

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 γ

Estimates (of γ 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

Author	Year	γ	s.e. of γ
Rose	2000	1.21	0.14
Engel-Rose	2002	1.21	0.37
Frankel-Rose	2002	1.36	0.18
Rose-van Wincoop	2001	0.91	0.18
Glick-Rose	2002	0.65	0.05
Persson	2001	0.506	0.257
Rose	2001	0.74	0.05
Honohan	2001	0.921	0.4
Nitsch	2002b	0.82	0.27
Pakko and Wall	2001	-0.38	0.529
Walsh and Thom	2002	0.098	0.2
Melitz	2001	0.7	0.23
López-Córdova, Meissner	2003	0.716	0.186
Tenreyro	2001	0.471	0.316
Levy Yeyati	2003	0.5	0.25
Nitsch	2002a	0.62	0.17

Flandreau and Maurel	2001	1.16	0.07
Klein	2002	0.50	0.27
Estevadeoral, et al	2003	0.293	0.145
Alesina, Barro, Tenreyro	2003	1.56	0.44
Smith	2002	0.38	0.1
Bomberger	2002	0.08	0.05
Melitz	2002	1.38	0.16
Saiki	2002	0.56	0.16
Micco, Stein, Ordóñez	2003	0.089	0.025
Kenen	2002	1.222	0.305
Bun and Klaassen	2002	0.33	0.1
de Souza	2002	0.17	0.24
de Sousa and Lochard	2003	1.21	0.12
Flam and Nordström	2003	0.139	0.02
Barr, Breedon and Miles	2003	0.25	0.033
de Nardis and Vicarelli	2003	0.061	0.027
Rose	2004	1.12	0.12
Subramanian-Wei	2003	0.732	0.08

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:
 - estimate underlying coefficient of interest
 - test hypothesis that coefficient is zero
 - 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 γ 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 chi-squared(68) under H_0 .
 - Clear rejection of null hypothesis of no effect!

Meta-Estimate of γ Pooled across Different Studies

	Pooled Estimate of γ	Lower Bound of 95% CI	Upper Bound of 95% CI	P-value for test of no effect
Fixed	.29	.27	.31	.00
Random	.64	.51	.77	.00
Fixed without Rose	.22	.19	.24	.00
Random without Rose	.53	.40	.66	.00

Table 1: Meta-Analysis of Currency Union Effect on Trade (γ)

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-squared(54) under H_0

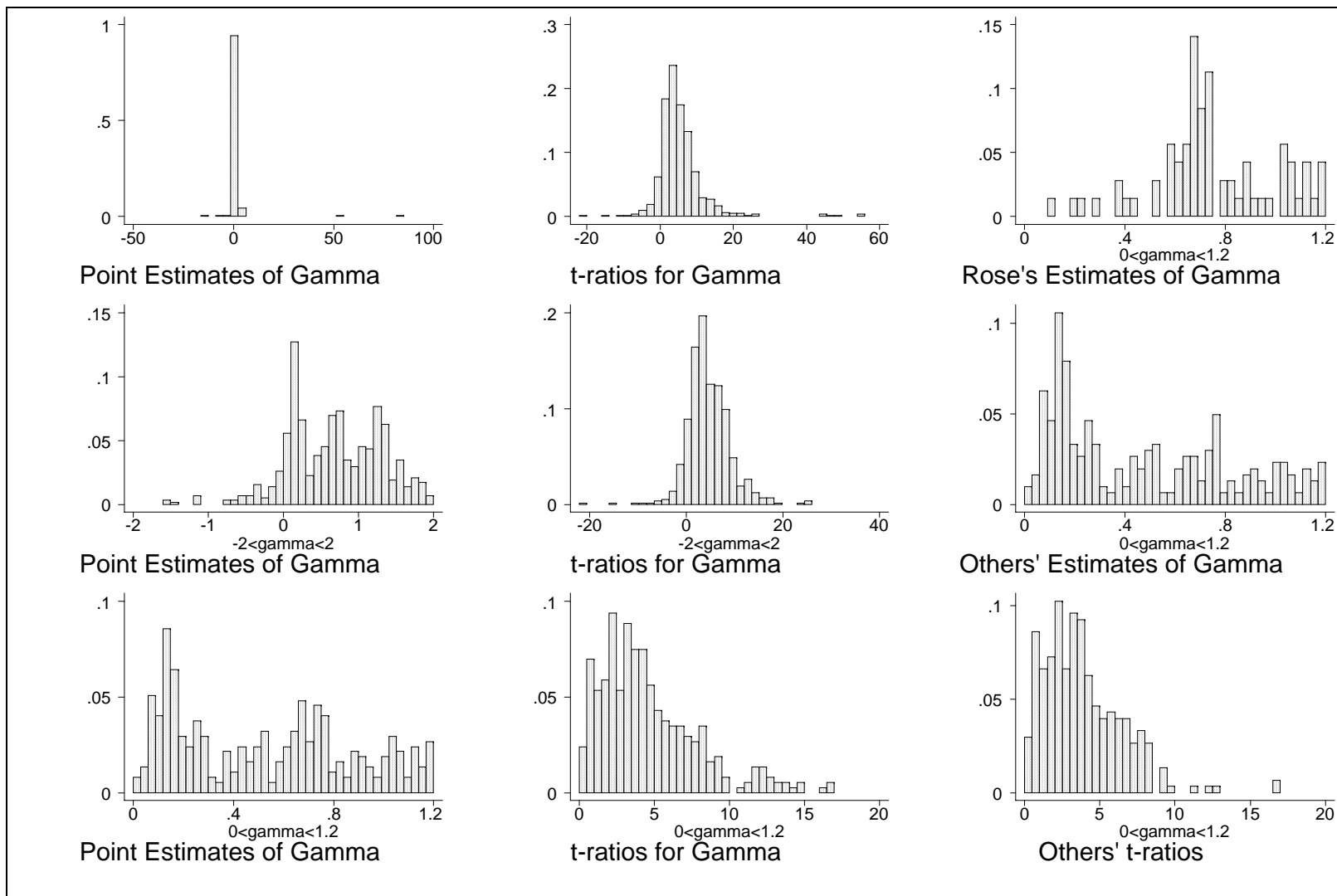


Figure 1: The Estimated Effect of Currency Union on Trade

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+\$5tariff
 - 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:

$$\text{BCS} = \alpha + \beta * \text{fiscal divergence} + \gamma * \text{trade} + \varepsilon$$

Darvas, Rose, and Szapary Data

- Default OECD sample: 21 countries
- Wide sample: 115 countries
- Calculate and study all possible country-pairs, i.e.

$21 * 20 / 2 = 210$ for default OECD; $115 * 114 / 2 = 6555$ for wide

- Four disjunct decades: 1964-73, 1974-83, 1984-93, 1994-2004
- For OECD, we have maximum of $4 * 210 = 840$ observations

Measure of BCS between countries i and j for decade τ :

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

⇒ 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
- Activity concepts: GDP, U, Ind. Prod.

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: ~ 0.03, IV estimate: ~ 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

⇒ *Trade raises BCS*

- robust to sensitivity checks