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Hein, Eckhard

WSI in der Hans Böckler Stiftung, Düsseldorf

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Eckhard Hein[*]

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[*] WSI in der Hans Böckler Stiftung, Bertha von Suttner Platz 1, 40227 Düsseldorf, Germany, e-mail: eckhard-hein@boeckler.de

Eckhard Hein

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Abstract

Starting from a Post-Keynesian model in which employment is determined by effective demand and the NAIRU is viewed as a limit to employment, enforced by monetary policy reacting upon conflict inflation, the effects of central bank independence and labour market institutions on macroeconomic performance are considered and the perspectives for employment and inflation in the European Monetary Union are discussed. Central bank independence seems to be associated with stable prices and to prevent the rate of unemployment from falling below the NAIRU. But price stability also depends on labour market institutions. Horizontally and vertically co-ordinated wage bargaining allows for a considerable reduction of the NAIRU and hence of the real costs of price stability. Therefore, the perspectives for employment and inflation in the European Monetary Union depend on the development of the degree of co-ordination of wage bargaining and on the monetary strategy chosen by the independent European Central Bank. Different scenarios derived from these determinants are finally discussed.

JEL classification: E24, E58

1. Introduction

That institutions matter for macroeconomic performance is not disputed in macroeconomic theory anymore, at least since the bulk of work on central bank independence and macroeconomic performance. There are, however, major differences when it comes to the question which macroeconomic variables are influenced by institutions. The mainstream, following the classical dichotomy between the real and the monetary sphere, assumes that the degree of central bank independence only affects the rate of inflation but has no long run impact on unemployment, distribution or growth.[1] Politically, economically and personally independent central banks have the capability to solve the time-inconsistency problem of monetary policy, because politically initiated and exploited surprise inflation causing increasing inflation expectations in the private sector is prevented. According to this view, a higher degree of central bank independence is associated with a higher degree of conservatism concerning price stability and a higher degree of credibility in pursuing low inflation. Therefore, central bank independence is viewed to guarantee price stability as a "free lunch". There are, however, major doubts that time-inconsistency is the true cause of inflation and that the role of independent central banks is adequately assessed in this mainstream approach.[2]

From the perspective of a "monetary theory of production" originating from J.M. Keynes, the position sketched above has to be rejected. According to this perspective, the monetary variables controlled by the central bank determine the real equilibrium of the economic system and hence the level of employment.[3] Inflation is not a monetary phenomenon but is caused by conflict over distribution in the private sector. Therefore, a higher degree of conservatism associated with central bank independence should have real effects. There should be losses of employment, at least in the short run, and effects on income shares in the long run. In the following part we will therefore draft a simple Post-Keynesian macro-model in which the level of employment is determined by effective demand on which monetary policy has a major impact, and in which the NAIRU (non-accelerating-inflation-rate-of-unemployment) is a limit to

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[1] For theoretical foundations see Kydland/Prescott (1977), Barro/Gordon (1983) and Rogoff (1985). For a survey of more recent contributions see Eijffinger/de Haan (1996) and Berger/de Haan/Eijffinger (2000).

[2] For a critique see Bibow (1999) who accuses the time-inconsistency literature to discuss a non-existent problem and to derive pseudo-solutions, for instance central bank independence. On the one hand, the capacity of economic policy to generate surprise inflation is over-estimated. On the other hand, the true causes of inflation, lying in distribution struggle are overlooked, according to his view. See also the critical discussion by Forder (1998).

[3] See for instance Arestis (1996), Davidson (1994), Heine/Herr (1999) and Lavoie (1992).

employment enforced by monetary policy. This limit, however, may not be reached by actual employment.

The limit to employment given by the NAIRU can be influenced by wage bargaining institutions and is not a constant, neither in international nor in inter-temporal comparison. Whether this limit to employment becomes effective also depends on institutional arrangements, for instance on the degree of central bank independence. The direction and the real effects of monetary policy, therefore, depend on the institutional setting of the central bank and the labour market. This will become clear when discussing some major empirical studies on this topic in part 3.

The transition to the European Monetary Union (EMU) has changed the institutional framework and therefore the possibilities for interaction between monetary policy and wage bargaining. In part 4 we will therefore discuss some perspectives for inflation and employment in the EMU taking into account these changes. With an independent European Central Bank (ECB), the NAIRU will become an effective limit to employment. But this limit will also depend on the future degree of co-ordination of wage bargaining. The actual degree of employment to be attained in EMU will also be affected by the monetary strategy chosen by the ECB.

2. A Post-Keynesian model of employment: the NAIRU as a limit to employment enforced by monetary policy

In order to facilitate the discussion of the effects of labour market institutions and central bank independence on macroeconomic performance we will draft a Post-Keynesian model in which some of these effects should become obvious. In a closed economy without economic activity by the state, the level of employment (L) is determined by effective demand expected by the entrepreneurs, as in equation (1). Productivity (y) is given or following an exogenous trend:

(1) $$L = \frac{I(r^e, i)}{s_\Pi h + s_w (1-h)} \frac{1}{y}.$$

Investment (I) depends positively on the expected rate of profit (r^e) and negatively on the monetary interest rate (i). The interest rate in a monetary economy is an exogenous variable for the income generating process and is determined by the central bank, whereas the volumes of credit and money are endogenously given by effective demand financed by credit.[4] The propensity to save out of profits (s_Π) exceeds the savings propensity out of wages (s_W). Abstracting from material costs, overhead labour and depreciation of fixed capital, the profit share (h) is determined by mark-up (m) pricing (p) on unit labour costs, which are given by the nominal wage rate (w) and labour productivity (y):

$$(2) \qquad p = (1+m)\frac{w}{y}, \qquad m > 0,$$

$$(3) \qquad h = \frac{m}{1+m}.$$

The mark-up is determined by the degree of competition in the goods market.[5] As the mark-up has to cover the actual and imputed interest payments of the firm, the minimum mark-up is affected by the interest rate. For the same reason, the rate of interest determines the minimum rate of profit on real investment in the long run. In the short run, however, there is no immediate positive impact of interest rate variations on the mark-up and the rate of profit, but an inverse effect on investment and employment.

The short-run effects of interest rate variations on investment are asymmetric. Rising interest rates choke investment and hence employment at a certain point, whereas falling interest rates will not be able to stimulate investment and employment, if expectations of entrepreneurs are depressed and firms do not expect to realise a rate of profit above the rate of interest due to effective demand considerations.

If the change in the interest rate generated by monetary policy is lasting, mark-up and profit share will change in the same direction, because in the long run, firms can only sustain those

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[4] Here we assume, that the central bank controls the base rate, and that the market rates are determined by mark-ups of commercial banks according to risk and period of validity of credit. If the mark-ups are constant, the central bank directly affects the market rates of interest in financial markets which are important for investment decisions (see Smithin 1994, pp. 111). On endogenous money in post-Keynesian theory see Lavoie (1984, 1992, pp. 149, 1996), Cottrell (1994), Hewitson (1995), Moore (1989), Rousseas (1998, pp. 75) and Smithin (1994, pp. 64).

[5] In an open economy the mark-up is also elastic to foreign competition in those sectors producing tradable goods and hence to the level of foreign prices and the exchange rate.

production processes which yield the minimum rate of profit determined by the interest rate. Changing mark-ups and income shares, however, have no unique effects on investment and hence employment. Rising mark-ups mean rising unit profits but also falling consumption demand. The overall effect of changing income shares on investment and employment therefore depends on the savings propensities out of wages and out of profits and on the elasticities of investment with respect to interest rates, unit costs and capacity utilisation. In a Post-Keynesian effective demand model we therefore get different possible regimes with respect to variations in interest rates and income shares.[6]

In what follows, we will discuss wage bargaining and monetary policies and their effects on employment.[7] Although wage bargaining is concerned with money wage rates, labour unions intend to achieve a certain real wage – and with labour productivity growth given and correctly anticipated a certain wage share. The intended real wage rate (w^r_b) depends positively on the volume of employment (L) determined by effective demand and, with the working population (LF) given, on the employment rate.[8] Unemployment has the function to curtail distribution and participation claims of labourers, a view already held by Marx (1867) and Kalecki (1943). But bargaining claims and results are also affected by the degree of co-ordination of wage bargaining (KO), as will be shown below:

(4) $w^r_b = w^r_b(L, y, KO), \quad \text{with} \ \dfrac{\partial w^r_b}{\partial L} > 0, \ \dfrac{\partial w^r_b}{\partial y} > 0$.

The feasible real wage rate (w^r_p) is given by mark-up pricing from equation (2):

(5) $w^r_p = \dfrac{w}{p} = \dfrac{y}{1+m}$.

The real wage intended by labour unions and the feasible real wage given by entrepreneurial pricing only coincide by accident. If we assume the level of productivity and the degree of co-

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[6] This has been shown by Bhaduri/Marglin (1990) and Hein/Krämer (1997) for the effects of changes in income shares on investment and by Hein/Ochsen (2000) for the effects of changes in the interest rate on income shares and investment.

[7] The following discussion builds on Carlin/Soskice (1990, pp. 135). Similar approaches can be found in Rowthorn (1977), Layard/Nickell/Jackman (1991) and Franz (1996).

[8] Layard/Nickell/Jackman (1991) and Franz (1996) also discuss efficiency wages as an argument for increasing real wages when employment rises. This will not be explicitly considered in our model, because efficiency wages also increase productivity and may have no effect on the wage share.

ordination of wage bargaining as given, the relation between employment and distribution conflict can be depicted as in figure 1:

Figure 1: Employment and distribution conflict
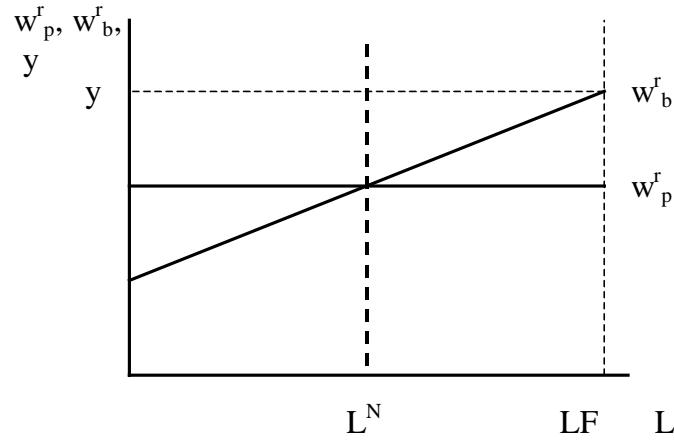
The feasible real wage given by mark-up pricing is a constant.[9] The real wage intended by unions is a rising function of employment. Only if effective demand in the goods market generates a volume of employment of L^N, the distribution claims of firms and labourers will be compatible and there will be no acceleration or deceleration of inflation. The rate of unemployment $[(LF-L^N)/L^N]$ associated with this volume of employment may therefore be called the NAIRU. It describes a distribution equilibrium between the claims of labourers and firms. If the actual level of employment given by effective demand in the goods market exceeds L^N, there will be increasing inflation rates caused by distribution struggle. If employment falls short of L^N, inflation rates will be falling because unemployment will enforce wage moderation on labour unions. These results can also be derived from equations (6) – (8):

(6) $\qquad \hat{w} = \hat{p}_T + \hat{y} + B(L - L^N), \qquad B > 0$,

(7) $\qquad \hat{p} = (1 \hat{+} m) + \hat{w} - \hat{y}$,

(8) $\qquad \hat{p} - \hat{p}_T = (1 \hat{+} m) + B(L - L^N)$.

The growth rate of nominal wages pushed through by labour unions is determined by the expected inflation rate, which is interpreted as the target inflation rate of the central bank ($\hat{p}_T$),

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[9] The w^r_p-curve would be falling, if firms tried to increase mark-ups in periods of rising demand and employment. This would exacerbate the distribution conflict when unemployment falls below the NAIRU.

the anticipated rate of productivity growth ($\hat{y}$) and a component aimed at achieving a higher wage share which depends on the level of employment.[10] If the level of employment exceeds the critical value of L^N, labour unions will push through a growth rate of nominal wages which will exceed the sum of the inflation rate and the productivity growth rate. If the level of employment falls short of L^N, labour unions are too weak to maintain the wage share.

Firms' mark-up pricing follows wage bargaining and consists of the components in equation (7). Equation (8) shows that – with a constant mark-up – the inflation rate will only be constant, if employment will not deviate from L^N and actual unemployment will be equal to the NAIRU. If actual employment deviates from L^N and this deviation is tolerated by the monetary authorities, the actual inflation rate of the present period will become the expected inflation rate for the future period which will cause accelerating or decelerating inflation.[11]

In the model, there are no endogenous market forces which could cause an adjustment of the employment level given by effective demand to the stable inflation level of employment. If unemployment exceeds the NAIRU, inflation rates will be falling and, with some price rigidities, wage shares will be falling as well.[12] But falling output prices do not improve the yield expectations of entrepreneurs and therefore do not stimulate private investment.[13] A falling wage share also means falling consumption demand which may feed back on investment, so that there is no general expansive effect on aggregate demand which could narrow the gap between the actual unemployment rate and the NAIRU. If unemployment determined by effective demand falls short of the NAIRU, there will also be no restrictive market processes which could narrow the gap, as long as the central bank is willing to accommodate the inflation process generated by distribution struggle. With rising prices, investment demand will be stimulated and also consumption demand will be accelerated as soon as unanticipated inflation rates make physical goods the only form to secure households' wealth.

Although there are no market forces adjusting unemployment to the NAIRU in the short run, there may be some forces making the NAIRU shift into the direction of the unemployment

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[10] The growth rate of variable x is written as $\hat{x}$.

[11] The short-run Phillips-curve shifts continually upwards or downwards (see Carlin/Soskice 1990, pp. 154).

[12] This constellation of falling inflation rates and falling labour income shares has prevailed in the advanced OECD-countries since the 1980s, whereas the 1970s saw rising inflation rates accompanied by rising labour income shares (see Hein/Ochsen 2000).

[13] Extending the model to finance issues, debt deflation would exacerbate the effect of falling prices on investment.

rate determined by effective demand in the long run. In other words, the NAIRU may become path-dependent and we have to deal with hysteresis.[14] If unemployment persistently exceeds the NAIRU, the NAIRU will adjust to this higher level, because de-qualification and stigmatisation will reduce the number of unemployed competing effectively for jobs and thereby curtailing bargaining power of labour unions. If rising unemployment is caused by a persistent increase in interest rates, the mark-up will have to increase as well reducing the feasible real wage and adjusting the NAIRU to the actual unemployment rate. If unemployment determined by effective demand in the goods market falls short of the NAIRU, the excess demand for qualified labour will lead to qualification and re-integration of marginal groups into the labour market. This will increase effective competition for jobs, reduce unions bargaining power and therefore make the NAIRU shift downwards. This shift will be reinforced, if the increase in employment is caused by a persistent decline in interest rates which will finally reduce the mark-up and increase the feasible real wage.

Accelerating inflation rates originating from distribution conflict will finally make the central bank intervene. In a monetary economy in which each production process requires money advances, predominantly in the form of credit, the central bank has to guarantee the real value of money advances in order to stabilise the readiness to grant credit as a precondition for continuous macroeconomic expansion. Therefore, the major task for central banks is to prevent the erosion of the monetary system caused by cumulative and unanticipated inflation. Following Seccareccia (1998), we can formulate the following reaction function for the base interest rate set by central banks:

$$(9) \qquad i = i[\hat{p}, (\hat{p} - \hat{p}_T)], \qquad \text{with } \frac{\partial i}{\partial \hat{p}} = 1, \ \frac{\partial i}{\partial (\hat{p} - \hat{p}_T)} > 0.$$

By means of varying the base rate the central bank intends, on the one hand, to regulate the real short term interest rate and to affect the real long-term interest rate in the financial market. The nominal short-term interest rate, therefore, has to vary with the inflation rate. On the other hand, the central bank intends to achieve a certain target inflation rate and has to react to a deviation of actual inflation from target inflation. The capacities of the central bank to adjust inflation to target inflation are, however, asymmetric. Accelerating inflation caused by an unemployment rate falling short of the NAIRU can always be stopped by central bank inter-

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[14] See Layard/Nickell/Jackman (1991) and Franz (1996).

vention, whereas decelerating inflation and deflation caused by an unemployment rate exceeding the NAIRU cannot be converted by the central bank, as mentioned above. Therefore, in our model the NAIRU is only a limit to employment, enforced by central banks reacting to conflict inflation. The NAIRU is not the equilibrium rate of unemployment originating from labour market imperfections as in New-Keynesian models.[15]

In our model, the NAIRU, on the one hand, depends on those factors which have an impact on the distribution claims of labour unions and their capacities to enforce nominal wage hikes. On the other hand, the NAIRU is affected by the determinants of the mark-up and the feasible real wage. Extending our model to an open economy with economic activity by the state, these determinants would also encompass the real exchange rate which determines the foreign distribution claims and net taxes and charges which constitute the distribution claims of the state. The possibility for the actual unemployment rate to fall short of the NAIRU is affected by the weight of the inflation goal in the objective function of the central bank. Therefore, the tolerable degree of employment is determined by the institutions of the labour market and the central bank, as will be shown in the next part.

3. Labour market institutions, central bank independence and employment: results and implications of some empirical studies

Implications for the effects of monetary and labour market institutions on the NAIRU and long run unemployment can be derived from different debates: 1. the discussion about the relationship between labour market institutions and employment, 2. the discussion about the effects of central bank independence on inflation and 3. the more recent discussion about the joint effects of wage bargaining institutions and central bank independence on macroeconomic performance. We do neither intend to give a complete survey of these debates nor do we want to discuss the relevant studies in detail.[16] We will rather sketch some results and implications for our subject.[17]

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[15] See Layard/Nickell/Jackman (1991), Gordon (1997), Blanchard/Katz (1997), Staiger/Stock/Watson (1997) and for a critique Galbraith (1997) and Sawyer (1997).

[16] A more detailed discussion of some relevant studies can be found in Hein (1999).

[17] The studies considered are related to advanced capitalist economies and are predominantly based on long-term analysis.

For the impact of labour market institutions on macroeconomic performance the well known work by Calmfors/Driffill (1988) postulates a hump-shaped relation between the degree of centralisation of wage bargaining and unemployment in international comparison.[18] Highly centralised as well as highly decentralised systems perform better than intermediate systems. Calmfors (1993) relates this result to the differences in the abilities to internalise negative wage externalities on the different levels of centralisation.[19] Soskice (1990), however, has shown that not centralisation but rather the degree of formal and informal co-ordination of wage bargaining (for instance pattern bargaining) and the degree of "local pushfulness" of unions, determined by the strength of local unions and their tendency towards short run results, are of utmost importance for macroeconomic performance. Contrary to the "hump-shaped"-hypothesis by Calmfors/Driffill, he derives a linearly inverse relationship between the degree of co-ordination and unemployment and a positive connection between "local pushfulness" and unemployment. Layard/Nickell/Jackman (1991) confirm an inverse effect of the degree of co-ordination of labour unions, but especially of employer associations on the level of unemployment. But if there is no co-ordination of wage bargaining, the coverage ratio of collective bargaining agreements has a positive impact on unemployment, according to their results. The Calmfors/Driffill hypothesis is also rejected by a comprehensive study of the OECD (1997). The authors rather find, although not statistically significant in each case, "(...) some tendency for more centralised/co-ordinated bargaining systems to have lower unemployment and higher employment rates compared with other, less centralised/co-ordinated systems" (OECD 1997, p. 64). Traxler (1999) and Mesch (2000), who have found a positive impact of the degree of co-ordination on employment as well, make the valuable distinction between horizontal and vertical co-ordination. A high degree of horizontal co-ordination between industries, through pattern bargaining, state imposed co-ordination, intra-associational co-ordination by the peak association, inter-associational co-ordination or state-sponsored co-ordination is a necessary but not a sufficient condition for wage setting to take its macro-economic effects into account. In order to translate and implement the results of horizontal co-ordination and to prevent wage-drift or wage-dumping, also a high degree of vertical co-

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[18] See Calmfors (1993), Flanagan (1999) and OECD (1997) for comprehensive surveys of the relevant studies and their conceptual and empirical problems in assessing the impact of labour market institutions on macroeconomic performance.

[19] Decentralised bargaining on the firm level prevents workers from demanding excessive wage hikes to avoid losses of jobs in the particular firm. Centralised bargaining on the national level is able to anticipate and internalise the effects of wage bargaining on national employment. Intermediate bargaining on the sectoral, branch or industry level, however, is neither threatened by immediate job losses caused by rising wages in the particular industry nor able to anticipate the aggregate effects of the industry wage hikes.

ordination within industries is needed, through a high level of union and bargaining agreement coverage, legal enforceability of collective agreements and peace obligations. Schmidt (1996) confirms and complements this view, although he does not explicitly investigate the effects of co-ordinated wage bargaining. He concludes that low wage pressure, a low rate of inflation and low unemployment are supported by non-fragmentary wage bargaining, labour unions aiming at consensus and union wage demands dominated by the economic sectors producing internationally tradable goods.

Whether the limit to employment given by distribution conflict is actually enforced, depends on the weight of stable prices in the objective function of the central bank. As Eijffinger/de Haan (1996) and Berger/de Haan/Eijffinger (2000) in their comprehensive surveys on central bank independence and macroeconomic performance have shown, low inflation is associated with a high degree of personal, economic and political independence of central banks and its commitment to conservatism. The index of central bank independence in the overwhelming majority of studies displays a stable and robust inverse relation with inflation, independently of the index used. This relation is the more pronounced, the less central bank action is restricted by fixed exchange rate systems, as in the former international currency system of Bretton Woods or in the former European Monetary System. The empirical studies discussed use a composite index of central bank independence, very often the one originating from Cuikerman/Webb/Neyapti (1992). This index encompasses, on the one hand, the formal, legal degree of central bank independence, relating to the objectives of central banking, the appointment, dismissal, and term of office of central bank governors, the limitations on lending to the public sector and the resolution of conflict between central bank and political executives. On the other hand, also informal indicators of actual independence are introduced. These are the turnover of central bank governors and information derived from a questionnaire about the actual political influence by the government, the resolution of conflict between political executives and the central bank and about lending to the public sector.[20]

Whether central bank independence should really be viewed as cause for low inflation, will not be discussed here any further. There have been made convincing arguments that central

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[20] The also widely used index by Grilli/Masciandoro/Tabellini (1991), however, only considers legally political and economic aspects of independence. Political independence is affected by the legal appointment procedure of central bank governors, the legal objectives of the central bank and the legal relation between policy and the central bank. Economic independence is determined by the limits to lending to the public sector and the degree

bank independence and low inflation should rather be considered as effects of a third factor, as the dominance of those social classes preferring price stability in order to protect their wealth (finance capital, rentier class)[21] or a general aversion against inflation in the society given by historical experiences[22]. We will also not discuss the question, whether central bank independence is an appropriate solution to the alleged time-inconsistency problem of monetary policy, because we do not view inflation as being caused by politically intended surprise for the private sector but rather as originating from distribution conflict within the private sector. In what follows, we will rather deal with real costs of central bank independence and low inflation, and possibilities to minimise these costs by appropriate labour market institutions.

In a widely discussed paper, Alesina/Summers (1993) consider the real effects of central bank independence by means of simple scatter diagrams. They find a perfectly inverse relation between their index of central bank independence with annual inflation rates and its variances. Real variables, as GDP-growth, GDP-per-capita-growth, unemployment, and their variances, however, do not show any relation with central bank independence.[23] Therefore, they conclude that price stability by means of central bank independence should be considered a "free lunch". In a multiple regression aimed at explaining unemployment on average over the trade cycle, Cornwall/Cornwall (1998), however, find a significantly inverse impact of central bank independence on the level of unemployment. This is true for each index of central bank independence they use which makes them reject the "free lunch"-hypothesis. This conclusion is supported by Jordan (1997), Gärtner (1997) and Posen (1998) who show that disinflation costs do not vary inversely with central bank independence, as should be expected due to higher credibility of more independent central banks, but are rather positively influenced by the index of central bank independence. Gärtner (1997) also demonstrates that higher sacrifice-ratios of more independent central banks are not accompanied by less frequent interventions. A higher degree of central bank independence is therefore associated with higher losses of output and employment also in the long run.

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of control of the instruments of monetary policy by the central bank. For further indices see Eijffinger/de Haan (1996). For a critical view on indices for central bank independence see Mangano (1998).

[21] See the models by Epstein (1992, 1994), Hein (1999) and the arguments by Pivetti (1996), Posen (1993, 1998) and Schürz (2001).

[22] See for instance Debelle/Fischer (1994).

[23] Grilli/Masciandaro/Tabellini (1991) and Eijffinger/Schaling/Hoebrichts (1998) also do not find any real impact of central bank independence on output-growth.

A final glance at the results of papers dealing with the joint effects of central bank independence and labour market institutions on macroeconomic performance shows a heterogeneous picture. This is mainly due to the use of different indices for labour market institutions in these studies. There can be found the degree of corporatism, the degree of centralisation or of co-ordination of wage bargaining. For instance, Havrilesky/Granato (1993) claim that annual inflation rates vary inversely with the degree of central bank independence and that the degree of corporatism, given by the strength of labour unions and the labour orientation of government, has no impact on inflation when a linear relation between these variables is tested. Bleany (1996) also looks for linear relations when testing the impacts of central bank independence, an index for the degree of centralisation of wage bargaining and a corporatism-index on inflation and unemployment. He concludes that labour market corporatism has an inverse influence on unemployment but no impact on inflation whereas the degree of central bank independence only affects inflation inversely but does not influence unemployment. Contrary to these results, Al-Marhubi/Willet (1995) find that a negative impact of central bank independence is accompanied by a weaker but significant "hump-shaped" influence of the degree of centralisation of wage bargaining on inflation as well. Iversen (1999) and Cuikerman/Lippi (1999) confirm these results and demonstrate that the "hump-shaped" relation between centralisation of wage bargaining and inflation will more pronounced if central banks are dependent, but can hardly be found if central banks are independent.

Our discussion above, however, has displayed that the analyses of macroeconomic effects of central bank independence and labour market institutions should rather consider the degree of horizontal and vertical co-ordination of wage bargaining than the level of centralisation. This road is followed by Hall (1994) and Hall/Franzese (1998). They also find that a higher degree of central bank independence is associated with a lower inflation rate. Comparing countries with a similar degree of central bank independence they derive, that a higher degree of co-ordination of wage bargaining is associated with a lower "misery index", which is the sum of the inflation rate and the rate of unemployment. From this follows, that in economies with a high degree of co-ordination of wage bargaining the reduction of inflation rates by independent central banks is accompanied by less employment losses than in economies with a low degree of co-ordination in the labour market. Kittel/Traxler (2001) support this conclusion and demonstrate that the successful anticipation of real effects of restrictive monetary policy especially rests on well-functioning vertical co-ordination in the labour market which solves the problem of implementation of horizontally co-ordinated wage bargaining. In these sys-

tems, wage bargaining is able to take into account its effects on overall unit labour costs and inflation so that monetary policy does not have to intervene, whereas uncoordinated systems and systems with horizontal but insufficient vertical co-ordination have to be disciplined by the central bank. Here, more restrictive monetary policies of independent central banks are then associated with increasing unemployment.

The main implications of this survey can now be summarised – with some caution due to the problems of building appropriate indices for labour market institutions and central bank independence:

1. A high degree of formal and actual independence of central banks is associated with price stability. Whether a true cause of low inflation or not, central bank independence seems to be a main guarantee for achieving and sustaining price stability in the view of dominant social groups. With a high degree of central bank independence the NAIRU becomes an effective limit to employment. Price stability by means of independent central banks is not a "free lunch", but is rather associated with real costs, for instance higher unemployment.

2. A high degree of co-ordination of wage bargaining is capable of increasing the level of employment compatible with price stability and decreasing the real costs of disinflation and stable prices. Co-ordinated wage bargaining allows for the integration of the central banks objectives into the nominal wage demands of labour unions and reduces wage pressure when employment is increasing. Co-ordination, on the one hand, means horizontal co-ordination of wage demands between sectors, industries or branches which makes it possible to consider the effects of wage agreements by sectors or industries on aggregate unit wage costs and inflation. It also makes sector or industry "inflation increments", protecting the agreements against surprise inflation caused by other sectors, redundant. But co-ordination will only becomes effective, if the implementation problem is solved by vertical co-ordination, on the other hand. Only a high degree of vertical co-ordination is able to prevent upwards or downwards wage pressure when employment is increasing or decreasing.

The effect of co-ordination of wage bargaining on sustainable employment in a monetary economy are shown in figure 2:

Figure 2: Increasing the degree of co-ordination of wage bargaining
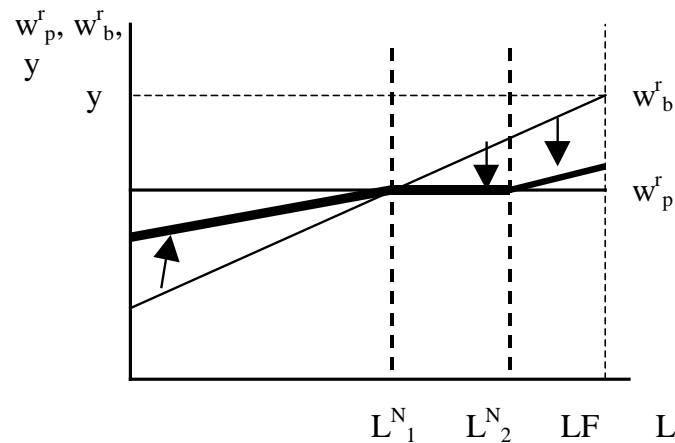
With an increasing degree of horizontal and vertical co-ordination of wage bargaining, the real wage demanded by labour unions changes compared to non-co-ordination. Between L^N_1 and L^N_2 the bargaining partners are able to accept the feasible real wage determined by mark-up pricing and to exhaust the scope for distribution, thereby respecting the inflation objective of independent central banks. If employment falls short of L^N_1, unions will be too weak to exhaust the scope for distribution. If employment exceeds L^N_2, union members will push for higher wages and a higher wage share, and either unions will demand redistribution in favour of wages or wage drift due to excess demand for labour in some sectors may arise. This will accelerate inflation and cause central bank intervention forcing employment down to L^N_2.

By means of co-ordinated wage bargaining a constant inflation rate becomes compatible with a range of employment levels, and the NAIRU is no longer unique.[24] As an increasing degree of wage bargaining co-ordination decreases the NAIRU, a higher level of employment can be achieved without contradicting the inflation objective of an independent central bank. Contrary to prevailing propositions, a reduction of the NAIRU can be attained by means of organising the labour market and the bargaining parties and does not require decentralisation of wage bargaining and deregulation of labour markets.[25] A high degree of wage bargaining co-ordination has the additional virtue that increasing unemployment will not cause immediate disinflation or deflation with its negative impacts on effective demand and employment.

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[24] This fact may explain the difficulties to estimate the actual level of the NAIRU with sufficiently small confidence intervals, especially for economies with co-ordinated wage bargaining (see Staiger/Stock/Watson 1997).

[25] This does not preclude, however, that the NAIRU can be reduced by decentralisation of wage bargaining and deregulation of labour markets, as long as the bargaining position of labour unions is sufficiently weakened. According to Gordon (1997), the decrease in the NAIRU during the 1990s in the USA has also been due to weakened labour unions.

4. The perspectives for Euroland

The transition to European Monetary Union in 1999 caused major changes for the institutional framework and the possibilities for interaction between monetary policy and wage bargaining. The personally, politically and economically independent European Central Bank[26] with its primary objective of price stability is faced with different national wage bargaining systems for which co-ordination across Euroland has not yet become effective.[27] Hall/Franzese (1998) and Schelkle (1997) expect major problems and increasing unemployment, especially for those economies with well-working signalling between central bank and co-ordinated wage bargaining, as Austria, Germany, Finland and the Netherlands. But also for countries with uncoordinated wage bargaining but politically dependent central banks, as France, Italy, Ireland, Portugal and Spain, they expect negative consequences, because the independent and conservative ECB would not accommodate inflation caused by unemployment falling below the NAIRU any more. Soskice/Iversen (1998), however, make clear that national signalling before the transition to EMU only took place in Germany, the regional key currency country. The other central banks in the European Monetary System (EMS) rather had to follow the policy of the German Bundesbank and could not react to national wage bargaining. The changes caused by transition to EMU have therefore to be discussed separately for Germany and the other countries.

The superior development of employment and inflation in Germany from the 1950s to the early 1990s is often mentioned as an example for a well-working system of signalling be-

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[26] According to the Maastricht treaty, the primary objective for the ECB is price stability. Only when price stability is achieved, the ECB should support the economic policy of the European Union. The ECB is goal and instrument independent (see Bean 1998). Its monetary strategy rests on two pillars: on the one hand, on a monetary target as an intermediate reference point and, on the other hand, an inflation target assessed by a broad set of indicators (see Europäische Zentralbank 1999, p. 43). Most commentators expect the ECB to pursue inflation targeting, as more and more central banks, including the Bundesbank, have done in fact after the collapse of the Bretton Woods system (see Marquard 1999 and Chada/Janssen 1998).

[27] For the differences between national wage bargaining systems in the EMU see Kasten/Soskice (1999), Mesch (1999) and Traxler (1999). Attempts to co-ordinate wage bargaining across borders have been made by the union federations of Germany and the Benelux-states. In the "declaration of Doorn" (1998), they agreed to aim at real wage increases according to productivity growth and to prevent wage dumping. On the sectoral level, the European Metalworker Federation (EMF) has been the first to develop concepts of European co-ordination of bargaining demands based on productivity growth rates. This line has now been followed by almost all other European industry federations and by the European Trade Union Confederation (ETUC). This does not mean, however, that wages actually increase with productivity growth. On the contrary, a wage policy based on productivity growth has not yet become effective in EMU. On the state of co-ordination of wage bargaining in EMU see Mesch (2000), Hoffmann/Mermet (2000), Schulten/Bispinck (1999), Schulten (2001, 2001a) and Traxler (1999).

tween an independent central bank and co-ordinated wage bargaining.[28] The independent and conservative Bundesbank was highly credible in fighting inflation. Wage bargaining characterised by a high degree of co-ordination through pattern bargaining by the union of metalworkers, the IG Metall, well-working co-ordination within German labour union federation, the DGB, and within the employer associations, took the Bundesbank's inflation objective seriously into account and avoided excessive wage hikes. If labour unions pushed through nominal wage hikes incompatible with price stability, the Bundesbank rigorously intervened and punished bargaining parties with persistently increasing interest rates. This model of interaction expired when the ECB took over responsibilities for monetary policies. The consequences for German wage bargaining will depend on whether the ECB will attach a major role to the effects of German wage bargaining on inflation in Euroland and therefore will directly respond to Germany's nominal wage hikes, on the one hand, and whether German labour unions will anticipate such a reaction, on the other hand.

Soskice/Iversen (1998) expect a widened space for wage hikes in Germany because the ECB would not target German inflation. This would cause increasing inflation for Euroland and a higher NAIRU for Germany. Mesch (2000), however, sees some evidence for the ECB trying to influence the wage demands of the IG Metall and therefore focusing on German inflation. If German wage bargaining recognises these signals, there is no variation in the German NAIRU to be expected. German labour unions, however, may fear that with uncoordinated wage bargaining across Euroland, their relative real wage position may be weakened, because the other countries may not follow the German pattern. In this case, German wage unions may not be impressed by the ECB and may hope, that their wage demands might not have proportional effects on the EU-price level and therefore generate increasing real wages without immediate ECB intervention. A higher potential for inflation in Germany and Euroland as well as an increasing NAIRU would, however, be the consequences. But this kind of scenario may be more relevant for phases of full employment than in the present period with mass unemployment.

For the other member countries of EMU there have also been major changes. Generally and persistently decreasing interest rates in the course of convergence and the redundancy of the mark-up on the German interest rate have widened the scope for distribution and reduced the

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[28] See Hall (1994), Hall/Franzese (1998), Soskice/Iversen (1998) and Streeck (1994) for a more extensive discussion.

national NAIRUs. If the degree of competition has also increased by more transparent markets for goods and services in Euroland, the associated reduction of the mark-up will also contribute to a wider scope for distribution and a reduction of the NAIRU. This is also true for Germany.

When employment is generally increasing or when there are exogenous shocks limiting the national scopes for distribution, there will be major problems for those economies with fragmented and uncoordinated or inefficiently co-ordinated wage bargaining. With no nominal wage moderation by means of co-ordination, small countries with only minor impact on inflation in Euroland will suffer losses in market shares and employment. Failing wage moderation and increasing inflation in intermediate or bigger countries with major impacts on inflation in Euroland, will make the ECB intervene. Overall losses in output and employment in Euroland and especially in these countries will follow.

Economies with a high degree of co-ordination of wage bargaining (including Germany) will, however, be able to contain inflation when employment is increasing or when they are hit by exogenous shocks limiting the scope for distribution. With persisting unemployment, these countries may also want to make active use of their co-ordination advantage and keep their bargaining agreements below those of their competitors in Euroland. This kind of "competitive corporatism" seems to become a major tendency of the "social pacts" in EMU member countries.[29] Competitive corporatism does not destabilise macroeconomic development as long as its introduction is confined to small economies, but it exacerbates regional disparities caused by different labour market institutions already in this context. A "beggar thy neighbour" policy will, however, become a major macroeconomic problem and may cause deflationary wage dumping in EMU as soon as it is pursued by some major economies.[30]

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[29] According to Schulten (2001, p. 21), there are pacts for competitiveness which encompass nominal wage guidelines in Belgium, Germany, Greece, Finland, Italy, Ireland, the Netherlands and Portugal. See also Kasten/Soskice (1999). For the dangers of national corporatism aimed at increasing international competitiveness see also Crouch (2000).

[30] Simulations with the Oxford Economic Forecasting Model by Fritsche et al. (1999) show that nominal wage reductions in Germany improve international competitiveness and hence production and employment in Germany but also reduce output and employment in the other EMU countries by a considerable amount. The reduction of interest rates made possible by German wage moderation does not have sufficiently compensating effects. If the Netherlands, however, follow a "beggar thy neighbour" strategy there are neither effects on output and employment in the other EMU economies nor on the interest rate. For the dangers of a destabilising wage dumping process in EMU see also Kromphardt (1999) and Heise/Schulten (1999).

The danger of destabilising deflation or inflation will apparently dominate in the EMU, if wage bargaining remains internationally uncoordinated, because wage externalities will not be taken account of for Euroland as a whole. With high unemployment, the threat of deflation seems to prevail at present. An increasing degree of co-ordination of wage bargaining across EMU, with wage demands of labour unions related to national productivity growth and the target inflation rate of the ECB, could therefore widen the corridor for stable inflation levels of employment. In this way, the European NAIRU could be reduced and the danger of future deflation spirals caused by increasing unemployment above the NAIRU could be confined. A potentially viable road towards co-ordination of wage bargaining across Euroland could be initiated by the European Metalworkers Federation led by the German IG Metall, because in this sector the conditions for efficient vertical co-ordination seem to be given. The metal sector could therefore develop the core of pattern bargaining across EMU. Centralised, top down wage bargaining at the EMU-level seems to be impossible under present conditions, because of the differences between national wage bargaining institutions and the lack of co-ordination within European labour unions and employer associations.[31]

A reduction of the NAIRU in the EMU could, however, also be achieved by means of deregulation of labour market institutions, decentralisation, fragmentation and individualisation of wage bargaining, the reduction of social benefits and hence the reservation wage rate and through active labour market policies increasing the qualifications of labour supply.[32] This strategy, aiming at weakened labour union bargaining power, can effectively decrease the NAIRU and improve the employment performance, as the US-experience in the 1980s and 1990s has shown (see Gordon 1997). The strategy, however, crucially depends on central bank policies matching with deregulation of labour markets and rewarding deregulated markets with symmetric reactions to deviations from target inflation. A reduction of the NAIRU by means of deregulation has therefore to be accompanied by expansive monetary policies (see Allsop/Vines 1998). But it should not be forgotten, that symmetric monetary policy reaction may still have asymmetric effects on investment, output and employment. As mentioned above, monetary policy is always able to convert an investment boom into a recession by increasing interest rates, if unemployment falls short of the NAIRU and inflation accelerates. But decreasing interest rates by central bank interventions may not be sufficient to convert a

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[31] For similar views on the perspectives of co-ordination of wage bargaining in Euroland see Kasten/Soskice (1999), Kittel/Traxler (2001), Mesch (2000), Soskice (2000), Traxler (1999).

[32] This strategy is advocated by those authors who suppose the European unemployment problem to be predominantly "structural" (see Calmfors 1998).

recession, with unemployment considerably above the NAIRU, into an investment boom, if expectations of investors have deteriorated. In this case, also matching fiscal policies or/and increasing world demand for goods may be needed.[33] If these conditions are not given, central banks may not be able to stop falling unemployment and deflation. Therefore, the strategy of achieving higher employment by means of the central bank rewarding labour market deregulation demands a lot of the central bank. The central bank would have to conduct the economy on a path between overheating and recession and would have, above all, to avoid deep recessions. Under the conditions of deregulated labour markets without wage moderation in the face of rising employment, this strategy might contradict the central bank's price stability objective.

There is not only the symmetric strategy of the US Federal Reserve that can be chosen by the ECB, but also the asymmetric strategy of the German Bundesbank, which increased interest rates whenever inflation climbed above the target rate, but which did not decrease interest rates immediately, when inflation rates fell below the target.[34] This monetary strategy supposes powerful strategic actors in the labour market as causes for inflation, who have to be disciplined by appropriate monetary policy, whereas the Fed strategy supposes powerless actors and attributes inflation to the market constellation in the labour market. Contrary to the Fed, the Bundesbank had also to take into account the higher degree of openness of the German compared to the US economy and was very successful in its strategy of "stability oriented under-valuation" of the D-Mark. This strategy persistently combined current account surpluses with revaluation tendencies of the currency.

Summing up, the perspectives for inflation and employment in EMU are determined, on the one hand, by the ECB's choice of reaction function and, on the other hand, by the development of labour market institutions, as can be seen from table 1 and figure 3. If we only distinguish between a high degree of co-ordination of wage bargaining and a low degree, which may be associated with further deregulation in the labour market, and between a symmetric reaction function of the ECB imitating the Fed and an asymmetric approach following the

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[33] As has been shown by Flassbeck et al. (1997), Kalmbach (2000), Palley (1998) and Schulmeister (2000), the superior performance of the US-economy in the 1990s was rather due to co-ordinated macroeconomic policies than to labour market deregulation.

[34] See Debelle/Fischer (1994), Horn (1999) and Soskice (1999) who claim that the Bundesbank strategy caused higher sacrifice-ratios than the Fed strategy. Bibow (2000) shows that the growth differences between the USA and Germany in the 1990s are predominantly due to the asymmetric strategy of the Bundesbank compared to the symmetric approach of the Fed.

Bundesbank, we can derive four scenarios which show the medium to long run perspectives for inflation and employment in Euroland.

Table 1: Potential scenarios for macroeconomic performance in Euroland determined by the degree of co-ordination of wage bargaining and by the ECB's choice of monetary policy strategy

|		Strategy of the ECB	
		German Bundesbank (asymmetric)	Federal Reserve (symmetric)
Degree of co-ordination of wage bargaining	high	1: Price stability and intermediate rate of employment	2: Price stability and high rate of employment (stable)
	low	3: Deflation and low rate of employment	4: Price stability and high rate of employment (unstable)

If a high degree of co-ordination of wage bargaining is attained and the ECB follows the strategy of the Bundesbank, Euroland's economy will achieve price stability and an intermediate rate of employment (scenario 1). The potentials for stable inflation rates of employment will not be exhausted in the long run, because the ECB will react asymmetrically to short run deviations from its inflation target. Under the conditions of co-ordinated wage bargaining a better employment performance will be achieved, if the ECB follows the Fed strategy (scenario 2).

If wage bargaining remains uncoordinated at the EMU level and if further deregulation in the labour market is introduced, the choice of the Fed-strategy may also lead to a high level of employment (scenario 4). But high employment will be far more unstable than in the case of co-ordinated wage bargaining. If unemployment exceeds the NAIRU, there will be the immediate threat of disinflation and deflation which will be especially pronounced if there are no stabilising fiscal policy interventions in this situation. As fiscal policies in EMU are restricted by the stability pact of Amsterdam and orientated towards consolidation by means of expenditure cuts, there can rather be expected pro-cyclical policies for the future (see Arestis/McCauley/Sawyer 2001, Priewe 1997). If the ECB chooses the Bundesbank strategy under the conditions of uncoordinated wage bargaining across EMU, the attainable degree of employment will persistently remain below the stable inflation rate of employment and there will

be permanent deflationary pressure which might be exacerbated by pro-cyclical fiscal policies (scenario 3).

As we have to expect a low degree of co-ordination of wage bargaining for the foreseeable future, scenarios 3 and 4 will be the more probable at present. As the degree of openness of Euroland is similar to that of the USA there is, however, no necessity for the ECB to follow the Bundesbank strategy which was predominantly motivated by open economy considerations. If the ECB acts according to this view, we will have to expect scenario 4 for the medium run future.

Figure 3: Potential Scenarios for macroeconomic performance in Euroland determined by the degree of co-ordination of wage bargaining and by the ECB's choice of monetary policy strategy
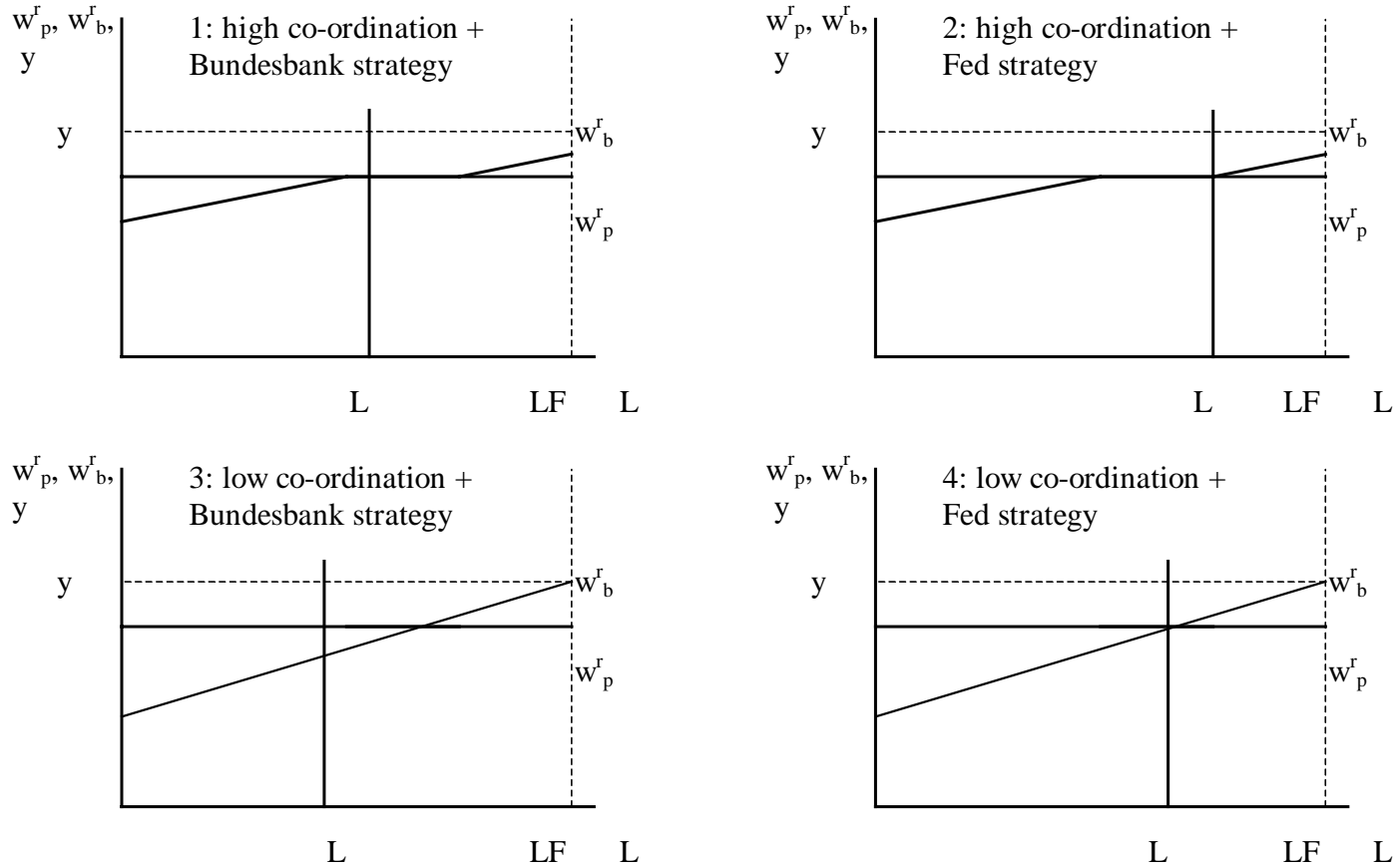
5. Conclusions

Starting from a Post-Keynesian model, in which there is no mechanism that equates employment determined by effective demand with the NAIRU as the limit to employment given by distribution conflict and enforced by monetary policy, we have analysed the impact of labour market and central bank institutions on the stable inflation rate of employment. From empirical work on the effects of labour market institutions on macroeconomic performance we have concluded that the horizontal and vertical degree of co-ordination of wage bargaining has an inverse effect on the NAIRU. Therefore, a reduction of the NAIRU does not require deregulation of labour markets and weakened union bargaining power but can be achieved by improved co-ordination of wage bargaining. The NAIRU becomes an effective limit to employment in those economies with independent central banks ready to sacrifice output and employment to gain price stability. Empirical studies on joint effects of labour market institutions and central bank independence support the presumption that with the dominance of independent central banks, macroeconomic performance is superior in those economies with co-ordinated wage bargaining. Horizontally and vertically co-ordinated wage bargaining allows for the internalisation of macroeconomic wage externalities in the bargaining process. Inflation caused by distribution conflict in the face of rising employment or by external shocks limiting the scope for distribution, can therefore be avoided. Under these conditions, the central bank is enabled to tolerate a higher rate of employment. A high degree of co-ordination of wage bargaining will also prevent the economy from sliding into deflation if unemployment increases.

With an independent central bank the perspectives for inflation and employment depend on the monetary strategy chosen by the ECB and on the development of wage bargaining co-ordination across Euroland. Under the more probable conditions of uncoordinated wage bargaining for the medium run future, the choice of the asymmetric Bundesbank strategy by the ECB will cause a level of employment persistently below the non accelerating inflation level and a permanent deflationary pressure for Euroland's economy. The choice of the symmetric Fed strategy would allow for a higher level of employment but still bear the risk of deflation, exacerbated by pro-cyclical fiscal policies when unemployment rises above the NAIRU. Co-ordination of wage bargaining across Euroland would improve the level of employment and stabilise the level of prices for both potential strategies of the ECB.

References

Alesina, A., Summers, L.H. (1993): Central Bank Independence and Macroeconomic Performance: Some Comparative Evidence, in: Journal of Money, Credit and Banking, Vol. 25, 1993, pp. 151-162.

Allsopp, C., Vines, D. (1998): The Assessment: Macroeconomic Policy After EMU, in: Oxford Review of Economic Policy, Vol. 14 (3), 1998, pp. 1-23.

Al-Marhubi, F., Willet, T.D. (1995): The Anti Inflationary Influence of Corporatist Structures and Central Bank Independence: The Importance of the Hump Shaped Hypothesis, in: Public Choice, Vol. 84, 1995, pp. 153-162.

Arestis, P. (1996): Post Keynesian Economics: Towards Coherence, in: Cambridge Journal of Economics, Vol. 20, 1996, pp. 111-135.

Arestis, P., McCauley, K., Sawyer, M. (2001): An Alternative Stability Pact for the European Union, in: Cambridge Journal of Economics, Vol. 25, 2001, pp. 113-130.

Barro, R.J., Gordon, D.B. (1983): Rules, Discretion and Reputation in a Model of Monetary Policy, in: Journal of Monetary Economics, Vol. 12, 1983, pp. 101-121.

Bean, C. (1998): Monetary Policy Under EMU, in: Oxford Review of Economic Policy, Vol. 14 (3), 1998, pp. 41-53.

Berger, H., de Haan, J., Eijffinger, S.C.W. (2000): Central Bank Independence: An Update of Theory and Evidence, CESifo Working Paper Series, No. 255, Munich, February 2000.

Bhaduri, A., Marglin, S. (1990): Unemployment and the Real Wage: the Economic Basis for Contesting Political Ideologies, in: Cambridge Journal of Economics, Vol. 14, 1990, pp. 375-393.

Bibow, J. (1999): Reflections on the Current Fashion for Central Bank Independence, Beiträge aus dem Institut für Statistik und Ökonometrie der Universität Hamburg, No. 41.

Bibow, J. (2000): Making EMU Work: Some Lessons from the 1990s, Beiträge aus dem Institut für Statistik und Ökonometrie der Universität Hamburg, No. 53.

Blanchard, O., Katz, L.F. (1997): What We Know and Do Not Know About the Natural Rate of Unemployment, in: Journal of Economic Perspectives, Vol. 11 (1), 1997, pp. 51-72.

Bleaney, M. (1996): Central Bank Independence, Wage Bargaining Structure, and Macroeconomic Performance in OECD Countries, in: Oxford Economic Papers, Vol. 48, 1996, pp. 20-38.

Calmfors, L. (1993): Centralisation of Wage Bargaining and Macroeconomic Performance – A Survey, in: OECD Economic Studies, No. 21, 1993, pp. 161-191.

Calmfors, L. (1998): Macroeconomic Policy, Wage Setting, and Employment - What Difference Does the EMU make?, in: Oxford Review of Economic Policy, Vol. 14 (3), 1998, pp. 125-151.

Calmfors, L., Driffill, J. (1988): Centralization of Wage Bargaining, in: Economic Policy, 1988, pp. 13-61.

Carlin, W., Soskice, D. (1990): Macroeconomics and the Wage Bargain. A Modern Approach to Employment, Inflation and the Exchange Rate, Oxford (Oxford University Press).

Chada, J., Janssen, N. (1998): Same Tune, Different Words? The Reaction Function of G7 Monetary Authorities, in: Arestis, P., Sawyer, M. (eds.), The Political Economy of Central Banking, Cheltenham (Edward Elgar), pp. 157-168.

Cornwall, J., Cornwall, W. (1998): Unemployment Costs and Inflation Targeting, in: Arestis, P., Sawyer, M. (eds.), The Political Economy of Central Banking, Cheltenham (Edward Elgar), pp. 49-66.

Cottrell, A. (1994): Post-Keynesian Monetary Economics; in: Cambridge Journal of Economics, Vol. 18, 1994, pp. 587-605.

Crouch, C. (2000): National Wage Determination and European Monetary Union, in: Crouch, C. (ed.), After the Euro. Shaping Institutions for Governance in the Wake of European Monetary Union, Oxford (Oxford University Press), pp. 203-226.

Cukierman, A., Lippi, F. (1999): Central Bank Independence, Centralization of Wage Bargaining, Inflation and Unemployment: Theory and some Evidence, in: European Economic Review, Vol. 43, 1999, pp. 1395-1434.

Cukierman, A., Webb, S., Neyapti, B. (1992): Measuring the Independence of Central Banks and its Effects on Economic Policy, in: The World Bank Economic Review, Vol. 6, 1992, pp. 353-398.

Davidson, P. (1994): Post Keynesian Macroeconomic Theory, Aldershot (Edward Elgar).

Debelle, G., Fischer, S. (1994): How Independent Should a Central Bank Be?, in: Fuhrer, J.C. (ed.), Goals, Guidelines, and Constraints Facing Monetary Policymakers, Federal Reserve Bank of Boston Conference Series No. 38, pp. 195-221.

Eijffinger, S., De Haan, J. (1996): The Political Economy of Central Banking, Special Papers in International Economics, No. 19, May 1996, Princeton University, New Jersey.

Eijffinger, S., Schaling, E., Hoeberichts, M. (1998): Central Bank Independence: A Sensivity Analysis, in: European Journal of Political Economy, Vol. 14, 1998, pp. 73-88.

Epstein, G.A. (1992): Political Economy and Comparative Central Banking, in: Review of Radical Political Economics, Vol. 24, 1992, pp. 1-30.

Epstein, G.A. (1994): A Political Economy Model of Comparative Central Banking, in: Dymski, G., Pollin, R. (eds.), New Perspectives in Monetary Macroeconomics, Ann Arbor (University of Michigan Press), pp. 231-277.

Europäische Zentralbank (1999): Die stabilitätsorientierte geldpolitische Strategie des Eurosystems, in: Monatsbericht, Januar 1999, pp. 43-56.

Flanagan, R.J. (1999): Macroeconomic Performance and Collective Bargaining: An International Perspective, in: Journal of Economic Literature, Vol. XXXVII, 1999, pp. 1150-1175.

Flassbeck, H. et al. (1997): Unemployment in Europe and the U.S.: Macroeconomics is the Key, in: Internationale Politik und Gesellschaft, 4/97, pp. 412-424.

Forder, J. (1998): Central Bank Independence - Conceptual Clarifications and Interim Assessment, in: Oxford Economic Papers, Vol. 50, 1998, pp. 307-334.

Franz, W. (1996): Theoretische Ansätze zur Erklärung von Arbeitslosigkeit: Wo stehen wir 1995?, in: Gahlen, B., Hesse, H., Ramser, H.J. (eds.), Arbeitslosigkeit und Möglichkeiten ihrer Überwindung, Tübingen (Mohr), pp. 3-45.

Fritsche, U. et al. (1999): Is There a Need for a Co-ordinated European Wage and Labour Market Policy?, in: Huemer, G., Mesch, M., Traxler, F. (eds.), The Role of Employer Associations and Labour Unions in the EMU, Aldershot (Ashgate), pp. 65-84.

Galbraith, J.K. (1997): Time to Ditch the NAIRU, in: Journal of Economic Perspectives, Vol. 11 (1), 1997, pp. 93-108.

Gärtner, M. (1997): Central Bank Independence and the Sacrifice Ratio: The Dark Side of the Force, in: Swiss Journal of Economics and Statistics, Vol. 133, 1997, pp. 513-538.

Gordon, R.J. (1997): The Time-Varying NAIRU and its Implications for Economic Policy, in: Journal of Economic Perspectives, Vol. 11 (1), 1997, pp. 11-32.

Grilli, V., Masciandoro, D., Tabellini, G. (1991): Political and Monetary Institutions and Public Financial Policies in the Industrial Countries, in: Economic Policy, Vol. 13, 1991, pp. 341-392.

Hall, P.A. (1994): Central Bank Independence and Coordinated Wage Bargaining: Their Interaction in Germany and Europe, in: German Politics and Society, Autumn 1994, pp. 1-23.

Hall, P.A., Franzese, R.J. (1998): Mixed Signals: Central Bank Independence, Coordinated Wage Bargaining, and European Monetary Union, in: International Organization, Vol. 52, 1998, pp. 505-535.

Havrilesky, Th., Granato, J. (1993): Determinants of Inflationary Performance: Corporatist Structures vs. Central Bank Autonomy, in: Public Choice, Vol. 76, 1993, pp. 249-261.

Hein, E. (1999): Zentralbank-Politik und makroökonomische Ergebnisse: eine sozio-institutionelle Interpretation, WSI-Diskussionspapiere No. 73, WSI in der Hans Böckler Stiftung, Düsseldorf.

Hein, E., Krämer, H. (1997): Income Shares and Capital Formation: Patterns of Recent Developments, in: Journal of Income Distribution, Vol. 7, 1997, pp. 5-28.

Hein, E., Ochsen, C. (2000): Monetary Interest Rates, Income Shares, and Investment: Theory and Empirical Evidence for France, Germany, the UK, and the USA, Schriftenreihe des Promotionsschwerpunktes „Makroökonomische Diagnosen und Therapien der Arbeitslosigkeit", No. 11/2000, Stuttgart-Hohenheim.

Heine, M., Herr, H. (1999): Volkswirtschaftslehre, München (Oldenbourg).

Heise, A., Schulten, T. (1999): Lohndumping in der EWU – geht ein Gespenst um in Europa? Erwiderung auf Angela Schürfeld, in: Wirtschaftsdienst, 2/1999, pp. 89-94.

Hewitson, G. (1995): Post-Keynesian Monetary Theory: Some Issues, in: Journal of Economic Surveys, Vol. 9, 1995, pp. 285-310.

Hoffmann, R., Mermet, E. (2000): Wage Coordination in the European Union – Challenges for the Coordination of Collective Bargaining, in: Hoffmann, R. et al. (eds.), Transnational Industrial Relations in Europe, Düsseldorf (Hans Böckler Stiftung), pp. 63-84.

Horn, G.A. (1999): Zur Koordination von Geld- und Lohnpolitik. Eine empirische Analyse für die USA und Deutschland, in: Filc, W., Köhler, C. (eds.), Macroeconomic Causes of Unemployment: Diagnosis and Policy Recommendations, Berlin (Duncker & Humblot), pp. 419-439.

Iversen, T. (1999): The Political Economy of Inflation: Bargaining Structure or Central Bank Independence?, in: Public Choice, Vol. 99, 1999, pp. 237-258.

Jordan, T.J. (1997): Disinflation Costs, Accelerating Inflation Gains, and Central Bank Independence, in: Weltwirtschaftliches Archiv, Vol. 133, 1997, pp. 1-21.

Kalecki (1943): Political Aspects of Full Employment, in: Kalecki, M., Selected Essays on the Dynamics of the Capitalist Economy, Cambridge (Cambridge University Press), 1971, pp. 138-145.

Kalmbach, P. (2000): Höhere Arbeitsmarktflexibilität oder flexiblere Wirtschaftspolitik? Zu den Ursachen der unterschiedlichen Beschäftigungsentwicklung in den USA und in Deutschland, Friedrich-Ebert-Stiftung, Reihe "Wirtschaftspolitische Diskurse", No. 132, Bonn.

Kasten, G., Soskice, D. (1999): Möglichkeiten und Grenzen von Beschäftigungspolitik in der Europäischen Wirtschafts- und Währungsunion, Discussion Paper FS I 99-303, Wissenschaftszentrum Berlin für Sozialforschung.

Kittel, B., Traxler, F. (2001): Lohnverhandlungssysteme und Geldpolitik, in: Wirtschaft und Gesellschaft, Vol. 27, 2001, pp. 11-40.

Kromphardt, J. (1999): Lohnsenkungswettbewerb in der EWU - Deflationsgefahr oder Beschäftigungsimpuls?, in: Wirtschaftsdienst 1999/II, pp. 85-89.

Kydland, F.E., Prescott, E.C. (1977): Rules Rather than Discretion: The Inconsistency of Optimal Plans, in: Journal of Political Economy, Vol. 85, 1977, pp. 473-492.

Lavoie, M. (1984): The Endogeneous Flow of Credit and the Post Keynesian Theory of Money, in: Journal of Economic Issues, Vol. 18, 1984, pp. 771-797.

Lavoie, M. (1992): Foundations of Post-Keynesian Economic Analysis, Aldershot (Edward Elgar).

Lavoie, M. (1996): Horizontalism, Structuralism, Liquidity Preference and the Principle of Increasing Risk, in: Scottish Journal of Political Economy, Vol. 43, 1996, pp. 275-300.

Layard, R., Nickell, S., Jackman, R. (1991): Unemployment, Oxford (Oxford University Press).

Mangano, G. (1998): Measuring Central Bank Independence: A Tale of Subjectivity and of its Consequences, in: Oxford Economic Papers, Vol. 50, 1998, pp. 468-492.

Marquardt, R.-M. (1999): Geldmengenkonzept für die EZB? - Ein Mythos als Vorbild?, in: Heise, A. (ed.), Makropolitik zwischen Nationalstaat und Europäischer Union, Marburg (Metropolis), pp. 143-174.

Marx, K. (1867): Das Kapital. Kritik der politischen Ökonomie, Erster Band: Der Produktionsprozeß des Kapitals, Marx-Engels-Werke, Band 23, Berlin (Dietz) 1962.

Mesch, M. (1999): Vom Wettbewerbskorporatismus zur transnationalen Koordination der Lohnpolitik in der EU? (Teil 1), in: Wirtschaft und Gesellschaft, Vol. 25, 1999, pp. 387-422.

Mesch, M. (2000): Vom Wettbewerbskorporatismus zur transnationalen Koordination der Lohnpolitik in der EU? (Teil 2), in: Wirtschaft und Gesellschaft, Vol. 26, 2000, pp. 7-63.

Moore, B.J. (1989): The Endogeneity of Credit Money, in: Review of Political Economy, Vol. 1, 1989, pp. 65-93.

OECD (1997): Economic Performance and the Structure of Collective Bargaining, in: Employment Outlook, July 1997, Paris, pp. 63-92.

Palley, T. (1998): Restoring Prosperity: Why the U.S. Model is not the Answer for the United States or Europe, in: Journal of Post Keynesian Economics, Vol. 20, 1998, pp. 337-352.

Pivetti, M. (1996): Maastricht and the Political Independence of Central Banks: Theory and Facts, in: Contributions to Political Economy, Vol. 15, 1996, pp. 81-104.

Posen, A. (1993): Why Central Bank Independence Does Not Cause Low Inflation: There is no Institutional Fix For Politics, in: O'Brien, R. (ed.), Finance and the International Economy, Oxford (Oxford University Press), pp. 41-65.

Posen, A. (1998): Central Bank Independence and Disinflationary Credibility: A Missing Link?, in: Oxford Economic Papers, Vol. 50, 1998, pp. 335-359.

Priewe, J. (1997): Verschuldungsregeln in der Europäischen Währungsunion, in: WSI Mitteilungen 6/1997, Vol. 50, pp. 365-373.

Rogoff, K (1985): The Optimal Degree of Commitment to an Intermediate Monetary Target, in: Quarterly Journal of Economics, Vol. 100, 1985, pp. 1169-1189.

Rousseas, S. (1998): Post Keynesian Monetary Economics, 3. ed., Basingstoke (MacMillan).

Rowthorn, R.E. (1977): Conflict, Inflation and Money, in: Cambridge Journal of Economics, Vol. 1, 1977, pp. 215-239.

Sawyer, M. (1997): Income Distribution, Macroeconomic Analysis and Barriers to Full Employment, The Jerome Levy Economics Institute of Bard College, Working Paper No. 211.

Schelkle, W. (1997): Die Bedeutung der Arbeitsmarktsysteme für die Beschäftigungsentwicklung in einer zukünftigen Europäischen Währungsunion, in: List Forum für Wirtschafts- und Finanzpolitik, Vol. 23, 1997, pp. 373-394.

Schmidt, P.-G. (1996): Strukturmerkmale des Arbeitsmarktes und gesamtwirtschaftliche Stabilität, in: Zohlnhöfer, W. (ed.), Die Tarifautonomie auf dem Prüfstand, Berlin (Duncker & Humblot), pp. 95-148.

Schulmeister, S. (2000): Die unterschiedliche Wachstumsdynamik in den USA und Deutschland in den Neunziger Jahren, Österreichisches Institut für Wirtschaftsforschung, WIFO Working Papers 134/2000.

Schulten, T., Bispinck, R. (eds.) (1999): Tarifpolitik unter dem EURO. Perspektiven einer europäischen Koordinierung: das Beispiel Metallindustrie, Hamburg (VSA).

Schulten, T. (2001): Solidarische Lohnpolitik in Europa. Ansätze und Perspektiven einer Europäisierung gewerkschaftlicher Lohnpolitik, WSI-Diskussionspapier No. 92, WSI in der Hans-Böckler-Stiftung, Düsseldorf.

Schulten, T. (2001a): The European Metalworkers' Federation's Approach to a European Coordination of Collective Bargaining – Experiences, Problems and Prospects, manuscript, WSI in der Hans Böckler Stiftung, Düsseldorf.

Schürz, M. (2001): Die Glaubwürdigkeit der Federal Reserve Bank: Vertrauen zwischen Eliten, in: Wirtschaft und Gesellschaft, Vol. 27, 2001, pp. 69-86.

Seccareccia, M. (1998): Wicksellian Norm, Central Bank Real Interest Rate Targeting and Macroeconomic Performance, in: Arestis, P. Sawyer, M. (eds.), The Political Economy of Central Banking, Cheltenham (Edward Elgar), pp. 180-198.

Smithin, J. (1994): Controversies in Monetary Economics. Ideas, Issues and Policy, Aldershot (Edward Elgar).

Soskice, D. (1990): Wage Determination: The Changing Role of Institutions in Advanced Industrialized Countries, in: Oxford Review of Economic Policy, Vol. 4, 1990, pp. 36-61.

Soskice, D. (1999): The Political Economy of EMU. Rethinking the effects of monetary integration on Europe, Discussion Paper FS I 99-302, Wissenschaftszentrum Berlin für Sozialforschung.

Soskice, D. (2000): Wage Determination in the EMU, in: Hoffmann, R. et al. (eds.), Transnational Industrial Relations in Europe, Düsseldorf (Hans Böckler Stiftung), pp. 45-51.

Soskice, D., Iversen, T. (1998): Multiple Wage-Bargaining Systems in the Single European Currency Area, in: Oxford Review of Economic Policy, Vol. 14, 1998, pp. 110-124.

Staiger, D., Stock, J.H., Watson, M.W. (1997): The NAIRU, Unemployment and Monetary Policy, in: Journal of Economic Perspectives, Vol. 11 (1), 1997, pp. 33-49.

Streeck, W. (1994): Pay Restraint without Incomes Policy: Institutionalized Monetarism and Industrial Unionism in Germany, in: Dore, R., Boyer, R., Mars, Z. (eds.), The Return to Incomes Policy, London (SAGE), pp. 118-140.

Traxler, F. (1999): Wage-setting Institutions and European Monetary Union, in: Huemer, G., Mesch, M., Traxler, F. (eds.), The Role of Employer Associations and Labour Unions in the EMU, Aldershot (Ashgate), pp. 115-135.