Labor Supply Shocks and the Beveridge Curve

Empirical Evidence from Austria

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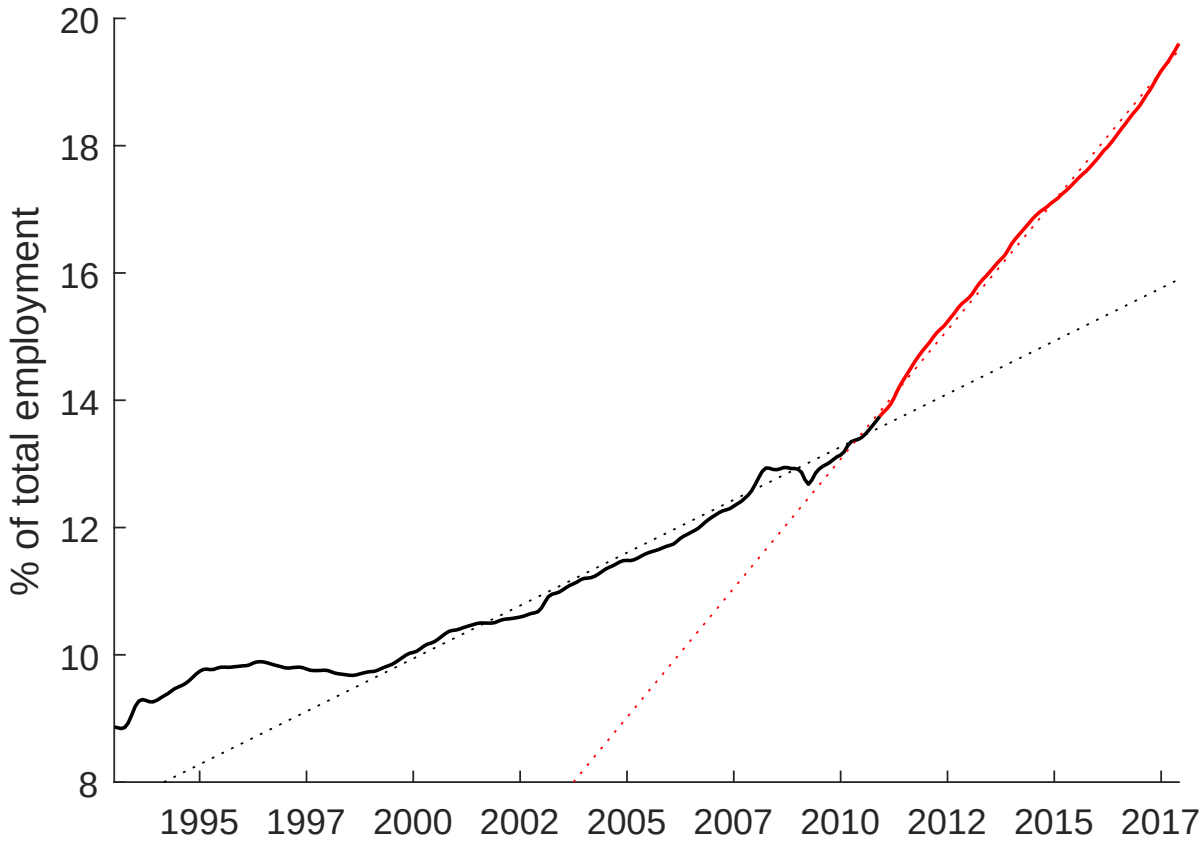
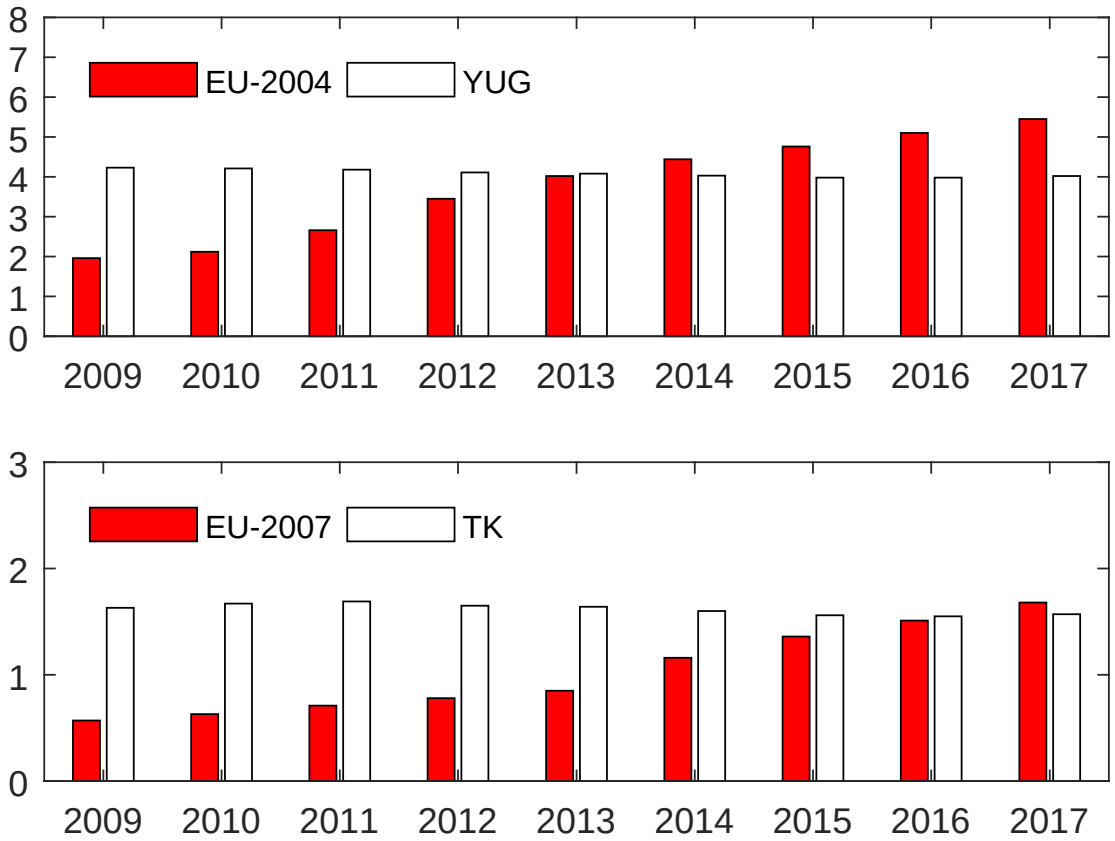
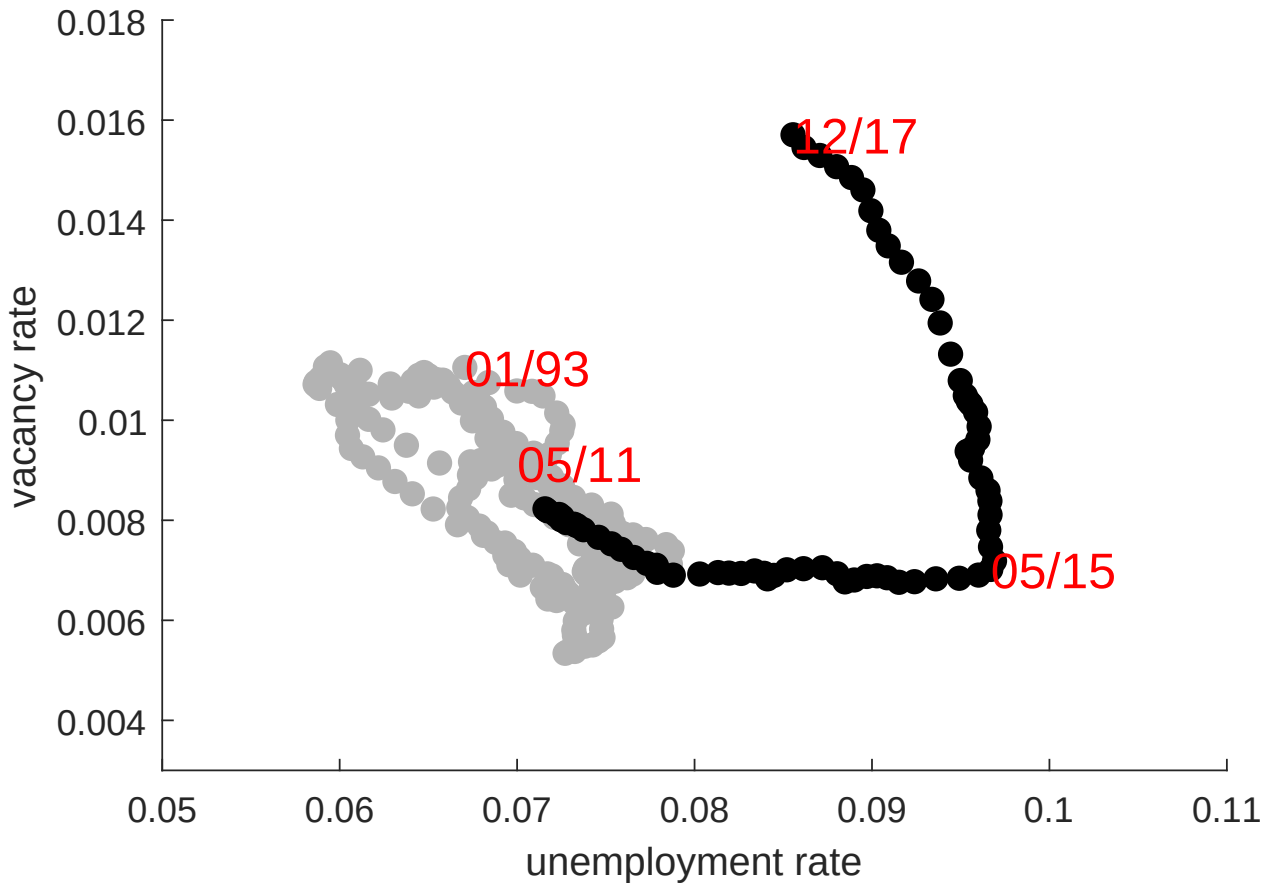
Piece #1/3: The Share of Foreign Workers



Piece #2/3: Who immigrated?



Piece #3/3: The Beveridge Curve in Austria



Research question: To which extent did (foreign) labor supply shocks since 05/2011 contribute to the outward shift of the Beveridge Curve?

▸ literature

Labor supply shock: definition

a positive labor supply shock represents a decrease in disutility of work

- either at the intensive margin (increase of hours worked per head) or
- **at the extensive margin** as additional members of a representative household are added to participation

mechanism:

1. job seekers ↑
   - search time ↑, (stock of) **unemployment** ↑
   - recruitment time ↓, (stock of) **emplyoment** ↑
2. matching improves, vacancies ↓
   wages ↓, labor demand ↑, vacancies/employment ↑, unemployment ↓

unique (identifying) feature:
positive comovement of employment and unemployment on impact

Empirical model

$$\mathbf{y_t} = \mathbf{c} + \sum_{i=1}^{6} \mathbf{A_i} \mathbf{y_{t-i}} + \mathbf{u_t}$$

$$\mathbf{u_t} = \mathbf{B}^{-1} \mathbf{w_t}$$

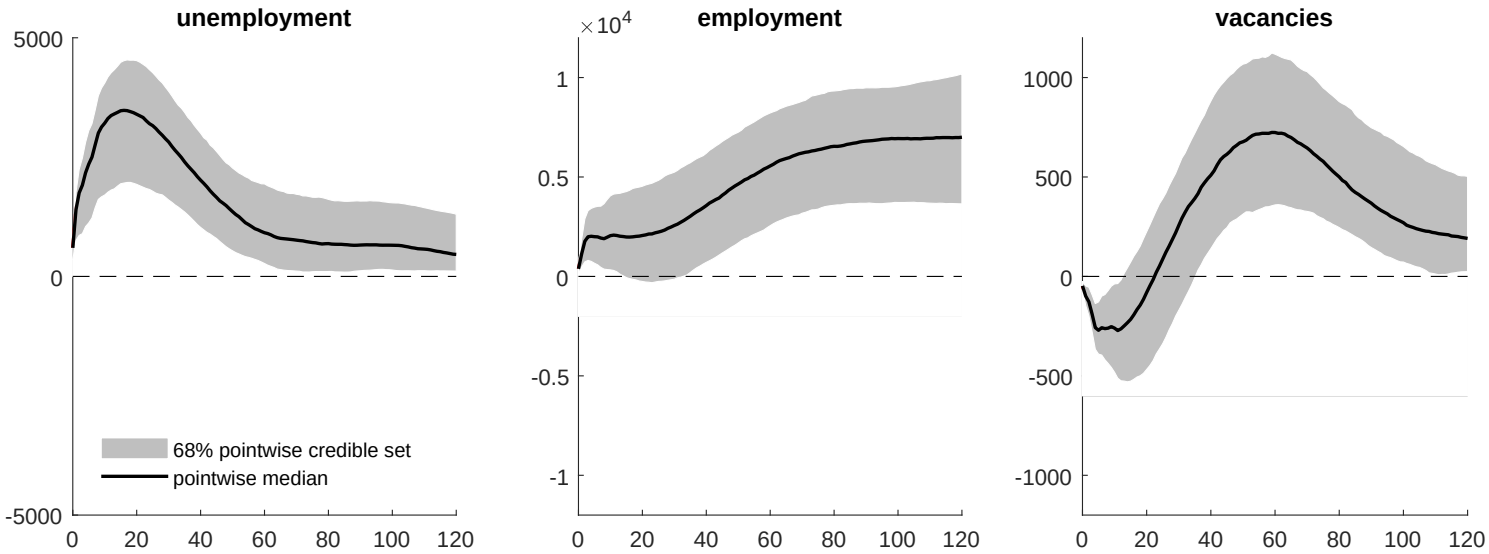
where $\mathbf{y_t} = \begin{pmatrix} une_t & emp_t & vac_t \end{pmatrix}'$ ▸ data

$b_{ij} \in \mathbf{B}^{-1'}$	une.	emp.	vac.
labor supply shock	+	+	
shocks of the BC*	+	−	+
shocks along the BC°	+	−	−

* *corr*(job creation, job destruction) > 0: reallocation (structural change), matching efficiency
° *corr*(job creation, job destruction) < 0: demand, technology, bargaining power

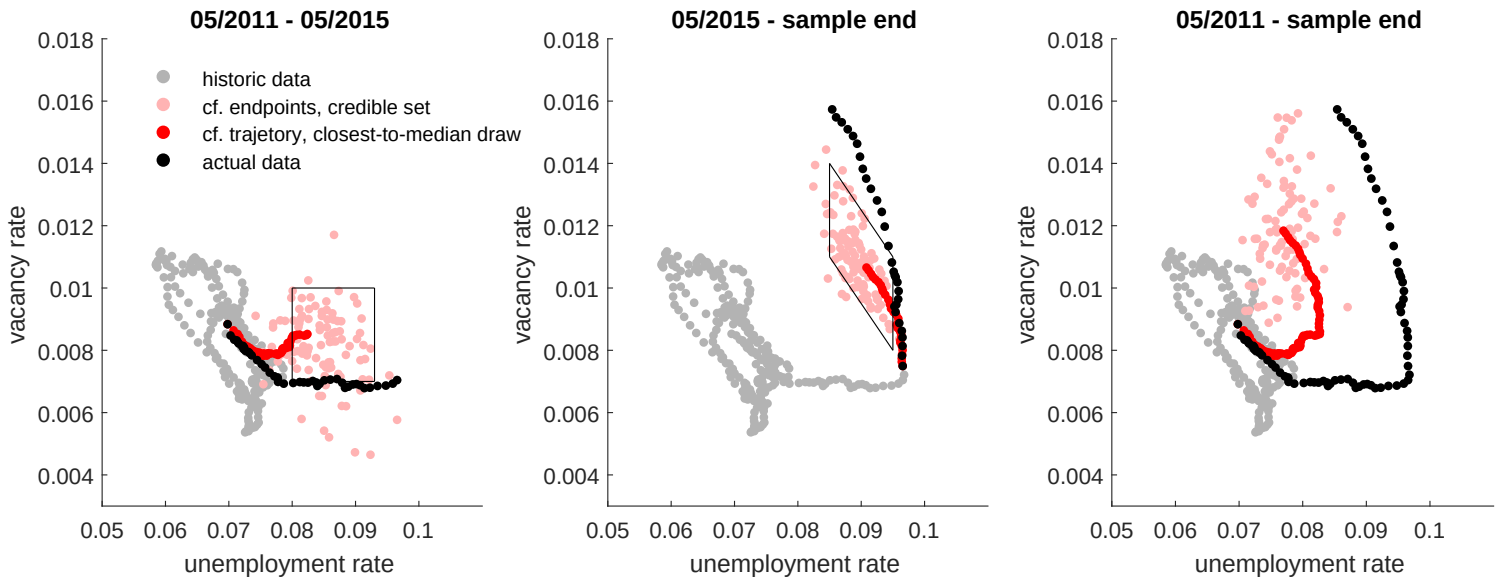
▸ implementation of sign restrictions

Impulse responses, labor supply shocks



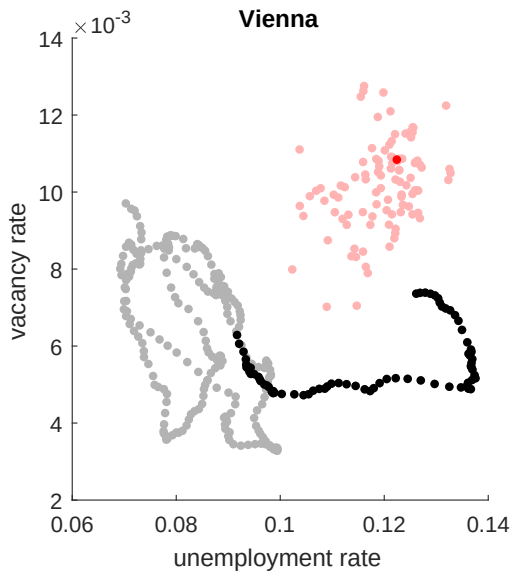
- unemployment rises for approx. one and a half year
- increased matching reduces vacancies on impact
- in the medium run, higher labor demand raises vacancies, boosts employment, and reduces (heightened) unemployment

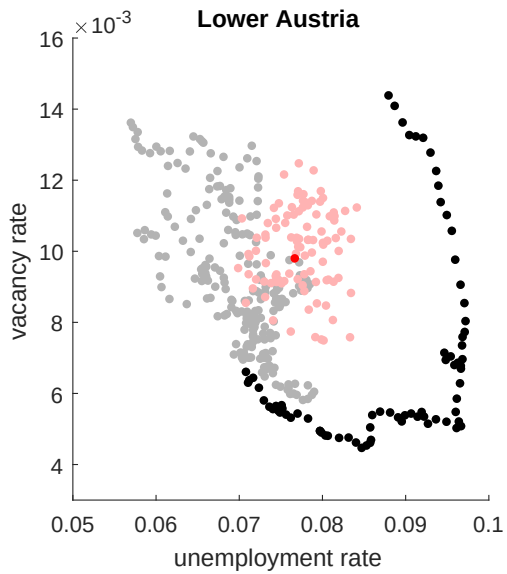
Counterfactual Beveridge Curves

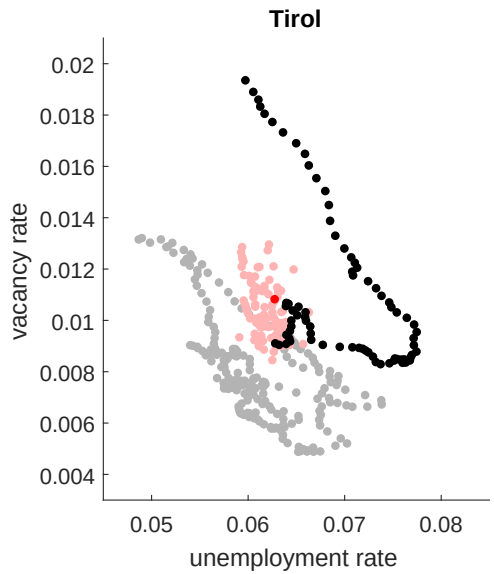


- from 05/2011 to 05/2015, 1 to 2.2 percentage points of unemployment increase from 7% to 9.7% (i.e. 37%-82%) due to labor supply shocks
- also, vacancies increase and unemployment decline since 05/2015 is to a large extent due to labor supply shocks

Counterfactual Regional Beveridge Curves



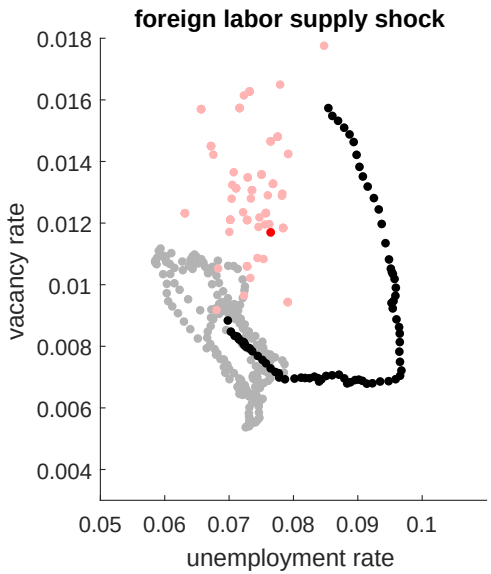


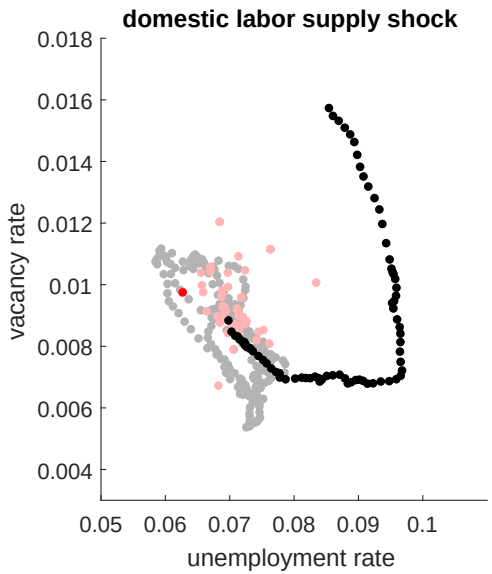


- effects large in Vienna, modest in Lower Austria, absent in Tirol
- east was more exposed to labor supply shock than the west
- the metropolitan area was more affected than the countryside

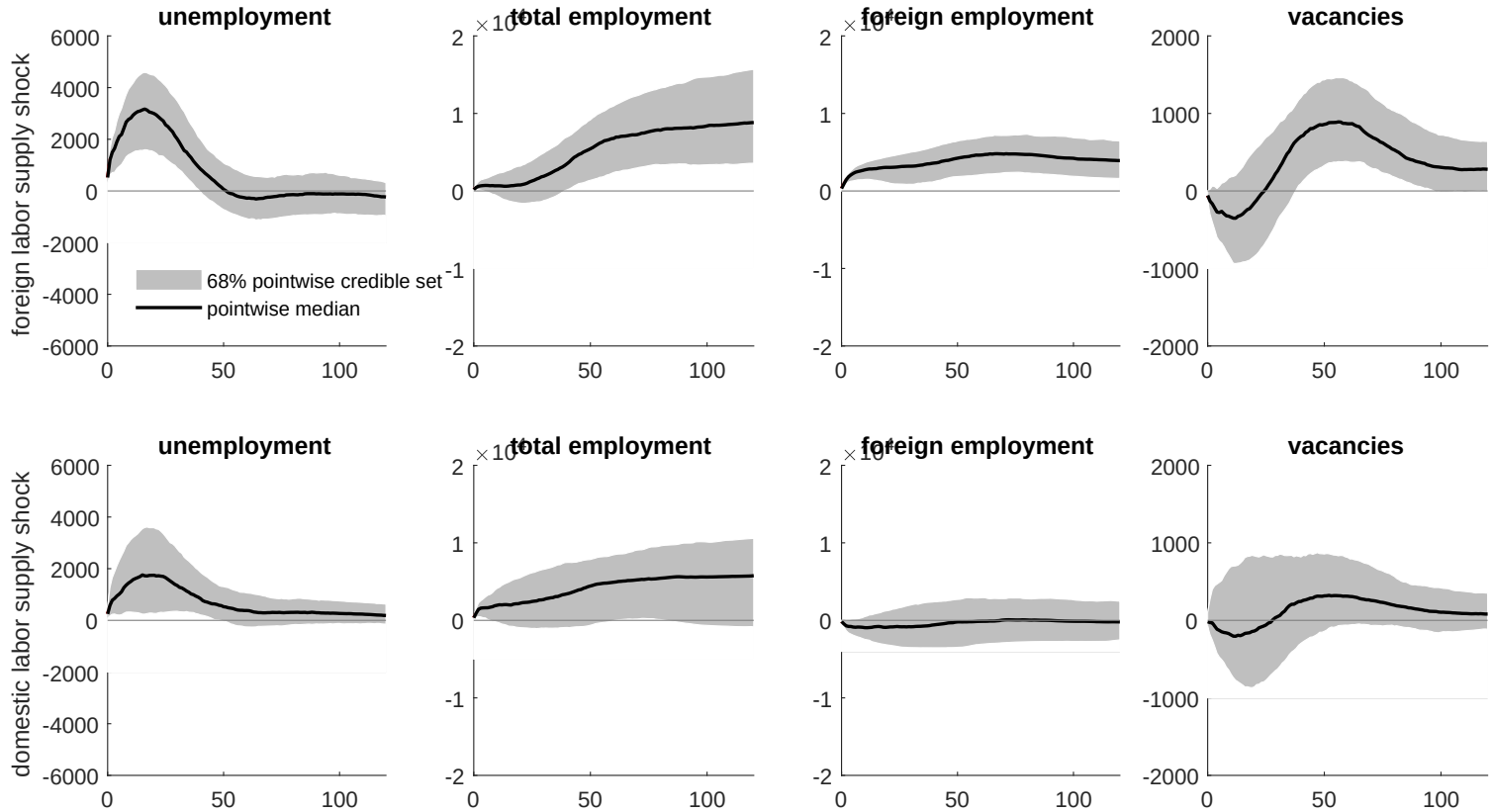
Domestic vs. Foreign labor supply shocks

$b_{ij} \in \mathbf{B}^{-1'}$	une.	emp.	**f.emp.**	vac.
foreign labor supply shock	$+$	$+$	$+$	
domestic labor supply shock	$+$	$+$	$< \frac{b_{13}(b_{21}+b_{22})}{(b_{11}+b_{12})}$	
shock of the BC	$+$	$-$	$-$	$+$
shock along the BC	$+$	$-$	$-$	$-$





Domestic vs. Foreign labor supply shocks, IRFs



- foreign workers displace domestic workers, on impact
- later, domestic employment rises due to increased labor demand

Outlook

estimate growth and wage effects in an extended model on quarterly data according to the sign restrictions proposed by *Foroni - Furlanetto - Lepetit* (International Economic Review, 2018):

	gdp	prices	wages	une.	vac.
demand shock	+	+		−	
technology shock	+	−	+		
labor supply shock	+	−	−	+	
wage bargaining shock	+	−	−	−	+
matching efficiency shock	+	−	−	−	−

Thank you for your attention!

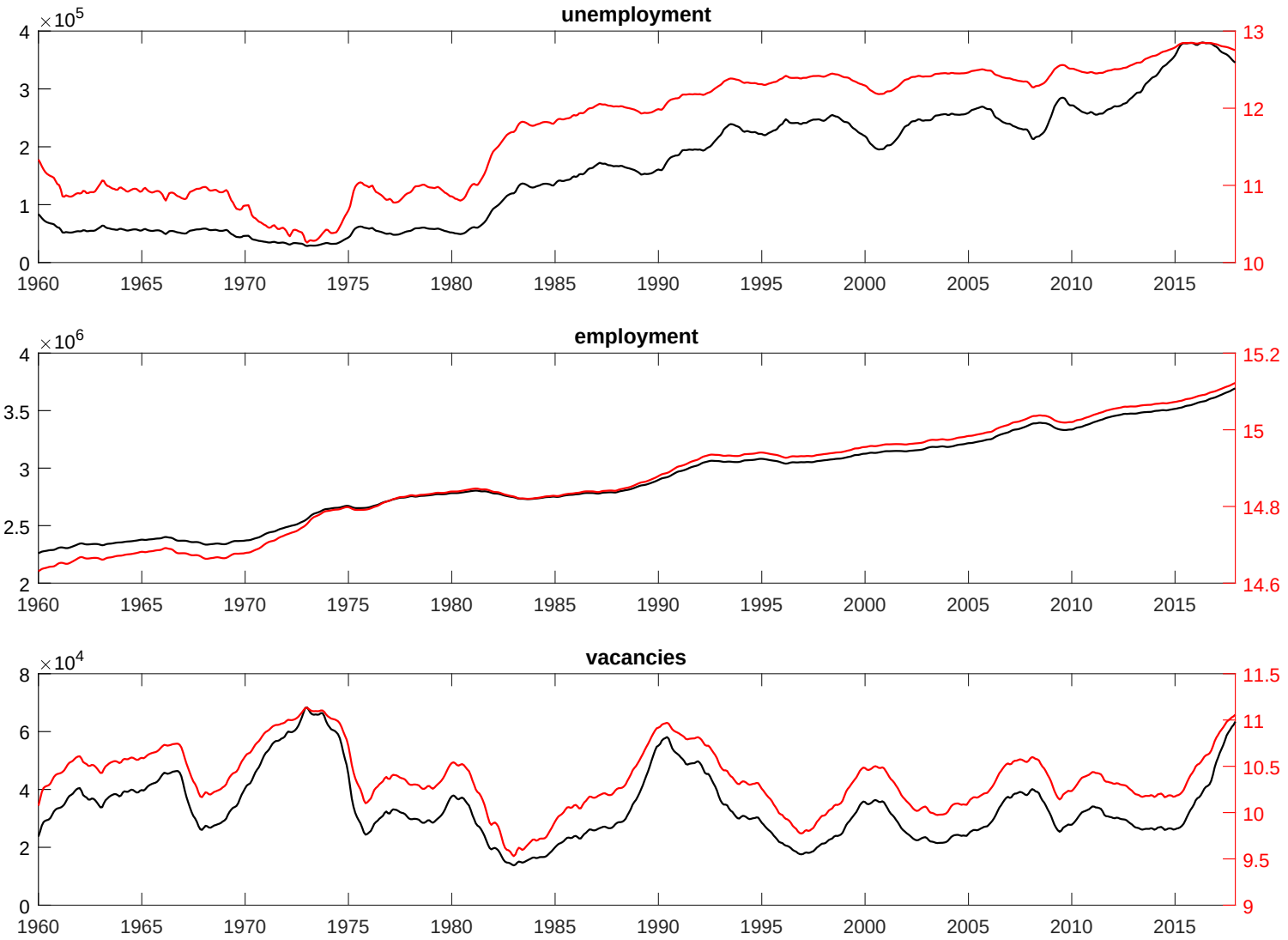
Appendix

Relation to the existing literature

the analysis

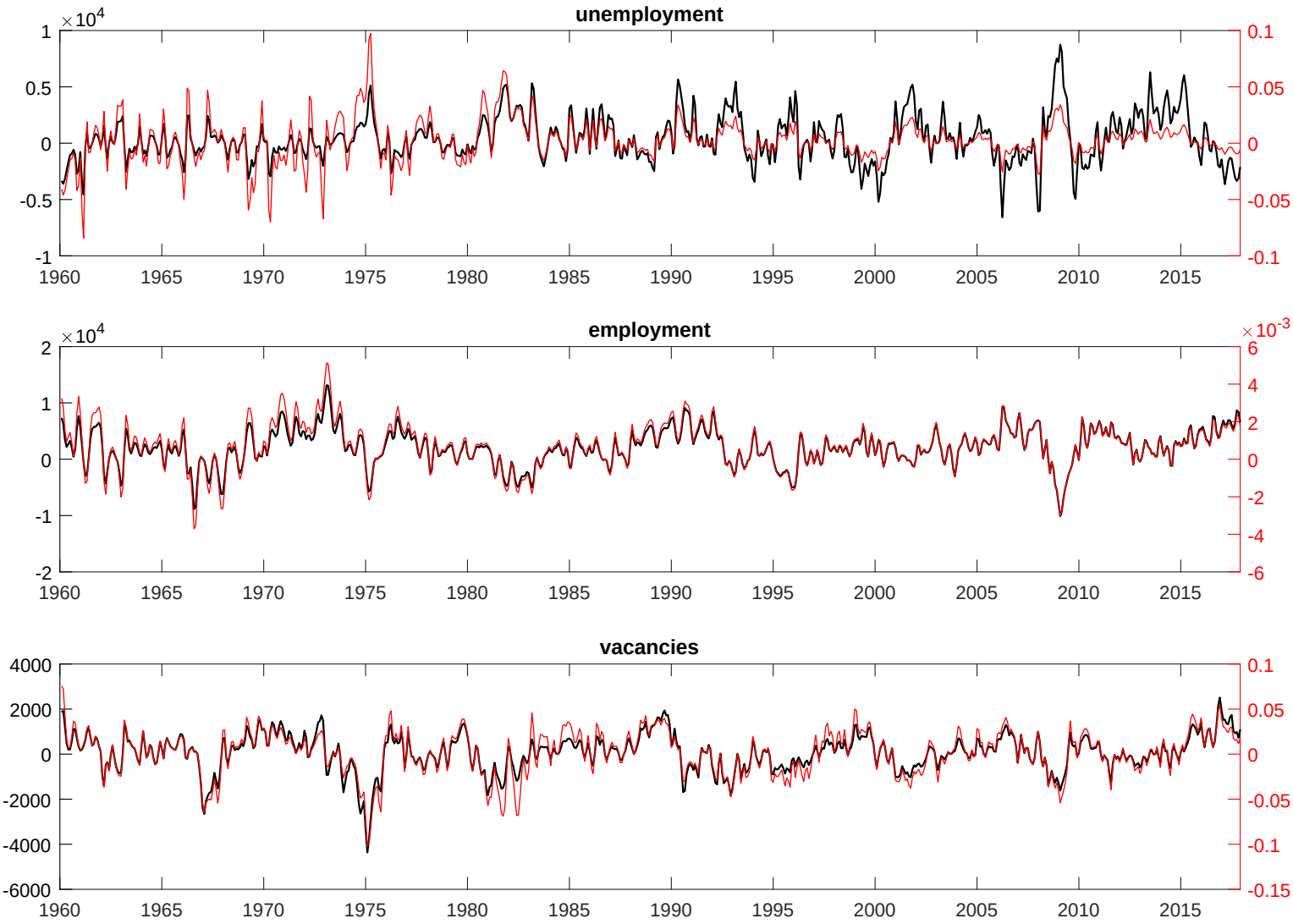
- is embedded in a search-and-matching labor market framework (**Elsby et al.**, JEL 2015)
- draws from New Keynesian models (**Foroni/Furlanetto/Lepetit**, IER 2016, **Galí/Smets/Wouters**, NBER-MA 2012)
  - to obtain the characteristics of a labor supply shock
  - to attribute economic content to other shocks
- adds to a very recent literature on macroeconomic effects of labor migration shocks in SVARs (**Furlanetto/Robstad**, 2018, Norges Bank WP)

Data in levels



Data in 1st differences

back



Implementation of sign restrictions

$$\mathbf{w_t} = \mathbf{B}\mathbf{u_t},$$

such that $\mathbf{\Sigma_w}$ is diagonal.
Then

$$\mathbf{\Sigma_u} = \mathbf{B}^{-1}\mathbf{\Sigma_w}\mathbf{B}^{-1'}$$

Without loss of generality let $\mathbf{\Sigma_w} = \mathbf{I}$, such that $\mathbf{\Sigma_u} = \mathbf{B}^{-1}\mathbf{B}^{-1'}$.
Then

$$\mathbf{\Sigma_u} = \mathbf{P}\mathbf{P}' = \mathbf{P}\mathbf{Q}\mathbf{Q}'\mathbf{P}'$$

where $\mathbf{P} = chol(\mathbf{\Sigma_u})$ and $\mathbf{Q}$ is orthogonal (accounts for *model uncertainty*) and chosen such that sign restrictions are satisfied on first 6 months. back