54. URPP Forum
Financial Market Regulation

Zurich, 19 November 2019
Quantifying Macroeconomic Tradeoffs in Europe

Prof. Linda L. Tesar (University of Michigan; Inge Strauch Visiting Professor UZH)
Quantifying macroeconomic tradeoffs in a monetary union

Linda L. Tesar
University of Michigan, NBER
Inge Strauch Visiting Professor UZH

Based on “Quantifying the benefits of labor mobility in a currency union” with Chris House and Christian Proebsting.
Unemployment rates across Europe

Average rate of 8% to 2005
Increased to 12% in 2011-13

Wide dispersion in rates across euro area

Common currency limits the set of possible policy responses

Euro area economies, 1995-2015, Eurostat
Unemployment rates in the U.S vs. Europe

48 U.S. states

Euro area economies

Quantifying Macroeconomic Tradeoffs in Europe
Churchill, Zurich (Zurich, 1946) “If we are to form the United States of Europe or whatever name or form it may take, we must begin now.”

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

- Gains from economic unification and ultimately a common currency are potentially large. BUT
- Costs due to loss of autonomous monetary policy. Costs large if:
  - Inflexible labor and product markets
  - Asymmetries in market structure
  - Country-specific shocks
- Belief/hope?
  - With greater market integration, countries will become more similar
  - Where is Europe now on this path to integration?
  - How does integration of euro area compare to integration across US states?
Outline

• Present some data contrasting Europe with the U.S.

• Describe a model that captures key characteristics of Europe

• Perform some "what if" experiments:
  • Greater labor mobility in Europe
  • Vs. flexible exchange rates
U.S. and euro area as integrated economies

- Common currency
- Integrated (but not fully complete) capital markets
- Labor migration within the union
- Trade in goods and services
- Central and state/member level fiscal policy
- Political institutions
- Culture/language
Unit of analysis: States (U.S.) and Countries (Europe)

• Measurement
• Level of policy responses
• Meaningful boundaries (in Europe)
## Data

<table>
<thead>
<tr>
<th>United States</th>
<th>Europe</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Trade data</td>
<td>- Trade data</td>
</tr>
<tr>
<td>- Commodity flow survey</td>
<td>- OECD, national sources</td>
</tr>
<tr>
<td>- Macro data</td>
<td>- Eurostat, national sources</td>
</tr>
<tr>
<td>- BEA, BLS</td>
<td>- Eurocore: 12 countries</td>
</tr>
<tr>
<td>- Migration data:</td>
<td>- Europe: 29 countries</td>
</tr>
<tr>
<td>- IRS, # tax returns that migrate</td>
<td>- 1995-2015</td>
</tr>
<tr>
<td>- 48 states, 1977-2015</td>
<td></td>
</tr>
</tbody>
</table>
Less migration in Europe than in the US

Migration rate for state $i$ at time $t$

$$\text{Migration rate}_{i,t} = \frac{1}{2} \frac{\text{In-Migr}_{i,t} + \text{Out-Migr}_{i,t}}{\text{Pop}_{i,t}}$$

<table>
<thead>
<tr>
<th></th>
<th>Unit</th>
<th>US</th>
<th>Canada</th>
<th>Europe</th>
<th>Euro</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regions</td>
<td>#</td>
<td>48</td>
<td>10</td>
<td>29</td>
<td>12</td>
</tr>
<tr>
<td>Population</td>
<td>m</td>
<td>5.57</td>
<td>2.94</td>
<td>17.30</td>
<td>26.28</td>
</tr>
<tr>
<td>Migration rate</td>
<td>%</td>
<td>3.23</td>
<td>1.96</td>
<td>0.73</td>
<td>0.64</td>
</tr>
</tbody>
</table>

Less migration in Europe than in the US

Gross migration across state borders is three times higher in the US

US: average internal migration 77-15

Europe: average internal migration 95-15
Europeans tend to stay where they were born.
Fraction born in another state about three times higher in the US

Europe: fraction of pop born in another country, 95-15
US fraction of pop born in another state, 77-15
Migration is rising in Europe, but not to U.S. levels
Migration lower in Europe...
... even after controlling for country size
Do people move from high unemployment locations to low unemployment locations?

Our focus is on the business cycle. We want to know how responsive workers are to cyclical unemployment differentials.

Detrending matters for what you conclude from the data.

Example:

Studies point to the fall in migration after the Great Recession as evidence that people don’t move in response to bad shocks.

This is a mistake: The places where people typically move (e.g. sunbelt) were particularly hard hit by the recession.
Does migration respond to economic conditions?

$$\hat{netm}_{i,t} = \beta_0 + \beta \hat{ur}_{i,t} + \epsilon_{i,t},$$

For a one percentage point increase in the unemployment differential, 27 additional people out of 1000 move from the high UE state to the low UE state.
Does migration respond to economic conditions?

\[ \text{netm}_{i,t} = \beta_0 + \beta \bar{u}r_{i,t} + \epsilon_{i,t}, \]

European migration response is about one third of the size of US response.

(a) U.S.: 1977 - 2015

(b) Europe: 1995 - 2015
What about trade?
More intra-US state trade than intra-Europe trade

Europe: \(0.5 \times (\text{exp} + \text{imp}) / \text{GDP}\)
US: \(0.5 \times (\text{exp goods} + \text{imp goods}) / \text{gross output of goods}\)
More US trade, even controlling for state/country size.
Trade shocks are not transmitted symmetrically

Exposure to California trade

House, Proebsting and Tesar, JMCB

Exposure to German trade
Summing up

• Labor
  • More migration in US relative to Europe
  • Unemployment – higher and wider dispersion in Europe
  • Migration more responsive to unemployment differentials in US
  • Migration response is persistent, significant population reallocation

• Trade
  • More intra-US state trade than intra-Europe trade
  • Trade shocks have a significant state/country-specific component
Multi-country model

• 29 countries + ROW [48 states + ROW]
• Trade between countries [states]
• Price rigidity – Taylor rule-driven monetary policy
• Financial flows between countries [states]
• Labor migration
• Search unemployment (DMP)
• Shocks to relative demand for traded goods
Was Mundell right? Does labor mobility substitute for flexible exchange rates?

**Step 1:** Fit the model to European data. Find the sequence of shocks that reproduces the observed paths for unemployment in each country.

**Step 2:** Use the model to run counterfactuals:

For a given series of shocks, $\varepsilon^j_t$, what would happen if...

- Labor mobility in Europe were as high as in the U.S.?
- Each country had a floating exchange rate?
Cross-sectional variation in Europe

<table>
<thead>
<tr>
<th></th>
<th>Benchmark</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unemployment rate</td>
<td>2.46</td>
</tr>
<tr>
<td>GDP</td>
<td>2.05</td>
</tr>
<tr>
<td>Consumption per capita</td>
<td>1.75</td>
</tr>
<tr>
<td>Net migration</td>
<td>0.23</td>
</tr>
<tr>
<td>Net exports</td>
<td>1.74</td>
</tr>
<tr>
<td>Exchange rate</td>
<td>0</td>
</tr>
</tbody>
</table>

Model captures the cross-country dispersion in unemployment, output, trade and consumption.
## Cross-sectional variation in Europe

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Labor mobility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unemployment rate</td>
<td>2.46</td>
</tr>
<tr>
<td>GDP</td>
<td>2.05</td>
</tr>
<tr>
<td>Consumption per capita</td>
<td>1.75</td>
</tr>
<tr>
<td>Net migration</td>
<td>0.23</td>
</tr>
<tr>
<td>Net exports</td>
<td>1.74</td>
</tr>
<tr>
<td>Exchange rate</td>
<td>0</td>
</tr>
</tbody>
</table>

*If people can move:*

- Reduces dispersion in unemployment
- Increases dispersion in GDP
## Cross-sectional variation in Europe

### Flexible exchange rates

<table>
<thead>
<tr>
<th></th>
<th>Benchmark</th>
<th>Labor mobility</th>
<th>Flexible exchange rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flexible exchange rates</td>
<td></td>
<td>1.95</td>
<td>2.19</td>
</tr>
<tr>
<td>smaller reduction in UE</td>
<td></td>
<td>2.66</td>
<td>1.82</td>
</tr>
<tr>
<td>differentials,</td>
<td></td>
<td>1.43</td>
<td>1.66</td>
</tr>
<tr>
<td>net export differentials</td>
<td></td>
<td>0.63</td>
<td>0.23</td>
</tr>
<tr>
<td>are bigger,</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less consumption risk</td>
<td></td>
<td>1.63</td>
<td>1.91</td>
</tr>
<tr>
<td>sharing,</td>
<td></td>
<td></td>
<td>11.55</td>
</tr>
<tr>
<td>Plus FX volatility</td>
<td></td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

Quantifying Macroeconomic Tradeoffs in Europe
Was Mundell right? Does labor mobility substitute for flexible exchange rates?

**Labor mobility**
- People move to reduce differentials in unemployment
- Respond to shocks by adjusting supply
- This works best when:
  - Wages and prices are sticky
  - Demand for the country’s good is not responsive to the exchange rate

**Flexible exchange rates**
- Exchange rate will adjust to counteract the underlying shock
- Respond to shocks by adjusting demand
- This works best when:
  - Wages and prices are flexible
  - Demand for the country’s good is responsive to the exchange rate
Mundellian trade-off will differ across countries
Mundellian trade-off will differ across countries

Reduction in unemployment
With higher labor mobility

Reduction in unemployment
With floating exchange rates
Mundellian trade-off will differ across countries

Most countries in Europe have conditions for which labor mobility helps most to reduce unemployment.
Mundellian trade-off will differ across countries

Most countries in Europe have conditions for which labor mobility helps most to reduce unemployment.

But not all! Greece and Portugal have conditions that favor flexible exchange rates.
Why the difference?

Migration works better when
- The country is large
- There are frictions in the labor market
- The trade share is large
Structure vs. shocks
Europe: shock differentials are bigger, rising over time, and greater transmission to unemployment

United States

Ratio \( \text{stdev(UE)} : \text{stdev(shock)} = 0.41 \)

Europe

Ratio \( \text{stdev(UE)} : \text{stdev(shock)} = 0.29 \)

Quantifying Macroeconomic Tradeoffs in Europe
Where are we vis-à-vis Mundell’s trade off?

• Despite increased integration in capital, labor and goods markets, Europe remains far from US benchmark
• Labor market rigidities and smaller trade linkages make adjustment to shocks difficult
• Shocks in Europe are relatively large and country-specific
• Under current conditions, exchange rate flexibility is not a good substitute for migration
• Important role for coordinated fiscal policy –
  • Implications of fiscal policy remains for future work
With gratitude

- University of Zurich
- Department of Economics
- Excellence Foundation
- My family, coauthors and colleagues
- Inge Strauch Visiting Professor and the Office for Gender Equality
55. Forum Financial Market Regulation

Subject: Small and medium-sized banks in CH (working title)

Speaker: Philippe Ramuz-Moser (FINMA)

Friday, 6 December 2019 12:15 – 13:30 p.m.

University of Zurich, Rämistrasse 74, 8001 Zürich

www.finreg.uzh.ch/events