

“Trade, Finance, Specialization and  
Synchronization”

by  
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# The Importance of Being Synchronized

“Giving up independent monetary policy can be very costly when business cycles are out of phase.” (Imbs, page 2.)

- Synchronization is a desirable — even required -- precursor to monetary union; see footnote 15: “It is for instance one of five tests set by Gordon Brown that the UK economy has to pass to enter EMU.”

## A Comment and Three Questions

- An important unstated assumption: fine-tuning via monetary policy is desirable, feasible, and effective.
- Do we as economists believe that this is true?
- Or is our research justified by the belief that policymakers think it to be true, and will thus try to fine-tune unless we give them good reasons not to?
- Is this the main motive for monetary union? Or just one of many important motives?

## Trade and Synchronization

- Frankel and Rose (1998) find empirical support for the following causal link:  
Currency union → increased trade → increased business cycle correlations.
- Implication: Currency unions can ‘endogenously become optimal.’ (Imbs, page 6.)
- But: Michael Klein (2002) has recently shown that this empirical support is not found when looking at currency unions involving the US dollar.

## The empirical model

Imbs estimates a simultaneous-equations model:

$$\rho_{i,j} = \alpha_0 + \alpha_1 T_{i,j} + \alpha_2 S_{i,j} + \alpha_3 I_{1,i,j} + \varepsilon_{1,i,j}$$

$$T_{i,j} = \beta_0 + \beta_1 S_{i,j} + \beta_2 I_{2,i,j} + \varepsilon_{2,i,j}$$

$$S_{i,j} = \gamma_0 + \gamma_1 T_{i,j} + \gamma_2 I_{3,i,j} + \varepsilon_{3,i,j}$$

## Unraveling the Simultaneity

- The exogenous variables hold the key to identifying the separate effects of trade (T) and specialization (S) on business cycles.
- Equations (2) and (3) may also be of separate interest, no matter what the outcome of estimating equation (1).
- Imbs uses prior theoretical – and empirical -- work to guide his choice of the exogenous variables.

## Additional Variables (Instruments)

Equation 1: dependent variable - trade synchronization.

$I_1$  consists of a single variable: a measure of financial integration represented by capital account restrictions.

- IMF report on the presence of capital account restrictions; variable takes on the values 0, 1, 2.
- Interstate risk-sharing (intranational data).
- Sensitivity analysis: add a measure of monetary policy.

Justification: Models have suggested that financial markets affect business cycle comovement. The sign of this effect is depends on the specifics of the model.

## Additional Variables (Instruments)

Equation 2: dependent variable = bilateral trade intensity.  $I_2$  consists of the standard gravity variables:

- Distance
- product of GDP's
- common border
- common language

Justification: The gravity model works well empirically. Many different theoretical models have been developed to support the gravity equation.

## Additional Variables (Instruments)

Equation 3: dependent variable = specialization.

$I_3$  includes  $I_1$ : a measure of financial integration represented by capital account restrictions. Also included are:

- Product of GDP per capita
- The GDP gap.
- **What about factor endowments?!**

Key: The intersection of  $I_2$  and  $I_3$  is (technically) empty.

Imbs provides results for OLS and for 3SLS estimation.

## TSLS Results (Based on Table 5)

(1) Correlation $\rho$	T	0.159 (7.56)	0.056 (1.82)
	S	--	-0.602 (3.25)
	K	--	-0.93 (2.03)
	R2	0.064	0.207
(2) Trade: T	Distance	-0.973 (14.15)	-0.786 (8.29)
	Border	-0.017 (0.06)	0.118 (0.41)
	Language	0.604 (3.28)	0.597 (3.05)
	GDP Product	0.322 (8.67)	0.210 (3.22)
	<b>Imbs, "Co-Fluctuations"</b> S	--	<b>-2.715 (4.35)</b>
	R2	0.668	0.407
Specialization: S	GDP product p.c.	-0.160 (2.90)	-0.197 (4.01)
	GDP Gap	1.054 (2.36)	1.393 (3.48)
	T	-0.086 (3.15)	-0.064 (2.41)
	K	--	-0.057 (1.53)
	R2	0.225	0.227

## Main Findings

- ✓ Allowing for simultaneity of trade intensity, specialization, and business-cycle comovement reduces the role of trade in explaining business cycles. This mitigates the Frankel-Rose results, and is consistent with the results of Klein.
- ✓ Specialization is important for trade.
- ✓ The results are robust to estimation method and to a very thorough sensitivity analysis.

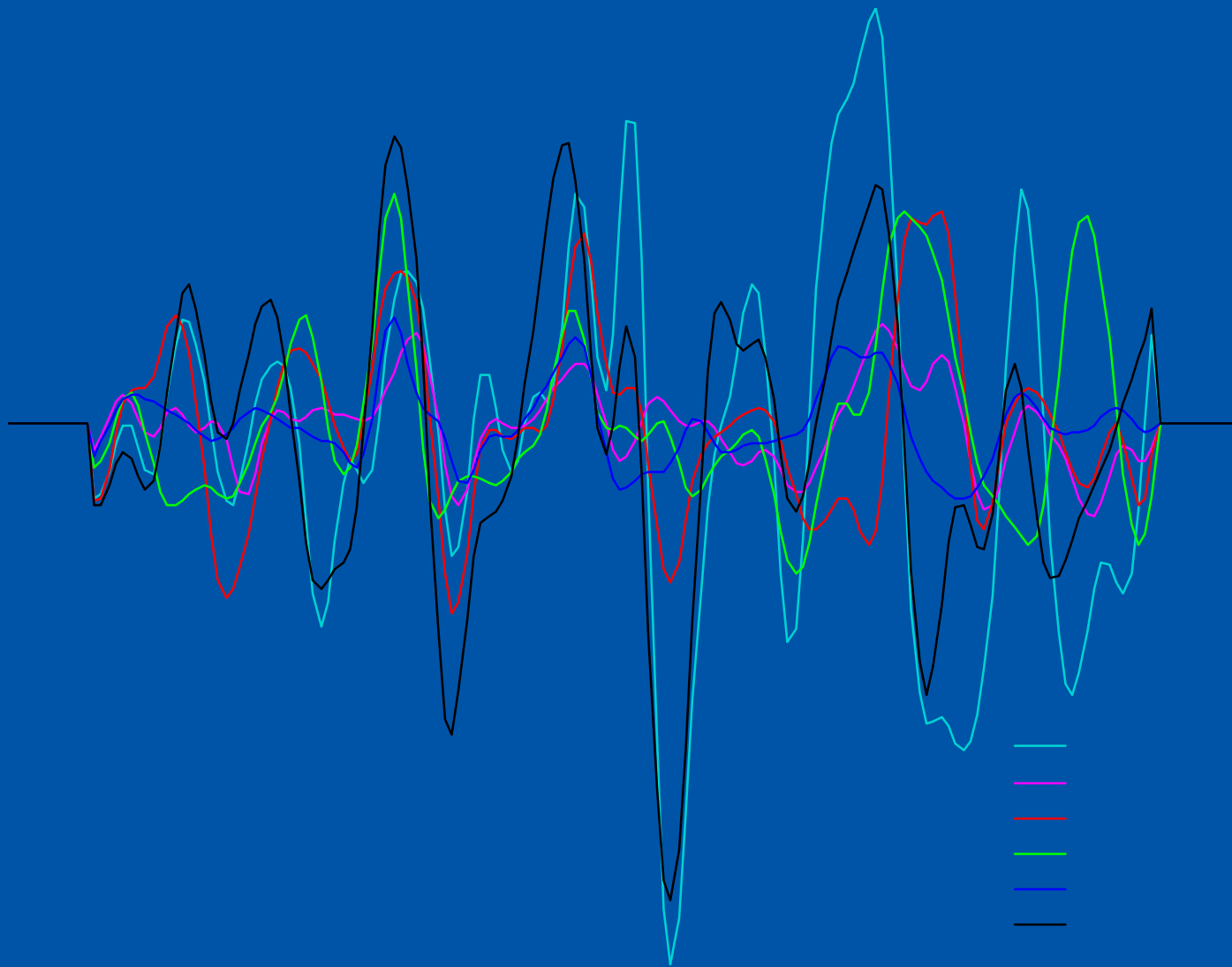
# Measuring Synchronization

The painful truth: We can't measure international business-cycle synchronization very well.

- Long time-series of good-quality data on real output are not available – Imbs's sample starts in 1980 (revisions underway at OECD)
- There haven't been that many business cycles in the periods for which we have data
- Business-cycle filters require that you discard about 3 years of data at the beginning and ends of the sample period; Imbs' sample period is 1983:1 – 1998:3.

## NBER Business-Cycle Dates

Peak	Trough	Duration: Trough to trough	Duration : Peak to peak
Nov. 1948	Oct 1949	48 months	45 months
July 1953	May 1954	55	56
Aug. 1957	April 1958	47	49
April 1960	Feb. 1961	34	32
Dec. 1969	Nov. 1970	117	116
Nov. 1973	March 1975	52	47
<b>Jan. 1980</b>	<b>July 1980</b>	<b>64</b>	<b>74</b>
<b>July 1981</b>	<b>Nov. 1982</b>	<b>28</b>	<b>18</b>
<b>March 2001</b>			<b>128</b>



## Instability in Business-Cycle Correlations

### 1960-1980 Correlations

US-Canada: 0.78

US-Japan: 0.58

Germany-France: 0.80

UK-France 0.65

Japan-UK 0.71

### 1980-2002 Correlations

US-Canada: 0.85

US-Japan: - 0.08

Germany-France: 0.41

UK-France 0.29

Japan-UK 0.01

The recent decline in business-cycle correlations has been documented by Heathcote and Perri (2002).

## A Strong Note of Caution

- Imbs finds that trade and specialization variables help explain business-cycle correlations across countries within his sample: 1980-2002.
- But...we have seen that these business cycle correlations may not be stable over time.

Trade patterns and within-country structure of production (specialization) are things that change very slowly. Thus....how can they be a good explanation for business-cycle correlations?

## Conclusion

- This is an ambitious, well-crafted paper.
- The results for explaining business-cycle correlations may not be robust, as the cyclic correlations themselves are not stable over time.
- The findings concerning the determinants of trade and specialization may be of interest in themselves.
- Specifically, these latter findings reinforce the message from Imbs' prior work on specialization and trade.