Quantifying the Benefits of Labor Mobility in a Currency Union

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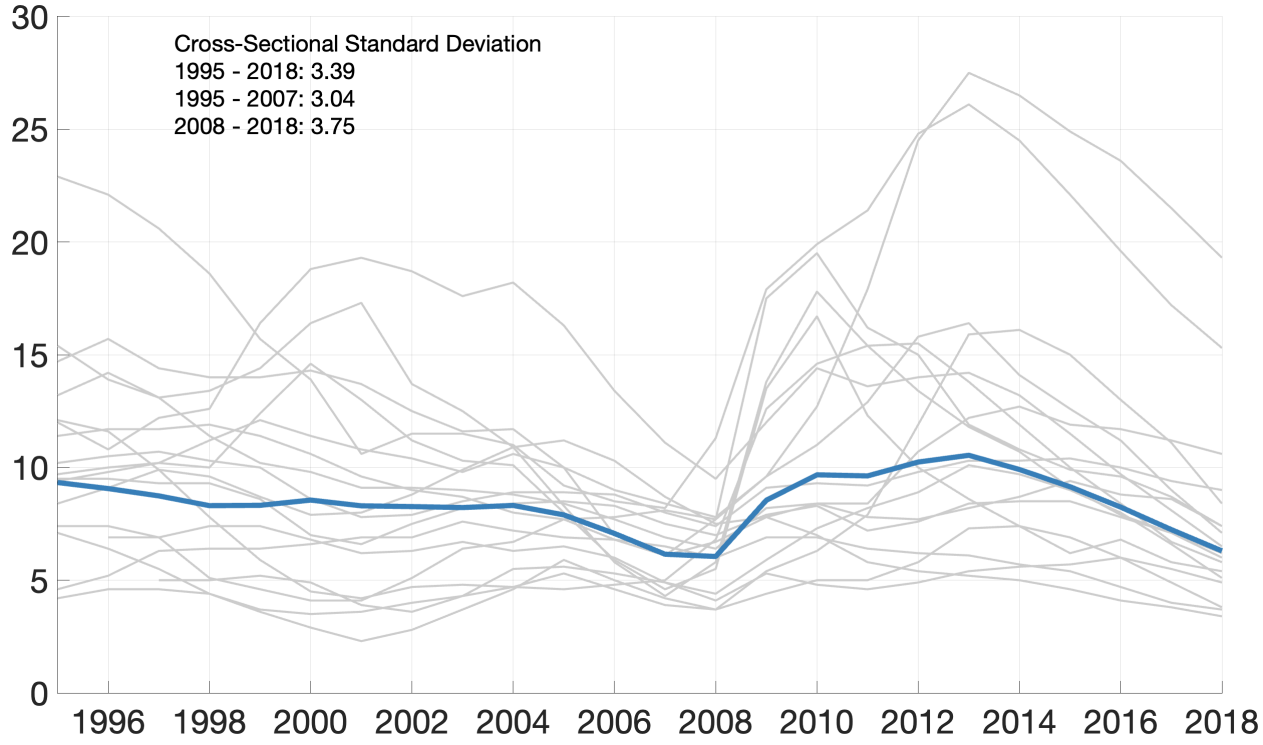
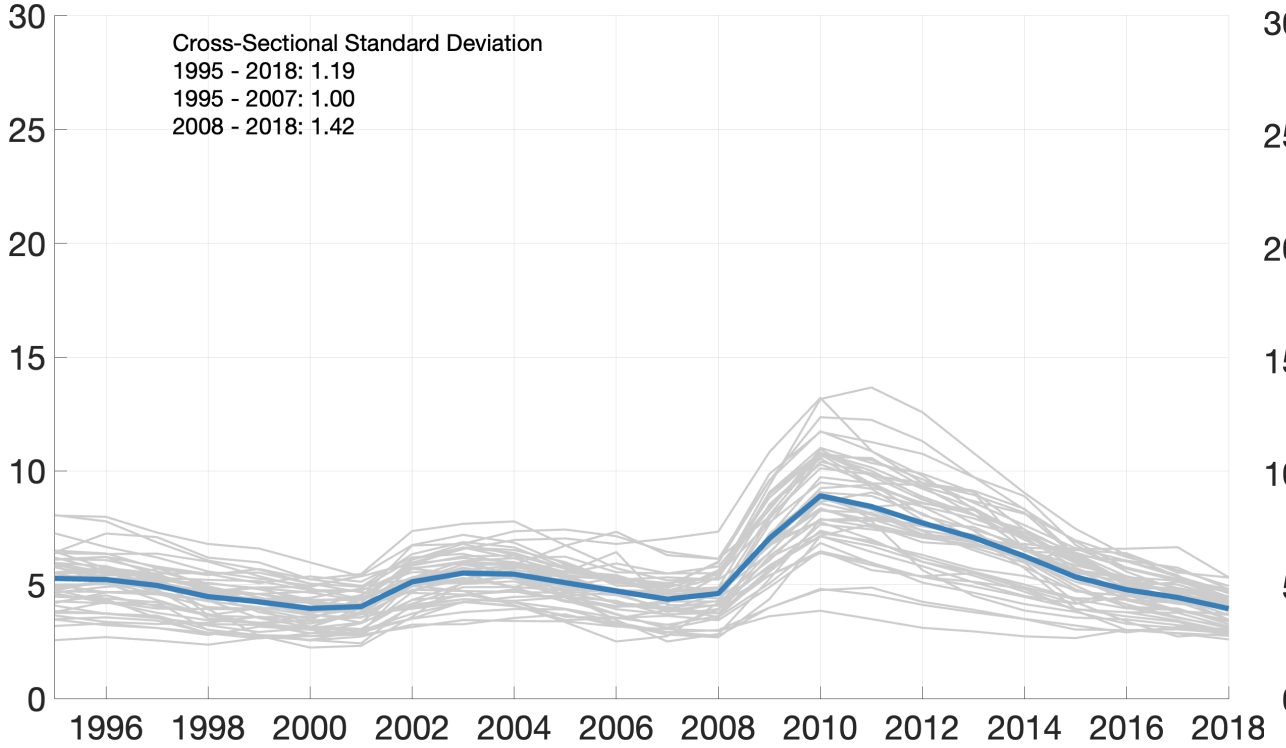
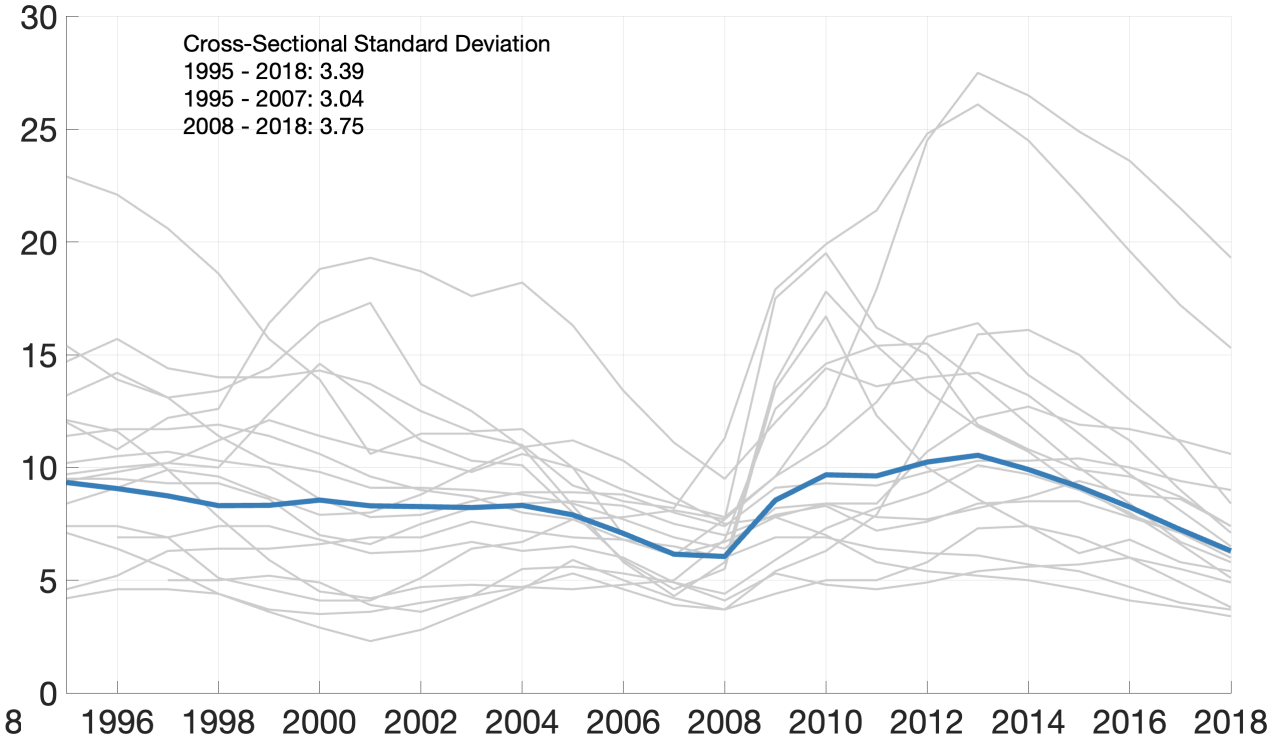
Unemployment rates in the euro area

- Wide dispersion in rates across euro area
- Stronger fluctuations at the country level compared to the union level
- Common currency limits the set of policy responses to country-specific shocks



Unemployment rates in the U.S. vs. the euro area





Mundell (1961): *"If factors are mobile across national boundaries then a flexible exchange rate becomes unnecessary."*

- Factor mobility substitutes for independent monetary policy
- To what extent is this true for the euro area?
- What are the gains if labor was as mobile as it is in the United States?
  - Does migration help reduce the volatility of unemployment?
  - How costly is it for European countries to be in the currency union? Does labor mobility reduce that cost?

Outline

- Present data contrasting migration in the euro area with the United States
    - Updated results on US labor mobility
- Describe an open-economy model with migration calibrated to the euro area
- Counterfactual experiments: What if…?

Migration Data

United States

- IRS, based on # tax returns that migrate
- 48 states (Lower 48)
- 1977-2018

Europe

- Eurostat, national sources, flows reconciled using methodology for trade data
- Belgium, Germany, Ireland, Spain, France, Italy, Netherlands, Austria, Portugal, Finland, Greece, Slovenia, Cyprus, Malta, Slovakia, Estonia, Latvia, Lithuania
- 1995-2018

Less migration in Europe than in the U.S.

$$\text{Migration rate}_{i,t} = \frac{1}{2}\frac{\text{Inmigration}_{i,t} + \text{Outmigration}_{i,t}}{\text{Pop}_{i,t}}$$

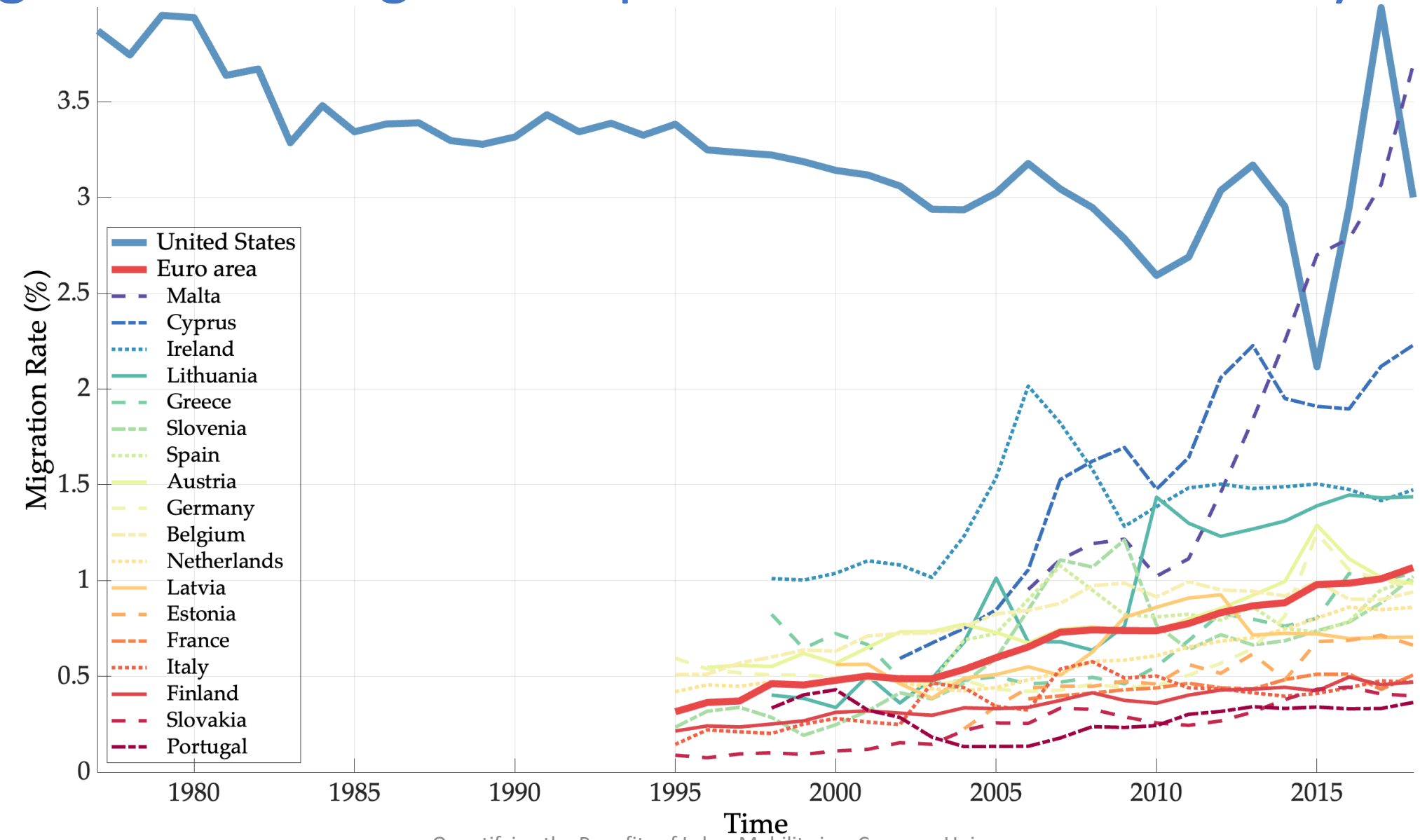
	Unit	U.S.	Euro
Regions	#	48	18
Population	m	5.5	18.2
Migration Rate	%	3.3	0.7

Less migration in Europe than in the U.S.

$$\text{Net migration rate}_{i,t} = \frac{\text{Inmigration}_{i,t} - \text{Outmigration}_{i,t}}{\text{Pop}_{i,t}}$$

	Unit	U.S.	Euro
Regions	#	48	18
Population	m	5.5	18.2
Migration Rate	%	3.3	0.7
Net migration rate (std. dev.)	%	0.5	0.4

Migration is rising in Europe… but not to U.S. levels yet



- IRS
  - Based on tax returns
  - Should be objective and exhaustive, to the extent that changes in addresses for filed individual income tax returns capture all migration

- ACS
  - Based on surveys
  - There could be issues with
    - Sample size
    - Response rates
    - Coverage
    - Human errors
      (e.g. https://www.census.gov/programs-surveys/acs/technical-documentation/errata/109.html)

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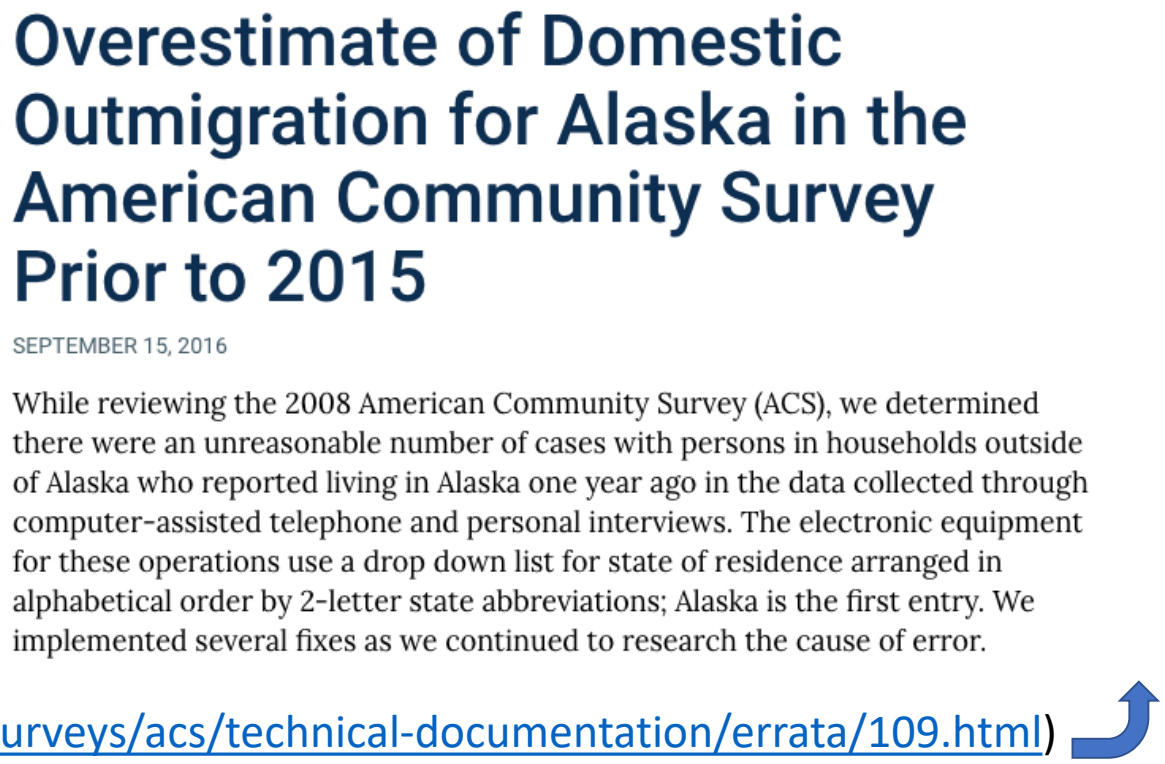
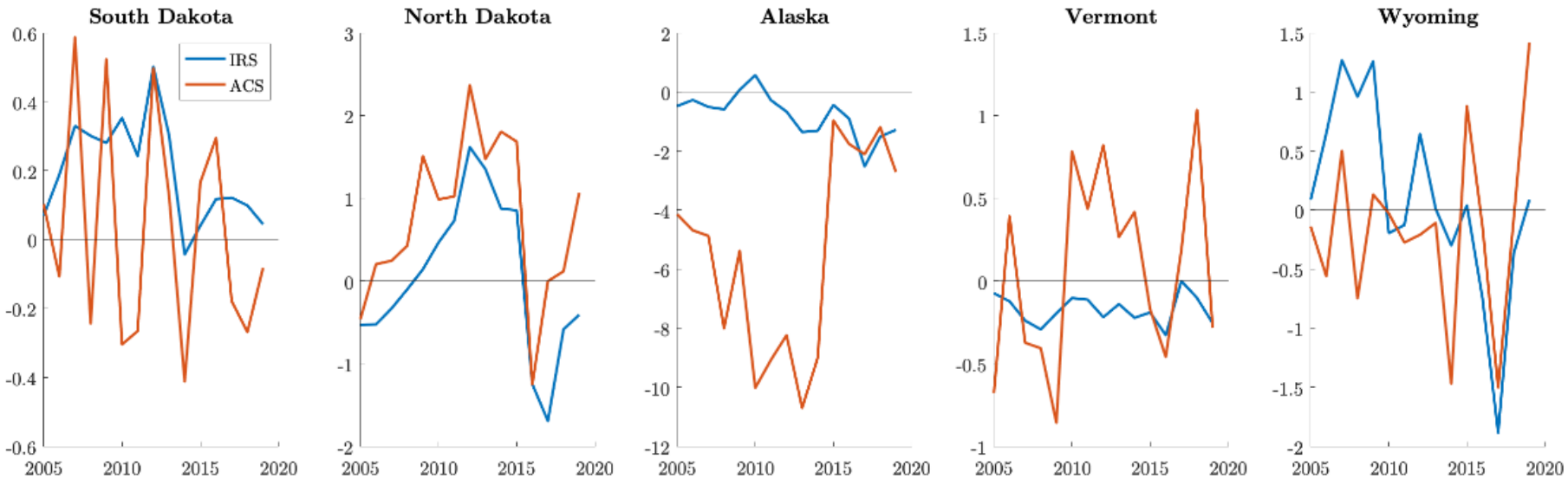


Overestimate of Domestic Outmigration for Alaska in the American Community Survey Prior to 2015

SEPTEMBER 15, 2016

While reviewing the 2008 American Community Survey (ACS), we determined there were an unreasonable number of cases with persons in households outside of Alaska who reported living in Alaska one year ago in the data collected through computer-assisted telephone and personal interviews. The electronic equipment for these operations use a drop down list for state of residence arranged in alphabetical order by 2-letter state abbreviations; Alaska is the first entry. We implemented several fixes as we continued to research the cause of error.


South Dakota
North Dakota
Alaska
Vermont
Wyoming
IRS
ACS
2005
2010
2015
2020

Cross-sectional dispersion in unemployment rates

Double de-meaning the data

Define:

$$\widehat{ur}_{i,t} \equiv ur_{i,t} - ur_i - (ur_t - ur)$$

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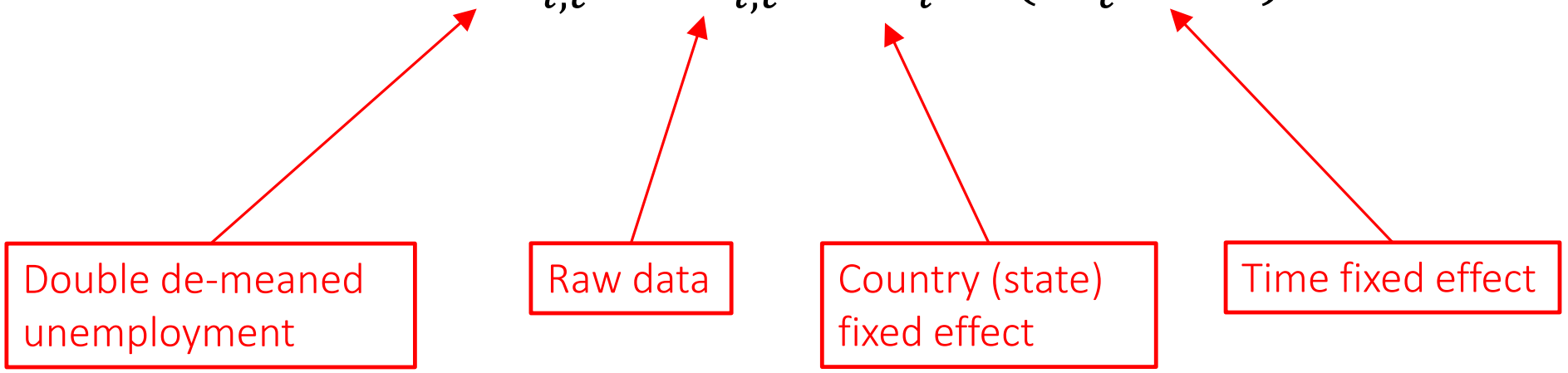


Net Migration and Unemployment

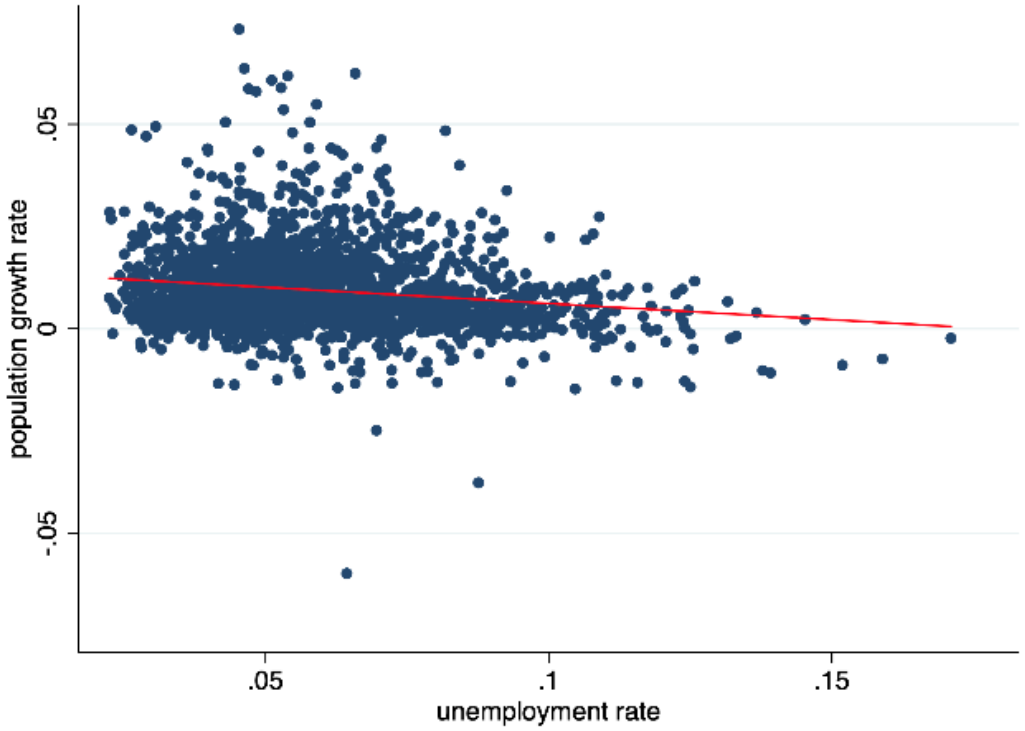
Basic regression specification:

$$nm_{i,t} = \alpha + \beta ur_{i,t} + \varepsilon_{i,t}$$

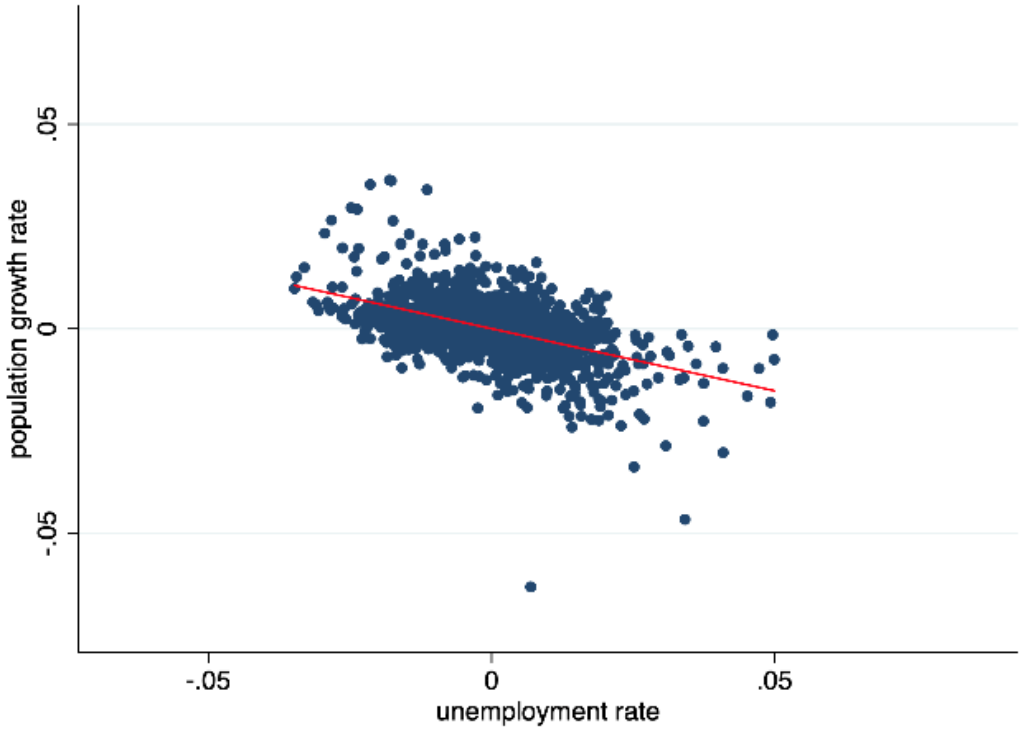
Net migration from region *i*

Unemployment rate in region *i*

Detrending / Fixed Effects



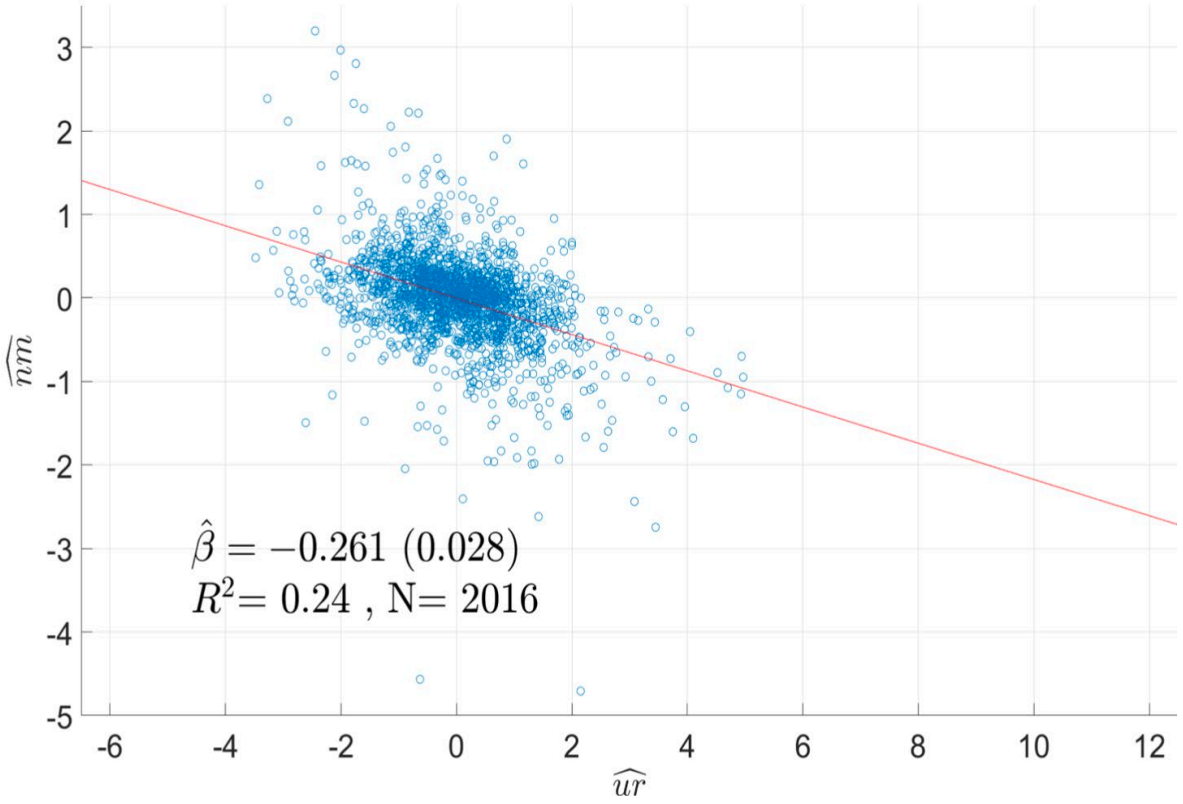
Raw data



Demeaned

Does migration respond to economic conditions?

$$\widehat{nm}_{i,t} = \beta \widehat{ur}_{i,t} + \varepsilon_{i,t}$$



United States, 1977 - 2018

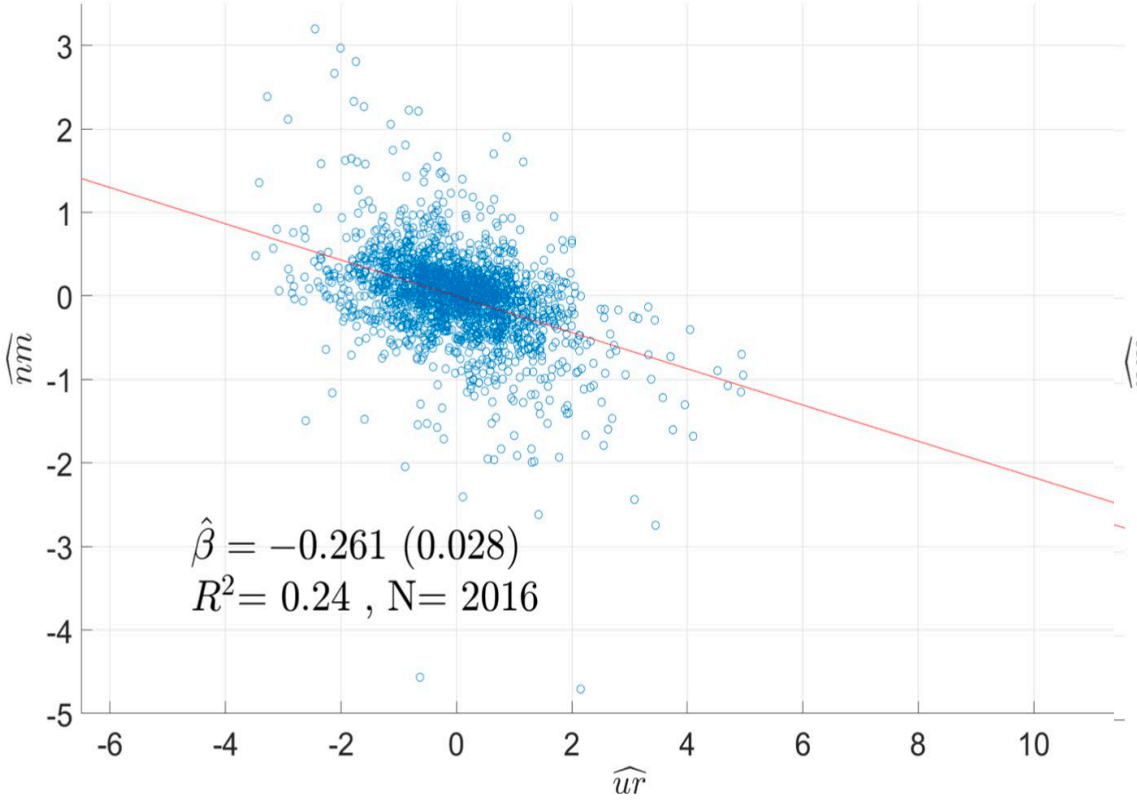
Suppose a labor force participation rate of 0.65.

Then, for every increase of 100 unemployed people,
40 (=26/0.65) people move out.

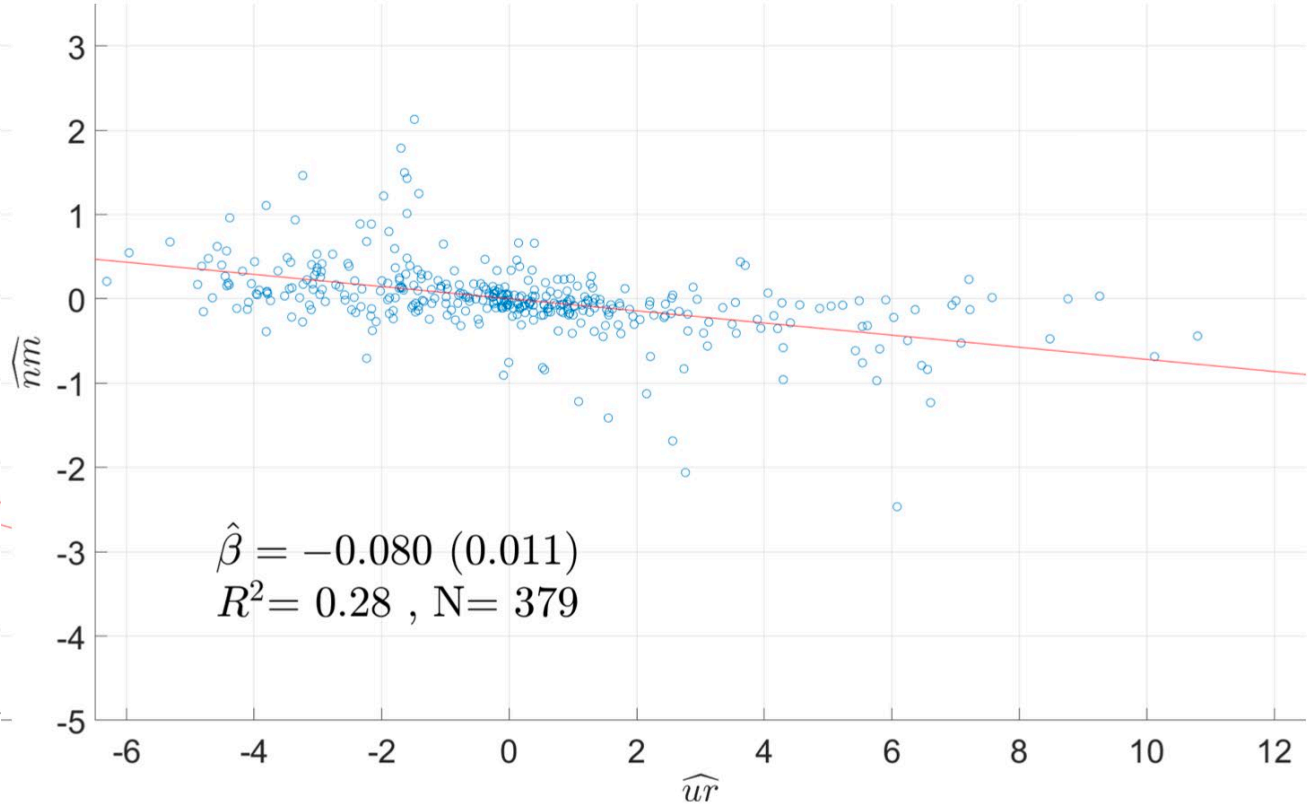
Does migration respond to economic conditions?

$$\widehat{nm}_{i,t} = \beta \widehat{ur}_{i,t} + \varepsilon_{i,t}$$

Response in euro area less than a third.

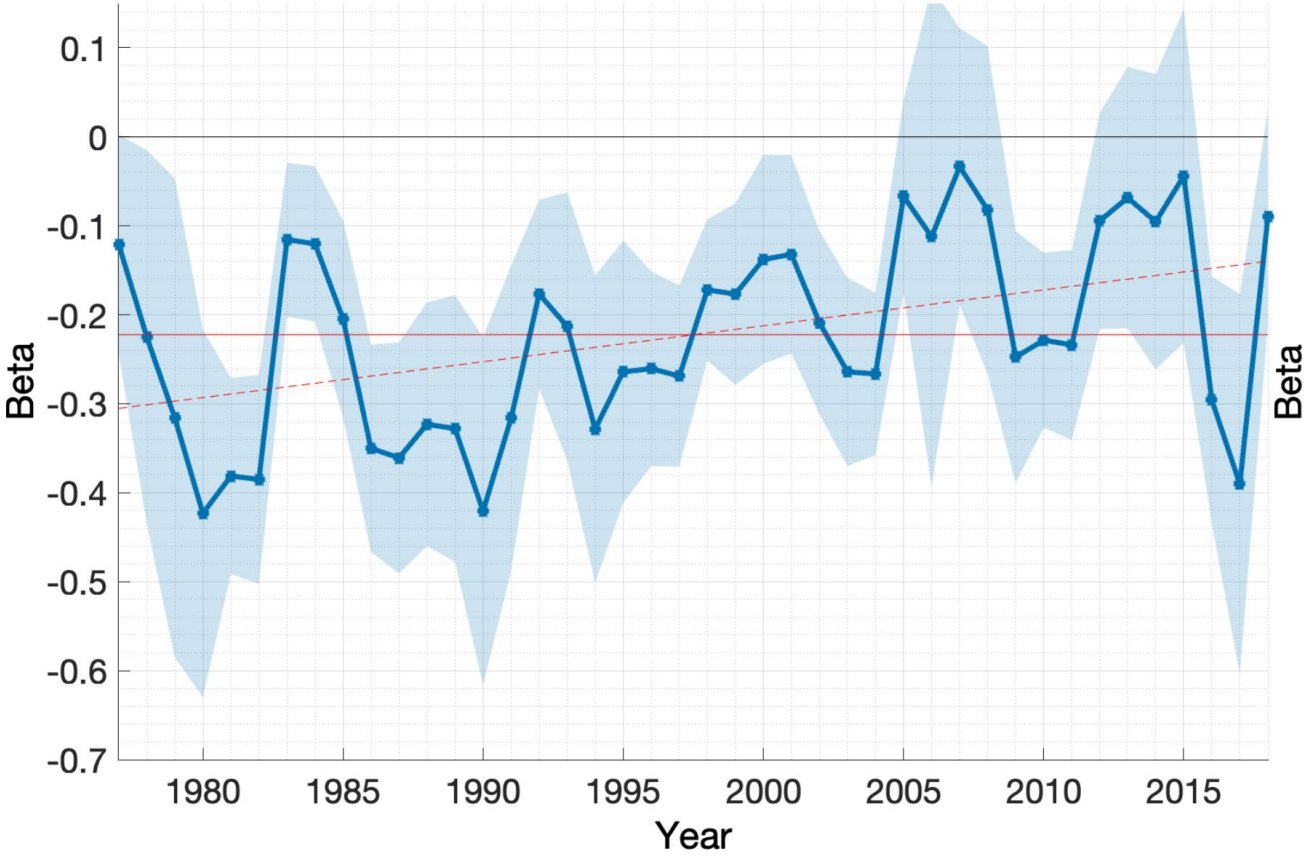


United States, 1977 - 2018

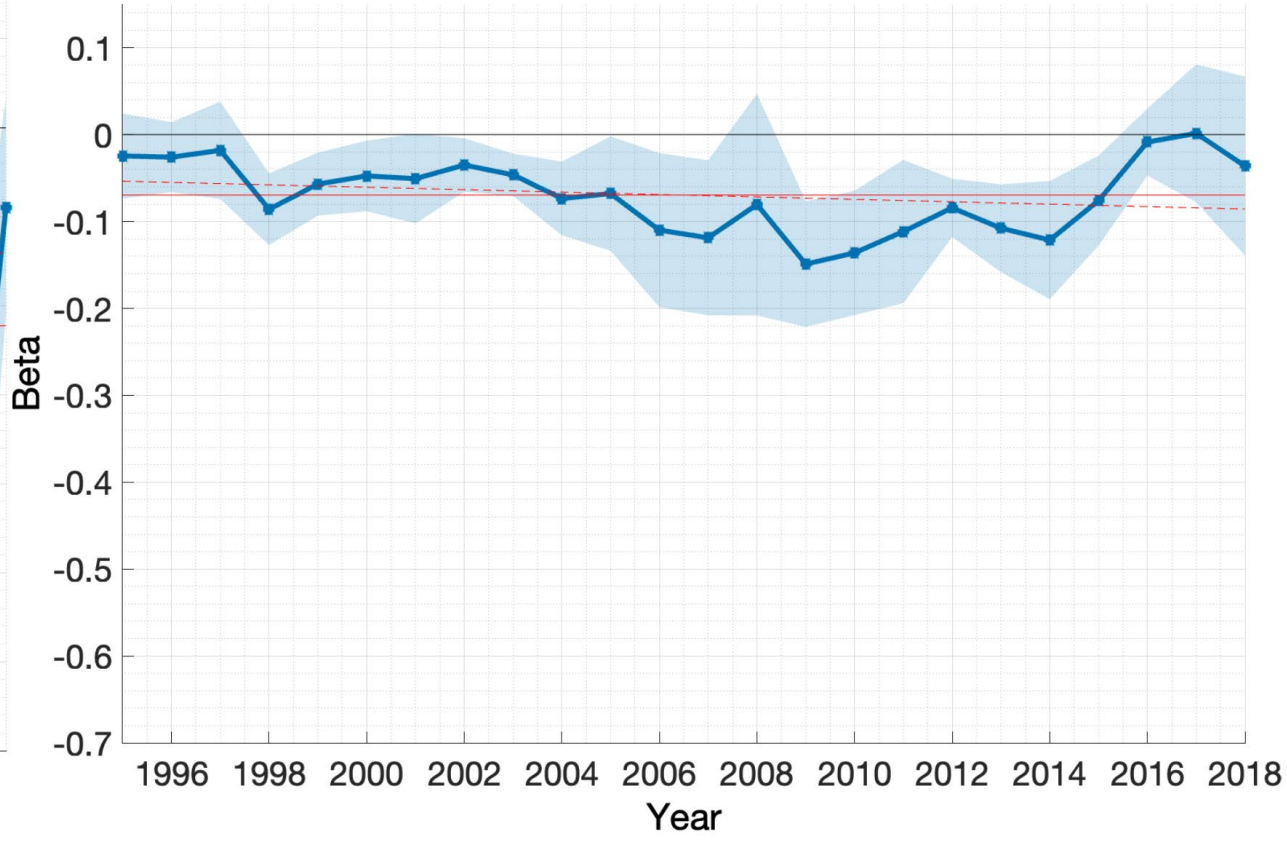


Euro area, 1995 - 2018

Does migration respond to economic conditions?

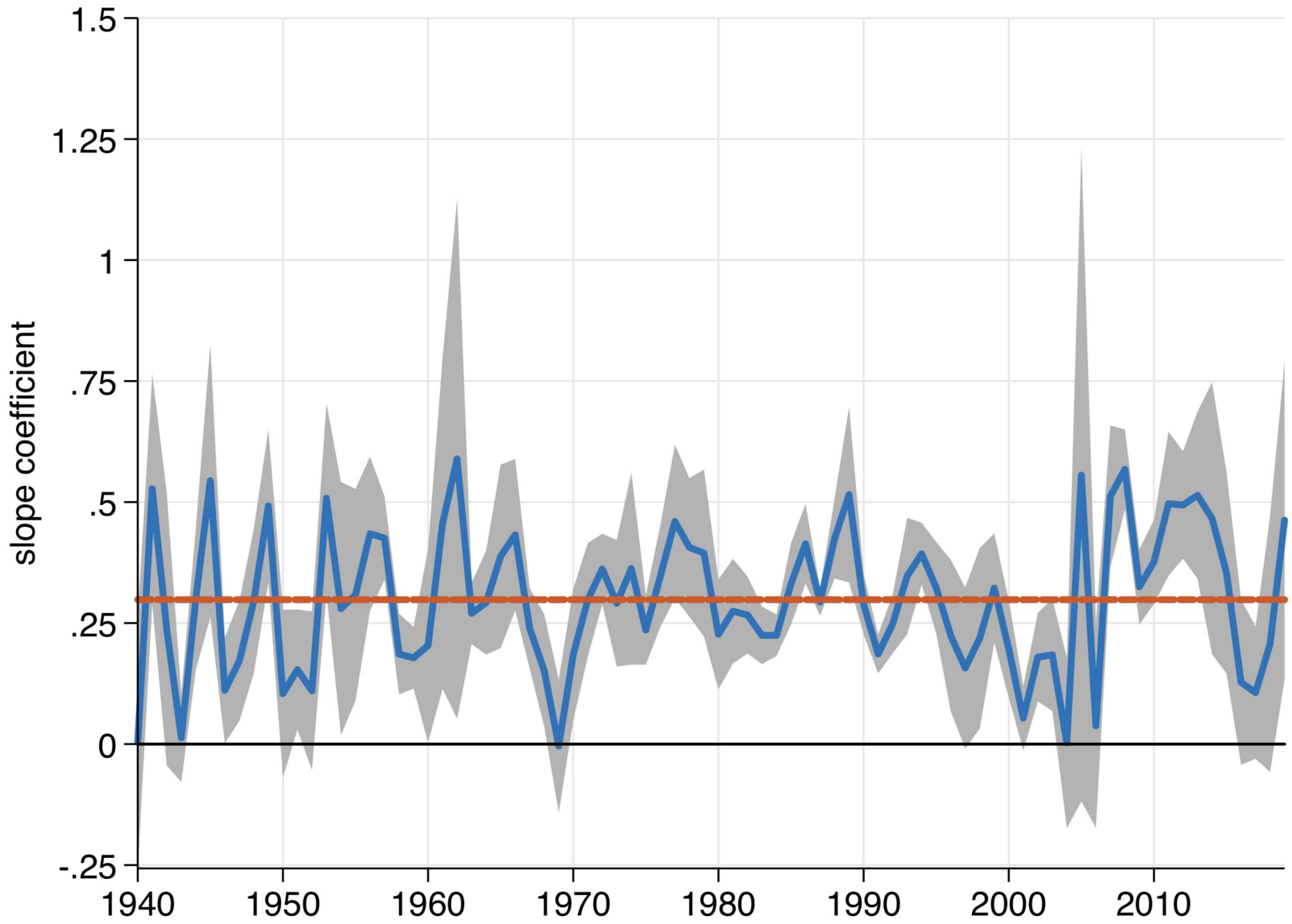


(a) United States: 1977 - 2018

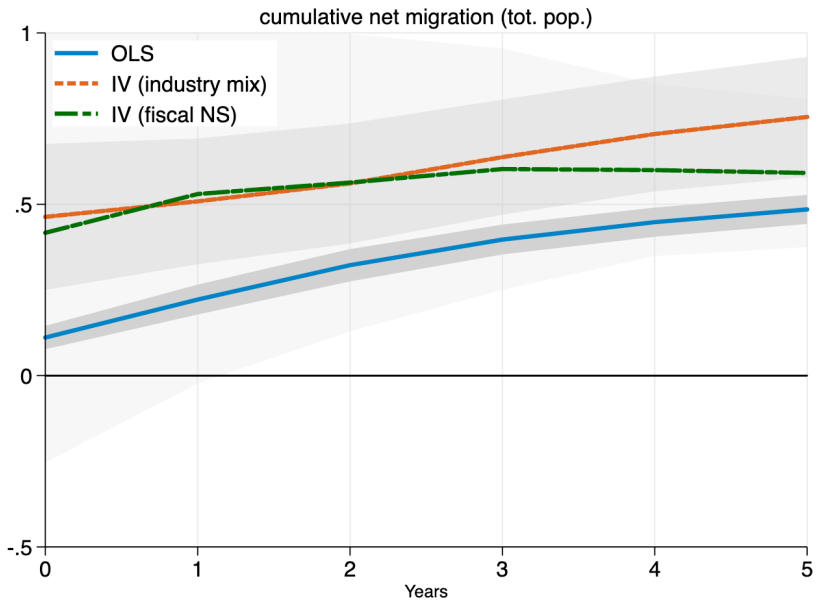


(b) Euro area: 1995 - 2018

Relationship between employment growth and migration, 1940 - 2019



Instruments for the employment growth “shock”.

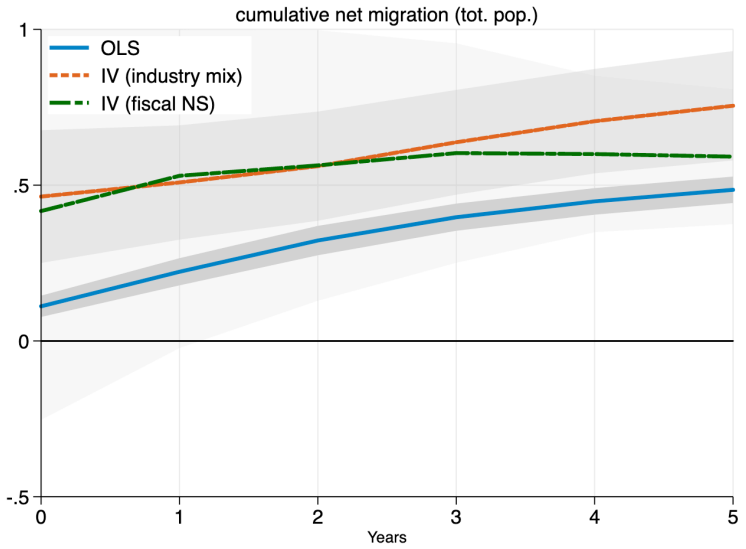


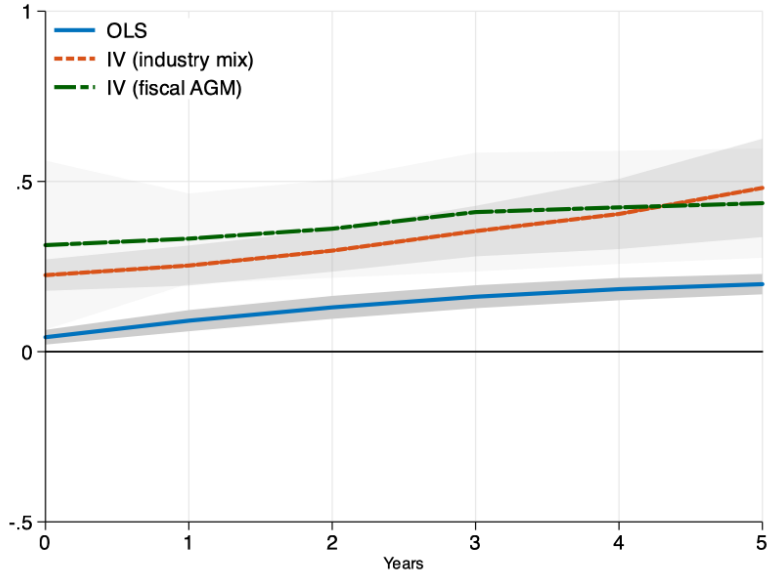
$$\widehat{nm}_{i,t} = \beta \widehat{empl\ growth}_{i,t} + \varepsilon_{i,t}$$

Bartik instrument – industry share weights
Nakamura-Steinsson fiscal shocks

Regression run at the state level

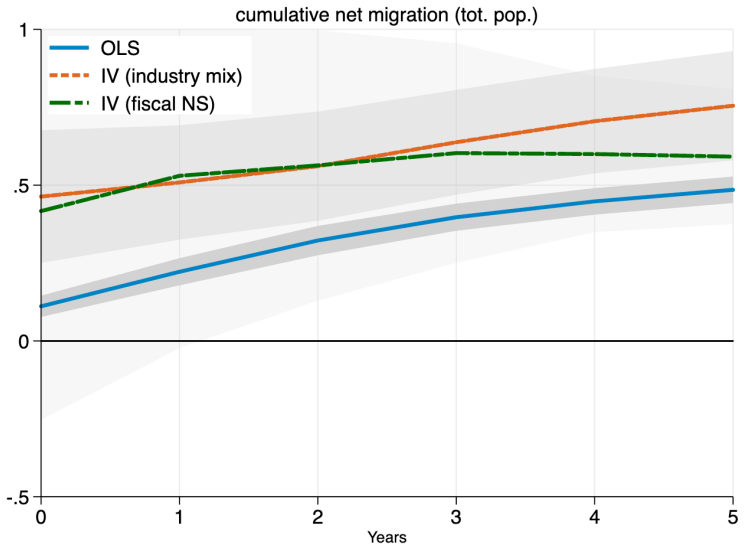
Migration responses to “identified” shocks

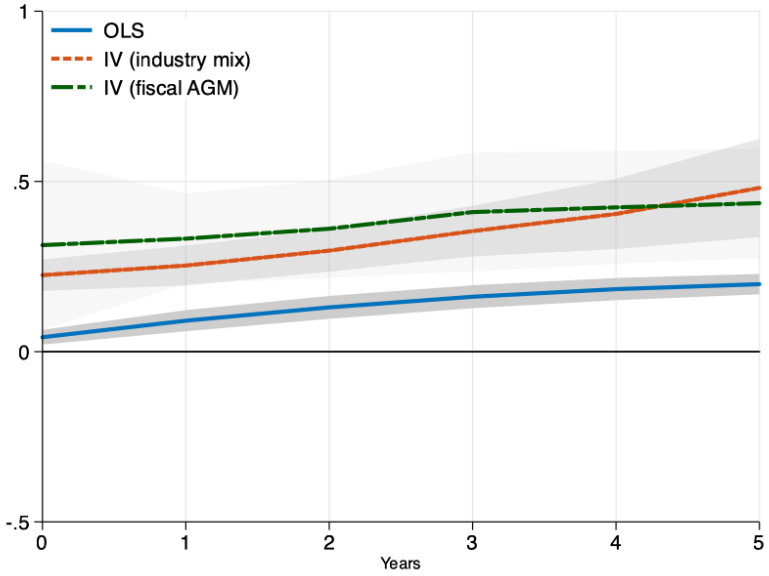


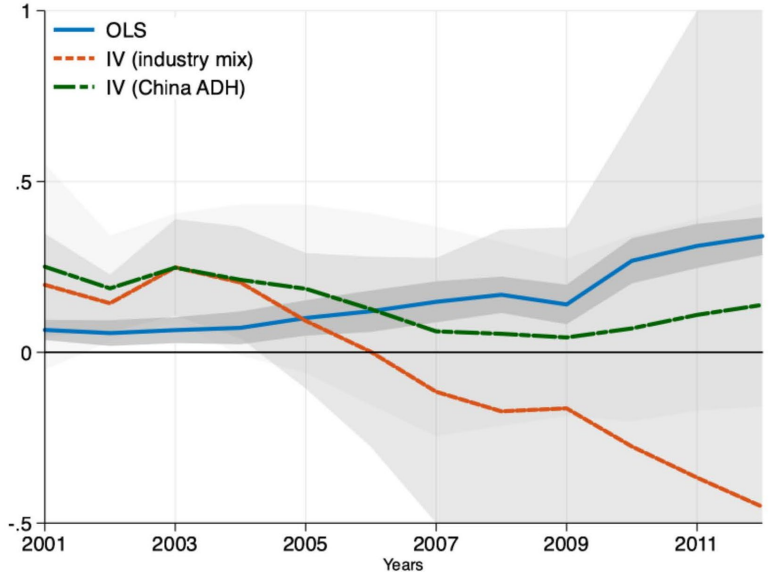


Fiscal shock ala Auerbach, Gorodnichenko and Murphy at the CBSA level

Migration responses to “identified” shocks

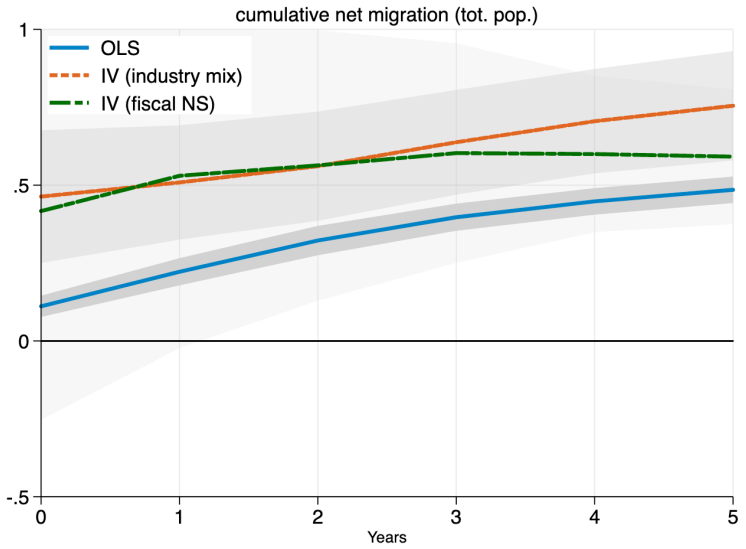


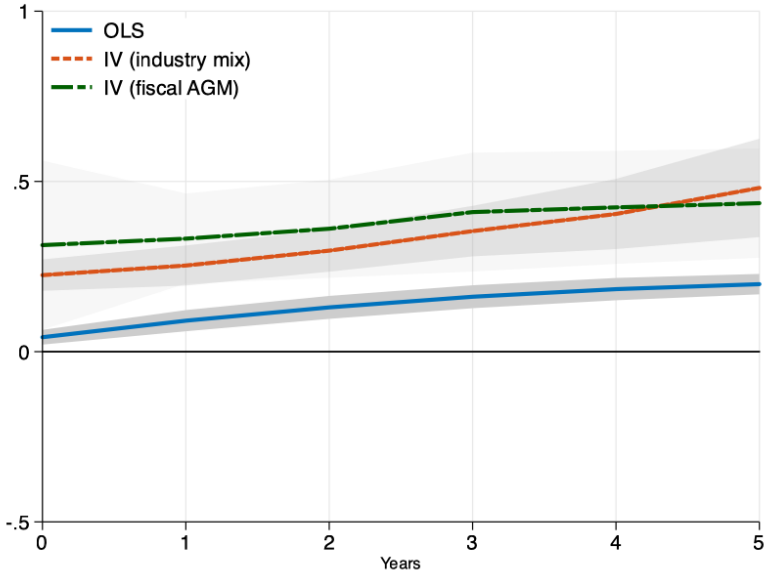


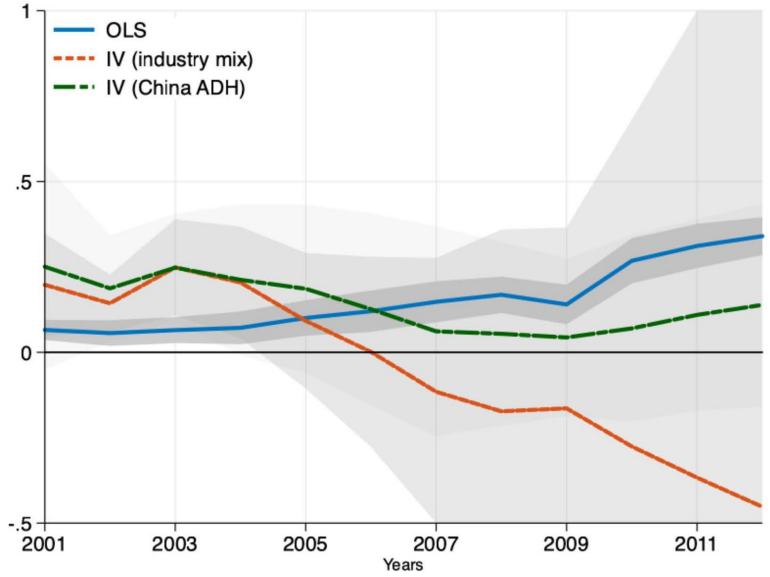


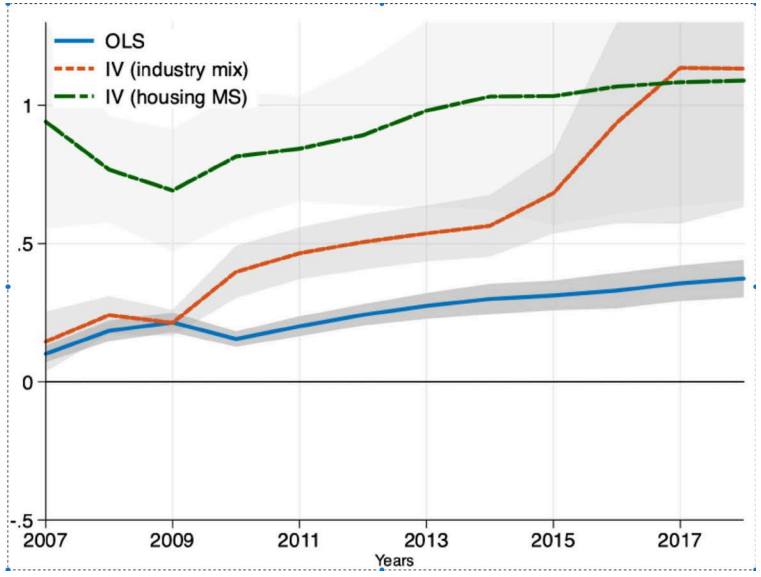
China shock ala Autor, Dorn and Hanson at the CZ level

Migration responses to “identified” shocks









Housing shock ala Mian and Sufi at the county level

Migration during the Great Recession

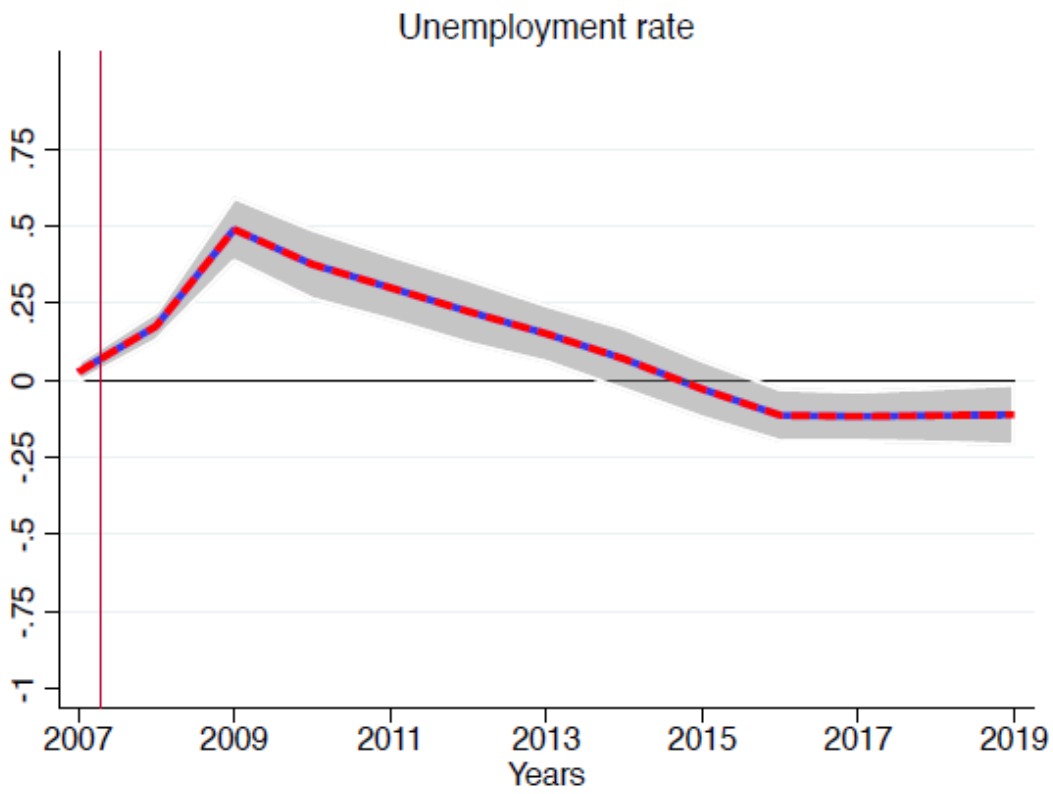
- Local Projections (Jorda)
- Cumulative population response

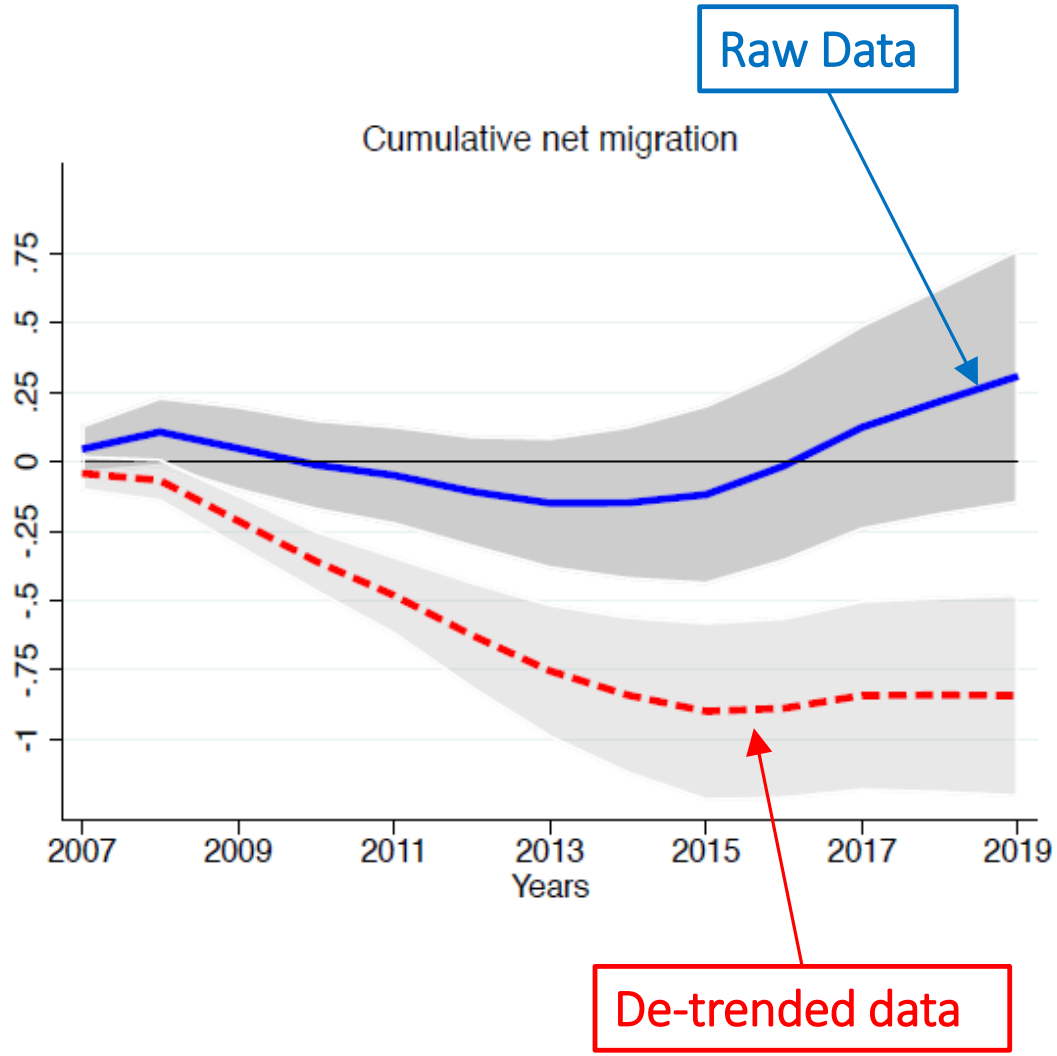
$$\sum_{s=1}^{h} nm_{i,2006+s} = \alpha_h - \beta_h \sum_j s_{i,j} \frac{L_{j,2009} - L_{j,2006}}{L_{j,2006}} + \varepsilon_{i,h}$$

Cumulative population change from 2006

Predicted employment growth 2006-2009 (Bartik)

Migration during the Great Recession





Summary of empirical results

- Clear evidence that labor responds to regional unemployment differentials
  - Source of data and detrending matters
- US baseline elasticity (state) $\approx -0.26 \text{ to } -0.30$
  - For every one percent increase in unemployment, annual net migration falls by roughly 3/10 of one percent.
  - If 100 people are suddenly unemployed, roughly $47 = 0.30/LFP$ people leave the state
- Instrumented changes in employment suggest larger responses
- Less migration in Europe (detailed European results are in progress)

To evaluate quantitatively Mundell's trade-off we need …

- Multi-country model of a currency union (18 countries +RoW)
- Labor migration (Artuc et al. 2010, Caliendo et al. 2015)
- Unemployment (Erceg et al. 2000, Gali 2011)
- Trade (Eaton and Kortum 2002)
- Sticky wages and sticky prices
- Country-specific shocks

Model: Population

$$\mathbb{N}_{i,t} = \mathbb{N}_i^k + \mathbb{N}_{i,t}^w$$

Capital owners $\mathbb{N}_i^k$

- Immobile
- Labor and capital income
- Inelastic labor supply
- Trade in international (non-contingent) bonds

Workers $\mathbb{N}_{i,t}^w$

- Mobile
- Labor income only
- Inelastic labor supply, but can change location of work
- Hand-to-mouth

Model: Migration

A worker who is currently living in country *i* chooses location according to:

$$v_{i,t} = \max_j \left\{ U\left(c_{j,t}^w\right) + \frac{1}{\gamma}\epsilon_{j,t} - \tau_j^i + \beta\, \mathbb{E}_t\left(V_{j,t+1}\right) \right\}$$

Utility from consuming in country *j*

Random idiosyncratic benefit from being in country *j*

Cost of moving from *i* to *j*

Expected value from living in country *j* in *t+1*

$\epsilon_{j,t} \sim$ Type-I extreme value distribution

Higher γ makes relocation less random

Was Mundell right? Does labor mobility substitute for flexible exchange rates?

Step 1: Fit the model to European data.

Calibrate most parameters, estimate a few.

Recover supply and demand shocks by matching time series for $C_{i,t}$ and $ur_{i,t}$

Step 2: Use the model to answer 2 questions

1. Does labor mobility stabilize economies?
2. Does labor mobility reduce the cost of joining a currency union?

Results

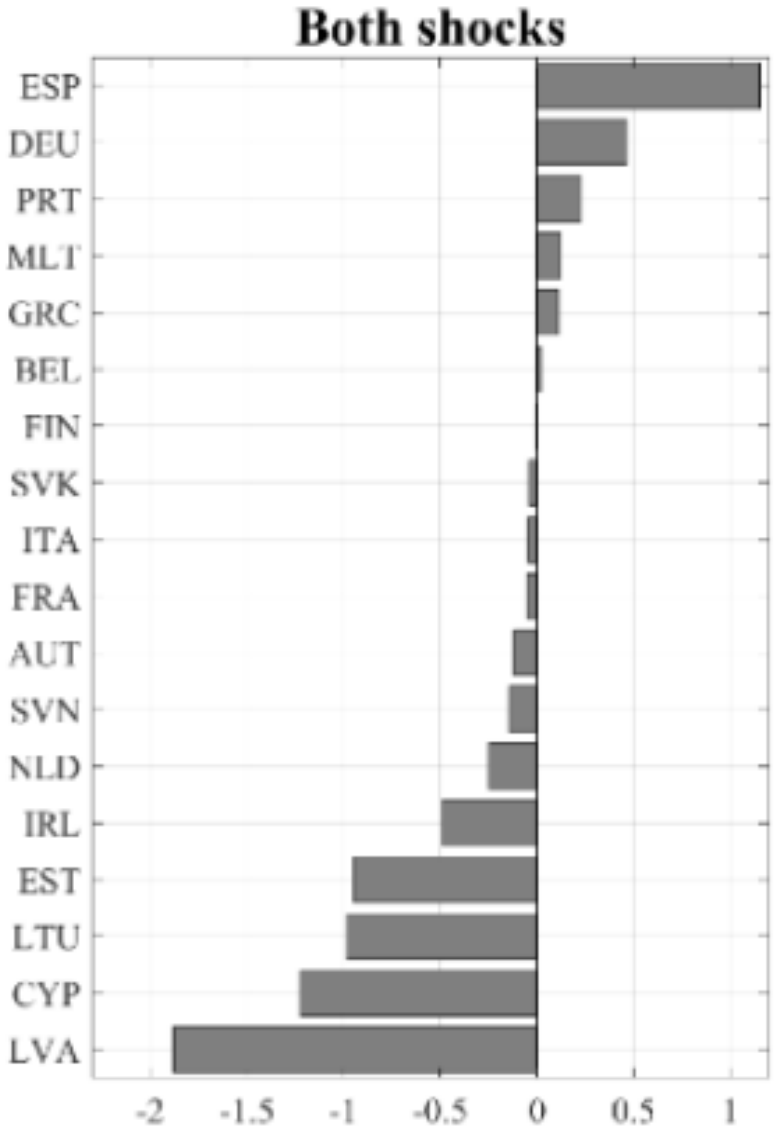
1. Increased labor mobility decreases the volatility of unemployment and per capita fluctuations

   But exacerbates aggregate fluctuations

2. Increased labor mobility reduces the cost of being in a currency union

   But not for all countries

2. Welfare cost of a currency union



For the average euro area citizen, mobility would reduce the cost of the union by 25 percent…

… but there is substantial heterogeneity across countries!

Average gains driven by Spain and Germany.

For most countries, mobility makes union more costly (Mundell upside down!)

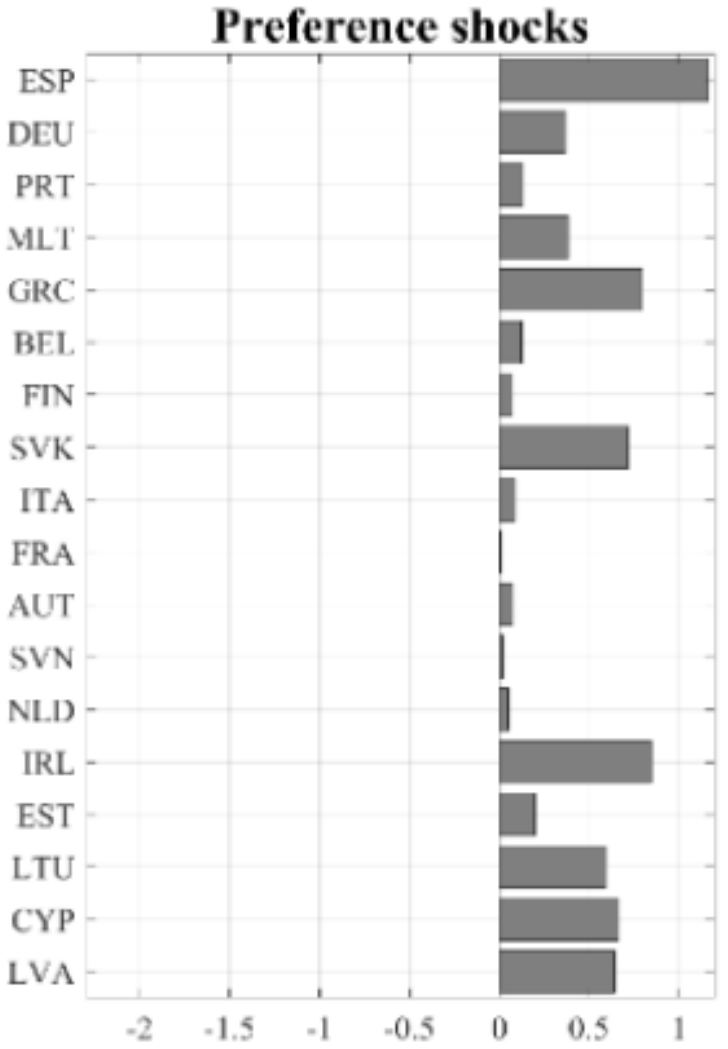
Why?

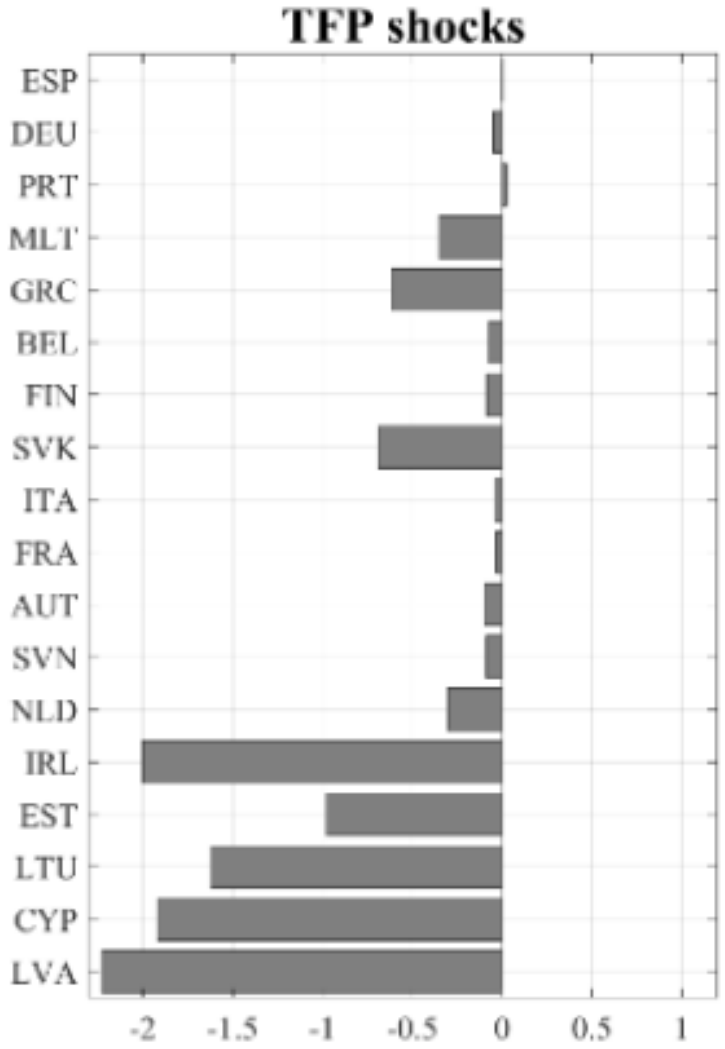
2. Welfare cost of a currency union

Simulate model feeding in only 1 type of shock at a time.

In a world with preference shocks, mobility reduces cost of union.

In a world with TFP shocks, mobility raises cost of union

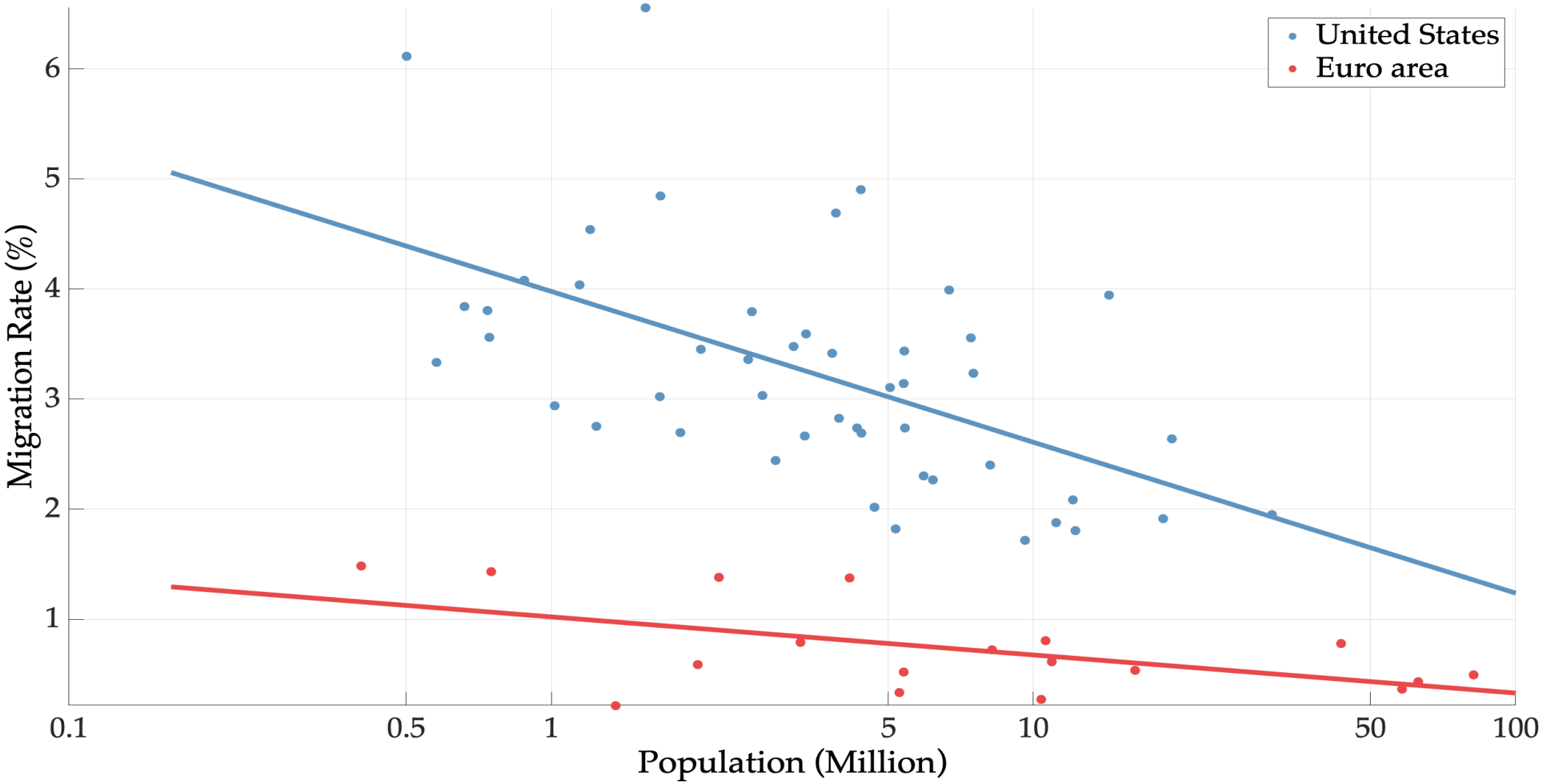




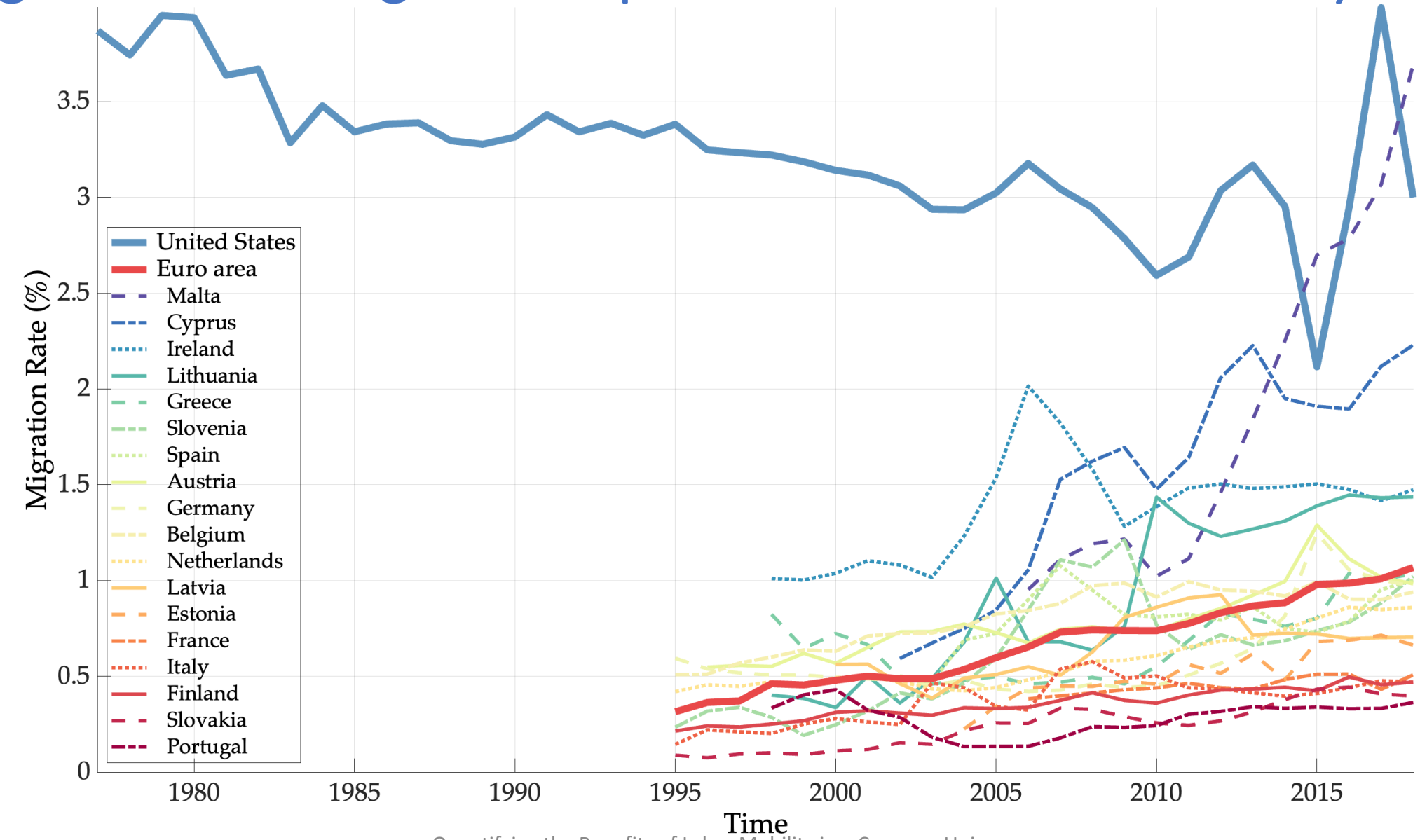
Was Mundell right? Yes and no.

- Euro area country unemployment rates are about 2.5 more volatile than U.S. state unemployment rates
- Higher (U.S.-level) labor mobility in Europe would reduce this gap by about 25%.
- Welfare cost of currency union would fall by one half,…
- … but not all countries gain!

Migration is lower in Europe…
… even after controlling for country size



Migration is rising in Europe… but not to U.S. levels yet



Most unemployment is idiosyncratic in the euro area

Double de-meaning the data: $\widehat{ur}_{i,t} \equiv ur_{i,t} - ur_i - (ur_t - ur)$

$$var(ur_{i,t} - ur_i) = var(\widehat{ur}_{i,t}) + var(ur_t) + 2cov(\widehat{ur}_{i,t}, ur_t)$$

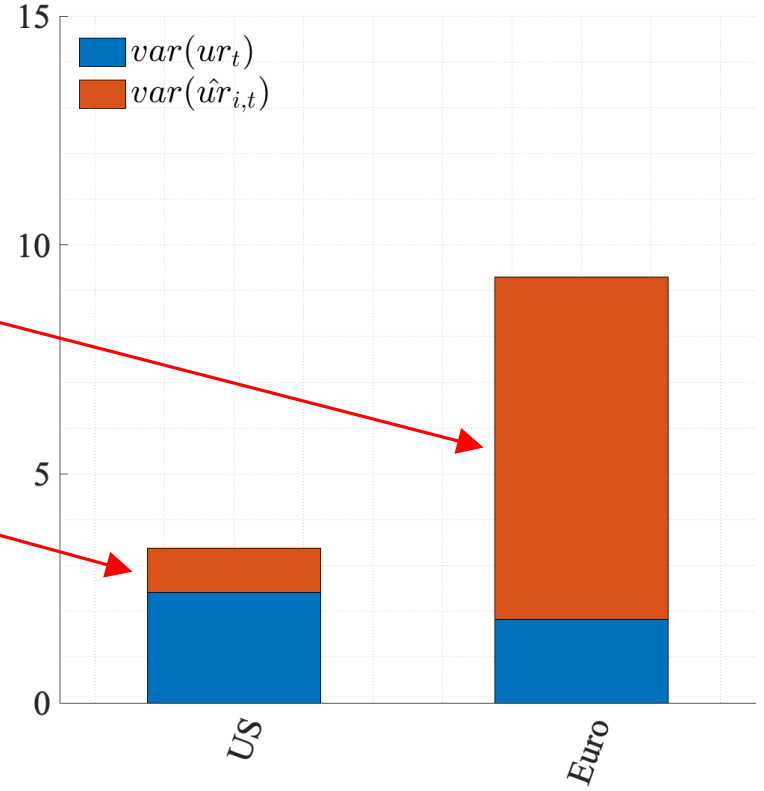
Idiosyncratic component accounts for

80% of total fluctuations in the euro area

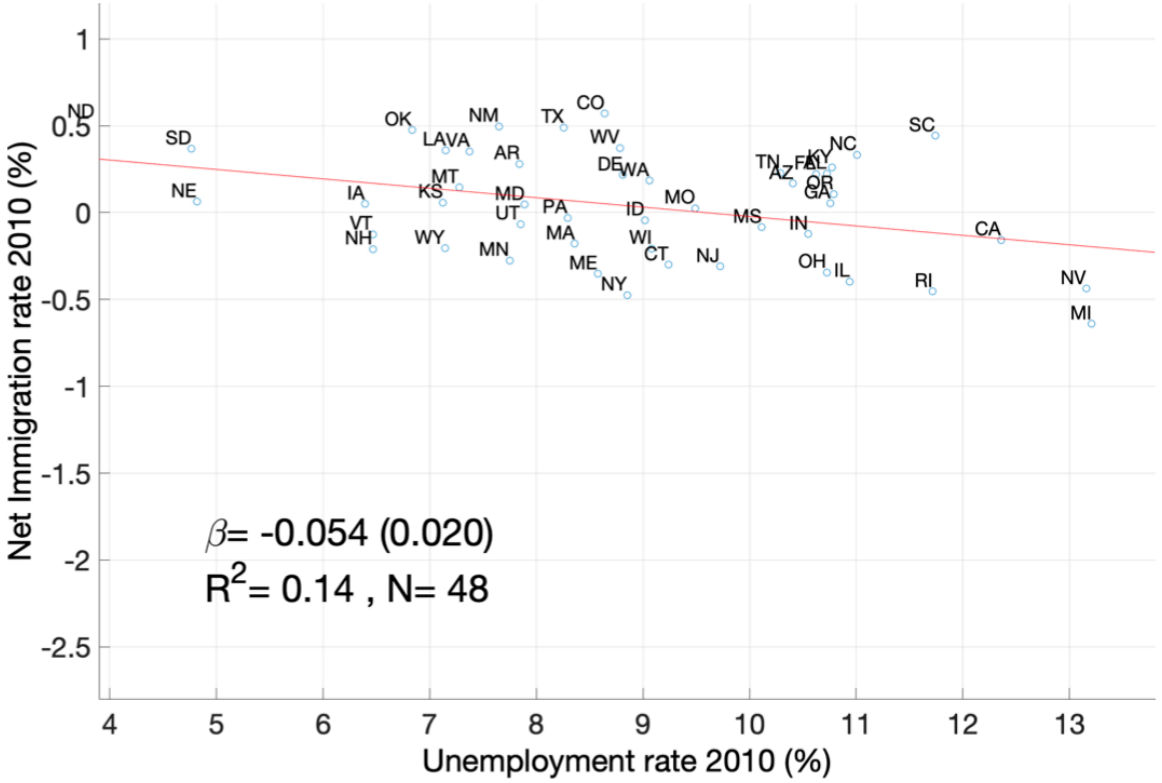
but only 30% in the U.S.

Std. deviation of idiosyncratic component:

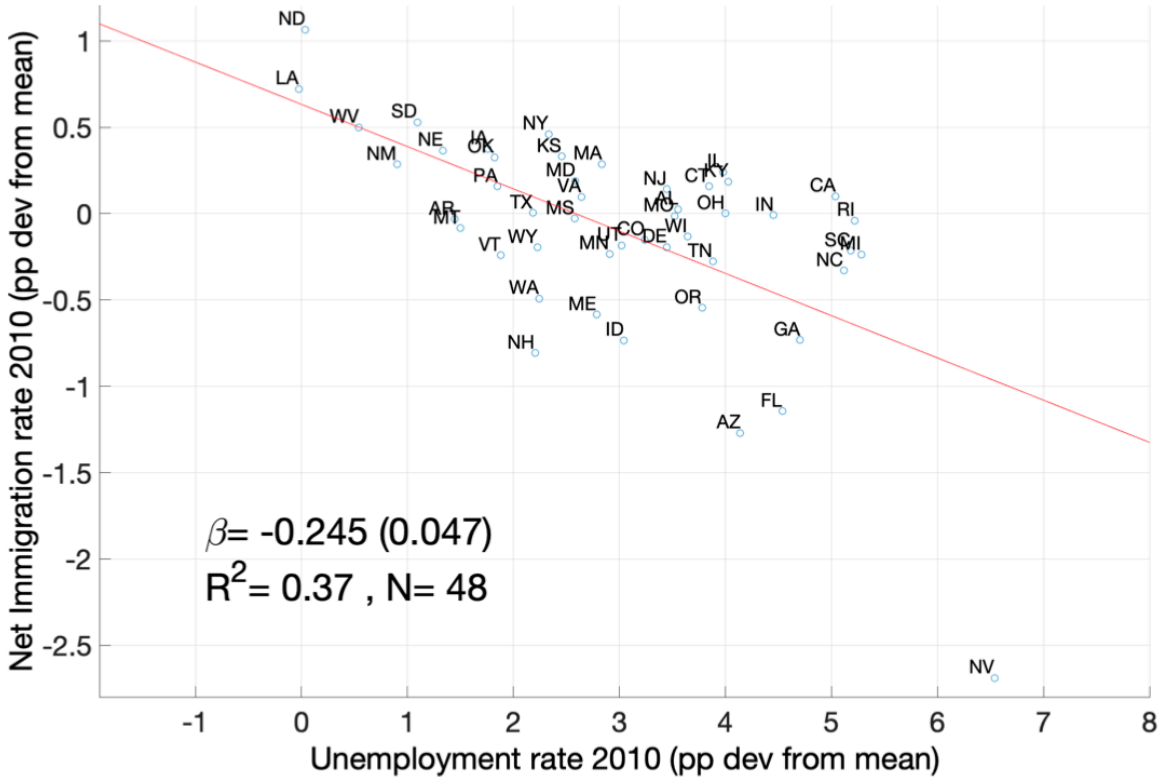
2.3 in euro area vs. 1.0 in the U.S.



Migration in the U.S. durig the Great Recession



(a) Raw Data



(b) Demeaned Data

	(1) Data	(2) Baseline model	(3) Only ω shocks	(4) Only Z^N shocks
Other Moments				
Time-Series Standard Deviation				
Unemployment rate (ur)	2.28	2.28	2.43	0.73
Consumption per capita (C)	2.80	2.80	2.05	2.00
Investment per capita (I)	8.07	12.93	2.71	12.11
GDP per capita	2.45	3.64	2.23	2.85
GDP	2.60	3.73	2.25	2.94
Inflation	2.20	2.72	0.65	2.71
Net exports over GDP $\left(\frac{nx}{GDP}\right)$	1.24	0.96	0.41	1.18
Net migraton rate (nm)	0.26	0.18	0.16	0.09
Persistence				
Net exports over GDP $\left(\frac{nx}{GDP}\right)$	0.89	0.96	0.96	0.96
Investment per capita (I)	0.88	0.96	0.97	0.96
Net migration rate (nm)	0.65	0.83	0.86	0.74
Correlation with GDP				
Consumption per capita (C)	0.80	0.96	0.93	1.00
Investment per capita (I)	0.84	0.79	0.73	0.99
Net exports over GDP $\left(\frac{nx}{GDP}\right)$	−0.43	−0.51	0.36	−0.79
Inflation (π)	0.07	0.05	0.85	−0.03