

# **The Sustainability of Monetary Stability**

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The primary objective of European Monetary Union is to maintain price stability. The underlying idea is that only if the value of money remains stable over time can the price system signal the innumerable messages on the state of supply and demand for each commodity which will ultimately determine the composition of the output, allocate resources, set the technology of production and divide it among the population. In a well-functioning market economy competition resolves these tasks efficiently. But if the value of money varies significantly, prices get distorted and the information value of the price system declines. Individual market participants can no longer distinguish between shifts in relative prices and general price level movements (Lucas, 1972). Furthermore, some prices are rigid, others are flexible so that the whole price structure changes. With nominal debt contracts, debtors profit from inflation, creditors from deflation. Given nominal wages contracts, real wages fall in inflation and rise in deflation periods. Therefore, both is to be avoided: inflation as much as falling price levels.

How is price stability to be ensured? The Maastricht Treaty emphasises the institutional arrangements of central bank independence and constraints on budget policies. The European Central Bank (ECB) is the institution charged to pursue price stability and it has one of the highest degrees of political independence in the world in order to do so. The Treaty of European Union (TEU) also clearly establishes a preference for price stability over other objectives. This should give comfort to those who fear the Euro may become an unstable, inflationary currency. But if

their fear were justified, the sustainability of EMU may not be guaranteed. In order to assess this risk, we may ask two questions:

1. What is the likelihood that the decision-making organs in the ECB may not *want* to give price stability the overruling preference?
2. Will the ECB be *able* to guarantee price stability even in a hostile environment?

The first question relates to the objectives and motivations of monetary policy. But the ECB will operate in a real world environment where independent exogenous, as well as endogenous shocks require policy makers to respond and act. Economic theory discusses the possibility of monetary authorities having an "inflationary bias" in their policy actions under the title of "time inconsistent behaviour". We will discuss the likelihood of such development in the second section. On the other side, even if the willingness to fight inflation prevails at the central bank, it is always confronted with two major constraints which result from unstable wage and cost dynamics and from unsustainable public finances<sup>1</sup>.

If inflationary pressures from these sources are too high, monetary policy becomes necessarily (over)restrictive which might lead to a deflationary process. This might be necessary to maintain price stability, but if it persisted for a long time, it could lead to social and political instability. This might not put European Monetary Union as such in doubt, but it could jeopardise European integration in a broader context. In the third section we will analyse the link between monetary

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<sup>1</sup> A third dimension are terms of trade shocks. Given that they are outside the control of domestic agents, we will not discuss them here.

policy and employment in Europe. Yet, before turning to monetary policy it is useful to clarify the concept of price stability.

## **1. Defining price stability as a policy objective**

Over the past 20 years there has been an emerging consensus and commitment among central bankers throughout the world to make price stability the primary policy goal of monetary policy (McDonough, 1997). This commitment is expressed in the world wide reduction in inflation rates over the 1980s into the 1990s. In Europe it can be seen by the significant convergence in price stability and the simultaneous reduction in nominal interest rates (see figures 1 and 2).

How well do these indicators measure inflation? There is now an increasing awareness that consumer price indices overstate the true rate of increase of the cost of living. In the United States, this measurement error may attain up to 2% (Shapiro and Wilcox, 1996). In Europe, newly constructed Harmonised Indices of Consumer Prices will be available from 1999 which are likely to correct some of these distortions (EMI, 1996). However, there seems to be a consensus that recorded inflation rates around 2% are close to price stability, as this figure underlies most of the inflation targets by EU central banks.

For conceptual reasons, a more appropriate definition of price stability is that "expected changes in the average price level are small enough and gradual enough that they do not enter business or household decisions" (Pemberton, 1992). Therefore, monetary policy is more about containing

dynamic price expectations than about eliminating all sources of potential inflationary shocks (McDonough, 1997). It also must take a medium-term perspective as it takes normally time until expectations have entered behaviour or until they have died down. Estimating inflation expectations is a complex task. A range of indicators based on past price movements might be useful, but monetary aggregates and interest rates also contain information. The Bank of England publishes a regular Inflation Report that synthesises all relevant factors. It might be a good idea for the European Central Bank to prepare similar reports.

Our definition of price stability gives some substance to the distinction of will and capacity in central bank behaviour: monetary policy may not be able to control exogenous price level shocks, but it must have the will to bring down inflationary expectations after such shocks. Consequently policy must aim at a zero rate of expected inflation and not at a constant price level. However, even if the political will to maintain price stability thus defined exists, it is only a necessary and not a sufficient condition for its achievement. The central bank also needs to know how to realise its objective. This is not only an argument about technicalities related to the conduct of monetary policy. Romer and Romer (1997) have insisted that lack of will (dynamic inconsistencies) has been overemphasised in the literature as a source of monetary policy failures.<sup>2</sup> Not sufficient attention is given to the limits of knowledge about how the economy operates and the obstacle that this provides to good policy. This lack of knowledge at times extends from economists to monetary policy makers and elected leaders and voters. Romer and Romer's (1997) analytical argument is

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<sup>2</sup> This idea was already anticipated by Eucken (1952), one of the inventors of German's "Ordnungspolitik" when he wrote: "... die Erfahrung zeigt, daß eine Währungsverfassung, die den Leitern der Geldpolitik freie Hand läßt, diesen mehr zutraut, als ihnen im allgemeinen zugetraut werden kann. Unkenntnis, Schwäche gegenüber

powerful and they suggest monetary institutions as a remedy that would allow the progress of knowledge to be incorporated into policy design. In their opinion the institutional structure of the ECB is very close to their requirements and they expect that the ECB "is likely to lead to substantial improvements in policy" (p. 399). To this structural assessment of the ECB institutions, one may add the extremely solid review of monetary policy instruments and procedures conducted by the European Monetary Institute (EMI 1997). There is probably today no other institution in the world with a higher concentration of sophisticated knowledge about central banking. Of course, policy implementation requires appropriate instruments. Here is not the place to discuss the technicalities of central banking, but from the various publications of the EMI it is apparent that the ECB will dispose of the latest state of art technology. Certainly, all this accumulated human capital is no guarantee against policy mistakes, but the error margins are limited. The decisive question then remains about the matter of will. Why would the ECB tolerate inflation?

Sustained inflation is possible only if money supply increases in a sustained manner in excess of the growth rate of output. In theory, if the authorities refused to accommodate price increases, inflation would come to a halt. However, society imposes some limits to central banks' ability to resist the expansion of money supply. In the words of Antonio Fazio: "In large and complex economic systems the level of prices is strongly affected by other variables and circumstances, first of all fiscal policy and labour costs. In such cases the reliance solely on monetary policy to achieve monetary stability can be extremely costly in terms of other objectives" (quoted in: Cukierman, 1992, p. 15). Given that monetary authorities have no control over exogenous factors such as

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Interessensgruppen und der öffentlichen Meinung, falsche Theorien, alles das beeinflusst diese Leiter sehr zum Schaden der ihnen anvertrauten Aufgabe." (p. 252).

supply shocks or crises in the financial system and social and political instability, appropriate monetary policy might require occasionally a temporary reflation (McDonough, 1997). But for the maintenance of price stability what matters most is that monetary policy anchors inflation rates at low levels and thereby locks in low inflation expectations. Consequently, occasions might occur when it would be wrong to request that central bankers should give *exclusive* consideration to money supply or price stability at every moment, as the social costs of such a policy might become undefendably high. Instead, monetary policy *rules* can help to achieve zero expected inflation at low social cost (Meltzer, 1997). We will here not review the long debate on "rules versus discretion", nor the range of rules which have been suggested in the literature. In practice we find that all major central banks in the world, including the Bundesbank, take real economy influences into account when defining their policy stance (Clarida and Gertler, 1997). In the case of EMU the commitment to the "primary objective to maintain price stability" (TEU art. 3a and 105) implies that monetary policy is geared at eliminating inflationary price expectations; it does not mean that prices may never go up and down.

Following this approach, EMU-sceptics would have to explain why the ECB would be inclined to tolerate a persistent expansion of money supply to such a degree that households and firms would anticipate future inflation. In other words, the question is: why and how is it that monetary policy would become itself a source of inflation?

## **2. Inflationary biases in monetary policy objectives**

The economic literature gives a number of policy motives which can lead to excessive inflation in the context of dynamic inconsistencies. These inconsistencies occur when the best policy planned currently for some future period is no longer the best when that period arises.<sup>3</sup> Typically, it is assumed that the "monetary authority" is part of "government", so that different policy objectives by the government can be pursued by the central bank. It is doubtful, to put it mildly, that these models could operate with a legally independent, supranational central bank in the same way. But given that they dominate the public debate, it is useful to assess possible deviations from price stability oriented monetary policies under EMU, which might result from dynamic inconsistencies. We may distinguish four motives which could collide with the price stability objective<sup>4</sup>: 1. the revenue motive, 2. the exchange rate motive, 3. the stability of the financial system and 4. the employment motive. We will try to assess the likelihood that the European System of Central Banks will be detracted by these temptations from the virtue of pursuing price stability.

#### *The revenue motive*

By printing money, i.e. creating a liability that carries no interest, public authorities obtain revenue in the form of central bank profit. This is known as seignorage. Furthermore, inflation reduces the real value of the outstanding public debt and the related debt service. Therefore, government may have an interest to inflate, particularly when their tax system is already stretched to the limits of the tolerable. However, if the public is aware of these intentions and expects inflation to rise, it

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<sup>3</sup>How to respond to dynamic inconsistency is, of course, the essence of a moral problem. By assuming that authorities can (should?) renege on commitments, the theory claims that what is wrong for individuals is right for policy. This way of thinking may trace its roots back to N. Machiavelli, but I would maintain, nevertheless, that no society can survive (i.e. be sustained) if lying, cheating and breaking one's word becomes the rule. Taylor (1983) has observed that many governments overcome dynamic inconsistency problems without the classical arrangements proposed by theory. Maybe the reason is that the sense of ethics among policy makers is more prevalent than theory supposes (See also Romer and Romer 1997, p. 315).

will reduce the amount of money balances held. This might deter the government from inflation, unless it can create a "surprise" inflation. However, persistent surprise inflations would lead to accelerating rates of inflation, as economic agents would incorporate them into their expectations. Therefore, the return on excess inflation is diminishing with longer time horizons and ultimately disinflation becomes unavoidable.

A straightforward remedy against any kind of dynamic inconsistency is to establish binding rules from which policy cannot depart without costs. European Monetary Union has effectively put into place several provisions to prevent such revenue-motivated inflation. First, it has split political and monetary authorities by giving the ECB a statute of independence (TEU art. 107). The ECB's primary objective being price stability, it can not be instrumentalised to follow government revenue motives. Secondly, indirect monetisation is prevented by the prohibition of overdrafts or other credit facilities with the ECB in favour of governments (TEU art. 104). Third, seignorage income in EMU will be allocated to national central banks (which are themselves politically independent) in proportion to their paid-up shares in the capital of the ECB (Protocol on the Statute of the ESCB and the ECB, art. 32.5). Consequently, even if it could manifest itself in the ECB council, the revenue motive of one particular government is always deluted to its share in the ECB capital. Only if all member states together, or at least a majority, would request higher seignorage income could this become a factor of concern for the ECB. Our chapter on fiscal sustainability assesses the likelihood of such developments in Europe. It finds that the probability of using the inflation tax to reduce government debt is extremely low and seignorage is negligible in Europe.

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<sup>4</sup> We follow Cukierman (1992) in the subsequent argument.

### *The exchange rate motive*

Governments may have foreign exchange objectives in order to dispose over a sufficient amount of foreign reserves when maintaining a fixed exchange rate peg or for competitiveness purposes when following a mercantilistic development strategy.<sup>5</sup> Given that the amount of foreign exchange reserves is a function of the real exchange rate, a situation may arise when a devaluation would help to achieve a given reserve objective. However, if the real devaluation is resisted by nominal wage increases, prices go up and the government's objective is unattainable. Therefore, it needs to "surprise" social partners with an unexpected devaluation which goes even further than expected price increases. This would accelerate the existing inflation rate, when businesses and households adapt their price expectations.

The exchange rate motive is unlikely to have a significant impact on EMU. Although art. 109 TEU gives some say to political authorities in the formal arrangements of exchange rate systems for the Euro, it is foreseeable that fixed pegs will only take place in the context of the so called ERM II or unilaterally by other countries. The agreements of the Amsterdam summit stipulate that the ECB could always withdraw from intervention obligations, if the overall objective of price stability were in danger. Furthermore, national central banks are holding foreign reserves today in order to stabilise their pegs in the EMS. Once their exchange rates are irrevocably fixed, a large part of these reserves will no longer be needed. Initially the reserve holdings will be relatively high with the reserve to import ratio of 2.6 for the EU against 1.0 for the USA but they would still be below

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<sup>5</sup> The following does not apply to a mercantilistic strategy which uses competitive disinflation rather than nominal devaluations. Only the first is sustainable in the long run. See Riese, 1986.

the Japanese ratio (Funke and Kennedy, 1997). Thus, there will be little need to accumulate additional foreign reserves. It is more likely that these reserves will slowly be reduced and the balance of payment objective is not going to be substantial.

### *Stability of the financial system*

Historically, one function of central banks has been to prevent micro-level banking trouble, crises and panics, from disturbing the macro-economy (Goodhart, 1992). This has led to the emergence of a lender of last resort. It is sometimes feared that concern with microbanking stability might divert the central bank's focus on maintaining price stability. Given that interest rates are the principal tool whereby modern central banks conduct monetary policy, they might get confronted with situations when they would have to rise interest rates aggressively. If the stability of the financial system is fragile, high costs of funds may rise the likelihood of financial collapse.

The argument has a short-term and a long-term aspect. It is generally accepted that commercial banks' demand for reserves is virtually inelastic in the short run. Therefore, the central bank has no choice but to accommodate liquidity demand (King, 1994). This can lead to an expansion of the money stock beyond levels strictly compatible with price stability, unless the excess liquidity is mopped up in the medium-term, when a "smooth" increase in interest rates starts to reduce commercial banks' demand for reserves. Therefore, the short-term argument of an inflationary bias of the lender of last resort function is based on weak foundations. Only if the financial fragility would prevent keeping interest rates at the appropriate level over a longer period of time, could systemic issues interfere with the monetary policy goal of price stability. This could be the case if

authorities fear tight money may lead to wide-spread default, due to the state of balance sheets, and this could precipitated or worsen a recession via multiplier effects on income. Thus, they may shirk away from setting interest rates at a level that prevents the emergence of inflationary expectations (Friedman, 1990).

To what degree is there evidence that the policy margins of the ECB could be constrained by the financial system and its structures? Since the mid 1960s there have been numerous examples of financial instability in OECD-countries.<sup>6</sup> In the 1990 Sweden, Finland, UK and less severely France experienced financial fragility to some degree and Germany and Italy only very little. Yet, in all those countries significant disinflation has taken place<sup>7</sup> and everywhere inflation is at historic lows. Thus, despite structural differences in financial markets monetary performance has converged (Collignon, 1997). Clearly then, if there has been no constraint on monetary policy in a period of sometimes aggressive disinflation, why should the ECB find it more difficult to *keep* inflation down?

The only answer possible is that the social costs of a recession are too high in terms of output loss and unemployment. There is evidence that in recent years recessions have tended to be longer in financially fragile economies, reflecting the time taken to reduce the burden of debt by cutting expenditure and rising savings. The deepest recessions in the early 1990 were in fact in the UK,

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<sup>6</sup> Some notable events are: the UK secondary banking crisis 1973, the Herstatt collaps in Germany 1974, the LDC debt crisis in August 1982, the stock market crash in October 1987, the US-thrifts crisis in the 1980s, the banking crises in Finland, Sweden and Japan in the 1990s and the Ecu bond market in 1992. See Davis, 1995.

<sup>7</sup> It can be argued that the UK's exit from the ERM was accelerated by financial fragility, given the intolerably high interest rates necessary to defend the DM-peg. However, the depth of the recession in the UK indicates that the exchange rate level of the peg was simply wrong.

Sweden and Finland which also experienced financial crisis symptoms (Davis, 1995). However, this would mean that the inflationary bias in monetary policy does not result from government objectives or financial instability and systemic risk, but from the employment motive. Furthermore, while the revenue and foreign exchange objectives are difficult to pursue in the context of the asymmetric division of power between the European Central Bank and national governments, the employment motive may have greater impact on the ECB's policy preferences because it may reflect a general public consensus rather than a direct government instruction. It is therefore the most serious threat to the European Central bank's price stability commitment.

#### *The employment motive for inflation*

The argument of an inflationary bias resulting from an employment motive is somewhat similar to the exchange rate motive analysed above. It is based on a set of conditions under which short-term neutrality of money does not apply. If the government had the authority over monetary policy, rather than an independent central bank with a price stability objective, it might be tempted to inflate in order to achieve real objectives (Cukierman, 1992). If the task is to reduce unemployment, it can do so, provided three conditions hold. First, real wages must stand above the market clearing rate so that employment is constrained by demand for labour. If the latter is a function of real wages, a surprise inflation can lower real wages and increase employment. Second, policy makers must have an objective function that gives positive weight to both high price stability and high employment. Third, wage bargainers set nominal wages for a fixed period so that some degree of nominal wage rigidity prevails. When setting nominal wages, workers aim at setting real wages by taking inflation expectations into account. Consequently, the authorities

can only lower real wages by renegeing on their declared price objective in creating surprise inflation. This will then lead to accelerating price increases through the feedback mechanism of inflation expectations in wage bargains, while real wage resistance keeps unemployment at its "natural rate". Only the unanticipated part of inflation reduces real wages and consequently only temporary deviations from the natural rate are possible. Thus a possible inflationary bias from employment motives depends on the structures in the labour market<sup>8</sup> and on the policy objectives and preferences of authorities.

The question of labour market structures essentially relates to the rigidity in wage bargaining. The existence of nominal wage rigidities is now a well established fact in the theoretical and empirical literature (cf. Fischer, 1977; Taylor, 1979; Card and Hyslop, 1997; De Grauwe, Micossi and Tullio, 1996). As for real wage resistance and the assessment of the role of inflation expectations in the process of disinflation in Europe, the verdict is less clear. In general, countries with high inflation exhibit a higher degree of real wage resistance, as inflation expectations are more prevalent. During inflation, real wage resistance is the attempt to defend workers' living standard. However, during disinflations rising real wages (and unemployment) are the consequence of falling prices which are not correctly anticipated by wage bargainers and unemployment is likely to rise. Therefore, during periods of falling inflation, the credibility of the authorities is crucial. However, if credibility needs to be "earned" over time, disinflation is unavoidably associated with some degree of rising unemployment. Several studies have tried to find evidence of a "credibility" effect

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<sup>8</sup> Long lasting nominal wage contracts are useful for low inflation, if the central bank gives high priority to price stability, but they can also be a temptation for surprise inflations. Short term nominal wage contracts are useful in disinflations as they prevent lasting overvaluations in real wages and therefore reduce the "sacrifice ratio" (on this point see Ball, 1994).

linked to low-inflation convergence in the European Monetary System (EMS). Supposedly, governments renounced the option of surprise inflation by committing themselves to keep a fixed exchange rate with the DM. If this commitment is credible with wage bargainers, they would adjust their inflation expectation downwards and the disinflation process would be less costly in terms of output and unemployment. Anderton, Barrell and in't Veld (1992) studied the structural stability of wage equations in four EU countries. They found no changes in labour market structures in the UK (despite the Thatcher reforms) nor in France and therefore ascribe the changes in wage behaviour to credibility effects. In Italy there is evidence of a shift from backward to forward looking wage behaviour and this has since been confirmed by the abolition of the *scala mobile*. Other studies are more pessimistic about credibility effects.<sup>9</sup>

The lessons from these experiences are that disinflationary policies in the EMS did not work through the credibility of the exchange rate anchor *alone*, but rather that the exchange rate policy was part of traditional stabilisation packages, focused on income policies and fiscal consolidation. The disinflationary effect of the EMS consisted in the greater credibility of governments rather than of exchange rates. This reputational gain came about *gradually* due to the policy discipline imposed by ERM membership (Egebo and Englander, 1992). Countries seeking credibility had to be prepared, and to prepare their public, to earn their reputation by demonstrating that they were willing to pass a high price in terms of output and job losses for price stability. The 1980s show that convergence in Europe was not possible unless the hard work was done at home (Onofri and Tomasini, 1992; Micossi and Padoan, 1994). As Artis and Ormerod (1996) conclude: "The extent

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<sup>9</sup> See Collignon et al. (1994) for references and an overview.

of unemployment in Europe is mute witness to the price that has been paid for convergence on the low rates of inflation traditionally enjoyed in Germany".

Thus, European price stability has been paid for by high social costs. If this is so, why have we not seen more time inconsistent policy behaviour to increase employment? Have Europe's leaders become insensitive to the burden of high unemployment? This seems hardly reasonable: the rising number of jobless is an important factor in run-away public deficits and the electorate does not seem willing to put up with a steady deterioration of their living standards. A cynical view sees in the convergence progress to EMU a foreign policy ploy to "get rid of the Bundesbank". Once EMU has started, "surprise inflations" will reappear in the attempt to remedy unemployment. But this carries the risk, as we have shown, of undermining the sustainability of the single currency. The "policy ploy" would therefore be self defeating. Thus, the only correct answer must be: the high costs of disinflation have been paid because policy makers believe in the value of stable money as a policy aim in itself. They all have converged to a consensus of high price stability.

*A bias toward price stability in the European policy frame*

A commitment to price stability will ultimately increase output stability. Most economic models and nearly all estimated wage functions implicitly assume short-term a trade-off between output and inflation, to which monetary policy makers react.<sup>10</sup> If the central bank reveals a high preference for price stability compared to output stability, social partners will learn to take this into account and adjust wages. Therefore flexibility in labour markets is to a large extent a matter of the central bank's credibility. Yet, with more flexible price (i.e. wage) adjustments, quantity

adjustment (unemployment or migration) becomes less urgent. Therefore, the sacrifice ratios, i.e. the cost of disinflation in terms of unemployment, will fall (see Artis and Ormerod, 1994) and the slope of the Phillips curve will get flat.<sup>11</sup> With such a development the sustainability of EMU would be improved. The debate about sustainability of EMU with "rigid" labour markets boils down to the question: are nominal wage developments exogenously set and can they therefore destabilise the economy or are they endogenous to a large set of policy variables? It seems hard to believe that a market economy could survive if wage setting (as any kind of pricing) would take place without regard for the economic environment. Consequently the crucial issue is: which policy variables matter to wage bargainers? No doubt, the policy stance by the Central Bank - and in particular if it is not willing to accommodate wage increases in excess of productivity growth - is crucial. However, the credibility of the central bank's commitment to price stability is essentially determined by the record of past performance, i.e. reputation. In the case of the ECB this does not exist. But this does not mean, European monetary authorities are not committed to price stability. Several points can be made:

First of all, the studies about disinflation in the EMS and labour market effects provide us with an important piece of evidence about policy preferences in Europe: Monetary authorities in all low inflation converging countries clearly have given greater weight to price stability than to output stabilisation since the early 1980's. Sometimes this change in preferences has been gradual and slow, in other cases more determined and rapid, but it is at the basis of the newly regained culture of price stability in Europe.

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<sup>10</sup> In the next section we will look at the long-term relation of monetary policy and economic growth.

<sup>11</sup> This does not necessarily imply that output volatility will decline with inflation volatility.

This conclusion is further reinforced by some econometric studies estimating parameters for policy preferences directly. Clarida and Gertler (1997) have estimated a Taylor-rule reaction function for the Bundesbank where price stabilisation has 3.5 times the weight of output stability. This is close to Taylor's results for the USA (Taylor, 1996). Cukierman, Rodriguez and Webb (1995) have estimated monetary policy reaction functions for 17 industrial countries from the mid 70s to the end of the 80s with wage and foreign inflation, real exchange rates and unemployment as arguments. The results are heterogeneous and not frequently significant. Nevertheless they do allow us to derive some findings about relative emphasis of policy in these countries: If countries show high concern for price stability and/or foreign competitiveness they will lean against wage inflation by reducing monetary growth in reaction to accelerations in wage inflation. Accommodation of wage inflation is generally weaker in countries with more legally independent central banks. Therefore, given that the European System of Central Banks (ESCB) will be even more legally independent than the Bundesbank and less politically vulnerable than national central banks alone (Sievert, 1993), we must expect that policy preferences in the European system of Central banks will have converged to high preference for price stability over other arguments.

Secondly, the ESCB's initial disadvantage is also partly compensated by what Sievert (1993) called the "advantage of having money that one cannot create oneself": while it was the privilege of the Nation-State to print money (and to abuse of this sovereign right), under EMU this task is transferred to a community institution, the ESCB, which has the primary objective of maintaining price stability. Consequently the ESCB will be less vulnerable to pressures from different groups in

society, be they social partners, financial institutions or governments. The accommodation of inflationary wage settlements will become less likely because the central bank is more removed from social pressures.

Third, a well known alternative is the appointment of a "conservative central banker" (Rogoff, 1985). While in the Sievert model (1993) the preferences of society matter less to monetary policy because of a natural asymmetry of a centralised European federal institution and decentralised civil societies, in the Rogoff model society can be made better off by a central banker who does not share the social objective function, but instead places "too large" a weight on inflation-rate stabilisation relative to employment stabilisation. However, although the appointment of such a central bank governor reduces the time-consistent rate of inflation, it also suboptimally raises the variance of employment when supply shocks are large. Therefore, there is a trade-off between too much conservativeness and too little. Eijffinger (1997) has tried to estimate the optimal degree of conservativeness in Europe. He finds that conservativeness limits the degree of flexibility (discretion) in monetary policy, so that central banks with high reputation need little "extra-conservativeness". The optimal degree of conservativeness is higher, the higher the natural rate of unemployment, the higher the slope of the Philips curve, the less inflation-averse society and the smaller the variance of productivity shocks. However, this conservativeness is based on the assumption of a given degree of central bank independence. This will change with the European System of Central Banks in stage 3 of EMU. In many countries central bank independence will increase and consequently the required optimal degree of conservativeness will fall. Figure 3

shows the excess of EU-countries over German central bank conservativeness.<sup>12</sup> It shows that all other countries require a degree of conservativeness substantially higher (up to nearly 4 times in Spain) than Germany *before* stage 3 of EMU. This constrains the discretionary freedom of their monetary policies and increases output volatility. But after the start of EMU, when all share the benefit of high central bank independence, conservativeness can be reduced significantly everywhere (except in Germany which serves as bench mark). In Ireland, Austria, Netherlands, France, Belgium, Italy and Spain conservativeness can even fall below the German standard, given the economic structure in these countries. Therefore, it is unlikely that the central bank preferences in the council of the ESCB would be inclined to an inflationary bias.

Fourth, another approach of reducing the handicap of the non-existing track-record is to "borrow" the reputation of the Bundesbank, basically by following its "proven" monetary strategy. The EMI has now established the operational framework for the future ECB and it does indeed borrow some features from the Bundesbank - but also from other banks. Clearly, the intention is here to save as much reputation as possible.

A final approach to avoid the dangers of national misbehaviour has been outlined by Tietmeyer (1993): a restrictive selection of participating EMU countries.<sup>13</sup> However, the significant progress of convergence to the required criteria in the TEU prevents using the criteria in this sense. Our fiscal paper also shows that such a restrictive selection could be counterproductive. With respect

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<sup>12</sup> Germany is taken as the reference as many believe that the Bundesbank's reputation is the standard for the future ECB.

<sup>13</sup> "Aus meiner Sicht wird die Auswahlfrage wahrscheinlich zu einer Schicksalsfrage für die Entwicklung der Währungsunion und die Entwicklung der Gemeinschaft insgesamt werden" (Tietmeyer, 1993, p. 34)

to labour market developments and unit labour costs, few countries are subject to doubt, as the Fröhlich (1997) study shows. One should therefore not expect too much from a rigid interpretation of the convergence criteria for long term sustainability.

### **3. Price stability, wage costs, growth and unemployment**

Even if there is ample evidence that the political will of maintaining price stability in Europe is high and will prevail in EMU, the high levels of unemployment in Europe are a matter of concern. As the IMF (1997) put it: "A failure to address labour market problems would prevent Europe from realising its full growth potential, and could also weaken the credibility of the euro if financial markets perceive that persistent unemployment is eroding support for prudent macroeconomic policies" (p. 68). We may add to this that unemployment also has become an onerous charge for public finance<sup>14</sup>.

Unemployment clearly is Europe's most pressing problem. Figure 4 shows the evolution compared to the USA and Japan. Unemployment has increased from under 4 percent in the 1960s to over 10 percent. Although cyclical variations are perceivable, a dominant feature of unemployment is the high persistence even in times of relative booms. The so-called "natural" or structural rate of unemployment or NAIRU (non-accelerating-inflation rate of unemployment) is not a constant around which the actual rate oscillates, as it might have appeared the early 70s, but it has been

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<sup>14</sup> The European Commission (1993) has calculated the total cost of unemployment in 1993 at 210 000 million Ecu; Layard and Philpott (1991) have calculated that each unemployed in the UK cost the Exchequer over £ 8 000 a year. See also Adnett, 1996, p. 201. In Germany, recent estimates by the IAB reckon that the cost of unemployment is DM 158,9 bn or DM 40.075 per person (Süddeutsche Zeitung Nr. 277/1997)

itself increasing over time. Elmeskov (1993) and the OECD (1994) have captured this phenomenon by estimating that the NAIRUs have been rising in most European countries since the 1970s. The principal factor behind these high rates is the low outflow of workers from unemployment back into employment. Thus Europe's ill is the low rate of employment creation. Although there is no consensus in academic circles on the relative importance of particular causes of high European unemployment (Adnett, 1996), policy makers seem to converge to certain conclusions about labour market imperfections (OECD, 1994; IMF, 1997). Usual recommendations centre on making labour markets more flexible by reforming overly generous social benefit systems and the relevant tax systems, minimum wage regulations, centralised wage bargaining, rules, laws and norms concerning hiring, firing and the nature of work contracts which discourage the creation of new jobs by limiting employer's ability to dismiss employees.

Several European countries have made attempts in recent years to reform their labour markets; However, there has been little success in bringing down unemployment, except in Ireland, Denmark, the UK and the Netherlands. How does one explain the persistence of high unemployment in Europe despite attempts at reform? The IMF (1997) suggests that the reforms may have been insufficiently coherent and of piecemeal nature. But others, like Ball (1997), argue that the main cause of rising unemployment was tight monetary policy pursued to reduce inflation. Traditional explanations based on exogenous shifts of factors like bargaining, taxes, labour-market rigidities most fail empirical scrutiny. Instead, there is a strong empirical relation between the natural rate in unemployment and disinflation. This favours hysteresis theories whereby the evolution of actual unemployment determines the natural rate (Belke, 1996). We are still lacking a

clear understanding of these phenomena. In the words of the OECD jobs study: "despite considerable effort, it has been hard to identify changes in the basic structural determinants in the natural unemployment rate that are large enough to account for the observed trend increase in actual unemployment during the 1980s" (1994, Vol. I p. 67). Thus, it might well be that lack of knowledge, as discussed by Romer and Romer (1997), is becoming a source of policy failure. In this section we will attempt to develop a simple model that explains persistent unemployment as a consequence of inconsistent wage and monetary policies.

#### *Economic growth and the neutrality proposition of money*

In the second section of this paper the employment motive for a potential inflationary bias in monetary policy was put forward. This is a short-term argument for time-inconsistent policies. It is generally understood that in the long-term nominal rigidities are overcome and prices adjust, so that monetary policy has no long-term effect on the real economy. Only cyclical variations and transitory deviations can be affected by money. Macroeconomic policy is "relatively impotent in dealing with unemployment resulting from structural causes" (OECD, 1994 p. 66). However, as most theories would readily concede, monetary policy and interest rates determine at least to some degree the level of investment. To the extent that capital accumulation contributes to long-term growth, monetary policy might therefore have an impact on employment that goes beyond the transitory shocks of time inconsistent policies.

There is little doubt that economic growth is an important factor in the evolution of employment rates. Even in the four countries that are often mentioned as examples for labour market reforms

and the reduction of unemployment, growth has been a significant factor. Table 1 suggests that the significant increase in the average growth rate from 1989-93 to 1994-98 has been correlated with reduced unemployment in the UK, Ireland and Denmark; but in the Netherlands where growth is not improving, or even falling, unemployment rises. The IMF (1997) explains this by "cyclical" factors, that may have had an important effect in reducing unemployment in the successfully reforming countries. However, if that these cyclical factors are related to demand management, could they also explain some of the more long-term tendencies? This does not exclude labour market reforms, but it opens a second angle for attacking unemployment.

	Average growth rate			Average unemployment rate		
	1989-93	1994-98	Diff.	1989-93	1994-98	Diff.
UK	0.68	3.02	2.34	8.0	7.16	-0.8
Ireland	4.56	7.64	3.08	14.9	11.62	-3.3
Denmark	0.94	3.04	2.10	10.5	9.28	-1.2
Netherlands	2.78	3.06	0.28	7.1	7.46	0.3
Germany	3.08	2.26	-0.82	7.0	10.36	3.4
France	1.5	2.28	0.78	9.9	12.24	2.3
Italy	1.12	1.82	0.7	11.0	11.9	0.9

The connection between economic growth and employment is simple: new jobs are only created if economic growth exceeds the growth of productivity. This is shown for Europe in figure 5. Both economic growth and productivity growth have fallen in the 1970, but productivity has risen on average at a fairly steady rate of nearly 2 percent since the early 1980s. In the boom of the late

1980s, economic growth rose well above productivity so that new jobs were created and unemployment fell. By contrast in the USA, productivity growth has been much lower, and economic growth has created many more jobs. This demands an explanation. Given that productivity growth in the EU has been stable at an average 1.9 percent p.a., the European Union would require growth rates of 3 to 3 1/2 percent p.a. in order to mobilise its employment potential fully over the medium-term. This compares with labour productivity growth of 1/2 to 1 percent in the USA and effective economic growth rates of about 2 1/2% (European Commission, 1997). Thus, over the long-term, the essential difference between the US and the EU performance has been the difference in labour productivity growth. European excess productivity growth was essentially due to a high rate of substitution of capital for labour, while in America productivity increased nearly exclusively as a consequence of technological progress alone. However, during the 1990s, the rising rate of unemployment in Europe and the falling rate in the USA must be explained by the difference in economic growth rates (1991-95: 2.3% for the USA, 1.4% for the EU) and the rate of capital substitution 0.2% USA; 1.1% EU), while total factor productivity improved in both economies along the same lines (0.9% US; 1.0 EU).

This poses two questions: why has economic growth in Europe been so low and why has the rate of capital substitution been so high? Supply-siders blame rigid labour and product markets. Yet, the European Single Market programme has significantly improved the flexibility of product markets. Reform policies aimed at deregulation and flexibilisation of labour markets have also taken place in many countries, even if at a more careful pace. It may be these reforms have been insufficient. It may also be that more time is needed for them to bear fruit. But not surprisingly,

others, like Modigliani (1997), have emphasised the lack of effective demand in Europe's policy mix. Even the OECD (1994) has acknowledged "a deficiency of demand...reflected in significant output gaps" (p. 66). Often, demand-siders focus on monetary policies to remedy the unemployment crisis. Of course, this division reflects the debate between (neo- or new) classical economists and Keynesians. The first believe that all markets, including the labour market, clear perpetually, unless institutional impediments distort it. The second believe that market economies can suffer from chronic and persistent demand failures which can be remedied by efficient demand management policies (Benassi et al., 1994).

The debate between economists, and the policy recommendations that follow, hinge on one central axiom: market clearing. If the classical axiom holds, labour market reforms to overcome market imperfections must yield higher employment. New Keynesian Economics has incorporated previous criticism about the microfoundations of a macro-theory and the assumption of rational expectations. Its distinguishing mark is the believe that markets do not always clear because there are systemic real rigidities due to asymmetric information and co-ordination failures (Benassi et al, 1994, p.18). If they are right, the resorption of unemployment requires more than flexible labour markets.

However, even in the context of general equilibrium models which serve as a reference for classical economists, there is a more fundamental reason why labour markets *cannot clear*. This reason derives from what Riese (1986a) calls "the monetary foundation of interest rates". In general equilibrium models with different markets, Walras' Law says that the sum of net market

demands, valued at whatever prices generated those demands, must be exactly zero. This means that the aggregate positive excess demand in one market must be exactly offset by the negative excess demand (i.e. the excess supply) in other markets. This law is an identity that expresses the interdependence of different markets that stems from the budget constraint. In a monetary economy this Law must also apply to money, product and labour markets. Yet, as every central banker knows <sup>15</sup>(but unfortunately only few economists), the purpose of monetary policy is to create a permanent and structural shortage of central bank reserves in the money market, in order to allow the monetary authority to set and steer short-term interest rates. This means, that it is the function of a central bank to create a "disequilibrium" in the sense the demand for credit in the money market permanently exceeds the supply.<sup>16</sup> But this implies that the structural excess demand for money creates as its mirror image an excess supply of resources. The transmission process goes via the capital market and investment to the goods and labour markets. In the product markets the "scarcity of money" gives rise to the buyer's markets which are characteristic for market economies, but in the labour market it causes a structural surplus of labour supply (Riese, 1990). Obviously, the larger the excess demand for money, i.e. the tighter monetary policy, the higher is ultimately the excess supply in other markets. The theoretical necessity that all markets cannot clear simultaneously in a monetary economy is not incompatible with multiple equilibria. By adjusting the employment of economic resources to effective demand, the goods market can indeed exhibit a tendency to return to a market clearing equilibrium. Yet, this will

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<sup>15</sup> "Decisions on (monetary policy instruments) will have to be made by the ECB with a view to the functions the set of instruments is expected to fulfil and, inter alia, against the background of considerations such as the link between the monetary policy strategy and the instruments, the structural liquidity deficit or surplus of the banking sector at that time and the likely volatility of autonomous liquidity factors." (EMI, 1997, p.14)

<sup>16</sup> Because it is a permanent feature, the money market is in "expectational" equilibrium in the sense that market participants' expectations are correct.

cause necessarily a structural surplus in the labour market as a counterpart to the money market shortage, although the degree of (un-)employment of labour may vary. Thus, equilibrium in the labour market designates simply a state or path along which expectations are correct (Phelps, 1994). Guaranteeing the survival of the unemployed part of the labour force by paying transfers and social benefits may then be a matter of social charity or justice, but it does not necessarily distort the proper functioning of a market economy.

These considerations are important for the understanding of the role of monetary policy in the long-term evolution of Europe's employment performance. The claim, of course, is not that the central bank is allmighty. In fact, it is not for it is only one, although an important, player in the money market. But its policy actions set the refinance conditions in the capital market which is also influenced by other factors, not least risk and uncertainty. But if the tightness of the monetary policy stance determines the degree of (labour) resource utilisation via investor's portfolio equilibrium, then monetary policy may not be without effect on employment. But this is a matter of the general or structural equilibrium of the economy and not a short-term trade-off between inflation and unemployment. The question is therefore under what conditions long-term neutrality of money does not apply.<sup>17</sup> Monetary neutrality means that nominal variables have nominal effects, but do not alter real quantities. For example a change in nominal interest rates may not alter real interest rates. But if monetary policy can affect short-term real interest rates by setting the nominal rate (because in the short-term the inflation rate is fixed) and if this has real effects on long-term rates, investment, growth and employment, then the neutrality hypothesis would only hold if all

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<sup>17</sup> Blanchard, 1990, reminds us that the long-run neutrality hypothesis is imposed on models out of theoretical considerations and is a matter of faith rather than empirical evidence.

these real effects were short lived. But if a temporary disturbance would not only have transitory effects so that the whole history of disturbances, i.e. the actual timepath, becomes relevant, then the system would not necessarily return to its "natural rate" equilibrium but evolve along a random walk.

This feature is caught in hysteresis models.<sup>18</sup> The most well-known is the insider-outsider model of wage bargaining in which the evolution of wages and employment depends critically upon whether an insider who becomes unemployed retains influence on the wage bargain. However, strong empirical evidence supporting this model is still lacking; the facts for Europe are rather pointing at persistence of real wage rigidity than at hysteresis problems stemming from insider membership (Adnett, 1996, p. 217). In other words, it could well be that it is not so much the structural "rigidity" of labour markets that has determined wage settlements, but rather the level of inflation. An alternative approach might therefore look for the long-term consequences of short-term monetary policy actions. The following simple model aims at explaining the link between monetary policy and unemployment hysteresis.

#### *A model of unemployment hysteresis*

The link between monetary policy and economic growth in this model is investment. The central bank sets nominal short-term interest rates ( $i$ ) in the money market and because inflation rates are fixed in the short-run, it also sets real rates. We will assume for reasons of simplicity that  $i$  is the

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<sup>18</sup> Hysteresis occurs when a system does not return to its previous state after the disturbance that has caused its deviation is removed. Thus, a temporary cause has a lasting effect. It is not enough to restore the original state in order to restore the original environment. Hysteresis occurs only when a dynamic system of difference equations possesses one or more unit roots (Benassi et al., 1994).

risk free interest rate which is identical with the rate on credit.<sup>19</sup> Firms finance all investment with borrowed capital at the fixed interest rate ( $i$ ). Before undertaking productive investment, the firm evaluates its profitability by discounting future returns and costs. The internal rate of return ( $i_N$ ) is the profit rate at which the present value of the future cash-flow is zero. The higher this rate, the greater the incentive to invest; if it is low, and especially if it stands below the money market rate, investment will not be forthcoming. This relation is expressed by Tobin's  $q$  which can be defined as the ratio of the market value to capital replacement cost or simply the ratio to the internal return to the risk free money market rate (Bofinger et al, 1996, p. 556). It can be put in nominal or real terms:

$$(1) \quad q = \frac{1+i_N}{1+i} = \frac{1+i_N - E(p)}{(1+i-p)} \approx \frac{R}{r}$$

where  $p$  as inflation rate,  $R$  the internal rate of real return and  $r = i - p$  the real short-term interest rate.<sup>20</sup> A different way of describing  $q$  is to say it reflects the extra mark-up or economic profit that productive investment would earn over and above the placing of funds in risk-free money market certificates. It is clear that, ceteris paribus,  $q$  will fall when the central bank rises interest rates. In models with neoclassical production functions  $R$  is equivalent to the marginal product of capital, a technical variable dependent on the size of the capital stock. Investment will then be determined by the growth of the capital stock to the point where the marginal product of capital is equal to  $r$  and  $q = 1$ . In reality, investment may already stop at an earlier rate, say  $\bar{q}$ , if a minimum profit rate is required for investment. However, the crucial point about the "monetary foundation

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<sup>19</sup> Obviously, this is an extreme simplification. It abstracts from risk considerations and strictly applies only to a closed economy. It nevertheless makes the point that is relevant here. Our argument is supported by the fact that EMU will create a much more closed economy than applies to Europe's individual national economies. For a full treatment of open economy effects on the theory of  $q$ -profits see Collignon, 1997a.

of interest rates" is that  $i$  (and hence  $r$ ) are exogenously given by monetary policy, while the marginal product of capital adjusts - and not the other way round.<sup>21</sup> In a Keynesian environment  $R$  must be itself a function of  $r$ , for an increase in real interest rates would have negative consequences for effective demand which would affect the future cash-flow of the firm and therefore also the internal rate of return.<sup>22</sup> Yet, whether the two variables are independent or not, does not invalidate the basic insight of  $q$ : a rise of  $i$  will always affect  $q$  negatively; if  $R$  is negatively correlated to  $i$ , the impact of an increase in  $i$  will simply be stronger.

The higher  $q$ , the higher is the incentive for firms to invest. By aggregating firm investment we obtain the aggregate investment function (Tobin and Brainard, 1977):

$$(2) \quad \frac{I}{K} = j (q - \bar{q}) + a_0$$

where  $\bar{q}$  is the "normal" value of  $q$ , perhaps 1, with  $j (+) = +$ ,  $j (0) = 0$ ,  $j (-) = -$  and  $a_0$  some autonomous rate of capital accumulation ("animal spirits"). Growth equilibrium occurs when the savings out of net income support net investment so that  $s \frac{Py}{K} = a_0$  with  $s$  as savings rate,  $Py$  as net income and  $q = \bar{q}$ . It should be clear that  $q$  represents profits as entrepreneurial quasi-rents which tend to disappear over time if monetary policy remained stable ( $i$  constant) and investment

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<sup>20</sup> Under perfect foresight, nominal and real  $q$ 's are identical; under rational expectations  $q$  is a white noise process. Risk considerations may also influence the value of  $q$ .

<sup>21</sup> It may be helpful to think about a period in this model as the time between an interest rate change which rises  $q$  and the adjustment in investment which brings  $q$  back to equilibrium.

<sup>22</sup> In the General Theory, however, Keynes (1936) made great efforts to prove that  $R$  was independent from  $r$ . If all agents had absolute perfect foresight, including about the timing of interest rate increases, then  $R$  would indeed be independent of  $r$ .

adjusted to profitable opportunities. But if, by lifting or lowering  $q$ , short-term policy measures have real effects, then the consequences of transitory disequilibria may become long lasting.<sup>23</sup>

Next we may determine output. In our simple model, we will assume aggregate output as being produced using two factors of production, capital ( $K$ ) and labour ( $L$ ):

$$(3) \quad y = F(K, L)$$

If we divide output by labour we get labour productivity as a function of capital intensity:

$$(4) \quad l = f(k), \quad f'(k) > 0, \quad f''(k) < 0.$$

With  $l = y/L$  and  $k = K/L$ .  $f'(k)$  is the marginal product of capital per unit of labour. We also assume diminishing returns.

Employment growth will depend on investment. The capital stock will have to grow at the rate of the labour force plus the deepening of the capital/labour ratio ( $dk/k$ ) which determines the rate at which labour is substituted by capital:

$$(5) \quad \frac{I}{K} = \frac{dk}{k} + n$$

where  $n$  is the growth rate of employment,  $dk/k$  is the rate at which the capital intensity increases.

Given that our simple model abstracts from technological progress, an increase in  $k$  is the only way to rise productivity. This can be derived from (4) which is a monotonically increasing function.

Therefore, its inverse  $k = f^{-1}(l)$  exists with the derivative

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<sup>23</sup> If  $q = \bar{q}$ , planned investment is equal to planned savings and in aggregate no quasi-rents accrue to entrepreneurs (Collignon, 1997a). Therefore, the condition of equilibrium reflects an "IS"-locus in the  $(q, I)$ -space (Tobin and Brainard, 1977). This implies also that profitable investment opportunities require a (temporary) deviation from IS-equilibrium.

$$(6) \quad \frac{dk}{dl} = \frac{1}{f'(k)}$$

Hence, the rate at which the capital intensity increases depends on the required increase in productivity:

$$(7) \quad dk = \frac{1}{f'(k)} \cdot dl$$

If productivity is to remain constant ( $dl = 0$ ), the rate of capital accumulation will be identical with employment growth. Higher employment requires higher capital accumulation or lower productivity growth or both. We can now substitute (7) into (5) and (2) and obtain the growth rate of employment

$$(8) \quad n = a_0 + j \left( q - \bar{q} \right) - \frac{1}{f'(k)} \cdot \frac{dl}{k}$$

In the steady state equilibrium we have  $n = \bar{n}$ , i.e. the natural growth rate of employment with  $q = \bar{q}$  and  $dl = 0$ , so that  $\bar{n} = a_0$ . The full employment level evolves at the rate  $E_f(1 + \bar{n})^t$ . For purposes of simplification we will now assume that  $\bar{n} = a_0 = 0$ , so that the full employment level  $E_f$  remains constant over time. The actual employment level is  $E_0(1 + n)^t$  and the unemployment rate grows at the difference between  $\bar{n}$  and  $n$ . The rate of actual employment growth will depend on  $dl$ , i. e. the growth of production, and the profit function  $j(q - \bar{q})$ . Yet, given that  $q$  is in our simplifying model a function of  $i$  which is set by the central bank, monetary policy has persistent effects on the (un-)employment level. For, if a rise in interest rates lowers  $q$ , (assuming we start in equilibrium and  $a_0 = dl = 0$ ),  $n$  becomes negative and unemployment rises.<sup>24</sup> However, given that the capital stock adjusts and  $q$  return to equilibrium, *the growth rate of employment* will return to

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<sup>24</sup> Obviously, if we allowed risk considerations in capital markets and changes in liquidity preferences, these factors could cause similar effects. Within certain limits, monetary policy might be able to compensate those effects, but obviously not in all cases.

its natural rate (here  $\bar{n} = 0$ ), but the *employment level* will be lower and the "natural" rate of unemployment will be higher. Only if interest rates are lowered so that  $n$  exceeds the natural rate, will unemployment be reduced.

It follows that monetary policy can stimulate investment and economic activity by influencing the expected profitability via interest rates. However, monetary policy is constrained by the need to maintain price stability, either explicitly as in the ECB statutes or implicitly in order to maintain the functionality of the monetary system. The link between the price level and profitability has been shown by Keynes's (1930) fundamental equation. It can be reformulated in the form (see Collignon, 1997a):

$$(9) \quad P = \frac{w}{1} + q \cdot i_0 \cdot b$$

where  $w$  stands for the nominal wage rate, and  $b$  is the capital-output ratio which is assumed to be identical with the volume of credit outstanding per unit of output;  $i_0$  the nominal interest rate at which funds have been borrowed, so that  $i_0 b$  is the (net) debt service per unit of (net) output.<sup>25</sup> Assuming in equilibrium  $\bar{q} = 1$ , we have the equilibrium price level determined by unit labour costs ( $w/1$ ) and the (rental) cost of capital per output. This implies prices are set as a mark-up on wages on the microlevel. This mark-up has to cover at least the cost of capital, but in order to incite new investment, it should be even higher and this would imply  $q > 1$ .<sup>26</sup>

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<sup>25</sup> For simplicity, we will assume here that all credit contracts have fixed interest rates like corporate bonds.

<sup>26</sup> For evidence on time-varying mark-ups see Forsman et al., 1997, and Martins et al., 1996)

Inflationary dynamics can be separated into wage cost push inflation when nominal wages increase more than productivity (wage inflation) and into demand or (transitory) profit inflation when  $q$  increases after a cut in interest rates.

From (9) we can derive after some manipulation the inflation rate as:

$$(10) \quad p = (\dot{w} - \dot{l})S_w + q_i \frac{i_0 b}{p} \cdot \Delta i$$

where  $p$  the inflation rate,  $\dot{w}$  and  $\dot{l}$  the proportional rate of increase in nominal wages and productivity,  $S_w$  the labour share in (net) national income,  $b/p$  the ratio of corporate debt to turnover.<sup>27</sup>  $\Delta i$  is the variation of interest rates undertaken by the central bank and  $q_i$  is the partial derivative of  $q$  with respect to  $i$ , i.e. the sensitivity by which profits respond to interest rates. Because of equation (1) we know that  $q_i < 0$  and close to  $-1$ .

Monetary policy has a direct impact on profit inflation: a rise in interest rates ( $\Delta i$ ) lowers  $p$  because lower effective demand will reduce profits ( $q_i < 0$ ). But the effectiveness of this measure depends to a large degree on labour cost developments. If the wage share in the economy ( $S_w$ ) is high, and unit labour costs increase rapidly ( $\dot{w} - \dot{l}$  is large), monetary tightening is unlikely to reduce inflation expectations to zero. The central bank will then have to maintain the tight monetary stance until wage increases fall to the level of productivity increases. We can formalise this by deriving the following monetary policy rule from (10):

$$(11) \quad \Delta i = \frac{1}{b} \left[ s_w (\dot{w} - \dot{i}) - p_m \right]$$

where  $b = -\frac{i_0 b}{p} q_i$  and  $p_m$  is the inflation target of the central bank. The extent by which the monetary authorities raise interest rates is determined by the structural parameter  $b$  and the increase in unit labour cost, weighted at the labour share minus the acceptable rate of inflation ( $p_m$ ). Obviously, the lower the inflation target, the sharper will be the interest rate increase as a response to a given wage cost development. The structural parameter  $b$  depends on the debt structure in the economy.

A fully accommodating monetary policy would keep interest rates constant and adjust its inflation target to the wage cost developments such that the expression in brackets equals zero. Monetary policy that is committed to price stability would set  $p_m$  close to zero and raise interest rates aggressively to fight inflation. Thus, it is not surprising that real interest rates have been rising in the period of disinflation since the early 1980s<sup>28</sup> (Ciocca and Nardozi, 1996). This must have had direct consequences for employment.

Let us assume that employment stands at the initial level  $E_0$  and that the economy is in equilibrium with  $q = \bar{q} = 1$  and  $dI = 0$ . Next the central bank lowers interest rates, say because it pursues a time-inconsistent objective. As a consequence  $q$  will rise, investment will be stimulated beyond planned savings and quasi-rents appear. This disequilibrium translates in an upward move

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<sup>27</sup> If we assume flexible interest rates on contracts the equation would be:  $p = (\dot{w} - \dot{i}) s_w + \left( q_i \frac{i_0 b}{p} + q \frac{b}{p} \right) \Delta i$

<sup>28</sup> What is, however, surprising is that they have not come down more, after price stability has been obtained.

of the price level according to (9) and (10). If we assume that unit labour costs do not change, then this is a transitory price level movement. Investment and employment increase until the diminishing returns from capital have reduced  $q$  back to  $I$  and competition has reduced prices back to the equilibrium level. But during the adjustment process, real variables have changed: the new employment level  $E_t$  is higher than  $E_0$ , while interest rates are lower and prices are stable. The NAIRU (non-accelerating-inflation rate of unemployment) has fallen.

However, this is an unlikely story. Wages will respond to the move in prices, either because wage bargainers cannot distinguish between transitory price adjustments and continued inflation, or because workers tend to resist the new distribution of income in favour of profits or simply because of a Phillips-curve trade-off where wages increase with employment. We can formulate the wage equation as:

$$(12) \quad \dot{w}_t = g_1 E_t(p_{t+1}) + g_2 p_{t-1} + g_3 Z_t$$

where  $Z_t$  is a vector of arguments that influence wage bargaining other than inflation. If  $g_1 = 1$  and  $g_2 = 0$ , wage bargaining is exclusively forward looking, in the inverse case exclusively backward looking. In most cases, wages are set as a mix of both, so that  $g_1, g_2 > 0$ . For simplicity we will assume  $g_3 = 0$ <sup>29</sup> and substitute (12) into (11):

$$(11') \quad \dot{i}_t = i_{t-1} + \frac{1}{b} \left[ s_w \left( g_1 E_{t-1}(p_t) + g_2 p_{t-1} - \dot{i}_t \right) - p_m \right]$$

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<sup>29</sup> Empirical estimates of wage equations show that  $g_3$  is normally much lower than  $g_1$  or  $g_2$ . See De Grauwe, Micossi, Tullio, 1996. Allowing for Philipps-curve dynamics would add nothing to the logic of our model, although it might lower the persistence effect.

This equation gives the monetary policy rule at which the interest rate should be set, if the authorities pursue an inflation target. If the central bank has a credible reputation to maintain price stability, we have  $p_m = E(p_t) = 0$ . Thus wage cost inflation pressures are lower than if the central bank has a low reputation. From this point of view, the ECB is likely to benefit from the clear commitment to price stability, and its high degree of independence; but it will also need to earn its reputation in practice.

Yet, as long as  $g_2 > 0$ , past inflation will be reflected in wage bargaining. This is a form of real wage rigidity, which will inevitably reduce employment: first firms will react to cost pressures by increasing productivity ( $dl > 0$ ) which lowers employment growth according to equation (8). This may explain the high rate of labour substitution by capital which is prevalent in Europe. Secondly, the central bank will rise interest rates according to (11') in order to fight inflation (10). Yet, if the investment adjustment process has already eliminated the quasi-rent, so that  $q$  is back to 1, then the rise of the interest rate to the new level  $i_t$  implies that  $q_t < 0$ . Both factors will reduce employment ( $n < 0$ ) according to equation (8)<sup>30</sup>.

The restrictive phase of monetary policy will only come to a halt when the growth in unit labour costs stops, so that  $\dot{w} - \dot{l} = g_2 p_{t-1} - \dot{l}_t = 0$ . At that point we will have reached a new level of the NAIRU which is clearly higher than the previous one. This increase in the NAIRU is a consequence of the disinflation process when past inflation matters to wage bargainers ( $g_2 \neq 0$ )

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<sup>30</sup> Technically equation (11') is the difference equation with a unit root which can explain the hysteresis phenomenon in the natural rate of unemployment. The parameter  $g_2$  can explain the persistence of negative demand.

and the central bank is committed to contain inflation by rising interest rates. But if the stability of unit labour costs is achieved by high productivity increases, the job-creating impact of economic growth may still diminish. Analytically we should distinguish between productivity increases due to technological progress (total factor productivity) and increases in capital intensity. We have assumed the former to be zero in our model, but in reality this would allow employment-neutral wage increases. On the other hand, capital deepening leads to the substitution of labour by capital and this reduces the job-creating effect of growth. In our model labour substitution would only cease if nominal wage increases follow the rate of technological progress.

What can be done to lower unemployment? If the central bank simply lowered interest rates, little would be gained, for it would re-ignite the vicious circle of rising inflation followed by disinflation with still higher structural unemployment. This phenomenon has been referred to as "speed limits" on the rate of reduction in unemployment (OECD, 1994 p. 69). The only way to stimulate economic growth and employment without inflation is obtained from equation (10) as the condition:

$$(11'') \quad \Delta i = \frac{S_w}{b} \left( \begin{array}{c} \cdot \\ w - i \end{array} \right)$$

that is to say a non-inflationary reduction in interest rates requires a *fall* in unit labour costs. Higher profit margins would then stimulate investment and growth.  $q$  would rise above equilibrium without causing an upward shift in the price level. There are, however, some important constraints to this strategy:

First, if nominal wages are rigid, a fall in unit labour costs can only come from an increase in productivity. In our simplified model, this increase must result from a higher rate of substitution of labour by capital and this reduces the employment creating effect of economic growth, according to (8). If, however, we would admit technological progress into our model, the margins for interest rate reductions are increased. Second, sustainable employment growth is only possible in an environment of low inflation, for otherwise wage increases will be higher than productivity increases and interest rates have to be raised and not lowered. Consequently, given that EMU starts in an environment of historically low rates of inflation, a sustainable monetary policy that keeps prices stable and supports job creation is possible. The United States have documented this development over the last 6 years.

Third, wage restraint alone, without supporting cuts in interest rates, will not create new jobs. For if  $q = 1$  and  $\Delta i = 0$  and  $\left(\dot{w} - \dot{i}\right) < 0$ , the price level will simply fall (see equation (9) and (10)) without renewed growth. Wage restraint then simply causes a deflation.

We may now summarise our model:

1. At a given technology, the level of employment is determined by the level of the capital stock.
2. The variation in employment and therefore the change in unemployment is determined by (net) investment and the change in productivity.
3. Investment depends on profit expectations and therefore on the deviation of interest rates from their equilibrium level. In equilibrium, interest rates determine the capital stock and

therefore the level of employment. The adjustment of the disequilibrium goes from investment (the dependent variable) to interest rates (the independent variable).

4. Interest rates are set by the central banks in response to inflation expectations. The higher the degree of real wage resistance, the higher the increase required to maintain price stability. Also, the lower the central bank's credibility, the higher the interest rate rise.
5. Stable unit labour costs imply constancy in the interest rate level and therefore of the equilibrium capital stock. However, employment only remains stable when nominal wages are stable; if unit labour costs are stabilised by rising productivity beyond the level of technological progress, equilibrium unemployment increases.
6. Non-inflationary employment growth is possible if, and only if, unit labour costs and interest rates both fall together, so that the price level stays constant and the profit margin augments. A reduction in unit labour costs without an interest rate cut would lead to deflation and not to price stability, nor employment growth.
7. Hysteresis effects on (un-)employment levels are derived from interest rate dynamics. Persistence of *rising* unemployment levels are a consequence of real wage resistance. Both together explain the upward shifts in the equilibrium unemployment rate and the slow downward adjustment.

It may surprise that we have not explicitly modelled the labour market in terms of demand for and supply of labour services. Such models usually explain unemployment as a disequilibrium resulting from "competition-restraining institutions and anti-competitive practises in the labour markets"

which result in "wages that are set too high for market-clearing" (OECD, 1994 Vol. II, p. 52). However, as we have pointed out, a monetary economy necessarily creates the labour market as a buyer's market. The question is then: wages are too high compared to what? The answer is simple: compared to prices, for this determines the profitability of investment (and labour)<sup>31</sup>. This makes monetary policy a non-negligible factor in the determination of employment. It is, however, not the only one: firms control the production technology and therefore productivity, and wage bargainers set the nominal wages in reference to prices, past wages, productivity, and other factors, of which unemployment is certainly less irrelevant than insider-outsider models suggest.

It is today common place to blame labour market inflexibilities for unemployment. Yet, the word "flexibility" has become a weasel word which increasingly overtakes the abuse of the adjective "social" of which Hayek (1988) wrote that it had "probably become the most confusing expression in our entire moral and political vocabulary...and now increasingly supplants the word "good" as a designation of what is morally right" (p. 114). In order to remedy the confusion, it is recommendable to point out clearly, what is to be made more "flexible".

In our model, what matters for price stability most are unit labour costs. They depend on nominal wages and productivity. If nominal wages are inflexible, productivity growth will lower costs. If prices fall with costs, real wages increase; therefore, flexible goods markets create real wage flexibility if nominal wages are inflexible. However, if both nominal wages and the price level are kept stable, which is characteristic of sound money, then real wages and employment will also be

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<sup>31</sup> This is also the only logically stringent analysis, for comparing nominal wages and prices refers to the same value category, while comparing wages to employment is like comparing apples to oranges.

able to remain stable<sup>32</sup>. This is a powerful argument for maintaining price stability in the long run. Consequently, the *focus should be on nominal wage setting*.

Nominal wages are set by wage bargainers in a complex process reflecting not only economic calculus, but also cultural values. By adopting a single currency, Europe opts for a coherence in its economic system, which will require a corresponding consistent wage setting behaviour. The appropriate long term rule is that nominal wages unit must grow at the rate of normal productivity growth. This helps stabilise unit labour costs in the long run and avoids the need for excessively tight monetary policies. When it is necessary to reduce unemployment in the short run, nominal wages should lag behind productivity increases, but monetary policy would have to cut interest rates simultaneously.

It may well be, that structural reforms in the institutions of labour and society at large are required to ensure that productivity oriented wage settlements are implemented in practice. This is not subject of this report. There are, however, indications that stability oriented wage settlements have gained prominence in Europe over recent years.

### *Labour market developments*

Where do we stand in Europe with respect to labour cost developments? As figure 1 in the next chapter (Fröhlich 1997) shows, European unit labour costs have grown significantly faster than in the USA or Japan. This may explain, why monetary policy had to be more restrictive in Europe. Our figure 6 shows the annual rate of growth in unit labour costs in the EU and the USA. In the

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<sup>32</sup> Adjustment should be made for normal technological progress and resulting increases in labour productivity.

1970s monetary policy, as measured by real long term interest rates, was more accommodating in Europe and hence labour costs grew more rapidly. In the early 1980s, monetary policy moved to re-establish price stability everywhere, but was at first more restrictive in the US. As a consequence unit labour costs decelerated more rapidly in America than in Europe but unemployment rates also remained higher. Only in the mid 1980s did monetary policy ease, although it remained more restrictive in Europe. Unemployment has come down during this period, but less in the EU. Except for the transitory shock resulting from German unification in 1992, real interest rates have been higher in Europe ever since 1985, and unit labour costs have grown in the EU less than in the US (in some EU member countries they have even fallen). But the aggregate European monetary policy stance has not significantly softened. This is in clear contrast to the actions pursued by the FED in America. Not surprisingly, unemployment remains high and rising in Europe, but is falling in the United States (see figure 4).

For the sustainability of EMU, it would be useful that - at least in the early years - nominal wages increase in line with average productivity.<sup>33</sup> Otherwise, the new European System of Central Banks would immediately have to prove its commitment to price stability by overly tight monetary policies (i.e.  $q < 1$ ). Has Europe progressed to a uniform wage bargaining model which aims at stabilising unit costs?

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<sup>33</sup> The European Commission works with the wage policy rule that *real* wage increases should remain one percentage-point below productivity increases in order to rise the profit share and the return on the rising capital stock. Technically this is compatible with a rule of constant unit labour costs if inflation is 1 percent. However, what matters from a monetary policy perspective is the link between nominal and not real wages to productivity growth, for otherwise monetary policy has no nominal anchor.

Early studies, like Barrell et al. (1992) and Horn and Zwiener (1992) are sceptical; they find little evidence that the wage formation process has become very similar across Europe despite convergence in inflation. In fact, insofar as the ERM was instrumental for this purpose, price stability was imported, while in Germany disinflation came about by the Bundesbank's commitment to price stability and not by exchange rate policies. It is widely believed that German wage restraint is related to the credibility of the Bundesbank to threaten and implement interest rate increases if nominal wage bargains are considered as 'excessive' (Streek, 1994). In fact, the Bundesbank has explicitly acknowledged that an important purpose of its money supply targeting is « to make the aims of monetary policy clearer to labour and management, whose co-operation is essential if inflation is to be brought under control without detrimental effects to employment ».<sup>34</sup> This strategy seems to have worked, for wage behaviour is such that wages rise in line with productivity in the long-run (Horn and Zwiener, 1992). However, structural changes in wage bargaining do not seem evident in the other ERM-countries. Horn and Zwiener (1992) conclude: "the shift towards counter-inflationary policies and the credibility which participation in the ERM has lent to the outcome of such policies in terms of expectations seems to have contributed more to the convergence of inflation rates than changes in wage bargaining behaviour" (p. 93). In terms of our equation (12) this means that the value of the  $\alpha$ -coefficients have not converged, but  $\beta$

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<sup>34</sup> The passage is quoted by Clarida and Gertler, 1997, with reference to a Bundesbank publication dated 1989. A more recent version has purified and neutralised the passage: "..., daß es nützlich wäre, allen Verantwortlichen durch ein quantifiziertes Geldmengenziel den monetären Rahmen für das nominale gesamtwirtschaftliche Ausgabenwachstum ausdrücklich vorzugeben. Dies geschah in der Hoffnung, durch ein Geldmengenziel die Anpassung an die von der Geldpolitik verfolgte stabilitätsorientierte Linie zu fördern, mögliche Zweifel an der Ernsthaftigkeit der monetären Stabilisierungsbemühungen der Notenbank auszuräumen und eine widerspruchsfreie Abstimmung der einzelnen Teilbereiche der Wirtschaftspolitik zu erleichtern. Damit sollte gleichzeitig auch das Risiko vermindert werden, vermeidbar erscheinenden Fehlentwicklungen später durch schmerzhafteste Restriktionsmaßnahmen entgegenwirken zu müssen. Möglich geworden war eine Geldmengenstrategie durch den Zusammenbruch des Systems von Bretton Woods im Jahre 1973 und den Übergang zu flexiblen Wechselkursen,

has. If this were true, the sustainability of EMU could be fragile. With a single currency the exchange rate can not compensate for diverging unit labour costs.<sup>35</sup> If unit labour costs rose more in some regions than others, while inflation rates have converged and are unified<sup>36</sup>, the situation is not sustainable. Profit margins, investment and employment would be the adjustment variables. Regional difficulties could then lead to political claims for transfers (Flassbeck, 1994). Therefore, sustainable unit labour cost stability would also prevent regional instabilities. But this means convergence in the difference between nominal wage increases and productivity is required.<sup>37</sup>

Anderton et al. (1992) have found that nominal wage and productivity converge in several European countries, but their studies reflect pre-Maastricht behaviour and are therefore subject to the Lucas critique. It seems reasonable to assume that the incompatibility in European wage behaviour observed by Horn and Zwiener has found its solution in the EMS-crisis 1992/93. Since then the developments in Europe has been more promising. As the paper by Fröhlich (1997) in the next chapter shows, nominal wage increases have fairly well converged to productivity growth since 1990. As a consequence, unit labour costs have increased moderately in all countries, and with the exception of Portugal and Greece, less than in Germany.<sup>38</sup> This must be taken as a sign of adjustment to the low inflation environment in a future EMU. The country study by Padoan and

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wodurch die Bundesbank die Kontrolle über die heimische Geldmenge zurückgewonnen hatte" ("Die Geldpolitik der Bundesbank", Oktober 1995, p. 51).

<sup>35</sup> This is a wage policy and not an optimum currency area argument. The common external exchange rate can still be used to adjust for shocks on the community.

<sup>36</sup> This does not exclude that even in monetary union there might be modest deviations from the average, but market forces will prevent large persistent price gaps.

<sup>37</sup> Unit labour costs are also often used as an indicator for international competitiveness. Within an integrated currency area they would effectively have to simulate exchange rate variations. Keeping increases of unit labour costs in one region below those of other regions is equivalent to a real depreciation. This is at the root of the "employment miracle" of the Netherlands in recent years, although it is obviously easier for a small country to pursue such strategy than for a large.

Fantacone (1997) for this study confirms the significant adjustment in economic behaviour in Italy. Nascimento (1997) and Cardoso (1997) show that, although Portugal had permitted some excesses in the early 1990s, progress has been made in bringing nominal wage increases below productivity increases.

### *Non-wage labour costs*

From the point of view of EMU-sustainability, labour market developments are only relevant with respect to unit labour costs. Stable unit labour costs imply nominal wage increases at the same rate as productivity increases. Yet, if workers bargain for real wages, they will only accept cost stabilising wage settlements if inflation expectations are close to zero. They will also look at after-tax income. Therefore tax policies can become a disturbance to price stability.

Daveri and Tabellini (1997) have claimed that in Europe increases in unemployment and the slowdown of growth are related because they both stem from excessively high cost of labour. This has diminished the incentives to invest into capacity enlargement and increased incentives to substitute capital for labour. As one of the main causes for high labour costs, they identify high taxes on labour. However, the correlation between labour taxes and unemployment is only evident in continental Europe, but not in Scandinavia nor the UK, USA or Japan. The authors explain this by monopolistic trade unions, although the opposition to "highly centralised trade unions" in Scandinavian countries seems somewhat artificial. There does, however, appear an unequal tax burden between capital and labour in different countries. Figure 7 shows high effective tax rates on

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<sup>38</sup> In Germany's figures the post-unification wage push has still left some footprints.

labour in continental Europe and low capital taxes.<sup>39</sup> In non-continental economies the opposite is the case. Furthermore, a high tax rate on capital income is correlated with low unemployment rates (figure 8). This is entirely consistent with the story of labour being substituted by capital: low taxes on capital increase the net (after tax) return on capital, while high labour taxes reduce the net return on labour. This distorts factor incomes. European Commission data (1997a) show that the implicit tax rate on labour has risen from 34.9 percent in 1981 to 42 percent in 1995, while taxation on capital and other factors of production fell by 10 percentage points from 45.5 to 35.0 percent. Consumer taxes remained nearly constant between 13 - 14 percent. This implies a relative price shift of nearly 50 %. If wage bargainers take income distribution and equity considerations into account when negotiating, or if trade unions defend the net real wage, then a rise in labour taxes will increase labour costs<sup>40</sup>. In the non-continental economies, this distortion is less significant than in continental Europe. Thus, the detrimental effects of labour costs on unemployment are more a matter of distorting tax regimes in Europe than of trade unions' power. An indication that this might be the case is also given in figure 9 which shows that the increases of effective tax rates on labour income from the period 1981-85 to 1986-91 correspond to the intensity of disinflation.<sup>41</sup> Countries with high disinflation have stronger increases in the tax burden on labour than those with little reductions in inflation. Thus, it would appear that the social consequences of disinflation (output and employment losses) are shifted more to labour and less to capital.

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<sup>39</sup> The effective tax rate is computed as the ratio between total taxes on labour/capital income and their respective tax base. The labour income tax includes taxes on wages and salaries from the individual income tax, social security contributions and payroll taxes. Capital income taxes are those levied on the operating surplus of unincorporated enterprises, profits and entrepreneurial incomes as well as corporate taxes, recurrent taxes on immovable property and taxes on financial and capital transactions.

<sup>40</sup> For details of labour cost responses to changes in tax rates, see OECD 1994, Vol. II, p. 246.

<sup>41</sup> Calculated as the difference of average inflation rates between 1981-85 and 1986-91.

Thus, a more equal share of the tax burden would help to reduce unit labour cost and contribute to less unemployment<sup>42</sup>. It also means that a more equitable distribution of the tax burden would make stability oriented policies easier for the ECB, as unit labour costs are less likely to rise. However, ultimately, price stability depends on the central bank's determination to eradicate inflationary expectations. Thus, we are back to the proposition that ultimately it is monetary policy that guarantees the sustainability of EMU by maintaining price stability; this is the ECB's task.

*A proposal to strengthen the stability of EMU in the initial stage*

There is, however, an option which could help to ensure a smooth transition into the next monetary regime that would allow the ECB to build up its anti-inflationary reputation. If monetary policy during the initial period of EMU would take place in an environment which is favourable to price stability this would support the ECB when establishing its reputation for price stability without an overly tight monetary policy. Therefore, short-term interest rates could stay relatively low and this would also have salutary effects on fiscal consolidation. Such an environment would also help to win the acceptance of the Euro in the public at large. Alternatively, if inflationary tensions would become manifest at an early stage of EMU, the ECB would immediately have to rise interest rates, causing a recession and making fiscal consolidation more difficult - with negative consequences for public opinion.

Given the limitations on public finances in Europe under the Stability Pact, it is obvious that the single most important factor on price developments in Europe are the developments of unit labour

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<sup>42</sup> This is also a tentative conclusion in OECD, 1994.

costs. The convergence of unit labour costs is also the best guarantee to prevent significant transfers within the union (Flassbeck, 1994). It is therefore of crucial importance that unit labour costs stay constant in the initial period of EMU. This implies that nominal wages must not grow faster than general improvements in productivity. The transition to a stable Euro would be strengthened if wage bargainers in the future member countries of EMU would agree to conclude long-term wage agreement for the years 1999 to 2001 whereby they fix wage increases to average country productivity. In order to ensure that labour cost do not rise due to tax increases, governments should also take measures to reduce taxes and social charges on labour income.

Following such a productivity oriented wage rule would also make a significant contribution to the reduction of unemployment in Europe (Modigliani, 1997). It would allow less restrictive monetary policies without endangering price stability and therefore money growth would finance real growth rather than fuel inflation. With higher growth, lower unemployment, stable prices and low interest rates, government deficits would also come down. That such a policy mix is not impossible has been proven by the economic performance in the United States over the last six years. The acceptance of such an agreement would be in the interest of everyone and it therefore constitutes a win-win game. As Modigliani (1997, p. 265) pointed out, labour unions should be willing to accept such a targeted nominal wage, given that the ECB guarantees price stability. Labour has nothing to gain, but only to lose, from higher nominal wage increases. It may be understandable that under normal circumstances, social partners may not wish to bind themselves in long-term contracts. But EMU is a unique historic event. Maybe it will also enable unique solutions to Europe's problems.

## 4. Summary and Conclusions

This paper has tried to assess whether monetary policy under European Monetary Union is likely to maintain price stability, as required by the TEU. As we have seen, long term price stability is also necessary to ensure the sustainability of EMU. At first the concept of price stability was clarified. It appeared that the ECB's objective should be to keep inflationary expectations close to zero. In practical terms this implies realised (ex-post) inflation rates below 2 to 2.5 percent.

We then analysed the possible motives, why the ECB might wish to pursue monetary policies that are not consistent with this objective. In particular the revenue motive, the exchange rate motive and the employment motive for time inconsistent monetary policies were considered. It appeared that none of these motives are likely to be of significant importance for the conduct of monetary policy of the European Central Bank, given its political independence and the fact that most of these motives are more of the domain of governments than central banks. The stability of the financial system could be of concern to the ECB, but at present this does not appear as a dominant threat to the price stability in the Euro-Zone. In fact it seems more likely that the ECB will have a bias toward price stability than toward inflation.

This poses the question if monetary policy will be biased to become excessively tight. This could aggravate the already tense situation on the employment front. Even if this would not lead to more inflationary policies, such a development could throw shadows on the long term sustainability of European integration.

In the third section a model was developed that is able to explain why restrictive monetary policies have had real economy effects that translate into rising structural unemployment. These developments are a consequence of wage developments that are inconsistent with monetary policy that aims at price stability. In the end, monetary policy will prevail, but the price is high unemployment.

However, these inconsistencies may be less a consequence of social rigidities, but of past inflation experiences. Real wage resistance is in the last instance an attempt to defend standards of living and distributive shares. However, once the inflation mentality has been broken and price stability has been re-established, nominal wage rigidity is gaining predominance. This makes the conduct of wage and monetary policies easier. Wage settlements should reflect the development of technological progress and productivity growth. This would give a stable nominal anchor to the price level. It therefore also lifts the pressure off the central bank to keep an over-restrictive monetary policy stance. Europe stands today at the brink of such positive new development. It is, however, important that the social partners all over the European Union become aware of the consequences that the single currency will have for wage bargaining.

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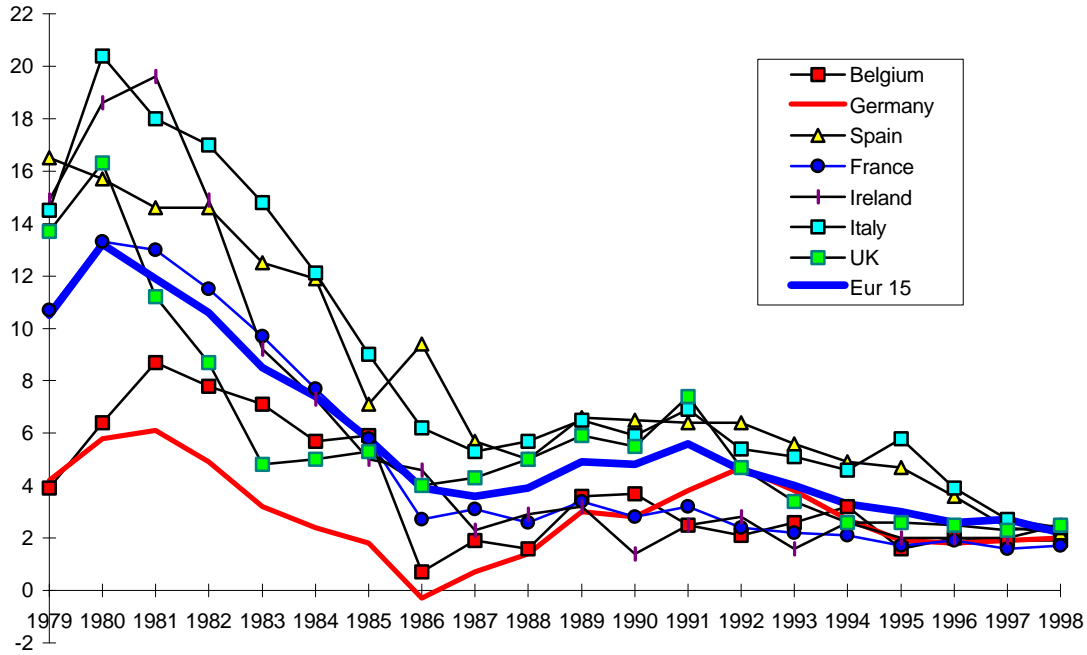
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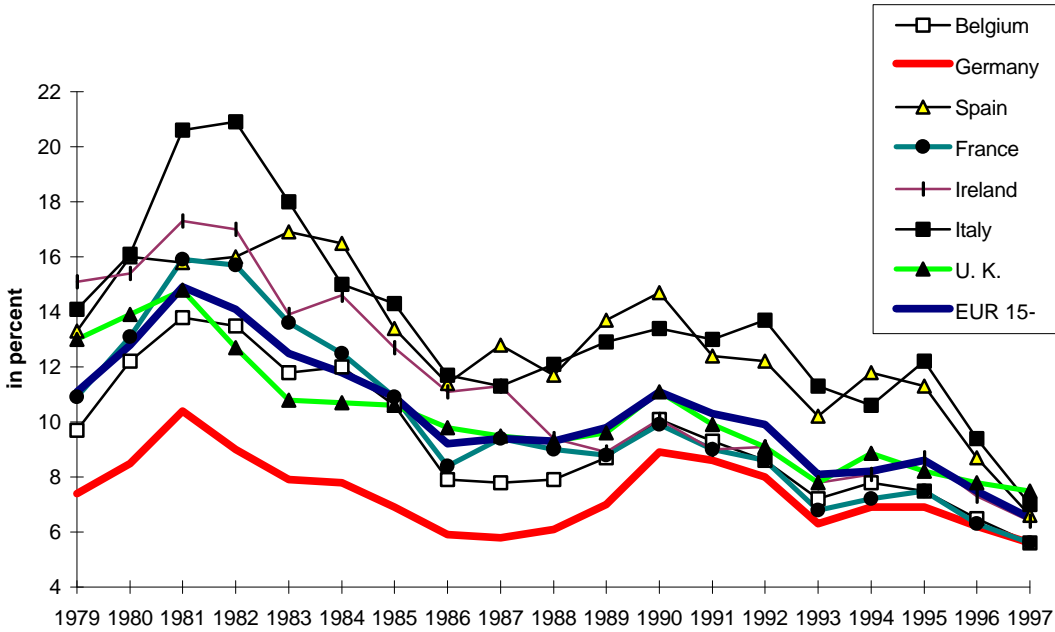
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**Figure 1: Convergence of inflation rates**  
(CPI, anual percentage change)



**Figure 2: Convergence of interest rates**  
long term interest rates in % p.a.



**Figure 3: Optimal Conservativeness before and after EMU**  
as percentage of Germany

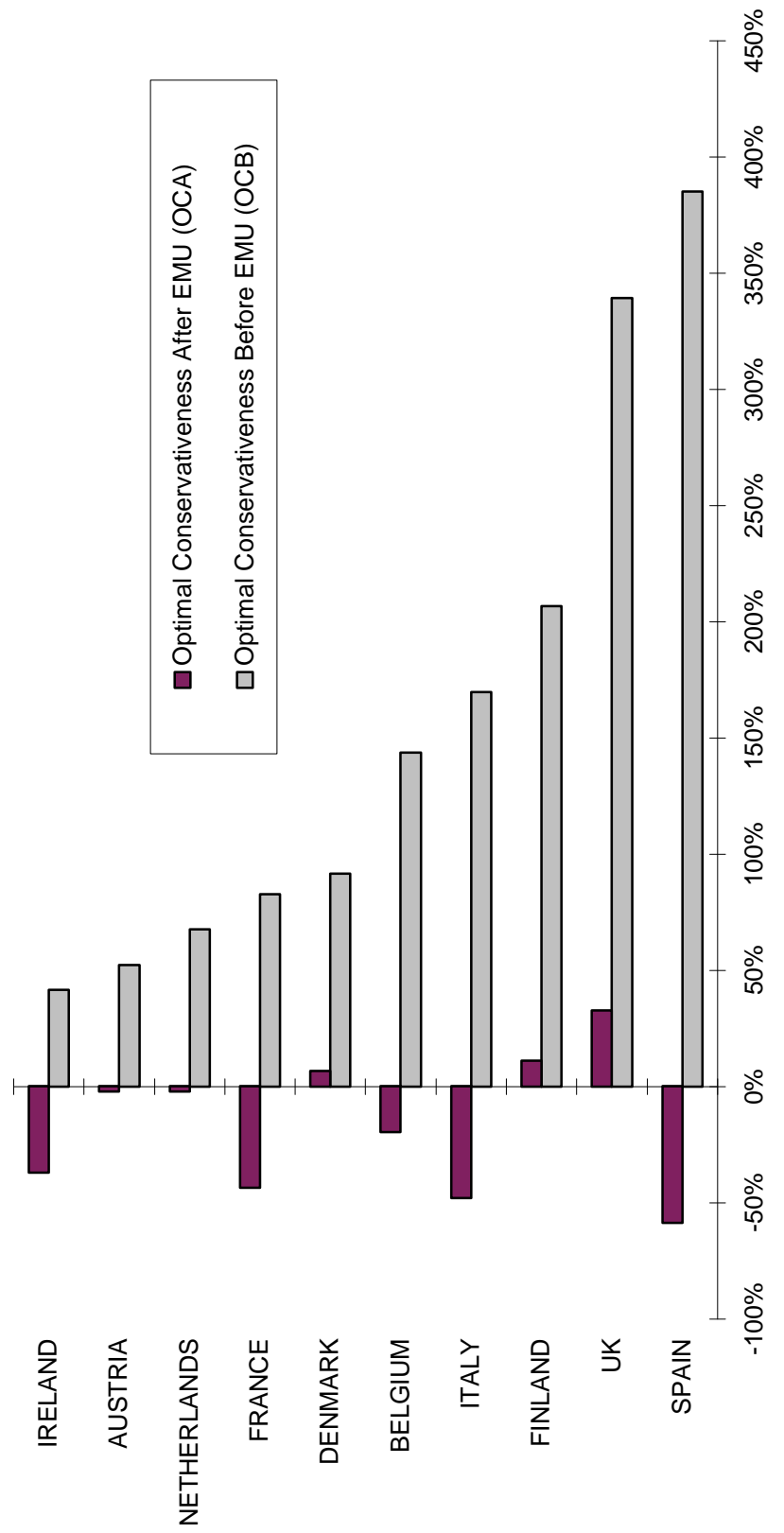
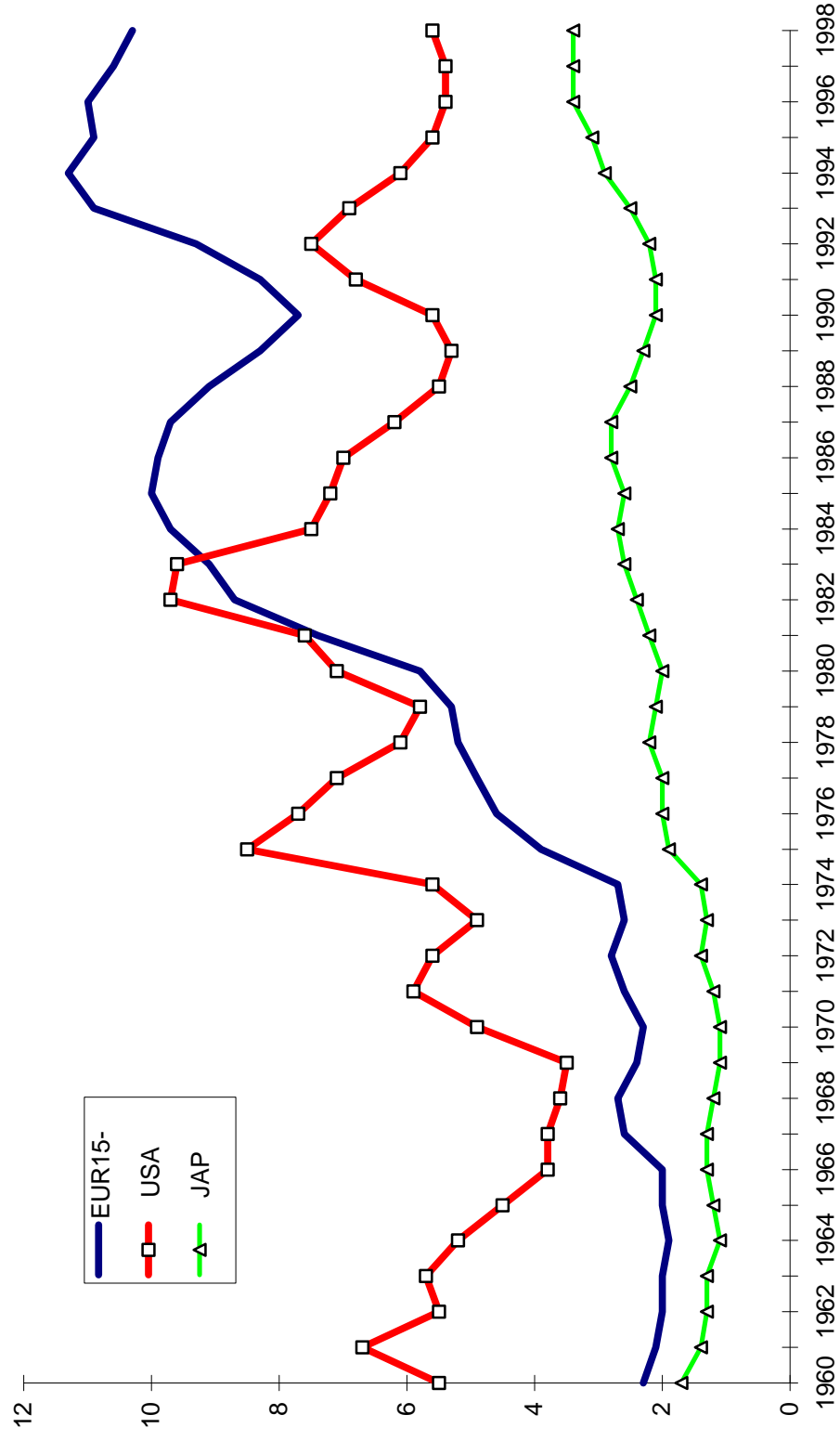
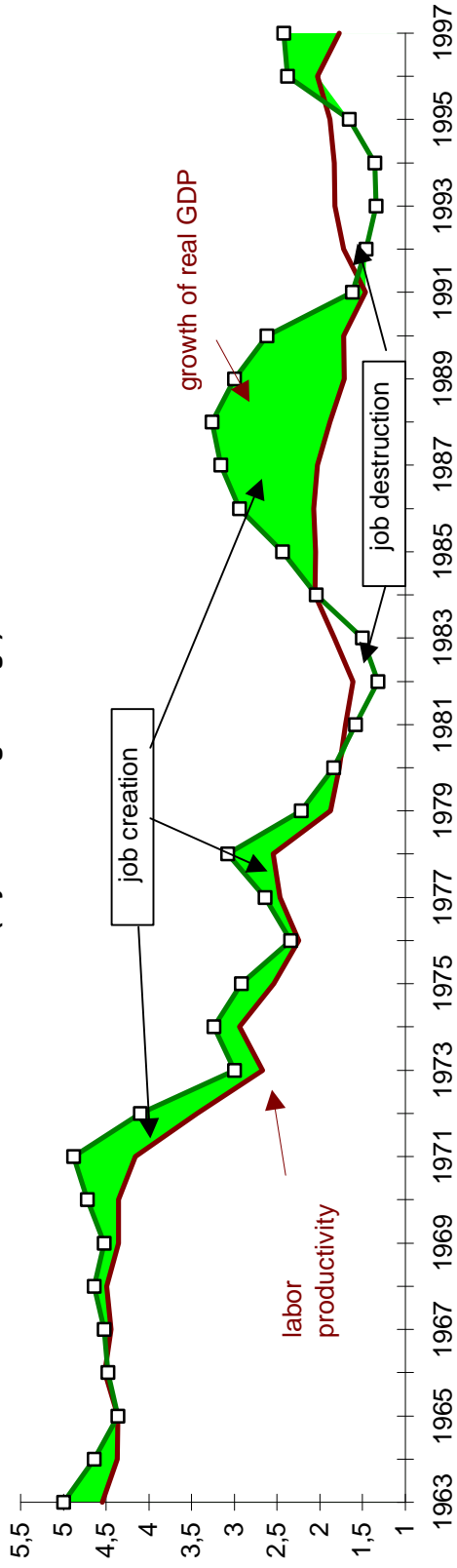


Figure 4: Unemployment in Europe, USA and Japan



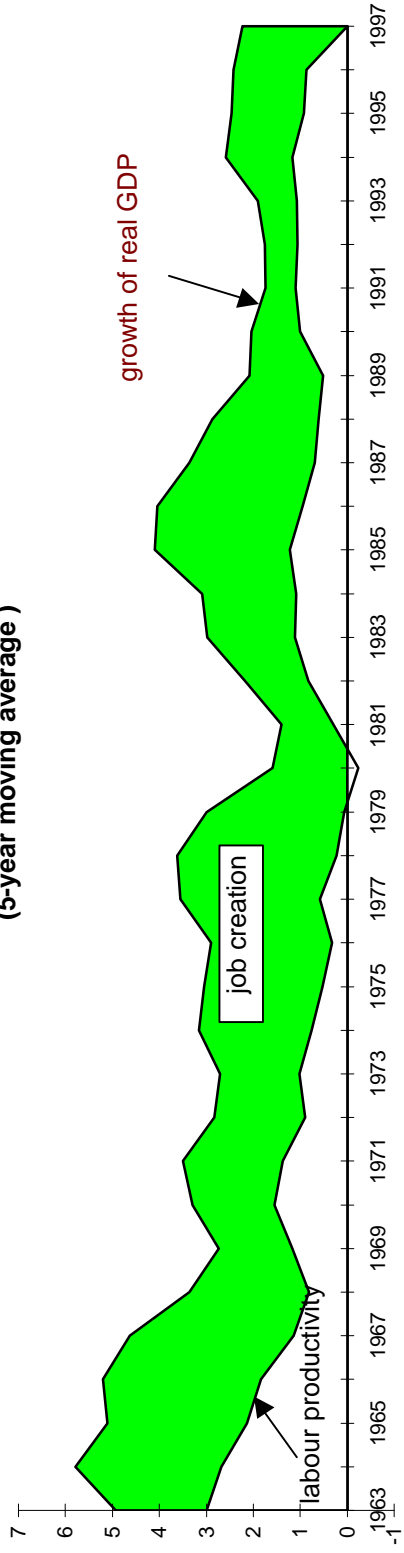
**Figure 5a: Job creating growth in Europe**

(5-year moving average)

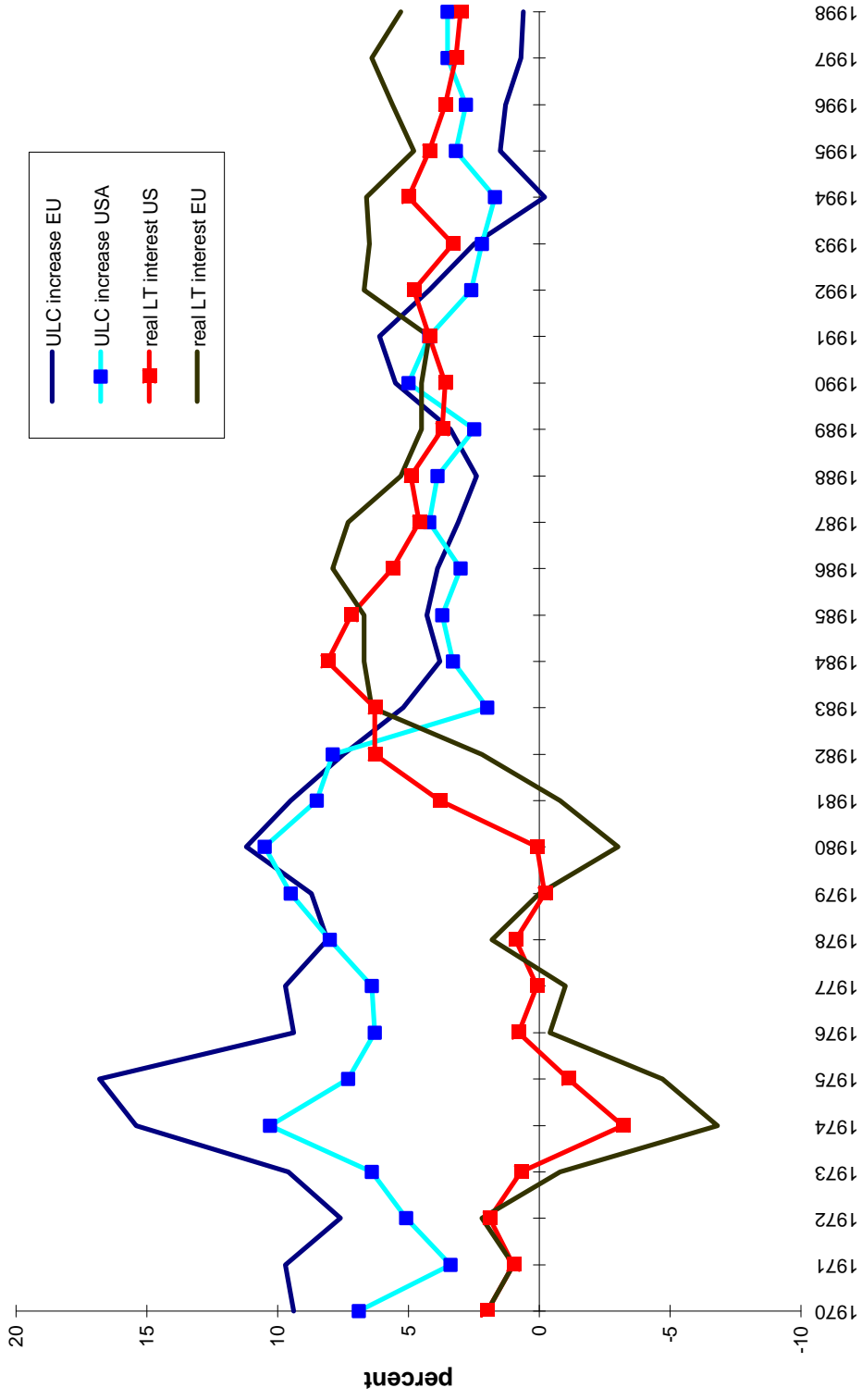


**Figure 5b: Job creating growth USA**

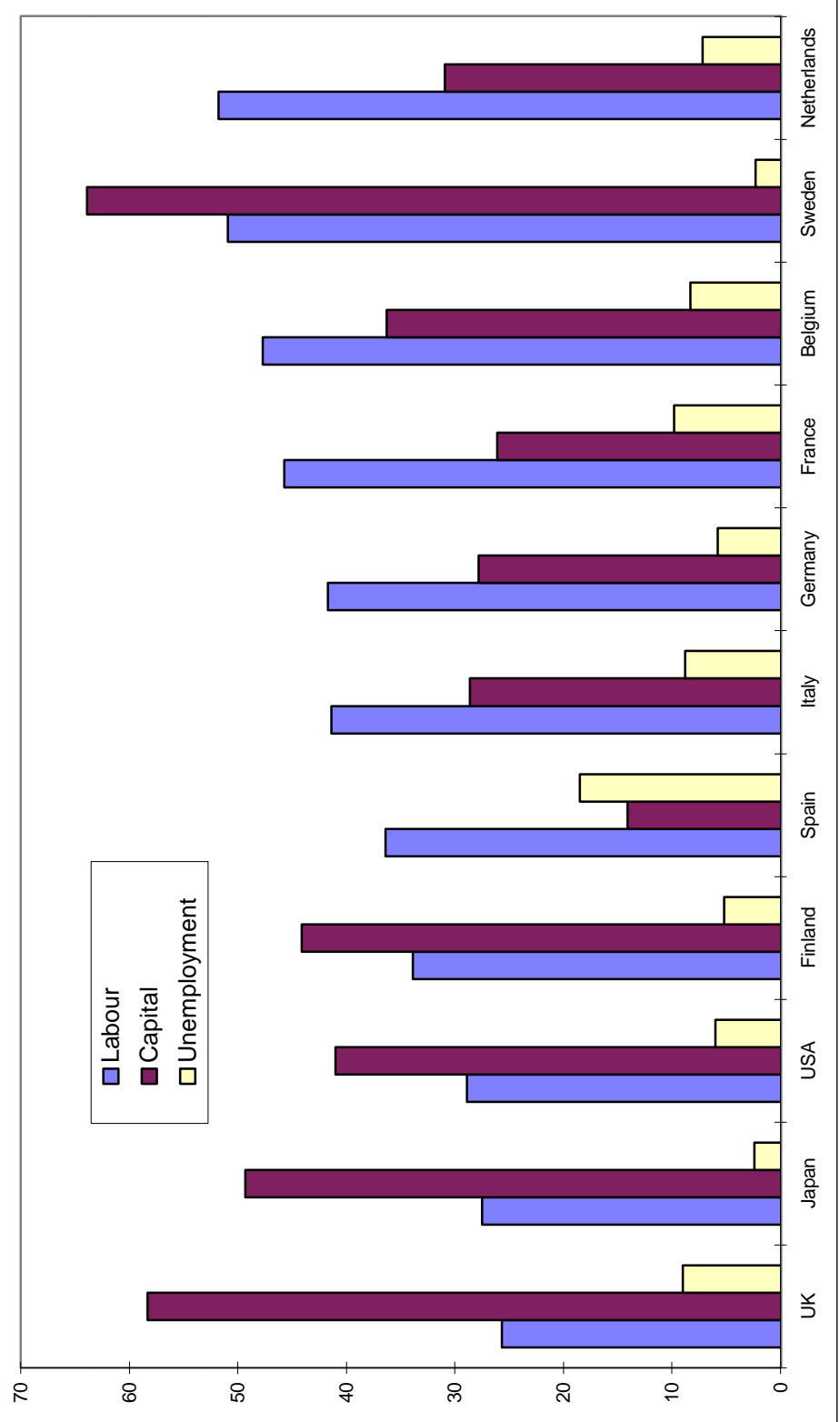
(5-year moving average)



**Figure 6: Unit Labour Cost Growth and Real Interest Rates**  
EU versus USA

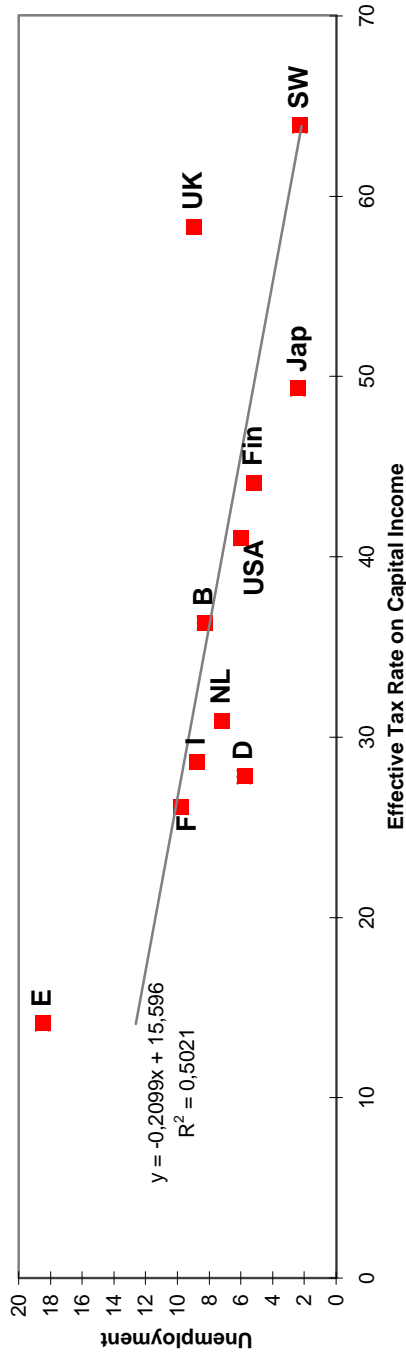


**Figure 7: Effective Tax Rates on Income and Unemployment**  
1986-91



**Figure 8: Capital Income Tax and Unemployment**

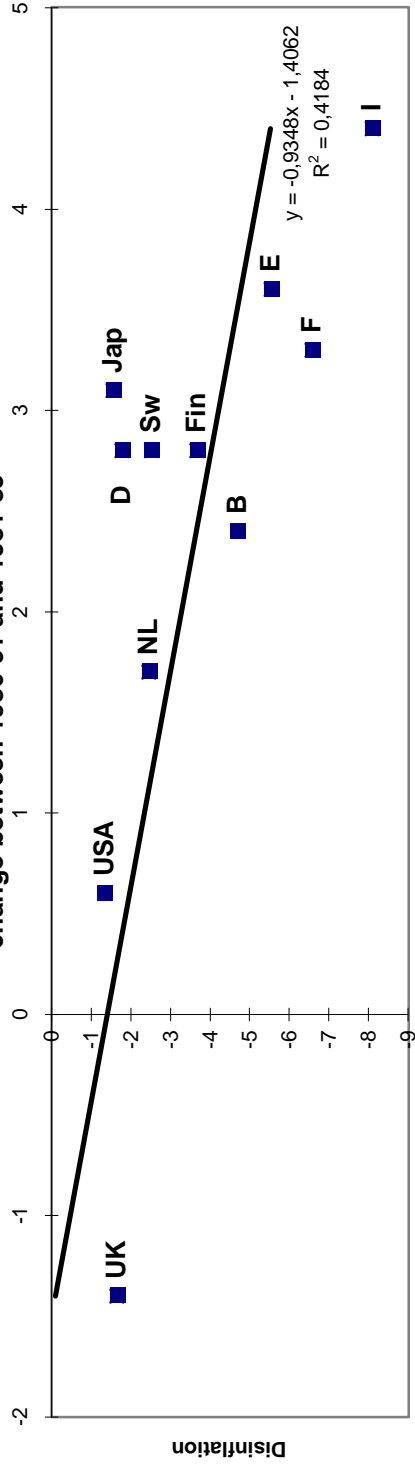
1986-91



**Figure 9: Disinflation and Increases in Effective Taxes on Labour Income**

Income

change between 1986-91 and 1981-85



Percentage points of Tax Increases