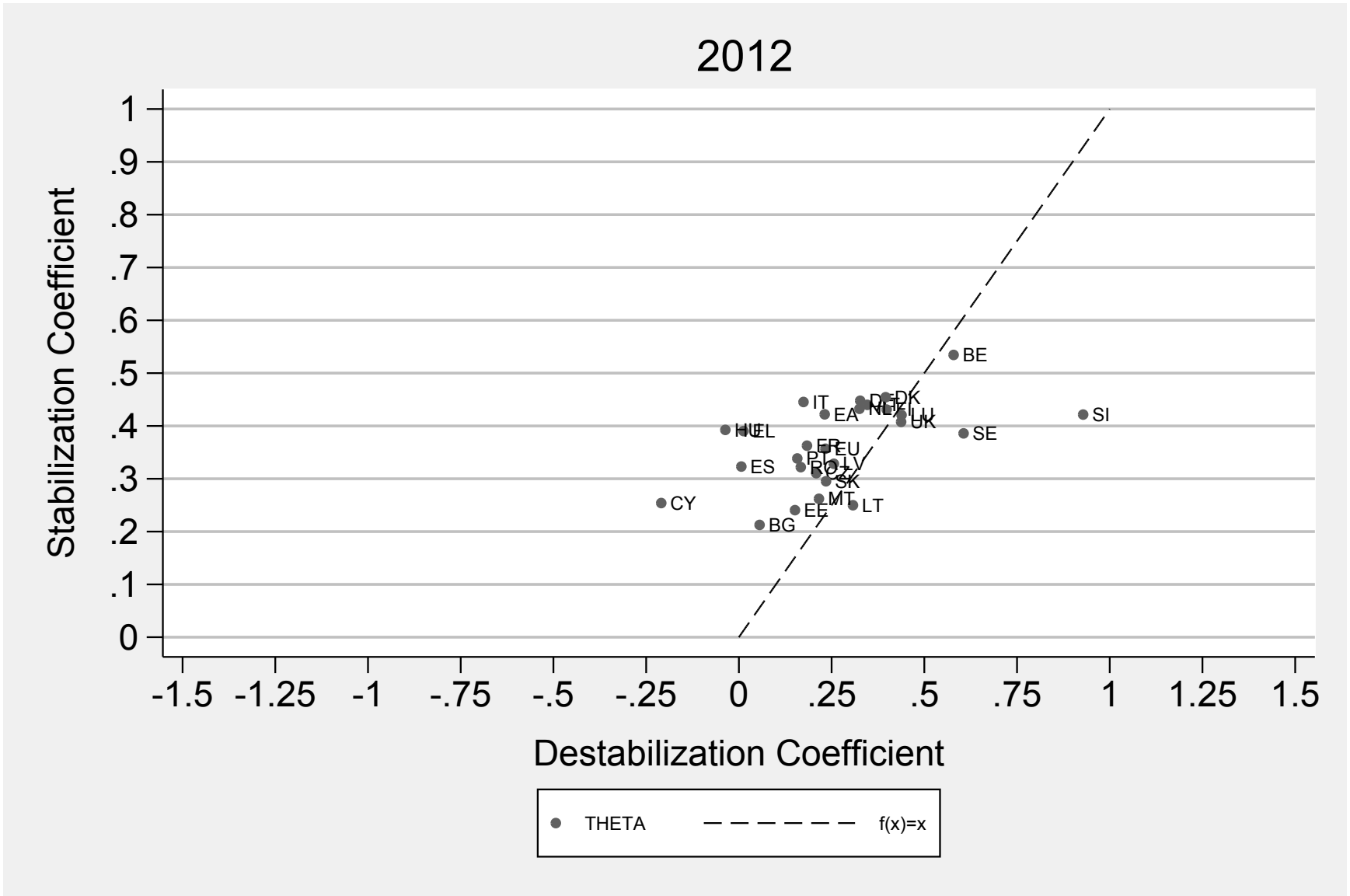
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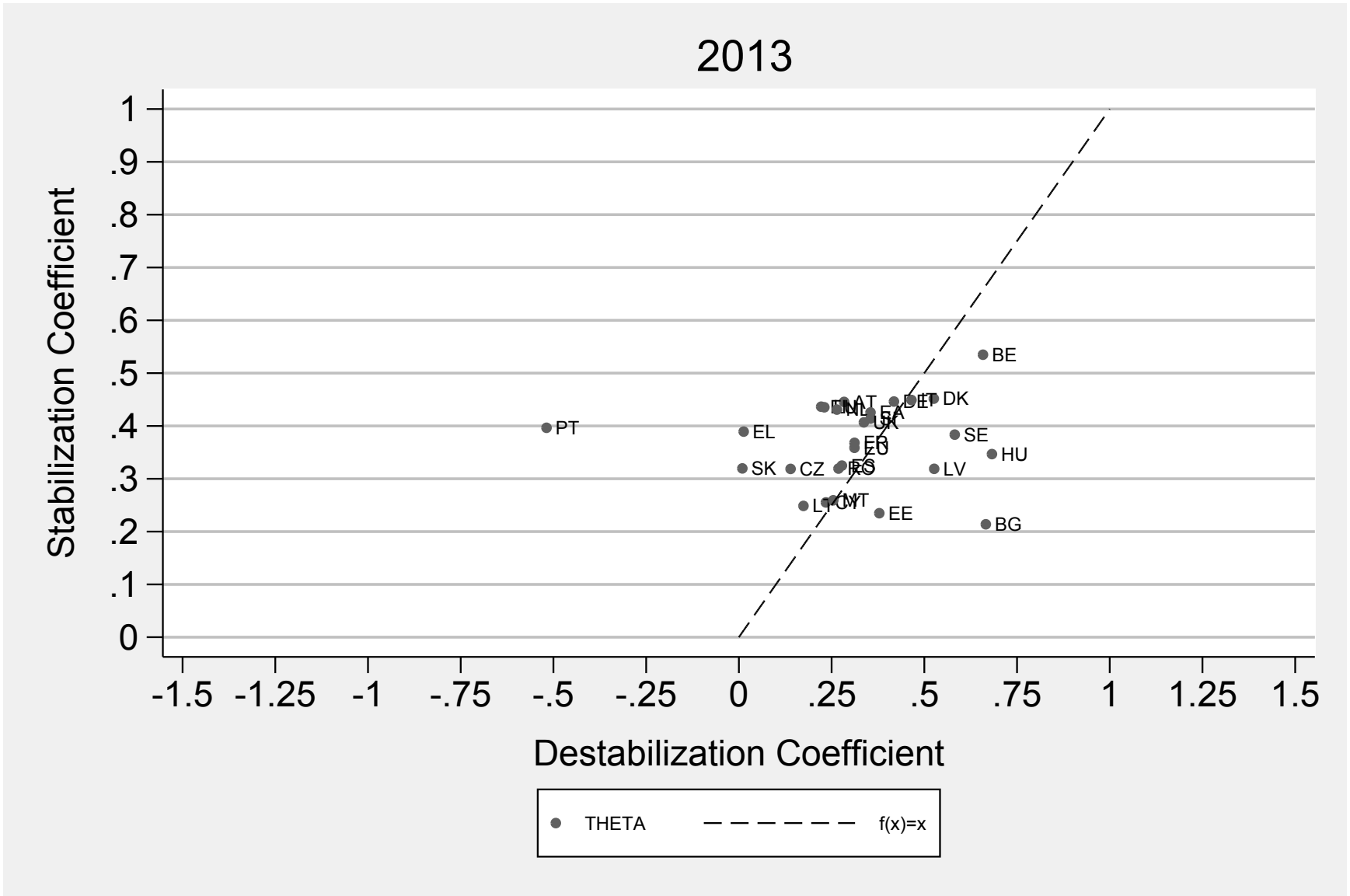
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Conclusions

- **Large heterogeneity** within the EU...
- ... both in levels and (policy) changes in AS
- AS play an important role in stabilizing incomes
  - Countries with stronger AS were resilient during the crisis...
  - ... while those with weak AS experienced major economic contractions and increases in unemployment (correlation, not causation)
- Redistribution through tax-and-transfer system is higher (long-term)
- However: increasing AS *during* crisis can have short-term destabilizing effects
  - AS worked 2007-2008
  - After 2009, austerity measures implemented, weakened AS

Thank you for your attention!

Comments? Questions?

wittneben@zew.de

Related Literature

Macroeconometric studies:

- e.g. Gali (1994), Fatas & Mihov (2001), Girouard & André (2005), Dolls et al. (2014)
- Theory: ambigous. Empirics: neg. correlation btw. gov. size and GDP volatility
- Issues: **discretionary** and **automatic** stabilization confounded

Microeconometric studies:

- Microsimulation analysis to single out automatic stabilization: Auerbach & Feenberg (2000), Mabbett & Schelkle (2007), Dolls et al. (2011, 2012a,b)

AS Levels 2007