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Table of Contents

| | |
|---|----|
| <i>MONETARY DIALOGUE MARCH 2007</i> _____ | 5 |
| <i>Summary of Monetary Experts' Panel Briefing Papers</i> _____ | 5 |
| <i>Monetary Policy Transmission Channels in Comparison - Europe versus US</i> _____ | 11 |
| Guillermo de la Dehesa _____ | 13 |
| Jean-Pierre Patat _____ | 21 |
| Leon Podkaminer _____ | 31 |
| Pedro Schwartz _____ | 39 |
| Juan Castañeda _____ | 39 |
| Charles Wyplosz _____ | 47 |
| <i>Wage setting and price stability</i> _____ | 55 |
| Prof. Dr. Sylvester C. W. Eijffinger _____ | 57 |
| Jean-Paul Fitoussi _____ | 71 |
| Gustav Horn _____ | 79 |
| Dr. Jörg Krämer _____ | 89 |
| Anne Sibert _____ | 97 |

MONETARY DIALOGUE MARCH 2007

Summary of Monetary Experts' Panel Briefing Papers

The following summary presents the respective topics of the briefing papers followed by brief bullet points on the main messages and answers of the experts to the questions asked:

1. Monetary Policy Transmission Channels in Comparison - Europe vs. US

How monetary policy affects output and prices is presumably the most important set of information for the ECB when making decisions. In the first years of the euro, the ECB had to get this information from (artificial) pre-euro aggregate data. Only since 1999 has the dataset become large enough to allow for rigorous analysis of the various transmission channels during euro (i.e. the effect of interest rates on consumption, investment, wealth, exchange rates etc.)

Regarding the difference to the US situation, some research seems to suggest that there is little difference in the general conditions of transmission between both regions, while certain structural differences between the US and the euro area may be interesting to analyze in further detail. To exemplify, research by Angeloni et al (2003, NBER Working Paper 9985) identify consumption to be the predominant channel driving output changes in the US, while in the euro area investment is more important. The experts were asked the following:

- How does the elasticity of output growth and prices to changes in the interest rate behave in the euro area in comparison to the US?
- How do specific transmission "blocks" behave in comparison across the Atlantic and what are the implications of possible differences for monetary policy?
- Have the euro area transmission functions grown more homogenous across member states since the introduction of the euro and what are the ways to improve the predictability, stability and homogeneity in this respect?

The answers to these questions have shown a variety of interpretations. However, there is general consensus on the observation that the most important transmission channel is the interest rate channel. This channel works fairly comparably on both sides of the Atlantic. Fortunately, the interest rate channel also seems to be the least conducive to the danger of asymmetric reactions to shocks (Wyplosz). Considerable differences remain in the specific disaggregated effects of channels given the very different financial structures and fiscal systems in the US and in the euro area.

The ultimate real effect of interest rate changes on output and prices remains difficult to assess. In general, it is known that output reacts more rapidly than prices. Although the change in the price level is more delayed, it is at the same time a (more) lasting change. In contrast, the impulse on output growth seems to be reversed in the mid-term perspective (Schwartz, de la Dehesa). However, it has to be noted that this time-frame can be somewhere in the magnitude of 5 years, and it would be equally right to conclude that monetary policy has a considerable real effects on output for quite some time. The more peculiar details of transmission remain a black box in many ways. Given the similarities in the magnitude of effects documented on both sides of the Atlantic, the real puzzle could lie in the question why that is so given the enormous differences in financial structures and preferences between the euro area and the US (Podkaminer).

A further interesting structural difference is that a majority of the US population are net debtors, while in Europe the situation is mixed, albeit the majority are savers. This, among other factors, implies simpler and more homogenous effects of monetary policy in the US making transmission more effective. Giving faith to the assertion that the ECB operates under somewhat more diverse and unequivocal conditions than the FED when the predictability of transmission channels is concerned (see e.g. Patat, Schwartz), one interesting observation is that the ECB needs an environment of "credibility" to operate, "characterised by a rule, a commitment and a published framework", while the FED operates in an environment of "confidence", with "no rule, no commitment, no published framework and a permanent dialogue with the public" (Patat).

Finally, as to the remedies to make monetary policy conditions more homogeneous, all experts agree that further financial integration (e.g. through FSAP) in Europe will help to eliminate some asymmetries in monetary policy transmission.

Further interesting implications for monetary policy brought forward by the experts are very briefly and selectively presented in the following. For a complete picture of each expert's argumentation, consultation of the respective entire contribution is however indispensable.

Charles WYPLOSZ – Main features of transmission very similar, differences remain in details

Europe is far away from symmetric conditions for monetary policy and will always remain somewhat asymmetric in this respect. The "one-size-fits-all"-problem of monetary policy will therefore never be solved, but it seems not to be too serious.

The immediate tool for a central bank is short-term rates. However, the bank needs to be able to influence long-term rates in order for the transmission to work. A key element in the central banks attempts to influence long-term rates is the predictability of its actions, since the long-term rates always reflect a market perception of the sum of future short-term rates and future central bank actions. Therefore, transparency of monetary policy is key!

Leon PODKAMINER– The ECB is not handicapped and could use its instruments more actively

The average output effects of interest rate changes are very similar in the US and in the euro area. Therefore there is no evidence why the ECB should be more handicapped than the FED to use its policy to stabilize output. The details of the transmission channels still remain a black box of which we know very little.

In the US, evidence shows that long-term price effects of interest rate changes are more pronounced. This implies that monetary easing could have much stronger inflationary effects in the US than in Europe. Thus, Europe is not more rigid in this respect, as is often stated, and the ECB could be much more output-oriented without compromising its price-stability mandate.

Jean-Pierre PATAT– The ECB needs "credibility", while the FED enjoys "confidence"

The ECB needs a strategy of "credibility", while the FED can afford a strategy of "confidence". This allows the FED to be more discretionary and "activist".

The income effect: as most US households are net debtors, the implications for monetary policy are clearer as changes have simple and unique effects. Debtors will also worry less about inflation. The situation in Europe is mixed (possibly more savers) and can sometimes be conflicting in terms of impact.

The bond market is more widespread and more reactive in the US. Its reactions over the yield curb are crucial for the economy's financing conditions. In addition, the European bond market is dependant on the US market which hinders autonomous transmission.

Pedro SCHWARTZ – Disposable income and consumption are more affected in the US

The standard deviation, i.e. a measure of the variability of official interest rates in the US is 1.7, while for the euro area it is 0.8. This has allowed the wealth and income effects of policy to be stronger in the US, and led to more pronounced effects on consumption. In Europe, in contrast, the stronger social safety net may have contributed to cushion the consumption effect.

Europeans have traditionally preferred to invest in real assets and government debt which are less prone to transactions, as opposed to more "liquid" assets in the US. As a result, investment decisions rather than consumption are more affected by monetary policy. Consequently, the ECB should make ample use of indicators to monitor investment: financial assets, capital goods and residential investment.

Guillermo DE LA DEHESA – The sensitivity to monetary policy is weaker in the Euro area

Monetary transmission through banks has become more homogenous in the Euro area after EMU. The interest rate channel does also show stark convergence, but this effect is not unambiguously attributable to EMU.

Globalization and financial integration make the effect of monetary policy on long-term interest rates weaker, as the long-term interest rates tend to be dependent on each other across industrial countries. Economic shocks, such as the oil price shock, have been more global in nature and this has contributed to the fact that monetary policy responses across the world have been similar. The FED, however, can still keep some leverage over these rates by applying consistent policies and communications.

There is a clear need for the ECB to engage anew in empirical research on the monetary transmission channels in order to reassess what the main elements of diversity and heterogeneity are in the euro area. There are a number of criteria against which it can be tested how responsive/sensitive a member state is toward monetary policy.

2. Wage Setting and Price Stability

"In the Governing Council's view, the outlook for price developments remains subject to upside risks ... It is therefore crucial that social partners continue to meet their responsibilities. In this context, wage agreements should take into account productivity developments, while recognising the still high level of unemployment and price competitiveness positions. As stated on previous occasions, it is also important that wage settlements move away from automatic, backward-looking indexation mechanisms." Jean-Claude Trichet, President of the ECB, 11 January 2007 (highlighting by the authors)

What is the ECB's rationale behind this thinking? The statement by the ECB President acknowledges that wage developments have a decisive impact on price stability. Therefore, the ECB watches these developments closely. Prices, in turn, may have an impact on competitiveness thereby affecting growth. The fact that unemployment should be considered as well means that the ECB assumes a relationship between wages and employment which would also impact growth.

Productivity developments

Many studies show that there is a stable relation between prices and unit labour costs. Unit labour costs are the relation between costs of labour per hour or per head and productivity per hour or per head. They lend the possibility to measure the impact of wages on prices. In unit labour costs productivity is a major component. Hence the ECB stresses that wage settlements should take into account productivity developments.

Taking productivity developments into account in wage setting could potentially ensure that wage settlements will be non-inflationary from a macro-economic perspective: If prices are not to rise faster than 2 % annually, in line with the ECB definition of price stability, unit labour costs should also not rise more than this, net of productivity increases. This limits the increase of the compensation of the workforce close to the productivity development plus the definition of price stability. In this case wage developments are perfectly in line with the target of price stability.

Backward-looking indexation mechanisms

The question of indexation mechanisms is important since these mechanisms are backward-looking in the context of a forward-looking central bank. They work with past observed actual inflation rather than inflation targets or definitions of price stability. If only actual inflation is taken into account in the wage-setting, destabilising processes can occur, namely a wage-price spiral: An inflation rate above the inflation target would lead to accordingly higher wage settlements reinforcing accelerated inflation. Therefore it is a necessity that wages take the target and not actual inflation into account. Hence the ECB has concerns over indexation schemes.

Anne SIBERT – Accommodative monetary policy can cause a one-time increase in nominal wages to lead to sustained inflation

If increased wages lead to a fall in employment and output, a central bank that is not strictly targeting inflation might be tempted to create unanticipated inflation in an attempt to lower the real wage and restore employment and output to their original level. However, as the central bank cannot systematically fool the public, the result is eventually likely to be inflation without an output gain.

Belgium is a euro zone member with an indexation mechanism and provides an example of how wage settlements can lead to the kind of problems the ECB is concerned about. Belgian wage settlements may not have taken into account changes in productivity, promoting a loss of competitiveness with all the consequences this entails.

Sylvester EIJJFINGER – Only if productivity developments are taken into account can wage-setting be non-inflationary

A moderate level of inflation provides "grease" to the price and wage setting processes. The economic adjustment of relative prices to shocks can become sluggish in the presence of downward nominal rigidities in wages and prices. A moderate level of inflation provides for some real wage flexibility, which reduces the natural, or long run, rate of unemployment.

Wage agreements should take account of (labour) productivity developments for (nominal) wage setting to be non-inflationary. Therefore, the ratio of hourly labour cost divided by labour productivity per hour worked should be stable over time for each euro zone country and the euro area as a whole. However, there should be (more) decentralized wage setting to comply with (labour) productivity differentials between various sectors in a country's economy. Also, (more) labour mobility between these sectors is paramount to mitigate tensions within specific segments of the labour market.

Wage setting to be moved away from backward-looking indexation mechanisms is less realistic, as labour unions are backward-looking in nature and are likely to protect their workers against (real) wage decreases. The only remedy against the inflationary effect of automatic indexation mechanisms is a low and predictable *level* and *variability* of euro area inflation.

Gustav HORN– Wages must take the inflation target and not actual inflation into account

The relationship between wages and employment that the ECB infers in its comments and publications works only either in a small open economy or in a theoretical supply side setting. For the euro area as a whole, the closed economy model is closer to reality than the completely open economy. If demand is the limiting factor, real wage restraint will lead to a decline in demand and production.

Looking at the empirical evidence of the past years there is no reason for concern that wage settlements in the euro area endanger upward price stability. Wages have done nothing in the past to spur inflation. The credibility of a stability-oriented wage settlement should be high. In the light of these findings the warnings of the ECB are exaggerated.

Jörg KRÄMER – With strong growth of both GDP and liquidity, ECB vigilance over wage settlements is warranted

Wage pressure increases, if the unemployment rate falls below the structural unemployment rate NAIRU. According to estimations the structural unemployment rate has come down to 7½%. In January, the euro zone unemployment rate stood at a mere 7.4%. This is roughly in line with the estimated structural rate of unemployment. The situation is thus critical for the ECB as a decline below NAIRU could lead to wage pressures increasing.

Given the uncertainties in estimates, the estimated acceleration of wage growth in the euro area of 2¾% in 2007 is still more or less in line with the wage growth probably tolerated by the ECB. Nevertheless, there is the risk that wage growth further accelerates in 2008. The ECB is therefore right to remind trade unions and employers associations that they currently bear a lot of responsibility.

Jean-Paul FITOUSSI – Economic policy making should not be limited to facilitating the smooth working of markets

The European institutional setup, de facto, gives up discretionary economic policy. Monetary policy is delegated to an independent monetary authority which is not accountable to any political body. Fiscal policy is strongly constrained by the Stability and Growth Pact, which barely leaves space for automatic stabilizers to work. But most criticisms are internal to the mainstream and call for only minor adjustments while with a few exceptions no one has challenged the underlying framework that limits the role of government to removing obstacles that prevent the smooth working of markets.

A wage price spiral does not seem likely in the near future. A more probable risk is that European countries continue trying to improve their competitiveness through wage and cost reductions, in a race to the bottom that will have no effects on their relative position, but cause a general contractionary effect on private spending and income.

Topic 1

Monetary Policy Transmission Channels in Comparison - Europe versus US

Monetary transmission mechanism channels - The EU versus the US

Briefing Paper for the Monetary Dialogue of March 2007 by the Committee on Economic and Monetary Affairs of the European Parliament with the President of the European Central Bank

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Introduction

There is a wide consensus about monetary policy having significant influence, in the short to medium run, on economic behaviour by households and firms and thus on real aggregate economic activity and, in the long run, on the general price level, given that monetary policy, in essence, determines the nominal or money values of goods and services. That is, while in the long run, inflation is basically a monetary phenomenon, by contrast, monetary policy has very little or no impact on the long run trend path of output, which is determined by real variables, such as knowledge, skills and technology.

The monetary transmission mechanism describes how policy-induced changes by central banks in the nominal money stock or the short term nominal interest rate impact real variables such as aggregate output or employment. In theory, the central bank can operate either by setting the nominal quantity of base money and allow the market to determine the short-term nominal interest rate or by setting the short-term nominal interest rate and then supplying whatever quantity of nominal base money is demanded by the market at that interest rate.

Given that empirical evidence has been showing that money demand shocks tend to be large and unpredictable, most central banks today prefer to aim at influencing, directly or indirectly, the nominal short-term interest rate (the federal funds rate in the US or the refinancing repurchase rate in the Euro Area) rather than any measure of the money supply, even if, strictly speaking, these monetary actions always begin with “open market operations” made by the central bank either by purchasing securities from the market (mainly government bonds) to increase the monetary base or by selling securities to the market to decrease the monetary base, producing in both cases an effect on the market nominal interest rate (Poole, 1970). That is, by affecting financial conditions, including the level of interest rates and asset prices, monetary policy is able to influence a variety of decisions by households and firms, including how much to consume, to produce and to invest.

Nevertheless, it is important to mention three key necessary assumptions for these mentioned effects to happen (Ireland, 2005): First, that the central bank, in order to control the monetary base (that is, its liabilities which include banknotes and coins in circulation, reserves held by banks with the central bank and recourses by credit institutions to the central bank) must be a “monopolist supplier” of “high powered money” or “base money”.

Second, that for these induced changes in the nominal money stock or the nominal short interest rate to have an effect beyond the central bank balance-sheet, other financial agents must lack the ability to offset them by immediately changing the quantity or composition of their own liabilities (“financial frictions”).

And third, that in order for these policy-induced changes to have real effects in the economy it is a necessary condition that nominal prices would not be able to respond immediately to those movements and leave the real value of the monetary base or the real interest rate unchanged (“real and nominal rigidities”).

Therefore, any model of monetary transmission must assume that some degree of friction in the economy acts to prevent nominal prices from adjusting immediately and proportionally to offset those central bank nominal monetary policy changes. (Mankiw and Romer, 1991) (Hubbard, 2000) (Bean, Larsen and Nikolov, 2002) (Meier and Müller, 2005).

There are several specific channels of monetary transmission which operate through the effects that such monetary policy has on interest rates, exchange rates, equity, bond and real estate prices, bank lending and company and household balance sheets (Mishkin, 1995).

Different channels of monetary transmission

The first one is the Interest rate channel. This is the traditional Keynesian channel which operates within a Hicks (1937) IS-LM framework. A reduction in the monetary base limits the banking system ability to sell deposits, thus, demand for bonds increases while demand for money decreases. If prices are not fully adjustable, real money balances will tend to decline pushing up interest rates and raising the cost of capital (Rotemberg and Woodford, 1997) (Clarida, Galí and Gertler, 1999) (Woodford, 2003).

That is, an increase in the nominal short-term interest rate tends to lead to an increase in the market nominal short term interest rates (even if some of them are slow to adjust) as well as in longer-term nominal interest rates (depending on the expectations generated by the policy induced interest rate change on expectations about the future path of interest rates), as investors tend to act arbitraging away differences in risk-adjusted expected returns on debt instruments of various maturities as described by the “expectations hypothesis” of its term structure. If nominal prices are slow to adjust, these movements in nominal interest rates translate into movements in the real interest rates as well, which tend to increase the real cost of capital.

Firms, which find that their real cost of borrowing of all terms and maturities has increased, tend to cut back on their expected investment expenditures while, for the same reason, households tend to reduce their purchases of housing, automobiles and other durable goods and eventually, real aggregate output and employment tend to fall.

The second one is the Exchange rate channel. In open economies, when an unexpected domestic interest rate rise relative to interest rates on equivalent foreign currency assets happens, then domestic assets become more attractive than foreign currency assets for international investors. As the exchange rate is the relative price of domestic and foreign currency, equilibrium in the foreign exchange rate market requires that the domestic currency appreciates up to equating the risk-adjusted returns on various debt instruments in each of the currencies (the “uncovered interest rate parity” condition). That is, an appreciation up to a level where investors expect a future depreciation large enough to make them indifferent between holding domestic or foreign currency assets.

When prices are slow to adjust, this appreciation makes domestically produced goods more expensive than foreign-produced goods, so net exports tend to fall and therefore, domestic output and employment (Fleming, 1962; Mundell, 1963; Dornbusch, 1976; Taylor, 1995; Obstfeld and Rogoff, 1995).

The third one is the Asset price channel. A policy-induced increase in the nominal short term nominal interest rate makes debt instruments more attractive than equities for investors (the prices of bonds are inversely related to the long-term interest rate, so an increase in the latter makes bond prices to fall) so that equilibrium across the securities markets needs to be reestablished partly through a fall in equity prices (depending on inflations expectations).

The consecutive effect of that fall is that companies need to issue more new shares of stock in order to finance a new investment project and investment becomes more costly to the firm, so many projects which were marginally profitable before the rate increase are not funded leading to employment and output falls as well. This is explained by Tobin's "q", which measures the ratio of the stock market value of a firm to the replacement cost of the physical capital that is owned by the firm (Tobin, 1969).

Something similar happens to households. According to Ando and Modigliani (1963) life-cycle theory of consumption, when equity prices and other financial assets fall, household financial wealth declines as well as the value of physical assets (real estate), leading, through these two negative "wealth effects", to a fall in household consumption and eventually to a decline in output and employment. Monetarists, such as Meltzer (1995), give a very important role to assets, both financial and real, on their monetarist descriptions of the transmission mechanism. Recent developments in the assets markets have proved that they were right.

The fourth one is the Credit channel which describes the effects of an increase in the cost of external financing to firms and other types of borrowers (the so called "financing premium"), which is the wedge between the cost of funds raised externally (by issuing equity or debt) and the opportunity cost of funds raised internally (by retaining earnings) (Bernanke and Gertler, 1995)

Two different versions of the credit channel explain the link between the monetary policy action and the external finance premium: the Bank lending channel and the Balance sheet channel. In the first, the issue is that uncollateralized external financing is more expensive than internal financing and in the second, there are two more issues, the first is that the spread between external and internal financing varies inversely with the borrower's net worth (that is, internal funds and resources that can be collateralized) relative to the amount of funds required, and the second is that this adverse shock to the borrower's net worth increases further the cost of its external financing.

The "bank lending channel" derives from the fact that banks in general, but even more so small and medium banks, issue liabilities (by selling deposits) to households and firms and invest the proceeds in assets (loans and credits) which are the main source of finance for small and medium size firms. So a policy-induced reduction of the supply of bank reserves by the central bank through selling securities and, therefore, the similar contraction of bank deposits, requires banks to cut back on their investment reducing proportionally their volume of loans to small and medium size firms, which end up not being able to finance externally their investments, either by its higher cost or by its lower volume, and are being forced to retain more earnings or reduce investments, inducing eventually an aggregate reduction of output and employment (Bernanke and Blinder, 1989 and 1992)

The second is the "balance sheet channel" which derives from the financial position of the borrower's balance sheet when facing an increase in its cost of capital. The greater the borrower's net worth, the lower will be its external finance premium and vice-versa.

Thus asset prices play an important role in that they determined the value of the collateral that firms and consumers may present to obtain a loan. If there were no "frictions" in credit markets, a fall in the value of the borrower collateral would not affect investment decisions, but in the presence of "information or agency" costs, declining collateral values will increase the external finance premium. (Blinder and Stiglitz, 1983), Mankiw and Romer (1991) (Cecchetti, 1998) (Bean, Larsen and Nikolov, 2002) and (Meier and Müller, 2005).

That is, an increase in short term nominal interest rates not only augments the flow of payments which a firm must make to serve its floating rate debt but also reduces the capitalized value of the firm long lived assets, deteriorating its balance sheet. As a firm's cost of credit (by banks or other external sources) increases, the strength of its balance sheet deteriorates, suffering a dual and magnifying negative effect, through the so called "financial accelerator": one produced by the more expensive external finance plus one produced by the dearer cost of credit due to the weaker financial position of its balance sheet, leading both eventually to a reduction of output and employment (Bernanke and Gertler, 1989) (Bernanke, Gertler and Gilchrist, 1996 and 1999) (Hubbard, 2000).

Testing the monetary transmission channels

Several empirical research papers have dealt with the true effects of each of the channels, both in the Euro Area as well as in the US, using structural models, VAR's, panel estimates etc. and in the context of dynamic, stochastic, general equilibrium (DSGE) models such as those by Christiano, Eichenbaum and Evans (2001) for the US and by Smets and Wouters (2002) for the Euro Area.

The first one is that of Angeloni and Ehrmann (2003). Their paper tries to find out if the monetary transmission process has changed after EMU and, if so, if it is becoming more homogeneous among EA member countries than before. The paper concentrates on three blocks of the transmission mechanism: the banking, the interest rate and the asset market channels.

They find evidence that, although bank integration in the EA is not advancing fast, the monetary transmission through banks has become more potent and homogeneous across countries because of EMU. Bank rates do have had a stronger response to central bank signals. The interest rate channel shows a sharp convergence, but it does not take place unambiguously after EMU (it depends on whether levels or changes are considered) nor does it take place exclusively among EA members, given that the UK, Sweden and Denmark converge as well. Finally, the asset markets channel (using as a proxy the effects of monetary policy on equity markets) also seems to work rather homogeneously across national markets, surprisingly in spite of the different national weights of the stock markets as a percentage of GDP.

The second one is that of Angeloni, Kashyap, Mojon and Terlizzese (2003). They focus on three main questions:

The first is: what are the stylized facts concerning the transmission of monetary policy for the Euro Area and for its individual member countries? They find the following results: The first is that an unexpected increase in the short term interest rate temporarily reduces output, with a peak effect occurring after one year, while prices respond more slowly, with inflation hardly moving the first year and falling gradually over the next few years. These findings are broadly consistent with results achieved by similar empirical tests in the other comparative large currency area, namely the US.

They find as well that in the Euro Area (EA) investment is highly responsive in driving output changes in the wake of monetary tightening while by contrast, in the US, consumption is the key driver of output adjustment.

The second question is: can the classic interest rate channel (IRC) alone, without financial frictions or credit constraints, explain these facts? They find that the IRC is a very prominent channel in the transmission but not dominant. In a group of member countries accounting for about 15% of the EA GDP, (Spain, Finland and Luxembourg) the IRC is the dominant channel. In others, accounting for 75% of the EA, IR effects are sizable and sometimes unique affecting investment through the increase cost of capital effect on investment, but overall financial factors also are relevant in some countries for investment decisions (Italy and France) or for consumption (Germany). On the whole, while not supporting the idea that the IRC is dominant is somehow quite relevant.

The third question is: Is the bank lending channel (BLC) a plausible candidate to complete the story? They find that the role of banks supplying business credit to finance investment maybe important but it does not appear to hold everywhere and that, overall, the role of banks is smaller than what might be expected on prior work. It is important in Germany and Italy, a little less so in France, Netherlands and Greece, insensitive in Austria, Finland and Spain and not possible to be assessed in Ireland and Belgium. Finally, bank size and bank capital seem not to play much of a role in shaping loan supply responses to monetary policy, due to institutional reasons which make that the liquidity held by banks becomes the key factor to shape their loan supply responses.

The third paper is again one by Angeloni, Kashyap, Mojon and Terlizzese (2003b) In this second paper the authors focus on the comparison of certain macroeconomic features (the “output composition puzzle” as they call it) on the transmission mechanisms of monetary policy in the US and in the EA to try to identify why are they similar in some respects and different in others, but also to better appreciate the global implications that the independent conduct of monetary policy in each of the two areas generates.

The authors compare first the cyclical properties of the EA and the US macroeconomic time series, and find surprisingly that they are broadly similar, suggesting that common underlying market forces are at work.

Then, they analyze a small set of VAR models for both areas. They find that, again, the macroeconomic facts are similar. Specifically, after a monetary shock, real GDP displays a humped-shaped profile, returning to baseline, whereas the price level diverges gradually but permanently from the initial value. Thus, the consensus on the way monetary policy operates in the US has held up through the long business cycle expansion of the 1990s and that consensus view fits also well with what has happened in the EA.

However, prior work has paid little attention to the underlying adjustments that accompany the change in output. In this respect the two large currency areas differ. After a change in monetary policy, the role of household consumption in driving output changes is greater in the US relatively to the EA and that of investment is smaller. This difference is what they call the “output composition puzzle”.

Finally, they try to explore and explain the puzzle and find out that US consumers are responsible for these differences. It appears that disposable income maybe less responsive to monetary changes in the EA than in the US, due to the hypothesis that the more generous social safety net in the EA might cushion the effects of monetary policy on consumption and that movements in consumption relative to disposable income are larger in the US too, maybe due to different wealth effects of monetary policy in both currency areas given that total financial assets in the hands of households in the US are much larger than in those of the EA.

The fourth paper is that of Kuttner and Mosser (2001) who report from the conclusions of a conference organized by the New York Fed on “financial innovation and monetary transmission”. Their conclusions refer exclusively to the US and are the following:

First, monetary policy appears to have less of an impact on real activity than it once had, although the causes of that apparent change remain an open issue. One its causes could have been the increase in financial innovation, such as the growth of securitization, shifts between the sources of financing residential or housing investment or changes in the strength of the wealth effect. Nevertheless, reality shows that the housing sector appears to be no longer the leading edge of monetary transmission and the wealth effect is now on a decreasing trend.

Second, a change in the conduct of monetary policy may also explain what appears to be a change in the effectiveness of policy. An third, the fundamental structural changes affecting the economy stability and the monetary transmission may be of non financial nature.

Nevertheless, there are three areas where financial innovation seems to have left the monetary transmission unchanged: First, the reserves market has changed profoundly in the last years as lower reserve requirements, higher vault cash holdings and sweep accounts have dramatically reduced the size of aggregate reserve balances, but surprisingly in spite of those changes, monetary policy keeps being effective. Second, the wealth asset channel has not change much in the last years so its contribution to monetary policy if any has been decreasing. Third, financial consolidation and globalization have had a dramatic impact on the financial industry but it has not had a perceptible effect on monetary transmission.

Finally, although monetary policy has retained its effectiveness, the economy sensitivity and response to interest rates seems to be decreasing, but this result may respond to a problem of the endogenous reaction of monetary policy, given that it is very difficult to isolate the effects of interest rates on economic conditions when interest rates are themselves a function of economic conditions.

A recent speech by Ben S. Bernanke (2007) analyses how globalization and global financial integration affect monetary policy and its monetary transmission mechanism. Today, foreigners hold about one quarter of the long-term fixed-income securities issued by US entities of all types and more than half of publicly held US Treasury securities. Cross-border financial flows are large and growing. For example, in 2006, foreigners purchased more than \$1.6 trillion in US assets while US investors purchased more than \$1 trillion in foreign assets.

The Fed can retain its autonomy to set its fed funds rate target as needed to respond to domestic economic conditions only because the dollar is a freely floating currency whose value is continuously determined in open and competitive markets, so interest rates can differ from rates in international capital markets. Short term interest rates can affect the domestic economic activity in the short run (the cost of holding inventories), but also in the long run (thirty year fixed-rate mortgages can be prepaid in order to refinance them).

Nevertheless, globalization and world financial integration make the effect of monetary policy on long-term interest rates more difficult. The behavior of long-term interest over the past few years is a clear example. Long-term interest rates in the US have remained relatively low even after the Fed raising the fed funds by more than 400 basis points inverting the yield curve which is very unusual. The reason is, on the one side, the strong foreign demand for US long-term debt and on the other the increase in the net supply of savings in global capital markets, which is the byproduct of the large current account surpluses of some emerging market economies and oil producing countries.

This effect has also been similar in other industrial countries. With globalized financial markets correlations between long-term interest rates in the US and in other industrial nations are high and increasing. Correlations between changes in ten-year swap rates in the US and Germany have been high: 0.42 on average between 1990 and 2006, and going up to 0.65 in the last three years. As a consequence, the transmission of monetary policy decisions to long term rates is now somewhat slower than to short term rates.

In spite of these developments, Bernanke shows how the Fed keeps retaining considerable leverage over long-term rates and key asset prices. By employing consistent and predictable policies, the Fed can help to shape market participants views of how future nominal short-term rates are likely to evolve and how are going to respond to economic developments. As long-term nominal interest rates can be viewed as the sum of a weighted average of expected future nominal short-term rates plus a term premium, the Fed policies and communications substantially influence the behavior of these rates. Empirical research on US bond yields across the whole spectrum of maturities shows that all yields respond significantly to unanticipated changes in the Fed short-term interest rate target (Andersen et al, 2005 and Faust et al, 2006).

Then, if globalization has not constrained the ability of US monetary policy, why are long-term interest rates and key asset prices so correlated across industrial economies? Bernanke gives two possible explanations: One is that economic integration has increased the extent that economic shocks (oil shocks for instance) have global rather than local effects and all central banks are guiding their policy responses in a similar way.

Another one is US monetary policy actions may have significant effects on foreign yields and asset prices as well as on domestic financial prices. For instance, changes in US short term rates seem to exert a substantial influence on Euro Area bond yields (Ehrmann, Fratzscher and Rigobón, 2005) and appear to have a strong effect on foreign equity indexes as well (Ehrmann and Fratzscher, 2006). By contrast, the effects of foreign short-term rates on US asset prices appear to be relatively weaker, what is somewhat puzzling, given that one should expect a more symmetric relationship between the US and the Euro Area, as the two regions are of comparable economic size.

Conclusions

There is a clear need for the ECB to engage again in new empirical research on the “monetary transmission channels” in the EA, now that there is more availability of member country information than before, longer time series and of larger experience using VAR and structural models, in order to achieve the following targets:

First, to test again which are those factors which make some EA member countries to be more sensitive than others to monetary policy; Second, to evaluate if the average response to monetary policy by the ensemble of the members is becoming progressively homogeneous since EMU. Third, to further study how the new EA members may respond to monetary policy, once they are members of EMU.

Fourth, to compare these results again with those from the US, and fifth to analyze further these asymmetric relationships between the monetary policy effects of the US and the EA.

Intuitively and excluding the EA member's different legal and financial structures (Cecchetti, 1999) it seems clear to me that an EA country becomes more sensitive to monetary policy (or, what is the same, the pass-through of interest rate changes from official interest rates to bank lending rates and to households and firms behavior is done at greater speed and extent and, therefore, it has a stronger and faster effect on output) if the following combination of factors may be taking place:

First, the higher the level of mortgage debt owe by households, the higher the percentage of variable rate mortgages and the higher the access by households to housing wealth through their mortgages, the faster and stronger the pass-through should be, due to the interest rate channel.

Second, the higher the level of household financial wealth due to their greater size of equity holdings and the wider demographic profile of equity holders (provided that financial wealth is not locked into life and pension funds) the faster and stronger the pass-through should be, due to the interest rate and asset channels.

Third, the looser they are the relationships between banks and firms, the larger the non-bank financial markets and the higher the levels of debt leverage of the latter, the faster the pass-through should be, due to the credit and balance sheet channels.

Fourth, the smaller the size of banks and of firms, the faster and stronger the pass-through should be, because the higher the supply constraint by banks and the lower the alternative sources of finance to firms will be, due to the credit channel.

Fifth, the larger the stock of foreign assets and liabilities as a percentage of GDP, the faster and stronger the pass-through should be, due to the interest and exchange rate channels.

Sixth, the larger the extra-EMU trade as a percentage of GDP, the faster and stronger the pass-through should be, due to the interest and exchange rate channels.

Seventh, the larger the manufacturing sector and the smaller the services sector, in the composition of total output, the faster and stronger the pass-through should be, due to interest and the exchange rate channels.

Finally, the higher the nominal wage and price rigidities, the faster the pass through to output and employment should be, due to the "non neutrality of money", because if they were fully flexible, then monetary policy will not have an effect on output, according to the principle of the "neutrality of money" (Lucas, 1972).

Naturally, we should not forget that the overall sensitivity of output and employment to monetary policy will depend on the relative size of these factors on how they balance out in aggregate and on how the integration of financial markets affect them.

Monetary policy transmission channels - A comparison between the Euro-area and the US

Briefing Paper for the Monetary Dialogue of March 2007 by the Committee on Economic and Monetary Affairs of the European Parliament with the President of the European Central Bank

Jean-Pierre Patat

Executive summary

A comparison of the monetary policy transmission channels in the two main worldwide financial areas is especially interesting as the ECB action is permanently assessed with reference to the FED policy.

One can identify three closely interrelated areas of influence in central bank decisions:

- The banking sector, the resource costs of which are affected by the shifts in central bank interest rates and which transmits the changes in its credit conditions.
- The non-financial sector, through three “effects”:
 - The “*income effect*” resulting of the impact of interest rates changes on the economic agents' income and, as a result, on spending and saving expectations and behaviours.
 - The “*substitution effect*”, linked to the arbitrages between different types of financial investments or between financial and non-financial investments.
 - The “*wealth effect*” which results of the effect of the monetary policy changes on the market value of the equities and bonds portfolio of the non-financial agents.
- The financial market and especially the bond market, the reactions of which to changes in short term interest rates via the yield curb are crucial for the overall economy's financing conditions and for the monetary policy “credibility”.

Finally, we have to mention the effects on exchange rate market by changes in monetary policy influencing external capital flows.

There are some differences between the monetary policy transmission channels in the US and the Euro-area because there are differences in the financial situation of economic agents and also in banking practices.

The income effect transmission is different, because

1. US households are net debtors and the Euro-area households are net savers, so the interest rates changes have relatively simple and unique effect in US while in Europe they can have conflicting impacts.
2. Bank practices are not the same. Accordingly, the household spending behaviour is more directly and rapidly affected by the monetary policy stances in the US than in the Euro-area.

The wealth effect is less important in the Euro-area than in the US as the equities market is less developed, and the role of institutional and non resident investors more decisive.

Concerning the impact of the ECB monetary policy on the bonds market and the yield curb, one must be aware that the European bonds market can be in many circumstances relatively dependant of the American debt securities market.

Most of these uncertainties in the transmission channels effects won't keep going on. Given that European monetary integration will deepen and the banking business will be more and more oriented toward market practices, the transmission channels will become more robust.

The present situation leads the ECB to favour a strategy of "credibility", characterised by a rule, a commitment, a published framework, while the FED is assumed to follow a strategy of "confidence" with no rule, no commitment, no published framework and a permanent dialogue with the public.

The sensible effects of this situation are that the ECB is more successful for reducing inflation pressures than for stimulating economic growth, and is less "activist" than the FED. The ECB follows an obvious mid term strategy for preserving price stability which is, according to its assessment, the best condition for a sound economic growth.

1) Assessing how monetary policy affects the economy in general and the price level in particular, i.e. what economists call "transmission channels" of monetary policy, has become a crucial issue as, in most countries and especially in Europe, direct regulations (like credit ceilings or selective refinancing) have been phased out, while open market operations, through changes in interest rates, have been the main, if not the sole instrument of central banks.

In this context, it has turned out to be essential for monetary policy deciders to have a clear idea of the mechanisms by which very small changes in short term interest rates (generally no more than 25 basis points), directly affect a very limited amount of money in comparison with global monetary and financial flows (the interbanking net liquidity balance), which in turn can impact on the behaviour of financial and economic agents, and after more or less long lags, on the economy and the price level.

A comparison of monetary policy transmission channels in the two main worldwide financial areas, i.e. the US and the Euro-area, is particularly important as the ECB action is permanently judged by reference to the FED policy. Most observers and some economists, considering the apparent similarities of the two institutions (federal bodies acting on a large market economy and broadly using the same instruments), neglect the important differences which characterise, in both areas, banking activities and specific financial situations and behaviours of economic agents.

Before precisely assessing this subject, it seems useful to summarize what are, according to academics and empirical monetary experts the main monetary policy transmission channels.

In a simplified approach, one can identify the three areas, closely interrelated, of influence of central bank decisions: the banking sector; the non financial sector (house holds, firms, government, non-residents); the financial market.

2) Changes in interest rates induced by monetary policy decisions directly affect the banking sector, by increasing or lowering the cost of its resources.

Although the central bank action is primarily concerned with interbank market transactions, it will affect a considerably larger part of the bank liabilities, in fact all those of which remuneration is linked to the market rates. So, the larger is the share of indexed deposits and saving accounts in bank liabilities, the greater will be the effect of central bank action on the cost of their resources.

The most probable reaction of credit institutions to a change in their resources cost will be a change in credit conditions they offer to their customers, ie to house holds and firms. Changes will affect immediately the rate of all existing credits outstanding, of which interest charges are indexed on market rates. They will only affect new fixed rate credits.

However it is not impossible for the banks not to transmit, or to moderately transmit the change in their liabilities cost to their customers. For example, a situation of high competition can incite banks to maintain relatively advantageous credit conditions to borrowers, in spite of a tightening central bank action. Such a reaction can be easier if credit institutions have margin to increase other sources of income, e.g. commissions and if competition is weak in this specific field. Conversely, banks can try to take benefit of a softening central bank action in increasing their margins.

To conclude, the impact of the central bank policy will be closely linked to the importance of market rate indexed assets and liabilities of banks and to the degree of transparency and real competition prevailing in the banking system.

3) Concerning the reactions of the non-financial economic agents to the changes in monetary policy, they are, according to the academic analyses, conditioned by three basic “effects”: the income effect, the substitution effect and the wealth effect.

- The “income effect” results of the incidence of changes in interest rates on the regular (permanent) income of economic agents. According to the new level of credit rate, households can decide or not to contract new loans, and if their debt outstanding is market rate linked, their income will be directly and immediately affected. In any case, the new monetary policy stance will cause shifts in spending and saving expectations and behaviours. Firms can modify their investments or goods inventories policy, but monetary policy can also affect wage formation and the setting of intermediate goods price. Lastly, the government, as debtor, will support a more or less heavy debt cost which can affect the public spending level. A central bank rise in interest rate can even be a signal to convince a government to have a less relaxed fiscal policy.

- The “substitution effect” is linked to the arbitrage between different types of financial investments (monetary or non-monetary), or between financial and real investments. A rise in interest rates can incite preference for long term financial investments or a preference for saving as opposed to durable goods purchases. Economic agents choices affect spending and the alternative between monetary assets and other financial assets can affect inflationary expectations and behaviours. However the “substitution effect” is also depending of the effect of changes in the central bank rate on long term interest rates(cf infra).

- The “wealth effect” refers to the impact of the monetary policy on the value of the portfolio of non-financial agents, especially their equities portfolios. It is assumed that changes in interest rates can affect the equities market value that could rise if rates are decreasing (business prospects improve) and decrease if rates are rising. So, the agents are more or less potentially wealthy, according to the monetary policy stances, which can have some influence on their spending and saving behaviour, and consequently on inflationary pressures.

- Another “wealth effect”, which has to do with firms, refers to the incidences of changes in monetary policy on the market value of firms. As central bank rates movements can depreciate/appreciate this value, a comparison with the cost of capital replacement, which is determined by the interest rates level (this ratio is called the "Tobin's Q") can discourage or encourage investments in productive goods.

4) Impacts of monetary policy on financial markets and especially the bonds market are crucial for at least two reasons:

- First, the more or less noteworthy transmission of the short term interest rates variations on the long term interest rates will affect the more or less restrictive/expansionary stance of the monetary policy as bond rates influence many financial operations conditions.

- Secondly, with financial globalisation, the bonds market reaction to the monetary policy stances has become the main indicator of the “credibility” of the central bank action. According to the behaviour of the investors (especially the non-resident investors) on the bonds market this policy can achieve relatively easily its objectives.

- Considering the relation between short term and long term interest rates, i.e. the yield curve, it can be diversely affected by the changes in monetary policy:

- The yield curve can remain unchanged at a higher or a lower level, according to expectations and risk premium estimates of economic agents. That means a

correct or neutral assessment by investors of the pertinence and future efficiency of monetary policy.

- The yield curve can pick up with long term rates rising more, or decreasing less than money market rates. This situation implies a relatively low credibility of monetary policy. Investors are selling bonds as their value can be affected if inflation surges. In any case monetary policy is more difficult. If it is softening, long term financing will remain expensive and there are inflationary pressure risks; if it is strengthening, the price for the economy of the disinflation process can be heavy.
- Lastly, the yield curve can flatten with long term interest rates rising/decreasing less/more than short term rates. This situation can be a reflection of excellent credibility of monetary policy in which investors have the conviction that whatever could be the objective of this policy (softening or tightening) inflation risks remain limited or controlled, with a steady sound economic activity.

In fact, such a situation can also result from specific behaviour of investors who are strongly or structurally attracted by some types of bonds or investments (their purchases increase the market value of bonds and, as a result, reduce the long term yield). This tropism is called the “preferred housing” and plays a more or less important role on the US and Euro area bonds markets (cf infra).

5) To finish with transmission channels via the markets, we have to mention the effects of changes in monetary policy on exchange rates working external capital flows. All other things equal, an interest rate rise can strengthen the value of the currency on the exchange market, which reduces import goods prices and helps to reduce inflation.

Conversely, an interest rate drop can weaken the currency value on the markets, and increase the price of import goods, especially the price of inputs and raw material.

The exchange rate channel is less important for a large and relatively closed currency area like the Euro area or the US, than it is for a small economy.

Moreover, regarding the US and Euro area, which have the largest financial markets and issue worldwide currencies, one can wonder if “things remain equal”, as other factors can affect the currency exchange rate: attractiveness of the economy and correlated flows of foreign direct investments or reserve currency functions of the dollar and the Euro. So the links between the level and the shifts in interest rates and the currency value are somewhat loose. For example, in 99 and 2000, Euro noticeably weakened on the markets as the ECB interest rate rose from 3 to 4.75%. It strengthened in 2002 and 2003 with rates decreasing to 2%.

Let us say in conclusion that there are close interrelations between all the channels we listed. The transmission mechanism of monetary policy is a complex web of economic interactions. Behaviours and expectations of financial and economic agents are simultaneously acting through all the channels and can retroact one another and these interrelations contribute to the final result of the monetary policy.

6) There are differences between the transmission channels of monetary policy in the US and in the Euro-area because there are differences in financial situations of economic agents and in banking and market practices.

- First, US households are globally net debtors whilst Europeans are net savers. That affects the management of the monetary policy (net debtor households of course worry less about inflation than net saver households) but also some transmission channels.

- Secondly, according to bank practices, the behaviour of US households is more directly and rapidly affected by the monetary policy decisions than the European ones.
- Thirdly, markets, and especially the stocks markets are very different in size and in structure.
- Fourthly, the US bonds market is affected by uniquely US factors, while the Euro-area bonds market is partly affected by the US market evolutions.

7) The income effect mechanism is affected by the financial situation of households and by bank practices.

Due to the net debtor situation of US households, changes in interest rates by the central bank globally have relatively simple and unique effects on income, by reducing or increasing it.

The transmission is more complex in the Euro-area. There are, of course, net debtor households but net savers dominate, the macro economic impact of the interest rate changes is a combination of conflicting effects on households income and is difficult to assess, especially when the policy is softening as net savers are potentially poorer if they consider their short term rates indexed investments, and potentially richer if the market value of their long term assets is improving.

Another source of divergences is due to the fact that, in Europe, most bank loans (especially housing credits) have fixed interest rate (except in Spain) while in the US, market rate credits are widely used. Therefore, a rise/decrease in interest rates immediately affects household permanent income in US, but, in most circumstances, only the one of new borrowers in Europe.

Mortgage credit conditions can easily be easily reviewed in the US with changes in monetary policy stances. That gives households opportunities for optimizing the management and the structure of their debt. In Europe, such renegotiations have been generally more difficult and costly (at least until recently as some projects of reform could be achieved).

Another frequent practice in the US gives households the opportunity of taking advantage of real estate price increase, as they can collateralize new credits by gains on their asset market value. While this practice can not be considered as very safe (collateral value can of course be dramatically reduced with price reverse), it is another factor of reactivity of the household behaviour to the monetary policy changes. There are some intentions to introduce this questionable practice in some European countries.

8) Concerning the transmission of monetary policy via the firms' behaviour, there are no real difference between the US and the Euro-area, if we except the fact that American companies are less reliant on bank credits than European banks as their net financing needs are weaker and they obtain a large part of their external resources on the markets. The bonds issuance by US non-financial corporate sector is four times larger than the European one. At some point, firms' inventories policy was considered by the FED as a pertinent indicator of inflationist expectations. This element is also included in the second "pillar" of the ECB framework organising the information and analysis underlying its policy decisions. In fact, firms are now optimising their inventories management and more and more reducing them. So, this indicator is less relevant.

Transmission of monetary policy changes on firms policy would therefore *a priori* be greater in the Euro area than in US. This is especially the case through its impact on the setting of intermediate good prices and the investment intends as the European non-financial corporate sector is more tied to bank credits than the US one. In fact, it seems relatively asymmetric: in a context of worldwide competition and pressures on costs, a tightening policy has more effects than a softening policy, as the investment decisions depend of many factors among which the interest is one element.

9) Concerning the wealth effect, its importance is dependant on the size of the equity market and on the individual and resident investors on this market.

1. The US equities market is almost twice the Euro-area stocks market.
2. Individual investors (households) hold more than 50% of the equities market capitalisation in US, while their share on the European market is less than 30%.
3. Non-residents hold a minority share of the US stocks market, but between 40 and 50% in the Euro area capitalisation.

Thus the wealth effect is weak in the Euro-area, while it can play a significant role in the US. (It is for example assumed that it contributed one percentage-point of economic growth between 1996 and 1999).

Is this situation unwelcome as regards the high volatility of the markets? The opposite of the wealth effect is the "poverty" effect. If an increase of the stock market size in the Euro-area can be a favourable factor for diversifying and expanding the firms financing opportunities, the relatively modest share of individual investors and symmetrically, the importance of institutional (mutual funds) can be considered as a "buffer", protecting savers against sharp variations of the value of their portfolio. That is, in our sense, an advantage as in most countries of the Euro-area (France, Germany...) savers remain reluctant to invest in "risky" assets.

10) The European bonds market can be, in many circumstances, relatively dependant of the US market. Consequently the appreciation of the impact of the ECB monetary policy on the behaviour of investors is often blurred and we can find circumstances in which the yield curb profiles were similar and adapted to the economic situation and inflationary pressures in US, but not to the Euro-area context.

The fact that the US market seems to be sometimes affected by the portfolio shifts of non-resident dollars holders (Asiatic central banks for example) is another puzzling element for analyses.

Some evolutions can be observed but it is difficult to conclude that there is a process of real "disconnection" between the two markets. In 2005, for example, the FED monetary policy was continuously strengthening (with fed funds rates rising from 2,25% to 4,25%), and ECB rates remained unchanged at 2%. In spite of this discrepancy, European long term rates increased by 100 basis points, in the same way as the US long term rates.

Since in Europe (Germany, France...) long term interest rates are important references for the level of credit institutions conditions (short term rates have a more prominent role in US) the relatively low autonomy of the Euro-area bonds market is a problem.

11) Considering all the previous elements, it could be assumed that the monetary policy of the ECB is inefficient. This is not the case, but the ECB itself very honestly admits that the transmission mechanisms of monetary policy remain imperfectly understood.

Indeed, in addition to previously listed factors, another source of uncertainty, which causes a sizeable difference with the FED is the fact that the ECB is responsible for an “entirely new currency area” in which financial and banking practices, saving and borrowing behaviours are not homogeneous. That means firstly that monetary policy can differently affect specific countries: in Spain for example, the “income effect” is more active due to the broader use of market rate indexed credits. There are a lot of other sources of heterogeneity: unequal diffusion of mutual funds or equities investments, survival in some countries of non-market indexed saving accounts. All these can also create distortions in the impact of interest rates changes. The second consequence is that the total effect of monetary policy is sometimes difficult to assess, although it remains crucial since the ECB has to consider the whole area.

We can assume that such a situation is temporary. As the European monetary integration will deepen and the banking business becomes more and more market practices oriented, it is probable that the transmission mechanisms of monetary policy progressively become more robust.

12) The present uncertainty of traditional monetary policy transmission mechanisms leads the ECB to favour a strategy of “credibility”, in adopting a model of behaviour and following it.

There is a rule – to give priority to price stability, and a commitment, -to maintain inflation at a 2% maximum level, and a transparent framework showing a monetary process of inflationary pressures. Thus the Bank says what it is going to do and everyone must be convinced that it will do what it says. The public announcement of the strategy works as a sort of engagement of the Central bank in respect of the citizens of the Euro-area. Such an engagement creates direct responsibility of the institution with regard to the public, strengthening a legitimacy which does not proceed from submission to elected representatives (unlike the FED).

This strategy aims to reinforce the traditional transmission channels of monetary policy by a strong influence on expectations with a time frame of transmission which is medium to long term.

The “credibility” strategy of the ECB is sometimes opposed to the one of the FED which is assumed to be a strategy of “confidence”. The American central bank has no “rule”: there is an unclear “double mandate”, with no hierarchy of the objectives which, in fact, means no rule. It has no commitment: nobody knows at which level its inflation limit is fixed (it is supposed to be between 3 % and 4%). It does not publish any framework underlying its policy decisions. As the transmission mechanisms are relatively robust, and the impact of interest rates movements are, if not certain, at least fast and relatively strong, the FED is supposed to interpret its policy management as a deliberative process with permanent dialogue with the public in order to improve its understanding (but a dialogue without any improvisation). The cornerstone of this dialogue is the presentation and explanation of the “balance of risks”, which gives some consistence to the possibility of a permanent trade-off between inflation and output and unemployment. Finally, there is a process of effective democratic accountability, with the subservience to potential sanctions for the central bank: the US Congress can abolish the independence or remodel the FED by a simple majority, which is not the case of the European Parliament concerning the ECB.

There is no doubt that those who oppose the credibility strategy of the ECB and the confidence strategy of the FED do so with a critical, if not severe, judgement on the Euro-area central bank.

Given the international statute of the ECB, the absence of an economic government in Europe and the limited powers of the European Parliament, one can ask oneself if the strategy of credibility, which is a necessary support for monetary policy transmission channels, is not also the best substitute for an absence of classical democratic legitimacy, which is regrettable but is a situation the ECB is not responsible for.

In addition, one can ask if the confidence strategy and the deliberative process of the US monetary policy, if supported by a good knowledge of the transmission mechanisms process, do not depend on the charisma of a personality, i.e. the President of the FED. Alan Greenspan was a real communication master (even if its comments were not always very clear).

Probably the American central bank is aware of this limit, as the post-Greenspan period could see a modification in the policy of the FED moving it closer to inflation targeting, which could lead to a certain convergence of the two policy regimes.

13) What could be the main practical effects of this situation?

- First, the ECB strategy seems successful for reducing inflation pressures. Even if some transmission channels are not as robust and direct as it is assumed in theoretical models, central bank credibility on this question is undisputable. Rule, commitment, and published framework underlying policy decisions have convinced economic agents and markets of the ECB determination. In addition, significant improvements in its actions predictability can presently be observed, as its new communication formula has considerably reduced the uncertainty about them.

- Secondly, the ECB seems to currently have less efficient ability to stimulate economic growth. It is a second-rate mission in its mandate, but nevertheless it is not neglected by the central bank. A relatively recent research (2003) of the CAE (the French “Centre d’Analyses Economiques) has concluded that, since its creation, the Bank had acted more for supporting the economic situation than for fighting inflation. That means clearly that when the inflationary risk was judged low, the central bank did not maintain a restrictive stance. But in this case, it is sure that the credibility strategy is less operational than concrete transmission mechanisms which seem, as described, less efficient than those of the FED for rapidly stimulating demand. One can add that there is a relatively broad agreement on the idea that European economic growth is handicapped by specific problems that monetary policy cannot solve. But common understanding of this situation certainly requires a long time and the ECB has easily become the scapegoat of national politicians.

As a result of this complex context, one can understand why the ECB seems less active than the FED: since its creation, the institution moved its rate 22 times, as during the same period; the FED did it 36 times. Short term or fine tuning actions seem, for the moment, less suitable than a mid term strategy in preserving price stability. In the assessment of the ECB, price stability is the best condition for a sound economic growth.

Monetary policy transmission in comparison? Europe versus the USA

Briefing Paper for the Monetary Dialogue of March 2007 by the Committee on Economic and Monetary Affairs of the European Parliament with the President of the European Central Bank

Leon Podkaminer

Executive Summary

There is a large econometric literature on the effects of changes in the policy interest rates on output and prices. The average output elasticity parameters reported are similar for the US and the Eurozone (actually identical for the shorter-term output effects). Also, the short- and long-term price effects are tested to be *practically the same* on both sides of the Atlantic. An important corollary to these findings is that there is no empirical evidence supporting the view that the ECB is more handicapped in using its policy for the purpose of stabilising output than the FED.

The transmission of monetary policy into ultimate effects is quite complex. To facilitate its analysis economists distinguish various ‘channels’ through which changes in the policy interest rates may be transmitted. It is legitimate to study empirically ‘separate’ channels. But such studies are unlikely to be of much use when it comes to gaining understanding of the *ultimate* effects (on output and inflation). There is some limited evidence that specific channels operate differently in the US as compared with the Eurozone. The real puzzle seems to be that the overall transmissions look so similar – despite huge structural, financial, fiscal etc differences between the two areas.

There is surprisingly little research on the evolution of the transmission since the introduction of the euro. However, the existing studies suggest that little has changed. This is quite natural given the fact that the euro countries continue to differ on so many counts. The single policy conducted by the ECB is at least partly responsible for the diverging performances of individual member states: real interest rates are high in low-inflation countries and low in high-inflation ones. This is a perverse consequence of the underlying ‘one size fits all’ principle. Can something be done about this? No, there does not seem to exist any quick fix. The hope is that sooner or later all member states somehow become homogeneous – despite ECB’s actions. In the meantime, a revision of the fiscal constraints (Maastricht/SGP) could perhaps help.

Elasticity of output growth: Europe not much different from the USA?

There is a large (and exponentially growing) econometric literature on the effects of (apparently unanticipated) changes in the policy interest rates on output. Unfortunately, the estimates derived from individual studies tend to be of rather low statistical quality (i.e. they tend to have low testing statistics). This is another way of saying that our knowledge of the actual monetary policy transmission is at best inaccurate (and at worst irrelevant, or perhaps outright wrong). Moreover, the output elasticity parameters reported by individual studies (or implied by these studies) are widely dispersed. This is well documented in a recent study by Paul De Grauwe and Claudia Costa Storti¹ (see Table 1).

Table 1. Characteristics of the distributions² of short- and long-term output effects of a 1% increase in the short-term interest rates in the US and in the Eurozone countries (%)

| | US short-term | EURO short-term | US long-term | EURO Long-term |
|---------------------------|------------------|--------------------|-----------------|-------------------|
| Mean Effect | -0.28 | -0.28 | -0.23 | -0.19 |
| Median Effect | -0.38 | -0.25 | -0.14 | -0.11 |
| Maximum Effect | +0.85 | +0.61 | +0.28 | +0.65 |
| Minimum Effect | -0.99 | -0.91 | -0.83 | -0.95 |
| Standard Deviation | 0.43 | 0.26 | 0.28 | 0.33 |
| Observations (studies) | 51 | 126 | 48 | 92 |

As can be seen, the average (mean) output elasticity parameters reported are similar for the US and the Eurozone (actually identical for the short-term³ output effects). However, in all cases the standard deviation of the output effects is larger than the absolute value of the mean effect. The implication of this is that in each case a significant proportion of studies suggest that monetary policy shocks have ‘perverse’ output effects (e.g. that a hike in interest rates is followed by a speed-up in output growth). Moreover, Table 1 suggests yet another ‘heretical’ observation: the decisive majority of studies indicate that monetary policy shocks have pretty much permanent effects on output. An interest rate hike leaves – according to the majority of econometric studies - output depressed even well beyond the 5th year.

Elasticity of price effects: Eurozone and the US actually not dissimilar ?

Table 2 gives the summary statistics on the short- and long-term elasticity parameters, derived from available econometric studies, characterising the US and Eurozone’s response of the price level to policy interest rate shocks.

¹ “Is Monetary Policy in the Eurozone Less Effective than in the US?”, *CESifo Working Paper* No. 1606, Nov. 2005.

² Outlier observations (parameter estimates) for both short- and long-term output effects (larger than +1, or lower than -1) have been eliminated.

³ De Grauwe and Costa Storti define the short-term as ranging between 1 and 5 years. Long-term is beyond the 5th year.

Table 2. Characteristics of the distributions of short- and long-term price level effects of a 1% increase in the short-term interest rates in the US and in the Eurozone countries (%)

| | US short-term | EURO short-term | US long-term | EURO Long-term |
|---------------------------|------------------|--------------------|-----------------|-------------------|
| Mean Effect | -0.06 | -0.09 | -0.59 | -0.25 |
| Median Effect | -0.02 | -0.07 | -0.52 | -0.16 |
| Maximum Effect | +0.64 | +0.45 | +1.09 | +1.01 |
| Minimum Effect | -0.82 | -0.82 | -2.55 | -2.25 |
| Standard Deviation | 0.29 | 0.20 | 0.82 | 0.55 |
| Observations (studies) | 37 | 81 | 35 | 73 |

As can be seen, there are wide ranges for the price effects subsequent to a monetary policy shock. On the whole however, the bulk of the short-term effects are reasonably close to zero in both the US and the Eurozone countries. Thus, the conventional wisdom about the inability of monetary policy to have significant impacts on inflation at shorter time horizons is confirmed in both the US and the Eurozone countries. As far as the short-term price effects are concerned, the US does not seem to be much different from the Eurozone. However, the mean and median for the long-term US effects seem dissimilar from the Eurozone's. The fact that the long-term price effect in the US is about twice the Eurozone's might suggest that Eurozone's inflation is much less responsive to the monetary policy than the US. In particular, a monetary easing could, 'on average', be expected to have much higher inflationary effects in the US than in the Eurozone. Of course, this conclusion would be inconsistent with the idea, actively propagated (by the ECB, among others) that the Eurozone is much more 'rigid' (e.g. as concerns the labour and product markets) than the US. Alternatively, the conclusion would be that the ECB could – and should – afford to be much more 'output-oriented' in its decisions than the FED, without compromising its long-term price stability mandate any more than the FED.

Naturally, given very high standard deviations (relative to the means) of the effects of interest rate shocks, drawing definite conclusions about similarity (or dissimilarity) of the transmission of monetary policy between the US and the Eurozone countries is a bit risky. The values of the elasticity parameters reported by separate econometric studies may have been influenced by additional factors such as the type of econometric technique used, definitions of variables (e.g. industrial output or GDP as representations of 'output'), sample size, exchange rate regime, etc. Last, but not least, the elasticity parameters may in fact have been country-specific. A more reliable way to draw conclusions about the similarity (or otherwise) of the monetary policy transmission in the US and the Eurozone countries would require that one controls for these characteristics of the studies under scrutiny. This is what has been actually done by De Grauwe and Costa Storti. Their 'meta-analysis' allows a formal testing of the hypotheses on similarity of transmission of monetary policy shocks. It turns out that:

- the equality of the US and Eurozone short-term output and price coefficients cannot be rejected with a probability higher than 99%. In plain language, the short-term effects of monetary policy shocks are more or less the same in the US and the Eurozone;

- the equality of the US and Eurozone long-term output and price coefficients cannot be rejected with a probability higher than 95%. In plain language, the long-term effects are practically the same on both sides of the Atlantic.

Two comments are now in order. First, the fact that on closer scrutiny the transmission from policy shocks to output/prices, as elicited by the sample of econometric studies, turns out to be basically the same on both sides of the Atlantic does not mean that our knowledge of this mechanism has become any more specific (e.g. as far as the prediction of the effects of policy shocks is concerned). All we have learned is that according to the studies scrutinised the monetary policy shocks suggest, ‘on average’, more or less the same responses in the US and the Eurozone. Second, as rightly concluded by De Grauwe and Costa Storti, no evidence appears to exist supporting the hypothesis that the ECB is in any way handicapped in using its policy for the purpose of stabilizing output compared to the FED.

Separate transmission channels operate jointly

The transmission of monetary policy into ultimate effects is quite complex. To facilitate its analysis economists distinguish various ‘channels’ through which changes in the policy interest rates may be transmitted. The central role is assigned to the interest rate channel which transforms the original change in the policy rate into the market interest rates (charged/offered by banks) and directly affects private consumption and investment. Changing market interest rates are capable of having also indirect effects on aggregate demand - via direct effects on the exchange rates and on the prices of assets. Changes in asset prices affect aggregate demand through two sub-channels: via direct wealth effects and via the impacts of changing value of assets (collaterals) on bank lending. Besides, changing policy interest rates may also affect banks’ ability/willingness to extend credit. Of course, the catalogue of channels can be further extended (e.g. some economists talk of ‘cost channel’ – i.e. rising interest rates augmenting costs of running business, and therefore possibly adding to inflation).

In practice, the monetary policy contributes to the ultimate outcomes (i.e. output and inflation) with impulses being transmitted through possibly all channels more or less simultaneously. Needless to say, the strengths of individual channels depend on very many factors: be they structural, dynamic (i.e. cyclical), or institutional (e.g. relating to the way the central bank operates). Moreover, separate channels may well be connected through complex linkages and feed-backs. Thus it is a bit artificial to treat individual channels as truly separate. All in all, it is certainly legitimate to study empirically ‘separate’ channels. I doubt however whether such studies will – in the foreseeable future - be of much use when it comes to gaining an understanding of the ultimate effects (on output and inflation) of monetary policy⁴.

⁴ Figuratively speaking, the entire transmission mechanism is a ‘big black box’ composed of a number of smaller (but still fairly complex) black boxes. Even if one were to understand properly the operation of individual ‘small boxes’, one would have to know the complex mechanism that is binding them together.

Meagre comparative (US/EU) evidence on individual channels

There are some (not terribly many) studies concerned with cross-country quantitative comparisons of the operation of individual transmission channels (or aspects). Some of them report more or less substantial differences between the US and the Eurozone. For example, according to a number of econometric studies, the pass-through from policy interest rates to the retail interest rates is higher in the USA than in the Eurozone⁵. In a similar vein, Angeloni et al⁶ (2003) detect large differences (US vs. the Eurozone) in the composition of responses of domestic demand to the monetary policy shocks: ‘In the euro area investment is the predominant driver of output changes, while in the US consumption shifts are significantly more important’. The important thing to notice is that all these differences notwithstanding, the overall ‘big black box’ of the monetary transmission seems to be operating similarly on the two sides of the Atlantic. This, by the way, is also the conclusion of Angeloni et al (2003).

The real puzzle: dissimilar in so many aspects, similar in monetary transmission

The difference in responses of investment and consumption, which puzzles Angeloni et al. (2003) does not really puzzle the present writer. These differences seem quite natural considering that: (1) the financial structures of both areas are highly different (different functions of banks, capital markets, retained corporate earnings); (2) public finances are different (strong fiscal federalism in the US vs. absence of such in the EU; flexible use of deficit spending in the US vs. the rigid corset of Masstricht/SGP in the EU); (3) output-minding policy of the FED vs. the ECB’s inattention to the needs of the real economy. The real puzzle is that despite all these differences, the ultimate transmission in both areas seems to be so much similar.

Greater homogeneity of transmission across the Eurozone? Perhaps later on

There is surprisingly little empirical research on the evolution of the transmission since the introduction of the euro. Arguably, the available time series are still too short for such studies. Moreover, the few available studies on this subject usually work with data ending by 2003. No doubt the conclusions drawn from such studies cannot carry much weight. Nonetheless, it may be worth quoting the findings of a recent study utilising the data collected within the Eurosystem Inflation Persistence Network (IPN)⁷. This study finds no evidence that introduction of euro cash in 2002 affected price setting in the Eurozone. Similarly, it finds no evidence that persistence of inflation was altered. Inflation came down and became steadier in the mid 1990s (as it also did in the UK and US at about the same time). More or less the same conclusions apply to individual Eurozone countries (and also to the main sectors of the Eurozone economy). Certainly, some intermediary channels of the transmission may have been changing across the Eurozone. In particular, the interest rates pass-through seems to have become more homogeneous across the Eurozone, and also faster - at least in some market segments⁸.

⁵ See e.g. a recent review article on this: C. Kwapil, J. Scharler: ‘Limited Pass-Through from Policy to Retail Interest Rates: Empirical Evidence and Macroeconomic Implications’; Austrian National Bank, *Monetary Policy & The Economy*, Q4/06.

⁶ I. Angeloni, A.K. Kashyap, B. Mojon and D. Terlizzese, “The Output Composition Puzzle: A Difference in the Monetary Transmission Mechanism in the Euro Area and US”, *NBER Working Paper* No. 9985, Sept. 2003.

⁷ I. Angeloni, L. Aucremanne and M. Ciccarelli: ‘Price setting and inflation persistence: did EMU matter’, *Economic Policy*, 2006 (April).

⁸ J. Coffinet: ‘The single monetary policy and the interest rate channel in France and the euro area’; Banque de France, *Quarterly Selection of Articles*, Autumn 2005.

The persistence of differences in the monetary transmission channels across the Eurozone would seem to be quite natural given the fact that the member states continue to differ in many ways (banking systems still play different roles, structures of real economy are still very dissimilar, labour market institutions are different, there is much diversity on public finances etc). Of course, the fact that individual Eurozone members perform so much differently on inflation, real growth and unemployment does not speak in favour of the ‘growing homogeneity’ hypothesis either.

Can something be done to improve homogeneity of transmission in the euro zone?

It may perhaps be added that the single monetary policy (conducted by the ECB) is in fact at least partly responsible for the diverging performances of individual Eurozone members. The ECB’s single interest rate has had radically different consequences throughout the Eurozone. While in low-inflation countries (e.g. Germany) the ECB rate has implied quite high real market interest rates, in higher-inflation countries (say Ireland or Spain) the same ECB rate implied low (or even negative) real market interest rates. The perverse consequence of this is that the same monetary policy which is actually too restrictive in low-inflation (and hence usually also low-growth) countries, is at the same time too lax in high-inflation (and, sometimes, also high-growth) countries. Thus, the ECB mechanism may actually be a destabilising force, amplifying rather than reducing cyclical movements in individual member states. Can something be done to change this? There does not seem to exist a quick fix. The fundamental principle underlying the single monetary policy has been that there is specific size that fits all. But, this does not appear to be the case. The average size designed at the ECB need not fit anyone: it may be too tight for some and at the same time too loose for others. The hope is that despite the tendency towards larger divergence inherent in the design of the ECB, sooner or later all member states will somehow managed to become sufficiently homogeneous. In the meantime, one could perhaps consider a revision of the fiscal criteria imposed on individual members (i.e. Maastricht/SGP). The idea would be to allow the low-inflation/low-growth members running higher deficits, temporarily, of course. A still more heretical idea would be to propose that the ECB somehow differentiates its own interest rates, applying higher rates to high-inflation/high growth countries and lower rates to low-inflation/low growth ones. Of course, the realisation of that proposal is highly unlikely. It would imply a radical change in the role of the national central banks – probably they would have to surrender their (national) monopolies of currency issue. Moreover, such a reform of the Eurosystem would probably require a measure of a common, centralised fiscal policy - modelled on e.g. the US Treasury.

A postscript: improving predictability etc requires more empirical research

Given the multitude of responses to monetary policy shocks derived from various econometric studies (and the generally large standard deviations of responses suggested by particular studies) it is obvious that our knowledge of the transmission is far from adequate. Much more research is needed. But I am not postulating ‘more of the same’ econometrics. Instead I would like to draw attention to a key deficiency of the bulk of existing studies. This relates to the treatment of the ‘raw’ data on monetary policies. It is quite obvious that policy actions tend to be taken in anticipation of the future developments. This creates endogeneity: a variable ‘to be explained (e.g. future output growth) by an earlier policy action (e.g. interest rate ‘shock’) turns out to be itself ‘explaining’ the policy action. Endogeneity may have grave consequences: it may result in spurious regressions with findings being biased, misleading or actually nonsensical:

‘For example, the Federal Reserve typically cuts the target funds rate if it sees signs that a recession is likely. In such a situation output is unlikely to rise in the wake of the interest rate cut even if the monetary policy action is having a stimulative effect. If anticipatory countercyclical actions are common, a regression may again fail to find a negative relationship between increases in interest rates and output growth even if it is actually present.’⁹

Deriving correct (i.e. purged of the anticipatory impacts) indicators of monetary policy is a labour-intensive undertaking. But, as demonstrated by Romer and Romer (2004), this can be completed. The effort seems to have paid off: their estimates using the new indicators suggest that the FED’s policy has large, relatively rapid and statistically significant impacts on both output and inflation. Moreover, these impacts appear to be substantially stronger and quicker than those obtained using conventional indicators. Concluding, it may perhaps be important to derive the time series of endogeneity-free indicators of monetary policy shocks also for the ECB. The results from models using such time series might help to better understand - and predict - the actual effects of actions taken by the ECB.

⁹ Quoted from Ch. Romer and D. Romer: ‘A New Measure of Monetary Shocks: Derivation and Implications’; *The American Economic Review*, No.4, 2004.

Brief Report on the monetary transmission mechanism in the euro area and the US

Briefing Paper for the Monetary Dialogue of March 2007 by the Committee on Economic and Monetary Affairs of the European Parliament with the President of the European Central Bank

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Executive Summary

Central banks conduct monetary policy by changing the short run nominal interest rate at which they lend high-powered money to the financial system. In doing so, they influence the interest rates of the money and financial markets and ultimately monetary growth and the rate of inflation. However, all these changes in interest rates also impinge indirectly on the consumption and investment decisions of agents and hence on real growth.

In the euro area, the lending nominal interest rate of the European Central Bank or the Federal Reserve is the primary instrument of its monetary policy. In this essay, we try to analyse the monetary transmission mechanism of ECB interest rate decisions by comparison with those of the Federal Reserve. To this end we ask the following questions: How deep and how lasting are the consequences of monetary policy decisions on real output? Are the real effects of monetary policy a necessary part of the transmission mechanism? Are there any important differences in the monetary transmission mechanisms of Euroland and the US? How far can knowledge of that mechanism help the monetary authorities forecast inflation and keep interest rate changes to a minimum? Hopefully, answers to these questions will help us decide whether it might be useful to take account of the role broad money in the euro zone transmission mechanism and thereby increase the transparency of the ECB strategy and contribute to the better fulfilment of its primary goal, price stability.

Inflation as a monetary phenomenon

Continued increases in the price level are caused by continued increases in money. Thus much we know. If individuals and corporations could form perfect expectations about the amount of real money needed to keep the economy on a steady growth path, any excessive issue of fiduciary money would immediately find its way into the price level. This is clearly seen in periods of hyperinflation when the rate of exchange to a more stable foreign currency is used to change local prices and portfolio composition on the spot without any previous influence on interest rates, consumption or investment. In normal situations, speedy and continuous acquisition of such information about central bank policy is too costly, given the relatively small size of liquidity changes. In this case, nominal money (M) makes its way into the productive system as if it were real money (M/P) and in the interim of affecting the price level equally changes the decisions of producers, consumers and savers. As Hume put it in (1752):

We find, that, in every kingdom, into which money begins to flow in greater abundance than formerly, everything takes a new face: labour and industry gain life; the merchant becomes more enterprising, the manufacturer more diligent and skilful, and eve the farmer follows his plough with greater alacrity and attention. [...] To account for this phenomenon, we must consider, that though the high price of commodities be a necessary consequence of the encrease of gold and silver, yet it follows not immediately upon that

increase; but some time is required before the money circulates through the whole state, and makes its effect be felt on all ranks of people. [...] In my opinion, it is only in this interval or intermediate situation, between the acquisition of money and the rise of prices, that the increasing quantity of gold and silver is favourable to industry. (Pgs. 37-38)

A steady supply of real money is favourable to the growth of the economy. However, it is not easy to achieve such steady flow. When transactors become wealthier they demand more real money and general liquidity, as can be seen in the downward trend of the income velocity of money in a growing economy. Consequently, the proper supply of real money should follow the long-term steady growth path of the economy, with due allowance for the fall in velocity. An increase in nominal money supply above or below that should have no effect on growth, except in as far as growth can be reduced or retarded by unforeseen inflationary shocks that deviate resources towards financial wizardry. In sum, the artificial excitement described by Hume is best avoided.

The conclusion of this analysis is that, in the long run, an excessive increase in money supply will indeed affect nominal GDP and the money prices of assets but that one cannot say how and how much will go to real growth in the short run. Milton Friedman's last academic article before his death (2005) adduced quite powerful empirical evidence in favour of this theory by examining three widely separate episodes of growth and decline in the economy and the Stock Market in the 20th century. Changes nominal money have no effect on long-term growth, but can have them in the short term. This is less than ideal, as the ECB knows only too well: it leads to demands by politicians that the ECB use their uncertain and undefined ability to influence the real economy with the purpose of micro-managing the real economy.

The Central Bank should not try to manage the economy with its interest rate policy, since very little that is systematic is known with sufficient certainty about the short term real effects of the bank rate. But the undoubted short term real repercussions of monetary policy can be used to good effect as an information tool. The ECB can use the empirical analysis of changes in saving, consumption, investment, employment, and asset prices as early warning signs of forthcoming inflation that will later be reflected in a lagging CPI. This supports the attention paid by the ECB to the so-called "second pillar", or data about the real economy, as an information tool.

These data about the real economy carry information about people being deceived by discrete changes in prices that later will turn out to have affected all prices equally. But presenting these temporary real effects of bank rate changes as the 'transmission mechanism of monetary policy' may cause confusion. This expression seems to suggest that inflation can only unfold through real channels, when in fact it is a monetary phenomenon. The expression 'transmission mechanism' carries echoes of the Keynesian view that inflation happens when the economy overheats, when real aggregate demand is larger than real aggregate supply, though we know from stagflation times that it is quite possible to experience inflation during a slump. Be that as it may, we will use the expression 'transmission mechanism' as it seems to be well established – with the caveat that such a mechanism only transmits contingent information and cannot be a systematic economic policy tool.

The interest rate channel

In times of moderate inflation, central bank interest rates changes result in a mixture of output and prices changes through different channels: the so-called interest rate channel; commercial bank credit policy; the exchange rate; and market expectations, among others. According to the conventional approach to monetary transmission mechanisms, The GDP in the euro area is dominated by domestic factors, and bank deposit policy is closely related to changes in the interest rate.

In consequence, the interest rate channel is seen as the primary one to try and analyse how monetary policy is affecting the real economy rather than prices in the short run. Moreover, the interest rate channel is also seen as the dominant channel in explaining real repercussions of changes in monetary policy in the individual members of the euro area (see Angeloni et. al. 2002). The importance of this approach in academia merits a closer look.

Changing the real interest rate affects the economy via different channels. Since in normal times it is difficult to separate the real from the nominal rate in the short run, money rates have an effect on present consumption in the following ways.

- Through the so-called substitution effect, an increase of the interest rate leads to an outward shift of the time preference schedule of the consumers; if the reward for saving is expected to increase, this will result in a reduction of present consumption in favour of future consumption. The size of this effect is rather difficult to pin down. In particular, it will depend on social or institutional factors such as consumption patterns of society and, in the end, on individual preferences agents for present consumption as against future consumption.
- By the so-called income effect, the consequence of interest rates increases (or decreases) will depend on the net financial position of individuals: if they are net debtors, they will see their income fall and, thus, current consumption will also decrease (and vice versa). This effect on consumption will be larger when the individuals concerned are invested in the stock market, because the income of this kind of financial assets is quite sensitive to changes in interest rates.
- Closely related to the income effect, the wealth effect plays an important role in explaining how interest rates change output and prices in the short run. This effect focuses on the impact of interest rates on asset prices, a crucial indicator on consumption patterns on a long-term basis. According to the “permanent income hypothesis” (Friedman, 1957), the expected long-term income determines major consumption decisions, especially the consumption of durable goods and investment in residential investments (see Hernando and Martínez 2005).

Since interest rates changes affect the demand of financial and non-financial assets, an increase in money interest rates will reduce this demand. This effect will be larger if agents place their wealth in the stock markets, which are more sensitive to changes in the interest rates. On the other hand, consumption in economies where the greater part of national wealth is placed in Government bonds and residential investment is less variable than in economies where the wealth is mainly placed in stocks or bonds. All this can suggest different speeds and sizes of interest rate changes to help avoid large real effects of monetary policy. It may also indicate the trend of inflation when monetary expansion is purged of its real effects with the passage of time.

On the producer side, an increase of the (real) interest rate also affects corporate investment decisions in capital goods and material assets. Money interest rates will for a time be read as real. In particular, an increase in interest rates increases the financial cost of the future investments and also the (opportunity) cost of current investment. In the end, it all may result in a reduction of future investment and, in some limiting cases, in the reallocation of resources of the existing ones, two developments that may indicate the existence of monetary causes of inflation or deflation.

Some empirical results: Euro area and US

According to the greater part of research in this field (see the survey of Angeloni et. al. 2002, 2003 for the euro area and Christiano et. al 2001 for the US), an increase in the short term interest rate by the central bank has the following effects on output and prices, both in the euro area and in the US economy.

- Regarding output measured by the GDP, an increase in the interest rate generates a reduction of the GDP beginning in the second or third quarter after the change; and it has its peak negative effect on GDP after eight or twelve quarters. The effect of that increase in the nominal interest rates disappears completely after three or four years in both economies. The quantitative impact of an increase of the interest rate on GDP depends on the econometric model and the type of interest rate shock inferred in the research works: AWM (ECB area-wide model), VAR (vector auto-regressive) models or multi-country models. After a survey of the different models and techniques used, the impact of an increase of the nominal interest rate in the euro area after one year generally lies in the range of -0.15 and -0.25 (See Angeloni et. al. 2002, 2003). This outcome confirms the inability of monetary policy to affect output on a long run basis, as well as the existence of real effects in the economy in the short run. In a rational expectations scenario, the latter may be motivated by the existence of price and wage rigidities that prevents agents to fully adjust to the new monetary decision. Once agents form new expectations and adapt their prices and income accordingly, the initial real effects erode and real variables follow their long term growth path.
- Regarding prices, an increase in the interest rates has a permanent effect on the reduction of the price level. But the effect is more gradual and delayed than the one on the GDP. According to Angeloni et. al. (2002), prices take almost a year to feel the first impact of an increase in the interest rate. Then, the downward effect on the price level persists over time. Again, the quantification of this effect in the euro area depends on the model and technique used. As a baseline, most of the works of reference set a null or insignificant impact for a year (See Angeloni et. al, 2002, 2003). In fact, the first significant effects can be observed only after three years. In this case, as expected, monetary policy reaches its primary goal of controlling prices and there is no reversion to the initial value.

However, as explained above, monetary policy affects the real output before affecting prices; in this sense, monitoring how monetary decisions affect real variables in the short run is a relevant issue in the central bank monetary policy strategy. Moreover, since there is a delay in the effects of interest rates on prices, a monetary aggregate could be useful information to explain the expected path of monetary policy in the medium and long term.

In sum, on both theoretical and empirical grounds, money matters in explaining prices; and, in a broader context, in determining the nominal national income of the economy (see Congdon 2006).

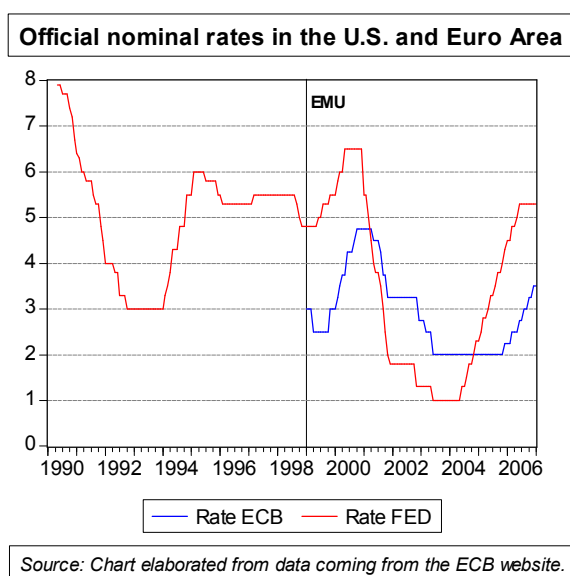
Differences in real and nominal reactions in the euro area and the US

Even though the overall effects of monetary policy on output and prices are similar, both in magnitude and time in the Euro area and the US, there are important differences in the variables that explain that similar outcome.

Firstly, in the case of the US, the income and wealth effects are more relevant than in the case of the euro area. This is because Americans maintain a high proportion of their wealth in the stock markets, particularly in financial assets whose market price is more sensitive to changes in the interest rates. As a result, consumption in the US (especially in durable goods) is more affected by changes in interest rates, which makes consumption a more volatile variable in the US; and this variable accounts for the main changes in the domestic demand coming from a change in the interest rate.

Moreover, official lending interest rates have changed more frequently in the US than in the euro area since the European Monetary Unification (1999). The standard deviation of the official interest rates in the US (1.7) doubles the one of the official interest rates in the euro area (0.8). This has reinforced the size of income and wealth effects in the US in the last years; hence the relatively larger consumption changes in the US economy.

Chart 1



Several papers have suggested other reasons to explain this major impact on interest rates changes in the US economy via consumption. One of them, Angeloni et. al. (2003) concludes that part of the difference in the monetary transmission mechanism is due to institutional and political-economy factors:

It appears to us that the consumers are responsible for the differences. [...] It appears that disposable income may be less responsive to monetary changes in the euro area than in the US. We were motivated to make this comparison by the hypothesis that social safety net in Europe might cushion the effects of monetary policy on consumption more there. It appears that movements in consumption relative to disposable income are larger in the US too. (Pgs. 1300).

As the authors point out this is just a possible explanation that requires further analyses.

Secondly, Europeans have generally opted to invest the greater part of their wealth in real assets (in particular residential investment) and government debt, whose units are less divisible or whose owners are less transaction prone. As a result, it is not consumption decisions but investment decisions that are relatively more affected by monetary policy decisions

Implications for monetary policy

(A) The ‘second pillar’

Thus, the results of the works of reference on this topic support the monetary strategy assigned and adopted by the ECB since 1999:

- Firstly, it confirms the dominance of the interest rate channel in explaining the major impact of the monetary decisions on the economy (consumption, investment and prices). The short run nominal interest rate is unanimously considered by central bankers as an efficient instrument to conduct monetary policy decisions.
- Secondly, interest rate changes affect the price level in the medium and long term permanently. However, they first temporarily affect real variables such as the GDP through its main domestic components, consumption and investment.
- This supports the use of the so-called “second pillar” of the ECB monetary strategy as a basic instrument of its communication policy with the market. Far from being a target of monetary policy, the variables included in the second pillar are used by the ECB as a valuable information in two ways:
 - On the one hand, since monetary decisions take time to affect their final goal (they suffer ‘monetary policy lags’), monitoring the effects of interest rates on real variables in the short run provides useful information about the later effect of rates on prices.
 - On the other hand, the variables included in the second pillar are used by the ECB as indicators of how past decisions on interest rates are working through the system.

Accordingly, the ECB strategy does not exploit the influence of the monetary decisions to affect real variables in the short run; on the contrary, the ECB has set a monetary strategy that clearly removes any room for that type of time inconsistent fine-tuning policies.

(B) The ‘first pillar’

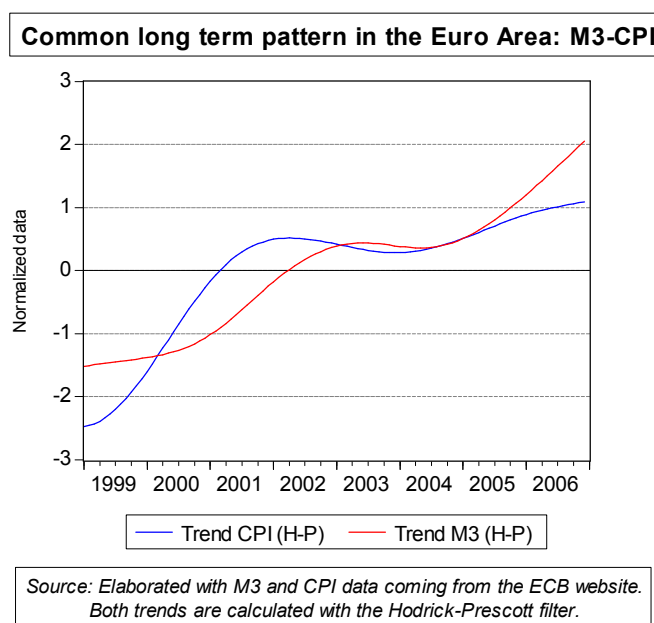
In order to fill the information gap between the short run real effects of monetary policy and the expected delayed effects on prices, the ECB also uses the monetary information provided by the so-called ‘first pillar’ of its monetary strategy. This includes analyses of money and financial aggregates, with a particular role assigned to a broad money indicator, such as M3. The ECB If does not assign M3 a “reference value”¹⁰ since 2003, but it still assigns an important role to broad money growth both in policy-making and in its communication policy.

¹⁰ In contrast with the previous practice of the Bundesbank, it was never an *intermediate monetary objective* for the ECB; but for the first three years, it was announced a *reference value* compatible with the definition of price stability. From 2003 onwards, the ECB decided to stop publishing that value due to the increasing divergence of the M3 growth and inflation growth in the euro area.

Since the euro area is a new monetary area, there are theoretical and statistical reasons that account for the imperfect cross correlation between the rate of growth of money and prices over several periods of time (See Schwartz and Castañeda 2006); which may make the monetary information less reliable than in a well established monetary area. Even in the more uncertain scenario in which the ECB makes monetary policy, a broad money aggregate can still function as an important channel of medium term information for the policy-maker.

Both trend and sample data taken from 1999 to 2007, broad money (M3) growth in the euro area is highly and positively correlated with prices (CPI) growth (correlation: 0.86). Both trends share a common slope, which indicates a common long run pattern, though with quite different intensities: the average growth of the M3 trend (6.6) has been much larger than the average growth of prices (1.9). In sum, a broad money indicator may be used as a useful benchmark to create price expectations in the medium and long term but not as a tool. This is why M3 is taken explicitly into account both in the policy-making and in the communication strategy of the ECB.¹¹

Chart 2



(C) Monetary strategies in the euro area and the US

The relatively greater importance of consumption in the US and investment in the euro area in the short term real effects of interest rate changes should respectively influence the monetary strategy of the Fed and the ECB.

¹¹ Furthermore, in the case of a long-established monetary union such as the German economy, the determinant role of money growth in creating inflation expectation is even stronger. With a bigger sample Castañeda (2006, ch. 3) showed how monetary aggregates not only share a common trend with the CPI, but it also were leading the cycle.

More concretely in the case of the euro area, since investment is a dominant variable in explaining the transmission of interest rates changes to the GDP, the ECB should use indicators especially to monitor the evolution of the major components of investment: financial assets, capital goods and residential investment.

(D) Connections between the first and the second pillars

Since M3 includes broad bank money, observing it may have a further use: it may allow the ECB to interpret changes in asset prices as an indication of on-coming inflation.

If agents change their demand and supply of different types of real and money assets in order to adjust their desired holdings of money (Friedman (1956) the role of a broad money aggregate becomes clearer. In the case of an increase of money supply, agents will exchange different real and financial assets, altering their prices, until the demand to hold money equals the supply of money. At the end of this adjustment process, a broad money aggregate will reflect the changes in the agents' portfolios and market prices:

If the analytical interest lies in understanding how the rate of change of the prices of goods and non-money assets are determined, it must surely be the entire amount of money – al-all encompassing measure of assets with a given nominal value- that is relevant. (Congdon, 2006; pg. 10).

Accordingly, M3 growth may supply useful information on the growth of prices of real and financial assets and, thus, relevant information to discover inflation expectations in the medium and long term. In this way, it may be adopted as an indicator of the income and wealth effects mentioned above, in order to asses underlying inflationary or deflationary pressures on a long term basis.

Recently, the Fed has decided to discontinue the publication of M3 series:

M3 does not appear to convey any additional information about economic activity that is not already embodied in M2 and has not played a role in the monetary policy process for many years. Consequently, the Board judged that the costs of collecting the underlying data and publishing M3 outweigh the benefits.(Fed 2006).

In our view, this decision goes in the wrong direction if the underlying inflationary pressures in the financial and housing markets should be monitored and evaluated.

Since the ECB clearly assigns a role to the monetary first pillar, it is institutionally prepared to anticipate and correct instability in financial markets that may later affect the overall prices of the euro area. In line with the potential importance of the financial markets (and the residential investments as well), to reinforce the commitment of the ECB with price stability in the medium term could require the use of a Financial Conditions Index (FCI that would combines the information coming from the standard HCPI (consumer prices in the goods and services markets) with information on the price of financial assets and the international price of the currency (in our case, the exchange rate of euro with the US dollar). While maintaining its focus on the achievement of price stability, the ECB would have an additional indicator to monitor and communicate its monetary policy to the market.

Monetary policy transmission in Europe and the US

Briefing Paper for the Monetary Dialogue of March 2007 by the Committee on Economic and Monetary Affairs of the European Parliament with the President of the European Central Bank

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Executive Summary

In an ideal world, the common monetary policy would have identical effects in each and every Euro area member country. The “one size fits all” issue has long been a concern, but how serious is it? This is mainly an empirical issue. It could be settled by estimating the effect on output and inflation of a change in the interest rate targeted by the Eurosystem. Unfortunately such a direct investigation is marred by numerous technical difficulties.

An alternative approach is to examine the channels through which monetary policy affects output and inflation. Four main channels of transmission have been identified: the interest rate channel, the asset price channel, the credit channel and the exchange rate channel. In 2003, the ECB has conducted a coordinated study of these channels. Although preliminary because of the short experience with the common currency, this study mostly suggests that the interest rate channel is the dominant one. This is reassuring because, to a first degree of approximation, this channel is the least conducive to asymmetric monetary policy effects. More recent studies, still preliminary, point to the same direction. In addition, the effects of monetary policy on output and inflation are found to be broadly similar in the Euro area and the US, although some differences emerge at a more detailed level.

The possibility that monetary policy leads to asymmetric effects remains, but it is unlikely to be a major source of concern. First, inflation and cyclical conditions have not fully converged throughout the Euro area and are unlikely to fully converge. It will always be the case, therefore, that one size does not fit all, even if the monetary policy effects are identical. Second, most of the asymmetric effects are likely to be related to differences in banking and financial structures. These differences are likely to be gradually reduced.

Introduction

Long before the introduction of the euro an important preoccupation has been whether a single monetary policy would have the same effects throughout the monetary union. In order to deal with the “one size fits all” question, in principle we could just look at how various countries react to policy actions by the Eurosystem. We would look at inflation, growth and unemployment, for instance, and check whether the impact of interest rate changes is similar or not. This track has been widely explored but it faces the difficulty that these variables respond to many other things than the interest rate many of which are decided nationally: fiscal policy, of course, but also trade with varied country specializations, wage negotiations, and more. Researchers try to account for these factors, but the results are too imprecise to draw sharp conclusions.

The other approach is to move one step up and track down how monetary policy affects the economy. The literature on the transmission channels of monetary policy is quite vast. The ECB, in particular, has devoted important efforts to the study of the transmission channels. A way to preview the conclusion of the present paper is to quote Meier and Müller (2005):

“The last two decades have seen a tremendous body of work attempting to characterize empirically the transmission of monetary policy shocks based on structural Vector Autoregressions (VAR). Although there is now a fair consensus on the basic pattern of the economy’s response to a monetary policy shock, the precise channels of transmission and their relative importance have remained a topic of debate. In particular, it is largely unclear whether or not there is a significant channel of transmission above and beyond the classical interest rate channel.”

The results of the coordinated study managed by the ECB seem to indicate that the effects of monetary policy in the Euro area and the US do not differ much, with some differences but mostly second order. The ECB study also tried to detect differences from country to country within the Euro area. Some differences have been identified but, like the previous ones, these results are very tentative, partly because of the short history of the euro.

It is customary to consider four channels of transmission:

- the interest rate
- asset prices
- credit
- the exchange rate

They are now examined one by one, along with the evidence accumulated so far.

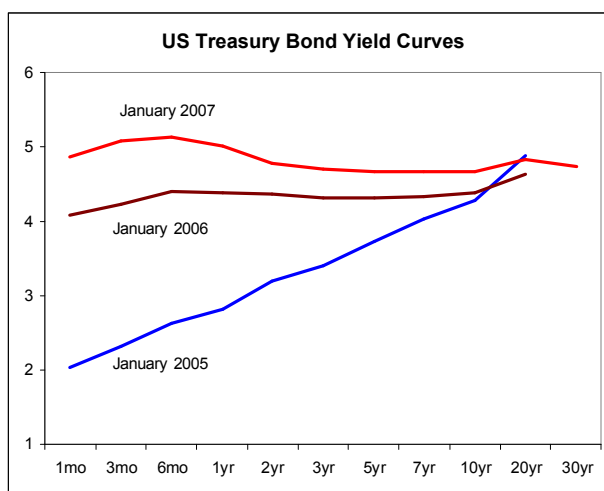
The interest rate channel

The interest rate channel is the most obvious one. The central bank controls the interest rate and interest rates affect the saving and borrowing decisions of households and firms. The simplest description of this channel is as follows. By raising its interest rate, the central bank makes credit more expensive, which discourages borrowing and therefore dampens consumption and investment spending.

Unfortunately, this description is far too simple. To start with, the central bank controls the very short-term interest – the overnight EONIA rate in the case of the Eurosystem – while borrowing decisions of households and firms typically depend of longer-term interest rates, from maturity ranging from, say, one year to ten, twenty or more years. A first important question, therefore, is how monetary policy affects long-term rates. A couple of examples well illustrate the issue.

Figure 1 reports the US yield curve in January 2005, 2006 and 2007, a period during which the Fed steadily raised its interest rate. The curve displays the interest rate on high-grade assets (Treasury bonds) at various maturities ranging from the short term – here 1 month – to the long term – here 20 or 30 years, depending on data availability. The figure shows that the short-term rates responded – almost one for one – to the Fed’s actions. For longer maturities the impact is still noticeable but quite muted.

Figure 1. US yield curve



Source: Federal Reserve Bank

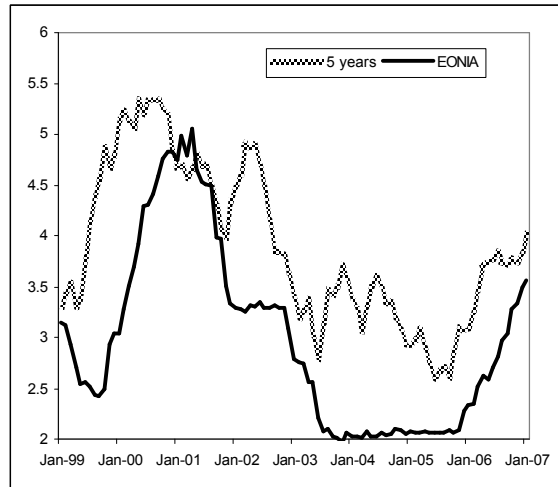
There is no publicly available yield curve for the Euro area. Instead

Figure 2 shows the Eurosystem's EONIA, along with the five-year Treasury bond rate for the whole period since the launch of the euro. The message is broadly the same: the long-term interest rate responds, usually in a muted way, to the Eurosystem's actions. Yet, looking at 2004-5, the long period of unchanged short-term rate, we see that the long rate has been moving quite significantly. Thus, during that period, the interest rate channel was active while the Eurosystem was not.

How to explain the different behaviour of short and long term rates? Long-term rates can be thought of as the average of current and all future short-term rates. They are driven by market expectations of what the central bank will do in the future, over the relevant horizon (five years in

Figure 2). For instance, from late 2005 onward, markets have been correctly expecting the gradual tightening monetary policy under way.

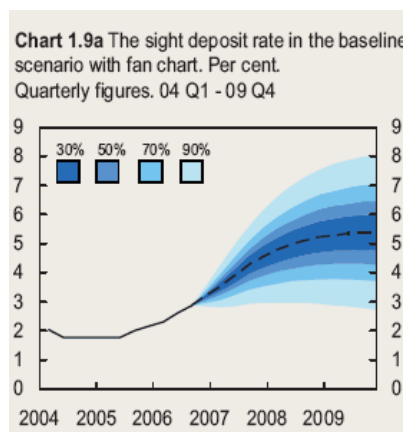
Figure 2. Euro yield curve



Source: *Monthly Bulletin*, March 2007, ECB

The important conclusion is that the ability of a central bank to affect long-term interest rates, those that matter for monetary policy transmission, very much depends on its ability to convince the markets of its future actions. Transparency emerges as a key success factor for a central bank. This has led some central banks to first issue forecasts of inflation – to give an idea of what they might want to do – and, more recently, to even indicate what interest rates they anticipate to set. This new approach has been first adopted by the Reserve Bank of New Zealand, then by the Bank of Norway and, since last month, by the Swedish Riksbank. The latest forecast from the Bank of Norway is shown in Figure 3. It shows the anticipated path – the dotted line – long with a “fan” that indicates the degree of uncertainty that the Bank of Norway attaches to its own forecasts.

Figure 3. The Bank of Norway: Forecasts of the short-term interest rate



Source: Norges Bank.

There seems to be no systematic study of how strongly and systematically central banks affect long-term rates. Yet, the interest rate channel is generally found to be the main – some even say the only – channel of monetary policy transmission.

The asset price channel

Changes in interest rates tend to affect the market value of most assets. For example, when the central bank raises the interest rate, stock and bond prices tend to decline, as do housing prices. This reduces private wealth. It is believed that households react by raising their saving in order to restore their wealth to a presumed desired level. This means less consumption. Similarly, declining stock prices lead firms to postpone share issues, thus depriving them from the means to carry out some of their investment projects.

This channel could differ across countries because of a host of factors. Two of them might create a difference between the Euro area and the US. First, the composition of household wealth matters. For instance, if most of private wealth is held in the form of houses, as is the case in much of Europe, it could be that the property market is little affected. In the US households more often hold shares, if only through their pension funds, which could well strengthen the asset price channel.

Another possible difference is the extent to which firms use share issues to finance investment. A traditional distinction between the “Anglo-Saxon and US model” and the “continental model” is that in the former firms make a heavy use of market borrowing while in the latter they rely mostly on bank credit. This would make monetary policy more powerful in the US than in the Euro area. This conjecture has received some empirical support, mostly based on pre-euro data.

The credit channel

Another possible way for monetary policy to affect the economy is via the availability of credit *independently of its cost* – since the cost of credit is the interest rate channel. The leading theory – initially proposed by Ben Bernanke, the current Fed Chairman – is that, for regulatory and prudential reasons, commercial banks need to hold liquid assets in proportion of the credit that they grant, which constitute their illiquid assets. A tightening of monetary policy, for example, implies less liquid assets in the banking system and thus leads banks to reduce the credit that households and firms require to carry out spending.

A variant of the credit channel notes that banks and, more generally financial institutions, require collateral when they grant credits. As noted before in Section 0, a tightening of monetary policy tends to reduce the value of a wide range of assets. Inasmuch as these assets are used as collateral for household and corporate borrowing, the result is less borrowing and therefore less spending.

An implication is that the detailed working of banking systems may play a role in the way monetary policy actions are transmitted. Many features can matter like the degree of concentration and the share of small banks in the banking system, since small banks are more sensitive than larger ones to liquidity availability (large banks can easily obtain liquidity abroad, for example). Bank regulation and the ability of banks to recover non-performing loans are also known to affect the impact of monetary policy actions on bank credit.

The exchange rate channel

Finally, monetary policy actions are likely to affect the exchange rate. The exchange rate, in turn, affects the competitiveness of domestic producers and therefore the total demand addressed to the economy. It is generally believed that an interest rate increase leads to an exchange rate appreciation, which reduces the level of activity and puts downward pressure on prices, at least for traded goods and services.

Before the advent of the Single Currency, the exchange rate channel was the most important channel of transmission, especially for the small open economies. Since the Euro area is a large and relatively closed economy, the exchange rate channel is believed to have become much less important. In addition, the link between monetary policy and the exchange rate is far more complex than stated above. As for long-term interest rates, the reaction of the exchange rate to central bank actions is mostly driven by market expectations of what the central bank will do in the future. Here again, transparency plays a crucial role.

In the end, the importance of the exchange rate channel has diminished for individual countries. In addition, it remains an uncertain channel. This explains why the Eurosystem correctly distances itself from the evolution of the exchange rate, in contrast to many policymakers who seem to believe that it should be a monetary policy target.

Heterogeneity within the Euro area

As previously noted, a major concern has long been that monetary policy could have different effects in different Euro area countries. The same policy action might be too strong in countries where the transmission is very effective and too weak elsewhere. This is sometimes referred to the asymmetric effect of monetary policy. Is this concern justified?

To a first order of approximation, the interest channel is the only one that should not a major source of asymmetric effect. Indeed, interest rates have closely converged within the Euro area, at all maturities. There might still be differences concerning the way households and firms react to interest rate changes, but this is likely of be of second order of magnitude.

On the other hand, banking systems differ within the area, which could be the source of important asymmetries if the credit channel is important. Similarly, differences in the composition of private wealth and in the use of stock markets by firms might make the asset price channel an additional source of asymmetric effects of monetary policy.

Similarly, individual countries do not rely in the same way on trade with countries outside the Euro area. In addition, some countries may be specialized in products whose demand is relatively insensitive to exchange rate changes while others, those that produce less “original” goods, might face strong effects. An illustration is given by Table 1, which shows that countries like Belgium, Austria and Ireland are much more dependent on trade outside the EU than countries like Portugal or Spain.

Table 1. Extra-EU Exports of Goods (% of GDP)

| Austria | Belgium | France | Germany | Greece | Ireland | Italy | Netherlands | Portugal | Spain |
|---------|---------|--------|---------|--------|---------|-------|-------------|----------|-------|
| 18.8 | 22.6 | 9 | 15.1 | 4.3 | 18.3 | 9.6 | 14.1 | 6.2 | 5.7 |

Source: European Economy, Autumn 2006

Little is known, at this stage on the importance of the asymmetry issue. The large ECB study mentioned above has detected significant asymmetries, but most of the evidence is informed by pre-EMU data.

How worrisome is that? The problem is probably overblown for three main reasons. First, the available evidence suggests that the interest rate channel is by far the most important one.

This channel is the one that is the least likely to lead to serious asymmetric effects. Second, concern about asymmetric effects arises mainly when all countries are in a similar situation regarding inflation and the business cycle; it is in this situation that we would like monetary policy to have the same impact throughout the Euro area. Although there has been some convergence, divergences remain. The main problem with the “one size fits all” issue is that the common monetary policy is, anyway, unlikely to be well adapted to each and every member country. Finally, most of the sources of asymmetric effects emerge because of differences in the structure of financial markets. Over time, however, it is likely that these structures will converge.

Reference:

Meier, André and Gernot J. Müller (2005) “Fleshing out the Monetary Transmission Mechanism Output Composition and the Role of Financial Frictions”, Working Paper No. 500.

Topic 2

Wage setting and price stability

Wage setting and price stability

Briefing Paper for the Monetary Dialogue of March 2007 by the Committee on Economic and Monetary Affairs of the European Parliament with the President of the European Central Bank

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Executive Summary

The purpose of this Briefing Paper is to discuss wage setting and price stability in the Euro area and the European Union (EU). As has been stated on several occasions, the President of the ECB, Mr. Jean-Claude Trichet, reiterated in his introductory statement of 11 January 2007 the view that there is a risk that wage dynamics could be stronger than expected. He stressed that "wage agreements should take into account productivity developments, while recognising the still high level of unemployment and price competitiveness positions". He repeats that "it is also important that wage settlements move away from automatic, backward-looking indexation mechanisms". In the first part of the Briefing Paper, we discuss the ECB's view on wage setting and price stability against the background of the academic debate on the grease and the sand in the price and wage setting process. In the second part of this paper, we will discuss the empirical evidence on unemployment rates, labour productivity per hour worked and hourly labour costs in the Euro area and the EU. Finally, we draw some conclusions on the ECB's point of view on wage setting and price stability. The only remedy against the inflationary effect of automatic indexation mechanisms is a low and predictable *level* and *variability* of Euro area inflation. An independent central bank such as the ECB is fully capable of realizing this low and predictable level and variability of inflation not for every individual country, but for the Euro area at large in the medium to long run.

Introduction¹²

The purpose of this Briefing Paper is to discuss wage setting and price stability in the Euro area and the European Union (EU). As has been stated on several occasions, the President of the European Central Bank (ECB), Mr. Jean-Claude Trichet, reiterated in his introductory statement of 11 January 2007 the view that there is a risk that wage dynamics could be stronger than expected. He stressed that "wage agreements should take into account productivity developments, while recognising the still high level of unemployment and price competitiveness positions". He repeats that "it is also important that wage settlements move away from automatic, backward-looking indexation mechanisms". In the first part of the Briefing Paper, we discuss the ECB's view on wage setting and price stability against the background of the debate on the grease and the sand in the price and wage setting process. In the second part of this paper, we will discuss the empirical evidence on unemployment rates, labour productivity per hour worked and hourly labour costs in the Euro area and the EU. Finally, we draw some conclusions on the ECB's point of view on wage setting and price stability.

Wage setting and price stability: the grease and the sand

Akerlof et al. (1996, 2000) argue that, for different reasons, *a moderate level of inflation provides 'grease' to the price and wage setting process*.¹³ The economic adjustment of relative prices to shocks can become sluggish in the presence of downward nominal rigidities in wages and prices. For instance, with a zero inflation rate, individual firms which face an adverse firm-specific shock, will not be able to secure real wage reductions in the presence of downward nominal wage rigidity and will, instead, lay-off workers. Likewise, at low levels of inflation, a significant part of the price and wage setters probably ignore or underweight anticipated inflation in setting future prices. A moderate level of inflation provides for some real wage flexibility, which reduces the natural, or long run, rate of unemployment.¹⁴

Akerlof et al. conclude that large permanent reductions in unemployment may be obtained by moving from either a very high or very low rate of inflation to a moderate rate, which they estimate for the US to be 2-4 per cent. However, Gordon (1996) argues that the prediction that a lower rate of inflation would imply a higher permanent level of equilibrium unemployment is not confirmed by the recent historical evidence of the United States, nor by cross-country analysis of the relationship between inflation and unemployment. Furthermore, there may also be a 'sand effect' on the natural rate of unemployment. When inflation rises, money illusion dissipates and the burden of price uncertainty rises (Groschen and Schweitzer, 1999). So, the long-run Phillips-curve is non-vertical; the natural rate increases with inflation, not necessarily monotonously. As pointed out by Wyplosz (2001), the 'grease' and 'sand' effects are not mutually exclusive: at very low levels of inflation 'grease' effects could dominate, with 'sand' effects setting in when inflation becomes more variable. Wyplosz (2001) has examined the relationship between steady state unemployment and inflation in four European countries: France, Germany, the Netherlands and Switzerland.

¹² The author gratefully acknowledges the research support of Martin Knaup, MPhil with the empirical part of this Briefing Paper.

¹³ In Akerlof et al. (1996) the model is based on nominal wage rigidity, while in Akerlof et al. (2000) the mechanism is near rationality in the use of inflationary expectations in price and wage setting.

¹⁴ Another view in which nominal wage rigidity also plays a role is that a temporary downturn can have persistent effects on unemployment due to hysteresis effects (Blanchard and Summers, 1986). This can be explained in a number of ways. People who became unemployed, for instance, lose human capital and may become less attractive to potential employers. Or, in an insider-outsider wage setting framework, unions only take the interest of the currently employed into account so that wages are set at too high a level.

He concludes that there is evidence for a 'grease' effect, which increases the natural rate of unemployment by some to 2 to 4 percentage points in the middle of the ECB's inflation target range. In order to reduce the effect, the ECB ought to aim at an inflation rate of more than 5 per cent.¹⁵

According to the ECB (2003), however, the empirical evidence on the importance of downward nominal rigidities for the Euro area is not conclusive. Evidence based on the distribution of changes in the Euro area price indices indicates that nominal price cuts are not as uncommon as often believed. For instance, the fraction of the Euro area Harmonized Index of Consumer Prices (HICP) that displayed negative year-on-year price changes in March 2002 was 11 per cent. At the time, inflation was 2.5 per cent. In December 1998, when inflation stood at 0.8 per cent, 20 per cent of all categories exhibited negative price changes (Kieler, 2003).

As far as wage-setting behaviour is concerned, most studies have found some concentration of wage changes around the zero mark. Still, according to micro-based studies a substantial proportion of wage earners have experienced wage cuts. Beissinger and Knoppik (2001) document, for instance, a large proportion of wage cuts in Germany – affecting up to 20-30 per cent of the blue-collar workers – in their panel. Similarly, using the *German Socioeconomic Panel*, Decressin and Decressin (2002) find that about one fifth of job stayers experience nominal cuts in wages. They also find that the level of inflation affects the distribution of real wage changes. They conclude, however, that “the results for Germany, which has experienced inflation at about 2 per cent per year on average over the 1990s, suggest that insufficient wage flexibility does not make a compelling case for the ECB to adopt a higher inflation target. Nonetheless, some ‘sand’ thwarts the functioning of the wage setting mechanism in Germany...Specifically, the presence of a nominal rigidity at the zero mark for base wages suggests that pushing inflation much below 2 per cent could bear risks.” (p. 30). In German micro data (*IBA-Beschäftigtenstichprobe*) Knoppik and Beissinger (2003) found a high degree of downward nominal wage rigidity. They show that a very low inflation policy may be a rather expensive endeavor. For inflation rates that are lower than 3 percent the high degree of downward nominal wage rigidity has real implications for individual expected wage growth, the aggregate wage level and equilibrium unemployment. For inflation rates above 4 percent these effects become negligible.

At the macro level, the presence of downward nominal rigidities has been usually associated with non-linearities in the Phillips curve relationship at low inflation (Ball et al., 1988). Downward nominal wage rigidities may give rise to non-linearities in the Phillips curve at near-zero inflation since the aggregate wage responds less to a negative shock to labour demand, as a larger fraction of workers is bound by the downward rigidity, than to a positive shock of equal magnitude. Also the slope of the Phillips curve becomes flatter at inflation rates close to zero, implying that a larger change in unemployment is needed to produce a certain change in wage inflation. Although there is quite some evidence for non-linearities, there are also findings to the contrary (see Kieler, 2003 for a further discussion). The analysis on this issue is considerably clouded by the scarcity of evidence due to the lack of prolonged periods of very low inflation.

¹⁵ Dickens (2001) argues that there are some major weaknesses in the analysis of Wyplosz (2001). For instance, the long-run Phillips-curve may not be stable.

In addition, it should be considered that a positive trend in productivity growth permits firms to reduce labour costs per unit of output without necessarily cutting nominal wages. Finally, even if downward nominal rigidities were pervasive, one may wonder whether “accommodating” them with a higher inflation rate makes this undesirable structural feature of some economies not even more “entrenched” (ECB, 2003).

Unemployment, labour productivity and labour costs: some empirical evidence

As Table 1 shows, the major economies in the EU experienced a similar pattern of unemployment rates during the period 1999 until 2006. After 1999, the booming economies around Europe led to a fall in the rates in 2000 and for some countries even in 2001 before the cooling down of economic activity led unemployment rates increase. From 2002 until 2004 rates increased continuously and only started to fall in 2005 or 2006. Examples of these countries are Belgium, Denmark, Germany, France, Luxembourg, the Netherlands, Austria, Portugal and to a lesser extent the Czech Republic, Ireland, Spain, Cyprus, Sweden and the United Kingdom. However, some countries did not follow this pattern. For example, a group of member states started out with higher unemployment rates than EU average and a catching up process most likely led them to experience falling rates during almost the complete sample period. Examples are Bulgaria, Estonia, Greece, Italy, Latvia, Lithuania and Finland. Yet another two countries, Poland and Slovakia experienced rising rates close to 20 per cent in the first years and saw rates falling only from 2004 onwards to levels still high around 13 to 14 per cent.

Table 1: Unemployment rates in % in the EU¹⁶

| | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | % change ¹⁷ |
|-------------------|------|------|------|------|------|------|------|------|------------------------|
| EU (27 countries) | : | 8.6 | 8.5 | 8.9 | 9 | 9.1 | 8.7 | 7.9 | -0.0814 |
| EU (25 countries) | 9.1 | 8.6 | 8.4 | 8.7 | 9 | 9.1 | 8.8 | 7.9 | -0.1319 |
| EU (15 countries) | 8.5 | 7.6 | 7.2 | 7.6 | 8 | 8.1 | 7.9 | 7.3 | -0.1412 |
| Euro area | 9 | 8.1 | 7.8 | 8.2 | 8.7 | 8.8 | 8.6 | 7.8 | -0.1333 |
| Belgium | 8.5 | 6.9 | 6.6 | 7.5 | 8.2 | 8.4 | 8.4 | 8.3 | -0.0235 |
| Bulgaria | : | 16.4 | 19.5 | 18.1 | 13.7 | 12 | 10.1 | 8.9 | -0.4573 |
| Czech Republic | 8.6 | 8.7 | 8 | 7.3 | 7.8 | 8.3 | 7.9 | 7.2 | -0.1628 |
| Denmark | 5.2 | 4.3 | 4.5 | 4.6 | 5.4 | 5.5 | 4.8 | 3.8 | -0.2692 |
| Germany | 7.9 | 7.2 | 7.4 | 8.2 | 9 | 9.5 | 9.5 | 8.4 | 0.0633 |
| Estonia | 11.3 | 12.8 | 12.4 | 10.3 | 10 | 9.7 | 7.9 | 5.6 | -0.5044 |
| Ireland | 5.7 | 4.2 | 4 | 4.5 | 4.7 | 4.5 | 4.3 | 4.4 | -0.2281 |
| Greece | 12 | 11.2 | 10.7 | 10.3 | 9.7 | 10.5 | 9.8 | : | -0.1833 |
| Spain | 12.5 | 11.1 | 10.3 | 11.1 | 11.1 | 10.6 | 9.2 | 8.6 | -0.3120 |
| France | 10.5 | 9.1 | 8.4 | 8.7 | 9.4 | 9.6 | 9.6 | 9 | -0.1429 |
| Italy | 10.9 | 10.1 | 9.1 | 8.6 | 8.4 | 8 | 7.7 | : | -0.2936 |
| Cyprus | : | 4.9 | 3.8 | 3.6 | 4.1 | 4.6 | 5.2 | 4.9 | 0.0000 |
| Latvia | 14 | 13.7 | 12.9 | 12.2 | 10.5 | 10.4 | 8.9 | 6.9 | -0.5071 |
| Lithuania | 13.7 | 16.4 | 16.5 | 13.5 | 12.4 | 11.4 | 8.3 | 5.9 | -0.5693 |
| Luxembourg | 2.4 | 2.3 | 2 | 2.7 | 3.7 | 5.1 | 4.5 | 4.8 | 1.0000 |
| Hungary | 6.9 | 6.4 | 5.7 | 5.8 | 5.9 | 6.1 | 7.2 | 7.5 | 0.0870 |
| Malta | : | 6.7 | 7.6 | 7.5 | 7.6 | 7.4 | 7.3 | 7.4 | 0.1045 |
| Netherlands | 3.2 | 2.8 | 2.2 | 2.8 | 3.7 | 4.6 | 4.7 | 3.9 | 0.2188 |
| Austria | 3.9 | 3.6 | 3.6 | 4.2 | 4.3 | 4.8 | 5.2 | 4.8 | 0.2308 |
| Poland | 13.4 | 16.1 | 18.2 | 19.9 | 19.6 | 19 | 17.7 | 14 | 0.0448 |
| Portugal | 4.5 | 4 | 4 | 5 | 6.3 | 6.7 | 7.6 | 7.4 | 0.6444 |
| Romania | 6.6 | 7.2 | 6.6 | 8.4 | 7 | 8.1 | 7.2 | : | 0.0909 |
| Slovenia | 7.3 | 6.7 | 6.2 | 6.3 | 6.7 | 6.3 | 6.5 | 6 | -0.1781 |
| Slovakia | 16.4 | 18.8 | 19.3 | 18.7 | 17.6 | 18.2 | 16.3 | 13.3 | -0.1890 |
| Finland | 10.2 | 9.8 | 9.1 | 9.1 | 9 | 8.8 | 8.4 | 7.7 | -0.2451 |
| Sweden | 6.7 | 5.6 | 4.9 | 4.9 | 5.6 | 6.3 | 7.5 | 7.1 | 0.0597 |
| United Kingdom | 5.9 | 5.3 | 5 | 5.1 | 4.9 | 4.7 | 4.8 | : | -0.1864 |

Source: Eurostat; (:) Not available

¹⁶ Unemployment rates represent unemployed persons as a percentage of the labour force. The labour force is the total number of people employed and unemployed. Unemployed persons comprise persons aged 15 to 74 who were: a. without work during the reference week, b. currently available for work, i.e. were available for paid employment or self-employment before the end of the two weeks following the reference week, c. actively seeking work, i.e. had taken specific steps in the four weeks period ending with the reference week to seek paid employment or self-employment or who found a job to start later, i.e. within a period of, at most, three months.

For more see http://europa.eu.int/estatref/info/sdds/en/employ/employ_une_lfsi_sm.htm

¹⁷ Percentage changes from first to last observation reported.

Looking at the labour productivity per hour worked in Table 2, one can detect a clear pattern at least for most of the new Member States. Most of the countries start at productivity levels way below the EU average but constantly catch up. Examples include the Czech Republic, Estonia, Greece, Latvia, Lithuania, Hungary, Poland, Slovenia and Slovakia. Notable exemptions of this pattern are Malta, Portugal and to a lesser extent Cyprus, who all become less productive over the period 1999 until 2005. Another group of countries (Denmark, Germany, Luxembourg, Sweden and to a lesser extent Spain and Austria) had declining productivity levels during the first years and rising productivity levels when the economies cooled down notably after 2002. A reverse pattern (first rising then falling levels) can be observed for France and partly the Netherlands and Finland. A clear upward trend in productivity can be found in Belgium, Ireland and the United Kingdom. Italy, on the other hand experienced continuously falling productivity levels from roughly the EU-15 average to only 90 per cent of it.

Table 2: Labour Productivity per hour worked in the EU¹⁸

| | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 % change ¹⁹ | |
|-------------------|----------------------|----------------------|---------------------|---------------------|---------------------|----------------------|-----------------------------|---------|
| EU (27 countries) | : | : | : | : | : | : | : | : |
| EU (25 countries) | : | 90.2 | 90.8 | 91.1 | 91.3 | 91.5 | : | 0.0144 |
| EU (15 countries) | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 0.0000 |
| Euro area | 105.5 | 102.2 | 100.8 | 100.8 | 102.3 | 101.8 | 102 | -0.0332 |
| Belgium | 126.2 | 126.5 | 126.8 | 127 | 128.9 | 131.4 | 128.7 | 0.0198 |
| Bulgaria | : | : | : | : | : | : | : | : |
| Czech Republic | 45.6 | 45.4 | 48.1 | 49 | 51 | 52.1 | : | 0.1425 |
| Denmark | 105.1 | 104.9 | 103.9 | 101.1 | 100.6 | 101.1 | 102 | -0.0295 |
| Germany | 107.9 | 106.7 | 106.6 | 106.3 | 111.2 | 109.7 | 109.4 | 0.0139 |
| Estonia | : | 34 | 35.4 | 36.9 | 39.4 | 41.1 | 44.6 ^(e) | 0.3118 |
| Ireland | 110.6 | 112.1 | 114.1 | 117.6 | 120 | 120.3 | 121 | 0.0940 |
| Greece | 62.7 | 65 | 66.2 | 69.5 | 71.2 | 71.6 | : | 0.1419 |
| Spain | 90.2 | 87.5 | 87.7 | 88.4 | 88.9 | 88.5 | 89.2 | -0.0111 |
| France | 117.6 | 119.2 | 120.4 | 120.8 | 116.8 | 117.3 ^(f) | : | -0.0026 |
| Italy | 100.9 | 100.6 | 98.7 | 96.2 | 92.7 | 91.0 ^(f) | : | -0.0981 |
| Cyprus | : | 69 | 66 | 64.5 | 65.7 | 67.3 | 68.5 | -0.0072 |
| Latvia | 28.8 | 30.6 | 31.6 | 32.1 | 33 | 35.4 | : | 0.2292 |
| Lithuania | 34.5 | 34.5 | 37.8 | 38.8 | 42.6 | 43.8 | 44.1 | 0.2783 |
| Luxembourg | 152.2 | 150.9 | 141.7 | 143 | 153.1 | 157.6 | 161.4 | 0.0604 |
| Hungary | 44.8 | 46.5 | 50.3 | 51.5 | 52.7 | 53.7 | 54.8 | 0.2232 |
| Malta | : | 76.7 | 74.9 | 75.1 | 74.5 | 71.5 | : | -0.0678 |
| Netherlands | 112.7 ^(e) | 115.8 ^(e) | 116.7 | 115.8 | 115.1 | 118.6 | : | 0.0524 |
| Austria | 99.2 | 100.2 | 98.1 | 96.3 | 98.4 | 99.1 | 98.9 | -0.0030 |
| Poland | : | 41.4 ^(e) | 42.4 ^(e) | 43.6 ^(e) | 44.2 ^(e) | 45.6 ^(e) | 45.4 ^(e) | 0.0966 |
| Portugal | 64.7 | 66.1 | 65.4 | 64.8 | 60.5 ^(f) | 59.5 ^(f) | 59.7 ^(f) | -0.0773 |
| Romania | : | : | : | : | : | : | : | : |
| Slovenia | 61.9 | 61 | 62.1 | 62.1 | 64.2 | 67.9 | : | 0.0969 |
| Slovakia | 45 | 46.7 | 48.2 | 52.1 | 55 | 56 | 57 | 0.2667 |
| Finland | 97.2 | 98.4 | 100.2 | 98.5 | 93.4 | 95.6 | 94.7 | -0.0257 |
| Sweden | 101 | 101.9 | 99.4 | 99 | 101.9 | 101.9 | 101.4 | 0.0040 |
| United Kingdom | 93.4 | 94.4 | 95.7 | 98.3 | 98 | 99.7 | : | 0.0675 |

Source: Eurostat; (:) Not available; (e) Estimated value; (f) Forecast

¹⁸ GDP in Purchasing Power Standards (PPS) per hour worked relative to EU-15 (EU-15 = 100). Gross domestic product (GDP) is a measure for the economic activity in an economy. It is defined as the value of all goods and services produced less the value of any goods or services used in their creation. GDP per hour worked is intended to give a picture of the productivity of national economies expressed in relation to the European Union (EU-15) average. If the index of a country is higher than 100, this country level of GDP per hour worked is higher than the EU average and vice versa. Basic figures are expressed in PPS, i.e. a common currency that eliminates the differences in price levels between countries allowing meaningful volume comparisons of GDP between countries. Expressing productivity per hour worked will eliminate differences in the full-time/part-time composition of the workforce.

¹⁹ Percentage changes from first to last observation reported.

From the hourly labour costs reported in Table 3, one can see that the hourly labour costs in all countries were higher in the last reported year (either 2003, 2004 or 2005) than in the first reported year (either 1999 or 2000). In addition, most countries experienced a continuous rise in the hourly labour cost with the exception of Poland, Romania, the United Kingdom (a drop in 2003), Sweden (in 2001) and to a lesser extent Austria (in 2000) and Slovenia (in 2004). Despite this general rise in hourly labour cost, the percentage change from the first reported year to the last reported year, reported in the last column of Table 3, are striking. The EU-25 average hourly labour cost rose from 1999 to 2005 by 17.9 per cent and the EU-15 average rose between 1999 and 2004 by 16.4%. In the same time, Austria only experienced a rise of 9 per cent (1999-2004) and Germany a rise of 12.7 per cent (1999-2005). Italy, Belgium and the United Kingdom stayed slightly below the EU averages, while Denmark, Slovenia and Sweden were slightly above. Next, Bulgaria, Greece (only until 2003), France, Luxembourg and Finland experienced rises in labour costs in the range of 5 to 10 percentage points higher than the EU-25 average and Cyprus, the Netherlands, Poland and Portugal had increases in labour costs in the range of 10-20 percentage points higher. While this sounds relatively small, keep in mind that an increase in the labour costs of 17 percentage points higher than EU average implies that the labour costs increased twice as much as the EU average. From this perspective, the increases in hourly labour costs for the Czech Republic, Estonia, Latvia, Lithuania, Hungary, Romania and Slovakia seem very large as they range from roughly 32 percentage points above EU-25 average to 76 percentage points. However, one also has to note that all these countries had levels of labour costs substantially lower than the EU average and that the rapid increase simply reflects a catching up process.

Table 3: Hourly labour costs in Euro²⁰

| | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 % change ²¹ | |
|-------------------|---------------------|---------------------|----------------------|----------------------|----------------------|----------------------|-----------------------------|--------|
| EU (27 countries) | : | : | : | : | : | : | : | : |
| EU (25 countries) | 17.97 | 19.21 | 19.64 | 20.32 | 20.58 | 21.14 | 21.18 | 0.1786 |
| EU (15 countries) | 20.57 | 21.79 | 22.33 | 23.06 | 23.28 | 23.95 | : | 0.1643 |
| Euro area | 20.23 | 21.07 | 21.57 | 22.29 | 22.83 | 23.65 | : | 0.1691 |
| Belgium | : | 26.61 | 27.89 | 29.17 | 29.58 | 30.29 | 30.73 | 0.1548 |
| Bulgaria | 1.22 ^(e) | 1.23 | 1.29 | 1.32 | 1.39 | 1.45 | 1.55 | 0.2705 |
| Czech Republic | 3.41 | 3.86 | 4.64 | 5.39 | 5.47 | 5.85 | 6.63 | 0.9443 |
| Denmark | 25.92 | 26.53 | 28.54 | 29.06 | 30.3 | 30.7 | : | 0.1844 |
| Germany | 23.46 | 24.33 | 24.92 | 25.45 | 26.05 | 26.17 | 26.43 | 0.1266 |
| Estonia | 2.6 | 2.85 | 3.22 | 3.67 | 4.01 | 4.24 | 4.67 | 0.7962 |
| Greece | 10.6 | 10.98 | 11.62 | 12.46 | 13.37 | : | : | 0.2613 |
| Spain | 14.22 | 14.22 | 13.07 ^(b) | 13.63 | 14.21 | 14.76 ^(p) | 15.22 | : |
| France | 23.57 | 24.84 | 26 | 27.04 ^(u) | 27.68 ^(u) | 28.46 ^(u) | 29.29 | 0.2427 |
| Italy | 18.68 | 18.99 | 19.27 | 19.99 | 20.64 | 21.39 | : | 0.1451 |
| Cyprus | 8.41 | 9.1 | 9.43 | 9.91 | 10.68 | 11.1 | : | 0.3199 |
| Latvia | 1.85 | 2.22 | 2.29 | 2.39 | 2.37 | 2.52 | 2.77 | 0.4973 |
| Lithuania | 2.16 | 2.63 ^(b) | 2.76 | 2.9 | 3.1 | 3.22 | 3.56 | 0.6481 |
| Luxembourg | 22.52 | 24.48 | 25.39 | 26.21 | 27.02 | 28.33 | : | 0.2580 |
| Hungary | 3.14 | 3.63 | 4.04 | 4.91 | 5.1 | 5.54 ^(p) | 6.14 | 0.9554 |
| Malta | : | : | : | 7.59 | 7.77 ^(b) | 7.77 | 8.35 | : |
| Netherlands | 21.14 | 22.31 | 23.88 | 25.19 | 26.45 | 27.23 | 27.41 | 0.2966 |
| Austria | 23.21 | 22.87 | 23.88 | 24.93 | : | 25.3 | : | 0.0900 |
| Poland | 4.05 | 4.48 | 5.3 | 5.27 | 4.7 | 4.74 | 5.55 | 0.3704 |
| Portugal | 7.99 | 8.13 | 8.6 | 9.1 | 9.6 | 10.2 | 10.6 | 0.3267 |
| Romania | : | 1.41 | 1.55 | 1.67 | 1.6 | 1.76 | 2.33 | 0.6525 |
| Slovenia | 8.94 | 8.98 | 9.58 | 9.7 | 10.54 | 10.41 | 10.76 | 0.2036 |
| Slovakia | 2.76 | 3.07 | 3.26 | 3.59 | 4.02 | 4.41 | 4.8 | 0.7391 |
| Finland | 21.37 | 22.1 | 23.59 | 23.82 | 24.78 | 25.34 | 26.39 | 0.2349 |
| Sweden | 25.43 | 28.56 | 27.41 | 28.73 | 30.43 | : | : | 0.1966 |
| United Kingdom | 20.84 | 23.71 | 24.51 | 25.24 | 23.56 | 24.71 | 24.47 | 0.1742 |

Source: Eurostat; (:) Not available; (e) Estimated value; (b) Break in series; (p) Provisional value; (u) Unreliable or uncertain data, Note: no data available for Ireland, % change for change between first and last reported year, no % change reported for Malta and Spain due to breaks in the series.

Table 4 shows the ratio of hourly labour costs to labour productivity per hour worked. A higher ratio implies a worsening of the competitive situation. As you can see, all ratios increased during 1999/2000 until 2004/2005 but the ratio in the Euro area increased by more than in the rest of the EU.

²⁰ Average hourly labour costs, defined as total labour costs divided by the corresponding number of hours worked. For more, see ec.europa.eu/eurostat/

²¹ Percentage changes from first to last observation reported.

This implies that the non-Euro members had a stronger productivity growth than labour cost growth relative to the Euro members. However, a closer look reveals that Poland may have had a major influence due to its size and that many smaller countries had growth rates of the ratio well above EU average. Examples are Estonia, Cyprus and Lithuania in a moderate sense and the Czech Republic, Hungary, Slovakia and Portugal (as a Euro member) who all experienced a substantial rise in the ratio of labour cost to productivity. While this implies a worsening of the competitive situation, one has to keep in mind that at least the first six countries start from levels well below the EU average and are catching up. Portugal however, faces a more serious situation. While Portugal's productivity was already far below the EU average, it decreased from 1999 to 2005 even further but at the same time, its hourly labour cost increased by 32 per cent. From the Euro members, most countries experienced growth rates of the ratios around the Euro area average, where Belgium, Germany, Greece and Austria exhibited lower rates, improving their competitive position relative to other members.

Comparing the development with the ratio of labour cost to productivity does not immediately show a distinctive pattern. However, one would expect that high unemployment leads to wage moderation, which in turn should lower the labour cost and hence the ratio of labour cost to productivity in order to improve a country's competitive position. This in turn should stimulate economic activity and thus reduce unemployment but after a while also increase wage demands again. As both variables influence each other with potentially quite some lags, it is very difficult to detect a clear pattern. In addition, looking at the new member states may complicate the analysis as most of them are in a catching up process so that they are likely to experience a higher growth rate in the ratio of labour cost to productivity and at the same time a fall in unemployment. Therefore, one should focus on the more developed Euro area members and look at substantial deviations from EU averages. Weak evidence for the above-mentioned relationship comes from countries like Greece and Spain who both experienced a relatively slow growth of the ratio of labour cost to productivity and a relatively strong fall in unemployment. In addition, Portugal can be used as a bad example, as its ratio of labour cost to productivity grew substantially and with it the Portuguese unemployment rate. However, there are also countries that experienced a normal development in either variable while the other deviated from EU average (see for example the Netherlands or Italy). Therefore, the overall evidence is mixed and might not be found within such a short period of time, given that the influence of unemployment on the wage setting process can exhibit considerable lags of two or even three years.

Table 4: Ratio hourly labour cost in Euro divided by productivity per hour worked²²

| | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | change ²³ | % |
|-------------------|---------|---------|---------|---------|---------|---------|---------|----------------------|---|
| EU (27 countries) | : | : | : | : | : | : | : | : | : |
| EU (25 countries) | : | 0.21297 | 0.21630 | 0.22305 | 0.22541 | 0.23104 | : | : | : |
| EU (15 countries) | 0.20570 | 0.21790 | 0.22330 | 0.23060 | 0.23280 | 0.23950 | : | 0.1643 | |
| Euro area | 0.19175 | 0.20616 | 0.21399 | 0.22113 | 0.22317 | 0.23232 | : | 0.2115 | |
| Belgium | : | 0.21036 | 0.21995 | 0.22969 | 0.22948 | 0.23052 | 0.23877 | 0.1351 | |
| Czech Republic | 0.07478 | 0.08502 | 0.09647 | 0.11000 | 0.10725 | 0.11228 | : | 0.5015 | |
| Denmark | 0.24662 | 0.25291 | 0.27469 | 0.28744 | 0.30119 | 0.30366 | : | 0.2313 | |
| Germany | 0.21742 | 0.22802 | 0.23377 | 0.23942 | 0.23426 | 0.23856 | 0.24159 | 0.1112 | |
| Estonia | : | 0.08382 | 0.09096 | 0.09946 | 0.10178 | 0.10316 | 0.10471 | 0.2492 | |
| Greece | 0.16906 | 0.16892 | 0.17553 | 0.17928 | 0.18778 | : | : | 0.1107 | |
| Spain | 0.15765 | 0.16251 | 0.14903 | 0.15419 | 0.15984 | 0.16678 | 0.17063 | 0.0823 | |
| France | 0.20043 | 0.20839 | 0.21595 | 0.22384 | 0.23699 | 0.24263 | : | 0.2106 | |
| Italy | 0.18513 | 0.18877 | 0.19524 | 0.20780 | 0.22265 | 0.23505 | : | 0.2696 | |
| Cyprus | : | 0.13188 | 0.14288 | 0.15364 | 0.16256 | 0.16493 | : | 0.2506 | |
| Latvia | 0.06424 | 0.07255 | 0.07247 | 0.07445 | 0.07182 | 0.07119 | : | 0.1082 | |
| Lithuania | 0.06261 | 0.07623 | 0.07302 | 0.07474 | 0.07277 | 0.07352 | 0.08073 | 0.2894 | |
| Luxembourg | 0.14796 | 0.16223 | 0.17918 | 0.18329 | 0.17649 | 0.17976 | : | 0.2149 | |
| Hungary | 0.07009 | 0.07806 | 0.08032 | 0.09534 | 0.09677 | 0.10317 | 0.11204 | 0.5986 | |
| Malta | : | : | : | 0.10107 | 0.10430 | 0.10867 | : | : | |
| Netherlands | 0.18758 | 0.19266 | 0.20463 | 0.21753 | 0.22980 | 0.22960 | : | 0.2240 | |
| Austria | 0.23397 | 0.22824 | 0.24343 | 0.25888 | : | 0.25530 | : | 0.0911 | |
| Poland | : | 0.10821 | 0.12500 | 0.12087 | 0.10633 | 0.10395 | 0.12225 | 0.1297 | |
| Portugal | 0.12349 | 0.12300 | 0.13150 | 0.14043 | 0.15868 | 0.17143 | 0.17755 | 0.4378 | |
| Slovenia | 0.14443 | 0.14721 | 0.15427 | 0.15620 | 0.16417 | 0.15331 | : | 0.0615 | |
| Slovakia | 0.06133 | 0.06574 | 0.06763 | 0.06891 | 0.07309 | 0.07875 | 0.08421 | 0.3730 | |
| Finland | 0.21986 | 0.22459 | 0.23543 | 0.24183 | 0.26531 | 0.26506 | 0.27867 | 0.2675 | |
| Sweden | 0.25178 | 0.28027 | 0.27575 | 0.29020 | 0.29863 | : | : | 0.1860 | |
| United Kingdom | 0.22313 | 0.25117 | 0.25611 | 0.25677 | 0.24041 | 0.24784 | : | 0.1108 | |

Source: Eurostat; (:) Not available; calculations based on Table 2 and 3; Note: no data available for Bulgaria, Ireland and Romania

²² Obtained by dividing the observations from Table 3 by the observations from Table 2.

²³ Percentage changes from first to last observation reported.

Some conclusions

The purpose of this Briefing Paper is a deeper understanding of the relationship between wage setting and price stability in the Euro area and the EU. What should we conclude about the statements by the President of the ECB that (1) "wage agreements should take into account productivity developments, while recognising the still high level of unemployment and price competitiveness positions", and that (2) "it is also important that wage settlements move away from automatic, backward-looking indexation mechanisms"? The first statement that wage agreements should take account of (labour) productivity developments is certainly true. Only then (nominal) wage setting will be non-inflationary from a macro-economic perspective. This implies that the ratio of hourly labour cost (in Euro) divided by labour productivity per hour worked should be stable over time for each Euro country and the Euro area as a whole. However, we should allow for (more) decentralized wage setting to comply with (labour) productivity differentials between various sectors in a country's economy. Not only wage flexibility, but also (more) labour mobility between these various sectors is paramount to mitigate tensions within specific segments of the labour market. The second statement by the President of the ECB that wage settlements should move away from automatic, backward-looking indexation mechanisms is less realistic, as labour unions are backward-looking in nature and hardly forward-looking (like central banks) and are likely to protect their workers against (real) wages decreases. The only remedy against the inflationary effect of automatic indexation mechanisms is a low and predictable *level* and *variability* of Euro area inflation. An independent central bank such as the ECB is fully capable of realizing this low and predictable level and variability of inflation not for every individual country, but for the Euro area at large in the medium to long run.

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Wage setting and price stability

Briefing Paper for the Monetary Dialogue of March 2007 by the Committee on Economic and Monetary Affairs of the European Parliament with the President of the European Central Bank

Jean-Paul Fitoussi

Executive Summary

This briefing paper analyzes the reference framework that the European Central Bank uses for its analysis and for the ensuing policy prescriptions. I argue that the ECB's analysis is deeply rooted in the consensus that developed since the mid 1970s, that was also embedded into the institutional setup put in place in Europe with the Maastricht Treaty. According to such a consensus, the only role for policy is the elimination of distortions to the free working of market ('structural reforms') and a predictable, rule-based approach to monetary and fiscal policy. This explains the emphasis of President Trichet on embedding only fundamental factors (i.e. productivity) in the wage setting mechanism, in order to let the real wage free to converge to its equilibrium level.

The paper then highlights some weaknesses of this view, with particular reference to the labour market. On one side it seems that the evidence in favour of the consensus is weaker than expected. On the other, the worries that emerge from the statements of President Trichet on a wage explosion do not seem to be grounded neither in short nor in long run data.

The theoretical framework used by the European Central Bank

The ECB bases its analysis on the theoretical consensus that developed since the 1970s, and that reached its apex in the early 1990s, precisely at the time in which the European institutions were designed through the Maastricht Treaty.

The theoretical basis of the consensus is a modern version of the neoclassical paradigm, that after the crisis of Keynesian policies in the 1970s, became dominant again, both in academic research and in economic policy making.

The centrepiece of the New Classical revolution was the idea that expectations are rational in the sense that agents do not make systematic errors in making their decisions.

The main building block of the theory is the supply side of the economy, where starting from “first principles” (technology, preferences, endowments) agents form demand and supply for the production factors that are matched in the market. Absent imperfections, clearing and complete markets that are populated by fully rational agents usually yield the best possible outcome in terms of resource allocation and growth. Relative prices have to be left free to adapt to the fundamentals: that is they have to change in response to a real shock (for example, the real wage is free to change following a productivity shock); and they have to stay constant facing a nominal shock (i.e. nominal flexibility is required). If this happens, then the market allocation will be optimal in the sense of welfare maximizing.

If frictions and market failures prevent the necessary adjustment towards the optimum, the role of economic policy is simply to remove or minimize these frictions on the supply side, that is, to alter the structure of the economy to insure that it conforms as much as possible to the reference model.

From this perspective, any intervention on the demand side is useless, if not harmful. Once the appropriate conditions on the supply side are established, the economy will attain the most efficient position unless distorted by public measures. This has important consequences in terms of policy: if tradeoffs do not exist, the policy maker is not confronted by choices, and there is no role for activist policy. Fixed rules are the preferred tool for conducting policy because they prevent biases in policy makers' actions and constitute an anchor for private expectations.

In the field of monetary policy, the consensus rejects the Keynesian claim that monetary policy has real effects, which had been long based on the Phillips curve (the negative relation between unemployment and inflation).

If the economy has the necessary flexibility and reaches the equilibrium level of activity (corresponding to the ‘natural rate of unemployment’), each systematic attempt of monetary authorities to trade inflation for lower levels of unemployment are doomed to failure, because agents will anticipate it and adjust their behaviour accordingly. According to the consensus, therefore, the Phillips curve is vertical (in the long run, and according to the more extreme versions of the theory in the short run as well), and a sensible monetary policy should only aim at price stability.

Similarly, if the system is left free to converge to the optimum, any fiscal policy intervention aimed at affecting the level of activity will only have the effect of crowding out private expenditure, the overall level of activity being determined by the supply side. The role of fiscal policy is confined to the short run management of income fluctuations, which can easily be performed through the working of automatic stabilization.

A noteworthy feature of the paradigm is the claim of universality, which stems from its grounding in the “first principles” of rationality and maximization. This allows to prescribe the same policies in any situation—for a developing country facing the risk of a currency crisis, a mature European country affected by chronic low growth, an economy in transition, or an African country confronted with hunger and chronic diseases. This universality contributes to explain its persisting success.

As often happens for mainstream thinking, today’s consensus has both academic and institutional supporters. For example, Prescott (2003) argues that the much larger amount of hours worked in the United States with respect to Europe is almost entirely attributable to Europe’s excessive tax burden. So reducing government size would yield higher growth. In a similar vein, although Lucas (2003) concedes that Keynesian stabilization policies played an important role in reducing income fluctuations in the past, he claims that there is no further role for stabilization policies and that much can be gained in terms of overall welfare from structural reforms.

Policy makers in Europe adhered so closely to the consensus that its prescriptions have been embedded into the fundamental structure of the EU, established by the Maastricht Treaty of 1992 and the Amsterdam Treaty of 1997. The European institutional setup, de facto, gives up discretionary economic policy. Monetary policy is delegated to an independent monetary authority, the European Central Bank, which is not accountable to any political body. Fiscal policy is strongly constrained by the Stability and Growth Pact, which barely leaves space for automatic stabilizers to work. Recently, a variety of critics have condemned this setup as being too rigid and incapable of promoting growth. Still, most criticisms are internal to the mainstream and call for only minor adjustments.

With a few exceptions (Fitoussi, 2002; Arestis and Sawyer, 2003), no one has challenged the underlying framework that limits the role of government to removing obstacles that prevent the smooth working of markets. As proof, one might consider the Constitutional Treaty whose fate is currently being debated after the French and Dutch referendums of 2005: in economic matters, it simply solidifies the existing setup without any modification.

Challenging the consensus

The consensus has been internalized by European policy makers who, as we noted above, embedded it into the institutional setup of the European Union. Monetary policy was focused almost exclusively on exchange rate stabilization before the launching of the Euro; since then, it has focused on price stabilization. Nevertheless, the EU's growth performance has hardly been impressive. On the other hand, the only two episodes of relatively high growth in the past two decades—at the end of the 1980s and at the end of the 1990s—were both preceded by a substantial loosening of monetary conditions. Monetary policy seems to be a major factor, although not the only one, behind recent unimpressive European growth performance.

It could be argued, nevertheless, that the poor performance is due to the insufficient adherence of national governments to the consensus: structural reforms have not progressed enough. Most economists point to labour markets as the main suspect in explaining the strikingly different growth performances of the United States and Europe over the past two decades. A recent study representative of this view is Nickell et al. (2003). They argue that the equilibrium level of unemployment is affected by variables that influence the ease with which unemployed individuals can be matched to available job vacancies or by variables that directly prevent wage adjustment in spite of existing disequilibria in the labour market. These variables include the unemployment benefit system, the real interest rate, employment protection, active labour market policies, labour union structures, the extent of coordination in wage bargaining, labour taxes, and many others. Yet the impressive amount of work devoted to finding empirical support for this view has not yielded the expected results. Evidence on institutions and labour market performance is weak and often contradictory so that the most cautious authors studying the subject have to conclude that, for example, "the broad-brush analysis that says that European unemployment is high because European labour markets are 'rigid' is too vague and probably misleading" (Nickell, 1997, p. 73). The reason for this cautiousness has to be traced to a few related facts. First, the negative effects of various rigidity measures on employment performance are often of second order and not particularly robust. In fact, in unemployment regressions, at least for OECD countries, nation-specific factors often become non-significant once we control for common shocks.

Second, Fitoussi et al. (2000) show that structural reforms where implemented have not always yielded the expected results on labour market performance. In general, they find that different degrees of labour market rigidity across OECD countries may help to explain the effect of shocks on unemployment, but reforms per se should not be seen as determining variables for medium-to-long term unemployment reduction.

Finally, an important and often overlooked factor is the endogeneity of institutions. The well known results by Greenwald and Stiglitz (1986) show how with incomplete information, the first theorem of welfare economics does not work because market allocation is not (constrained) Pareto optimal. As a consequence, they demonstrate that a government can act to improve efficiency. But their research also has the less emphasized consequence that institutions themselves may emerge to compensate for market inefficiencies and incompleteness. For example, once imperfect information prevents contracts in the labour market from yielding the efficient outcome, government norms guaranteeing labour protection may prevent excessive fluctuations in employment. How then can consensus adherents be sure that labour protection legislation is an obstacle to full employment? Could it rather be that norms emerged precisely in response to persistently high levels of unemployment? Paradoxically, the only convincing conclusion to emerge from the wide array of studies devoted to the subject is that no single labour market institutional setting proves to be superior to others and that success is determined by the interaction of institutions with country-specific factors (Freeman, 2000).

Is the Wage-Inflation Spiral the Real Issue?

Besides the weaknesses of the consensus underlying the ECB analysis, can we say today that we have a “wage problem?” Are we in a situation in which wage pressures risk triggering inflation, and hampering economic growth? Both looking at the recent past and at a longer time horizon, we do not seem to be in such a situation.

First, we can observe that in the vast majority of European countries backward indexation mechanisms in the wage setting process have been eliminated. This, among other factors, explains why in the recent past wages did not react to inflationary shocks. It is the case for example of the recent oil price increase, which has not triggered important wage increases. If anything, hence, real wages have had a tendency to decrease, not to increase, taking most of the burden of absorbing the price shock.

This observation is also coherent with a longer run view, which saw the wage share steadily decrease in most OECD countries. The OECD average wage share passed from 52.3% on average in the period 1986-1996 to 49.2% in 1996. Within this downward trend, the Euro zone has a lower wage share, and experienced an even more marked reduction. This reduction was even more marked in the Euro zone, where we passed from 51.3% to 46.3% (OECD, 2006, table 22).

To conclude, a wage price spiral does not seem a likely event in the near future. A more probable risk is that European countries continue trying to improve their competitiveness through wage and cost reductions, in a race to the bottom that will have no effects on their relative position, but cause a general contractionary effect on private spending and income (a scenario that I analyzed in a previous Briefing Paper; see Fitoussi 2006).

The perplexities on the consensus underlying today's economic policy debate in Europe should bring to recognize the complexity and the multidimensionality of economic policy making, that should not be limited to facilitating the smooth working of markets. Recognizing such a complexity would imply to consider, besides the necessary structural reforms aimed at a better functioning of markets and incentives, also an active role for fiscal and monetary policy in managing and supporting economic activity. This seems all the more important in a monetary union like the EMU in which some rigidities (think for example to the obstacles to labour mobility across European countries) are rooted in cultural and institutional differences that would be extremely difficult to remove.

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Wage setting and price stability

Briefing Paper for the Monetary Dialogue of March 2007 by the Committee on Economic and Monetary Affairs of the European Parliament with the President of the European Central Bank

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Executive Summary

In the following paper the theoretical and the empirical background of the ECB presidents reasoning on wages will be outlined. On the one hand the relation between wages and price stability is analysed. On the other hand it is shown how wages affect employment and competitiveness. Finally it is shown how wage settlements have been since the emergence of currency union.

It turns out that the ECB president has described the relationship between wages and prices correctly. Wage settlements should look after productivity and they should incorporate the ECB price stability target and not actual inflation. The latter one implies that people must forsake all indexation schemes. That wage settlements should consider the competitiveness of the respective economy is also true. However the relationship between wages and employment as described by the ECB just works either in a small open economy or in a theoretical supply side setting. If demand is the limiting factor, the ECB statement is not true.

Looking at the empirics of the past years there is no reason for concern that wage settlements in the Euro area endanger upward price stability. The contrary is rather true. Keeping all other things equal, wages would have led to an inflation rate that is below the inflation target of the ECB. In the light of these findings the ECB should show more trust into the Euro area wage formation process.

Introduction

The ECB president has stressed that "wage agreements should take into account productivity developments, while recognising the still high level of unemployment and price competitiveness positions". He added that "it is also important that wage settlements move away from automatic, backward-looking indexation mechanisms". He acknowledged by this statement that wage movements have a decisive impact on price stability. Therefore the ECB has to closely watch these movements so as to derive proper inflation forecasts. Related to that is the also mentioned competitive position. Prices may have an impact on competitiveness thereby affecting growth. The president also stated that unemployment should be considered as well. That means he assumes a relationship between wages and employment what would also have an impact on growth.

In order to assess the Presidents statement properly it has to be put into theoretical frameworks that explain the relationship between wages, prices and employment. In the following section different theoretical views will be presented and the statement will be judged in the light of these views. As it turns out the statement is in general only sensible if there is no perfect competition- what seems a realistic assumption.

Wages and Prices

In order to be clear, the term wages in the following denotes nominal effective wages plus social security benefits to be paid by the employer. This is the total cost of labour for the employer he will have to consider when producing goods. This is the correct term and not real or bargained wage settlements. The reason for this is that only money wages are set on the labour market. Real wages can only be derived when interacting with goods markets. Bargained wages may be an important part of all wages but they do not encompass all wages. And since paid wages are not the only costs that occur when employing labour, all others especially social security contributions have to be considered, too.

Given that, wages will affect the cost of labour input. In a neoclassical setting with perfect competition on all markets this has no impact on prices. Those were exclusively determined on the goods market by supply and demand. Therefore in such a setting a statement that wages affect inflation makes no sense. But as soon as one moves to a more realistic assumption that there is at least some sort of market power by firms, the price setting becomes related to wages.

It takes the form of mark up pricing. That means firms charge their customers their costs plus some mark up to make profits. The size of the mark up is determined by the extent of their market power. This may vary according to the state of the business cycle. Production costs especially on an aggregate level are predominantly affected by labour costs i.e. wages. That means if wages rise too fast prices will also do so. In such a theoretical setting the ECB is right to look on wage developments in order to assess the prospects of inflation developments.

The decisive question is how fast wages should be allowed to rise to preserve price stability. The target of price stability is set by the ECB to an inflation rate of below but close to 2 %. Hence the target shows an almost symmetrical form. Inflation rates above 2 % are seen as a violation, but also inflation rates that are below 2 % and not close to it, do not meet the target. The latter one is seen as a protection against deflationary processes. It is admitted by the ECB that the target cannot be fulfilled in each period of time due to always possible unforeseen shocks. However in the medium run the target must be met. What the ECB need to do is to assume a forward looking approach in order to judge whether the target will be met in the medium run or not. In theory the ECB follows this practice, but sometimes it is arguing with actual inflation rates and that is rather backward looking and thus an inappropriate stance.

These requirements determine the leeway for wages, or more precise, labour costs developments. But these affect prices via a very specific variable. Many empirical studies show that there is a stable relation, in technical terms a co-integration, between prices and unit labour costs. Unit labour costs are the relation between costs of labour per hour or per head and productivity per hour or per head. One can understand this variable as a relation between costs and benefits of labour. So if one wants to measure the impact of wages on prices one has to do this via unit labour costs. Therefore one has to assess productivity developments in the Euro area and total labour costs. The latter are measured by the compensation of employees in the national accounting system. In unit labour cost variable productivity is a major component. That is the reason why the ECB correctly stresses that wage agreements should take into account productivity developments.

If prices should not rise faster than 2 %, unit labour costs should also not rise stronger and not much less. This sets the limit for an increase of the compensation variable close to the productivity development plus 1.9 %. In this case unit labour costs should not rise more than 2 % and consequently the price impact of wages is slightly less than 2 %, but not much. In other words in this case wage developments are perfectly in line with the target of price stability.

There are several issues to be considered when applying such a rule. Productivity growth is not a constant, but varies a lot. Therefore it is very difficult to take it as a yardstick for wages especially when these have to be negotiated in advance. One major reason for productivity variability is the business cycle. It seems appropriate to calculate a cyclically adjusted productivity movement as it is possible when using modern time series trend calculating procedures. A major obstacle for a proper productivity measurement is of statistical nature. Still not for each member country of the Euro area there are per hour productivity data available. This is due to the fact that there are no hours worked data. Consequently one has to use per capita data, but these may be biased due to changes of working hours.

Another issue of importance is that the price stability target of the ECB defines the leeway for wage rises and not actual inflation. This should be so in order to bring labour costs always in line with the inflation target. If one would look just on actual inflation destabilising processes could occur. In such a case an inflation rate above the inflation target would lead to accordingly higher wage settlements reinforcing accelerated inflation. This is nothing else than the well known wage price spiral that has been effective in almost every industrialised country during the seventies and early eighties and in some even at the beginning of nineties. The same reasoning applies to an inflation rate below the target. If wages would follow, decelerated inflation would be reinforced, and the target would be missed further and further. Therefore it is a necessity that wages take the inflation target and not actual inflation into account. This is exactly the reason why the ECB is rightly concerned on indexation schemes. These consider only past actual inflation rates. That means with indexation schemes the above described destabilising processes are likely to occur. Therefore this strategy of wage formation should, in line with the recommendation of the ECB, no longer be followed.

In many countries non wage labour costs have also been changing all the time. These changes have to be considered too, since they have an impact on price stability. Increasing non wage labour costs spur inflation and vice versa. In an economy with rising social security contributions therefore wage increase have to be more moderate than in one with decreasing contributions.

Wages, Employment and Competitiveness

Above reasoning has focused on wages and price stability exclusively. But the ECB has also stated that wages should also take into consideration the employment situation. It indicates by this wording that wage rises should be lower than above if unemployment is considered too high. It would be correct in a theoretical neoclassical setting where real wages must equal marginal productivity. Because with lower nominal wages and a given inflation rate, wage restraint leads to lower real wages. Then firms increase their profits out of labour input and they consequently increase employment with lower quality until a decreasing marginal productivity equals again the lowered real wages. But in this theoretical setting all above considerations on inflation are not valid.

If one moves to a theoretical setting with imperfect competition as outlined above, things become more complicated. This is so because the theoretical criterion is real wages and not nominal labour costs. If above considerations on price stability are correct, lower nominal wages have a significant impact on prices and that means they have an accordingly less significant impact on real wages. Furthermore the employment reaction on real wages is less than proportional according to most estimation. Therefore one should expect real incomes to fall after wage restraint. A second related point is that in such a setting not wages alone determine employment but also production. At this point theoretical thinking diverges into two branches. Supply side economists would say that there is no reason to worry. Since lower real wages increase the incentive to hire, firms would employ more people who in turn produce more. The initial employment effect of lower real wages then gets even reinforced.

On the other hand, demand side oriented economists would state that production is determined by aggregate demand. In this case lower real incomes lead to a decline of demand and production. The effect of lower real wages then is a priori equivocal. The sign of the effect in the end depends on considerations that have to do with the second qualification set by the ECB for wage formation. That is competitiveness. Let us consider two extreme cases. The first one is a completely closed economy. Then the depressed demand will at the end of the day lead to lower employment. This effect will prevail positive incentives set by lower real wages. Consider on the other hand a totally open economy, where demand is completely determined by exports to foreign countries. In this case lower real wages will simply not affect demand. Moreover international competitiveness will increase as long as there is no real wage restraint in foreign countries. Then foreign demand even increases, delivering an unambiguous positive impact of lower real wages.

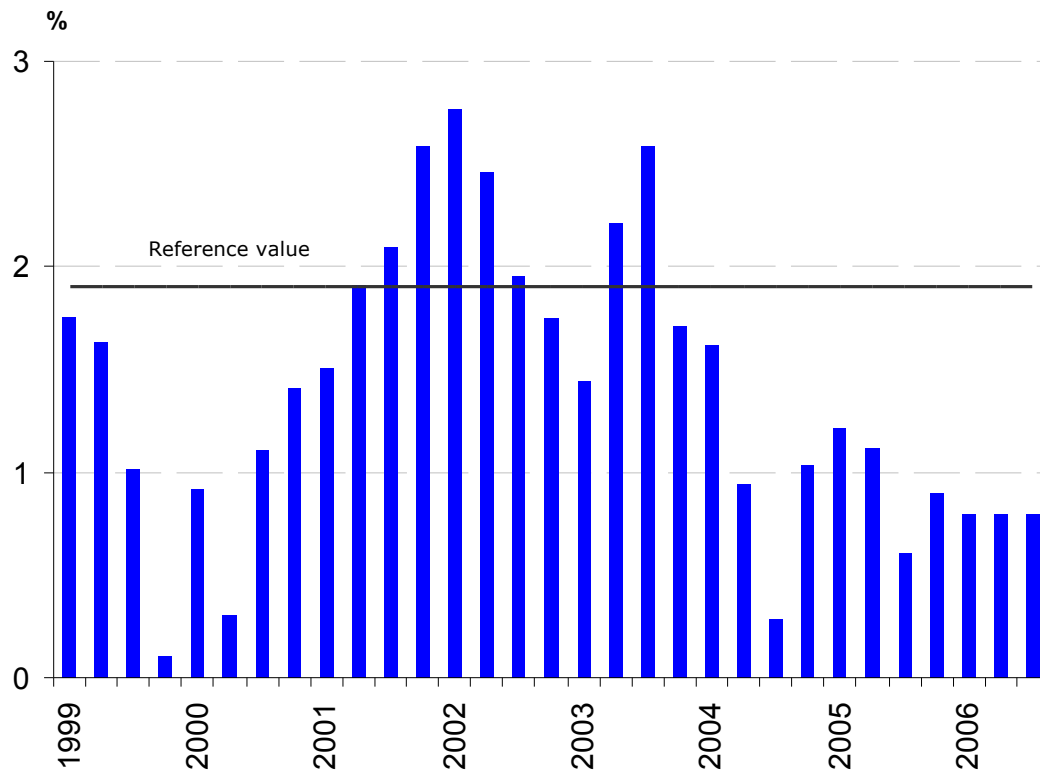
Reality is somewhere in between these extreme cases. For the Euro area as a whole - and that is what counts for the ECB - the closed economy model is closer to reality than the completely open economy. The same applies, albeit to a smaller extent, to the large economies of the Euro area, Germany, France and Italy. It certainly does not apply to small open economies like Luxemburg, Austria and the Netherlands.

In the light of these considerations one should be sceptical about the recommendation as far as wages and employment is concerned. Too many caveats, limit the validity of this statement. It is only perfectly valid in a small open economy or in a purely supply side theoretical setting. But the Euro area is not a small economy. It is large and it is open. For a large and demand driven economy the impact may well be the other way round. Therefore it would be wise to assess in the first place whether demand or supply is the limiting factor of the economy. If there exist supply side problems, because of a poor international competitiveness, then the recommendation of real wage restraint is sensible. Wage restraint always helps to improve competitiveness. Hence it is advisable to follow the ECBs recommendation with respect to this criterion. If however demand is the problem real wage restraint is not the solution but will aggravate the problem.

Empirical Considerations

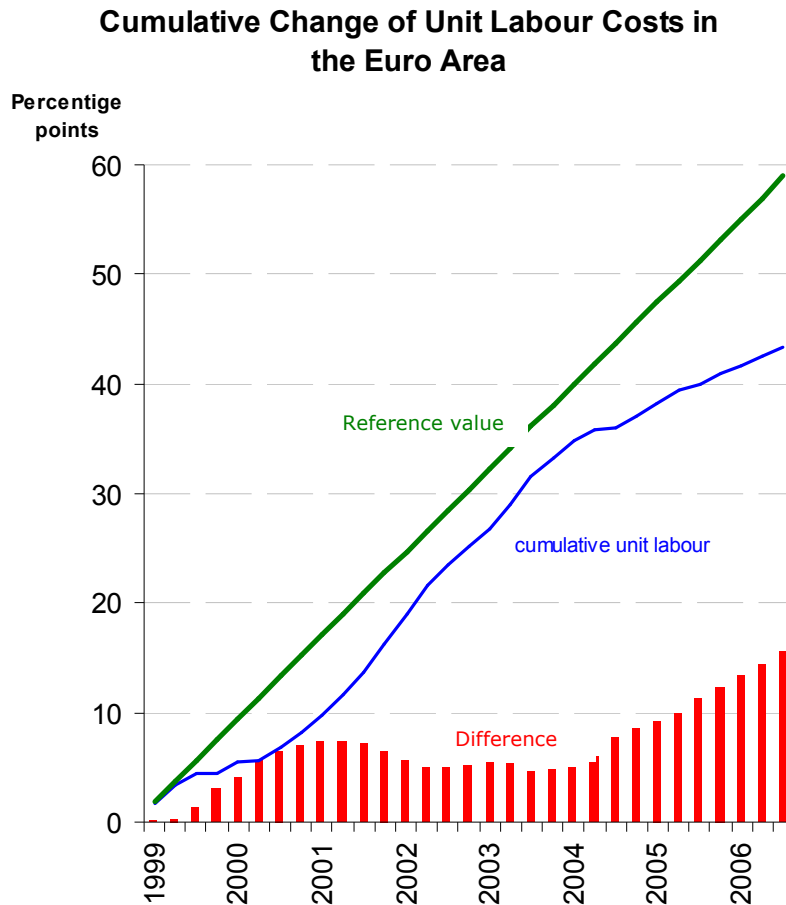
The warnings of the ECB do not just have a general theoretical background, but must be seen against the backdrop of the present situation. There are major wage bargaining rounds in Germany that take place while the economy is growing strongly and tax rises boosted some prices. There obviously concerns within the ECB that wage settlements will be too high for Germany and then will spread all over the Euro area. Are these concerns justified by past behaviour?

Changes of Unit Labour Costs in the Euro Area



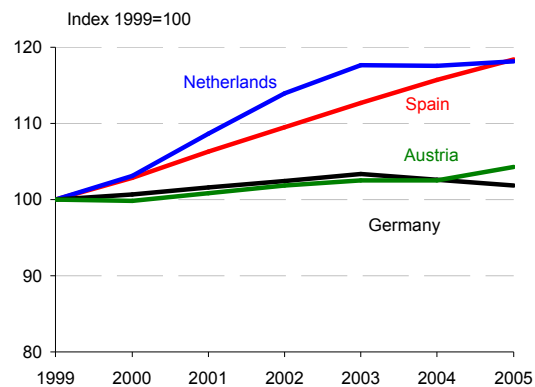
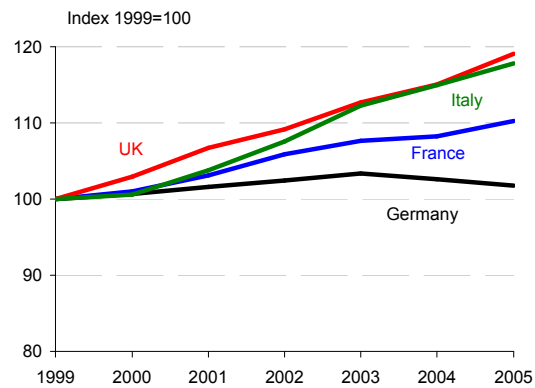
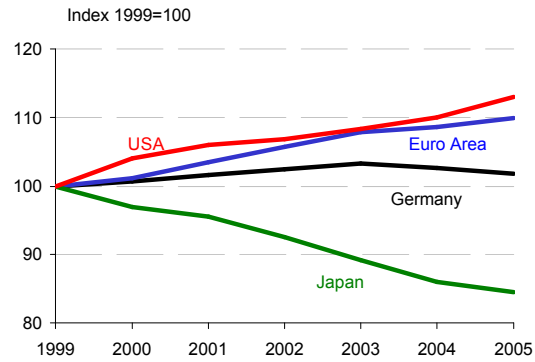
Above, unit labour costs were identified as the decisive variable to assess an appropriate wage setting behaviour. Looking at the development of unit labour costs in the Euro area since the beginning of the currency union, one realizes that wage movements have been moderate during most periods. Only in 2002 and some time in 2003 unit labour costs exceeded the reference value of 1.9 %. These were periods, when economic activity was weak, so that actual productivity growth was weak too. Wages exceeded these figures during that time. But in all other years wages were well below the reference value. Especially since 2004 there exists a very strong wage restraint in the Euro area. Unit labour costs then rose by just about 1 %. This means there is a deflationary impact from wages on prices. This has been more than compensated by higher import prices. Therefore the Euro area still faced inflation rates of temporarily above 2 %. Taking the whole period from 1999 until 2006 into account, unit labour costs increased on (geometrical) average by 1.2 %, quite lower than the reference value of 1.9 %. Given the past, the ECB has no reason to complain on wages.

If -as a purely theoretical exercise- one accumulates the reference value and the change in unit labour costs, one gets the result that unit labour costs could have been more than 10 percentage points higher without having endangered price stability.



To be clear this is no recommendation to catch up for past wage restraint. The effect on inflation would be detrimental and the ECB would have to act. But the figures show that wages have done nothing in the past to spur inflation. The credibility of a stability oriented wage settlement should be high. In the light of these findings the warnings of the ECB are exaggerated. This applies particularly to the wage formation process in Germany. In no other country except Austria the rise of unit labour costs has been as moderate as in Germany.

Unit Labour Costs¹



¹On domestic currencies.

Source: AMECO.



Therefore it seems strange that the ECB focuses so strongly on wage settlements here. A look on unit labour costs in Italy and Spain may prove more worrisome. There, price stability and international competitiveness are much more at stake than in Germany.

In fact presently diverging competitiveness of the Euro member states is much more a serious problem than price stability.

Conclusion and Recommendation

The statement of the ECB is absolutely correct as far the theoretical relationship between wages and price stability is concerned. Wage settlements should look after productivity and they should incorporate the ECB price stability target and not actual inflation. The latter one implies that people must forsake all indexation schemes. That wage settlements should consider the competitiveness of the respective economy is also true. However the relationship between wages and employment as described by the ECB just works either in a small open economy or in a theoretical supply side setting. If demand is the limiting factor, the ECB statement is not true.

Looking at the empirics of the past years there is no reason for concern that wage settlements in the Euro area endanger upward price stability .The contrary is rather true. Keeping all other things equal wages would have led to an inflation rate that is below the inflation target of the ECB. In the light of these findings the ECB should show more trust into the Euro area wage formation process.

Wage setting and price stability

Briefing Paper for the Monetary Dialogue of March 2007 by the Committee on Economic and Monetary Affairs of the European Parliament with the President of the European Central Bank

Dr. Jörg Krämer

By Dr. Jörg Krämer, Chief Economist, Commerzbank AG

Executive summary

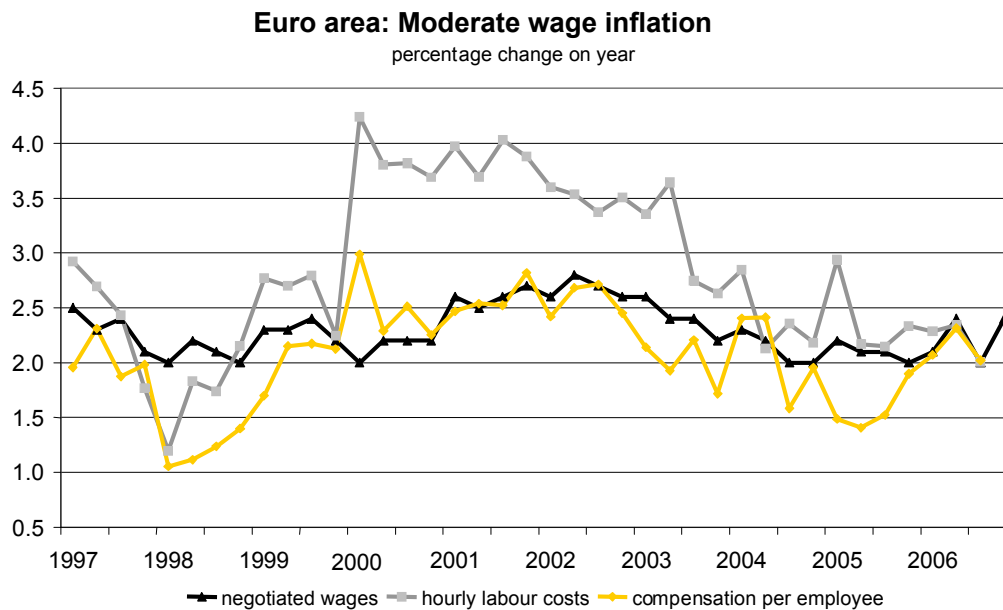
At 2¼% wage growth has been moderate recently. Due to the decline in unemployment wage growth should rise to 2¾% this year. This does not yet endanger price stability. But in the context of strong GDP growth and strong liquidity growth in recent years it is warranted that the ECB is vigilant as far as wage settlements are concerned.

I. Where do we stand in terms of wage dynamics?

Before we start to analyse potential inflationary risks stemming from wage increases it is necessary to find out how strong wages have risen in recent quarters.

There are three wage statistics available for the euro-zone (chart 1):

1. Hourly labour costs
2. Compensation per employee
3. Indicator of negotiated wages



- Chart 1 -

Hourly labour costs do not cover the whole economy, but only the non-agricultural market-related economy ('business sector'). In other words, they exclude non-market services such as public administration, education, health and social services. Due to these exclusions, hourly labour costs are more dependent on the volatile manufacturing sector. Moreover, as a measure of hourly labour costs they go up if the number of hours worked is reduced without corresponding wage cuts (e.g. the introduction of the 35 hours week in 2000 in France). This explains why the growth rate of this indicator has been more volatile than the others since the start of EMU. Over the last two years hourly labour costs have risen between 2% and 2½% which is more or less in line with the message sent by the other two measures of wage growth.

The *compensation per employee* is the sum of all wages and salaries paid (including employers' social security contributions) divided by the number of employees. Over the past years the growth rates have been below the ones for hourly labour costs partly because the latter excludes the public sector where wages tend to rise very moderately. The fact that part-time employment rose in excess of full-time employment also dampened the growth rates of compensation per employee. Since the middle of 2005 wage gains has moved up – albeit from a mere 1½%. However, recently wage growth fell back to 2%.

The *indicator of negotiated wages* calculated by the ECB does not include bonuses, overtime payments and other compensation that is not linked to collective bargaining and is by definition not influenced by changes in employers' social contributions. Moreover, it is not influenced by changes in the number of hours worked per day. The growth rate of this indicator is less volatile than the other two measures. We therefore prefer the indicator of negotiated wages. The indicator sends a very clear message: Since 2003, negotiated wages rose between 2% and 2½%. Recently, there seems to be no upward pressure on wage growth.

All in all, the three indicators suggest that wages rose by a mere 2¼% in 2006. Moreover, there is no meaningful upward pressure on that growth rate. Past wage growth is thus not a reason for the ECB to worry.

II. Is there the risk that wage dynamics could be stronger?

The ECB admits that past data suggest subdued wage pressure. But the bank sees the risk that wage growth could go up.

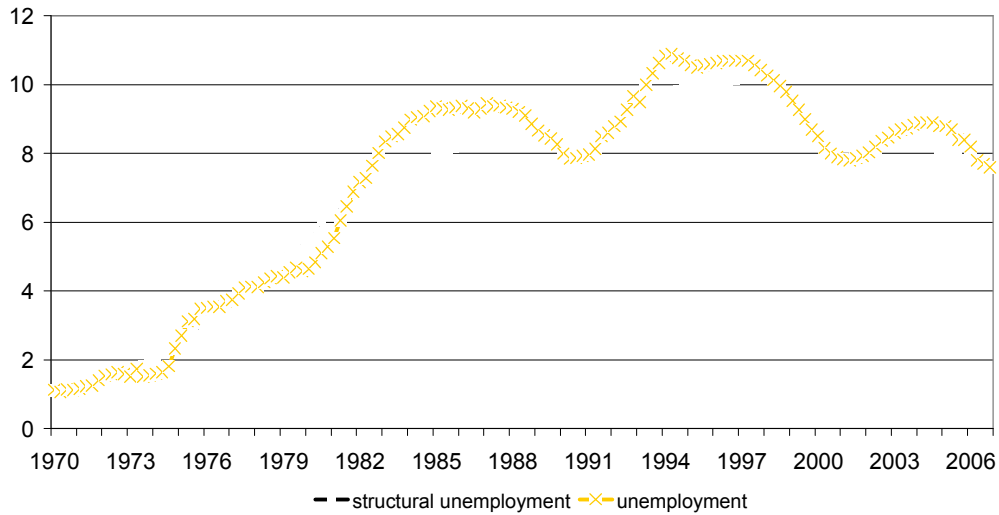
Wage pressure increases, if the unemployment rate falls below the structural unemployment rate which is often referred to as the non-acceleration inflation rate of unemployment – NAIRU. The structural unemployment rate equates the unemployment rate when the economy works at full capacity, i.e. if the output gap is closed. This is a situation, in which the pool of available workers is fully utilized. Additional workers can only be motivated away from unemployment and to enter the labour markets if higher wages are paid which would lead to an increase in the growth rate of wages. The structural unemployment rate is not constant over time, instead it is influenced by the degree of labour market rigidities.

Between the start of the seventies and the end of the nineties the structural unemployment rate went up from 1% to as much 10% (chart 2). This increase was mainly caused by the combination of two oil price shocks and high labour market rigidities. For example, if an oil price shock hits the economy, then the economy goes into recession and employees lose their jobs. If wage settlements do not take into account these unemployed and do not lead to lower wages then firms do not have incentives to re-hire these unemployed.

The longer they are out of work, the more their productivity goes down and the more difficult it becomes to find a job. Ultimately, there are long-term unemployed without any chance of finding a job given the high level of wages. Technically, the structural unemployment rate has gone up.

Euro area: Structural unemployment has peaked

percentage of the labour force, seasonally adjusted monthly data

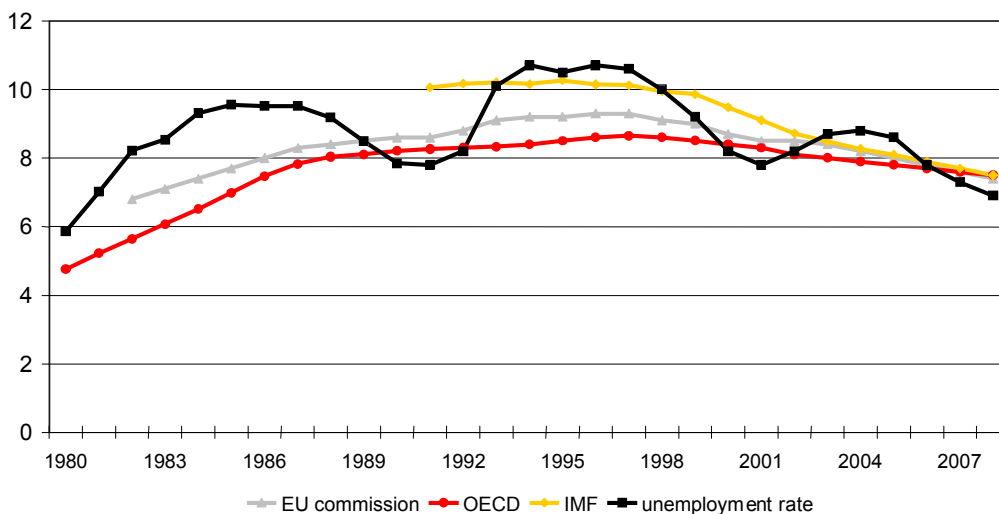


- Chart 2 -

In recent years, the structural unemployment rate has come down. This is mainly the result of labour market reforms in a number of euro-zone countries. According to our estimate the structural unemployment rate has come down to 7½%. This is more or less in line with the estimates of the EU Commission, the OECD and the IMF (chart 3)

Euro area: Structural unemployment rate has come down

non-acceleration inflation rate of unemployment - NAIRU



- Chart 3 -

In January, the euro-zone unemployment rate stood at a mere 7.4%. This is roughly in line with the estimated structural rate of unemployment. The situation is thus critical for the ECB. However, we think that wage inflation is unlikely to go up markedly from here:

- We expect economic growth to slow down this year to 2.4% from 2.7% in 2006. This should also dampen the decline in the unemployment rate.
- The trend in the structural unemployment rate points downwards.

All this suggests that the unemployment rate should decline more or less in line with the structural unemployment rate which should prevent any meaningful increase in wage inflation. We expect wage growth (on a per capita basis and not on an hourly basis) to rise from 2¼% in 2006 to a mere 2¾% in 2007.

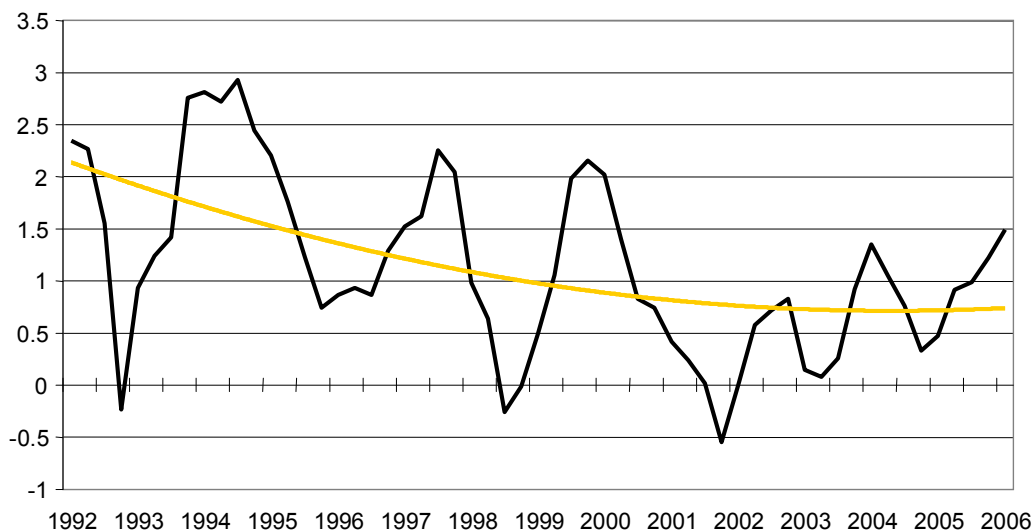
III. What is the tolerable wage growth rate of the ECB?

It is an open question whether 2¾% is tolerable for the ECB. The ECB itself has not published any formula to calculate “the appropriate growth rate of wages”. However, one yardstick for wage growth is of course the sum of productivity growth and the inflation target of the ECB. Then, growth in unit labour costs (which is defined as wage growth minus productivity growth) would be consistent with the inflation target. However, the ECB prefers that wage growth is somewhat below this yardstick due to lower mass unemployment.

The ECB wants inflation to be below, but close to 2%. On trend, productivity (output per capita, not per hour worked) grows by ¾% (chart 4). The “unemployment deduction” could be between ¼% and ½%. This results in an acceptable wage growth between 2¼% and 2½%. Given the uncertainties of such estimates our forecasted acceleration of wage growth from 2¼% in 2006 to 2¾% in 2007 is still more or less in line with the wage growth probably tolerated by the ECB. Nevertheless, there is the risk that wage growth further accelerates in 2008. The ECB is therefore right to remind trade unions and employers associations that they currently bear a lot of responsibility.

Euro area: Slow growth in labour productivity

real GDP per employee, percentage change on year, 3-months moving average



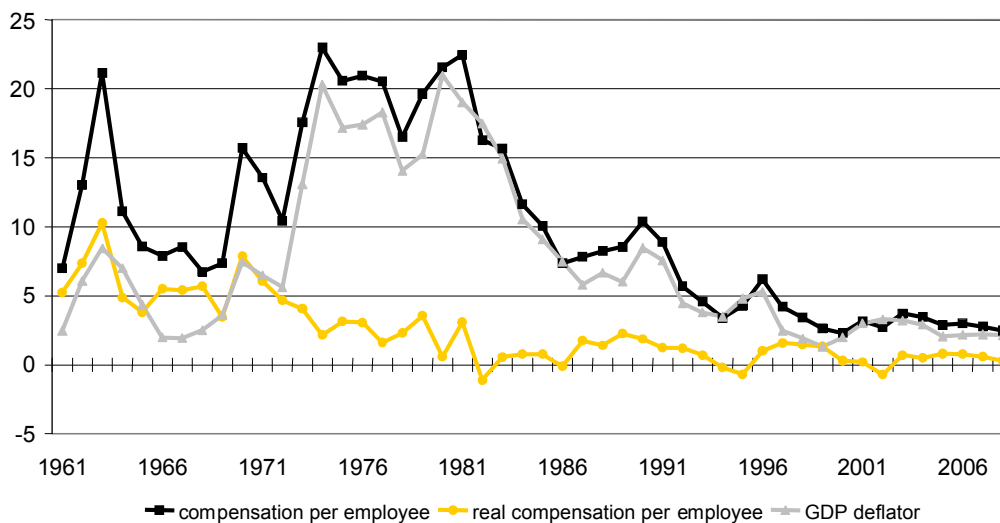
- Chart 4 -

IV. How realistic is a wage-inflation spiral?

The risk for a wage-inflation spiral is high, if social partners look at past inflation rather than at expected inflation. Then, higher inflation in the past will lead to higher wage settlements which in turn further raises inflation etc.

The risk of a wage-inflation spiral is especially high if wages are directly linked to past inflation. This had been the case for Italy where wages had been linked to a certain consumer price index up to 1992. The abolition of this indexation (“scala mobile”) stopped the wage-price spiral (chart 5). Thereafter, inflation as measured by the GDP deflator declined to very low levels.

Italy: Abolition of indexation in 1992 has stopped the wage-price spiral
percentage change on year

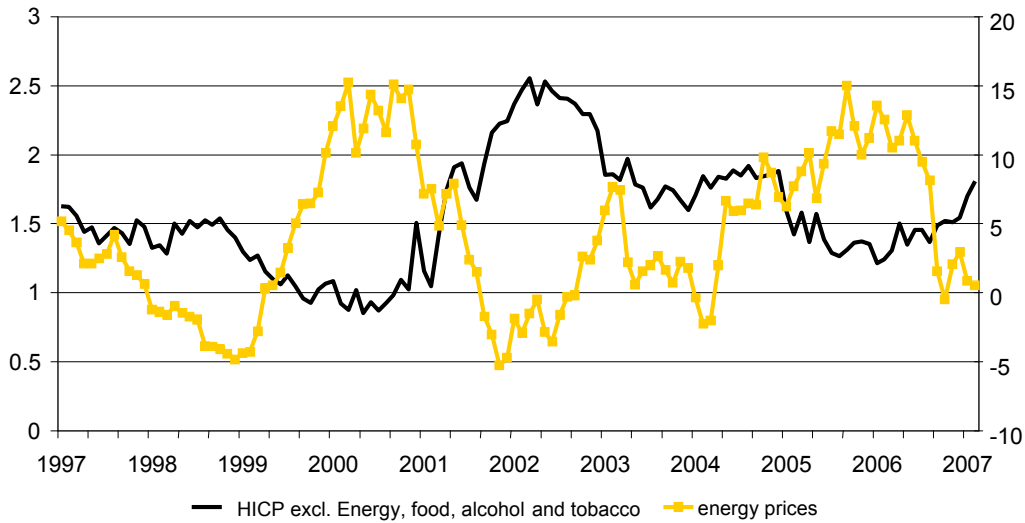


- Chart 5 -

The risk of a wage-price spiral is currently not very high:

1. Low inflation: Despite the hike in the German VAT, euro-zone inflation is still below the 2% mark (1.8% in February). Inflation is thus difficult for unions to use as an argument to significantly raise wage demands.
2. Stiff global competition: The integration of China into the world economy means that the supply of cheap labour has increased globally. While consumers benefit from cheaper products it has become more difficult for trade unions to push through higher wage settlements. The fact that euro-zone core inflation has not exceeded the 2% mark despite the recent commodity price shock is partly caused by stiff global competition (chart 6).

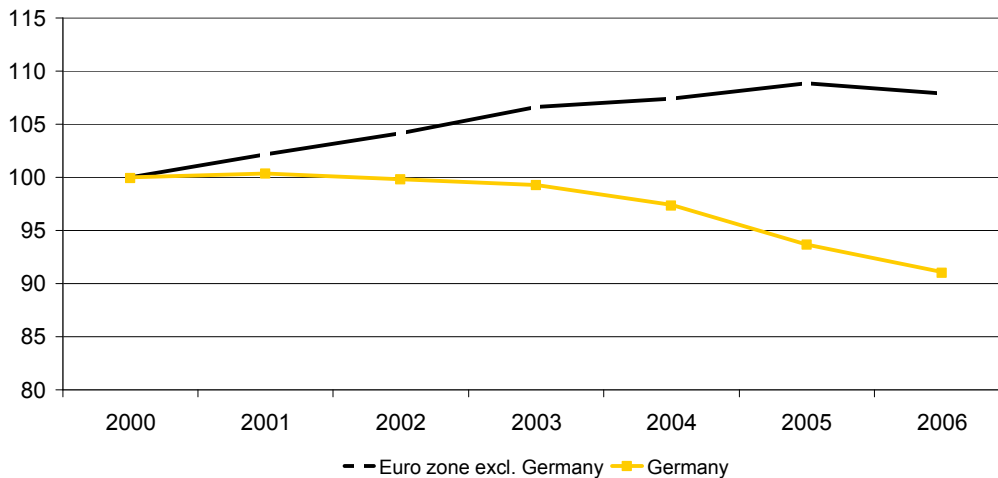
Euro area: Low core inflation despite strong increase in energy prices
percentage change on year



- Chart 6 -

- Germany has re-gained price competitiveness by lowering unit labour costs relative to other euro-zone countries (chart 7). This strategy not only boosted German exports. It also led to a strong rise in capital investment within Germany, a catch-up of GDP growth to the euro-zone average and, finally, created incentives for hiring more staff. The successful german concept of wage moderation will put pressure on other euro-zone members to follow a similar strategy.

Euro zone: German industry re-gained price competitiveness
unit labour costs, 2000=100



- Chart 7 -

V. Consequences

In the past years wage increases in the Eurozone were moderate. This year, we expect wage gains to go up to $2\frac{3}{4}$ % from $2\frac{1}{4}$ % in 2006. This does not significantly exceed what we estimate to be tolerable by the ECB. Nevertheless strong economic growth is a clear reason for the ECB to be vigilant as far as a wage growth is concerned. The ECB should further hike interest rates especially to make sure that high growth rates of money supply M3 come down to more normal level.

Wage setting and price stability

Briefing Paper for the Monetary Dialogue of March 2007 by the Committee on Economic and Monetary Affairs of the European Parliament with the President of the European Central Bank

Anne Sibert

In the Governing Council's view, the outlook for price developments remains subject to upside risks ... It is therefore crucial that social partners continue to meet their responsibilities. In this context, wage agreements should take into account productivity developments, while recognising the still high level of unemployment and price competitiveness positions. As stated on previous occasions, it is also important that wage settlements move away from automatic, backward-looking indexation mechanisms. (Jean-Claude Trichet, President of the ECB, 11 Jan 2007)

Executive Summary

- An increase in negotiated nominal wages does not directly cause a rise in the price level, but it can act as a supply shock and raise the price level indirectly.
- An accommodative monetary policy can cause a one-time increase in the nominal wage to lead to sustained inflation.
- The pursuit of higher real wages has contributed to high employment in Europe, but centralised and cooperative wage setting can also contain wage increases.
- Recent negotiated wage settlements do not appear to have led to large real wage increases.
- Belgium provides an example of how negotiated wage settlements can lead to the problems Mr Trichet is concerned about.
- Belgian wage settlements may not have taken into account productivity changes, promoting a loss of competitiveness and lower employment.
- Mechanistic indexing mechanisms may be distorting Belgian labour markets, further lowering employment.

In his introductory statement at the 11 January 2007 press conference, Mr Trichet warned about the upside risks to inflation. He then asked wage setters to take into account productivity developments and to move away from automatic, backward-looking indexation mechanisms. By first mentioning the upside risks to inflation, it might – on the surface – appear that Mr Trichet is arguing against wage increases that are not a result of productivity increases because they directly increase inflation. This is unlikely, however, as it confuses a change in a relative price with a change in the aggregate price level.

A negotiated nominal wage increase does not directly increase the price level

To see why an increase in the nominal wage does not directly increase the price level, imagine a simple, stylised economy where “capitalists” own the firms and hire labour from “workers”. I suppose that each period, firms demand and workers supply the same amount of labour. Assume that all savings is in the form of money and each period the capitalists and workers

demand a real value of money equal to the same constant fraction α of their incomes. Suppose also that the money supply is constant.

As employment in this simple example is constant, total output and, consequently, the sum of the real incomes of the capitalists and workers is constant as well. Thus, an increase in the nominal wage has no effect on total real income, it just redistributes income from the capitalists to the workers. Thus, following a rise in the negotiated wage, the total demand for real balances remains equal to α times the unchanged total real income. The money market clears at the original price level and there is no change in the price level.

A negotiated nominal wage increase can be a supply shock, indirectly increasing the price level

A nominal wage increase can cause inflation *indirectly*, however. This is because it can act as a supply shock, lowering real income and, thus, the demand for real balances. To see this, imagine the previously described model but instead – and more realistically – suppose that an increase in the real wage causes firms to demand less labour and, hence, lowers output and the sum of the real incomes of capitalists and workers. Then, at an unchanged price, a rise in the nominal wage increases the real wage and this causes employment and total income to fall. Thus, the demand for real balances falls and the price level rises to restore equilibrium in the money market. The higher price level dampens, but does not reverse, the rise in the real wage.

In a more elaborate scenario, one with capital as well as labour, any rise in real wages resulting from an increase in the negotiated nominal wage lowers the profitability of firms and this causes investment to decline. With lower capital stocks in future periods, the future demand for labour and output is further lowered. Thus, a one-time increase in the nominal price level can lead to an extended period of price increases.

The change in the nominal wage can also further affect inflation indirectly through a second-order distributional effect. Suppose that workers' demand for real balances is a fraction α^w of their income and firms' demand for real balances is a fraction $\alpha^k < \alpha^w$ of their income. Even if employment and the sum of capitalists' and workers' income is invariant to the real wage, an increase in the nominal wage can lead to an increase in the price level. This is because the share of real income going to workers rises and their demand for real balances increases by more than the capitalists' demand for real balances falls. Thus, the total demand for real balances rises and the price level rises to clear the money market.

An accommodative monetary policy can cause a one-time increase in the nominal wage to lead to sustained inflation

A one-time rise in negotiated wages can lead, not just to a one-time rise in the price level, but to sustained inflation through an accommodative monetary policy response. If the increased wages lead to a fall in employment and output, then a central bank that is not strictly targeting inflation might be tempted to create unanticipated inflation in an attempt to lower the real wage and restore employment and output to their original level. However, as the central bank cannot systematically fool the public, the result is likely to be inflation without an output gain.

The pursuit of higher real wages has contributed to high unemployment in Europe, but centralised and cooperative wage setting can also contain wage increases.

The obvious way, as suggested above, that an increase in negotiated nominal wages can act as a supply shock is by raising the real wage and lowering employment and output. Unionization and collective bargaining at an industry level can increase the bargaining power of workers and it is likely that the pursuit of real wage increases played a role in causing the high

European unemployment in the 1980s. On the other hand, when there is coordination between the unions, employers and the state, sufficiently centralised wage setting can contain wage increases.²⁴

Figure 4. Negotiated Wages and Prices

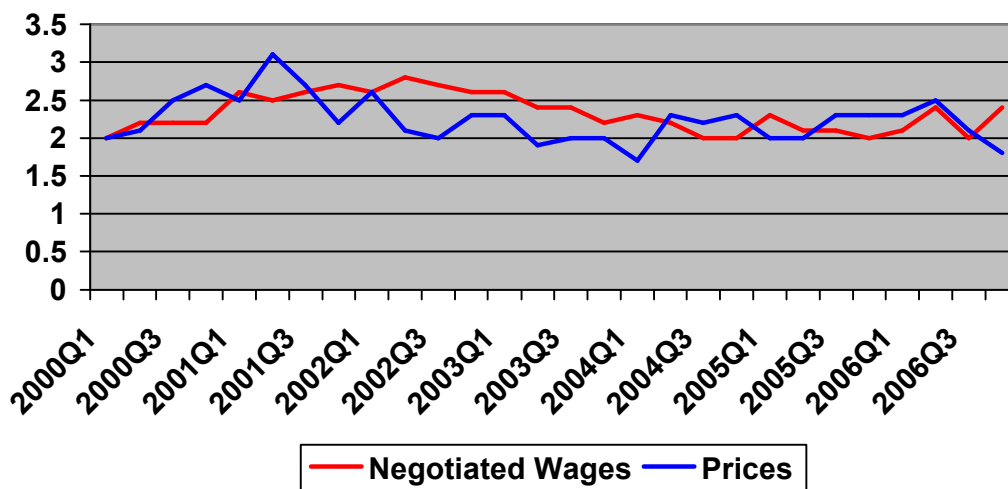


Figure 1 above depicts the paths of the consumer price index (HICP) and negotiated wages since 2000. One must be cautious in interpreting this chart: negotiated wages are an imperfect measure of the cost of labour; firms care about nominal wages deflated by output prices, rather than consumer prices; the path of market clearing real wages depends on unobservable technical progress. Nevertheless, the chart does not suggest that wage settlements during the euro era have been wildly excessive.

Negotiated wage settlements in Belgium

To get some additional insight on how negotiated wage settlements may cause the concerns voiced by Mr Trichet, I consider the current experience of a particular Euro area country: Belgium. There, a failure to consider productivity developments has led to wage increases which are less moderate than they first appear. This may have led to reduced competitiveness and higher average unemployment. Mechanistic use of a backward-looking indexation system has resulted in rigidity and distorted labour markets, increasing the variance of employment across regions.

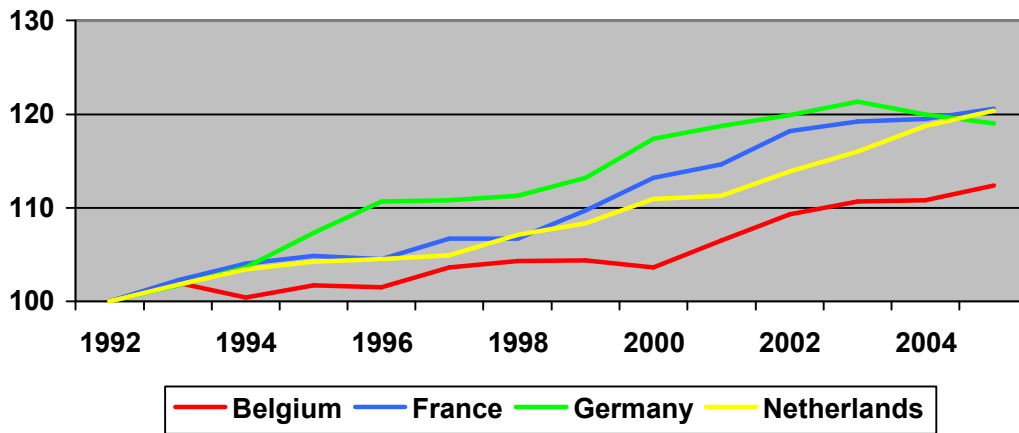
Wage negotiations in Belgium may not have adequately taken into account productivity differences

To maintain competitiveness, Belgium’s wage-setting system relates the maximum possible increase in negotiated Belgian wages to wage developments in Belgium’s three main trading partners: France, Germany and the Netherlands. As seen in Figure 2 below, the result has been a growth in real hourly compensation in manufacturing that appears more than moderate in comparison.

²⁴ See Calmfors and Driffill (1988). See Johansson (2006) for a description of how centralised wage setting moderated wage increases in Finland.

Unfortunately, the computation of the upper limit does not take into account differences in technological or other changes that affect the demand for labour in Belgium and its trading partners. Output per hour in manufacturing, shown in Figure 3 has lagged in Belgium relative to France, Germany and the Netherlands. To the extent that this reflects lower technological growth, rather than lower capital deepening, this suggests that wage growth should have been significantly slower in Belgium than in its trading partners.

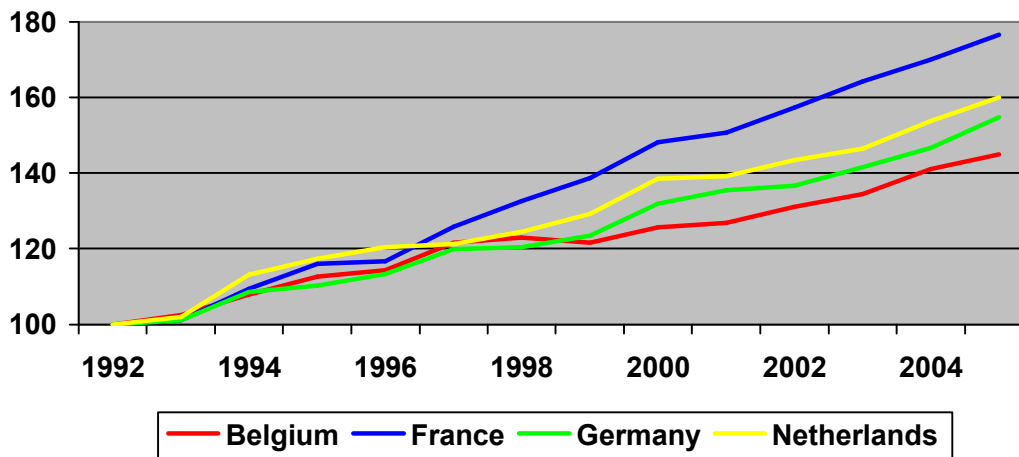
Figure 2. Real Hourly Compensation in Manufacturing, CPI Basis (1992 = 100)



Sour

ce: US Department of Labor, Burea of Labor Statistics

Figure 3. Output per Hour in Manufacturing



Source: US Department of Labor, Bureau of Labor Statistics

In an attempt maintain living standards, the wage-setting mechanism ensures that there is a floor. This lower bound is the result of an automatic backward-looking indexation system where minimum increases depend upon past inflation.²⁵ Sectoral opt-out clauses exist but are rarely invoked. Unfortunately, in combination with the wage ceiling this has resulted in an extremely narrow band of potential wages: the range of possible wages during the two-year period covered by a wage settlement has been only one to two-and-a-half percent. Wage differentials have shown little adjustment over sectors or regions. Perhaps as a consequence employment has varied widely: in the Flemish region unemployment in 2005 was under six percent, in the capital region it was about 16 percent.²⁶

²⁵ Such indexation schemes have become less common in Europe than they used to be. They are automatic in Belgium and Luxembourg, apply to the minimum wage in France, are typical in Spain and can be invoked in some other European countries. See ECB (2006).

²⁶ International Monetary Fund(2006).

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