# Reassessing the Role of Labor Market Institutions for the Business Cycle

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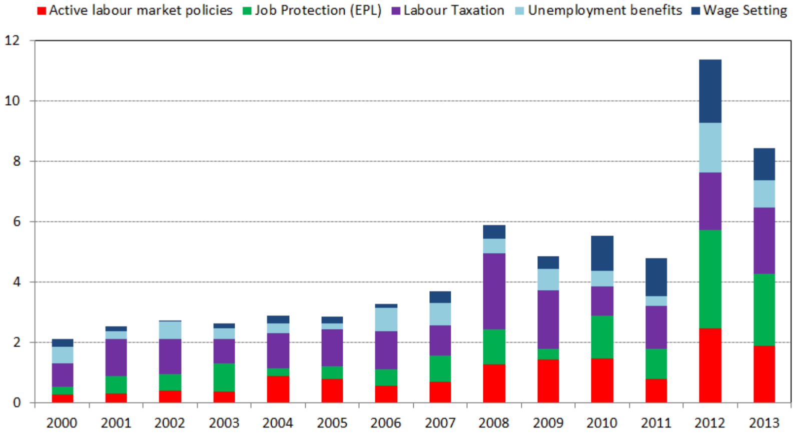
# Number of measures taken in EA, by type



# Motivation

- Structural and specifically labor market reform buzz word in times of constrained fiscal and monetary policy
- Extent of changes to labor market institutions (LMIs) in recent years substantial (in the euro area)
- But no commonly agreed view on implications (except “flexible good - rigid bad”)
- Provide an assessment of the implications of LMIs for adjustment of inflation and unemployment to shocks.

# Main Results

- LMIs have significant effect on both unemployment and inflation dynamics.
- Flexible need not mean good and rigid need not mean bad
- Some rigidities shift adjustment on prices (EPL, UDENS) and others on employment (BRR, TW)
- LMI harmonization not (necessarily) justified in common currency area

# Diverging views on role of LMI for unemployment dynamics

## Unemployment/Output (volatility)

- **EPL**: No effect (Rumler and Scharler 2011), reduction (Faccini and Rosazza Bondibene 2012; Merkl and Schmitz 2011), U-shape (Lochner 2014)
- **BRR**: No effect (Faccini and Rosazza Bondibene 2012), reduction (Lochner 2014), increase (Merkl and Schmitz 2011)
- **Unions**: Reduction (Lochner 2014 ,Faccini and Rosazza Bondibene 2012), increase (Rumler and Scharler 2011)

# Limited role of LMI for inflation dynamics

## Inflation (volatility)

- **Coordination**: Reduction (Bowdler and Nunziata 2007, Rumler and Scharler 2011)
- **Unions**: No effect (Rumler and Scharler 2011), increase (Bowdler and Nunziata 2007, )
- No effect: EPL (Rumler and Scharler 2011; Merkl and Schmitz 2011), BRR (Merkl and Schmitz 2011)

# From DSGE representation

- Start from structural representation of a standard log-linearized solution of a rational expectation DSGE model:

$$\begin{aligned} \mathbf{A}_0(\Lambda)\,\mathbf{y}_t &= \mathbf{A}_1(\Lambda)\,\mathbf{y}_{t-1} + \mathbf{B}_0(\Lambda)\,\mathbf{z}_t \\ \mathbf{C}_0\mathbf{z}_t &= \mathbf{C}_1\mathbf{z}_{t-1} + \varepsilon_t \end{aligned}$$

- $\mathbf{y}_t$ denotes the vector of endogenous variables
- $\mathbf{z}_t$ a vector of AR(1) shock processes
- $\Lambda$ is a vector of policy parameters with elements $\lambda_j$ that correspond to the individual LMIs of the economy

# To IPVAR estimation

- Use interacted Panel VAR (Towbin and Weber 2013, Nickel Tudyka 2014, Georgiadis 2014, Wieladek 2016)
- Focus on external shocks using Choleski identification

$$\begin{pmatrix} \mathbf{C}_0 & 0 \\ \mathbf{B}_{0,t} & \mathbf{A}_{0,t} \end{pmatrix} \begin{pmatrix} \mathbf{s}_{i,t} \\ \mathbf{y}_{i,t} \end{pmatrix} = \mu_i + \begin{pmatrix} \mathbf{C}_1 & 0 \\ \mathbf{B}_{1,t} & \mathbf{A}_{1,t} \end{pmatrix} \begin{pmatrix} \mathbf{s}_{i,t-l} \\ \mathbf{y}_{i,t-l} \end{pmatrix} + \begin{pmatrix} \varepsilon^S_{i,t} \\ \varepsilon^Y_{i,t} \end{pmatrix}$$

- $\mathbf{s}_t$ denotes the vector of observable "shocks"
- Assume linearity of structural coefficients in LMIs and allow their variation over time/countries

$$\mathbf{A}_{l,t} = \bar{A}_l + \alpha_l \quad \Lambda_{i,t}$$
$$\mathbf{B}_{l,t} = \bar{B}_l + \beta_l \quad \Lambda_{i,t}$$

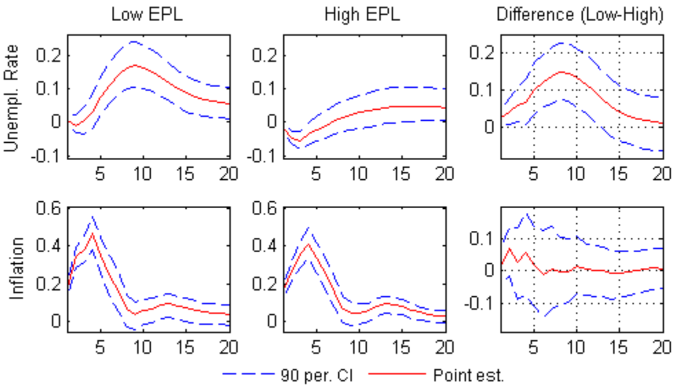
# Data

- Vector of observable shocks ($\mathbf{s}_{i,t}$) taken from OECD:
  - $4 \ln P_t$: first difference of (log) oil price
  - $4 \ln M_{i,t}$: World demand growth ($\Delta \ln \sum_{j \neq i}^{I} GDP_{j,t}$)
- Vector of endogenous variables ($\mathbf{y}_{i,t}$) taken from OECD:
  - UR: Unemployment rate
  - Infl: Inflation rate
  - Int: Interest rate
- Vector of LMI variables ($\Lambda_{i,t}$) - extended CEP-OECD institutions dataset:
  - EPL: Strictness of employment protection legislation
  - BRR: Generosity of the unemployment benefit system
  - TW: Extent of tax wedge
  - UDENS: Union density
  - CEW: Centralization of wage bargaining

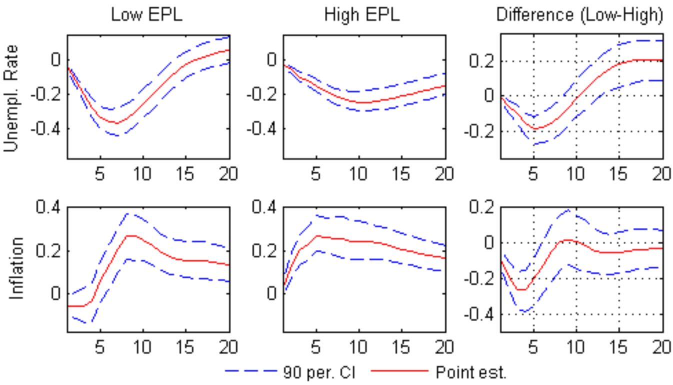
# Estimation and inference

- Quarterly data: 1970Q1-2013Q4, 20 OECD countries
- Use four lags, OLS-estimation
- Derive confidence bands using bootstrap method
- Assess role of LMIs for dynamics adjutment by computing IRF for high ($80^{th}$ percentile) and low ($20^{th}$ percentile) value of respective LMIs
- Compute differnce in response and provide confidence band based on bootstrap sample

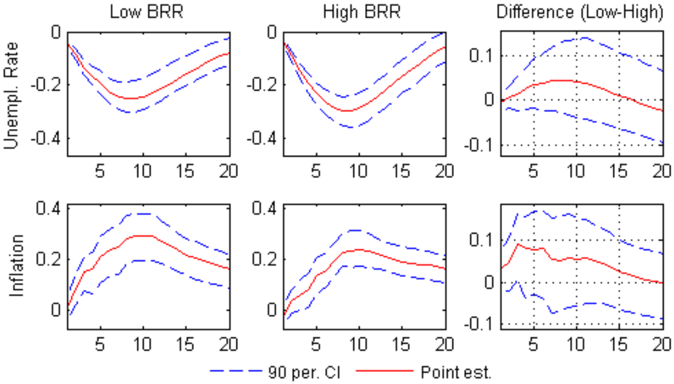
# Oil price shock: EPL " ) UR #



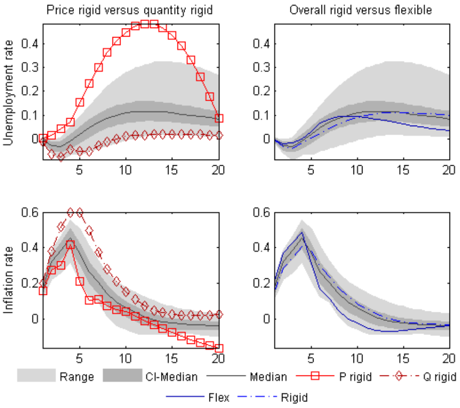
# World demand shock: EPL " ) UR # and Infl "



# World demand shock: BRR " ) UR " and Infl #

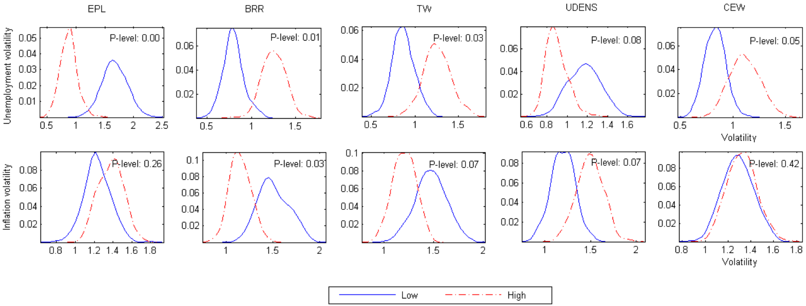


# Rigid versus flexible LM under oil price shock




Range = lowest and highest IRF based on average LMI of countries
CI-Median = 90-percent confidence interval for IRF with LMIs all at sample median
Median = median IRF
P rigid = Low (EPL and UDENS) and High (TW, BRR, and CEW)
Q rigid = opposite LMI constellation
Flex = all LMI at low value
Rigid = all LMI at high value.

# Simulated volatilities



# Conclusion

- **Quantity rigidity creating LMIs**: Union density, EPL*
- **Price rigidity creating LMIs**: Unemployment benefits, Tax wedge, Centralized wage setting*
- **Rigid versus flexible LM**: Little helpful concept; dynamics in countries with overall rigid LM not different from flexible LM economies.
- **LM harmonization in EA**: depending on configuration little to gain in terms of efficient adjustments. Avoid co-existence of P-rigid and Q-rigid.
- **Caveat:** Steady-state effects may overturn optimal LMI constellation considerations

Appendix

# Additional slides

- Estimation in literaure often based on 5-year average volatiity regressions for a panel of OECD countries:

$$\ln \sigma_y = \beta\Lambda + \gamma X + e$$

- Ignores several aspects from DSGE-based volatility given by:

$$vec(\Sigma_y) = [I \quad \mathbf{A}_1(\Lambda) \quad \mathbf{A}_0^{-1}\mathbf{A}_1(\Lambda)]^{-1}[\mathbf{A}_0^{-1}\mathbf{B}_0(\Lambda) \quad \mathbf{A}_0^{-1}\mathbf{B}_0(\Lambda)]vec(\Sigma_z)$$

- May mask effect of LMIs on fluctuations at higher frequency
- No shock identification, but different countries exposed to different types/magnitudes of shocks
- Constrained to linear relation between volatility and LMIs (not based on theory)