

# Federal Unemployment Insurance

– theory and an application to Europe –

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# Motivation

- ▶ Asymmetric regional shocks (Mundell (1961)).
- ▶ Lack of independent monetary policy.
- ▶ Fiscal transfers in monetary unions. (Farhi and Werning (forthcoming))
- ▶ Limited risk-sharing in the euro area. (Furceri and Zdzienicka (2015)).
- ▶ Politician call for further fiscal integration. (Jean-Claude Juncker (2015) and European Commission (2017))

# How to organize fiscal transfer?

- ▶ Unemployment insurance a key **automatic stabilizers** (McKay and Reis (2016)).
- ▶ Unemployment: indicative of the cycle and observable (*relative to a say cost-push-shock*).
- ▶ Federal UI could insulate against regional shocks.
- ▶ In practice: design of federal UI differs markedly
  - *U.S.*: UI systems of states short-lived on average, federal government offers extensions after severe aggregate shocks.
  - *Germany*: Common UI rules set exclusively at federal level.
  - *Europe*: Member states likely to keep control over set of labor market policy instruments.

# What we do

- ▶ Union of (small) countries with idiosyncratic shocks.
- ▶ Bias model in favor of European UI system:
  1. Countries are ex-ante homogenous (average unemployment rates are the same).
  2. No self-insurance via bond trading on country level.
  3. No correlated shocks.
  4. Limited consumption insurance of unemployed due to moral hazard of searching worker within country.
  5. Demand externality (as in Krueger et al. (2016)).
  6. Real wage rigidity.
  7. Frictional labor market.
- ▶ Scope for federal UI system but trade-off between regional insurance and regional moral hazard (Persson and Tabellini, 1996).

# Our question

- ▶ How to (qualitatively) design an optimal European UI system if
  - member states respond with (their UI system, hiring subsidies or layoff restrictions).
- ▶ How does the scheme look in practice (quantitatively):
  - Does it alter long run unemployment rates?
  - Does it alter policy response to the cycle?
  - Does indexation to past unemployment rates help?

# Main takeaways

- ▶ *Linear* federal UI optimal if no Moral Hazard.
- ▶ If member states respond optimally:
  - A linear UI system very costly (more harm than good).
  - Even if Europe could control local UI benefit systems  $\rightarrow$  *Entire policy mix matters.*
  - **Threshold system as in the US optimal:** federal UI only in **severe** crisis.
  - Indexation does alleviate long-term moral hazard but not problem of insufficient cyclical stabilization

## Model - member countries choices

- ▶ DMP with search and matching frictions:
- ▶ Unemployed **search**, face unobserved search cost (moral hazard) → equity-efficiency trade-off → *UI benefits* positive
- ▶ **Hiring** via free entry condition exerts externality on search → *hiring subsidies* (even at Hosios condition)
- ▶ **Separations** Privately efficient bargained exerts externality on society → *separation taxes* needed.
- ▶ *Production tax* balances budget each period.

# European Government

- ▶ Union of atomistic member states.
- ▶ Shocks observable only to member states.
- ▶ Utilitarian Ramsey planner (Stackelberg leader).
- ▶ Balanced European budget  $\int_0^1 \mathbb{B}_t^i di = 0$ .
- ▶ Net benefits  $\mathbb{B}_t^i$  are a function of local unemployment

$$\mathbb{B}_t^i = \underbrace{B_F(u_t^i)}_{\text{fct. of unemployment}} - \tau_F$$

- ▶ 3 parameter flexible form:

$$B_{F,t}(u - u_{\text{aut}}; \nu, \omega, \mathcal{B}) = \frac{\exp(\nu \cdot (u - u_{\text{aut}} - \omega))}{1 + \exp(\nu \cdot (u - u_{\text{aut}} - \omega))} \cdot \mathcal{B} \cdot u,$$



## Intuition in static framework

- ▶ To build intuition: One period only. Initially all workers unemployed. No separations. Only hiring and search.
- ▶ Let  $\Delta^i = u(c_e^i) - u(c_u^i)$  and  $\theta$  the market tightness
- ▶ Define **Micro**elasticity

$$\epsilon^m|_{\theta} \equiv \frac{\partial e}{\partial \Delta} \frac{\Delta}{u}.$$

- ▶ Define **Macro**elasticity

$$\epsilon^M \equiv \epsilon_m + \frac{\partial e}{\partial \theta} \frac{d\theta}{d\Delta} \frac{\Delta}{u}.$$

- ▶ In full model feedback of benefits on separation.

## Optimal local benefits (one instrument)

$$b^i := \frac{B^i + \tau^i}{w^i}$$

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$$b^i = R^i$$

where

$R^i \sim \frac{\Delta^i}{\epsilon^{m,i}}$ , depends inversely on the **micro**elasticity

## Optimal local benefits (one instrument)

$$b^i = R^i + \left(1 - \frac{\epsilon^{M,i}}{\epsilon^{m,i}}\right) (\Delta^i + \text{stuff})$$

where

$R^i \sim \frac{\Delta^i}{\epsilon^{m,i}}$ , depends inversely on the **micro**elasticity

$\left(1 - \frac{\epsilon^{M,i}}{\epsilon^{m,i}}\right) :=$  increasing if macroelasticity  $\epsilon^{M,i} <$  microelasticity  $\epsilon^{m,i}$

## Optimal local benefits (one instrument)

$$b^i = R^i + \left(1 - \frac{\epsilon^{M,i}}{\epsilon^{m,i}}\right) (\Delta^i + \text{stuff}) + \frac{dB^i(u^i)}{du^i} \frac{1}{w^i} \cdot \frac{\epsilon^{M,i}}{\epsilon^{m,i}}$$

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## Optimal local benefits (one instrument)

$$b^i = R^i \cdot \frac{1 - \Upsilon^i}{1 - \Upsilon^i \cdot \frac{\epsilon^{M,i}}{\epsilon^{m,i}}} - \frac{\Upsilon^i \cdot \frac{\epsilon^{M,i}}{\epsilon^{m,i}}}{1 - \Upsilon^i \cdot \frac{\epsilon^{M,i}}{\epsilon^{m,i}}} \\ + \left(1 - \frac{\epsilon^{M,i}}{\epsilon^{m,i}}\right) (\Delta^i + \text{stuff}) \frac{1}{1 - \Upsilon^i \frac{\epsilon^{M,i}}{\epsilon^{m,i}}} \\ + \frac{d\mathbb{B}^i(u^i)}{du^i} \frac{1}{w^i} \cdot \frac{\epsilon^{M,i}}{\epsilon^{m,i}} \frac{1}{1 - \Upsilon^i \frac{\epsilon^{M,i}}{\epsilon^{m,i}}}$$

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$\Upsilon^i := \varsigma \exp(a^i) [c^i]^{\varsigma-1} [e^i]^\alpha$ , increasing in the demand externality

## Limited set of instruments

What happens if the slope of federal insurance payouts  $\frac{dB^i}{du^i}$  changes? (aggregate resources in a country remain unchanged)

$$\frac{d\Delta^i}{d\frac{dB^i}{du^i}} \propto -\frac{\epsilon^{M,i}}{\Delta^i} \leq 0$$

- ▶ The more generous the federal system is the smaller is the gain from employment
- ▶ The effect is scaled by the **Macroelasticity**  $\epsilon^{M,i}$

# The federal government

What is the optimal level of the **federal** system? Assume two shocks, high and low, and a linear federal UI schemes  $\mathbb{B}(u^i) = \mathcal{B} \cdot u^i - \tau_F$ , then an optimal  $\mathcal{B}$  depends on:

$$\mathcal{B} = [e^H - e^L] \cdot \left[ \frac{\phi^L - \phi^H}{\pi\phi^H + (1 - \pi)\phi^L} \right] \cdot \left[ \pi_H \frac{du^H}{d\mathcal{B}} + \pi_L \frac{du^L}{d\mathcal{B}} \right]^{-1}$$



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$$\mathcal{B} = \underbrace{[e^H - e^L]}_{\text{employment difference}} \cdot \left[ \frac{\phi^L - \phi^H}{\pi\phi^H + (1 - \pi)\phi^L} \right] \cdot \left[ \pi_H \frac{du^H}{d\mathcal{B}} + \pi_L \frac{du^L}{d\mathcal{B}} \right]^{-1}$$

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$$\mathcal{B} = [e^H - e^L] \cdot \underbrace{\left[ \frac{\phi^L - \phi^H}{\pi\phi^H + (1 - \pi)\phi^L} \right]}_{\text{marginal social values of resources}} \cdot \left[ \pi_H \frac{du^H}{d\mathcal{B}} + \pi_L \frac{du^L}{d\mathcal{B}} \right]^{-1}$$

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# The federal government

The moral-hazard term:

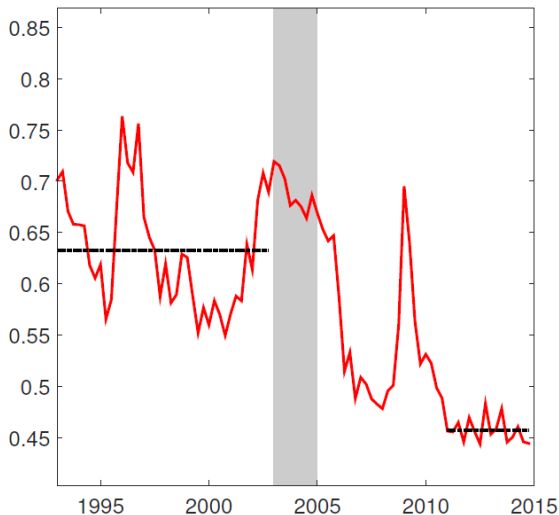
$$\left[ \frac{du^H}{d\mathcal{B}} \right] \simeq \left[ -\frac{d\Delta^H}{d\mathcal{B}} \right] \frac{\epsilon^{M,H}}{\Delta^H}$$

- ▶ Increasing in the macroelasticity,  $\epsilon^{M,i}$ .
- ▶ No moral hazard if the local government can hardly affect the unemployment rate, i.e.  $\epsilon^{M,i}$  is small.
- ▶ But: elasticity is endogenous!
- ▶ **Function of available policy instruments.**

# Dynamic Model

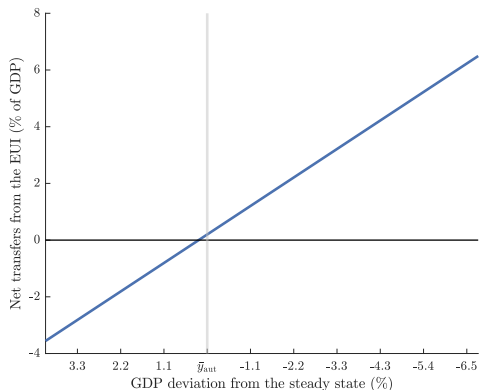
- ▶ Target European business cycle statistics of job-finding, separation and unemployment rates.
- ▶ Key input is the underlying **Macroelasticity** and the demand externality (zero in benchmark).
- ▶ Strong disagreement in the literature on both.
- ▶ Estimate currently based on Jung and Kuhn (2018)(German Hartz reforms to quantify the elasticity of separations on benefits).
- ▶ Macroelasticity  $\epsilon^M \simeq 4 - 6$  in steady state.
- ▶ Operates mainly through **separations**.
- ▶ Is this too large?

## German Hartz reforms affected separations



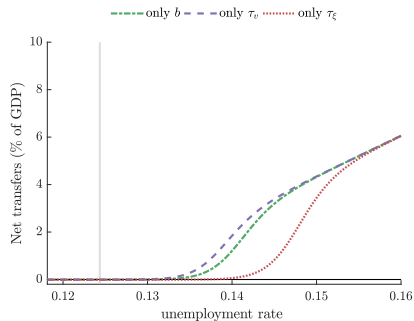
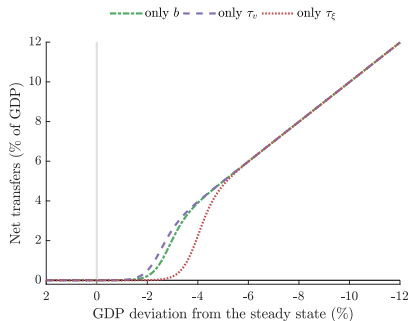
A more than 30% decline. In Hartung, Jung and Kuhn (2018) we argue for causality of benefits on separations.

## Results: optimal federal UI without moral hazard



- ▶ Slope B is 1.5, which is the ratio of the standard deviation of GDP to employment.
- ▶ If the local government could react to this scheme steady state unemployment rates could double.

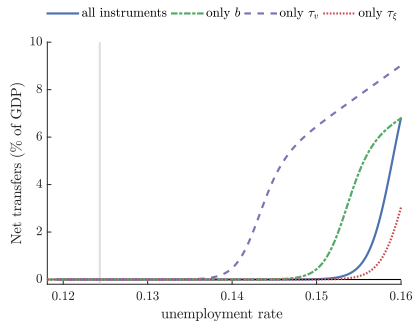
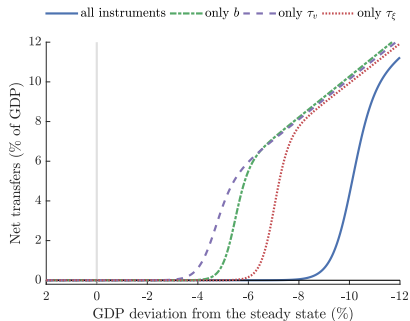
# Countries adjust only one long-term instrument



Note: fixing member states' UI benefit policies not sufficient to support generous federal UI.

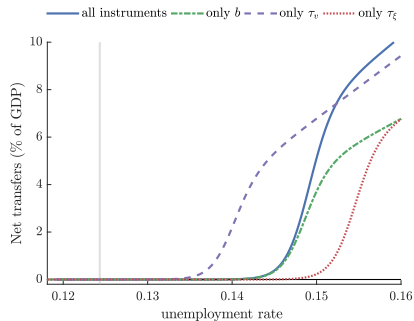
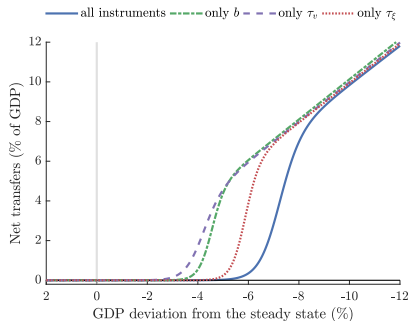


# Countries adjust also optimally over cycle



- ▶ Remains scope for federal insurance
- ▶ The more control member states retain, the smaller the scope for EUI.
- ▶ Welfare gains also drop substantially.

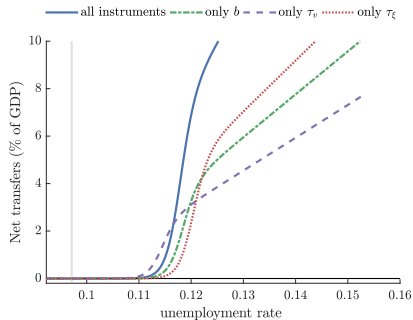
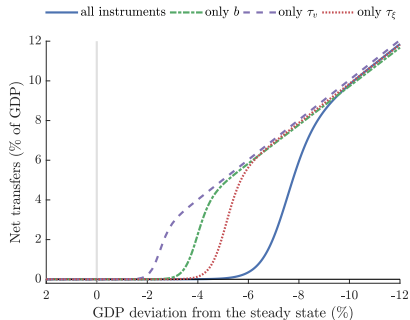
# Indexation to past unemployment over 10 years



- ▶  $u_t^{i,avg} = \delta u_t + (1 - \delta)u_{t-1}^{i,avg}$
- ▶  $\delta$  such that indexed to 120 month.
- ▶  $\mathbb{B}(u^i; \nu, \omega, \mathcal{B}) \equiv B_{F,t}(u_t^i - u_t^{i,avg}; \nu, \omega, \mathcal{B}) - \tau_F$

# Demand externalities

## Full Set of Instruments



- ▶ (Not re-calibrated yet)
- ▶ Further dimension: international spillovers (lack of stabilization policy if support-thy-neighbor)

# Conclusion

- ▶ How to design an unemployment insurance system in a union of sovereign states?
- ▶ If member states have no sovereignty over **all** labor market instruments, federal UI generous.
- ▶ Controlling only the benefit systems in member states or indexation does not fix moral hazard problem.
- ▶ Moral hazard affects not only the long run but also incentives of members to stabilize **over cycle**
- ▶ hence: Federal UI only against severe recessions.
- ▶ What does “severe” mean quantitatively?
  - Depends on government’s ability to shape the unemployment rate in steady state and over the cycle.
  - Demand externality lowers moral hazard disincentives.



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