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Chapter Title: Comment on "Fiscal Divergence and Business Cycle Synchronization: Irresponsibility is Idiosyncratic"

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Comment

Lucrezia Reichlin, European Central Bank and CEPR

1. The Main Result of the Paper

The idea of the paper is simple and appealing: the Maastricht Treaty, to the extent that it has enforced fiscal convergence, may have also induced business cycle synchronization. In other words, assuming that in the last 15 years we have observed an increase in business cycle synchronization, this is likely to have been endogenous.

The paper analyzes 21 OECD countries on the basis of a simple panel regression where correlations between the GDP growth of countries' pairs is regressed against indicators of fiscal divergence between the same pairs. The correlation coefficient is found to be negative, large, and significant. The interpretation is that persistent high deficits generate idiosyncratic shocks (idiosyncratic fiscal instability) and therefore idiosyncratic business cycle dynamics. When budget deficits decrease, business cycle synchronization increases and idiosyncratic dynamics explain a smaller part of output.

This is an interesting observation and a warning for discussions on optimal currency areas. Observed comovements of economic activity are endogenous to policy and regulatory regimes. As Frankel and Rose (1998) had observed for trade, it might be the case that fiscal rules also affect output synchronization.

Can this result be true? A first observation is that, while it is uncontroversial that for Euro area countries there has been fiscal convergence, business cycle relations among G7 and Euro area countries seem to have been stable at least since the seventies, with no clear change in the degree of synchronization. Of course, facts about business cycle are difficult to establish since they depend on definitions and data transformation.

The next section will present some facts based on GDP growth rates.

2. Some Stylized Facts

Let us look at some numbers and some charts.

First of all, Table 1 shows that the correlation of GDP growth between different G7 countries has been pretty stable over time.

The same fact emerges from Figure 1 which shows the correlation of per-capita GDP growth rates with respect to the Euro area for different sub-periods, and a larger selection of countries, grouped according to different criteria. Correlations, with the exception of few countries, have remained stable over time.

The fact that cross-country business cycle synchronization has remained stable over time, at least for the largest countries, is well

Table 1

Average correlation GDP growth G7 countries with respect OECD average

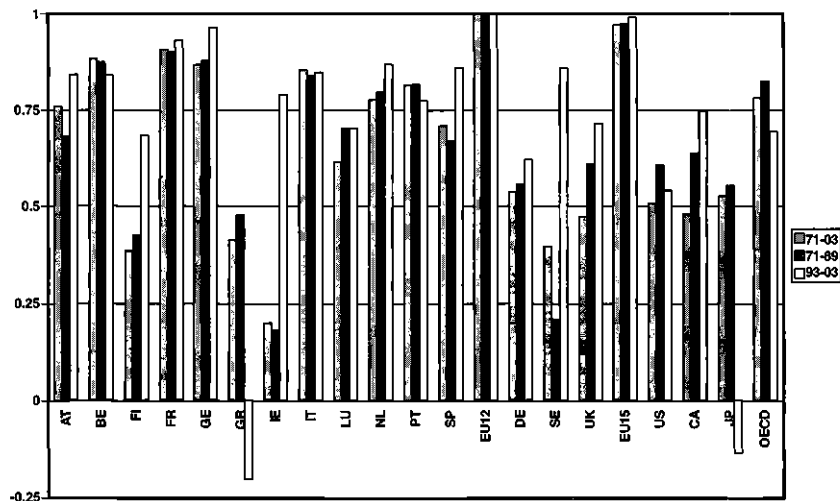| 1964–1973	0.42
1974–1983	0.69
1984–1993	0.69
1994–2003	0.68

Figure 1
Correlation with respect to the Euro area average GDP per-capita growth

documented and based on different measurement criteria. See, for example, Canova, Ciccarelli, and Ortega (2004), Giannone and Reichlin (2005), Harding and Pagan (2004), and Stock and Watson (2005).

This suggests that the result in the paper may be driven by a specific group of countries or that the regression result is picking up something else.

Output volatility, for example, has decreased over time in most countries (Figure 2 shows the variance of per-capita GDP growth rates for different sub-periods and for Euro area countries). This might be the effect of fiscal policy, as suggested by Fatas and Mihov (2003), but it is not what the paper is focusing on.

Finally, Figure 3 shows the percentage of forecast error of GDP per capita explained by country-specific shocks for Euro area countries. These numbers are estimated by Giannone and Reichlin (2005) (methods and data described in that paper).

As Giannone and Reichlin (2005) document, idiosyncratic shocks (country specific) are small and they have been so even before Maastricht and the recent period of fiscal convergence. This should imply that fiscal/national shocks or national fiscal responses to idiosyncratic shocks have little to do with business cycle correlations.
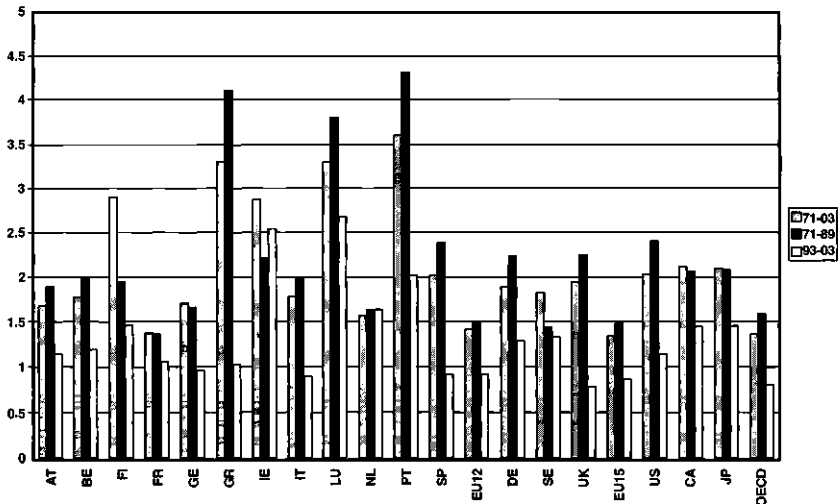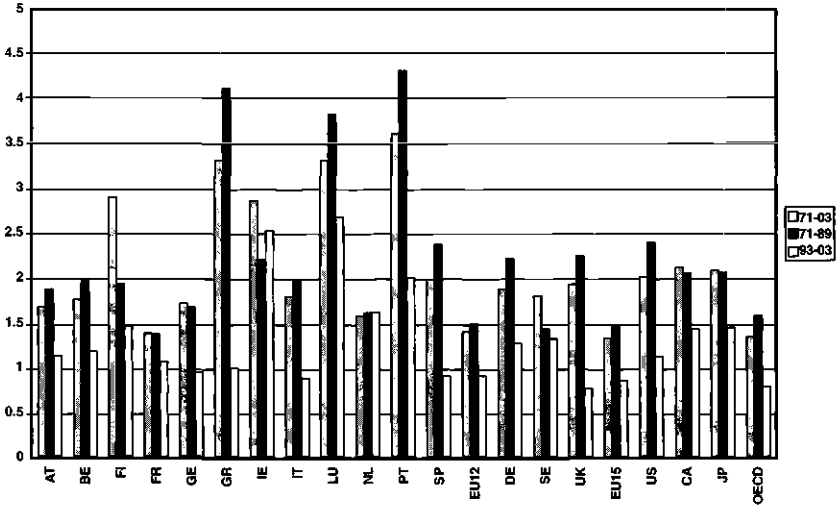
Figure 2
Variance—GDP per-capita growth

Source: Giannone and Reichlin (2005)

Figure 3
Percentage of GDP per capita forecast errors explained by country-specific shocks

3. What Is Going On?

If business cycle synchronization among OECD countries has remained stable and so have correlations amongst European countries despite Maastricht and if idiosyncratic shocks on output are small, what can possibly drive the results of the paper?

To answer this question, I will run the same panel regressions of business cycle dispersion on fiscal dispersion performed by the authors, but allow for some heterogeneity in countries' responses.

Heterogeneity across countries is taken into consideration by estimating the regressions on different country groups. I will group countries by their economic size, defined as share of GDP in the OECD total.

Table 2 reports the size in terms of GDP of the 21 OECD countries analyzed in the paper and will help interpreting regression results presented below.

As in the benchmark regression in the paper, I estimate:

$$\text{Corr}_{i,j,t} = \alpha + \gamma_t + \beta \text{FD}_{i,j,t} + \text{var}\varepsilon_{i,j,t}$$

where the dependent variable is the correlation coefficient between GDP growth rate of countries i and j in decade t. The independent variable is given by a measure of fiscal divergence between the same country

Table 2
GDP (constant PPP 2000) in year 2000. Percentage in OECD Total GDP and in total GDP of 21 countries in the paper
Unit: billions of dollars

Country	GDP	Marginal/OECD	Cumulative	Marginal/21	Cumulative
USA	9765	36%	36%	40%	40%
Japan	3309	12%	48%	14%	54%
Germany	2069	8%	56%	9%	63%
France	1552	6%	62%	6%	69%
UK	1503	6%	68%	6%	75%
Italy	1444	5%	73%	6%	81%
Canada	860	3%	76%	4%	85%
Spain	822	3%	79%	3%	88%
Australia	509	2%	81%	2%	90%
Netherlands	435	2%	82%	2%	92%
Belgium	269	1%	83%	1%	93%
Sweden	239	1%	84%	1%	94%
Austria	230	1%	85%	1%	95%
Switzerland	219	1%	86%	1%	96%
Portugal	178	1%	86%	1%	97%
Greece	178	1%	87%	1%	97%
Norway	163	1%	88%	1%	98%
Denmark	152	1%	88%	1%	99%
Finland	133	0%	89%	1%	99%
Ireland	108	0%	89%	0%	100%
New Zealand	79	0%	89%	0%	100%

pairs. The coefficient γ_t measures decade effects (1964–1973, 1974–1983, 1984–1993, 1994–2003) in the benchmark regression of the paper and captures global changes in correlations between country pairs across time. The results from this benchmark regression are reported in the column headed D.E. in Tables 3A and 3B. Results considering only a common intercept, excluding decade effects (C.I. column) and adding fixed effects (F.E.+D.E.) to account for heterogeneity in the country pairs are also reported, as in the paper.

Results for different country groups are reported in different rows in Table 3A and 3B. The second row reports results for the seven largest OECD countries (G7). Spain, Australia, Belgium, and the Netherlands, the four richest non G7 countries, are added to the G7 in the third row. In the fourth row, this group is augmented by Austria, Sweden, and Switzerland (Table 3A) or the latter subgroup plus Portugal (Table 3B). Finally, the last row reports the results of the paper, derived by running the regression on the whole set of the 21 OECD countries considered in the paper.

Results indicate that a significant and negative coefficient of fiscal dispersion on business cycle dispersion is only present when all countries are included, but the result does not hold for other groupings. As it is showed in column two of the tables, the negative relation does not hold for groups accounting for up to 86 percent of the total OECD income per capita.

A further confirmation of the lack of robustness of the authors' findings emerges from simple visual analysis.

Let me define a convenient synthetic measure of divergence for both fiscal and output variables.

Fiscal dispersion in decade j for country i will be defined as:

$$FD_{i,j,t} = \frac{1}{10} \sum_{t=1}^{10} | g_{it}^j - G_t^j |$$

where g_{it}^j is the deficit-GDP ratio of country i (N countries) at time t in decade j.

The global fiscal deficit will then be the cross-country average:

$$G_t^j = \frac{1}{N} \sum_{i=1}^{N} g_{it}^j.$$

This measure should be understood as a sort of standard deviation of fiscal policy of country i around the cross section (OECD wide) average.

Table 3A
Regression results

Panel	% OECD	C. I.	C.I. + D.E.	F.E. + D.E.
G7	73	0.008	−0.01	−0.012
	[81]	[0.016]	[0.016]	0.025
G7 plus 4	82	0.013	−0.002	−0.02
	[92]	[0.012]	[0.012]	0.017
G7 plus 7	86	0.008	−0.008	−0.012
	[96]	[0.009]	[0.009]	0.013
All	89	−0.0013**	−0.024**	−0.010
	[100]	[0.005]	[0.005]	[0.007]

Table 3B
Regression results

Panel	% OECD	C. I.	C.I. + D.E.	F.E. + D.E.
G7	73	0.008	−0.01	−0.012
	[81]	[0.016]	[0.016]	0.025
G7 plus 4	82	0.013	−0.002	−0.02
	[92]	[0.012]	[0.012]	0.017
G7 plus 8	86	0.013	−0.006	−0.005
	[97]	[0.008]	[0.008]	0.012
All	89	−0.0013**	−0.024**	−0.010
	[100]	[0.005]	[0.005]	[0.007]

- One (two) asterisk indicates 5 (1) % significance.
- Full cross section is the 21 OECD countries.
- G7 plus 4 is G7 Countries plus Spain, Australia, Belgium, and Netherlands.
- G7 plus 7 is G7 plus 4 plus Austria, Sweden, and Switzerland.
- G7 plus 8 is G7 plus 4 plus Austria, Sweden, Switzerland, and Portugal.
- C.I. column: Common Intercept.
- C.I. + D.E. column: Common Intercept plus Decade Effects (time dummies).
- F.E. + D.E. column: Fixed (country pairs) effects (F.E.) and Decade Effects (D.E.).
- In the second column, we indicate the % of GDP of the group of countries over the sample of all OECD countries while the number in parenthesis is the same % over the smaller set of the 21 OECD countries considered by the authors.

I will define business cycle dispersion in decade j for country i as:

$$BCD_{i,j,t} = \frac{1}{10} \sum_{t=1}^{10} | y_{it}^j - Y_t^j |$$

where y^j_{it} = is the GDP growth rate of country i at time t in decade j and

$$Y_t^j = \frac{1}{N} \sum_{i=1}^{N} Y_{it}^j$$

is a sort of (decade) standard deviation of the growth rate of country i around the cross section (OECD wide) average, say the world business cycle.

Figure 4 shows the scatterplot of fiscal dispersion and business cycle dispersion for the different decades.[1] The six smallest countries in the figures are indicated by the "rounds," while the biggest 11 with the "stars." Clearly, if the "rounds" are not taken into accounts, no clear relation between business cycle synchronization and fiscal divergence seems to emerge!
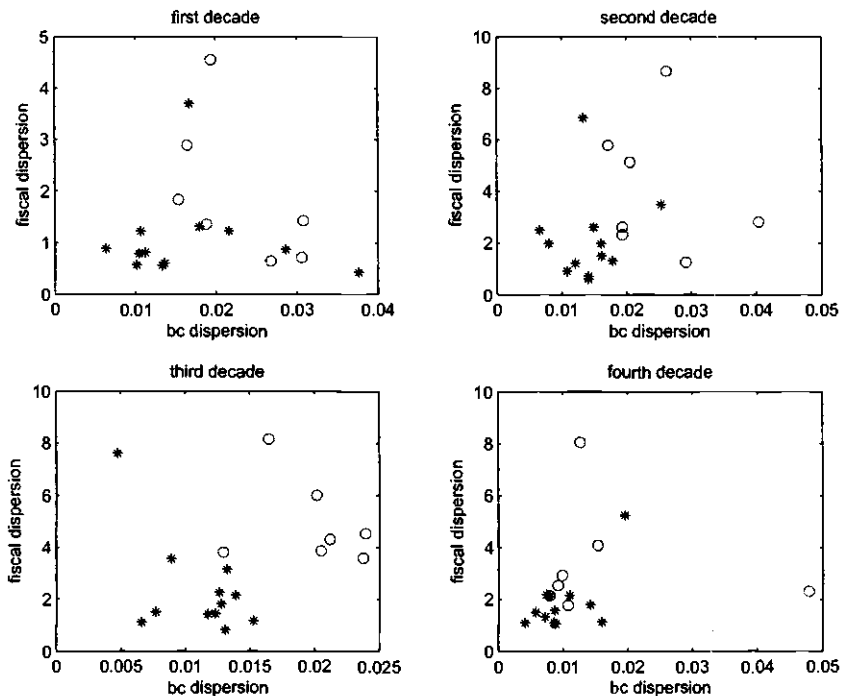

Figure 4
Scatterplot: fiscal dispersion - business cycle dispersion

Note

1. Australia, Belgium, Portugal, and New Zealand are excluded from the figures because of missing observations in the fiscal series

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