Rethinking the European Fiscal Framework

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On the Design of a European Unemployment Insurance System

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An European Unemployment Insurance System?

- Several policy proposals to introduce European Unemployment Insurance System (EUIS):

  ❏ high unemployment + low deficit requirements: costly delivery of UI during recessions

  ❏ business cycle-risk sharing across Europe

- Counterarguments:

  ❏ countries are too different to have an harmonized system

  ❏ will lead to cross-country transfers $\Rightarrow$ politically not feasible

- Arguments rarely evaluated in a structural way within a realistic modelling framework

Unemployment in Europe (2010Q1-2017Q3)
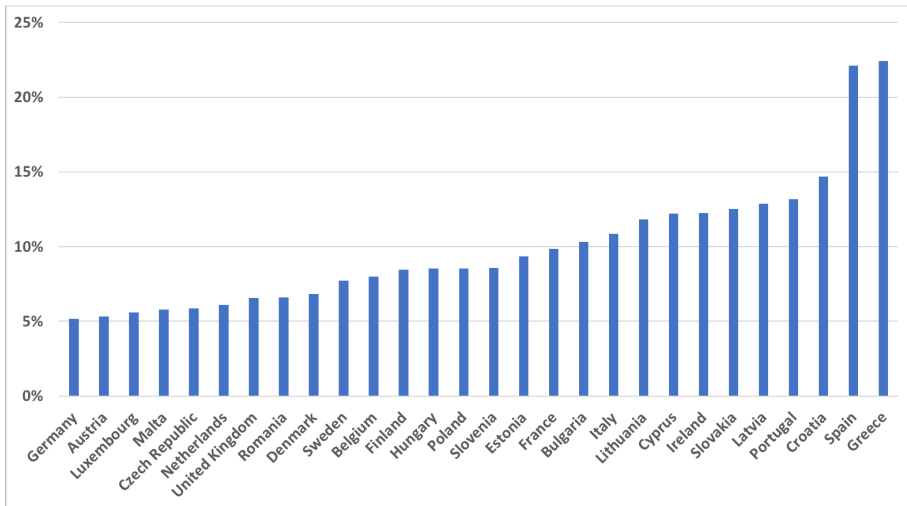
Three Questions

- *Can a European Unemployment Insurance System (EUIS) get unanimous support across Europe?*

- *How does such a system look like?*

- *What are its benefits?*

What we do

- Develop a multi-country dynamic general equilibrium model with infinitely-lived agents and search frictions

- Calibrate it to the Euro-Area countries accounting for the heterogeneity in labour markets across Europe (e.g. flows between employment, unemployment and inactivity)

- Evaluate impact of different types of EUIS on
  - ❏ individual behaviour: consumption, saving (no borrowing), labour supply, search effort
  - ❏ government budgets: taxes and UB expenditures
  - ❏ welfare and political support (accounting for the transition)

Findings

- *Can a European Unemployment Insurance System (EUIS) get unanimous support across Europe?*
  - ❏ yes, if designed properly

- *How does such a system look like?*
  - ❏ unlimited duration of eligibility
  - ❏ replacement rate of 10%
  - ❏ country-specific contribution payments
  - ❏ can be complemented by additional national benefits

- *What are its benefits?*
  - ❏ large gains from reforming currently suboptimal unemployment benefit policies
  - ❏ small benefits from business-cycle-risk-sharing
  - ❏ enhance EU social policy and identity

Related literature

- **Data:** Etienne Lalé, Lalé and Tarasonis (2017)

- **Model:** Krusell *et al.* (*JET* 2011 & *AER* 2017)

- **EUIS:**
  - ❑ Ignasszak *et al.* (2018), Claveres and Clemens (2017), Moyen *et al.* (2016),
  - ❑ Dolls *et al.* (2018), Dolls (2019), Beblavy and Lenaerts (2017), Hartung (2019),
  - ❑ 'Rainy day EUIS': Dullien *et al.* (2018), Lenarčič and Kari (2018)

Model - Dynamic Labour Markets

- **Employed:** Labour income, utility cost α of work
  - ❏ may *quit* (not eligible for unemployment benefits)
  - ❏ or *loose* job with probability σ^i (eligible for unemployment benefits)

- **Unemployed:** Costly search effort γ^i
  - ❏ receive job offers with probability λ_u^i
  - ❏ may *reject* job offers
  - ❏ if eligible, receive unemployment benefits
  - ❏ lose eligibility with probability μ^i

- **Inactive:** *Do not* actively *search*
  - ❏ receive job offers at lower rate λ_n^i
  - ❏ may *reject* offers
  - ❏ not eligible for unemployment benefits

- **Current (national) unemployment insurance system**:
  - ❏ replacement rate b^i
  - ❏ average duration $1/\mu^i$
  - ❏ financed with proportional labor income tax τ^i

Model - Basic elements

- Preferences:

$$\mathbb{E}_t \sum_{t=0}^{\infty} \beta^t \Big[\log(c_t) - \alpha w_t - \gamma^i s_t \Big].$$

- Technology:

$$F^i(K_t^i, L_t^i) = A^i (K_t^i)^\theta (L_t^i)^{1-\theta},$$

- Budget sets:

   Employed: $c + a' \leq (1 + r_t)a + (1 - \tau_t^i)\omega_t^i z_t$

   Unemployed: $c + a' \leq (1 + r_t)a + \bar{b}^i \omega_t^i z_t$

   Inactive: $c + a' \leq (1 + r_t)a$

- The distribution:

$$\zeta_t^i(a, z, x), \ \ x \in \{e, u^e, u^n, n\}$$

Calibration - Three Sets of Parameters

- Parameters common to all countries:

Parameter	Definition
θ	Capital share of output
δ	Capital depreciation rate
β	Discount factor
ρ_z	Persistence of productivity
σ_z^2	Variance of prod. shock
α	Utility cost of labour

Calibration - Three Sets of Parameters

- Institutional parameters:

Parameter	Definition (calibration)
A^i	Total factor productivity (diff. av. wages)
γ^i	Utility cost of search (share of U)
σ^i	Job separation rate (E $\rightarrow$ E)
λ_u^i	Job finding rate for unemployed (U $\rightarrow$ E)
λ_n^i	Job finding rate for inactive (I $\rightarrow$ E)

- Policy parameters:

Parameter	Definition
μ^i	Prob. of losing UB eligibility
$\bar{b}^i$	UB replacement rate

The heterogeneity of the EA labour markets

	A^i	γ^i	σ^i	λ_u^i	λ_n^i	$\bar{b}^i$	$1/\mu^i$	$\tau^i(\%)$
Austria	0.91	0.65	0.04	0.26	0.08	0.40	2	1.50
Belgium	1.01	0.65	0.02	0.10	0.06	0.50	20	4.82
Germany	1.00	0.01	0.01	0.10	0.10	0.42	4	1.07
Estonia	0.58	0.37	0.03	0.18	0.10	0.50	4	3.22
Spain	0.82	0.62	0.05	0.18	0.04	0.63	8	9.19
Finland	0.96	0.52	0.05	0.21	0.21	0.55	8	5.99
France	0.94	0.43	0.02	0.17	0.05	0.58	8	3.17
Greece	0.81	0.61	0.04	0.17	0.03	0.58	4	4.91
Ireland	1.04	0.37	0.03	0.13	0.06	0.48	4	2.99
Italy	0.91	0.43	0.03	0.13	0.04	0.50	3	2.40
Lithuania	0.47	0.22	0.03	0.16	0.07	0.34	2	1.18
Luxembourg	1.15	1.20	0.02	0.17	0.04	0.82	4	2.64
Latvia	0.45	0.34	0.04	0.17	0.07	0.56	3	4.04
Malta	0.72	1.00	0.01	0.10	0.03	0.20	2	0.07
Netherlands	0.87	0.09	0.01	0.17	0.13	0.75	4	2.59
Portugal	0.69	0.55	0.06	0.18	0.09	0.65	6	10.34
Slovenia	0.77	0.35	0.02	0.14	0.05	0.70	2	1.58

Diversity of Labour Market Institutions/Policies
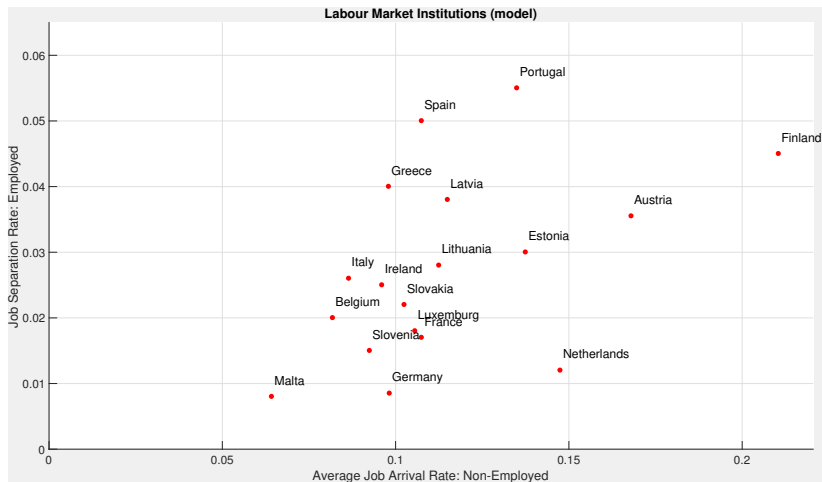
Figure: Labour Market Rigidity

Diversity of Unemployment Insurance Benefits
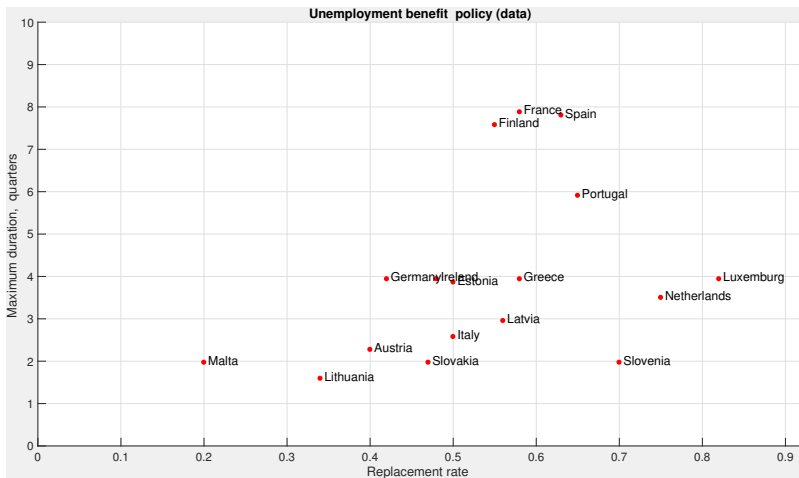
Figure: National Unemployoment Benefit Systems.

Optimal National unemployment benefit systems

- For each country i individually find (b^i, μ^i) that maximizes utilitarian social welfare:

$$\max_{(\bar{b}_1^i, \mu_1^i)} SW(\bar{b}_1^i, \mu_1^i) = \max_{(\bar{b}_1^i, \mu_1^i)} \sum_{x \in X} \sum_{z \in Z} \int_0^\infty V_0^i(a, z, x; \bar{b}_1^i, \mu_1^i) \zeta_0^i(a, z, x) da.$$

- Tax rates $\{\tau_1^i, \tau_2^i, ...\}$ clear government budget in country i each period

- Take into account transitional dynamics to new steady state

- Assumptions:
  ❑ unexpected one-time policy change
  ❑ partial equilibrium: a single country does not affect interest rate

Country	Status Quo			Optimal Reform			W. Gain
	$1/\mu_0^i$	$\bar{b}_0^i$	$\tau_0^i(\%)$	$1/\mu_1^i$	$\bar{b}_1^i$	$\tau_\infty^i(\%)$	
Austria	2	0.40	1.50	∞	0.10	0.42	0.41
Belgium	20	0.50	4.82	∞	0.15	0.47	1.85
Germany	4	0.42	1.07	∞	0.15	1.72	0.39
Estonia	4	0.50	3.22	∞	0.10	0.57	0.62
Spain	8	0.63	9.19	∞	0.20	3.50	1.05
Finland	8	0.55	5.99	∞	0.05	0.00	3.63
France	8	0.58	3.17	∞	0.35	2.99	0.73
Greece	4	0.58	4.91	∞	0.50	9.88	0.73
Ireland	4	0.48	2.99	∞	0.10	0.81	0.69
Italy	3	0.50	2.40	∞	0.30	5.15	0.67
Lithuania	2	0.34	1.18	∞	0.15	2.25	0.45
Luxembourg	4	0.82	2.64	∞	0.20	0.55	0.84
Latvia	3	0.56	4.04	∞	0.25	4.74	0.52
Malta	2	0.20	0.07	∞	0.40	2.50	0.46
Netherlands	4	0.75	2.59	∞	0.15	1.10	0.40
Portugal	6	0.65	10.34	∞	0.10	0.63	3.16
Slovenia	2	0.70	1.58	∞	0.30	2.81	0.69
Slovakia	2	0.47	1.60	∞	0.15	2.21	0.33

Table: Optimal National Reforms of the Benefit System

Country	Status Quo			Optimal Reform			W. Gain
	$1/\mu_0^i$	$\bar{b}_0^i$	$\tau_0^i(\%)$	$1/\mu_1^i$	$\bar{b}_1^i$	$\tau_\infty^i(\%)$	
Austria	2	0.40	1.50	∞	0.10	0.42	0.41
Belgium	20	0.50	4.82	∞	0.15	0.47	1.85
Germany	4	0.42	1.07	∞	0.15	1.72	0.39
Estonia	4	0.50	3.22	∞	0.10	0.57	0.62
Spain	8	0.63	9.19	∞	0.20	3.50	1.05
Finland	8	0.55	5.99	∞	0.05	0.00	3.63
France	8	0.58	3.17	∞	0.35	2.99	0.73
Greece	4	0.58	4.91	∞	0.50	9.88	0.73
Ireland	4	0.48	2.99	∞	0.10	0.81	0.69
Italy	3	0.50	2.40	∞	0.30	5.15	0.67
Lithuania	2	0.34	1.18	∞	0.15	2.25	0.45
Luxembourg	4	0.82	2.64	∞	0.20	0.55	0.84
Latvia	3	0.56	4.04	∞	0.25	4.74	0.52
Malta	2	0.20	0.07	∞	0.40	2.50	0.46
Netherlands	4	0.75	2.59	∞	0.15	1.10	0.40
Portugal	6	0.65	10.34	∞	0.10	0.63	3.16
Slovenia	2	0.70	1.58	∞	0.30	2.81	0.69
Slovakia	2	0.47	1.60	∞	0.15	2.21	0.33

Table: Optimal National Reforms of the Benefit System

|	Employed	Un. Eligible.	Un. Non-Elig.	Non-Active	Total W. Gain
Austria	0.41	0.40	0.50	0.39	0.41
Belgium	2.07	0.11	1.38	1.67	1.85
Germany	0.36	1.91	0.56	0.29	0.39
Estonia	0.63	0.26	0.90	0.66	0.62
Spain	1.11	0.37	1.45	1.10	1.05
Finland	3.72	3.02	-	3.44	3.62
France	0.69	1.28	1.09	0.53	0.72
Greece	0.57	2.14	1.83	0.56	0.73
Ireland	0.69	0.42	1.16	0.64	0.69
Italy	0.53	2.07	2.10	0.54	0.67
Lithuania	0.38	1.27	0.99	0.36	0.45
Luxembourg	0.88	0.27	1.00	0.76	0.84
Latvia	0.40	1.12	1.32	0.52	0.52
Malta	0.31	7.42	2.65	0.57	0.46
Netherlands	0.40	0.11	0.65	0.36	0.40
Portugal	3.36	2.21	2.99	3.04	3.16
Slovenia	0.63	2.31	1.31	0.57	0.69
Slovakia	0.28	1.10	1.08	0.23	0.33

Table: Welfare gains in percent CEV.

The social cost of unemployment (Spain 2015 by types)

Lucía Gorjón, Sara de la Rica and Antonio Villar, 2019

"The average disutility of those unemployed receiving no compensation
is **23 times** that of those with unemployment benefits"
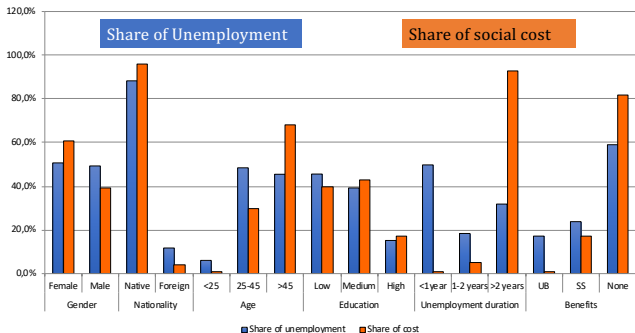
Summing Up

1. Are there gains from changing unemployment benefit systems?
   $\Rightarrow$ yes, and they are big for most countries

2. How different are the *optimal* national benfit systems?
   $\Rightarrow$ unlimited duration of benefits is optimal everywhere, but replacement rates vary

3. **Can countries agree to a common system?**

Optimal EUIS

- Find harmonized (b, μ) that maximizes total utilitarian social welfare in the Eurozone

- Consider two possible ways of financing:

  Uniform EA tax: Common tax rate clears total European budget

  Country tax: Country specific tax rates clear each individual steady-state government budget

- Assumptions:
  - ❏ unexpected one-time policy change
  - ❏ **general** equilibrium: changing unemployment policy in the whole union does affect interest rates

$\Rightarrow$ **Optimal Solution:** $b = 0.10$, $1/\mu = \infty$
  - ❏ Replacement rate of 10%
  - ❏ Unlimited duration of eligibility

	Employed	Unemp.	Inactive	W. Gain	Tax rate	Transfer
Austria	0.03	0.05	0.03	0.03	0.92	-0.36
Belgium	1.62	-0.68	1.18	1.35	0.92	-0.49
Germany	0.35	0.75	0.32	0.37	0.92	0.04
Estonia	0.40	0.24	0.43	0.39	0.92	-0.25
Spain	1.66	0.62	1.46	1.47	0.92	0.37
Finland	2.96	2.27	2.70	2.87	0.92	-0.64
France	-0.05	-0.70	-0.06	-0.03	0.92	-0.14
Greece	0.93	0.73	0.79	0.87	0.92	0.25
Ireland	0.61	0.68	0.57	0.61	0.92	-0.08
Italy	0.58	1.01	0.55	0.61	0.92	0.11
Lithuania	0.60	1.01	0.55	0.61	0.92	0.33
Luxemb.	0.34	-0.47	0.19	0.27	0.92	-0.51
Latvia	0.73	0.90	0.77	0.76	0.92	0.22
Malta	-0.31	0.48	-0.14	-0.25	0.92	-0.38
Netherlds.	0.12	-0.13	0.11	0.11	0.92	-0.19
Portugal	3.20	2.15	2.88	2.99	0.92	-0.20
Slovenia	0.09	0.38	0.11	0.12	0.92	-0.07
Slovakia	0.46	1.05	0.43	0.50	0.92	0.28

Table: Welfare gains (in % CEV), tax rate (in %) and transfers (in % of GDP)

	Employed	Unemp.	Inactive	W. Gain	Tax Rate	Cur. Tax
Austria	0.42	0.47	0.40	0.42	0.41	1.50
Belgium	2.13	-0.16	1.63	1.85	0.21	4.82
Germany	0.31	0.71	0.28	0.34	0.97	1.07
Estonia	0.65	0.50	0.67	0.64	0.56	3.22
Spain	1.14	0.11	1.02	0.96	1.46	9.19
Finland	3.75	3.06	3.48	3.65	0.01	5.99
France	0.10	-0.55	0.11	0.05	0.72	3.17
Greece	0.66	0.46	0.56	0.62	1.29	4.91
Ireland	0.71	0.79	0.66	0.71	0.80	2.99
Italy	0.52	0.93	0.49	0.55	1.08	2.40
Lithuania	0.28	0.77	0.27	0.33	1.39	1.18
Luxembourg	0.89	0.14	0.67	0.81	0.20	2.64
Latvia	0.42	0.57	0.48	0.44	1.24	4.04
Malta	0.16	1.04	0.22	0.20	0.38	0.07
Netherlands	0.34	0.10	0.32	0.33	0.64	2.59
Portugal	3.41	2.37	3.09	3.20	0.62	10.34
Slovenia	0.21	0.50	0.20	0.23	0.82	1.58
Slovakia	0.22	0.78	0.21	0.27	1.32	1.60

Table: Welfare gains (in % CEV), tax rate (in %) and transfers (in % of GDP)
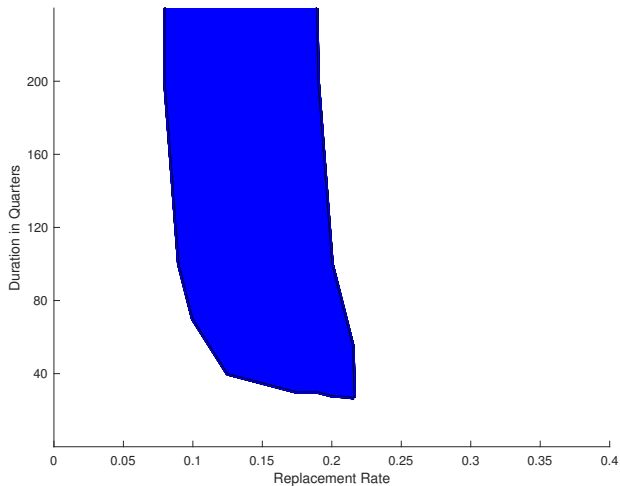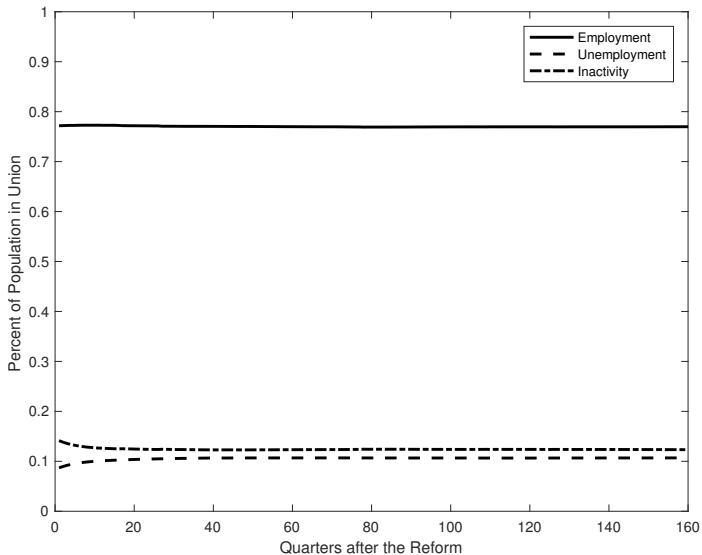
The Pareto improving region

Figure: Set of welfare improving reforms.

Small aggregate effect on EA-Employment

Significant effect on Countries-Employment (+)

		Employed	Un. Eligible.	Un. Non-Elig.	Non-Active
Germany	baseline	83.8	2.2	4.2	9.9
	EUIS	85.5	8.4	0.7	5.3
France	baseline	86.3	4.8	3.0	5.9
	EUIS	86.6	6.2	0.9	6.2
Greece	baseline	66.2	5.6	6.3	21.9
	EUIS	68.3	8.6	3.0	20.1
Italy	baseline	68.8	3.3	5.9	22.2
	EUIS	69.9	7.7	1.9	20.6
Lithuania	baseline	75.0	2.6	7.2	15.3
	EUIS	81.4	11.4	0.9	6.2
Malta	baseline	72.9	0.3	2.9	24.0
	EUIS	80.3	3.2	1.3	15.3
Netherlands	baseline	84.6	2.9	2.9	9.6
	EUIS	86.5	5.7	0.6	7.2
Portugal	baseline	62.4	10.1	1.7	25.8
	EUIS	64.1	3.8	1.2	30.9
Slovenia	baseline	83.1	1.9	5.3	9.7
	EUIS	86.4	7.0	0.9	5.7
Slovakia	baseline	72.6	2.5	5.4	19.5
	EUIS	79.7	10.6	0.8	8.8

Significant effect on Countries-Employment (-)

		Employed	Un. Eligible.	Un. Non-Elig.	Non-Active
Austria	baseline	77.6	2.8	2.8	16.8
	EUIS	72.4	2.9	1.4	23.3
Belgium	baseline	71.8	6.8	0.9	20.5
	EUIS	62.2	1.4	0.7	35.4
Estonia	baseline	78.7	5.1	2.7	13.5
	EUIS	71.9	4.0	1.0	23.1
Spain	baseline	72.1	10.5	5.0	12.4
	EUIS	66.3	9.4	2.6	21.6
Finland	baseline	76.5	8.3	0.0	15.2
	EUIS	73.6	0.1	0.0	26.3
Ireland	baseline	68.6	4.3	3.8	23.3
	EUIS	68.0	5.4	1.6	25.0
Luxembourg	baseline	75.2	2.4	2.0	20.4
	EUIS	66.2	1.3	1.4	31.0
Latvia	baseline	74.5	5.4	6.4	13.7
	EUIS	69.8	9.0	1.6	19.6

Table: Labour market states (in percentage points) pre and post reform

Significant effect on Countries-Savings

	Savings Change (in%)
Austria	+18.3
Belgium	+37.0
Germany	-17.6
Estonia	+25.0
Spain	+21.9
Finland	+36.8
France	+0.2
Greece	-8.5
Ireland	+0.1
Italy	-7.1
Lithuania	-25.7
Luxembourg	+29.2
Latvia	+17.6
Malta	-25.8
Netherlands	-7.6
Portugal	+3.4
Slovenia	-21.6
Slovakia	-26.0

Table: Savings change (in %) after the reform

Complementary National unemployment Benefits

- Our proposed system allows countries to complement EUIS with additional national benefits (financed internally)

- Most countries would benefit from this with optimal national replacement rates, but in as much as the EA is a closed economy, a cap on top-ups may be needed (in our EUIS of 10%, top-ups $\leq 14\%$)

Complementary National unemployment Benefits

| Country	$\tilde{b}_0^i$	$\tilde{\tau}_0^i(\%)$	EUIS W. Gain	EUIS + Nat. W. Gain
Austria	0.00	0.00	0.42	0.42
Belgium	0.05	0.26	1.85	1.86
Germany	0.05	0.75	0.34	0.39
Estonia	0.00	0.00	0.64	0.64
Spain	0.10	1.54	0.96	1.05
Finland	0.00	0.00	3.65	3.65
France	0.25	1.27	0.05	0.72
Greece	0.35	7.57	0.62	0.72
Ireland	0.00	0.00	0.71	0.71
Italy	0.20	4.07	0.55	0.67
Lithuania	0.05	0.86	0.33	0.44
Luxembourg	0.10	0.35	0.81	0.85
Latvia	0.15	3.23	0.44	0.51
Malta	0.30	2.12	0.20	0.46
Netherlands	0.05	0.51	0.33	0.36
Portugal	0.00	0.00	3.20	3.20
Slovenia	0.20	1.99	0.23	0.69

A Risk-sharing Experiment (with our EUIS UB policy)

- Consider individual country i, which would not change interest rates r_t; say, France

- $t = -1$: Economy is in the 10% EUIS steady state
  - ❏ Agents believe it will stay there forever (they think $A^i, \sigma^i, \lambda_u^i, \lambda_n^i$ are time-constant)

- $t = 0$: Large completely unexpected negative shocks happen:
  - ❏ Productivity $A^i \downarrow 20\%$
  - ❏ Job destruction $\sigma^i \uparrow 100\%$
  - ❏ Job creation $\lambda_u^i, \lambda_n^i \downarrow 50\%$

- $t \geq 1$: Economy slowly recovers deterministically and agents have correct believes about that

- *Upper bound* on welfare gains:
  - ❏ Government budget has to clear each period
  - ❏ No downside of constant taxes (no expansion)
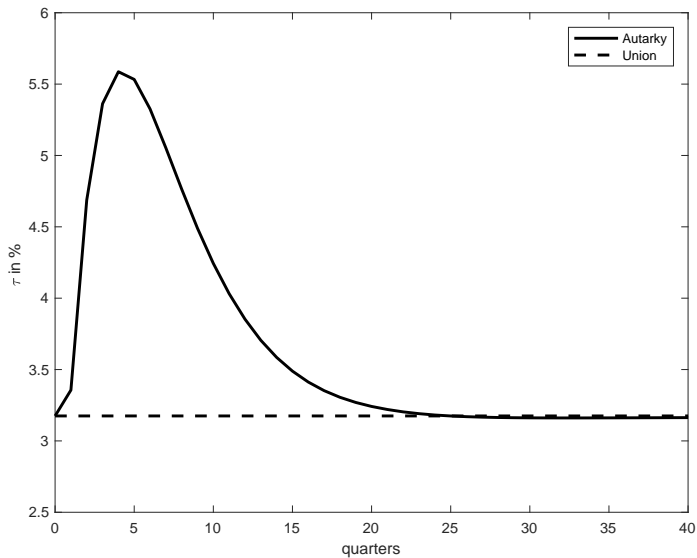 - ❏ No costs of insurance (since zero probability event)

The Shock - France
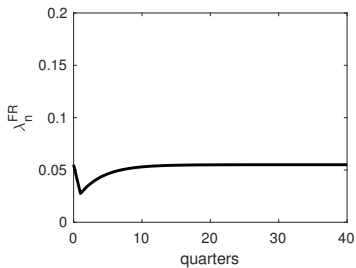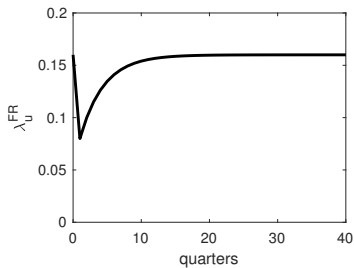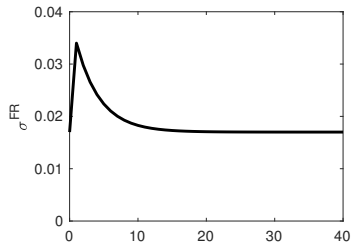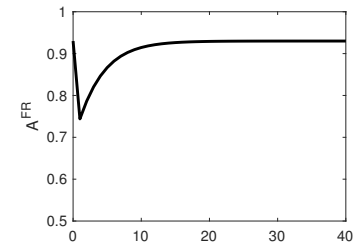
Response in Labour Market States - France
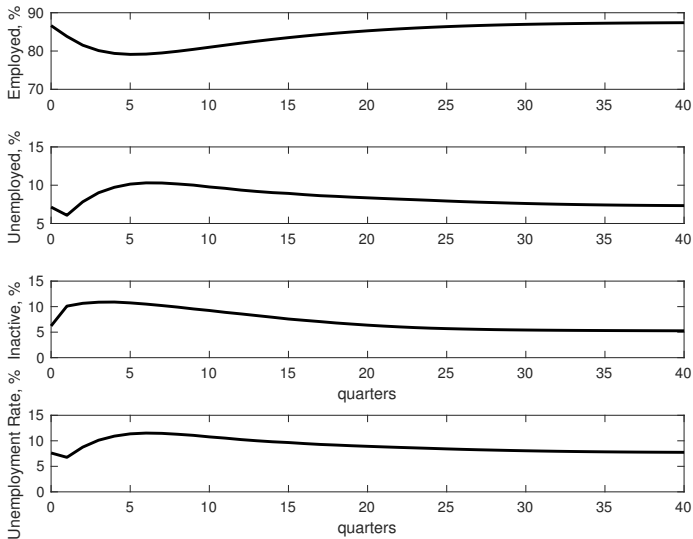
Response in Tax Rates - France

	Employed	Un. Eligible.	Un. Non-Elig.	Non-Active	W. Gain
Austria	0.05	0.06	0.058	0.04	0.05
Belgium	0.02	0.03	0.025	0.02	0.02
Germany	0.05	0.02	0.020	0.01	0.04
Estonia	0.08	0.08	0.08	0.05	0.07
Spain	0.12	0.11	0.10	0.06	0.10
Finland	0.00	0.00	-	0.00	0.00
France	0.06	0.05	0.04	0.02	0.06
Greece	0.11	0.10	0.09	0.05	0.09
Ireland	0.09	0.09	0.09	0.05	0.08
Italy	0.11	0.10	0.09	0.05	0.09
Lithuania	0.11	0.09	0.08	0.04	0.10
Luxembourg	0.02	0.03	0.02	0.01	0.02
Latvia	0.13	0.12	0.11	0.07	0.12
Malta	0.03	0.02	0.02	0.01	0.02
Netherlands	0.04	0.03	0.03	0.01	0.04
Portugal	0.07	0.08	0.09	0.06	0.07
Slovenia	0.07	0.05	0.05	0.02	0.06
Slovakia	0.10	0.07	0.07	0.03	0.09

Table: Welfare gains (in % CEV) of insuring a country-level severe shock

	Employed	Un. Eligible.	Un. Non-Elig.	Non-Active	W. Gain
Austria	0.05	0.06	0.058	0.04	0.05
Belgium	0.02	0.03	0.025	0.02	0.02
Germany	0.05	0.02	0.020	0.01	0.04
Estonia	0.08	0.08	0.08	0.05	0.07
Spain	0.12	0.11	0.10	0.06	0.10
Finland	0.00	0.00	–	0.00	0.00
France	0.06	0.05	0.04	0.02	0.06
Greece	0.11	0.10	0.09	0.05	0.09
Ireland	0.09	0.09	0.09	0.05	0.08
Italy	0.11	0.10	0.09	0.05	0.09
Lithuania	0.11	0.09	0.08	0.04	0.10
Luxembourg	0.02	0.03	0.02	0.01	0.02
Latvia	0.13	0.12	0.11	0.07	0.12
Malta	0.03	0.02	0.02	0.01	0.02
Netherlands	0.04	0.03	0.03	0.01	0.04
Portugal	0.07	0.08	0.09	0.06	0.07
Slovenia	0.07	0.05	0.05	0.02	0.06
Slovakia	0.10	0.07	0.07	0.03	0.09

Table: Welfare gains (in % CEV) of insuring a country-level severe shock

	Employed	Un. Eligible.	Un. Non-Elig.	Non-Active	Total
Austria	0.05	0.06	0.058	0.04	0.05
Belgium	0.02	0.03	0.025	0.02	0.02
Germany	0.05	0.02	0.020	0.01	0.04
Estonia	0.08	0.08	0.08	0.05	0.07
Spain	0.12	0.11	0.10	0.06	0.10
Finland	0.00	0.00	-	0.00	0.00
France	0.06	0.05	0.04	0.02	0.06
Greece	0.11	0.10	0.09	0.05	0.09
Ireland	0.09	0.09	0.09	0.05	0.08
Italy	0.11	0.10	0.09	0.05	0.09
Lithuania	0.11	0.09	0.08	0.04	0.10
Luxembourg	0.02	0.03	0.02	0.01	0.02
Latvia	0.13	0.12	0.11	0.07	0.12
Malta	0.03	0.02	0.02	0.01	0.02
Netherlands	0.04	0.03	0.03	0.01	0.04
Portugal	0.07	0.08	0.09	0.06	0.07
Slovenia	0.07	0.05	0.05	0.02	0.06
Slovakia	0.10	0.07	0.07	0.03	0.09

Table: Welfare gains (in % CEV) of insuring a country-level severe shock

A Risk-sharing Experiment (with current UB policies)

- $t = -1$: Economy is in the benchmark steady state (partial equilibrium)
  - ❏ Agents believe it will stay there forever (they think $A^i, \sigma^i, \lambda_u^i, \lambda_n^i$ are time-constant)

- $t = 0$ or with prob. ϕ: Large completely unexpected negative shocks happen: $A^i \downarrow 20\%$, $\sigma^i \uparrow 100\%$ and $\lambda_u^i, \lambda_n^i \downarrow 50\%$.

- $t \geq 1$: Economy slowly recovers deterministically and agents have correct believes about that.
  - ❏ policy 1: Shock in $t = 0$ & gov. budget has to clear each period
  - ❏ policy 2: Shock in $t = 0$ & constant taxes with balanced steady-state budget; i.e. no cost of shock insurance (EUIS)
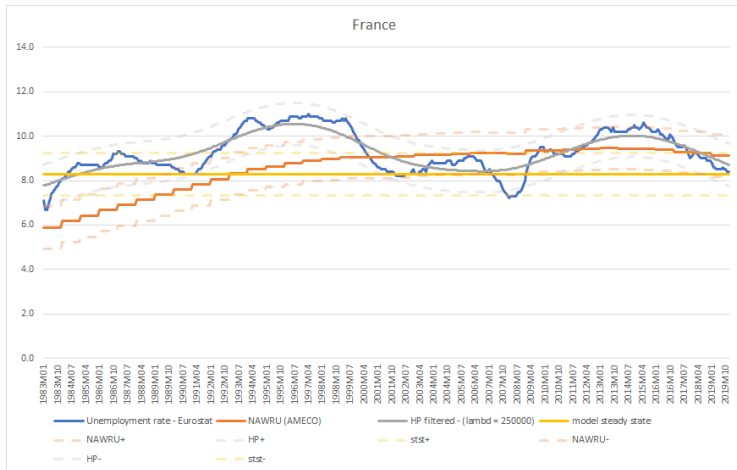
	Employed	Un. Eligible.	Un. Non-Elig.	Non-Active	W. Gain
Austria	0.10	0.07	0.09	0.04	0.09
Belgium	0.39	0.22	0.28	0.14	0.32
Germany	0.05	0.01	0.02	0.01	0.04
Estonia	0.19	0.07	0.11	0.04	0.16
Spain	0.68	0.32	0.39	0.11	0.55
Finland	0.65	0.26	-	0.24	0.55
France	0.20	0.09	0.11	0.02	0.18
Greece	0.31	0.14	0.17	0.05	0.23
Ireland	0.15	0.05	0.08	0.02	0.11
Italy	0.13	0.04	0.06	0.02	0.10
Lithuania	0.06	0.02	0.03	0.01	0.05
Luxembourg	0.18	0.10	0.13	0.05	0.15
Latvia	0.23	0.08	0.12	0.04	0.19
Malta	0.00	0.00	0.00	0.00	0.00
Netherlands	0.10	0.01	0.03	0.00	0.08
Portugal	0.10	0.06	0.36	0.00	0.41
Slovenia	0.08	0.02	0.03	0.01	0.07
Slovakia	0.08	0.02	0.03	0.01	0.06

Table: Welfare gains (in % CEV Policy 2) of insuring country-level fluctuations
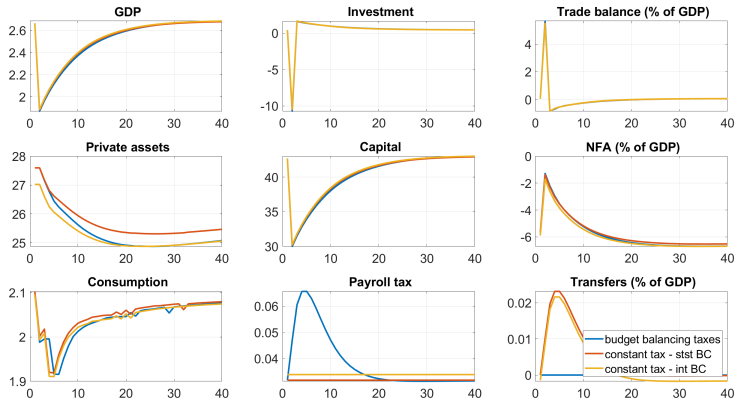
A Risk-sharing Experiment (with current UB policies)

- $t = -1$: Economy is in the benchmark steady state (partial equilibrium)
  - ❑ Agents believe it will stay there forever (they think $A^i, \sigma^i, \lambda_u^i, \lambda_n^i$ are time-constant)

- $t = 0$ or with prob. ϕ: Large completely unexpected negative shocks happen: $A^i \downarrow 20\%$, $\sigma^i \uparrow 100\%$ and $\lambda_u^i, \lambda_n^i \downarrow 50\%$.

- $t \geq 1$: Economy slowly recovers deterministically and agents have correct believes about that.
  - ❑ policy 1: Shock in $t = 0$ & gov. budget has to clear each period
  - ❑ policy 2: Shock in $t = 0$ & constant taxes with balanced steady-state budget; i.e. no cost of shock insurance (EUIS)
  - ❑ policy 3: Shock at $t > 1$ with prob. ϕ & constant taxes with balanced intertemporal government budget; i.e. taxes cover the shock insurance (EUIS)
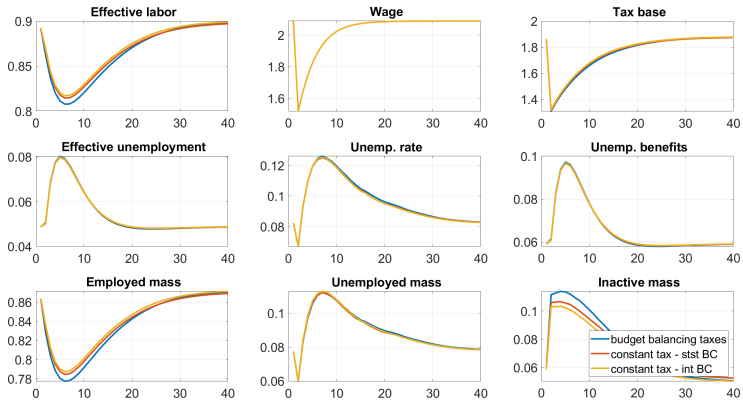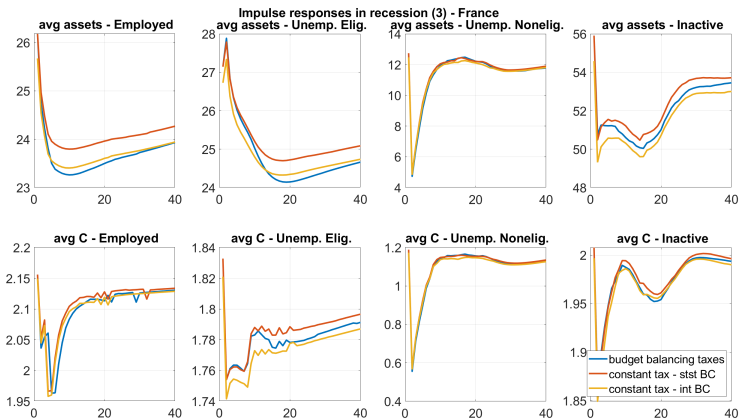
Unemployment rates (a closer look at France)

France

Impulse responses in recession (1) - France

GDP

Investment

Trade balance (% of GDP)

Private assets

Capital

NFA (% of GDP)

Consumption

Payroll tax

Transfers (% of GDP)

- budget balancing taxes
- constant tax - stst BC
- constant tax - int BC

Impulse responses in recession (2) - France

Effective labor, Wage, Tax base, Effective unemployment, Unemp. rate, Unemp. benefits, Employed mass, Unemployed mass, Inactive mass

Legend:
- budget balancing taxes
- constant tax - stst BC
- constant tax - int BC

Impulse responses in recession (3) - France

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Summing Up

- Only very small gains from pure business-cycle risk-sharing; particularly, with a 10% EUIS

- Non-negligible during recessions

- Nevertheless, our partial equilibrium probably overestimates the insurance capacity of the international financial market.

EUIS implementation

- With an Eurosystem from the national UI systems

- Accounting transparency (UB & payroll revenues) and commitment

- National funds + central fund to smooth country specific shocks

- The central fund (e.g. within the ESM) should have capacity to borrow/lend to smooth EA unemployment fluctuations

Conclusion

- We have provided a quantitative model to investigate the effects of a potential European Unemployment Insurance Systems (EUIS)

- Substantial gains from a harmonized EUIS with:
  - ❏ 10% replacement rate
  - ❏ unlimited duration
  - ❏ country-specific constant tax rates (to eliminate permanent transfers and smooth tax burdens)

- "Experience rating taxes" provide incentives for higher tax countries to improve their labour markets

- EUIS could be complemented by additional national unemployment benefits, but EA coordination/regulation may be necessary

- Small – but non negligible – welfare gains from insuring fluctuations in unemployment expenditures (more to come...)

- EUIS could be implemented as an Eurosystem (akin to the Eurosystem of Central Banks)

with Árpád Ábrahám & Gergö Motyovszki (EUI)

- EUIS insuring country-risks (not just a once and for all shock)

- New & better calibrations of the EA, or EU, internal and external risk structure

- Assessing the management of the EUIS with individual, country and EA risks

- Reassessing risk-sharing gains