Wages, Employment and Prices

An Analysis of the Relationship Between Wage Level,
Wage Structure, Minimum Wages
and Employment and Prices

Hansjörg Herr

Paper No. 15, June 2002

Dr. Hansjörg Herr is Professor of Economics at the Berlin School of Economics. This paper was written for the International Labour Organisation (ILO). A shorter version of this paper will be published in "Labour Education Review" in 2002.

Summary

The interaction between the level of nominal and real wages, employment and prices has to be distinguished from the discussion of effects on employment through changes in the wage structure. First the relationship between the wage *level*, the price level and employment is analysed. There are essentially two broad approaches in tackling this problem.

The neoclassical approach argues that flexible real wages lead to full employment. It is assumed that the real wages rate is determined in the labour market and the latter works like a normal market for goods. The neoclassical approach can be divided into a macroeconomic and a microeconomic stream. The backbone of the macroeconomic variation of neoclassical theory in analysing the "real sphere" is a macroeconomic production function. Behind the proposed smooth relationship between decreasing real wage rates and increasing labour demand from profit maximising companies, the function of the marginal product of labour is hidden. In a addition a smooth supply curve of labour showing a relationship between a higher labour supply by households and higher real wages completes the Marshallian scissors diagram of a market in a partial analysis. The macro version of the neoclassical paradigm comes to the clear conclusion that in a situation of involuntary unemployment a cut in real wages reduces unemployment. Minimum wages above the equilibrium real wage rate, or other wage rigidities for example caused by unions, lead to unemployment and have to be abolished. Two shortcomings of the macroeconomic neoclassical approach appear to be significant. Firstly the "normal" supply function of labour is not micro based, it can – though not normal practice – only be deduced by an empirical analysis which can only draw conclusions for specific countries at a specific historical time. Particularly in developing and transitional countries it is very likely that labour supply increases if real wages become very low. A "perverse" supply function of labour creating more than one equilibrium solution for the market is perfectly compatible with the neoclassical model. If such a supply function of labour exists and if there is involuntary unemployment, decreasing real wage rates may lead to a "bad" equilibrium with very low wages and very high employment compared to another full employment equilibrium with higher wages and a lower work load for employees. Government set minimum wages can prevent the realisation of a "bad" equilibrium. More significant is that the demand function for labour in the simple neoclassical macro model is based on the assumption of one capital commodity. Already two capital commodities destroy the stable relationship between decreasing real wages rates and increasing demand for labour.

The microeconomic neoclassical approach is broader and logically consistent. Unfortunately it cannot say much about macroeconomic phenomenon. The basic principle is that under certain conditions an equilibrium of a system with a many commodities market, including the labour market, can be achieved if all prices are flexible. In this approach it is an open question whether in a situation of disequilibrium, real wages should increase or decrease to move to the equilibrium.

The neoclassical model was first seriously challenged by Keynes before the World War II. Fundamentally different Keynes interpretations have been developing until today. The Neoclassical Synthesis which was the popular interpretation of Keynes after World War II and the now popular New Keynesians use the neoclassical model

as the reference model for the long term equilibrium. Keynesianism in their view is considered to be an analysis of short term distortions of the neoclassical long term equilibrium. Distortions can be caused by wage and price rigidities. These interpretations have practically nothing to do with original Keynesian ideas and the ongoing discussion in this tradition.

Keynesianism in the latter interpretation argues that the labour market can only determine nominal wages and real wages are determined by the whole economic system. Nominal wages are on one hand income and on the other hand costs for companies. The cost character of wages make them to an important element in determining the price level in a monetary production economy. In the Keynesian paradigm employment is not the outcome of processes in the labour market. It depends on aggregate goods demand and above all on investment demand. In the Keynesian paradigm productivity oriented nominal wage increases keep unit-labour costs unchanged and become the nominal anchor of the price level. If all workers increase nominal wages by the same percentage and productivity does not change, the real wage level and the distribution between wages and the other parts of national income will not change.

Minimum wages set a floor for nominal wage cuts and are a substitute for weak unions and an underdeveloped system of wage bargaining. The nominal wage level is a good indicator for indexing minimum wages.

The second main area of discussion is the wage *structure* and its influence on employment. Different ways to change the wage structure have to be distinguished as each differentiation has its own effects. The general result is that some ways to make the wage structure more flexible or differentiated, can create employment, others can not. How much employment is created by changing the wage structure can only estimated in a country specific empirical analysis. A more differentiated wage structure has also disadvantages. Besides potential social and political problems, all types of deeper wage differentiation have the disadvantage of decreasing productivity.

In the last part of the paper wages, international competitiveness and current account performance is touched on. External cost factors are particularly important for smaller countries. A devaluation increases import prices and reduces domestic real wages. There is always the danger that a devaluation will trigger a wage-price spiral which leads to further devaluation and hyperinflation.

1. Introduction

The labour market and its reform are at the centre of theoretical and political discussions of how to realise high employment and reduce unemployment rates. There are two basic approaches. The neoclassical model[1] – the present mainstream

---

[1] The neoclassical approach is occasionally also called the classical approach. This has some justification as the classical paradigm and the neoclassical paradigm argue that money is neutral in the long term. That means the role of money in the long term is not important. Classical and neoclassical economists divide the economy into a real sphere and a monetary sphere. The latter is in the end only a veil and unimportant. But classical and neoclassical economists have for example completely different opinions about the role of wages in the economy. In this paper the classical paradigm is not analysed as it plays no role in the actual debate about wages.

approach in academic and political debate – assumes that wage cuts will increase employment. Reforms of labour markets in order to make them more flexible is one of the key recommendations to improve employment and growth. Flexibility of wages, so the argument goes, is one of the preconditions for a functioning market economy. The neoclassical model was first seriously challenged by Keynes. He was sceptical about the effects of wage cuts and recommended rigid wages to stabilise a market economy.

The Keynesian approach in comparison with the neoclassical approach is not well known. The "original" Keynesian approach is more a quarry of ideas than a complete and consistent theory. It is not surprising that different interpretation of Keynes developed. After World War II the so called IS-LM-model (cp. Hicks 1937) and its further development to the Neoclassical Synthesis (cp. for example Modigliani 1944; Klein 1947; Samuelson 1948) became the most widespread Keynes interpretation. The IS-LM-model neglects the role of wages and does not explain inflationary and deflationary processes; the Neoclassical Syntheses developed Keynes as a special short term version of the general long term neoclassical equilibrium. Keynesianism in this model is understood as short term disturbances created by rigidities of wages and prices of the long term neoclassical model (cp. Heilbronner/Milberg 1995).

Keynes (1930; 1936) rejected the neoclassical idea about the role of wages and certainly would not have accepted the Neoclassical Syntheses. The Keynesian approach presented in this paper is more in the tradition of the "original" Keynes without neoclassical elements (cp. Heine/Herr 2000). As Keynesian ideas were wrongly identified with the IS-LM-model and the Neoclassical Syntheses it is the aim of this paper to clarify the original Keynesian ideas and compare these with the neoclassical approach.

There is a second aim. Many neoclassical economists built their arguments on a very simple and extremely limited neoclassical model that is not acceptable any longer. The conclusions and political recommendations of this crude neoclassical model are not supported by the modern microeconomic neoclassical approach which became the methodologically accepted approach of nearly all neoclassical economists. It will

be shown what neoclassical economists can say about wages and what they can not say.

In the centre of the on going debate is the flexibility of labour markets. Flexibility has many facets. The key theoretical point is the flexibility of the level of wages. To discuss this question one has to understand the basic arguments of the neoclassical and Keynesian model in respect to the working of the labour market. All other facets to make labour markets more flexible are secondary compared with the analysis of the effects of the level of wages. The effect of changes in the wage level in the neoclassical and Keynesian approach will be discussed in chapter 2.

A second area of labour market flexibility is concerned with wage structure. Wages can be differentiated as follows.

a) The flexibility of the wage structure between different industries.

Here the economic effects of more differentiated wages between one industry – say the steel industry – and another industry – say the house-cleaning industry – is discussed.

b) The flexibility of the wage structure between different companies in the same industry.

In this case for example company A pays a different average wage than company B in spite of the fact that the two companies produce the same goods.

c) The flexibility of the wage structure between different occupations within one industry.

It will be analysed which effects can be expected if the wage difference between say an electrician in the steel industry and an accountant in the steel industry will become bigger.

The economic effects of the different aspects of the wage structure are discussed in chapter 3.[2] Chapter 4 deals with the relation between wages and international competitiveness of a country. The discussion of the special problem of minimum wages will be included in each of the different aspects of flexibility.

---

[2] The discussion about the flexibility of labour markets includes also questions like working hours, dismissal protection, wage continuation etc. This dimensions are not covered in this paper. It will also not be discussed whether wages should be regionally differentiated within one currency area.

This paper discusses primarily the theoretical aspects of changes in the level of wages and wage structure. The quantitative effects of changes in the wage structure depend largely on country specific situations and can only be estimated by empirical investigation. It is not the purpose of this paper to carry out such empirical research. Some empirical illustrations are however presented in order to clarify particular arguments.

2. Wage level, employment and price level

In this chapter we discuss only the problem of the wage level. The effects of changes in the wage structure are not discussed here. It is assumed that the wage structure does not change.

2.1 The neoclassical approach

The simple neoclassical macroeconomic model

The basic idea of the simple version of the neoclassical analyses of the labour market is that the labour market is a market like the market for apples or shoelaces. It is assumed that in an ideal world the labour market can find its equilibrium of demand and supply *if* the price of labour – the wage rate – is flexible. In a deregulated labour market an excess supply for labour will lead to decreasing wages, higher labour demand from enterprises and lower labour supply by households until an equilibrium with full employment is reached. If the demand for labour is higher than the supply, wages will increase until an equilibrium is realised. To clarify the very specific assumptions of this widely used model the following basic points should be considered (cp. Heine/Herr 2000; Felderer/Homburg 1998).

First it must be stressed that in the neoclassical world workers and employers negotiate the real wage rate, that means the basket of goods and services workers can buy when they work for one hour. Effectively, the neoclassical world is a barter economy – workers exchange a certain quantity of goods (that they can consume) against a certain quantity of time they have to work. Of course neoclassical economists know that in the real world only wages in terms of monetary value are determined – one hours work earns 12 Euros for example. But they believe that changes in monetary value of wages will lead to changes in real wages. This argument implies that prices are independent from nominal wages. There is nothing

like a wage-price spiral or a cost push inflation which lead from a higher nominal wage level to a higher price level. The price level is given by the quantity of money which is exogenously determined by the central bank. Following this so called quantity theory of money the central bank is always responsible for inflation or deflation.[3] In the case of inflation caused by an oversupply of money the argument goes as follows: the central bank increases the money supply by 10%, if the real production is given and the population feels it has excess money, it will spend it and create a excess demand, as a result the price level (P) will increase by 10%, the nominal wage rate (w) will like all prices also increase by 10%. As wages increase in line with the price the real wage rate ($\frac{w}{P}$) will not change.[4] In the following discussion of the neoclassical model we accept that prices are independent from wages. This neoclassical assumption will be challenged in chapter 2.2 when we discuss the Keynesian approach.

Diagram 1 shows a neoclassical labour market, demand and supply in hours. It is assumed that the supply of labour (N_s)

$$(1) \qquad N_s = N_s(\frac{w}{P})$$

increases with increasing real wages as utility maximising households normally want to work more when real wages become higher. The logic is that higher wages lead to higher potential consumption and stimulates people to sacrifice some leisure time to work more. This "normal" shape of the supply curve is not deduced from a strict microeconomic analysis. Taking the neoclassical General Equilibrium Model – the heart of the neoclassical approach in the tradition of Léon Walras, Abraham Wald, Kenneth Arrow or Gérard Debreu – many different types of macroeconomic supply functions of labour are possible (cp. Bliss 1975; Hahn 1981). This point is discussed below.

---

[3] The quantity theory of money has a long tradition. Even David Ricardo believed in it. The modern variants of this theory were developed by Irving Fisher, Milton Friedman and recently by the New Classical School.

[4] During the transition from the old price level to the new one real effects can occur if individuals – especially workers – have false expectations (called money illusion) about the new price level. In the long-run real effects do not exist. Milton Friedman believed in money illusion and deducted a short term trade-off between higher prices and lower employment. The New Classical School argues that it not a convincing argument that workers are a bit "stupid". If all agents have rational expectation also in the short term money has no systematic influence on production and employment (cp. Heine/Herr 2000; Heilbronner/Milberg 1995).

Diagram 1: Neoclassical labour market
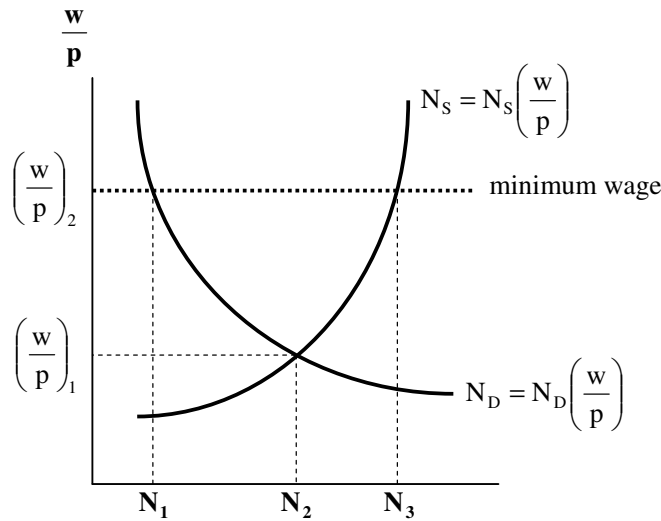
Even more problematic than the supply curve of labour is the deduction of the labour demand function (N_D)

(2) $N_D = N_D(\dfrac{w}{P})$.

The hypothesis is that falling real wages lead to higher labour demand.[5] Behind this relationship between real wages and labour demand is a technological argument. The law of decreasing marginal productivity of labour states that each additional worker hired produces – given the physical capital stock – a decreasing additional physical product. The physical production of a country within a certain time period (the net domestic product NDP) depends on labour input (N) and capital input (K). Capital is understood as a stock of physical capital goods for example a quantity of corn as seeds. The resulting macroeconomic production function

(3)   NDP = NPD(N,K)

---

[5] Under wages gross wages are understood as including the social security contributions from employers. What counts is the actual cost of labour for enterprises. The distribution of these costs in net wages and other components of gross wages is of secondary importance for the employer..

is the backbone in deducing the demand function for labour. According to the law of decreasing marginal productivity the partial derivative of labour ($\frac{\partial NDP}{\partial N}$) is decreasing as labour input increases. This is shown in diagram 2.

Diagram 2: Marginal product of labour
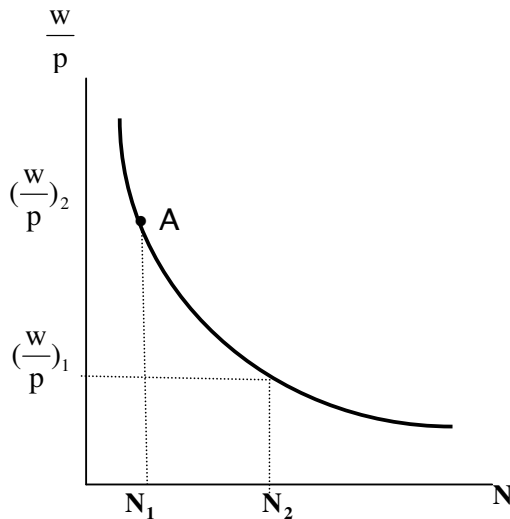
A profit maximising company will only hire workers as long as the physical product the marginal worker produces is not lower than the real wage. For example, the twentieth worker N_1 is producing a product according to the distance between N_1 and A in diagram 2. If $(\frac{w}{P})_1$ is the real wage given by the market the twentieth worker will get a wage expressed by the distance form N_1 to $(\frac{w}{P})_1$. The distance from $(\frac{w}{P})_1$ to point A is the product the company gets when wages are already paid. It is obvious that a company will employ workers as long as their marginal product is higher than their real wages. In diagram 2 the company will maximise profits if it employs N_2 workers and the equation

(4) $$\frac{\partial NDP}{\partial N} = (\frac{w}{P})_1$$

is satisfied. Only when the real wages drop will the entrepreneur be able to employ more workers. The conclusion is that the demand for labour is identical with the first partial derivative of the macroeconomic production function given a certain stock of

physical capital. In an equilibrium all workers are remunerated according to the marginal productivity of the last employed worker.

For capital inputs the same logic is applied. Higher capital input leads to a falling marginal productivity of physical capital goods. Similar to the determination of the equilibrium wage rate, the interest rate must be equal to the marginal product of capital, thus

$$
(5) \qquad \frac{\partial NDP}{\partial K} = i
$$

must be fulfilled.[6] The model not only determines employment and capital input, it also determines the equilibrium wage rate and the equilibrium interest rate and thus distribution of income between labour and capital.[7]

Given the demand function of labour, the supply function of labour, and flexible real wages the labour market will find a full employment equilibrium without the help of any other market.[8] In diagram 1 the equilibrium is characterised by the real wage rate $(\frac{w}{p})_1$ and employment N_2. Any other real wage rate would create excess demand or excess supply in the labour market.

Demand for goods and services do not influence the level of employment. According to Say's theorem supply creates its own demand. Basically this means that savings are always channelled into investment and a general lack of demand is not possible.

---

[6] The interest rate is a rate of return of the so called "real" sphere of the economy. We could also call the interest rate the profit rate of the economy earned by enterprises.

[7] The model makes a critical assumption about the technology. The surplus the company achieves through labour inputs is used to pay interest on the capital, the surplus the company gets from capital input is used to pay for labour. Net domestic product equals wages plus interest only if the production function is characterised by constant returns to scale. Decreasing returns of scale lead to a situation in which one part of the production is neither wage nor capital income . Increasing returns of scale distribute more income to labour and capital than is produced. Increasing returns of scale can lead to very "strange" demand curves. For example it is possible that labour demand increases when wages increase. Most industries with industrial production can realise economies of scale.

[8] In general economic models do not analyse how a market can find an equilibrium. There is no proof that a pure market economy will achieve an equilibrium even if an equilibrium would be possible (cp. Jäger 1981).

Diagram 1 can be used to show the effects of real-wage rigidity. Let us assume the government sets a minimum wage rate above the equilibrium wage rate at $(\frac{w}{p})_2$. In this case the market can not clear as real wages are not allowed to fall. The minimum wage leads to unemployment as for the wage rate $(\frac{w}{p})_2$ workers offer N_3 and firms demand only N_1. It is understandable that economists and workers who believe in the simple neoclassical model reject minimum wages as a potential barrier to full employment. But not only government dictated minimum wages can be responsible for wages that are higher than equilibrium wages. Social security payments can have the same effect. Also strong unions can be responsible for wages above the equilibrium level. This is explained by the "insider" behaviour of unions which try to achieve high wages for members and do not act in the interest of the unemployed.

The effect of productivity increases
The simple neoclassical model deduces a special relationship between changes in productivity, real wages and employment. An increase in labour productivity ceteris paribus shifts the macroeconomic production function upwards and the function of the marginal product of labour to the right. Labour can become more productive if capital stock increases or technical improvements take place. As a consequence of productivity increases the demand curve for labour also shifts to the right, in diagram 3 for example from $N_{D1} = N_{D1}(\frac{w}{P})$ to $N_{D2} = N_{D2}(\frac{w}{P})$. Starting from the equilibrium employment N_2 and the corresponding real wage rate $(\frac{w}{P})_2$ and assuming an increase in productivity two extreme reactions are possible. In one case the employment does not change and the productivity is used fully to increase real wages to $(\frac{w}{P})_3$. In the other extreme the real wage rate does not change and employment increases form N_2 to N_4.

In a constellation in which the wage rate is higher than the equilibrium rate but at the same time stable any increase in productivity will in crease employment. Let us assume that the real wage is $(\frac{w}{P})_3$ and the demand for labour $N_{D1} = N_{D1}(\frac{w}{P})$. In this

case unemployment is equal to N_3 minus N_1. If the demand for labour shifts to $N_{D2} = N_{D2}(\frac{w}{P})$ and wages do not change the equilibrium employment N_3 is realised.

Following these arguments it is very common for neoclassical economists to recommend that in a situation of unemployment, productivity increases should partly be used to increase real wages and partly be used to increase employment and reduce unemployment. Minimum wages and especially minimum wages which are adjusted according to productivity developments can preclude the choice between higher wages and higher employment.

Diagram 3: Neoclassical labour market and productivity changes
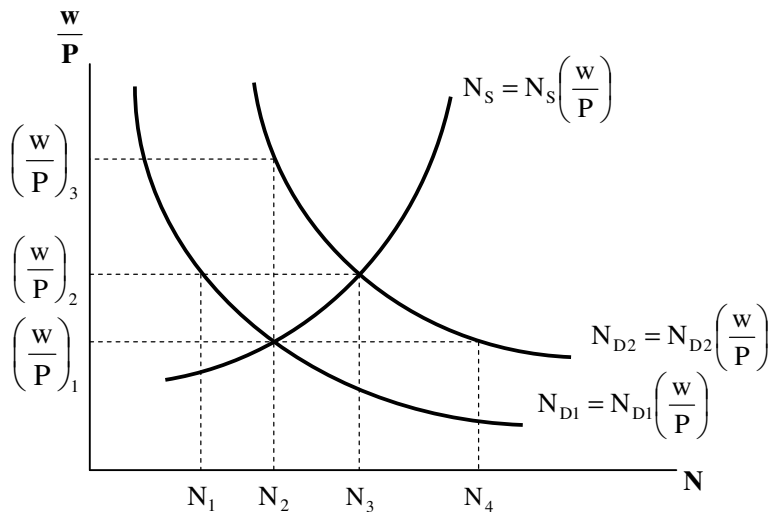
The case of a more differentiated supply curve of labour

So far we only used a very simple labour supply function. In complete harmony with the neoclassical model more differentiated functions are possible. In diagram 4 a plausible supply curve is shown. The middle part of the supply function has a "normal" shape. But when real wages become very low any further reductions in real wages increase the supply of labour. In this case people have to work more to survive. The lower the real wage rate the more pressure there is to work longer. This phenomenon could historically be noticed during the industrial revolution. In many transitional and developing countries we can see a similar development. Most people with low income in these countries need two or three jobs to survive – a phenomenon

also known in developed countries in the group of low paid workers.[9] Thus for developing and transitional countries the lower part of the supply curve of labour seems to be realistic. On the other hand increasing real wage rates do not in any case increase labour supply. When real wage rates are already very high and increase further, the supply of labour may decrease as leisure time becomes more and more precious for utility maximising households. This effect is also shown in diagram 4.

Diagram 4: Neoclassical labour market with an unusual supply function
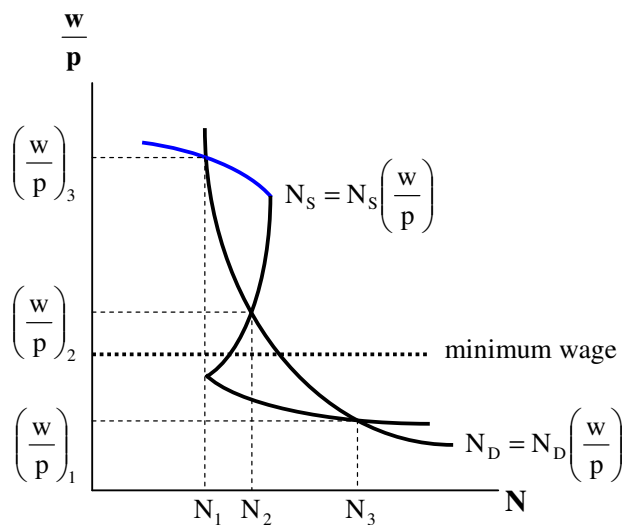
In diagram 4 we have three equilibrium points with three different combinations of real wages and employment. The existence of more than one equilibrium point is well known and can not excluded form economic theory (cp. Bliss 1975). Recently the possibility of more than one equilibrium solution was discovered again (cp. Obstfeld 1994). The argument was used to stress the path-dependence of economic development. There are good equilibrium developments and there are bad equilibrium developments. As utility comparisons between different individuals are not possible and for this reason a macroeconomic utility function simply does not exist, it is not possible on a purely theoretical basis to say which of the three equilibrium constellations in diagram 4 is the best one.[10] But politically and socially it can be argued that for a society a situation of very low real wages in combination

---

[9] A good example is the group of low paid workers in the USA.

[10] It is quite common that macroeconomic utility functions of representative individuals are used in economic analysis. Such an approach is methodologically unsatisfactory and must be judged as poor economics.

with very long working hours is not desirable. It follows that in diagram 4 the equilibrium with N_3 and $(\frac{w}{p})_1$ should not be realised. Minimum wages are able to prevent the undesirable equilibrium in diagram 4 and allow that one of the two other equilibrium constellations can be realised.

The limitations of the simple neoclassical demand function for labour

The smooth demand function for labour is based on dubious methodical grounds. It depends on the macroeconomic production function for the net domestic product, which is given by NDP = NPD(N,K). As a production function it describes the relationship between the physical inputs of capital goods (K) and labour (N) and the net domestic product. The macroeconomic production function suggests the enterprise sector can be melted to one large company. The striking fact of this function is that it implicitly assumes that there is no interaction between companies and no interaction between different markets. Methodologically there is no distinction between partial analysis and total analysis i.e. between the isolated analysis of one market and an analysis of the whole market system. To deduce macroeconomic hypothesis partial analysis is not suitable. In this case a only total analysis is legitimate.

The fundamental problems of any approach using a macroeconomic production function can be easily explained. If one considers a macroeconomic production function immediately the question comes up of how to measure capital and the net domestic product? For labour this question is easily answered as labour is measured in hours. Does it make sense to measure capital in tons, litres or miles? For logical reasons we can only do this if there is only one capital good. In this extremely simplified one commodity world we can define the macroeconomic production function without using prices. As soon as there are two or more commodities the categories "capital" and "net domestic product" in the macroeconomic production function have to be expressed in values using prices. And here the unsolvable problem of this approach begins. The macroeconomic production function must be used to define the equilibrium real wage rate and the equilibrium interest rate (equations 4 and 5). In a world with more than one commodity, prices depend on the

interest rate and the wage rate i.e. on the distribution of income. As the equilibrium interest rate and the equilibrium wage rate are unknown the variables K and NDP in the production function can not be defined. The model breaks down![11]

It is relatively easy to understand why the model does not work if there is more than one capital good. Let us assume the wage rate increases and the interest rate decreases. This will have repercussions on all markets and completely change the structure of the price system. Industries with high capital intensity will save only a little of their wage costs compared with industries with low capital intensity. The cut in interest rates will favour the industry with the low capital intensity. To realise the same rate of return in all industries – an equilibrium condition for a capitalistic economy – prices must change. As the selling price of one industry is the input price of other industries the whole structure of prices change. This will change the capital intensity in all industries and will lead to a new choice about the profit maximising technology in all industries.[12]

An example can clarify this argument. In an economy many technologies may be available, for example technology A with high labour input and technology B with low labour input. Let us assume that enterprises in a situation of low real wage rates and high interest rates use technology A with a low capital intensity and a high labour input. In diagram 5 technology A creates employment N_2. Now the real wage rate increases and the interest rate decreases. Let us also assume that, this leads to a more capital intensive technology B with lower employment, in diagram 5 employment N_1. This switch in technology fits to the simple neoclassical world with one commodity as higher wages lead to a less labour input. What happens under the condition of many capital goods if the real wage rate increases further and the interest rate drops? Now the possibility that entrepreneurs maximising their profits switch back to technology A can not be excluded. Increasing real wage rates can lead in this case to "reswitching" and employment N_2. The same employment is possible with very low real wages and very high real wages. The simple neoclassical

---

[11] The assumption of the same capital intensity in all industries is basically the same as the assumption of one commodity. Only in extreme cases have two industries an identical capital intensity. We can also say the approach with the macroeconomic production function breaks down if more than one capital intensity exists in the economy.

[12] There is a so called book of blueprints which contains of a certain number of known technologies from which entrepreneurs can choose. Innovations increase the number of available blueprints.

relationship between labour demand and real wages does not hold. As the number of capital goods increases also the number of potential switch points increases. The demand function for labour becomes a chaotic localisation of wage-employment combinations without any clear structure. Alfred Marshall (1920), on the basis of partial analysis, introduced smooth demand and supply curves into the economic analyses. He also suggested that markets can find their way to equilibrium given stable demand and supply curves. He led macroeconomic research in the wrong direction. In an interdependent system of markets such stable curves simply do not exist. This point was first stressed by Walras (1874), the father of neoclassical microeconomics, and confirmed by modern neoclassical economists arguing strictly the basis of a microeconomic model.

Diagram 5: Neoclassical labour market with more than one capital good
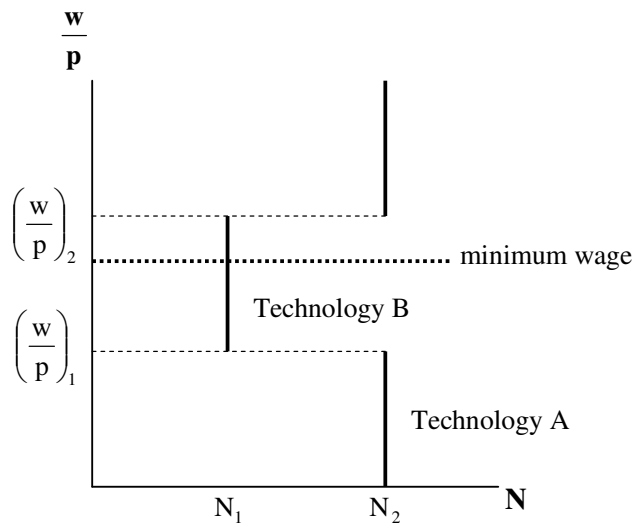
Diagram 5 also shows that a minimum wage may prevent the politically unwanted constellation of employment N_2 and low real wage rates. In the example, unchanged employment and higher wages are possible and obviously better for employees. The latter constellation is characterised by relatively low interest rates. That does not mean the whole population may be satisfied with the solution employees prefer.

The discussion about the crude neoclassical approach with a macroeconomic production function was essentially triggered by Sraffa (1960). After his publication neoclassical economists tried to prove that the "simple tales" based on a

macroeconomic production function could also be told in a world with many capital goods (cp. Samuelson 1971). All attempts failed.[13] In a world with many capital goods there is no smooth relation between falling real wages and an increasing demand for labour.[14]

One could argue that economic models need abstraction and the assumption of one commodity is one such assumptions. This argument is not convincing as abstractions should be robust. That means that abstractions should be a simplified version of a complex world. A one commodity world is not an abstraction of a world with many commodities as the one commodity world works in a completely different way compared with a world with many commodities. A one commodity world basically excludes the market from its analyses as the whole economy is treated as one huge company. In a one commodity world there are no prices of goods, capital is a purely physical and not a value category, and there is no interaction between commodity markets as only one commodity exists.

What is left from the neoclassical model if there are many commodities? Not many macroeconomic conclusions can be drawn and a micro-foundation of macroeconomics fails (Hahn 1981; Jäger 1981; Heilbronner/Milberg 1995). In the case of the labour market the neoclassical model comes to the conclusion that flexible real wages – given a set of conditions including the absence of economies of scale and a market mechanism which finds one of the possible equilibrium solutions – will lead to full employment. It can not say, that in a situation of involuntary unemployment a reduction in real wages is the right course to full employment. It may be the wrong course !

---

[13] See for a collection of important contributions to this debate (Harcourt/Laing 1971).

[14] Samuelson (1971, p. 250), who belonged to the group of economists who tried to save the old neoclassical tales in a world of more than one commodity, wrote honestly in his renowned article "A Summing Up": "Lower interest rates may bring lower steady-state and lower capital-output ratios, and the transition to such lower interest rates can involve denial of diminishing returns and entail reverse capital deepening in which current consumption is augmented rather than sacrificed. ... If all this causes headaches for those nostalgic for the old time parables of neoclassical writing, we must remind ourselves that scholars are not born to live an easy existence. We must respect, and appraise, the facts of life." Unfortunately even Samuelson forgot to stress this point in his well known textbook. In several other textbooks there is only a footnote, explaining that the assumption of a one commodity world is made. Numerous articles about labour markets were written – often indicating that a microeconomic approach is used – without mentioning how critical the assumptions behind the typical neoclassical demand curve for labour are.

2.2 The Keynesian approach

Employment and wages

In the Keynesian paradigm there is no direct relationship between wages and employment. "The traditional theory maintains, in short, that the wage bargains between the entrepreneur and the workers determine the real wage." (Keynes 1936, p. 11) But: "There may exist no expedient by which labour as a whole can reduce its *real* wage to a given figure by making revised *money* bargains with entrepreneurs." (Keynes 1936, p. 13) We will see below, that the nominal wage level is the most important element to determine the price level and that workers can not control real wages.[15]

Compared with the neoclassical approach, the labour market has a different function in the Keynesian model. Neoclassical economists believe that all markets are on the same level. The crude neoclassical macroeconomic model even believes that all markets including the labour market can find its own equilibrium without analysing the interdependence between markets. The neoclassical microeconomic model stresses the interdependence of a great number of markets on the same level including the labour market as one markets among many. In the Keynesian paradigm there is a hierarchy of markets. Economically the most important market is the asset market. In this market the portfolio decision of households, banks and enterprises and credit demand and credit supply are analysed. The asset market determines the interest rate and investment demand. Also the consumption demand can be effected, for example via changes in stock prices. In the Keynesian model investment is the most important element of demand and at the same time the most important link between the asset and the goods market. As long as there are free capacities in the goods market, demand determines supply. Net investment increases the capacities and the potential volume of production. The labour market is on the bottom of the hierarchy of markets. Demand of labour depends on the volume of production and the technology. The latter depends on the distribution of income. This means that on a theoretical level there is no clear relation between the volume of production and the demand for labour. Besides, asset and goods markets will create a certain demand for labour.

---

[15] The Neoclassical Synthesis argues differently. In this model flexible wages lead to changes in real wages and to full employment.

Labour demand will equal labour supply only by chance. Thus unemployment is a normal state of affairs in a capitalist economy. Most importantly: in the Keynesian model the labour market has no mechanism to create higher employment by itself. Asset and goods markets can be in equilibrium and at the same time the labour market in a stable disequilibrium.[16]

The fundamental equation of the value of money
In the Keynesian approach the labour market seems unimportant as employment is not determined by the labour market. This is not true ! In the Keynesian model nominal wages become one of the anchors of the level of prices. Wage developments are an important source stabilising or destabilising the whole economy.

In what follows the role of the wage level in the Keynesian approach is developed (cp. Keynes 1930; Riese 1986; Herr/Tober 1985). To simplify the analysis, foreign influences on the price level are not taken into account. The macroeconomic accounting system gives us the following equations:

(6) $Y = C + I + G$

> Y: national income
> C: consumption
> I: net investment
> G: government consumption

and

(7) $Y = W + Q_i + T_E + Q_E.$

> W: wages and salaries
> Q_i: interest payments
> T_E: enterprise taxes (minus state subsidies)
> Q_E: extra-profits (undistributed profits) or losses in disequilibrium

National income is made up of the wage bill, enterprise taxes and profits. The latter can be subdivided into normal or equilibrium profit (Q_i) and extra-profit or disequilibrium profit (or loss). Normal profits are the regular remuneration of the production factor "capital", i.e. interest payments, dividends, profit distribution to self-employed etc. Normal profits are a regular part of enterprise actual costs (in case of interest payments) or opportunity costs (in case of equity). In a theoretical model in

---

[16] It is not intended to develop a Keynesian model in detail here (cp. Heine/Herr 2000).

equilibrium, the interest rate regulates the remuneration of all other variants of normal profit. Normal profit can be equated with interest payments given the assumption of enterprises being externally financed.[17] Extra-profits or losses in disequilibrium – by Marshall (1920) called quasi-rents – exist if aggregate non-labour income differs from the sum of enterprise taxes and interest payments as defined above.

National income can therefore be divided into (factor) costs and extra-profits or losses in disequilibrium. With Y_f as costs it follows:

(8) $Y = Y_f + Q_E$

with

(9) $Y_f = W + Q_i + T_E$.

Real national income Y_r is defined as

(10) $Y_r = \dfrac{Y}{P}$,

so that equation (10) can be transformed into the fundamental equation of the value of money:

(11) $P = \dfrac{Y_f}{Y_r} + \dfrac{Q_E}{Y_r}$

Cost inflation, deflation and distribution

The first variable $\dfrac{Y_f}{Y_r}$ gives the costs which determine the long term price level in equilibrium; the second variable shows a disequilibrium and will be discussed in detail below. If costs increase there will be a cost inflation, if costs decrease there is a cost deflation.[18] Thus the Keynesian model assumes a mark-up pricing in explaining the price level. If costs increase enterprises will increase prices. They are able to do so as all enterprises are effected by the same cost increases. If costs decrease the competition between enterprises leads to falling prices. Thus changes in the price-level induced by changes in costs depend not on excess demand or

---

[17] The implicit assumption is that the interest rate in the end determines the profit rate. One can assume a certain positive difference between the profit rate and the interest rate. Such an assumption make matters more complicated without significant analytical gain.

[18] As costs are identical with income we can also speak of income inflation and income deflation (cp. Keynes 1930).

excess supply on the goods markets, they depend on a direct price effect. It follows that even in a situation of low capacity utilisation, increasing costs lead to higher prices. Keynes did not subscribe to the idea that higher nominal wages lead to higher demand and higher production.

Let us discuss cost inflation and deflation in more detail. If P_c gives the cost elements of the price level, then from equations (9), (10) and (11) it follows:

(12) $\qquad P_c = \dfrac{W}{Y_r} + \dfrac{Q_i}{Y_r} + \dfrac{T_E}{Y_r}$

The first term of equation (12) are unit-labour costs. If we divide denominator and nominator by N and define labour productivity by $\pi = \dfrac{Y_r}{N}$ and nominal wage per hour by w we get:

(13) $\qquad \dfrac{W}{Y_r} = \dfrac{w}{\pi}$

Unit-labour costs are given by nominal wage rate over productivity. When the nominal wage rate increases with the same percentage as productivity, unit-labour costs do not change and have neither an inflationary nor a deflationary effect. When nominal wages increase by more than productivity, unit-labour costs increase and lead to an inflationary push. If the nominal wage rate increases are less than productivity or the wage rate decreases, unit-labour costs and the price level fall.

The second term of equation (13) can be called unit-interest costs. Under our assumptions interest payments of enterprises equal interest rate (i) multiplied by the value of the capital stock ($Q_E = iK$). If we divide the nominator and denominator by N again and define capital intensity $\Psi = \dfrac{K}{N}$ we get:

(14) $\qquad \dfrac{Q_I}{Y_r} = \dfrac{i\Psi}{\pi}$

If we assume that enterprise taxes are a certain percentage of real income (t_E as the tax rate) then $T_E = t_E Y_r$. It follows that the third term of equation (13) becomes

(15) $\qquad \dfrac{T_E}{Y_r} = t_E$

Taking equations (13), (14) and (15) together equation (12) becomes:

(16) $P_c = \dfrac{1}{\pi}(w + i\Psi) + t_E$

In equilibrium and in the long term (without taking into consideration foreign influences), the price level is determined by productivity, nominal wage rate, interest rate, capital intensity and enterprise tax rate. Productivity and capital intensity can hardly be controlled by economic policy. Also the central bank is not completely free to set the interest rate. The enterprise tax rate can be controlled by governments but this variable can not be effectively used to influence the price level. That means that nominal wages are of paramount importance for the price level.

It could be argued that wages make up only a small part of total costs and thus the price level does not change with the same percentage as the unit-labour costs change. This argument is false as higher unit-labour costs increase the price level of capital goods and capital intensity. In the simple case when only wage costs and capital costs exist it can be shown that a certain percentage change in unit-labour costs lead to the same percentage change in the price level (cp. Heine/Herr 2000). In appendix 1 for several developed countries the relation between nominal wages and productivity and especially the relation between unit-labour costs and the development of the price level is shown. It can be seen how important unit-labour costs for the price level are.

Nominal wages become the *nominal anchor* of a monetary production economy. To be more precise: most central banks in the world have a positive target inflation rate as deflation should be prevented. The European Central Bank for example has a target inflation rate between zero and two percent, the Bank of England of 2.5% and Australia between two and three percent (cp. Bernanke/Mishkin 1997). If the target inflation rate is for example 2.0% and the increase in productivity 3%, the nominal wage rate then has to be increased by 5% to realise the target inflation rate and thus become the nominal anchor of the price level. In the centre of Keynesian wage theory is the recommendation of *productivity oriented wage increases*. Statistically productivity drops during recession as companies cannot immediately dismiss people and it increases during an upswing as companies use the existing stock of workers to produce more. Thus productivity oriented wage policy should follow the medium-term trend of productivity changes.

In the Keynesian approach wage policy can not be used to change the distribution of income. Having equation (10) in mind, equation (12) can be transformed into:

(17) $$\frac{W}{Y} = 1 - \frac{Q_I}{Y} - \frac{T_E}{Y}$$

In equilibrium – Q_E is zero – the wage share in national income $\frac{W}{Y}$ is one minus the (normal) profit share minus the enterprise tax share in the national income.[19] The enterprise tax share is given by the politically set tax rate for enterprises. In the Keynesian paradigm the interest rate becomes most important variable to determine the wage share in income. The interest rate is determined by the asset market and has the same effect as a tax rate on capital. For companies, interest payments are costs like wage costs and tax costs and must be covered by the price of the produced product.[20]

A similar argument is that real wages depend not on nominal wages. When we divide nominator and denominator of the left side of equation (17) by N and take into account that $Q_E = iK$ we get:

(18) $$\frac{w}{\pi P} = 1 - \frac{iK}{Y} - \frac{T_E}{Y}$$

When we finally define $k = \frac{L}{Y}$ as capital coefficient and $q_{TE} = \frac{T_E}{Y}$ as enterprise tax quota in income we get:

(19) $$\frac{w}{P} = \pi(1 - ik - q_{TE})$$

In summary, real wages can only be increased over the long term by productivity increases. The higher the interest rate, the higher capital coefficient and the higher the enterprise tax quote, the lower the real wage rate.

These conclusion does not mean that distribution can not be changed. For example individual workers (or funds owned by workers) can be given shares of companies. Government policy can intervene in market distribution.

---

[19] Taxes could be used to pay transfers to workers. In this case the wage share after redistribution would become bigger. In empirical analyses this effect can be important. In this paper this effect is neglected.

Demand inflation and deflation and their interaction with wages

So far we have discussed the first and equilibrium term of equation (11). The second and dynamic term of equation (11) is also important in understanding the inflationary and deflationary processes and the reactions of wages.

Household incomes consists of three parts:

(20) $Y_H = C + S_H + T_H$

Y_H: income flowing to households
S_H: household savings
T_H: household taxes (minus transfers from the state)

The national income is:

(21) $Y = Y_H + Q_E + T_E$

With T as aggregate taxes it follows:

(22) $T = T_E + T_H$

Equations (20), (21) and (22) give:

(23) $Y = C + S_H + T + Q_E$

Defining the budget deficit BD = G – T and combining equation (23) with equation (6) we end up with the definition of undistributed enterprise profits:

(24) $Q_E = I + BD - S_H$

Retained profits are higher, the higher investment, the higher the budget deficit and the lower household savings.[21] $Q_E = 0$ is the condition that the goods market is ex ante in equilibrium. If $I + BD > S_H$ demand for goods exceed supply of goods. Such a situation results in a demand driven inflation if capacities are fully utilised. If $I + BD < S_H$ there is an ex ante lack of demand and prices will fall. In the latter case the enterprise sector will incur losses as production costs exceed revenues.[22]

Taking equations (24), (16) and (11) we finally get the differentiated fundamental equation of the value of money:

---

[20] „If, however, the rate of interest exceeds zero, a new element of cost is introduced ..." (Keynes 1936, p. 216) Sraffa (1960) argues that the distribution of income can only be solved if for the goods market – in the classical case – the real wage rate is exogenously given or – in the Keynesian case – the interest rate.

[21] BD becomes positive if there is a budget surplus. In this case the government saves.

[22] Keynes (1930) spoke of profit inflation in case of a positive Q_E is and of profit deflation in case of a negative Q_E.

$$(25) \qquad P = (\frac{1}{\pi}(w + i\Psi) + t_E) + \frac{I + BD - S_H}{Y_r}$$

Equation (25) can be used to explain a typical inflation process. Let us assume there is a long period of high investment which drives demand. If capacities are fully utilised and higher demand can not be met by higher production. Such a situation will lead to excess demand and a demand inflation resulting in the second term of the equation becoming positive. This inflationary process leads to falling real wages. If workers do not accept a reduction in real wages and successfully increase nominal wages, both demand inflation and cost inflation increase the price level. It is very likely that demand inflation and cost inflation stimulate each other and lead to a faster and faster turning wage-price spiral and a cumulative inflationary process.

Equation (25) determines the price level without mentioning money supply. Money supply is determined endogenously. Central Banks can not directly determine the money supply (defined as cash, M_1, M_2, M_3, or $M_{anything}$). In developed countries they have only the direct power to determine the interest rate in the money market (cp. Kaldor 1985). The volume of credits taken by commercial banks and thus the creation of money, depends on the portfolio calculus of banks – the volume of credit demand by enterprises, credit risks etc. In spite of the fact that central banks can not directly control money supply they are not powerless to fight inflation. They can increase interest rates in the money market and can push up the whole structure of interest as high as they like. This leads to a fall in investment and demand deflation. At the same time the stabilisation crisis caused by anti-inflationary monetary policy reduces the growth rate and employment. Higher unemployment changes the situation in the labour market. Nominal wages do not increase as much as before and the cost inflation fades out. Of course central banks can try to use the money market interest rate to realise a target growth rate of M_2, M_3 etc. As they can not directly control monetary aggregates it is not very likely that they will be successful in controlling for example M_3. As a matter of fact the German Bundesbank, one of the central banks trying most strictly adhere to a monetary target after the break down of the Bretton Woods system during the early 1970's has only succeeded in achieving the chosen target growth rate in about half of the years since adopting this policy. During the last decade more and more central banks – including the US Federal Reserve and the Bank of England – have abolished monetary targeting. Many of

them have switched to a direct inflation target (cp. Bernanke/Mishkin 1997). There are basically two explanations for this: first it became more and more difficult to define a monetary aggregate as financial innovations created more and more papers with high liquidity (securitisation). Secondly the relationship between chosen monetary aggregates and inflation became unstable.

In developing and transitional countries central banks frequently use more direct instruments like a credit ceiling for the banking system in implementing monetary policy. But even under such conditions M-aggregates can not be controlled directly.

Equation (25) can also be used to understand eroding economies – to be found in some developing and transitional countries approaching hyperinflation and monetary chaos. If budget deficits explode there will be a demand inflation even if investment is zero. The budget-driven inflation can became so high that real wages drop to very low levels. In such a case nominal wage rates have to be increased to prevent real wages falling to a level at which workers can not survive. High inflation sooner or later leads to an incentive to reduce monetary wealth in domestic currency. That means household savings drop to nearly zero and the demand for durable goods increases sharply. In this case the second term of equation (25) becomes extremely positive. At the same time nominal wage increases must also become extremely high – the monetary system erodes (cp. Herr 1994).[23]

Especially in developing and transitional countries the general budget deficit is a poor indicator of the actual fiscal situation. This is not only a problem of hidden state funds. Much more important is that the banking system finances loss-making firms. At least with respect to keeping enterprises alive "artificially" there exists a soft budget constraint which is an alien element in a properly working capitalist economy. As these credits to loss-making firms are substitutes for state subsidies they can be termed quasi-fiscal deficits (cp. Dornbusch 1992).

Wages development and positive and negative macroeconomic regimes
In the Keynesian paradigm the functional interaction between nominal wage developments and monetary policy is one of the central elements of a positive

---

[23] This process is further stimulated if foreign relations are taken into account.

macroeconomic regime. High inflation rates can not be accepted by a central bank if it is intended that the population uses domestic money as a standard of value for goods, credit contracts and wealth as well as a means of payment and as store of value. If economic agents reject domestic money in its different functions a positive development becomes very difficult. A low acceptance of domestic money leads to an imminent danger of cumulative capital flight, a parallel monetary system and a incoherent economy divided into a foreign currency sector, barter sector, subsistence sector and domestic currency sector. At the same time central banks have to offer high interest rates to reduce capital flight. This harms investment, reduces real wages and leads to a falling share of wages in income (compare equation 19). Thus: a relatively stable price level is a precondition for economic development.

It is the function of central banks to guarantee a stable money and fight against inflation. Central banks potentially always have the power to reduce inflation rates by a policy of high interest rates. But the problem is that the short term costs in reducing inflation may be very high. Restrictive monetary policy will create a collapse in investment, a lack of demand, a demand deflation and enterprise losses. The stabilisation crises leads to low or even negative growth rates and increasing unemployment.

If there is no inflationary pressure there is no need for restrictive monetary policy. This is the point where the labour market becomes important. In the Keynesian paradigm there is no market mechanism in the labour market which could create higher employment, but wage developments can help to create a situation which makes a restrictive monetary policy unnecessary. *Incomes policy* becomes very important. In a market economy it has the function to establish a nominal wage anchor. If an incomes policy works to establish a productivity oriented wage development the central bank is freed from implementing restrictive monetary policy in order to stabilise the price level. There is no guarantee that a productivity oriented wage policy will lead to higher growth and higher employment. But such a policy improves the macroeconomic conditions and increases the probability of higher growth rates and higher employment.

In developed market economies some countries are successful in establishing a nominal wage anchor without high unemployment, other countries however are less successful and central banks regularly have to fight against wage pressure by increasing interest rates and creating a stabilisation crises. Especially in a situation of high employment it can become difficult to follow a productivity oriented wage policy. In such a situation the bargaining power of unions is high and this may lead to higher nominal wages. Even if unions accept moderate nominal wage increases in a situation of high employment, high demand in the labour market can lead to wage drift and cost inflation. The better a country can stabilise wages in a situation of high growth and high employment, the higher is the likelihood of continual long term growth. A successful interaction between nominal wage development (unions) and monetary policy (central bank) is of paramount importance for a prosperous economic regime (cp. Iversen 1999).

The most difficult problem in establishing an incomes policy is the competition between individual workers, groups of workers and unions. Already Keynes stressed this point: "In other words, the struggle about money-wages primarily affects the *distribution* of the aggregate real wage between different labour-groups, and not its average amount per unit of employment, which depends ... on a different set for forces." (Keynes 1936, p. 14) This means that when one group of workers or one union is able to increase nominal wages and other groups of workers or unions are not able to increase nominal wages, the former employees increase their real wages in comparison to the rest of the work force. One can imagine that there is a high incentive for powerful groups of workers to increase nominal wages even if they know that wages can not change the overall distribution of income in the long term. At the same time groups of workers who did not obtain the wage increases of other groups have a very high incentive to attain the level of the average nominal wage increases. Incomes policy has the function to reduce the competition between different groups of workers and prevent a dysfunctional race for a higher income share within the working class.

Different counties have different institutions and mechanisms to control nominal wage increases. One model is to have centralised wage bargaining on a national level. In this case unions and employers associations negotiate wages nationwide for

at least one industry. Other industries then use the result of the negotiations of this leading industry for wage negotiations in their industry. In Germany for example the metalworkers union typically takes the initiative of the first wage round. "Social contracts" or "round tables" between unions, employers associations and government including the central bank can contribute to a macroeconomic functional development of nominal wages. A co-operative model including round tables etc. is typical for smaller economically successful European countries like Austria or the Netherlands. A functioning incomes policy needs strong negotiating partners, that means strong unions and strong employers associations. To carry out effective negotiations unions should first organise a large proportion of employees and the employers associations a large proportion of the companies. Secondly, unions and employers should be strong enough to prevent wage drift as such positive and negative drifts undermine the nominal wage anchor.

Other models of wage bargaining are possible and do exist. Negotiations can also take place on a company level. This type of wage bargaining is only successful if wage developments in key enterprises have a signalling character for the whole economy. This type of model can for example be found in Japan. Particularly disadvantageous for productivity oriented wage developments are negotiation models which are dominated by pressure groups that immediately exploit temporal sacristies for certain professions in order to increase nominal wages as much as possible. Typical for this type of negotiation is Great Britain with its fragmented unions system, the existence of several unions in one firm and the tendency of unions to organise small groups of workers – mostly from one profession – to increase nominal wages aggressively. For further discussion and an overview about the different models of wage bargaining cp. Carlin/Soskice (1990); Layard/Nickel/Jackman (1991).

A functional interrelation between nominal wage developments and monetary policy is only one element of a successful economic regime. As wages can never be a compensating factor for other destabilising sources, incomes policy only can unfold it's stabilising power when the other macroeconomic markets are in a stable constellation. This shows the limited role of labour markets in the hierarchy of markets in the Keynesian paradigm. If inflationary pressure comes from other

sources, for example from a high budget deficit financed by central bank, a functional wage policy is not possible. Nominal wages have to be increased to prevent an erosion of real wages. Furthermore, nominal wages can not normally be kept stable when the domestic currency devalues by a high percentage and imported goods make up a large part of wage goods.

It has become very popular to calculate a so called NAIRU (non-accelerating inflation rate of unemployment). The NAIRU is the unemployment rate that keeps the inflation rate at a certain level, for example at a low percentage target inflation rate. In some respect the NAIRU concept fits to Keynesian thinking as a certain rate of unemployment may be necessary to prevent an inflationary wage-price spiral.[24] The better an incomes policy functions the lower the NAIRU. NAIRU should not be misunderstood by the notion that any empirically measured unemployment rate is identical with NAIRU. In the Keynesian model asset and goods markets can create unemployment rates which are much higher than the unemployment rate necessary to prevent a wage-price spiral. In Europe for example, unemployment rates since the 1970's can not be explained by an exaggerated wage pressure. The problem was that growth rates were too low because demand and especially investment demand was too low. It would be particularly misleading to use the NAIRU-concept to explain the high unemployment rates in developing or transitional countries.

The power of central banks to control the price level is asymmetric. So far we have pointed out that central banks (at least potentially) can always successfully fight against inflation. For central banks it is much more difficult to prevent or fight against deflation. Increasing interest rates sooner or later leads to a drop in investment, excess supply in the goods market, unemployment etc. and finally to lower nominal wage increases. The limited power of central banks to stop deflation becomes obvious if low interest rates do not stimulate investment demand and fail to increase the money supply. If expectation and the state of confidence are negative there may be no interest rate low enough to stimulate investment and prevent a permanent lack of demand. In such a situation the second term in equation (25) stays negative and

---

[24] NAIRU is often and wrongly identified with the natural rate of unemployment. The latter is the employment rate that the real sphere (real wage rigidity, low mobility of labour, mismatch of labour demand and supply etc.) in the neoclassical world creates. The neoclassical model explains inflation by excessive money supply and not by nominal wage increases. But nominal wage increases are behind the NAIRU-concept.

leads to permanent losses in the enterprise sector. If companies expect deflation, the expected return of investment drops as investors will take into account that they have to compete against subsequent investors who will buy capital goods much cheaper. If households expect deflation, spending for long-living goods like cars or houses will be postponed. Household savings will sharply increase and intensify the lack of demand.

The crucial dyke against cumulative deflation is the nominal wage anchor. If this dyke breaks and nominal wages start to fall, a deflationary wage-price spiral and a deflationary demand constellation will stimulate each other and lead to cumulative deflationary process. Any sharp deflation leads into a deep depression. Falling prices lead to a higher real debt burden as debts are fixed in nominal terms and the nominal interest rate can not fall below zero. Deflation leads to severe liquidity and solvency problems in the enterprise sector and the state. Fire sales of enterprises in distress and further falling prices are the result. "Then we have the great paradox which I submit, is the chief secret of most, if not all, great depressions. *The more the debtors pay, the more they owe*. The more the economic boat tips, the more it tends to tip. It is not tending to right itself, but is capsizing. " (Fisher 1933, p. 344)[25] Labour market institutions which help to establish a productivity oriented wage development and especially prevent wages to drop are extremely important for the stability of a market economy. Rigidity of wages is desirable to stabilise the price level and it is not a disruptive factor which prevents full employment. If the central bank is responsible to prevent inflation, then unions or labour market institutions are responsible to prevent deflation. On this matter the divergence with all variations of the neoclassical approaches could not be greater.[26]

Incomes policy in countries with insufficient labour market institutions
Without doubt an incomes policy in developing and transitional countries would be economically functional and ideally should be established. Regular "round tables" could not only be used to discuss a functional development of the nominal wage level.

---

[25] Neoclassical monetary theory believes in the positive effects of deflation. Deflation, so the argument goes, increases the real wealth of people and this leads to higher consumption. The basis of this wealth effect is quite small as most monetary wealth balances out to zero if debtors and creditors are taken into account. Real wealth like real estate does not change its value in case the price level changes.
[26] This includes the Neoclassical Syntheses and the so called New Keynesian model which in the end are only variants of the neoclassical approach.

Other topics like minimum wages etc. could also considered and negotiated in such co-operative meetings. Exercising restraint concerning wage demands could be made politically acceptable if it was offset against establishing social security systems not based on company level, against training and retraining of workers, against establishing rights of worker's co-determination and against allowing unions to exert greater influence on economic policy. The idea of a desirable social contract and incomes policy involves important political questions. These include the willingness of workers to voluntarily abstain from inflationary wage demands, the social and political coherence of society, the extend to which corporatist social structures exist and the degree to which special interests can be pushed aside (cp. Herr/Tober/Westphal 1994).

Unfortunately many developing and transitional countries lack labour market institutions and the political environment to establish an incomes policy in a continental European style. In some of the countries unions are too weak, not independent or only cover the state-owned enterprise sector and not the new private sector of the economy; strong employers associations may not exist; and in some cases the elite in power may consider it as politically inexpedient to start open discussions about wages and other labour market issues.

Wage negotiations in key industries on a national level appears more advantageous than wage negotiations on company level. Company level negotiations are especially ineffective in preventing deflation. In a crisis situation it is plausible for workers and management in a company to reduce wages to gain advantage over other companies in the industry. Unfortunately such a strategy does not work if all companies try to improve competitiveness by reducing wages. It is not surprising that during the 1990's Japan with it's company based wage negotiations suffered from deflation with all negative consequences for enterprise non-performing debt. In some developing and transitional countries bonuses make up a large proportion of wages. As these bonuses are determined on a company level it is likely that during a boom such payments increase and stimulate a wage-price spiral. In a crisis situation bonuses are reduced or not paid at all. China, which is characterised by an extensive bonus system, suffered twice during the 1990's from an inflationary wave and at the end of the that decade from deflation (cp. Herr/Priewe 1999).

Countries lacking sufficient labour market institutions to implement wage negotiations between unions and employers associations can use special types of wage control. Widely discussed and implemented in some transitional countries is a tax-based incomes policy. Governments use, in addition to the normal income tax, a progressively increasing tax rate to tax increasing wage. A certain increase in wages is tax free. When wage increases reach a certain threshold level, additional wages become heavily taxed. This type of incomes policy was already broadly used under the planning system to restrain the enterprise wage bill. It has several disadvantages (cp. Flanagan 1994). Firstly, the wage structure becomes frozen as the tax prevents reasonable and necessary changes in the structure of wages. Consequently the wage structure becomes out of step with the current economic needs. Particularly in transitional countries it may be the will of unions and managers to reform this structure in order to create a more suitable incentive system. Secondly in many transitional countries there is a large proportion of non-wage benefits included in gross wages. A tax-based incomes policy prevents the possibly wanted change from non-wage benefits to wages paid in cash. Finally wages may be increased in spite of high taxes. This will take place especially when managers and workers do not care about the individual fate of the individual company or the macroeconomic development of the whole country. In Poland for example tax-based incomes policy during the first period of transition did not work because there was a coalition between workers and management to increase wages and management salaries as much as possible. The background for this behaviour was the remaining soft budget constraints of many state-owned enterprises (cp. Rosati 1993). As long as companies can get as much credit as they demand and there is no mechanism to sanction bad management in companies and in banks, tax-based incomes policy may fail to reach its aim as managers do not reject high wage increases and unions do not act in a macroeconomic responsible way.

As during the time of the planning system, in some transitional countries governments still dictate the nominal wage level including the wage structure. Such a system is even less efficient than tax-based incomes system. It certainly has the advantage that nominal wages can be increased according to productivity by central government decision. The disadvantage is that such a system finds ways over time

to circumvent the government set wages. Extended bonus systems and non-wage elements of benefits for employees develop. In developed countries wage freezes and price freezes were sometimes used. Such steps only worked – if at all – for short periods. They have the same disadvantages as government set wages. These examples confirm that negotiations between strong unions and strong employers associations remain the most efficient way to implement incomes policy.

Minimum wages in countries with insufficient labour market institutions
Minimum nominal wages are set by governments. They are under certain circumstances important to stabilise the price level. Firstly minimum wages that can be enforced can prevent a deflationary wage-price spiral. They set a floor for nominal wage cuts and are a substitute for weak unions and an underdeveloped system of wage negotiations. Secondly minimum wages should cover all industries. This makes them more efficient in preventing deflation than rigid wages in only some sectors of the economy. Thus a general minimum wage is of vital importance in economies which are only partly unionised. In transitional countries minimum wages in the private sector, including smaller companies, are to be recommended.

The minimum wage should be set high enough to prevent general nominal wage cuts. If the level of minimum wages is substantially lower than the nominal wage of low-paid workers it can not prevent the general nominal wage level from decreasing. On the other hand if a minimum wage is so high as to increase the wages of the group of low-paid workers, they may compress the wage structure.[27] As a rule minimum wages should not be much lower than the wage level of the least paid groups of workers. Otherwise minimum wages are ineffective in preventing deflation.

In an inflationary situation fixed minimum wages quickly become ineffective as the general wage level increases and a considerable gap between the wage level of low-paid workers and the minimum wage develops. To prevent such a gap minimum wages have to be adjusted in an inflationary situation. Basically there are three different types of indexation possible:
- Minimum wages could be adjusted in line with the level of prices. In this case any inflationary push would automatically increase minimum wages. This would

---

[27] The relation between minimum wages and the wage structure is discussed in the next chapter.

stimulate general nominal wage increases and could trigger a wage-price spiral. An indexation of this type over time would result in a wage level increase after every price level increase. In many cases it makes no sense to increase wages if prices increase. For example a higher enterprise tax rate leads to an increase in the price level and a consequent decrease in real wages cannot be prevented. An increase in nominal wages would initiate a wage-price spiral and transform a price-level shock into an inflationary process. A second example: given a nominal wage inflation indexation an investment led demand inflation immediately leads to a wage-price spiral and an escalating inflation rate. An incomes policy is not possible in such a case. In developed countries there are no positive experiences with this type of wage indexation. Following break down of the Bretton Woods system during the 1970's in Italy for example, the "scala mobile" – a nominal wage-inflation indexation – institutionalised a wage-price spiral and led to high inflation rates (cp. Herr/Spahn 1989).

- Minimum wages could be adjusted in line with the price level. This type of indexation is also dysfunctional. As any change in the price level changes real wages, it would lead to the same problems we previously discussed.

- Minimum wages should be adjusted in line with the wage level. The nominal wage level is a good indicator for indexing minimum wages. Changes in minimum wages will not set off a wage-price spiral and at the same time they prevent an increasing gap between low-paid work and the minimum wage. If minimum wages are linked to the low-wage sector in the economy they can be combined with any wage structure.

- What is needed is an asymmetric indexation. In the case of deflation and falling average nominal wages the level of minimum wages should not be allowed to change. Rigid minimum wages will stop the fall in general wage level and prevent a significant deflation.

For developing and transitional countries the danger of deflation seems to be small as many of these countries suffered from inflation. But times may change and deflation may became a threat for the stability of the economy. China gives an example of how deflation in a transitional country is possible and of how difficult it is to overcome (cp. Herr/Priewe 1999).

3. Wage structure and employment

In the following section we assume that the nominal wage level does not change. Under this condition different ways to changes the wage structure including the effect of minimum wages are discussed.

3.1 The wage structure between different industries

Let us start with a situation in which the wage level in all industries is the same. What occurs if the wage level in some of the industries decreases and in others increases so keeping the general wage level at the same level ?

- The first effect will be that the structure of the price system – the relative prices – change. Products in industries with lower wages become cheaper and prices of goods produced in industries with higher wages increase.

- The second effect we can expect is that utility maximising households – under the usual conditions of the neoclassical household theory – will start to restructure their consumption. They will demand more from the now cheaper goods and less from the now more costly goods. To be accurate: this assumed change in the demand structure of households is a behavioural hypothesis and cannot be logically deduced from general neoclassical microeconomic models. If for example income effects are bigger than substitution effects there may be "perverse" reactions. But let us take for granted a normal reaction of consumers. Production of the group of goods with lower prices will increase and production of the other group decrease. Given the technology for the moment without additional information about the labour intensity of the two industries – the technologies they use – we can not know whether employment increases or decreases or, by chance, does not change. If the industry with the lower wage level would use more labour than the industry with the higher wages there would be certainly a positive employment effect. So let us discuss how technology reacts to the change in wage structure.

- The third effect is that enterprises in the two groups of industries will not only produce more or less. Confronted with a new structure of relative prices they change their technology and the structure of their input demand. In a partial analysis industries now with the lower wages will start to produce more labour intensive goods and industries now with the higher wages will start to produce

more capital intensive goods.[28] So far we could conclude that there is a positive employment effect if households consume more of the cheaper goods. But still the analysis of the effects in the wage structure is not finished.

- Unfortunately the conclusion so far is based on partial analysis and is not legitimate for a macroeconomic conclusion as partial analyses do not take into account the interaction between different markets. The vital point is that in our case all industries are confronted with a new structure of relative prices. This will not only change the prices of their products – which again become inputs of other industries, it will lead to a new choice in technologies which can be more labour intensive or more capital intensive (cp. chapter 2.1).[29] The fact is that we do not know which industries will become more labour intensive and which will not. It is even possible that relative prices in industries now with lower wage levels will increase and relative prices in others will decrease.

If wages between industries become more differentiated in an interdependent system of markets, we generally do not know whether employment will increase or decrease.

There is a specific theoretical case which quantitatively may have some significance. In all economies there are one-way industries which produce goods that are not used for inputs in other industries.[30] That means we have industries producing one hundred percent directly for private consumption or other end consumers.[31] Many industries of this type are found in the area of personal services, for example large parts of the tourism, the health care or the judicature industry, the industry of tax accountants, the catering industry, industry of household servants, the theatre performances and sports industry etc. fall into this category. If the wage level in these industries drops, the relative prices of the products produced in these industries will also drop. In this case we can expect that the demand for products of these industries will increase. If the labour intensity in these industries is relatively high there will follow a positive employment effect. This result is highly probable as these

---

[28] This arguments are in accord with the logic of the simple neoclassical macroeconomic model presented in chapter 2.1 and now used in partial analysis.

[29] If there is only one capital product decreasing wages leads to more labour intensive production. But if we want to analyse different wages in different industries we need more than one product. In the latter case the simple neoclassical relationship between wages, labour intensity and employment does not exist.

[30] Sraffa (1960) calls these goods non basic goods.

[31] In the real world it may be sufficient to assume that these industries produce quantitatively a very small proportion of their production for other industries.

industries are typically very labour intensive and lower wages may lead to an even more labour intensive production. Interdependence between markets which would not allow such a conclusion in a typical industrial situation do not exist in these industries which are like one-way streets from capital and labour inputs through to final consumption.

It is difficult to estimate the positive employment effect of relatively lower wages in one-way industries. The effect depends primarily on two factors. Firstly, the higher the price elasticity of demand for the goods produced in such low-wage industries, then the greater the employment effect. Secondly, the higher the labour intensity in these industries is – it is for example extremely high in the industry of household servants – the more additional employment will created by wage reductions. The price elasticity depends among other factors on the value system of a society – is it for example seen as utility increasing or as utility decreasing to consume many personal services. In the end only a historical and country specific analysis can clarify how significant the employment effect of an increasing differentiation between high-wage industries and consumption oriented one-way industries is.

Low wage segments in the labour market can have negative effects or can create a "perverse" reaction. Firstly, it is a political decision whether a society prefers a wage structure (and an income distribution in general) which is more egalitarian or a wage structure (and a income distribution in general) which is more differentiated. Social justice may make it unacceptable to increase income differentiation beyond a certain point.

As many social benefits such as pensions, unemployment benefits or family allowances depend on wages, a low-wage sector leads to a low-income sector for people out of work. Low wages may for example produce poverty in some of the aged population or in families with many children. If a government has to increase the income of the poor by public transfer payment the low income sector may force increased government spending and create fiscal problems.

If wages of low paid employees drop below the poverty line unemployment may not decrease in spite of the fact that the demand for the products produced in these

industries increases. Very low wages lead to an increase in labour supply (cp. diagram 4) as employees need more than one job to survive. In such a case the disequilibrium in the labour market can become greater if wages in low-wage industries increase.

A higher wage differentiation can lead to a more inequitable income distribution within the working class if the wage sum of the low-paid workers – in spite of more workers working in low-wage industries – decreases and the wage sum of the high-paid workers increases. From the Keynesian point of view such an effect creates a negative macroeconomic effect. Because the propensity to consume is usually lower for households with a high income than for households with low income, consumption demand through wages can decline. In this case production would decrease (Keynes 1936).

Minimum wages limit wage differentiation. They can prevent the negative effects of a wage differentiation which are economically or socially undesirable.

3.2 The wage structure between companies inside the same industry

In an equilibrium situation the basic law of one price dictates that all companies in an industry have to pay the same prices for all inputs – for oil, computers, pencils, drilling machines etc. and also for labour. Let us analyse what happens if the law of one price is violated and homogenous inputs have different prices for different companies. We take the example of labour and assume that the same quality of labour can be bought for different prices by different companies.

Let us start with an equilibrium in an industry with equal prices for all inputs including labour, equal productivity and equal technology for all companies. If one group of companies – let us say group A – now has to pay higher wages than the other group – let us say group B – the conclusion is simple: Group B becomes more competitive and group A will sooner or later exit the market. The goods formerly produced by group A will then be produced by group B. Employment will not change.[32] Obviously a wage differentiation under such conditions makes no sense.

---

[32] Because of lower wages the prices in this industry will fall. This effect is analysed in chapter 3.1.

The more realistic case for wage differentiation within one industry is a situation in which different companies have a different productivity. Let us assume that in our industry the companies in group B achieve only the half of the productivity of the companies in group A. Given the same wages for all companies in the industry the firms of group B are not competitive and will eventually be forced out of the market. In such a case wage differentiation between different companies can save the less productive companies from disappearing.

Let us make a simple example: if we assume only circulating capital the following equation gives us the equilibrium in the industry:

(26) $$P_1 X_1 = wN + CC$$

$P_1 =$ price of the product
$X_1 =$ quantity produced
$w =$ nominal wage rate
$N =$ labour input
$CC =$ capital costs

Equation (26) would be compatible with $P_1 = 1$, $X_1 = 400$, $w = 2$, $N = 100$, $CC = 200$ and productivity $\pi = \dfrac{X_1}{N} = 4$. Now let us assume that under otherwise unchanged conditions productivity in companies producing half of the market demand – group A – increases to 8. The new costs of group A determine the new equilibrium prices. To make it simple, capital costs and the quantity produced in the market do not change. Under these conditions the market price drops to $P_1 = 0.75$. Let us now calculate how wages in group B have to adjust to compensate for the lost competitiveness of the companies in group B. Using the definition of productivity equation (26) becomes:

(26) $$w = P_1 \pi - \frac{CC}{H}$$

Given an unchanged capital cost , an unchanged productivity of companies in group B and the new prices, the wages will have to drop 50% to $w = 1$. Under this condition the companies in group B can survive perpetually because they are subsidised by labour supply. What is the incentive for workers to accept a lower wages? Under the given conditions 25% of the labour force in the market does not become unemployed. If wages would not become differentiated companies in group A would produce the of

quantity of 400 units using a productivity with 50 units of labour. If group A and group B stay in the market then employment is equal to 75 units of labour.

At least in a short term perspective wage differentiation within one industry can save employment. But the price for this is lower nominal and real wages of employees in companies with lower productivity. For an economy this employment strategy is a policy to reduce average productivity to protect employment.

The big disadvantage of wage differentiation within one industry is the reduced incentive to restructure firms and to implement innovations. It is a strategy to slow down technological progress. Lame ducks are subsidised by labour and innovative enterprises punished as they have to pay higher wages and are not allowed to expand according to their competitive power. One of the most dynamic elements of capitalism is the chase for extra-profits (temporal rents or quasi-rents) by innovations, new management methods etc. Wage differentiation within one industry hinders the process of creative destruction, as Schumpeter (1942) called it, which a basic element of capitalism.[33]

For market economies wage negotiations with the same wage level for all firms in an industry are functional as they enforce the law of one price which in general should also hold for labour. Differentiated input prices for oil or drilling machines which influence a companies productivity are never the subject of discussion. Why should such an anti-market logic be used in the case of wages ? Only in special cases and for a limited period of time should the law of one price for labour be violated. It can make sense to reduce the wage costs for individually underperforming companies for a certain time in order to support restructuring. This may be desirable if the non performance of a company does not lead to an immediate expansion by other companies and the development of an industry is path dependant.

An alternative way to save companies which can not survive against strong competitors are government subsidies. As in the case of hidden subsidies of companies by lower than average wages government subsidies should only be paid for a limited period of time and should over time be reduced to zero.

---

[33] Also Karl Marx stressed this point.

Wage agreements between unions and employers without company specific wage differentiation on an industry level have some other advantages. They reduce costly individual wage negotiations on a company level and consequently they can save transaction costs. Especially in times of booms and high profits, wage negotiations on a company level may quickly escalate to strike actions and costly disruption of the production process for both companies and labour. It also may be very expedient for individual companies and workers to know that other companies pay approximately the same wage. Information costs and a dysfunctional turnover of labour can be avoided.[34]

Based on popular thinking in many developed countries there is a tendency to make wage agreements more flexible. The room for manoeuvre to differentiate wages between companies, so the argument, in an industry should be increased or wage negotiations should even be transferred form an industry level to the company level. There are not many economic arguments why employer associations follow such a strategy. One explanation is that in these associations the number of lame ducks – in many cases the majority of smaller firms – is bigger than the number of very competitive firms – in many cases the few big firms in the industry. An other explanation is that employers want to reduce the power of unions in general and this aim can be most easily reached if negotiations take place on company level.

The less wage negotiations take place on an industry level the more government set minimum wages become necessary. There is always the danger that poorly performing companiess force their workers to sacrifice wages to save the company and their jobs. Usually in such a situation workers are pliant to companies demands and workers representatives recruited exclusively from the company can hardly reject the plausible microeconomic arguments of their managers. Particularly during recession all companies may feel that wage cuts are necessary to survive. If this happens deflation and a major depression is the result.

---

[34] The New Keynesian School argues that wage rigidity can be explained on a microeconomic basis as optimal for individual firms and workers. Such rigidities can reduce costly negotiations, can reduce a dysfunctional turnover of labour, can reduce so called menu costs etc. (cp. for example Ball/Cecchetti 1988, Mankiw/Romer 1991, Phelps 1990, Snowdon/Vane/Wynarczyk 1994). All these arguments can also be used support wage negotiations on an industry level without firm specific wage differentiation.

3.3 The wage structure between different groups of workers within one company

Starting from a given wage structure between different groups of workers let us assume that the wages of the higher qualified – for example skilled workers – increase and the wages for the less qualified – for example unskilled workers – decrease so as to make the wage structure more differentiated. Companies are confronted with modified input prices. This will lead to a new choice in technology. Following a partial analysis we can also deduce that this company – following the simple neoclassical argument of input substitution[35] – will reduce the input of higher paid qualified workers and employ a greater number of less qualified and lower paid workers. Accordingly we will have a tendency to use more unqualified labour for production. Even at the level of a partial analysis it is very difficult to say if there is an overall resulting positive or negative employment effect.

In the case where the production of one industry is part of the inputs of other industries a partial analysis is insufficient. As already discussed in chapter 3.1 in an interdependent system of markets, changes in the relative price of one industry will lead to a completely new structure of relative prices and new choices in technology. It is not possible to predict in which direction relative prices and overall employment will change – not even for one-way industries producing their output only for private consumption.

Especially in transitional countries a more differentiated wage structure between diverse qualified groups of workers may be needed to create a more efficient incentive system. The latter can increase productivity to a certain degree. This argument however is fully independent from the volume of employment.

4. Wages level, wage structure and international competitiveness

There is not the space here to develop the theoretical relationship between wages and international competitiveness in detail. What can be done is to discuss some popular misunderstandings.

---

[35] Graphically spoken moving along a production isoquant.

4.1 Wage level and international competitiveness

In many statistics wages costs in different countries are compared and it is argued that domestic wages are relatively high or low. Let us take Germany as an example. We can compare wages in Germany with wages in China, in the United States or in Belorussia. Then we can conclude, as is frequently done, that wages in Germany are relatively high and the locational advantage of Germany is in danger. Does this type of comparison make any sense ? As a matter of fact during the last decades in Germany nominal wage rates (including non wage labour costs) in domestic currency – Deutschmark and since 1999 Euro – show in international comparison one of the lowest growth rates. That means the wage development is not responsible for the relatively high wages in Germany. The exchange rate makes wages in a country relatively high or low. If $w_{China\ in\ RMB}$ is the level of Chinese wages in RMB, e the nominal exchange rate measured in domestic units of money per unit of foreign currency and $w_{China\ in\ Euro}$ the money wage rate in China in Euro then we get:

$$(27) \qquad w_{China\ in\ RMB} \cdot e_{Euro/RMB} = w_{China\ in\ Euro}$$

$w_{China\ in\ Euro}$ can be relatively high or low compared with wages in Germany paid in Euro.

For cost developments wages are not a good indicator. More important is the development of unit-labour costs as high nominal wage increases can be combined with stable unit-labour costs if productivity growth is also high (cp. equation 13). But for an international comparison of unit-labour costs we again have to use the exchange rates and it is the exchange rate which makes unit-labour costs in some countries high and in others low.

The situation is completely different if wages or unit-wage costs inside a currency area are compared. In this case regional wage developments are evaluated. If for example unit-labour costs in Greece permanently increase faster than in other member states of the European Monetary Union Greece will sooner of later will develop a regional problem as there is no exchange rate available which can be adjusted.

There is no close or clear relationship between the development of wages and unit-labour costs of a country in domestic currency and its international competitiveness, its export performance and its current account situation. In the world economy we can find extremely poor and underdeveloped countries with current account deficits (for example some African countries) and at the same time we have very developed countries with current account deficits (for example the United States). We also can find developed and underdeveloped countries achieving current account surpluses. We could argue that in the United States and in some of the African countries unit-labour costs are too high to balance the current account. But such an argument suggests that the domestic wage developments in these two countries are responsible for the deficit in the current account. Such an argument is clearly incorrect.

The lesson to be learned is that the current account situation depends on capital movements and not on domestic wage developments, or on the natural resources a country has and such factors. It was that great analytical power David Ricardo who stressed that in spite of the biggest differences in productivity etc. the current account of a country must be balanced if there are no capital movements. We assume here that in the absence of capital movements flexible exchange rates adjust in a way to balance the current account.[36]

National accounting shows the following identities:

(28) $Kap_{Im} = CD = R_{IM} = S_F = FD_I$

and

(29) $Kap_{Ex} = CS = R_{EC} = S_D = FA_I$

Kap_{Im}, Kap_{Ex}	net capital import, net capital export
CD, CS	current account deficit, current account surplus
R_{IM}, R_{EX}	net resource inflow, net resource outflow
S_F, S_D	part of foreign savings, part of domestic savings
FD_I, FA_I	net foreign debt increase (net asset decrease), net foreign asset increase (net foreign asset decrease)

---

[36] In a system with fixed exchange rates economic mechanisms are slightly different. But also under such a system a current account deficit has to financed by net capital inflows and a current account surplus by net capital exports.

A current account deficit must be equal to net resource inflow, to net capital imports, to foreign savings and to an increase in foreign debt. A current account surplus must be equal to net resource outflow, net capital export, domestic saving and an increase in net assets (cp. Heine/Herr 2000). The key variables in equation (28) and (29) are net capital flows. Without net capital exports a current account surplus is not possible, without a net capital imports an current account deficit is not possible. Wages can be high or low if there is no net capital inflow there is no current account deficit and if there is no net capital outflow there will be no current account surplus. And there is no prevalent theory that argues that wages or unit-labour costs determine capital movements. There is no stable relationship in any form between wages and the current account situation of a country.

The following example can clarify the argument. Let us assume wage increases in domestic currency in country A are much lower than wage increases in domestic currency in other countries. These developments lead to a higher international competitiveness of country A. But if there are no capital export the higher competitiveness of country A will immediately lead to a higher demand for the domestic currency, to an appreciation and to a destruction of the advantage thought to be gained by relatively low domestic wage increases. Can we find an argument, why moderate wage increases in country A should stimulate capital exports; if at all higher capital imports can be expected as the country appears to be an attractive place for investment. Germany fits the described constellation. Moderate wage increases paralleled with a permanent appreciation of the Deutschmark as a result of capital inflows and insufficient capital outflows. An even more striking example are the United States. In spite of moderate domestic wage increases, the United States could not export enough to balance their current account. During the last decade they found themselves in a market constellation with a strong US-Dollar and huge current account deficit (cp. Herr 1997).

4.2 Wage structure and the structure of trade

If the current account deficit or surplus is given by capital movements and the development of wages or unit-labour costs have no direct influence on the current account, the wage structure also will not influence the current account situation. The wage structure can only influence the structure of international trade. To make this

argument clear we assume that there are no net international capital movements or – which means the same – the current account is balanced.

A country is internationally competitive in producing a commodity if it can be produced – given the exchange rate – cheaper than in other countries. It is not competitive to produce certain commodities if foreign countries can produce these goods cheaper. Assuming flexible exchange rates, the exchange rate will adjust to balance the current account. If there is a tendency of a surplus in the current account the domestic currency will appreciate. Some former internationally competitive industries lose their competitiveness and the current account will be balanced again.

Starting from an equilibrium let us make wages more differentiated. As shown in chapter 3 in most cases we do not know in which direction the system of relative prices will change. That means we do not know which products will gain international competitiveness and which products will not.

For the sake of our argument let us assume the wage differentiation including a reduction in minimum wages result in cheaper labour intensive productions compared with other domestic products. In this case labour intensive industries would become more internationally competitive and would increase their exports. Given no capital movements the higher demand for domestic products would lead to an appreciation. Some formerly competitive industries would lose their international competitiveness and cease to export. Hence there would be a switch from exporting more capital intensive goods towards exporting more labour intensive goods. For imports it would be the other way round. There may be positive employment effects as the share of labour intensive production in the economy increases. Should a country follow such a strategy ? There are certainly some disadvantages in addition to those discussed in chapter 3. The country would lose some capital intensive industries (usually technologically more advanced) and improve the situation of labour intensive industries (usually technologically less advanced). It is questionable whether this type of international division of labour stimulates development in the long term.

4.3 Exchange rate price level and wages

In this chapter the relationship between the exchange rate, the price level and wages will be discussed.

In equation (16) the domestic factors of enterprise costs are given. To measure the impact of external factors influencing costs we add an factor z and get the cost structure (P_{cf}) including foreign factors:

(30) $P_{cf} = z \, (\frac{1}{\pi}(w + i\Psi) + t_{E})$

z is a index measuring how changes in the exchange rate and the foreign price level influences domestic costs. The factor z depends on the exchange rate, the price level abroad (P*) and the import quota. The import quota determines the intensity of the impact of changes in the exchange rate and the international price level on the domestic price level. The strength of a given change in the exchange rate and the international price level depends on μ. A relatively small economy like Belorussia has a higher μ than for example Russia.

(31)   z = μ(e, P*)

The factor z is greater than 1 if the exchange rate and/or the international price level increases. It is between 0 and 1 when the exchange rate and/or the international price level decreases.

Including the current account, equation (24) has to include the current account surplus (CS)[37] and becomes:

(32) $Q_E = I + BD + CS - S_H$

Excess demand now depends on investment demand plus budget deficit plus current account surplus minus household savings. An increase in a current account surplus ceteris paribus increases enterprise profits, an increase in current account deficit increases enterprise losses.

Combining equation (31) and (32) we get the final determination of the domestic price level:

(33) $P = \left[\, ?e, \; P*) \right] \left[\frac{1}{\pi}(w + i\Psi) + t_{E}) \right] + \dfrac{I + BD + CS - S_{H}}{Y_{r}}$

---

[37] A current account deficit is a negative current account surplus.

For smaller countries in particular, external cost factors are important. If a country devalues its currency, import prices and the domestic cost level increase. An increase in the foreign price level has the same effect. If countries have to import manufactured goods and if the prices of these goods increase, there will also be an internal cost push. As higher prices reduce real wages, it is very likely that a devaluation will trigger a wage-price spiral. In many cases nominal wages have to increase. Otherwise real wages could fall below subsistence levels for substantial parts of the population and/or political unrest might emerge. The higher the inflation, the higher the likelihood of further devaluation. In such a situation a country is caught in a devaluation-inflation spiral which is combined with a wage-price spiral.

In many developing countries fiscal policy is a key source of inflation especially if deficits are financed by the central bank (cp. Herr/Priewe 2001). In addition to excess demand, the goods market equation (33) shows as an additional channel for inflation. The public will not hold more central bank money than it requires. As long as the budget deficit does not increase faster than the demand for cash, there will be no problem. If the budget deficit is too big, the public will try to discard the additional central bank money. It is very likely that in such a situation private agents will try to exchange their excess money for foreign currency. Of course, agents could also buy more local assets or additional domestic consumption goods, but this is not very probable. If the central bank wants to defend the nominal exchange rate and there is already a pressure for devaluation, the central bank has to buy the money, and it will be destroyed again. If the central bank has no more reserves left, a devaluation will take place. This will push inflation through cost increases. And this means that budget deficits financed by the central bank may create inflationary pressure via the exchange rate in spite of a lack of aggregate demand. For developing countries the worst of all worlds is the combination of high budget deficits financed by the central bank, devaluation and a wage-price spiral. In this case there can be very high inflation rates in spite of a lack of aggregate demand. The country becomes stuck in stagflation.

Relatively low inflation rates and a relatively stable nominal exchange rate are essential for macroeconomic stability. A nominal exchange rate anchor can add to macroeconomic stability. It is the best available way to stabilise the internal asset

market and prevent or – in most cases – reduce dollarisation. A nominal anchor that can be defended successfully increases the credibility of the home currency, reduces uncertainty and thereby gives room for central banks to reduce interest rates and improve the conditions for high investment and growth.

A nominal exchange rate anchor is easier to recommend than it is to actually achieve. The problem is that a nominal exchange rate anchor will only stabilise expectations if it holds, and an exchange rate anchor only holds if everybody believes that the exchange rate will never be changed: "It follows that in a world of high capital mobility there are only two feasible approaches to exchange rate policy. One is not just to peg the exchange rate but to lock it in." (Eichengreen 1999, p.105) To successfully establish a nominal exchange rate anchor certain conditions have to be met. The most important point is a low internal inflation rate. This can be reached by establishing an additional nominal anchor: a nominal wage anchor (cp. chapter 2.2). The nominal exchange rate anchor and the nominal wage anchor can enforce each other.

It may be argued that a nominal exchange rate anchor is very costly as it forces a central bank to follow a monetary policy to stabilise the exchange rate and not a policy based on internal needs. This argument is misleading. Especially for countries with weak currencies, it is very difficult to follow a monetary policy that is completely oriented to internal factors. Even the United States had to undergo a stabilisation crisis in order to stabilise the dollar at the end of the 1970's and the beginning of the 1980's. Countries with weak currencies are very rarely in a position to reduce interest rates, devalue, and increase exports and growth. There is always the danger that the devaluation gets out of control and initiates a devaluation-inflation spiral. Or the impact of the negative effect of a devaluation on the reputation of the currency will lead to high interest rates. In these cases the costs of stabilising the economy are much higher than stabilising the nominal exchange rate.

If a country cannot realise low inflation rates it will lose international competitiveness. In such a case the exchange rate has to be adjusted. Such a policy is not without costs: if the exchange rate has to be adjusted frequently many of the advantages of the nominal exchange rate anchor are lost. If a nominal anchor leads to a current

account deficits, a country should not wait too long before devaluing her currency. In such a case a country has to steer an optimal course between the negative effect of an exchange rate adjustment and the build-up of foreign debt. As foreign debt should be avoided an early devaluation seems to be the best of two bad options. It is important that, after the devaluation, the country immediately tries again to establish a nominal anchor as only a permanent fight for macroeconomic stability can create the macroeconomic conditions for investment and growth. We can once again conclude that the working of a nominal wage anchor is of paramount importance.

Literature

Ball, L., Ceccetti, S. G. (1988): Imperfect Information and Staggered Price Setting. In: American Economic Review, December

Bernanke, S., Mishkin, F.S. (1997): Inflation Targeting. A New Framework for Monetary Policy? In: Journal of Economic Perspectives

Bliss, C. J. (1975): Capital Theory and the Distribution of Income, Amsterdam u.a.

Carlin, W., Soskice, D. (1990): Macroeconomics and the Wage Bargain, Oxford

Dornbusch, R. (1992): Lessons from Experiences with High Inflation. In: The World Bank Economic Review, vol. 6

Eichengreen, B., (1999): Towards a New International Financial Architecture, Institute for International Economics, Washington, DC.

Felderer B., Homburg S. (1998): Macroeconomics and New Macroeconomics, 2nd ed., Berlin, Heidelberg, New York

Fisher, I, (1933): The Debt Deflation Theory of Great Depressions. In: Econometrica, vol. 1

Flanagan, R. J. (1994): Wage Determination and Incomes Policy During Economic Transition in Eastern Europe. In: Herr, H., Tober, S., Westphal, A.) (eds.): Macroeconomic Problems of Transformation. Stabilisation Policies and Economic Restructuring, Aldershot

Hahn; F. (1981): General Equilibrium Theory. In: Bell, D., Kristol I. (eds.), The Crisis in Economic Theory, New York, p. 123-138

Harcourt, G.C., Laing, N.F. (eds.) (1971): Capital and Growth, Harmondsworth

Heine, M., Herr, H. (2000): Volkswirtschaftslehre. Paradigmenorientierte Einführung in die Mikro- und Makroökonomie, 2nd ed. München.

Heilbronner, R., Milberg, W. (1995): The Crisis of Vision in Modern Economic Thought, Cambridge, USA

Herr, H. (1994): Budgetkrise und Entwicklungsperspektiven der Transformationsländer. Konjunkturpolitik, vol. 40

Herr, H. (1997): The International Monetary System and Domestic Policy. In: D. J. Forsyth, D.J., Notermans T. (eds.), Regime Changes. Macroeconomic Policy and Financial Regulations in Europe from the 1930s to the 1990s, Cambridge, USA

Herr, H., Tober, S. (1995): Monetary Stability and Economic Development. Institute for Economic Research Halle, Discussion Papers, Nr. 35

Herr, H., Tober, S., Westphal, A. (1994): A Strategy for Economic Transformation and Development. In: Perczynski, M., Kregel, J., Matzner, E., After the Market Shock, Aldershot a.o.

Herr, H.; Priewe, J. (1999): High Growth in China - Transition without a Transition Crises?   Intereconomics, Vol. 34, No. 6, pp. 303-316

Herr, H.; Priewe, J. (2001): The Macroeconomic Framework for Poverty Reduction. http://www.macropolicies-berlin.de

Herr, H.; Spahn, H.-P. (1989): Staatsverschuldung, Zahlungsbilanz und Wechselkurs. Außenwirtschaftliche Spielräume und Grenzen der Fiskalpolitik. Studien zur monetären Ökonomie, Bd. 5, Regensburg

Hicks, J.M. (1937): Mr. Keynes and the ‚Classics': A Suggested Interpretation. In: Econometrica, vol. 5

Iversen, T. (1999): Contested Economic Institutions. The Politics of Macroeconomics and Wage Bargaining in Advanced Democracies, Cambridge, UK

Jäger, K. (1981): Gleichgewicht, ökonomisches. In: Handwörterbuch der Wirtschaftswissenschaften, vol. IX

Kaldor, N. (1985): The Scourge of Monetarism, 2nd ed., Oxford

Keynes, J. M. (1930): Treatise on Money, Vol. I, The Pure Theory of Money, Cambridge

Keynes, J. M. (1936): The General Theory of Employment, Interest and Money, Cambridge

Klein, L.A. (1947): The Keynesian Revolution, New York

Layard, R.; Nickel, S.; Jackman, R. (1991): Unemployment, Macroeconomic Performance and the Labour Market, Oxford

Mankiw, N.G.: Romer, D. eds. (1991): New Keynesian Economics, Cambridge, UK

Marshall, A. (1920): Principles of Economics, 8th ed., London

Modigliani, F. (1944): Liquidity Preference and the Theory of Interest and Money. In: Econometrica, vol. 12

Obstfeld, M. (1994): The Logic of Currency Crisis. National Bureau of Economic Research, Working Paper No. 4640, Cambridge

Phelps, E.S. (1990): Seven Schools of Macroeconomic Thought, Oxford

Riese, H. (1986): Theorie der Inflation, Tübingen

Rosati, D. K. (1993): Poland: Glass Half Empty. In: Portes, R. (ed.), Economic Transformation in Central Europe, London

Samuelson, P. (1948): Economics, New York

Samuelson, P. (1971): A Summing Up. In: Harcourt, G. C., Laing, N. F. (eds.), Capital and Growth, Harmondsworth

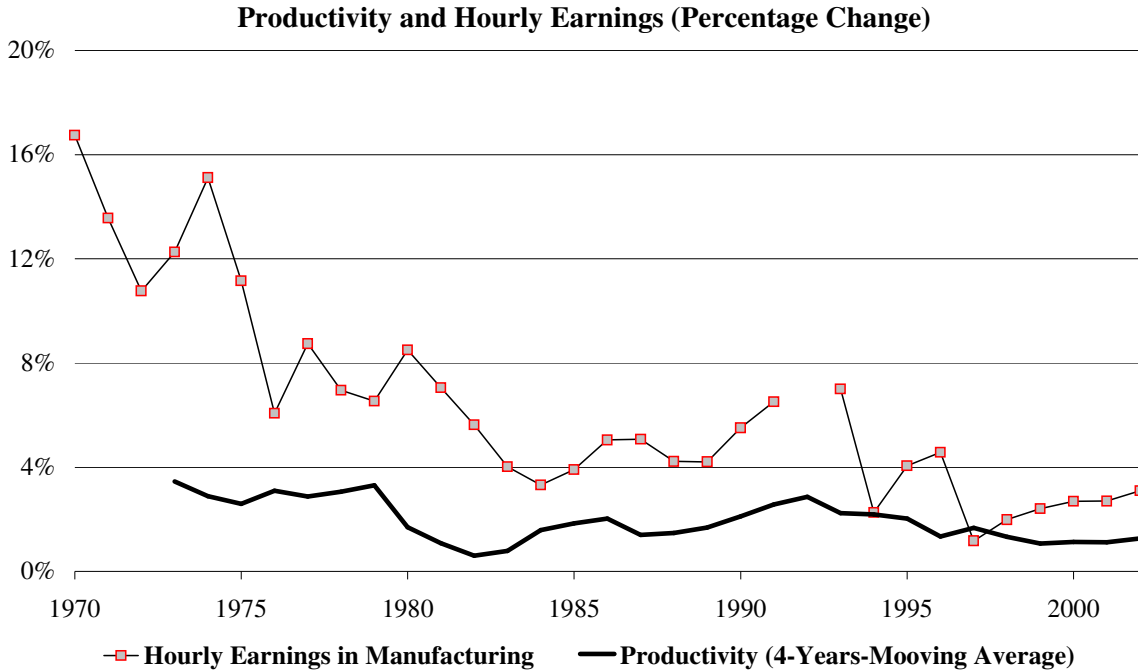Schumpeter, J. (1942): Capitalism, Socialism and Democracy, New York

Snowdon, B.; Vane, H.; Wynarczyk, P. (1994): A Modern Guide to Macroeconomics, Cambridge, UK

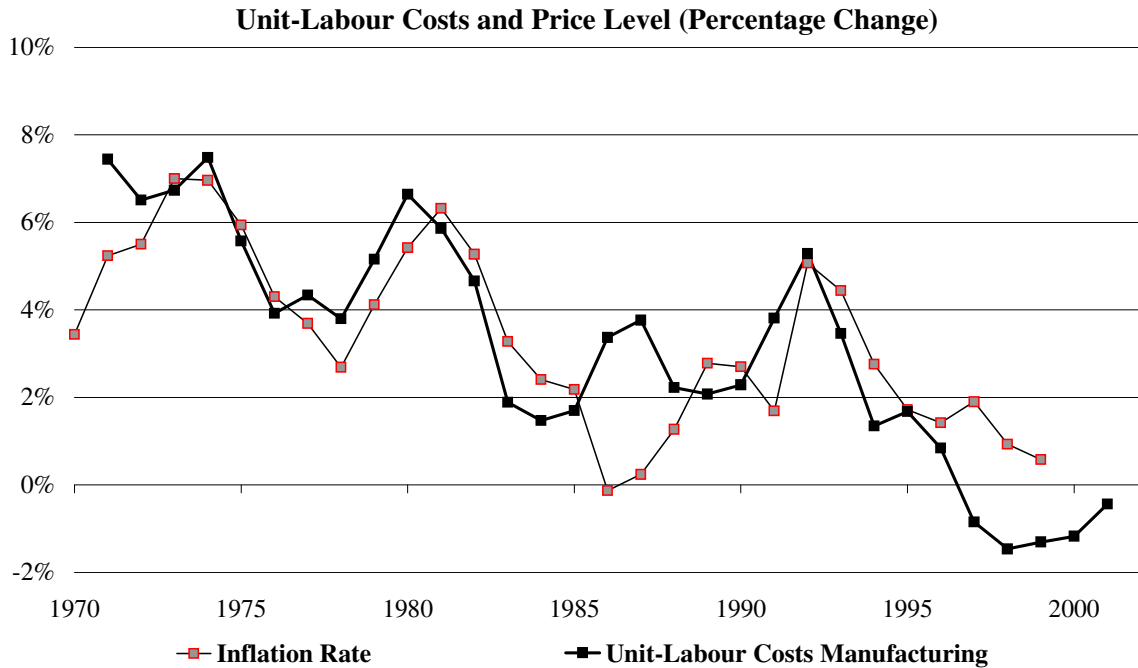Sraffa, P. (1976): Production of Commodities by Means of Commodities, Cambridge, UK

Walras, L. (1874, English ed. 1954): Elements of Pure Economics or the Theory of Economic Wealth, London
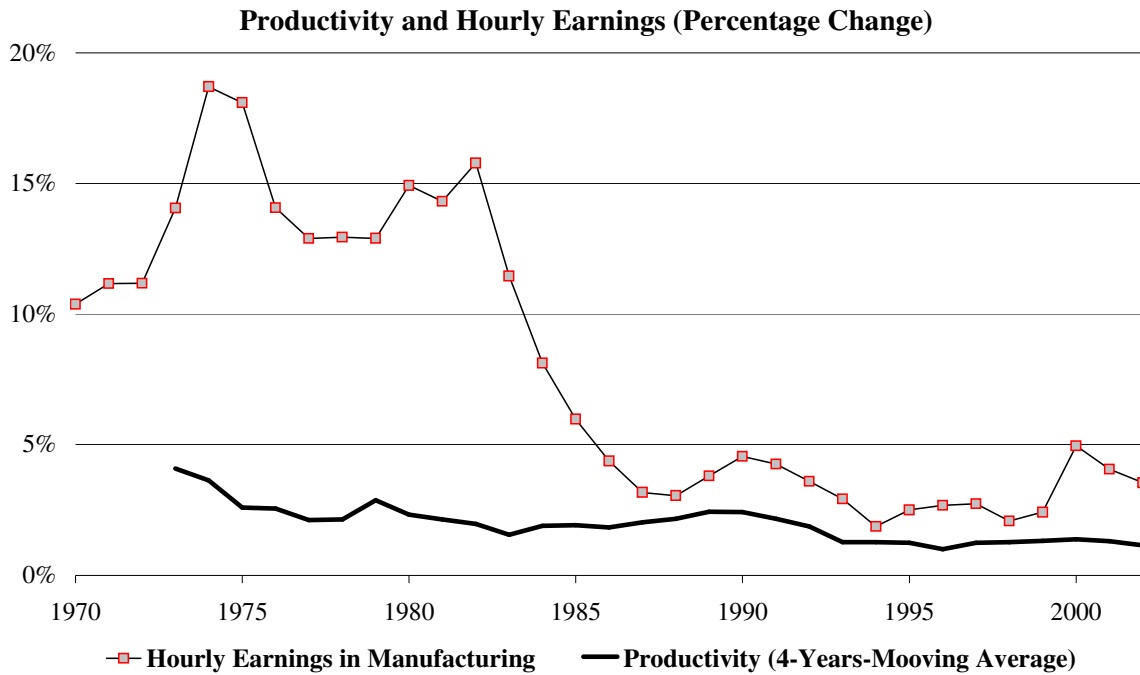
Appendix 1

Germany

Productivity and Hourly Earnings (Percentage Change)

Source: OECD; Statistical Compendium #1/2001

Unit-Labour Costs and Price Level (Percentage Change)

Source: OECD; Statistical Compendium #1/2001; Unit-Labour Costs 4-Year-Mooving Average

France

Productivity and Hourly Earnings (Percentage Change)

Source: OECD; Statistical Compendium #1/2001

Unit-Labour Costs and Price Level (Percentage Change)

Source: OECD; Statistical Compendium #1/2001; Unit-Labour Costs 4-Year-Mooving Average

Italy

Productivity and Hourly Earnings (Percentage Change)

Source: OECD; Statistical Compendium #1/2001

Unit-Labour Costs and Price Level (Percentage Change)

Source: OECD; Statistical Compendium #1/2001; Unit-Labour Costs 4-Year-Mooving Average

Japan

Productivity and Hourly Earnings (Percentage Change)

— □ — **Hourly Earnings in Manufacturing**   ——— **Productivity (4-Years-Mooving Average)**

Source: OECD; Statistical Compendium #1/2001

Unit-Labour Costs and Price Level (Percentage Change)

— □ — **Inflation Rate**   — ■ — **Unit-Labour Costs Manufacturing**
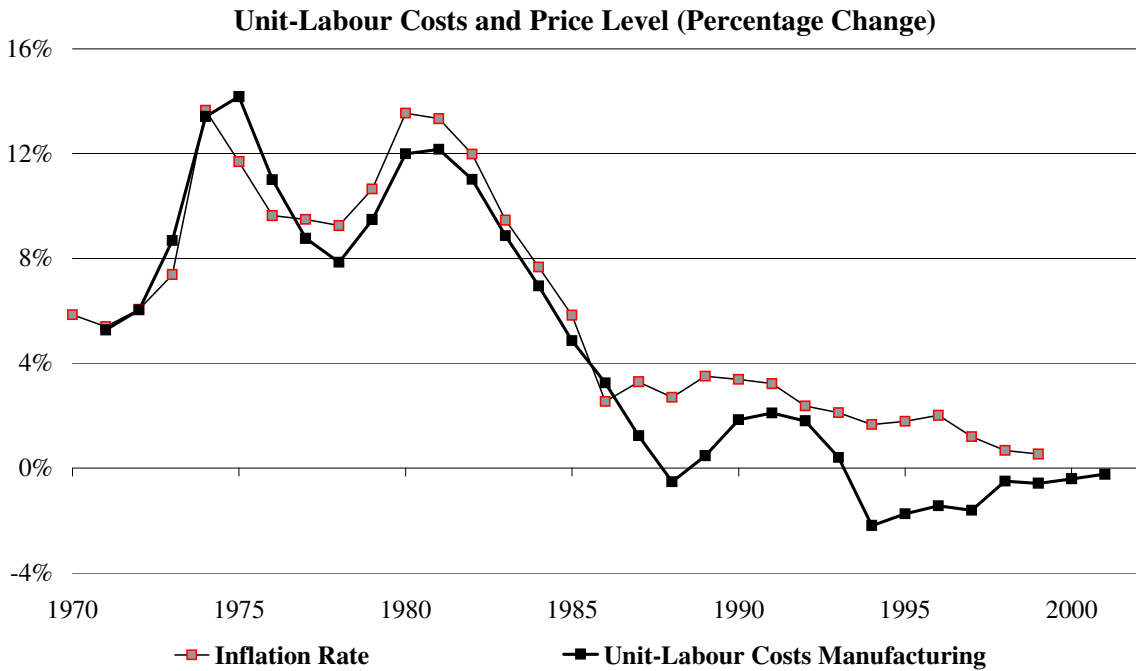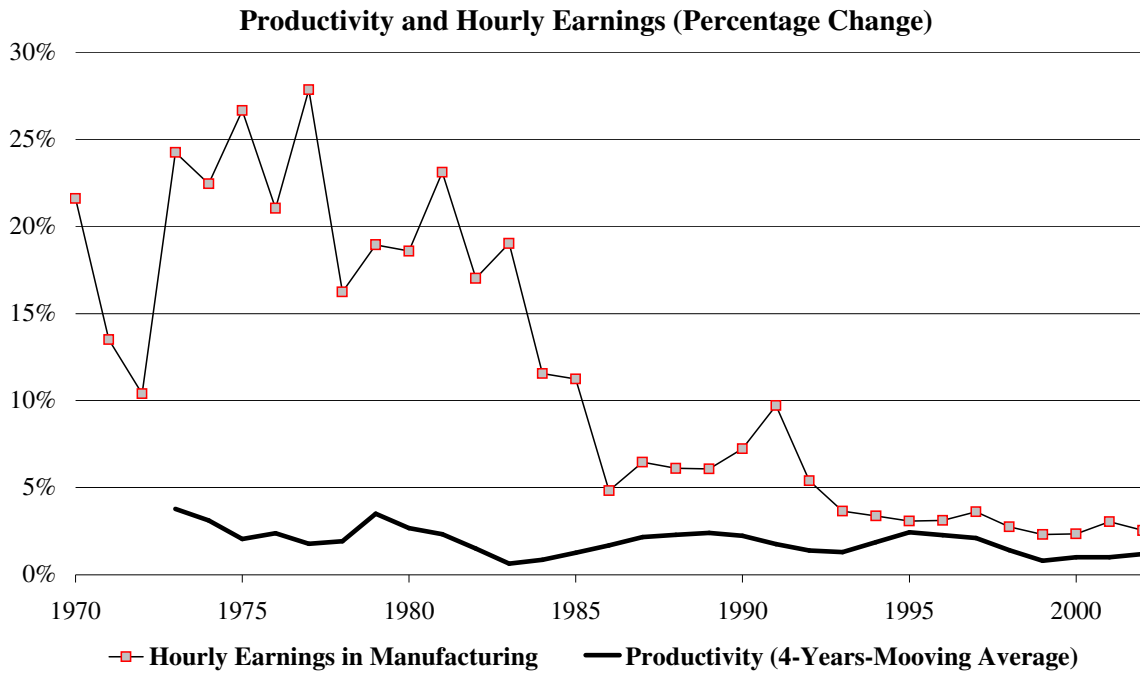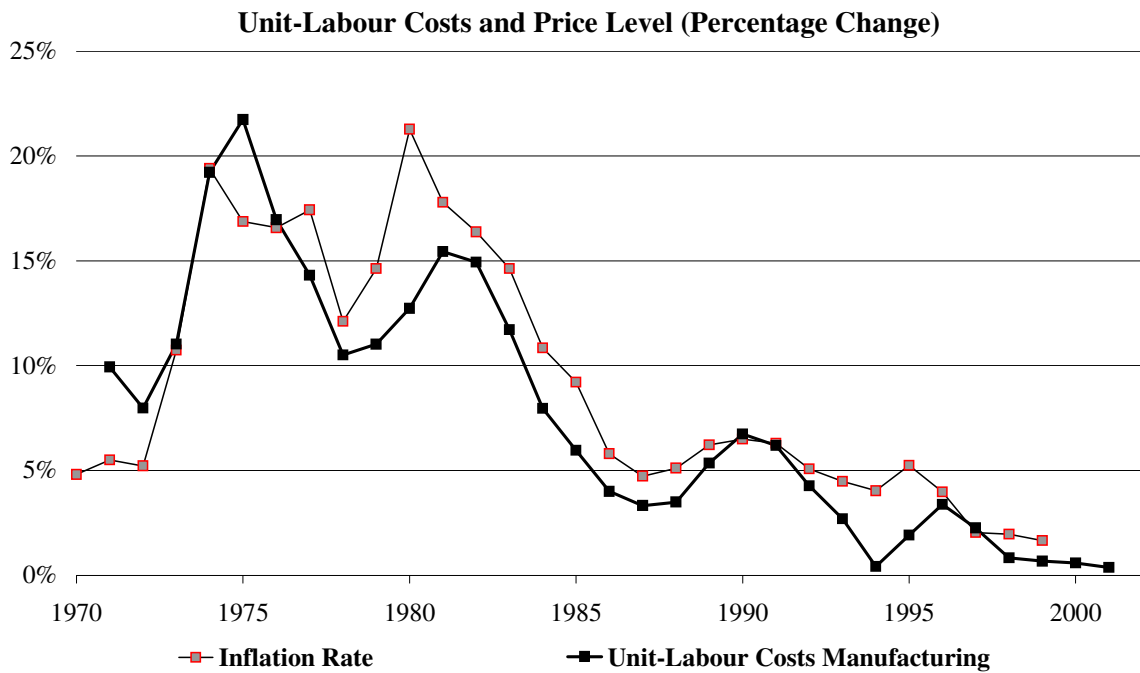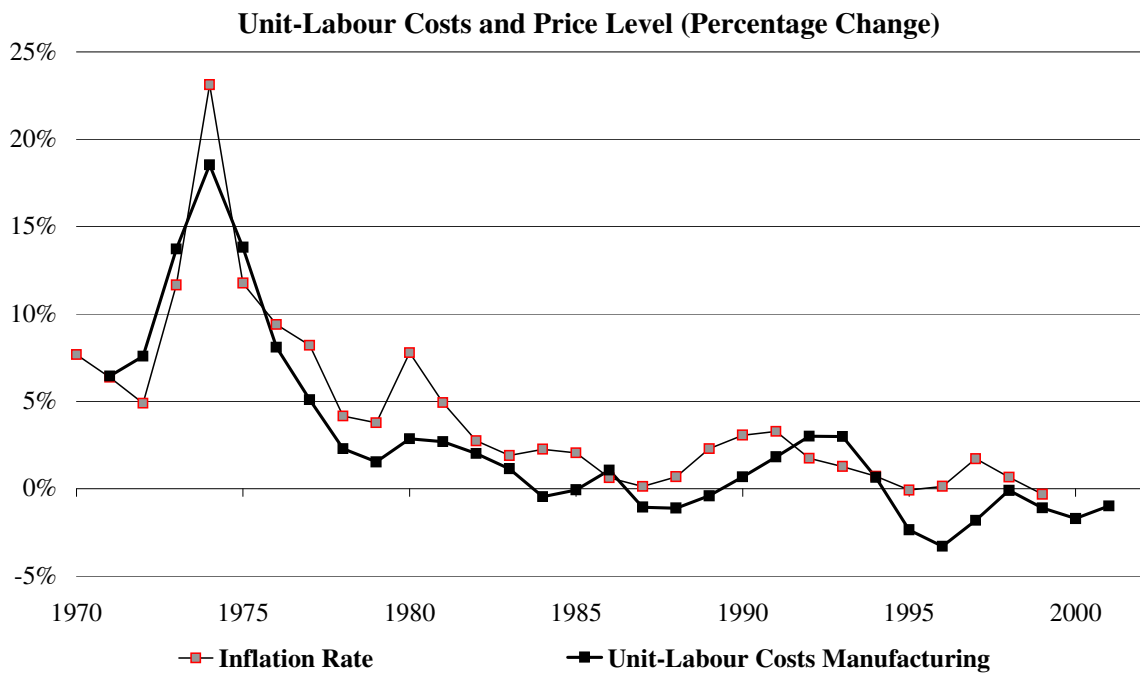
Source: OECD; Statistical Compendium #1/2001; Unit-Labour Costs 4-Year-Mooving Average

United States of America
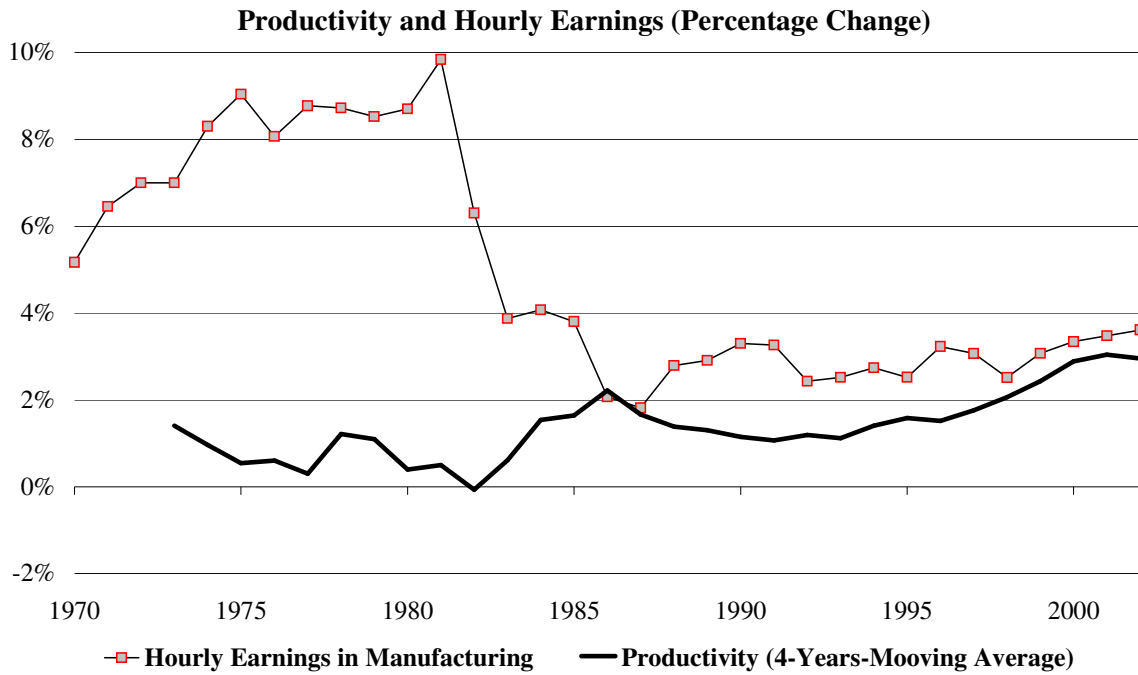
Productivity and Hourly Earnings (Percentage Change)

— □ — **Hourly Earnings in Manufacturing**   —— **Productivity (4-Years-Mooving Average)**

Source: OECD; Statistical Compendium #1/2001

Unit-Labour Costs and Price Level (Percentage Change)

— □ — **Inflation Rate**   — ■ — **Unit-Labour Costs Manufacturing**
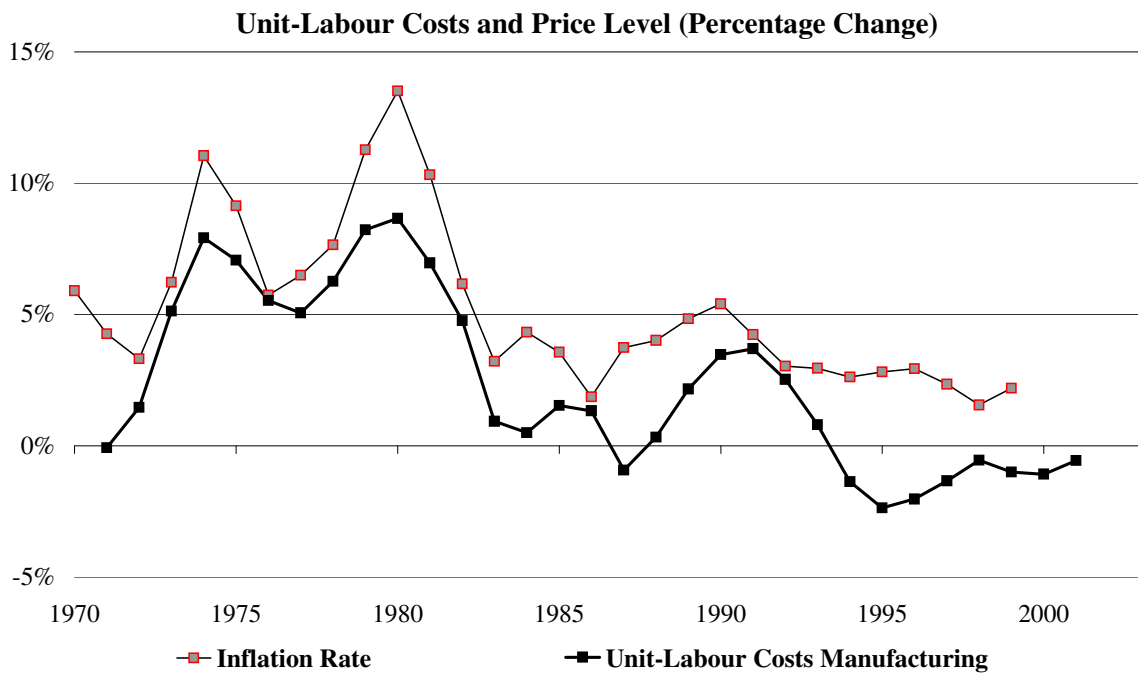
Source: OECD; Statistical Compendium #1/2001; Unit-Labour Costs 4-Year-Mooving Average

United Kingdom
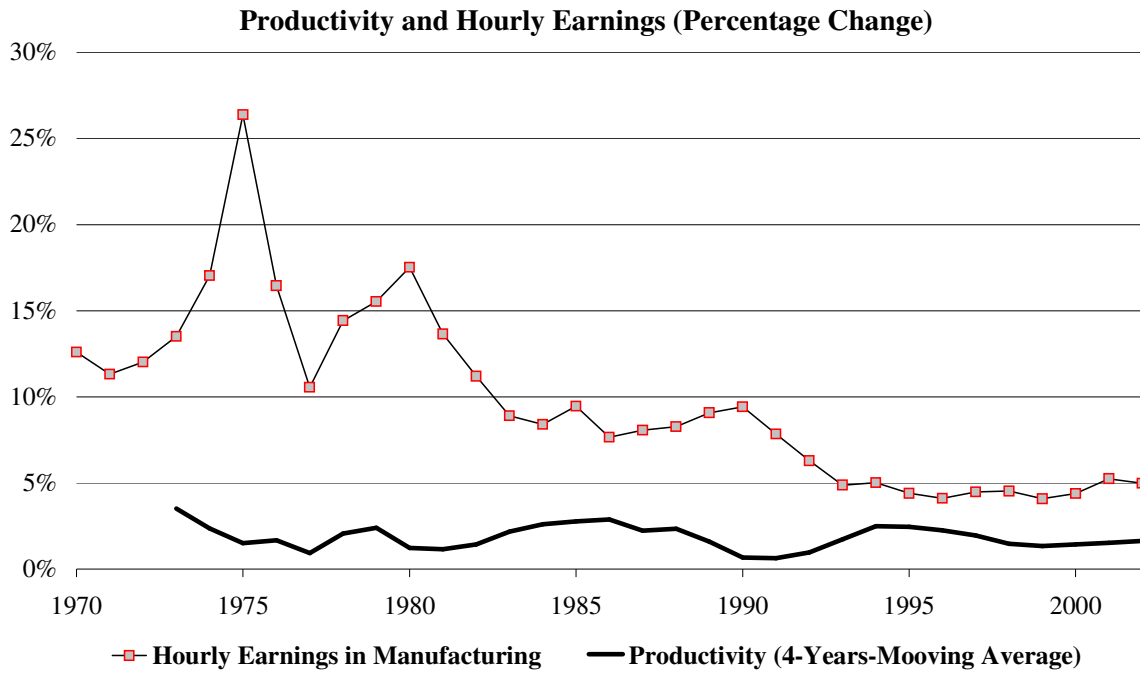
Productivity and Hourly Earnings (Percentage Change)

— □ — **Hourly Earnings in Manufacturing**   —— **Productivity (4-Years-Mooving Average)**

Source: OECD; Statistical Compendium #1/2001

Unit-Labour Costs and Price Level (Percentage Change)

— □ — **Inflation Rate**   — ■ — **Unit-Labour Costs Manufacturing**
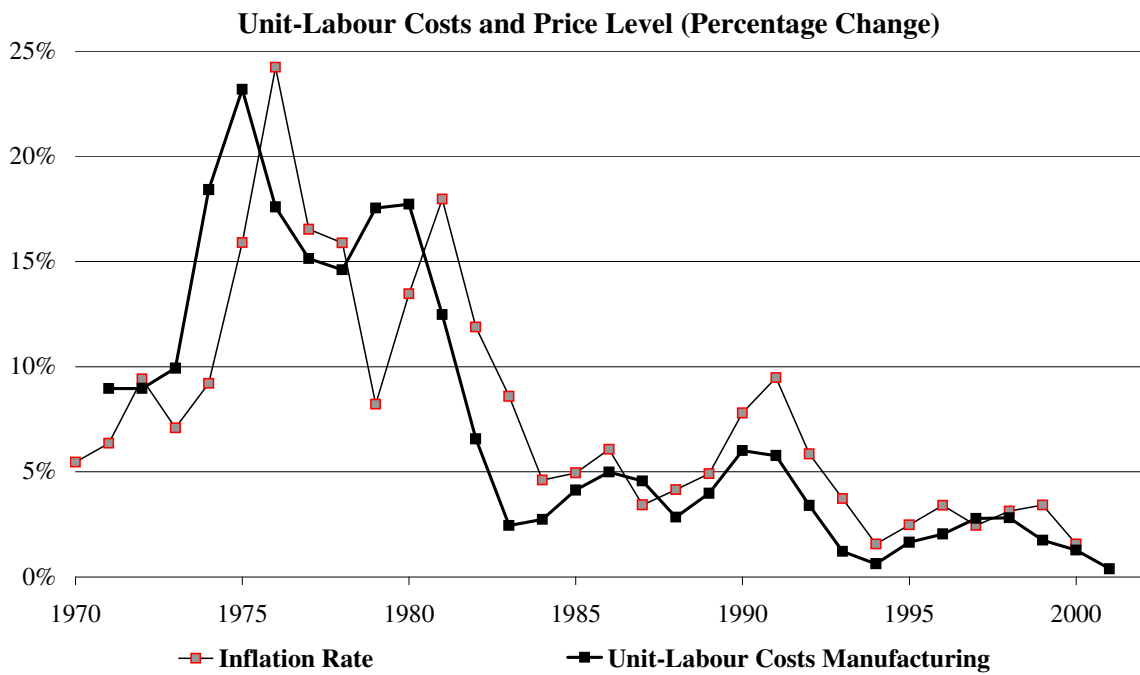
Source: OECD; Statistical Compendium #1/2001; Unit-Labour Costs 4-Year-Mooving Average

**Working Papers des Business Institute Berlin
an der Fachhochschule für Wirtschaft Berlin**

1   Bruche, Gert / Pfeiffer, Bernd: Herlitz (A) – Vom Großhändler zum PBS-Konzern – Fallstudie, Oktober 1998

2   Löser, Jens: Das globale Geschäftsfeld „Elektrische Haushaltsgroßgeräte" Ende der 90er Jahre – Fallstudie, Oktober 1998

3   Lehmann, Lutz Lars: Deregulation and Human Resource Management in Britain and Germany – Illustrated with Coca-Cola Bottling Companies in Both Countries, March 1999

4   Bruche, Gert: Herlitz (B) - Strategische Neuorientierung in der Krise - Fallstudie, April 1999

5   Herr, Hansjörg / Tober, Silke: Pathways to Capitalism - Explaining the Difference in the Economic Development of the Visegrad States, the States of the Former Soviet Union and China, October 1999

6   Bruche, Gert: Strategic Thinking and Strategy Analysis in Business - A Survey on the Major Lines of Thought and on the State of the Art, October 1999, 28 pages

7   Sommer, Albrecht: Die internationale Rolle des Euro, Dezember 1999, 31 Seiten

8   Haller, Sabine: Entwicklung von Dienstleistungen - Service Engineering und Service Design, Januar 2000

9   Stock, Detlev: Eignet sich das Kurs-Gewinn-Verhältnis als Indikator für zukünftige Aktienkursveränderungen?, März 2000

10   Lau, Raymond W.K.: China's Privatization, June 2000

11   Breslin, Shaun: Growth at the Expense of Development? Chinese Trade and Export-Led Growth Reconsidered, July 2000, 30 pages

12   Michel, Andreas Dirk: Market Conditions for Electronic Commerce in the People's Republic of China and Implications for Foreign Investment, July 2000, 39 pages

13   Bruche, Gert: Corporate Strategy, Relatedness and Diversification, September 2000, 34 pages

14   Cao Tingui: The People's Bank of China and its Monetary Policy, October 2001, 21 pages

15   Herr, Hansjörg: Wages, Employment and Prices. An Analysis of the Relationship Between Wage Level, Wage Structure, Minimum Wages and Employment and Prices, June 2002, 60 pages