Recent Developments in Optimum Currency Areas

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Two Recent findings:

1. Currency Unions Raise Trade

2. Trade and Fiscal Convergence Raise Business Cycle Synchronization

Sensible Currency Unions seem to generate OCAs!
Question #1

- What is the effect of a common currency on international trade?

Answer

- Large (though difficult to quantify exactly)
Much Work on this

- 34 studies estimate currency union effect on trade
- 754 point estimates of $\gamma$

Estimates (of $\gamma$ and standard error) taken from

$$\ln(\text{Trade}) = \gamma \text{CurrencyUnion} + \text{controls} + \text{error}$$

where CurrencyUnion a dummy (1 for countries in currency union)
## 34 Estimates of Effect of Currency Union on Trade

<table>
<thead>
<tr>
<th>Author</th>
<th>Year</th>
<th>$\gamma$</th>
<th>s.e. of $\gamma$</th>
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<tbody>
<tr>
<td>Rose</td>
<td>2000</td>
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<td>Nitsch</td>
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<td>Pakko and Wall</td>
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<td>López-Córdova, Meissner</td>
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<th>s.e. of $\gamma$</th>
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<tr>
<td>Flandreau and Maurel</td>
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<td>Alesina, Barro, Tenreyro</td>
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<td>de Nardis and Vicarelli</td>
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<td>Subramanian-Wei</td>
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<td>0.732</td>
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</table>
Meta Analysis

• Set of quantitative techniques for evaluating and combining empirical results from different studies.

• Different point estimates (one per study) of given coefficient treated as individual observations
• Can use this vector of estimates to:
  
  o estimate underlying coefficient of interest
  
  o test hypothesis that coefficient is zero
  
  o link estimates to features of the underlying studies

• Each study weighted equally
Test of Zero Effect

- Test null hypothesis $\gamma=0$, pooling 34 point estimates
- Fisher’s test uses p-values from 34 underlying $\gamma$ estimates
- Under null hypothesis, p-values are independently and randomly drawn from a normal $[0,1]$ distribution, $-2 \sum \ln(p_i)$ is chi-squared
- Test statistic: $1272 \sim \text{chi-squared}(68)$ under Ho.
  - Clear rejection of null hypothesis of no effect!
Meta-Estimate of $\gamma$ Pooled across Different Studies

<table>
<thead>
<tr>
<th></th>
<th>Pooled Estimate of $\gamma$</th>
<th>Lower Bound of 95% CI</th>
<th>Upper Bound of 95% CI</th>
<th>P-value for test of no effect</th>
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<td>Fixed</td>
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<td>Random</td>
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<td>Random without Rose</td>
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<td>.40</td>
<td>.66</td>
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Table 1: Meta-Analysis of Currency Union Effect on Trade ($\gamma$)
Findings

- Considerable heterogeneity

- Fixed and random effect estimators dissimilar

- *Economically big*; currency union increases trade > 25%

- No conclusions change if my six studies are dropped
  - Test-statistic rejects the hypothesis of no effect: $721 \sim \chi^2(54)$ under $Ho$
Figure 1: The Estimated Effect of Currency Union on Trade
Trade Diversion

- Does increased trade *inside* monetary unions divert trade away from non-members?
Theory

- *Not analogous* to customs unions in welfare

- Trade diversion can be harmful because trade gains are less than lost tariff revenue
  - Ex: import goods at $10, sell at $15 = $10 + $5 tariff
    - Lose if eliminate tariffs from exporter w/costs $12

- But monetary union is simply a reduction in transactions costs; no lost tariff revenue (better bridges, not lower tolls)
Practice

• Four Different Studies have searched for trade diversion

• *All* find evidence of *trade creation* between CU members & outsiders
Summary: What is the Effect of Currency Union on Trade?

• Still, substantial evidence currency union has a positive effect on trade

• Effect is large economically, statistically
  
  ○ Currency union associated with trade effect: (30%, 90%)

• Publication Bias!
  
  ○ Intensely political issue (especially in Europe) => bias?
Why is this Interesting?

- Trade gains of common currency are unambiguous gain of monetary unification (e.g., EMU).
- How big? Most have believed gains are small.
- But much uncertainty.
- Currency union may have a very different effect than even radical reduction in exchange rate volatility.
Question #2

- Is Business Cycle Synchronization (BCS across countries) systematically affected by policy?

Answer

- Yes: both trade and fiscal convergence raise BCS
Importance?

- A sensibly-designed currency union can raise trade and encourage fiscal convergence, indirectly raise BCS

- Hence move region towards Mundell’s “Optimum Currency Area” endogenously
Framework

- Can study the empirical linkages between trade, persistent cross-country differences in the fiscal policy and business cycle synchronization:

\[ BCS = \alpha + \beta \text{fiscal divergence} + \gamma \text{trade} + \varepsilon \]
Darvas, Rose, and Szapary Data

- Default OECD sample: 21 countries
- Wide sample: 115 countries
- Calculate and study all possible country-pairs, i.e.
  \[21 \times 20 / 2 = 210\] for default OECD; \[115 \times 114 / 2 = 6555\] for wide
- Four disjunct decades: 1964-73, 1974-83, 1984-93, 1994-2004
- For OECD, we have maximum of \[4 \times 210 = 840\] observations
Measure of BCS between countries $i$ and $j$ for decade $\tau$:

- Step 1: detrend output of both $i$ and $j$ for the full period
- Step 2: calculate correlation coefficient for decade $\tau$

⇒ Measurement error due to both steps (we’ll come back to this issue later)

- Methods of detrending: HP, differencing, BP + method of Alesina-Barro-Tenreyro
Measure of fiscal convergence

• Using total balance + primary balance (% GDP)

Step 1: calculate differences between annual fiscal balances

Step 2: calculate the absolute value of Step 1.

Step 3: Calculate (disjunct) decade averages of Step 2

• Additional measures: (a) interchange Steps 2&3, (b) use squared deviations instead of absolute, i.e. standard deviation,

(c) Deviation from Maastricht 3% deficit criterion
Results: Effect of Fiscal Convergence on BCS

• Effect positive and significant using both OLS and IV

⇒ Fiscal divergence reduces BCS

• OLS estimate: \(\sim 0.03\), IV estimate: \(\sim 0.12\)

• default OECD and wide panel as well

• robust to sensitivity checks
Results: Effect of Trade on BCS

- Again, effect positive and significant using both OLS and IV
  \[ \Rightarrow \text{Trade raises BCS} \]
- robust to sensitivity checks