On the Design of an European Unemployment Insurance Mechanism

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Should there be EU Unemployment Insurance?

ADEMU

A Dynamic Economic and Monetary Union

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- Business cycles not perfectly correlated across EU: room for risk-sharing.
- Can strengthen European Labour Market Integration.
- Differences in U levels and flows: permanent cross-country transfers.
- Labour market differences: no agreement on a common design.
- Can violate the subsidiarity principle.

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- Individual risk: Unemployment insurance;
- Aggregate risk, not perfectly correlated across countries: Country risk sharing;

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First structural model of EU labour markets to evaluate EU-UI policy reform (see Dolls et al. (2015) and Beblacy and Maselli (2014)).

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- Long run differences between countries (LM institutions, UI systems, technology).
- Short run differences (similar economic fluctuations), in a parsimonious way.
- Calibration to EU countries, LM data from Lalé and Tarasonis (2017).
- Map of labour market institutions across Europe.

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- Exp. 3 and 5 - On EU-UI: Steady state fluctuations
  - Exp. 3 - 'Average' UI policy resulting in permanent country transfers, that depend on country specific labour markets.
  - Exp. 5 - 'Countries' Pareto improving' UI policy with *zero* permanent country transfers and differential tax rates.

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- Closed competitive labour markets, subject to frictions: job separations, job findings.
- Agents optimize whether to work or actively search for a job: Employed, Unemployed or Inactive.
- No labour mobility across countries!

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- Employed Labour income, utility cost α of work:
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  - not eligible for UI benefits
- UI financed with proportional tax τ on labour income: replacement rate b_0 and average duration $1/\mu$, conditional on search. Balanced budget.

Model: Value Functions

Decision with an employment opportunity:

$$V(a, z, \iota^b) = \max_{w \in \{0,1\}} \left\{ wW(a, z) + (1 - w)J(a, z, \iota^b) \right\}$$

W: value of working and J: value of not working.

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$$J(a, z, \iota^b) = \max_{s \in \{0,1\}} \left\{ sU(a, z, \iota^b) + (1 - s)N(a, z) \right\}$$

U: value of searching (Unemployed) and N: value of not searching (Inactive).

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U: value of searching (Unemployed) and N: value of not searching (Inactive).

a: asset level; z: productivity level; ι^b: eligibility for benefits;

γ: cost of search, i.i.d. with mean $\bar{\gamma}$ and variance σ_γ^2.

Model: Employed

Bellman equation of employed:

$$W(a,z) = \max_{(c,a')\in\mathcal{B}_t} \Bigg\{ \log c - \alpha + \beta\mathbb{E}\Big[(1-\sigma)V(a',z',0) + \sigma\Big((1-\lambda_u)J(a',z',1) + \lambda_u V(a',z',1)\Big)|z\Big] \Bigg\}.$$

α: utility cost of working; σ: separation rate; λ_u: job finding rate while searching.

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- Quitters are not entitled for unemployment benefits.
- Entitlement for unemployment benefits in 1st period of unemployment: with prob. 1 if after separation & with prob. 0 if after quitting.
- Budget constraint: $c + a' = (1+r)a + (1-\tau)\omega z$.

Model: Unemployed

Bellman equation of unemployed (searcher):

$$U(a, z, \iota^b) = \max_{(c,a') \in \mathcal{B}_t} \Bigg\{ \log c - \gamma + \beta \mathbb{E} \Big[\lambda_u V(a', z', \iota^{b'}) + (1 - \lambda_u) J(a', z', \iota^{b'}) | z \Big] \Bigg\}$$

Model: Unemployed

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- $\text{Prob}(\iota^{b'}=1|\iota^b=1)=\mu$ and non-eligibility is an absorbing state.
- Budget constraint: $c+a' = (1+r)a + \iota^b b(z)$.
- Unemployment benefits are given by $b(z) = b_0\omega z$.

Calibration: Common Parameters

Parameter	Definition	Value
θ	Capital share of output	0.3
β	Discount factor	0.98
ρ_z	Persistence of productivity	0.89
σ_z	Standard deviation of prod. shock	0.1
α	Utility cost of labor	0.8
γ	Utility cost of search	0.4

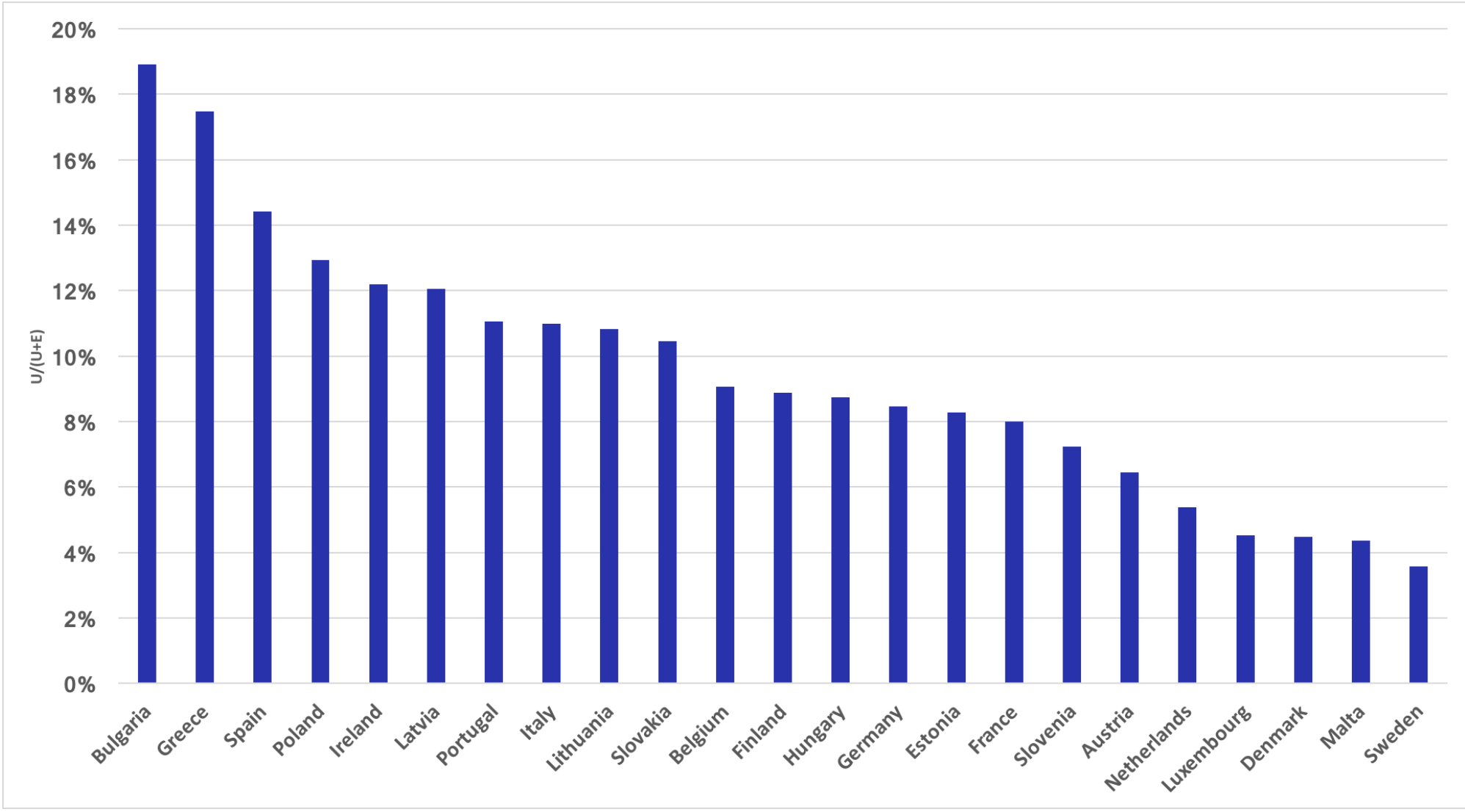
- Equilibrium interest rate $r \rightarrow$ clears capital market of 6 largest EU economies: Germany, France, Italy, Spain, Netherlands, Sweden. $r = 1.7\%$

Calibration: Country-Specific Parameters

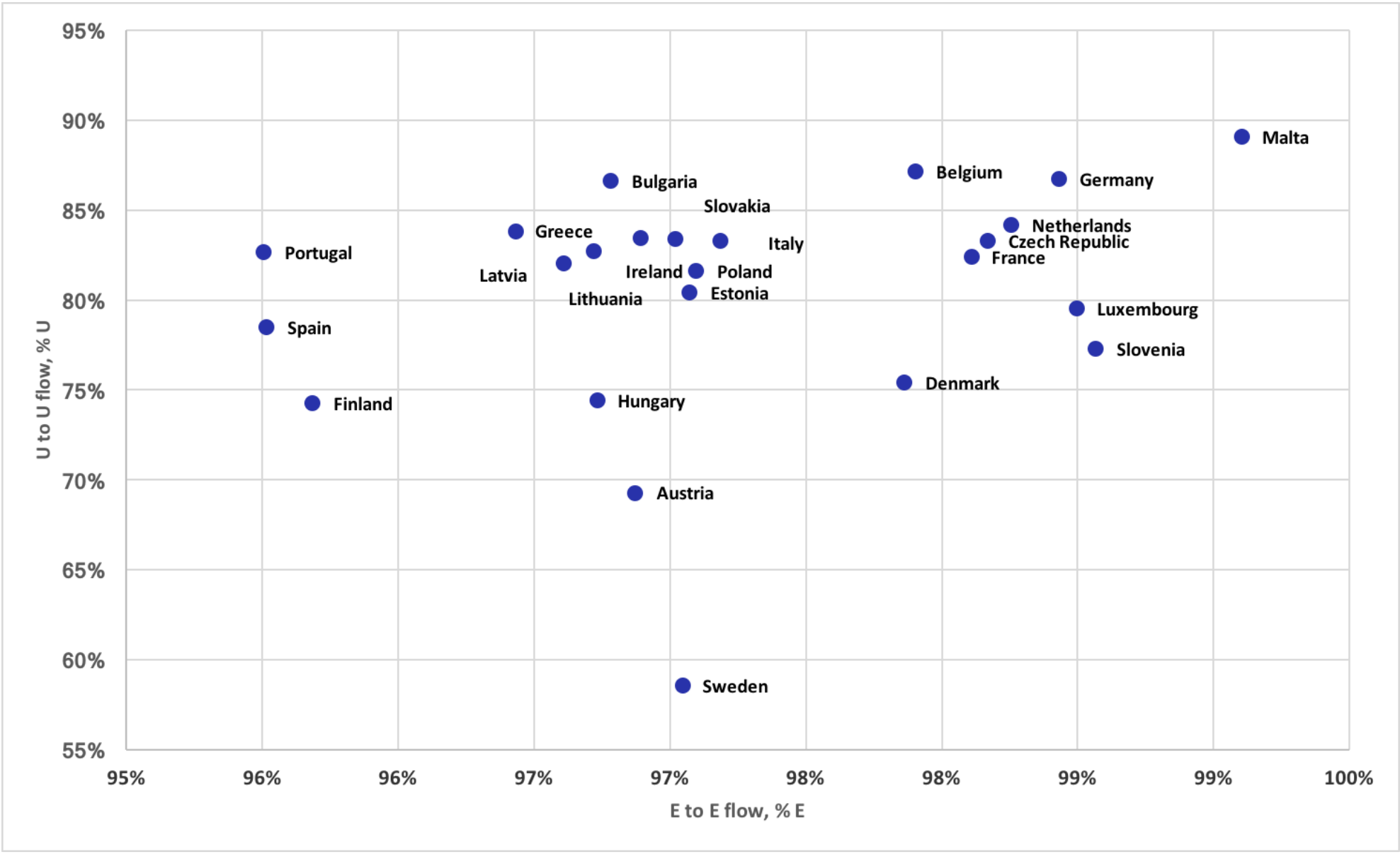
Parameter	Definition	Related Target
A	Total factor productivity	Average wage
σ	Job separation rate	Flow $E-U$
λ_u	Job arrival rate for searchers	Flow $U-E$
λ_n	Job arrival rate for inactive	Unemployment $U/(E+U)$
μ	Prob. of loosing UB eligibility	max duration
b_0	UB replacement rate	Benefits/GDP
τ	UI payroll tax rate	Budget clearing

- The first panel of parameters is related to a country's labour market institutions.
- The second panel refers to unemployment policies.

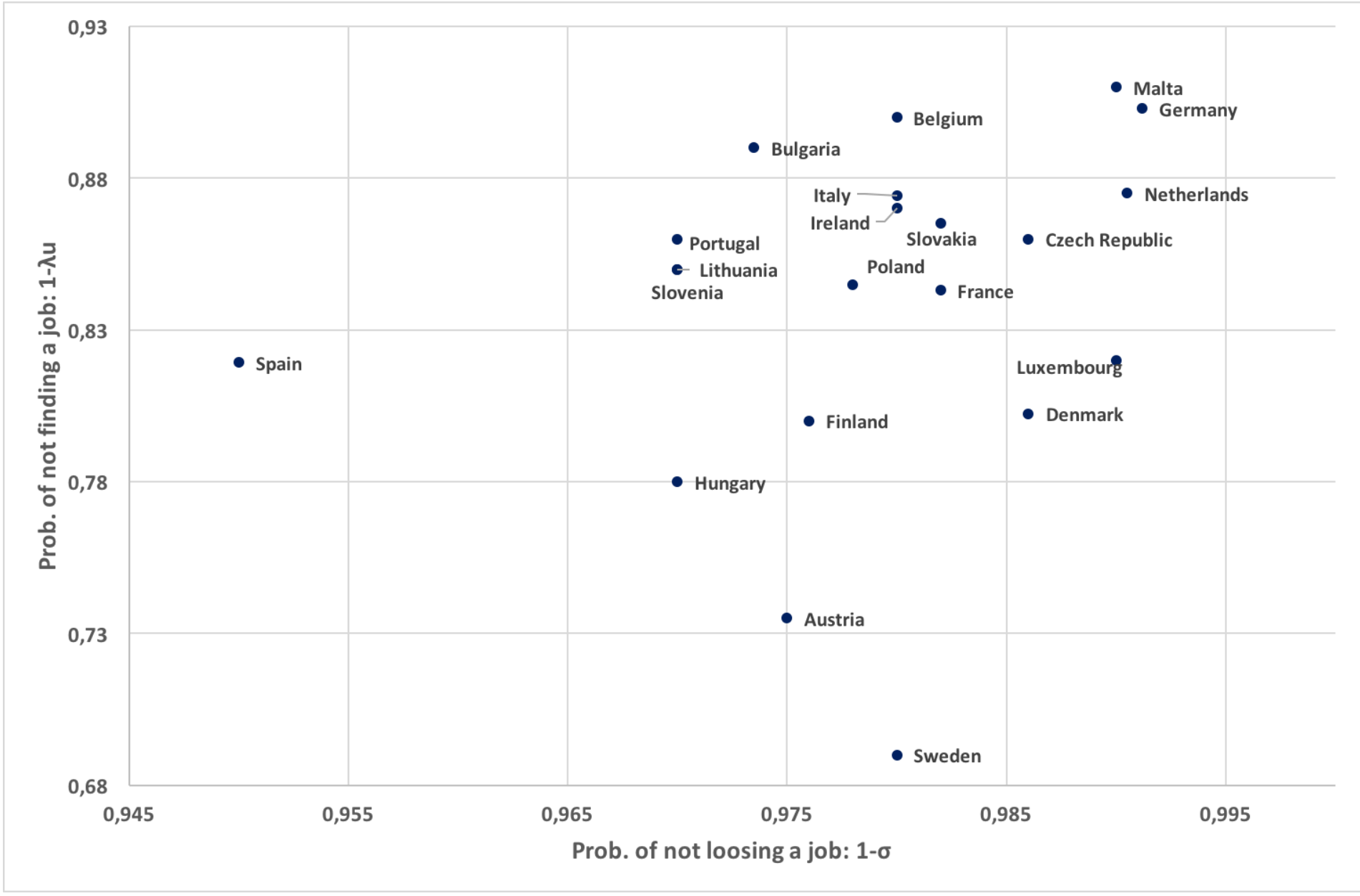
Unemployment Rates in Europe (2004q1-2013q4)



Persistence of Empl. & Unempl. (2004q1-2013q4)



A new picture of EU labour markets: LM Rigidity



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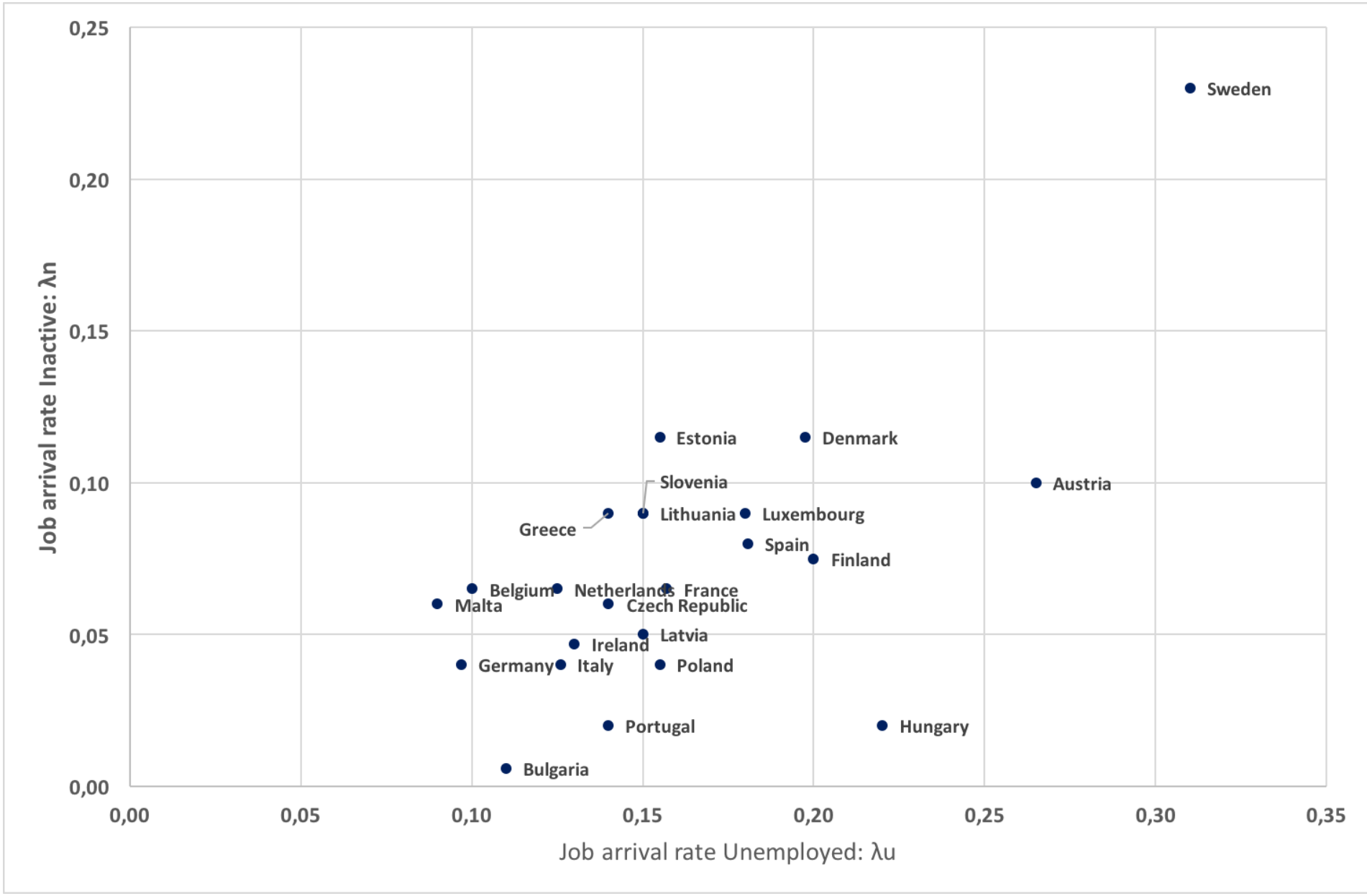

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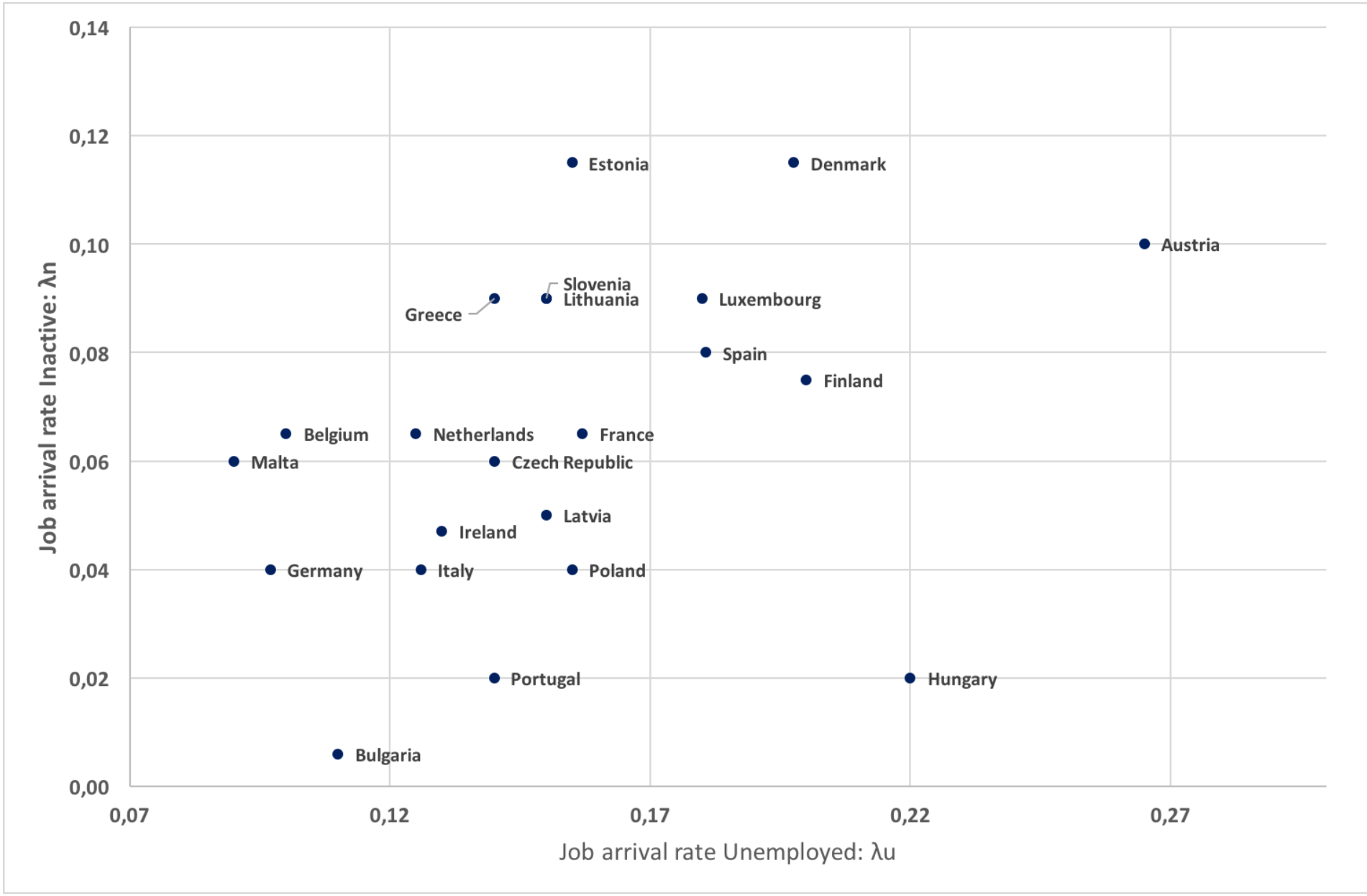

Policy Experiments

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- UI System: smooths tax rates.
- Insurance is actuarially fair: government's intertemporal budget constraint is satisfied.

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- Each shock has probability 1/2.
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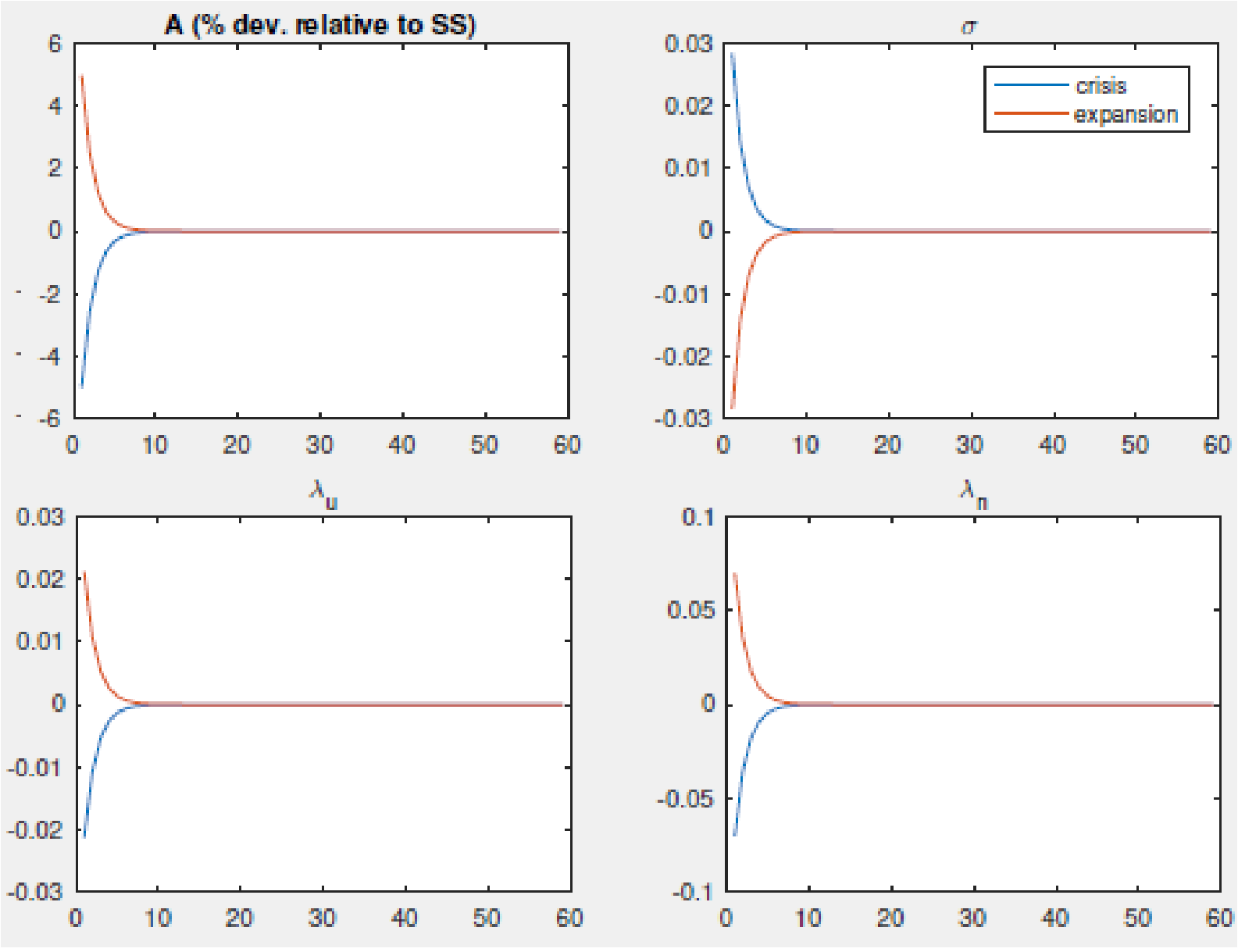
- Welfare measure (weighted E, U, I): compare ex-ante expected utility of going through the crisis/expansion in Autarky vs. with a constant tax.

Experiment 1: Country Specific Shock



Policy Experiment 1: Welfare comparison

Experiment 1: National level UB policy, fixed national tax after the shock.

	Welfare gain**	Approval E*	Approval Ue*	Approval Une*	Approval I*	Approval Total*
Germany	0.005%	91%	11%	10%	31%	85%
Spain	0.007%	78%	4%	21%	1%	62%
France	0.003%	86%	0%	17%	5%	74%
Italy	0.002%	84%	14%	4%	7%	69%
Netherlands	0.006%	88%	2%	21%	1%	81%
Sweden	0.002%	91%	9%	0%	0%	83%

** consumption equivalent, % of autarky consumption

* % population group/Total

Policy Experiment 3

- Introduce common UI policy: average b_0^U and duration d^U, financed jointly: τ^U.
  - Transfers from countries with low to countries with high eligible unemployed (post reform).
  - The common UI system also affects job acceptance and search decisions.
  - Transfers and welfare gains need not have the opposite sign.
- We calculate these steady state transfers and the welfare gains/losses from the joint scheme.

Policy Experiment 3: National Policies

Experiment 3: Common UB policy, common tax (joint budget)

	E	U	I	τ (%)	b0	d
Germany	84.4%	6.6%	8.9%	2.1%	0.83	3.9
Spain	72.9%	14.0%	13.1%	4.2%	0.31	7.8
France	86.3%	8.2%	5.6%	2.0%	0.36	7.9
Italy	74.3%	9.5%	16.2%	1.5%	0.43	2.6
Netherlands	87.5%	5.0%	7.5%	2.3%	0.98	3.5
Sweden	89.1%	3.7%	7.2%	2.3%	0.64	4.5

Policy Experiment 3: Policy Reform

Experiment 3: Common UB policy, common tax (joint budget)

	E	U	I	τ U (%)	b0 U	d U	Transfer***	Welfare gain**
Germany	84.3%	6.8%	8.9%	2.9%	0.59	5.0	0.80	-1.13
Spain	72.6%	14.1%	13.3%	2.9%	0.59	5.0	-3.08	3.39
France	84.5%	8.0%	7.5%	2.9%	0.59	5.0	0.03	0.02
Italy	78.8%	10.7%	10.5%	2.9%	0.59	5.0	-0.44	0.76
Netherlands	84.9%	5.0%	10.0%	2.9%	0.59	5.0	0.83	-1.30
Sweden	88.7%	3.6%	7.7%	2.9%	0.59	5.0	0.54	-0.69

*** % gdp

** consumption variation, % of autarky consumption

Policy Experiment 3: Approval rates

Experiment 3: Common UB policy, common tax (joint budget)

	Approval E*	Approval Ue*	App. Une*	Approval I*	Total*
Germany	0%	0%	0%	0%	0%
Spain	100%	100%	100%	100%	100%
France	18%	100%	0%	65%	24%
Italy	100%	100%	100%	100%	100%
Netherlands	0%	0%	0%	0%	0%
Sweden	0%	0%	0%	0%	0%

* % population group/Total

Policy Experiment 5: Optimal EU-UI

- Calculate the optimal (b_0, μ) policy for union of 6 countries.
- For many countries an optimal EU system may be preferable to current national policies.
- Transfers are prevented by varying contribution payments (taxes) that depend on LM institutions. These transfers:
  - can now be smooth: a risk-sharing effect not accounted for here;
  - are possibly the best statistic of the cost of having bad LM institutions,
  - creating an explicit incentive to improve them!

Preliminary exercise 5: Welfare improving EU-UI

Experiment 5: Common UB policy reform, without transfers.

	τ (%)	τ' (%)	b0	b0	d	d	Welfare gain* (%)
Italy	1.5%	**2.3%**	0.43	**0.2**	2.6	∞	**1.49%**
Germany	2.1%	**1.3%**	0.83	**0.2**	3.9	∞	**0.60%**
Spain	4.2%	**3.0%**	0.31	**0.2**	7.8	∞	**1.46%**
France	2.0%	**1.4%**	0.36	**0.2**	7.9	∞	**0.45%**
Netherlands	2.3%	**1.0%**	0.98	**0.2**	3.5	∞	**0.14%**
Sweden	2.3%	**0.4%**	0.64	**0.2**	4.5	∞	**0.01%**

Baseline policy

Better EU policy

* consumption variation, % of autarky consumption

Preliminary exercise 5: Approval rates

Experiment 5: Common UB policy reform, without transfers.

	Approval E*	Approval Ue*	Approval Une*	Approval I*	Approval Total*
Italy	100.0%	100.0%	100.0%	100.0%	100.0%
Germany	100.0%	54.6%	100.0%	100.0%	99.0%
Spain	100.0%	100.0%	100.0%	100.0%	100.0%
France	100.0%	86.0%	100.0%	100.0%	99.3%
Netherlands	52.4%	17.5%	100.0%	100.0%	56.6%
Sweden	31.1%	2.4%	81.5%	70.7%	33.3%

* % population group/Total

Preliminary exercise 5: Aggregate variables

Experiment 5: Aggregate variables

	E *	I *	Y *	K *	S *	L Efficiency*	Welfare **
Italy	4%	-33%	4%	0.1%	-25%	-0.48%	**1.49%**
Germany	0.5%	-1%	-1%	-4%	-13%	0.03%	**0.60%**
Spain	-6%	9%	-9%	-12%	17%	0.88%	**1.46%**
France	-5%	6%	-7%	-10%	15%	0.53%	**0.45%**
Netherlands	-4%	4%	-5%	-9%	8%	0.52%	**0.14%**
Sweden	-5%	7%	-6%	-9%	40%	1.21%	**0.01%**

* % change, relative to baseline policy

** consumption variation, % of autarky consumption

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  - Gains from reforming national systems *in a similar way* can be large (inactivity drastically reduced).
  - **There is room for agreement on an EU-UI system that smooths taxes and better integrates the EU labour market!**
- Work in progress: Include other EU countries and fine tuning on the 'Optimal EU-UI'

Thanks!