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Comment 4: Comment on Chapter 8

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1. The paper and its implications

Has the establishment of the European Monetary Union (EMU) affected European longterm interest rates and their comovement with those in the USA? What do you learn about European Central Bank (ECB) credibility and the transmission mechanism of monetary policy by answering this question? Favero and Giavazzi (FG)'s paper is organized around these questions.

They start from the observation that long-term interest rates have been converging since the early nineties, before the establishment of the ECB. Their analysis attributes this process to convergence of expected monetary policy. The further narrowing of the gap between US and euro-area rates achieved in the last decade, on the other hand, is attributed to term premia and real rates, causes which have nothing to do with monetary policy. FG therefore seem to conclude that the EMU has not affected the dynamics of long rates. This is their answer to the first question.

To answer the second question the authors present two exercises: a counterfactual simulation which aims at identifying the causes of convergence in expected monetary policy and Vector Auto Regression (VAR) estimates of the joint dynamics of euro-area and US interest rates over different subsamples.

The first exercise tells us that convergence in expected monetary policy is due to convergence in the structure of the US and the German (1990–8) euro-area (1999–2007) economy rather than to similar exogenous shocks.

The second exercise produces several empirical results, two of which are key for understanding ECB monetary policy and its credibility with respect to that of the Bundesbank. One result is that, during ECB years, long rates have reacted positively to an unanticipated monetary policy contraction in contrast to the negative reaction during Bundesbank years. This suggests that the Bundesbank enjoyed more credibility than the ECB. Another result is that policy rates in the ECB sample respond more forcefully to non-monetary shocks specific to the euro area than in the Bundesbank years, suggesting that the ECB, insofar as this response is a deviation from systematic policy, has been inducing volatility in the market. This result, according to the authors, explains why short rates in the last decade have not been synchronized across the USA and euro area even if long rates have.

In our discussion we will focus on the two main points of the paper, credibility and policy response to idiosyncratic shocks. We will then extend the analysis of the bond market by proposing a unified explanation of the different degree of cross-country correlation of short and long rates. Finally, we will show that the cross-country synchronization of long rates over the last ten years is attributed to common global forces.

2. Credibility and the EMU

A standard way to assess the credibility of the EMU is to analyze inflation expectations and verify whether they have been well anchored around the ECB target. Below we provide some evidence to serve as background information for interpreting FG's results.

Figure C4.1 shows inflation rates in France, Germany, Italy, and the euro area as a whole from 1970 to 2006. Clearly, since the mid-nineties inflation rates have decreased drastically in Italy and France converging to those of Germany and stabilizing around the target of the ECB.

Convergence of inflation rates in countries of the euro area other than Germany is an important effect of the process leading to the monetary union and an aspect of ECB credibility not discussed by FG's paper.

To examine inflation expectations during the ECB years, we report below the (quarterly) Survey of Professional Forecasters (SPF) for inflation in the euro area in the sample 1999Q1–2008Q2. Figure C4.2 plots the median, the mean, and the 25th and 75th percentiles of the distribution of the SPF's responses[1].

Clearly, expectations have been well anchored in the period 1999Q1–2008Q2.

Beyond these data on professional forecasters, the ability of the ECB to anchor inflation expectations has been analyzed in depth by Ehrmann *et al.* (2007). Those authors study the effects of news on macroeconomic announcements and find that with the inception of

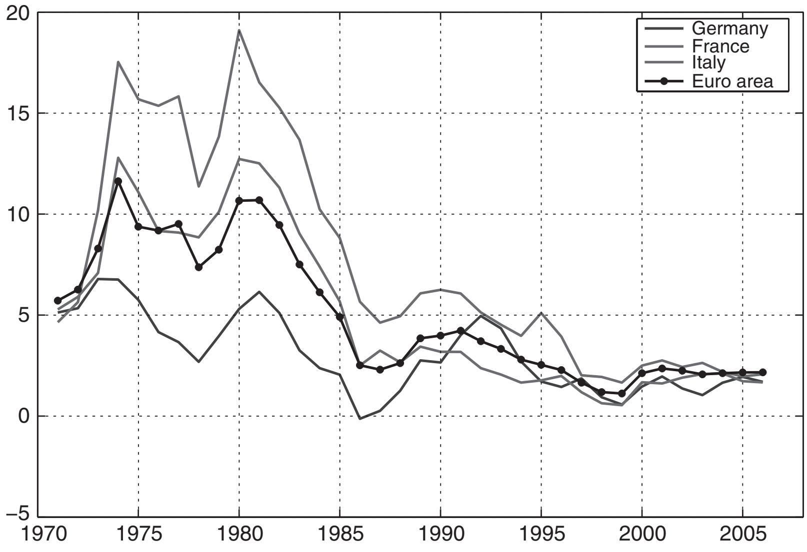

Figure C4.1: Inflation rates
Source: Eurostat.

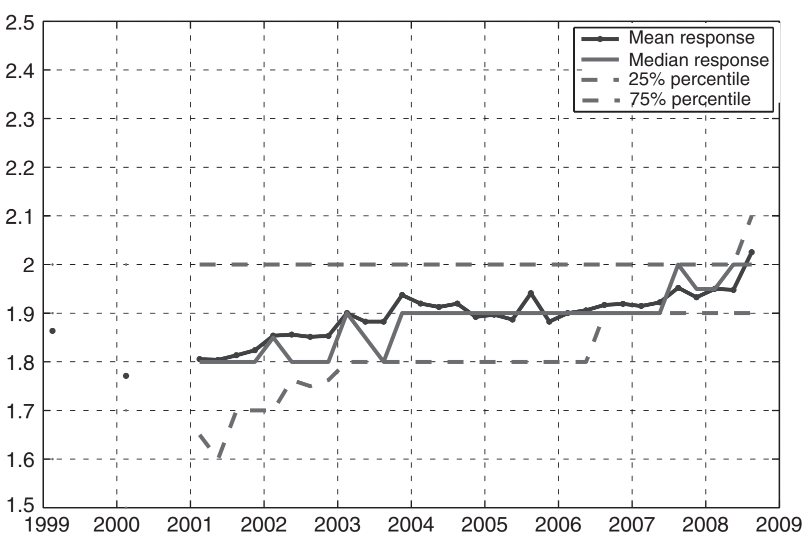

Figure C4.2: Long-run inflation expectations from the SPF
Source: ECB.

the EMU the long end of the yield curve (in particular, they look at very far ahead forward interest rates) has become less reactive to macroeconomic announcements that move the short end of the yield curve. This is true not only for countries that had a less credible monetary policy like Italy and France, but also for Germany.

FG propose an exercise which is similar in spirit to that of Ehrmann *et al.* (2007). However, instead of relying on observable measures of news, they use monetary policy shocks identified from their estimated VAR. Their results lead to a very different conclusion.

There are two reasons which may explain why results differ. First, FG's measure of news depends on their identification assumption and may not be robust to different identifying restrictions. Notice that, beside the assumptions implicit in the Choleski representation, the authors also assume that the USA is exogenous with respect to Germany (and, then, the euro area). Second, the VAR analysis is based on a very short sample of nine years of data and results are likely to be unstable.

Given the evidence on inflation expectations presented above and what is found in the literature on the effect of macro announcements, FG's result remains puzzling.

3. Response to idiosyncratic euro area shocks

One of the key results of the paper is that both long and short rates in the euro area are mainly affected by idiosyncratic (euro-area specific) sources of fluctuations.

The result on the long rate is surprising since, as the authors themselves argue, US and euro-area rates have been very synchronized over the last fifteen years. The result on short-term rates is not as surprising, but needs further investigation.

To this aim, and to cross-check FG's result, we conduct a counterfactual experiment. Precisely, we estimate a VAR on the levels of real GDP, the GDP deflator, short and long rates for the USA and the euro area using quarterly data from 1970 to 2006[2] and we compute the most likely path of euro-area variables conditional only on the history of the US variables.

Let us collect US variables in the vector X_t^{US} and euro-area variables in X_t^{EA}. Defining $X_t = \begin{bmatrix} X_t^{US} & X_t^{EA} \end{bmatrix}$, the estimated model is:

$$X_t = A(L)X_{t-1} + e_t.$$

Then, on the basis of VAR estimates, we can compute the conditional expectation[3]:

$$\hat{E}\left(X_t^{EA}\middle|X_{t0}^{US}\ldots X_T^{US}\right).$$

Clearly, if it were true that the two economies faced large idiosyncratic shocks, the conditional expectation would be very different from the observed euro-area variables. We report results for short (Figure C4.3) and long interest rates (Figure C4.4).

Clearly, the fit is very good for both rates: the simulated long rate is always within the bands and so is the short rate, with the exception of a couple of years in the early nineties. This implies that idiosyncratic European shocks play a very limited role in explaining not only fluctuations in the long rates in the euro-area economy, but also fluctuations in the policy rate.

As an additional cross-check we compute the percentage of the variance of euro-area interest rates accounted for by idiosyncratic sources of fluctuations. For the generic euro-area variable x_t, this is defined as:

$$V = \frac{Var\left(x_t - E\left(x_t\middle|X_{t0}^{US}..X_t^{US}..X_T^{US}\right)\right)}{Var(x_t)}.$$

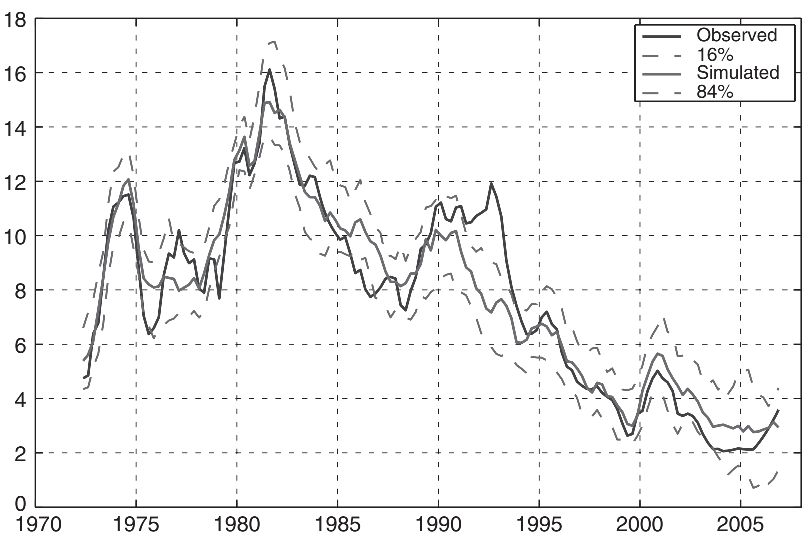

Figure C4.3: Short-term interest rates in the euro area
Source: ECB and authors' calculations.

Table C4.1: ***Percentage of variance of interest rates accounted for by idiosyncratic sources of fluctuation***

	Short Rates	Long Rates
Idiosyncratic variance	9.7%	4.6%

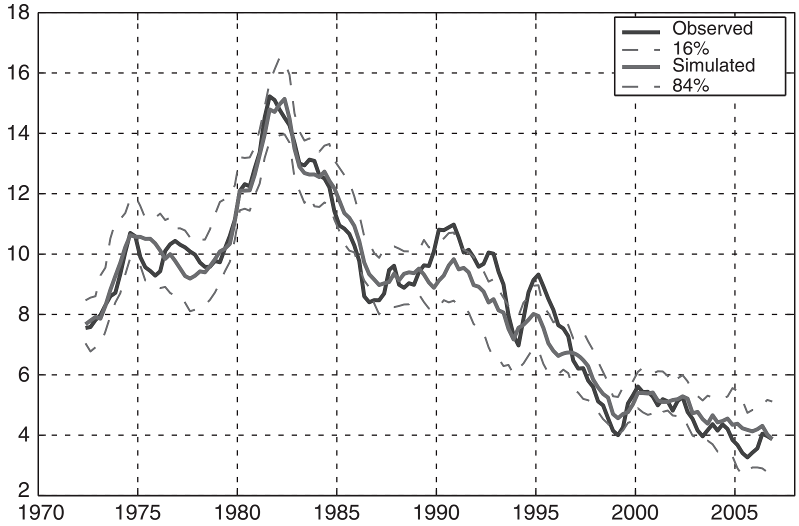

Figure C4.4: Long-term interest rates in the euro area
Source: ECB and authors' calculations.

Results are reported in Table C4.1.

Results confirm what was found for the conditional expectations. Global shocks explain a very high share of the variance of euro-area interest rates.

These findings are difficult to reconcile with FG's results which point to a large response of short and long rates to idiosyncratic euro-area specific shocks.

4. US-euro area business cycle and the policy rates

How do we reconcile the result from the previous section on the relation between US and the euro-area short rates and the observed lack of synchronization of these rates?

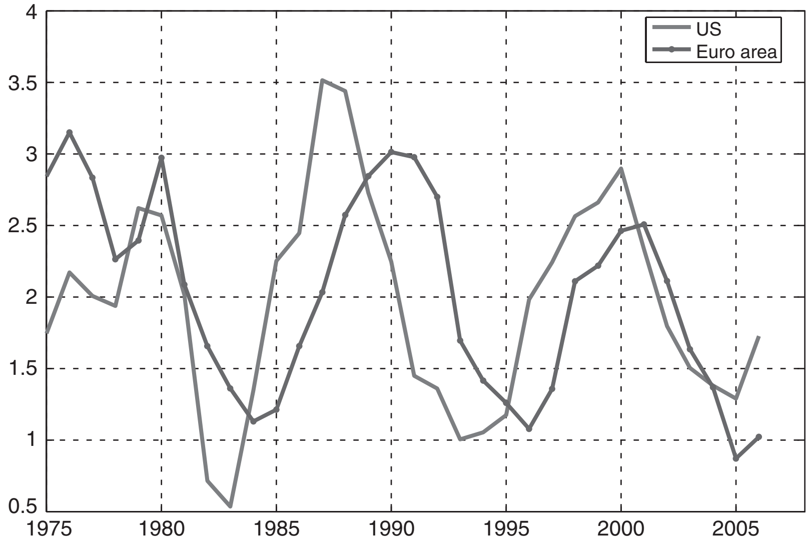

Figure C4.5: Five years (annualized) moving average of per capita real GDP growth rates
Source: Eurostat and authors' calculations.

Here we explore the conjecture that their lack of synchronization reflects the lead-lag relation among the US and euro-area business cycles and not idiosyncratic causes of variations.

We report the five-year moving average of output per capita GDP growth in the euro area and the USA (Figure C4.5) and the corresponding levels (Figure C4.6) (see Giannone and Reichlin, 2006b).

These figures suggest the hypothesis that real long rates have been similar since 1970 because long-run real economic activity has been the same in Europe and in the USA (the trend in GDP growth is the same), while differences in short-run rates reflect temporary non-synchronous output gaps. This explanation would be compatible with all the evidence we have shown so far.

5. World factors in long-term interest rates

The last decade has been a period of global financial integration which has affected the bond market and the relation between the short- and long-run rates worldwide. It is therefore difficult to analyze

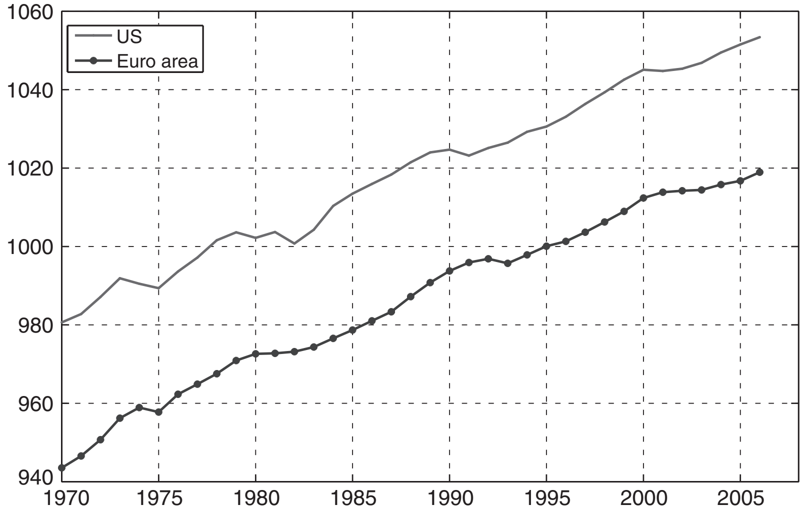

Figure C4.6: Levels of per capita real GDP
Source: Eurostat.

the credibility of the ECB on the basis of the changes in the transmission of policy rates to long rates since global forces have affected this relation.

Below we consider a wider panel of countries than we have done so far, and examine the relation between short and long rates in different subsamples.

Precisely, we consider a panel regression of the nominal long-term interest rate ($i^L_{i,t}$) on the nominal short-term interest rate ($i^S_{i,t}$) for all OECD countries[4] as a baseline:

Baseline

$$i^L_{i,t} = a_{i,b} + \beta_b i^S_{i,t} + e_{i,t}$$

where b stands for baseline and i for country (we include all the countries).

In order to control for the world interest rate we also consider the alternative "global" specification:

Global

$$i^L_{i,t} = a_{i,b} + \beta_g i^S_{i,t} + \gamma i^L_{W,t} + u_{i,t}$$

Table C4.2: ***Estimated beta coefficients: panel regression results***

SAMPLE	baseline	global
1974–04	0.8 (0.02)	0.5 (0.02)
1974–83	0.6 (0.04)	0.5 (0.05)
1984–93	0.6 (0.03)	0.5 (0.03)
1994–04	0.8 (0.04)	0.2 (0.03)

where $i^L_{W,t}$ is the global interest rate measured as a weighted average of the countries' interest rates. The weights for the country-specific interest rates in the aggregate are those of the first principal component.

We consider different subsamples: 1974–2004, 1974–83, 1984–93, 1994–2004 and report the estimated β_b and β_g with standard error in parenthesis.[5]

Results are illustrated in Table C4.2. They indicate that, since the last decade and once we control for the world interest rate, the sensitivity of the long interest rates to the policy rates declines quite substantially.

The implications of these results for our discussion is that, as conjectured, the differences in interest rate dynamics between the period 1994–2004 and the previous decades (the Bundesbank versus the ECB) are difficult to interpret in terms of relative credibility of the central bank. In the last decade, world factors have become a more important component of interest rate dynamics everywhere, changing the transmission of monetary policy to long-term interest rates worldwide.

In fact, the authors are well aware of the importance of global factors for the bond market and indeed the interaction between the world and the euro area is central in their empirical exercise. However, they fail to see the implications of this point when comparing the last decade and the previous period.

6. Conclusions

The world indeed matters for the bond market, as argued by FG's paper. The world also matters for explaining both short and long interest rates. We have shown that, when the dynamics of the euro area and the USA are jointly modelled, long and short rates in the euro area are mostly explained by shocks common with the USA. This result, obtained with a different methodology than that proposed in the paper, sheds doubts on

FG's finding on long and short rates responding aggressively to idiosyncratic euro-area shocks.

Evidence from the bond market in countries other than Germany and the analysis of long rates' response to macro announcements (see Ehrmann *et al.*, 2007) suggest that ECB matters for the bond market for having contributed with other central banks to a low inflation credible environment. The expectation of the EMU triggered the convergence of the nominal rates in those countries of the euro area whose central banks did not enjoy the Bundesbank's credibility. Moreover, since 1999, evidence from the Survey of Professional Forecasters points to anchored inflationary expectations. This evidence is difficult to reconcile with the analysis of credibility offered by the paper. FG's analysis of ECB credibility is ingenious, but seems to miss the big picture. Should we conclude that the ECB has lost credibility with respect to the Bundesbank by just looking at Germany? Should we trust results of impulse response functions estimated on the basis of less than ten years of data which do not appear to be robust to alternative model specifications? Finally, in interpreting term structure facts over the last ten years we must be aware of changes which have affected financial markets globally. These are the points we have developed in our discussion.

Notes

1. Notice that the SPF has been quarterly since 2001, while for both 1999 and 2000 there is only one observation.
2. The short-term interest rates for the USA are the three-month T-bill rate and the ten-year bond rate. The interest rates and the macroeconomic data for the USA are taken from the IMF International Financial Statistics database. As for the euro area, data are taken from the Area Wide Model database.
3. The VAR is estimated by Bayesian techniques using Litterman/Random Walk priors. The tightness of the prior for the degree of shrinkage is set using ideas developed in Bańbura *et al.* (2008). Precisely, since a bivariate VAR with the GDP of the USA and the euro area provides a very accurate description of the fluctuations in European economic activity (see Giannone and Reichlin, 2006b; Giannone *et al.*, 2008b), we set the tightness parameter such that the eight variables VAR fits the euro-area GDP as well as the bivariate VAR. The algorithm used to compute the conditional expectation is the same as in Giannone and Lenza (2008).
4. The data for the interest rates come from the OECD Economic Outlook and refer to the following countries: Australia, Austria, Belgium, Canada, Finland, France, Germany, Italy, Japan, the Netherlands, New Zealand, Portugal, Switzerland, the United Kingdom, and the United States.
5. Results are reported from Reichlin (2006).