



EUROPEAN CENTRAL BANK

# Research Bulletin

## DG Research, No. 3, September 2005

### Editorial

by Carsten Detken, Monetary Policy Research Division, DG Research, ECB

*The third edition of the Research bulletin focuses on three current macroeconomic policy issues; the behaviour of yield curves, the determinants of inflation and the effects of active wage policies. The lead article on the determinants of bond risk premia describes significant progress in one of DG-R's research priorities, marrying macroeconomic and financial approaches addressing issues of high relevance for central banks. The new methodology presented here pushes forward the frontier of knowledge on the interpretation of movements in yield curves, in particular the implied bond risk premia. First results, e.g., suggest that the variability of yield premia has declined with the introduction of the euro, which allows for a more precise assessment of inflation expectations. This will eventually also permit a more effective use of indexed linked bonds for the assessment of inflation expectations. Moreover, the combination of macroeconomic and financial methodologies leads to superior forecasting performance for interest rates.*

*The second article argues that up to 70% of the variance of national inflation rates can be explained by a global factor. A model making use of the global inflation factor is shown to have a superior out-of-sample forecasting performance for national rates than the best model available so far. The third article compares the effects of a temporary surprise wage increase and a more structural permanent change in wage policies, i.e. "the end of wage moderation", with the help of the ECB's (euro) area wide model. Not surprisingly the two have very different effects. The article contributes to the current debate on wage policies in some euro area countries.*

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### Forthcoming Workshops/Conferences

- The CEPR/ESI 9<sup>th</sup> annual conference on "Structural Reforms and Economic Growth in Europe". Frankfurt, 9-10 September, 2005.
- 4<sup>th</sup> Joint Central Bank Research Conference on "Risk Measurement and Systemic Risk". ECB, Federal Reserve Board, Bank of Japan, Committee on the Global Financial System/BIS, Frankfurt, 8-9 November, 2005.
- Conference on "European Economic Integration: Financial Development, Integration and Stability in Central, Eastern and South-Eastern Europe". Joint Conference of the ECB-CFS Research Network on Capital Markets and Financial Integration in Europe and the Austrian National Bank, Vienna, 14-15 November, 2005.
- Conference on "Issues Related to Central Counterparty Clearing", Frankfurt, 3-4 April, 2006.
- 3<sup>rd</sup> ECB conference on "Statistics: Financial Statistics for a Global Economy", Frankfurt, 4-5 May, 2006.

# Economic Determinants of Risk Premia in the Term Structure of Interest Rates

by Peter Hördahl, Oreste Tristani and David Vestin, Financial and Monetary Policy Research Divisions, DG Research, ECB

*A new empirical literature combining elements from macroeconomics and finance explains the dynamics of bond risk premia in terms of economic fundamentals. This permits to analyse jointly movements in yields and macro-economic variables without assuming that risk premia are constant. A robust finding in the literature is that risk premia increase during recessions, presumably reflecting a more prudent attitude of investors. Correcting yields for risk premia helps in out-of-sample predictions. These models display a superior forecasting performance of future interest rates. Preliminary empirical results on euro area yields suggest that, compared to Germany during pre-EMU years, the variability of risk premia has declined after the introduction of the euro.*

Long-term interest rates should reflect expected movements in future short-term interest rates. Macroeconomic models can provide a rich characterisation of this link. Expected future changes in short-term interest rates can arise from the systematic policy reaction to various macroeconomic shocks. At the same time, however, long-term interest rates are also likely to include risk premia. As such, their dynamics may be due purely to variations in the perceived level of uncertainty of future short-term interest rate developments, which are typically addressed in finance models. But what are the economic determinants of risk premia? In contrast to the expectations channel mentioned above, bond risk premia are not well understood from a macroeconomic perspective.

In recent years, a growing macro-finance literature has tried to redress this shortcoming. The macroeconomic underpinnings for the evolution of bond risk premia have been made explicit and related to the expectations channel. This has produced models where expectations of, and uncertainty about, future macroeconomic developments can be discussed jointly within a rigorous and consistent framework. This article reviews some of these contributions emphasising EU-related evidence.

## The new macro-finance framework

The building blocks of the new macro-finance framework are well-established models in the two fields. From the macroeconomic viewpoint, these models are typically stylised. Depending on the application, the economy is often modelled in terms of

a simple two-equation framework including just output and inflation. The description of the macroeconomic block of the models is completed by the specification of a Taylor-type interest rate rule for monetary policy. However, since such rules are often too simple to capture fully policy rate dynamics, they are extended to include a reaction to an unobservable variable. Typically, this is specified as a time-varying, perceived medium term inflation objective.

The finance-type aspects of the macro-finance approach revolve around the implicit and flexible modelling of investors' "appetite for risk". The approach builds on a literature modelling the term structure in terms of a number of unobservable dynamic "factors" (see Duffie and Kan, 1996; Dai and Singleton, 2000; and Duffee, 2002). Risk premia are assumed to be linear functions of these unspecified factors.

The intuition of Ang and Piazzesi (2003), the seminal contribution to the macro-finance literature, is that **the unspecified factors of traditional finance models can be replaced, or supplemented, by macro-economic variables**. The result is that variations in risk premia become dependent on the state of the economy. While allowing for such specification of risk premia, the Ang and Piazzesi model is entirely compatible with traditional, expectations-led dynamics. Increases in the inflation rate continue to be met by a monetary policy tightening, which will then be factored in expectations of future policy interest rate hikes.

Ang and Piazzesi described macroeconomic dynamics using reduced-form equations and a similar approach

has also been followed by Dewachter and Lyrio (2005). Hördahl, Tristani and Vestin (2005, henceforth HTV) and Rudebusch and Wu (2004) rely instead on a structural model including aggregate demand and aggregate supply schedules. In the HTV model, yield dynamics are expressed entirely in terms of macroeconomic variables. The shocks driving the system are therefore entirely standard: demand-type shocks, cost-push shocks, monetary policy surprises and perceived changes in the medium term objective of the central bank. These shocks have an impact on yields for two reasons. First, they induce changes in bond prices, because they trigger expectations of a monetary policy response. Second, they generate variations in risk premia, because investors value macroeconomic risks differently depending on the state of the economy.

## Empirical evidence

With the exception of the HTV model, the other models mentioned above are estimated on US data. HTV focus instead on the German pre-EMU period 1975-1998, for which reliable data are available. A re-estimation of the model on the period after the introduction of the euro indicates that risk premia have

become less variable (see Cappiello et al., 2005). These results are however very tentative because of the small sample size, and the focus in this section is therefore mainly on pre-euro results.

Figures 1a and 1b plot annualised yields, both raw and corrected for the model-estimated risk premium. For illustrative purposes, we focus on 1-year and 7-year bonds, which are indicative of developments in relatively short and relatively long maturities, respectively. The first feature which emerges from the figures, and which is consistent with the results of US studies, is that risk premia are large and acutely time-varying. Starting from average values of 20 and 120 basis points, yield premia vary within ranges of over 3 and little less than 2 percentage points for 1-year and 7-year bonds, respectively. The second feature of estimated yield premia is that they can occasionally become negative, especially for the shorter maturity. This happens if a bond provides a relatively high return when negative macroeconomic shocks occur, thus representing a hedge against those shocks. Finally, premia on long-term bonds are estimated to be large around the end of the seventies and eighties, and especially after 1992.

Figure 1a: 1-year German bond yield

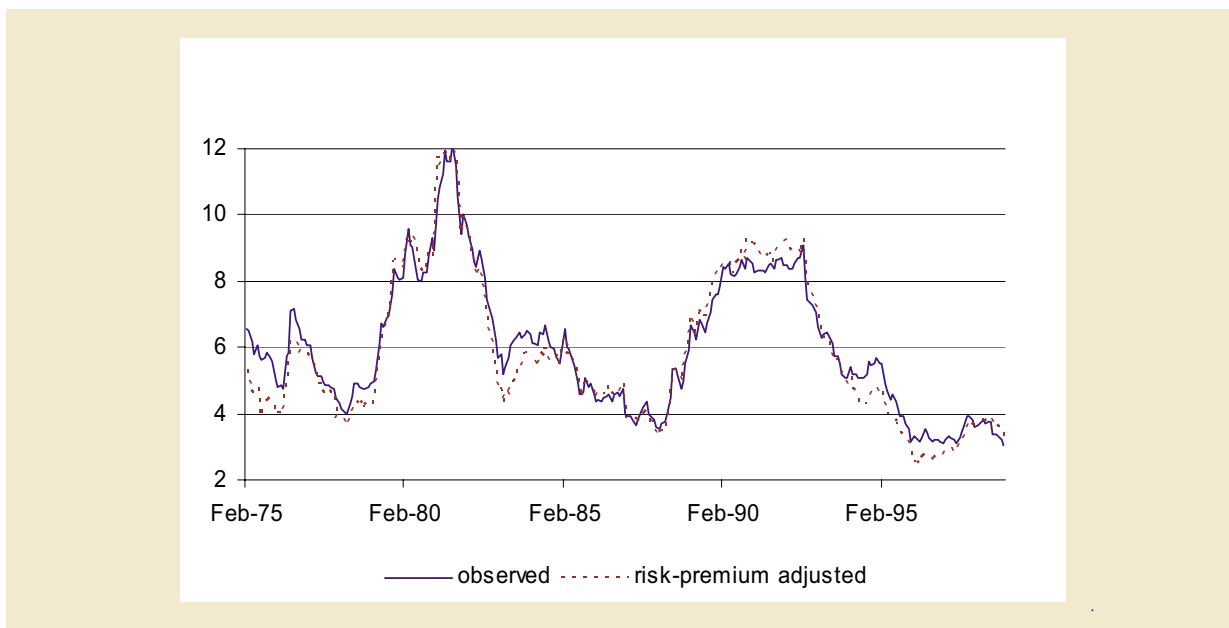
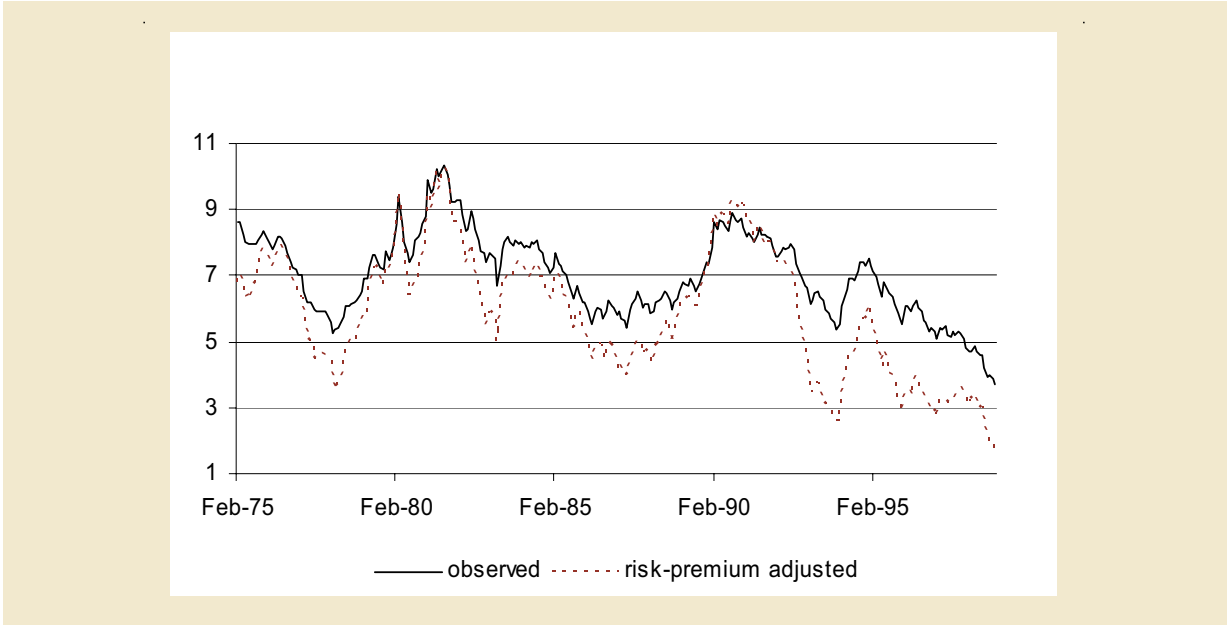


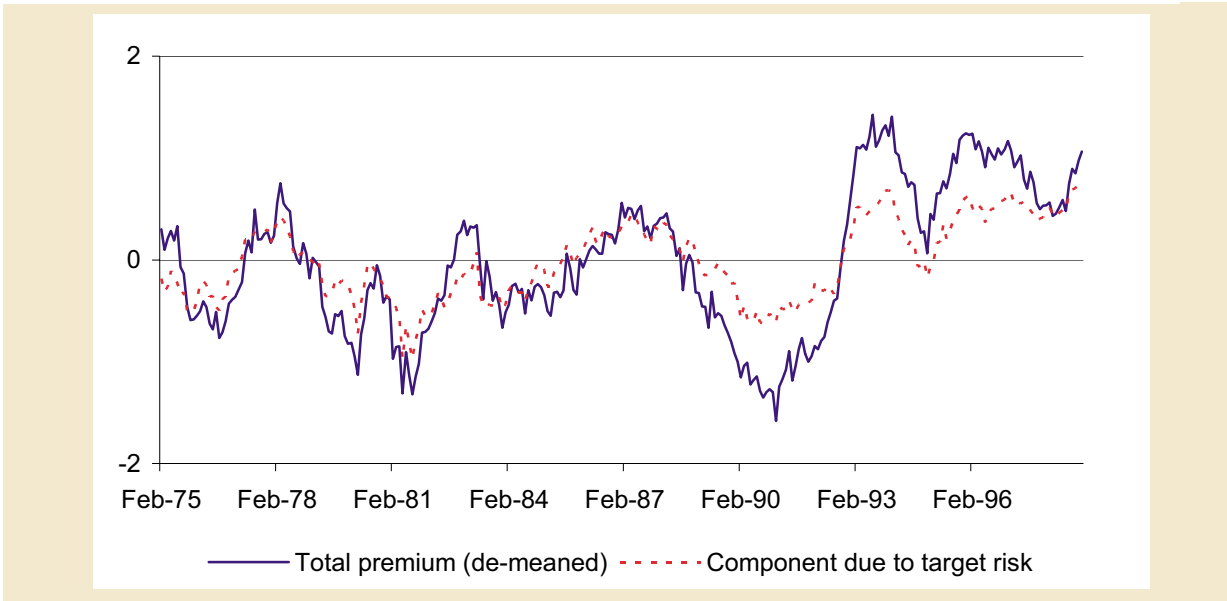
Figure 1b: 7-year German bond yield



In order to provide some intuition for the latter finding, Figures 2a and 2b show the most important sources of risk which determine the premia displayed in Figure 1a and 1b. **The most important determinant of the yield premium on long-term bonds appear to be changes in the perceived medium term inflation objective.** Movements in risk premia are also strongly related to

the economic cycle. This is a robust finding of this literature: **Yield premia are high during recessions and low at the peak of the expansion**, possibly reflecting a more risk averse attitude of investors during “bad times”. The increase in German risk premia in the years after unification is also sustained by the recession of 1993.

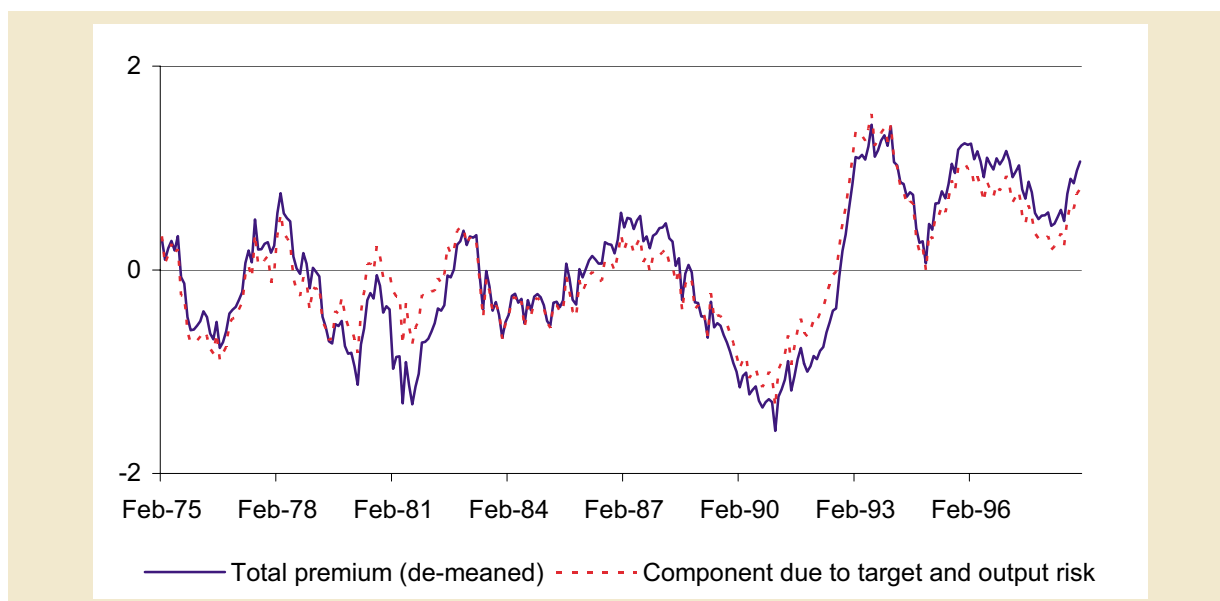
Figure 2a: Estimated German yield premium on 7-years bonds and target risk



The benefits of the macro-finance approach emerge clearly in forecasting, where estimated risk premia can be used to isolate the pure expectations component

from yields at all maturities. **The forecasting performance of the HTV model is superior to the best available alternatives.** A summary measure of the

Figure 2b: Estimated German yield premium on 7-year bonds and target and output risk



1-year ahead forecasting performance on yields of various maturities shows a reduction in average forecast errors by 20 percent compared to a random walk, 40 percent compared to a finance-type model without macro variables, and by almost 100 percent compared to a VAR. The improvements are often significant from a statistical viewpoint. Both the presence of macroeconomic variables and the imposition of no-arbitrage restrictions contribute to this result. The former provides a better characterisation of movements in the short-term rate; the latter ensures that information from the whole yield curve is exploited in the forecast.

## Future perspectives

The models discussed in this article provide the first empirically sound framework allowing one to discuss jointly expectations and risk premia within a macroeconomic context. The literature, however, is only at the beginning and there are many elements which need to be improved upon or developed in future applications. Three avenues for future research should be considered of particular importance.

First, this literature has not yet delivered an important result that is clearly within reach: an estimate of the likely magnitude of the inflation risk premium at

various yield maturities. For this purpose, **including index-linked bonds in the information set used for estimation is probably essential** (see Hördahl, Tristani and Vestin, 2005d). Estimates of the inflation risk premium would provide central banks with a means to correct break-even inflation rates and thus develop more precise measurements of long-run inflation expectations.

Another missing element in the literature is an economic intuition for why risk premia increase or decrease together with some macroeconomic variables. For this purpose, a fuller integration of the macroeconomic and finance literatures is needed. Hördahl, Tristani and Vestin (2005b) provide some initial results in this respect. **Investors' attitudes towards risk, or the "market prices of risk", are found to reflect the degree of uncertainty of the macroeconomic environment, as measured by the volatility of their consumption stream induced by macroeconomic shocks.**

Finally, this literature has so far dismissed completely the zero bound on nominal interest rates. An obvious disadvantage of this unrealistic assumption is that interest rates simulated through or forecasted by the models can occasionally become negative. The results of the models cannot be considered reliable when deflation expectations or risk prevail in the economy.

## Is Inflation a Global Phenomenon?

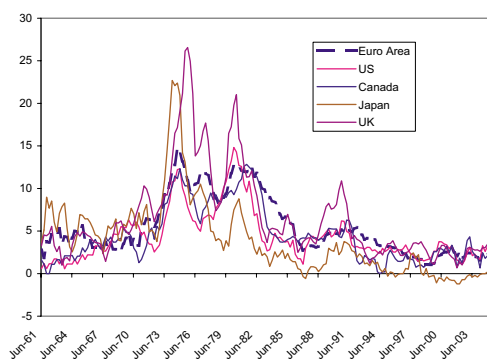
By Matteo Ciccarelli and Benoit Mojon, *Econometric Modelling and Monetary Policy Research Divisions, DG Research, ECB*

We show that inflation is largely a global phenomenon. First, inflation rates of 22 OECD countries have a common factor that alone accounts for nearly 70% of their variance. Second, Global Inflation is a function of real developments at short horizons and monetary developments at longer horizons. Third, there is a robust "Error Correction Mechanism" that brings national inflation rates back to Global Inflation. Preliminary results show that, by exploiting this mechanism, we can beat standard benchmarks used to forecast national inflation from 1 to 8 quarters ahead, across samples and countries.<sup>1</sup>

### The co-movement of inflation across the OECD

Inflation in the euro area has clearly been much lower in the last decade than in the 1980's and 1970's. **This decline in inflation is however not specific to the euro area.** Figure 1, which plots inflation rates for the euro area and non euro area G7 countries, shows that inflation is currently lower than its historical average. Another observation one can make from this picture is that the **inflation rates** of the different countries tend to **move together**. Inflation has progressively risen in the 1960s and 1970s before it declined in the 1980's, and further in the early to mid-1990's, remaining low and relatively stable since then.

Figure 1: The co-movement of inflation



The co-movement of inflation across countries raises a sequence of questions. First, how much of the fluctuations of inflation are actually common to all countries and how much are country specific? Second, in case these common fluctuations are sizable, what is driving them? Third, can we improve our national inflation models by decomposing them in the part that is common to all countries and the country specific part?

The following paragraphs answer to each of these three questions in turn.

### How much of the fluctuations of inflation are common to all countries?

The answer to this first question is that the part of countries inflation rates which is common is surprisingly large: in a cross-section of 22 OECD countries, we find that the co-movement, which we call **global inflation, accounts for 70 % of the variance of countries inflation.**

This measure is obtained by estimating a joint model of these 22 national inflation rates. In essence, we assume that each inflation rate  $\pi_{it}$  can be decomposed into a common factor  $F_t$ , and an "idiosyncratic" country  $i$  specific part  $\varepsilon_{it}$ . The estimation, where  $F_t$  is replaced by a **simple arithmetic average** or a slightly more sophisticated **principal component estimator**, provides us with a measure of the share of inflation rates' variance that is due to the common factor.

We report in Table 1 this variance decomposition for the G7 countries, for the period 1960-2003. The first column reports the decomposition for the headline inflation rates (as shown in Figure 1) and the second column reports it for de-trended inflation series. The share of the variance explained by global inflation differs significantly across countries, but it is sizeable in all of them, including Germany, where the level of inflation has been much lower on average than in the other countries. In addition, comparing the two columns of Table 1 indicates that **the co-movement of inflation is relevant both for the trend and for the fluctuations of inflation at business cycle frequencies.**

<sup>1</sup> This article is based on the paper "Global Inflation", by M. Ciccarelli and B. Mojon.

## What is driving global inflation?

Given the dominant share of inflation variance that is common across countries, it is essential to understand what is driving these common fluctuations. To answer this question, we have measured the **predictive power for global inflation of potential inflation determinants**. These include genuine common drivers of inflation such as commodity prices as well as estimates<sup>2</sup> of global developments in the business cycle, interest rates and monetary conditions. The results indicate that commodity prices and the global business cycle help predicting Global Inflation at one or two quarters horizon. Money growth appears on the contrary relevant to forecast the evolution of Global Inflation at longer horizons. While not surprising, these results indicate that Global Inflation is easily related to standard models of inflation. They bring support to the **ECB strategy** that real development matter for short run developments of inflation while liquidity is related to the inflation trend. This is important because a large share of the variance of euro area inflation is actually undistinguishable from Global Inflation developments.

## Can global inflation improve our models of national inflation rates?

One implication of the international co-movement of inflation could be that **national rates cannot deviate for too long from Global Inflation**. In equation (1) we formalise this implication within a simple error correction mechanism representation such that a stable relation between national inflation rates and the common factor is explicit.

$$\Delta\pi_{it} = \alpha_{i0} + \alpha_{i1} \Delta\pi_{it-1} + \alpha_{i2} (\pi_{it-1} - \lambda_i F_{t-1}) + \alpha_{i3} \Delta F_t + \varepsilon_{it} \quad (1)$$

We expect in particular that a rise in the country specific inflation component in the previous period ( $\pi_{it-1} - \lambda_i F_{t-1}$ ) is corrected in the current period, i.e., we expect  $\alpha_{i2}$  to be significantly negative. We estimate equation (1) for G7 countries over the period 1960-2003. Results, which due to space constraints are not reported here, confirm for all countries that there is an important **mechanism that pulls back national inflation towards Global Inflation**. The result is

**robust** across all other OECD countries considered and sample periods.

The ECM above suggests a **parsimonious model for forecasting inflation**. To test the performance of this model we compared the ratio of its forecast error to the forecast error of models that are widely considered as the most reliable models to forecast inflation<sup>3</sup>: (i) an autoregressive model augmented with the common factor; (ii) a simple autoregressive model; and (iii) a random walk. Results show that the use of **Global Inflation usually helps improve the out of sample forecast of inflation**, especially at 4 and 8 quarters horizons.

Taken altogether, the potential gains of exploiting the international interdependencies to model inflation appear very large. One interpretation of the results above is that the **common factor is a better signal of the underlying common shocks that will eventually affect inflation than the national inflation rates themselves**. Another possibility is that local inflation shocks are, at least to some extent, transmitted to other countries. Further research on the ability of monetary policies to limit adverse global inflation shocks is clearly warranted.

**Table 1: Variance decomposition**  
(% inflation variation explained by global factor)

country	Level	Cyclical component (de-trended)
Euro area	0.84	0.38
JP	0.41	0.46
DE	0.46	0.22
US	0.63	0.42
GB	0.72	0.33
CA	0.76	0.27
IT	0.82	0.57
FR	0.86	0.64
Mean	0.69	0.41
median	0.74	0.40

2 We estimated models similar to model (1) using national potential determinants of inflation: growth rates of industrial production, wage inflation and M3, and the level of interest rates.

3 In particular, these simple models are more efficient for out of sample forecasts of inflation than multivariate models where inflation is related to real and monetary developments. While the latter models perform well in sample, their coefficients are typically unstable and therefore of little help for out of sample tests.

## The Impact of Higher Wages on Output and Inflation

By Kai Christoffel and Julian Morgan, Econometric Modelling Division, DG Research, ECB

In this article we examine the effects of wage increases using the ECB's Area-Wide Model (AWM). The analysis implies that in all cases wage shocks lead to higher inflation. A wage shock may have a temporary positive impact on output only under a set of very unlikely conditions: (1) Wages rise temporarily and do not reflect any change in the wage bargaining process; (2) Economic agents correctly perceive this as temporary and do not change their behaviour; (3) Monetary policy does not react to the higher inflation induced by the rise in wages. In the likely event that these conditions were not fulfilled, the effects of the abandonment of wage moderation would imply falling investment, weak output and rising unemployment.

The persistently disappointing performance of growth in the euro area has prompted some economists and politicians to suggest that there is a problem of excessive wage moderation<sup>1</sup>. Put simply, the idea is that repeatedly low wage settlements have reduced the incomes of consumers and, in turn, weakened domestic demand. **We employ AWM simulations to assess the impact of higher wages on output and prices and find that the effects depend crucially on the reason why wages have changed.** We consider two possibilities. The first is what we call a 'wage-setting error': firms and workers accidentally set wages too high. This error is temporary and is gradually corrected as the wage increase feeds into higher prices so that real wages return to their original level. The important aspect of this scenario is that nothing changes on the real side of the economy in the long-run. The second possibility is what we label the "end of wage moderation" scenario: Wages are forced up due to a fundamental change in the willingness of unions to agree to moderate wage settlements.<sup>2</sup> This shock is of a permanent nature and implies in the long run, a higher natural rate of unemployment and a lower level of potential output. For both scenarios we have assumed that neither monetary policy nor the exchange rate respond to the higher inflation induced by the wage increases.

### The impact of a wage-setting error

This shock initially pushes wages 1 per cent above their baseline level and gives an immediate stimulus to disposable income and general demand conditions (see Table 1). With the exception of the first year, the positive effects of the rise in demand more than offset the reduction in labour demand due to higher wages leading to a rise in total employment. There is a direct effect of the wage shock on headline inflation, which is amplified by the strong demand conditions. With a constant nominal interest rate and increasing headline inflation, the real interest rate decreases lead to a rise in investment. Overall, this shock exhibits the Keynesian features expected by those who argue against wage moderation in Europe. It is important to note that these effects depend on the wage shock being unanticipated and of a temporary nature. **Efforts to obtain this effect by means of a deliberate wage policy will result in undesired long run effects described in the next section.** Moreover, the impact of the demand effect would be greatly reduced if monetary policy did not remain passive in the face of higher inflation.

<sup>1</sup> Some of the arguments for abandoning wage moderations are put forward by P. Bofinger: "Wir sind besser als wir glauben", Pearson Studium, 2004.

<sup>2</sup> In principle this could be due to any factor which reduced labour supply, implying a better bargaining positions of workers.

Table1: Effects of a Wage-Setting Error  
(Percentage point deviation from baseline scenario)

	HICP	Wages	GDP	Investment	Unemployment rate
2005	0.30	0.96	0.10	0.24	0.06
2006	0.56	1.22	0.19	0.83	-0.04
2007	0.70	1.18	0.21	0.99	-0.14

Table2: Effects of Higher Wages Due to Structural Changes  
(Percentage point deviation from baseline scenario)

	HICP	Wages	GDP	Investment	Unemployment rate
2005	0.18	0.84	-0.41	-2.49	0.27
2006	0.45	1.41	-0.46	-2.57	0.44
2007	0.76	1.80	-0.41	-1.79	0.45



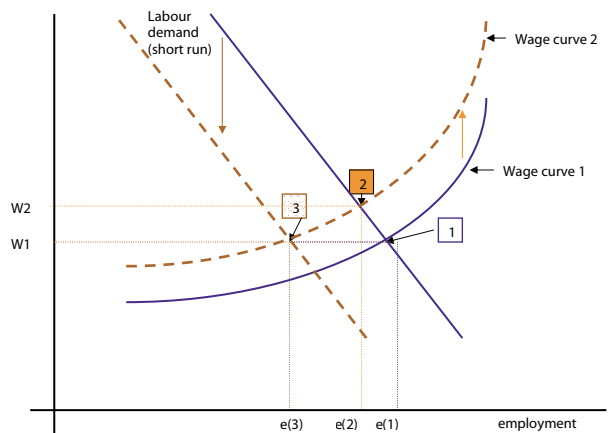
## The end of wage moderation

If the wage increase is of permanent nature and rooted in the underlying bargaining structure between firms and unions it will have an additional effect on long-run employment. The source of such a change could be, for instance, stronger bargaining power of workers or a rise in the minimum wage or a fundamental change in union attitudes towards wage moderation (increased militancy). Drawing from evidence on the relationship between structural factors and unemployment in Europe, we assume that changes in structural factors increasing the wage level by one percent would be associated with a one percentage point increase in the structural unemployment rate.<sup>3</sup>

As in the previous scenario the increase in the wage level will initially have some positive effects on disposable income and general demand conditions (see Table 2). However, this time the wage increase is associated with a fundamental deterioration in the long-run prospects for the economy: Structural unemployment rises and the level of potential output falls. In this environment, firms are induced to sharply scale back their investment plans. In the AWM – as in most macromodels – firms seek to maintain a constant capital-output ratio in the long-run. With lower potential output, the optimal capital stock will fall inducing firms to reduce investment. This effect lowers overall GDP, thereby more than offsetting the earlier stimulus to demand from higher wage incomes. Unemployment rises and remains at a higher level.<sup>4</sup> **In this scenario, the abandonment of wage moderation is bad news for both growth and inflation in the euro area.**

The mechanisms underlying these effects can be illustrated with the well-known 'wage curve' (Figure 1).<sup>5</sup> This curve traces the relationship between wages and employment and depicts wage bargaining in the economy. In the long-run, the standard neo-classical model with constant returns to scale implies that wages are determined by productivity and are fixed at  $W_1$ , whilst the intersection of  $W_1$  and the wage curve 1 determines the equilibrium level of employment before the wage shock. Following the shock, the wage curve of the employees or unions is shifted upwards implying increased wage aspirations for every employment level.

Figure 1: Shocks to the Labour Market



The change in the wage aspiration shifts the wage curve and defines a new structural employment level  $e(3)$ . The implied capital adjustment shifts the short run labour demand downwards to the new equilibrium in point 3.

The temporary equilibrium (Point 2) is characterised by higher wages and a lower level of employment. Due to the shift in the structural level of unemployment, firms will start to reduce investment to adjust the capital output ratio back to the optimal level. The implied reduction in the capital stock shifts the short run labour demand curve downwards, because the marginal product of labour is lower for every employment level. The new equilibrium in point 3 is characterized by a return to the initial real wage level but a substantially lower level of employment.

- 3 The evidence is provided by Morgan and Mourougane (2005): *What can changes in structural factors tell us about unemployment in Europe?* In *Scottish Journal of Political Economy* Vol. 25, No1, February 2005.
- 4 Note that these results depend on the calibration of the adverse impact on structural unemployment. Nevertheless, given the strength of the supply side effects a much smaller impact on structural unemployment (i.e. anything above 0.3 percentage points) would be enough to completely offset the initial positive demand stimulus.
- 5 Blanchflower and Oswald provide comprehensive evidence on the wage curve in "The Wage Curve", MIT Press 1995 and "The Wage Curve Reloaded" 2005, NBER Working paper no. 11338.

## Workshop on “What Effects is EMU Having on the Euro Area and its Member Countries?” held at the ECB on 16-17 June 2005

by *Francesco Mongelli, DG Economics, ECB*

Six years after the launch of the euro, a workshop was organised by the ECB to take stock of the changes in economic and financial structures, institutions and overall economic performance. Here are some major results.

Baldwin reassessed the methodology and principal findings of the pre-EMU literature on the effects of currency unions on trade. The euro has already boosted intra-euro area trade by five to ten percent. Detailed theoretical hypothesis are needed to understand what drives these effects: “if the euro boosted trade by sharpening competition, then in which dataset should we find the footprints?”

Giannone and Reichlin find no detectable change on the degree of heterogeneity of euro area countries. While it is not clear yet whether EMU has favoured or prevented specialisation, there has been an increasing degree of risk sharing between euro area countries since the early nineties. GDP variation is smoothed out through capital markets, credit markets, and other transfers.

Cappiello, Hartmann, Hördahl, Kadareja, and Manganelli apply new models of return linkages between different asset markets, and argue that co-movements among stock markets and government bond markets have increased noticeably after the introduction of the single currency. Interestingly, however, the increase in integration is much more pronounced among a set of larger countries with larger stock markets. The greater integration associated with the euro also led to a decrease in volatility of government bond markets in the euro area.

Duval and Elmeskov observe that on average, the intensity of structural reforms over 1994-2004 has been greater in the euro area than in the rest of the OECD, with top reforming countries being small EMU countries. Reforms have also been typically deeper while at the same time more comprehensive in the euro area. However, reform intensity has not been greater in EMU than in non-EMU EU countries. Furthermore, since 1999 reform intensity in euro area countries was lower than in the 1994-1998 period. No such slow down was observed in non-EMU EU countries.

Angeloni, Aucremanne and Ciccarelli examine the effects of EMU on inflation persistence and price setting across some selected euro area countries. By using data covering six countries, they find that, perhaps surprisingly, EMU has not yet had a visible, direct effect on both price setting and inflation persistence.

Overall, the effects of EMU that we observe are beneficial. Many potential concerns preceding the launch of the euro have been dispelled. All participants agreed that it will take considerably more time for the full effects of the euro to unravel.

## Selected Recent Journal Publications by ECB Staff

1. Adalid, R., Coenen, G., McAdam, P. and Siviero, S. (2005), “The Performance and Robustness of Interest-Rate Rules in Models of the Euro Area”, *International Journal of Central Banking*, 1(1), pp. 95-132.
2. Alesina, A., Angeloni, I. and Etro, F. (2005), "International Unions", *American Economic Review*, 95(3), pp. 602-615.
3. Coenen, G. and Wieland, V. (2005), “A Small Estimated Euro Area Model with Rational Expectations and Nominal Rigidities”, *European Economic Review*, 49(5), pp. 1081-1104.
4. Cristadoro, R., Forni, M., Reichlin, L. and Veronese, G. (2005), “A Core Inflation Indicator for the Euro area”, *Journal of Money, Credit, and Banking*, 37(3), pp. 539-560.
5. Forni, M., Hallin, M., Lippi, M. and Reichlin, L. (2005), “The Generalised Dynamic Factor Model: One Sided Estimation and Forecasting”, *Journal of the American Statistical Association*, 100(471), pp. 830-840.
6. Freixas, X. and Holthausen, C. (2005), "Interbank Lending under Asymmetric Information", *Review of Financial Studies*. 18(2), pp. 459-490.
7. Peersman, G. and Smets, F. (2005), "The Industry Effects of Monetary Policy in the Euro Area", *Economic Journal*, 115(503), pp. 319-342.
8. Smets, F. and Wouters, R. (2005), "Comparing Shocks and Frictions in US and Euro Area Business Cycles: A Bayesian DSGE Approach", *Journal of Applied Econometrics*, 20(2), pp. 161-183.

## Trichet on Asset Price Bubbles and Monetary Policy

On 8 June, the President of the ECB, Jean-Claude Trichet, addressed the issue of asset price bubbles and monetary policy at the Monetary Authority of Singapore's 2005 Annual Lecture.

Trichet pointed out the fundamental problems in calling an asset price boom a bubble, even from an ex-post perspective. The problem is to prove the irrationality of future return expectations at the time of the boom. This clearly is a formidable task.

Trichet went on to mention that the distinction between a boom and a bubble is for many practical purposes of monetary policy rather a semantic than a real issue. Empirical research can identify indicators, which help to predict whether asset price booms later turn out to be costly in terms of output and inflation volatility. Thus, despite the necessarily humble attitude towards central banks' ability to identify bubble episodes, situations where increased vigilance with regard to extreme asset price valuations is of the essence, can nevertheless be identified.

Trichet then reminded the audience that not all asset price boom/bust cycles are necessarily bad for an economy. Some economists have mentioned possibly positive output growth effects of asset price boom/bust cycles in the long run, e.g. due to the relaxation of credit constraints. Consequently, it is certainly not optimal for policy authorities to attempt to eliminate all financial risks. Such an attempt could easily turn out to be counter productive.

The President then discussed the theoretical literature on possible monetary policy reactions to asset price booms. He explicitly mentioned the theoretically attractive, but in terms of information requirements, onerous features of the "leaning against the wind" principle. He finally explained the advantages of the ECB monetary policy strategy in this context. Mainly due to the link between money and credit developments and asset price booms, the comprehensive monetary analysis is likely to detect medium and long-run risks to price stability. The policy recommendation following from the monetary analysis would appropriately take into account the asset price boom, without assigning any additional explicit role to asset prices in the strategy. The effective monetary policy decisions could in the rather rare occasions of identified dangerous asset price booms, be compared to an insurance policy, which tries to reduce the adverse post-boom effects by containing the boom already at an early stage. The insurance premium to be paid would be the additional tightening leading to a lower level of inflation than otherwise considered optimal.

## DG-R Economist Nominated for Best French Economist Prize 2005

Every year a club of prominent French economists and the French newspaper "Le Monde" nominate four promising French economists to receive the Best French Economist Prize. This prestigious award, for which President Jean-Claude Trichet was patron in 2004, is similar in spirit to the Clarke Medal in the US and was created in 2000 to promote the economic debate in the French media by distinguished economists aged below 40.

In 2005 the four nominees were Benoit Coeuré (Agence France Trésor), Esther Duflo (MIT), Elyies Joigny (Université Paris Dauphine) and **Benoit Mojon**, Principal Economist in the Monetary Policy Research Division of DG-Research, ECB. This year's prize was shared by Esther Duflo and Elyies Joigny. According to "Le Monde", the selection committee had nominated Benoit for his research on the monetary transmission mechanism in the euro area and his research on inflation persistence.

These two areas of research have actually been among the top priorities of the Eurosystem research agenda. They led to the set up of two research networks, the Monetary Transmission Network and the Inflation Persistence Network, to which Benoit has been contributing very actively since he joined the ECB Directorate General Research in 1998. Both networks pulled together large scale databases of microeconomic records on bank and firm balance sheets, as well as on disaggregated prices. The richness of these datasets and the analysis carried out in the context of these networks brought new perspectives on the nature of microeconomic adjustments underlying business cycle developments and the effects of monetary policy in the euro area.

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