# THE THEORETICAL DEBATE ABOUT MINIMUM WAGES

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# ABSTRACT

Over the past several decades minimum wages have steadily gained importance. In many cases this reflects the weakness of unions which have been unable to prevent very low wages compared to the national average wage in some segments of the labour market. Changes in minimum wages can affect employment, income distribution and price level. Empirical investigations in a large number of countries and historical periods show that there is no clear relationship between minimum wages and unemployment. However, there is a broad consensus that minimum wages change income distribution in favour of low-paid workers. Price level effects of minimum wages have not been in the centre of the empirical research.

In principle, for the neoclassical paradigm minimum wages have negative employment effects. These iron law of neoclassical thinking came under discussion after negative employment effects of minimum wage increases in empirical studies were difficult to find. The monopsony case was a way out of the dilemma. However, it seems to lack sufficient relevance to draw general macroeconomic conclusions.

In the Keynesian paradigm nominal wages become the nominal anchor for the price level. Minimum wages compress the wage structure and lead to a change in income distribution first of all within wage earners. Minimum wage policy should be in line with the following principles: a) Minimum wages must affect a sufficient number of employees, b) they should be adjusted frequently, c) they should increase at least according to trend productivity growth plus the target inflation rate of the central bank, d) they should increase at least in line with average wages because this is the only possibility to prevent an increase in the wage gap. As long as low wages are considered to be too low in comparison to average wages, minimum wages should increase faster than average wages. In a Keynesian perspective no relevant positive or negative employment effects resulting from changes in minimum wages can be expected.

# The Theoretical Debate about Minimum Wages

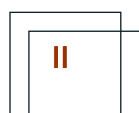Hansjörg Herr

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# 1. INTRODUCTION

Minimum wages were first introduced in the early 19th century. Currently about 90 per cent of all countries have statutory minimum wages. However, minimum wages can be set in different ways and can have fundamentally different roles in different countries. They can be set on an hourly or monthly basis for all employees. But minimum wages can also be differentiated according to industry, profession, age, region, etc. They can be set by governments and through the collective bargaining process if the negotiated wages are declared binding for all firms in an industry. They can be set autonomously by the government with or without consultation with trade unions and employers' associations or automatically following a certain rule of law. While in some instances they may have only a symbolic meaning if they are unrealistically low, they also can be effective and important for a substantial number of employees. Last but not least, unions may be in favour of minimum wages or against their introduction. In short: minimum wages must ultimately be judged as part of general labour market institutions which reflect a country's specific developments and constellations.

Over the past several decades minimum wages have steadily gained importance. In many cases this reflects the weakness of unions which have been unable to prevent very low wages compared to the national average wage in some segments of the labour market. To a certain extent minimum wages became a substitute for efficient wage bargaining between trade unions and employers' associations. Germany is a good example for the need to implement minimum wages in some German industries in regions where union density is too low and employers' associations represent so few firms that wage bargaining is incapable of creating a general level for wages. Some Social Democratic parties which rule in countries with weak unions and very flexible labour markets have been using minimum wages to include a social dimension to their otherwise rather neoliberal policies. Great Britain under Tony Blair is a good example for this case as well as Bill Clinton in the 1990s in the United States. However, there are also countries with more or less symbolic minimum wages because statutory wages are too low to affect a relevant number of employees. For this case Spain is a good example.

Minimum wages constitute a theoretical and political issue in both developing and developed countries. In both groups statutory minimum wages cover the formal sector of the economy; that means the sector in which statutory provisions are at least more or less followed. In both groups of countries an informal sector exists which is beyond the direct reach of statutory provisions. Typically, in developing countries the informal sector is much bigger than the formal sector. However, minimum wages may also influence wages in the informal sector indirectly.

In this paper we focus on the theoretical economic debate concerning minimum wages. As always in such debates different economic paradigms will come to different conclusions, whereas all paradigms present empirical studies that support their own view. In theoretical debates the neoclassical paradigm

dominates the stage in almost all countries around the world and its conclusions often seem "natural", a "common sense" example. This reflects the length of time this paradigm has dominated and how underrepresented other approaches are. It is important for us to show that from a theoretical point of view the neoclassical model is not plausible. In the end it is the struggle between different economic ideas which determine what young economists think, what policy makers believe in and which ideas the majority of people follow.[1]

Minimum wages can affect income distribution, poverty, inflation and employment. There is a huge body of empirical studies about the effects of minimum wages, the majority of them being dedicated to exploring the effects on employment. Of special importance is the research about employment effects in fast food restaurants in the United States done by Card and Krueger in 1994. Before their research the dominating view was the one supporting the neoclassical paradigm that minimum wages have negative employment effects (Bazen/Martin 1991; Neumark/Wascher 1992). However, Card and Krueger (1994) found a positive link between minimum wage increases and employment. Their study paved the way for intensive theoretical and empirical debates about the effects of minimum wages. Even the followers of the neoclassical view found for some extraordinary cases (monopsony, see below) a positive impact of minimum wage increases on employment.

As always in a debate between different theoretical approaches, the empirical results are mixed depending on the theory used as a basis for the research. The overall result of the empirical literature is that in many cases a minimum wage increase causes a drop in employment only among certain groups of employees (teenagers, young adults, low-skilled). A negative employment effect on the teenage population or young adults was found for example in Van Soest (1994), Deere et al. (1995), Maloney (1995), Bazen / Marimotou (1997), Burkhauser et al. (1997), Abowd et al. (1997), Baker et al. (1997). General positive employment effects of increases in minimum wages were detected, for example, by Card/Krüger (1994) und (1995), Machin/Manning (1994), König/Möller (2007). Many studies have found insignificant or no employment effects after the increase in minimum wages, for example Card (1992), Benhayoun (1994), Card/Krüger (1995, 1998 and 2000), Bell (1995), Lang/Kahn (1998), Dolado et al. (1996 and 2000), Steward (2004), Dickens /Draca (2005) and Draca et al. (2006). Again, other studies support the neoclassical belief that increases in minimum wages lead to negative employment effects, for example Bazen/Martin (1991), Currie/Fallick (1996), Chapple (1997), Orazem/Mattila (1998), Burghauser et al. (2000), Neumark/Wascher (2000), Machin/Wilson (2004). Obviously, there is no clear and no quantitatively relevant relationship between minimum wage development and employment.

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[1] „For in the field of economic and political philosophy there are not many who are influenced by new theories after they are twenty-five or thirty years of age, so that the ideas which civil servants and politicians and even agitators apply to current events are not likely to be the newest. But, sooner or later, it is ideas, not vested interests, which are dangerous for good and evil." (Keynes 1936, p. 283f.)

Table 1:        Empirical Studies of Effects of Minimum Wage Increases

| Authors/Year | Country/Region/ Industry | Employment Effect | Distribution Effect |
|---|---|---|---|
| Bazen/Martin (1991) | France, 1963/68-1986 | Negative | |
| Card (1992) | US, 1987-1989 | Insignificant | |
| Neumark/Wascher (1992) | US, 50 states and the district of Columbia, 1973/77-1989 | negative - (young adults) insignificant - (teenagers) | |
| Horrigan/Mincy (1993) | US, March 1981 and 1988 | | insignificant |
| Ragacs (1993a) | Austria, industrial sectors, 1969-1990 | negative – (short run) | |
| Ragacs (1993b) | Austria, industrial sectors, 1969-1990 | no effects – (long run) | |
| Card/Krüger (1994) | US, fast food restaurants, 1992 | Positive | |
| Machin/Manning (1994) | UK, 1979-1990 | Positive | |
| Dickens et al. (1994b) | UK, 1975-1990 | | Positive |
| Koutsogeorgo-poulou (1994) | Greece, 1962-1987 | negative - (for men) positive - (for women) | |
| Van Soest (1994) | Netherlands, 1984, 1987 | negative - (young adults) | |
| Dickens et al. (1994a) | UK, | Negative | |
| Benhayoun (1994) | France, 1975-1991 | insignificant | |
| Card/Krüger (1995) | US, 1987-1989 | Insignificant | |
| Card/Krüger (1995) | US, various years | | Positive |
| Card/Krüger (1995) | US, 1954-1993 | Insignificant | |
| Bernstein et al. (1995) | US, 1993, March 1994 | | Positive |
| Deere et al. (1995) | US, 1985-1993 | negative - (teenagers) | |
| Sutherland (1995) | UK, 1991 | | positive |
| Maloney (1995) | New Zealand, 1985-1994 | negative – (young adults) positive – (teenagers) | |
| Mare (1995) | New Zealand, 1985-1994 | positive – (teenagers) | |
| Bell (1995) | Mexico, Columbia 1984-1990 | Insignificant negative – (low-skilled) | |
| Green/Paarsch (1996) | Canada, 1986-1987, 1988-1990 | | positive – (male teenagers) no effects – (female teenagers) |
| Shannon (1996) | Canada, 1986 | | positive – (adults) negative – (teenagers) |
| Currie/Fallick (1996) | US, 1979-1987 | Negative | |
| Gosling (1996) | UK, 1994-1995 | | positive |

| Authors/Year | Country/Region/Industry | Employment Effect | Distribution Effect |
|---|---|---|---|
| Dolado et al. (1996) | France, industrial sectors, 1981-1985 minimum wage increase compared with 1985-1989 | no effects | |
| Addison/Blackburn (1996) | US, 1984-1992 | | no effects |
| Burkhauser et al. (1996) | US, March 1990 | | positive |
| Bazen/Skourias (1997) | France, industrial sectors | negative – (teenagers) | |
| Bazen/ Marimotou (1997) | US, 1954-1993 | negative – (teenagers) | |
| Burkhauser et al. (1997) | US, 1990-1992 | negative – (teenagers) insignificant – (prime age workers) | |
| Abowd et al. (1997) | US, 1981-1987 France, 1981-1989 | negative – (teenagers) | |
| Baker et al. (1997) | Canada, 1975-1993 | negative – (teenagers) | |
| Chapple (1997) | New Zealand, 1985-1997, 1980-1997 | Negative | |
| Neumark/Wascher (1997) | US, 1986-1995 | | positive |
| Card/Krüger (1998) | US, fast food restaurants, 1992-1993 | Insignificant | |
| Orazem/Mattila (1998) | US, Iowa, 1990-1992 | Negative | |
| OECD (1998) | 9 OECD countries, 1975-1996 | negative – (teenagers) | |
| Lang/Kahn (1998) | US, 1988-1991 | insignificant – (prime age workers) | |
| Dickens/Machin (1999) | UK, 1975-1992 | no effects | |
| Baker et al. (1999) | Canada, 1975-1993 | negative – (teenagers) | |
| Burghauser et al. (2000) | US, 1979-1997 | Negative | |
| Neumark/Wascher (2000) | US, fast food restaurants,1992 | Negative | |
| Card/Krüger (2000) | US, fast food restaurants, 1992-1997 | no effects | |
| Dolado et al. (2000) | OECD countries | no effects | positive |
| Steward (2004) | UK 1999-2002 | no effects | |
| Machin/Wilson (2004) | UK, 1999-2001 | negative | positive |
| Dickens /Draca (2005) | UK, 2003 | Insignificant | |
| Draca et al. (2006) | UK, 1999 | Insignificant | positive |
| König/Möller (2007) | Germany, 1994-1999, construction sector | positive – West Germany negative – East Germany | positive – East and West Germany |

Source: OECD (1998), Ragacs (2003) and own collection

There is also literature on the distribution effects of minimum wages. Nearly all empirical studies found that higher minimum wages compress the wage structure and change the income distribution. Low-paid and low-skilled and especially women benefit from minimum wage increases. To a certain extent minimum wage increases can reduce poverty, cp. for example Dickens et al. (1994b), Card/Krüger (1995), Bernstein et al. (1995), Sutherland (1995), Gosling (1996), Burkhauser et al. (1996), Neumark/Wascher (1997), Dolado et al. (2000), Machin/Wilson (2004), König/Möller (2007).

Empirical research has not come to a clear and definitive conclusion about the effects of minimum wages. At the same time the theoretical debate is mainly based on neoclassical thinking. In most cases a macroeconomic approach is missing. This state of affairs motivated us to write this paper. In Section 2 we discuss the Keynesian approach to minimum wages. Section 3 is reserved for the analysis of the neoclassical approach and their consequence for minimum wages.[2] Firstly, minimum wages in both paradigms are discussed under the assumption of homogenous labour with only one wage rate for the whole economy. This is an oversimplification, but it allows us to illustrate the fundamental differences between the different approaches. In the part that follows thereafter, minimum wages are then introduced under the assumption of heterogeneous labour and different wage rates.

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[2] There is a different version of the neoclassical and the Keynesian paradigm. For the neoclassical paradigm we take the macroeconomic model which dominates the theoretical and political debate. For the Keynesian paradigm we base our analysis on Keynes (1930 and 1936).

# 2. ECONOMIC EFFECTS OF MINIMUM WAGES IN THE KEYNESIAN PARADIGM

## 2. 1    Effects under the assumption of homogenous labour

We start with the analysis of price level effects of minimum wages and continue with the analyses of distribution and employment effects.

*Price level effects*

The basic Keynesian idea is that in a closed economy costs determine the price level in equilibrium. The model assumes mark-up pricing and the power of enterprises to increase prices. If costs decrease it is assumed that competition will lead to falling prices.[3] This means the assumption of a direct price-price effect when wage costs (and other costs) change. Thus Keynes did not subscribe to the idea that in a situation of low capacity utilisation higher nominal wages lead to higher real demand and higher production. A direct price-price effect reflects, as mentioned, equilibrium conditions. The dynamic process after a cost shock is more complicated, needs some time and depends on the historical circumstances. Cost increases and cost decreases seem to follow a different typical adjustment path. If all firms in an industry are confronted with higher costs, all have an incentive to increase prices and will do so, at least in a closed economy. Good examples of this mechanism are higher oil prices or an increase in value-added tax. When wage costs increase, higher costs will also be rolled over. If costs decrease, firms will cut prices. However, the process of falling prices typically requires a longer period of time. Even in a situation of shrinking demand and production increasing costs lead to inflation. This is called stagflation. Good examples of stagflation are the 1970s and the period after 2007, as both periods suffered from the combination of increasing prices of natural resources, inflation and economic stagnation.

In a closed economy a proportional relationship between changing wage costs and the changes in the price level exists. Or, to put it differently, firms are always able to defend a certain profit mark-up in the medium term (cp. Herr 2008). The profit mark-up may change, but such changes are independent of wage costs. In a market economy and in the game of price setting, firms obviously have the privilege of the last move: They can increase prices after wage costs have gone up. Unions can only negotiate nominal wages - real wages are then the result of the market.[4] Tarling and Wilkinson (1985, p. 179) ask correctly: "Why should distributional shares change in a system where wages are determined collectively between capital and labour, where prices are determined unilaterally by capitalists and where in time sequence prices follow wages?" In principle Kalecki

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[3] Implicitly monopolistic competition characterised by product differentiation, different locations and different transportation costs or oligopolistic and monopolistic markets are assumed.

[4] „In assuming that the wage bargain determines the real wage the classical school has slipt  in an illicit assumption. (…). 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 the entrepreneurs."  (Keynes 1936, p. 13)

(1971) followed this argument. However, he states that large increases in wages would intimidate firms into accepting lower profit mark-ups. Here he argues with a behavioural assumption which is not credible.[5]

The profit mark-up depends on a number of factors. Keynes assumed that the nominal money interest rate is a kind of external cost the enterprise is confronted with and one which determines the profit rate (cp. Keynes 1936, p. 213 and 222). Firms can, however, achieve a profit rate above the interest rate. While one possibility is to compensate for risks, a more convincing argument is the power of the financial sector, which pushes firms to achieve higher rates of return. The increasing pressure to earn higher rates of return can be explained by the shift from stakeholder to shareholder capitalism over recent decades, including the increasing role of institutional investors, non-bank financial institutions, etc. Last but not least, monopolies and oligopolies can achieve higher mark-ups than firms in competitive markets.

In a closed economy, nominal wages can be considered the nominal anchor. While changes to profit rates, natural resources prices, taxes, etc. may lead to changes in the price level, they can not alone create an inflationary or deflationary process. In a closed economy this is only possible if a wage-price spiral starts to turn. However, all kinds of price shocks can trigger such a wage-price spiral. The two oil-price shocks in 1973 and 1979 are instructive examples of this. Increasing oil prices led to an inflationary push. Because of decreasing real wages nominal wage demands increased and triggered an inflationary wave in most Western countries. When central banks started to fight against inflation the economies fell into stagflation and even recession.

The above analysis is modified by taking into account the world market. For smaller countries, particularly developing countries with a high import quota, external cost factors become important. If a country depreciates its currency, import prices, the domestic cost level and the price level increase, whereas real wages decrease. If depreciation triggers a wage-price spiral, a country is caught in a potentially cumulative devaluation-inflation spiral which is combined with a

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[5] The argument can be made clearer by presenting Keynes' (1930) fundamental equations of the value of money. National accounting of a closed economy gives us $Y = W + Q$ with $Y$ as nominal domestic income, $W$ as the wage sum and $Q$ as the sum of profits. Profits are equal to the value of the capital stock ($P \cdot K$), the price level multiplied by the real stock of capital, multiplied by the profit rate ($q$). We get $Q = q \cdot P \cdot K$. As nominal income is real income multiplied by the price level ($Y = Y_r \cdot P$), it follows that $P = \frac{W}{Y_r} + \frac{q \cdot P \cdot K}{Y_r}$. This equation gives us a simplified definition of the cost structures in an economy; simplified because factors like the price of natural resources, taxes or a change in import prices are not covered. The term ($W/Y_r$) expresses unit-labour costs, and the term ($q \cdot P \cdot K /Y_r$) gives us the profit per unit produced. In a closed economy there is a long-run proportional relationship between increases in unit-labour costs and the price level. This is not obvious because unit-labour costs are only part of total average costs. However, an increase in unit-labour costs ($W/Y_r$) increases the price level in the first round; in a second, the price of capital goods in ($q \cdot P \cdot K /Y_r$) increases. The result is a proportional relationship between unit-labour costs and the price level.

wage-price spiral. In many countries the nominal exchange rate can be considered the second nominal anchor of the price level.[6]

What can we learn from the above analysis for minimum wages? First of all, minimum wages can support or even create a nominal wage anchor which is one of the preconditions for the functioning of capitalist economies. More precisely, minimum wages can prevent a deflationary development in the goods market. Goods market deflations destabilise the financial system of a country because the combination of nominal debt and falling prices increases the real debt burden and leads to mass bankruptcy and shrinking production. The Great Depression in the 1930s and the deflation in Japan that started in the mid 1990s are examples of the negative effects of deflations (cp. Fisher 1933; Heine/Herr/Kaiser 2006).

To become a nominal anchor minimum wages should increase every year according to the *wage norm*. Given the target inflation rate ($\dot{P}_T$) the wage norm can be stated as $\dot{w}_N = \dot{\pi} + \dot{P}_T$ with $\dot{\pi}$ as medium-term productivity increases and $\dot{w}_N$ the desired increase in nominal wages. Statistically, productivity drops during recession because companies cannot immediately dismiss people, and it increases for a while during an upswing as companies use the existing stock of workers to produce more. The wage rule is the desired increase in the nominal wage level and also applies to increases in minimum wages. Thus minimum wage development should follow the medium-term trend of productivity changes plus the target inflation of the central bank. Of course, minimum wage increase above the wage norm can lead to an unwanted high inflation rate. However we have to be cautious here. The conclusions drawn from this depend on the assumption of a uniform wage rate in the economy. In the more realistic case of different wage rates average nominal wages can increase according to the wage norm and minimum wages can develop differently. In the case of a faster increasing minimum wage than given by the wage norm this would imply a change in the wage structure which benefits the low-wage earners.

*Distribution effects*

In the Keynesian approach, changes in nominal wage levels can not ultimately change the distribution of income between wages and profits. This is the result of the fact that firms can roll over higher wage costs and, at in least in the long run, do not have to change the profit mark-up. However, a changing profit mark-up

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[6] The degree of competition also depends on the openness of a country and on international competition in product markets. In this way profit mark-ups can be influenced by the world market. For example, it is possible that higher nominal wages-costs go along with a stable exchange rate or an appreciation. The tradable sector in the economy in such a constellation is probably not able to roll over higher wages and must except lower profits, or it realises losses. In the non-tradable sector prices can and will go up. Usually such a constellation is very unfriendly for sustainable economic development. Probably an economic crises, unemployment and lower wage increase will restore the profit-mark up to the old level. A depreciation of the currency can increase the competitiveness of the tradable sector and can leave room for a higher profit-mark up. To sum up, integration into the world market can modify the relationship between wage costs and the price level in special situations; however, in most countries wages are by far the most important anchor for the price level.

changes labour's share in national income. Given income distribution real wages change according to productivity development.[7]

The conclusion for minimum wages is that they are not a suitable instrument to change the distribution between capital and labour. Distributional changes can only be achieved by changing the profit mark-up which seemed to have increased as a result of changes in financial markets. This does not mean that distribution between capital and labour cannot be changed. It only means that minimum wages are not suitable instruments for such an aim.

*Employment effects*

There is no direct relationship between changes in wages and changes in employment because wage costs directly influence the price level. However, there are indirect effects. As mentioned, an extremely low nominal wage increase or even nominal wage cuts lead to deflation, problems in the financial system and a loss of production and employment. Extremely high wage increases lead to inflation which sooner or later will be combated by restrictive monetary policy. This also leads to losses in production and employment. Minimum wages can support a desirable development of nominal wages and especially help to prevent deflationary developments.

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[7] It may be helpful to show these results in a more formal way. Income equals wages plus profits ($Y = W + Q$). Because profit equals the profit rate multiplied by the stock of capital ($Q = q·P·K$) it follows that $W/Y = 1 – (q·P·K/Y)$. Using the definition of the capital coefficient ($k = P·K/Y$) the wage quota is $W/Y = 1 - q· k$. Taking into account that $Y = Yr·P$ we can also write $(W/N)/ (Yr·P/N) = 1 - q· k$. Because the nominal wage rate is $w = W/N$ and productivity is $π = (Yr/N)$ we get the following definition of real wages: $w/P = π(1 - q· k)$.

## 2.2　　Effects under the assumption of heterogeneous labour

We now assume heterogeneous labour with different wage rates and analyse the economic effects of minimum wages under this condition.

*Price level effects*

If the wage structure does not change and minimum wages increase according to the wage norm, the target inflation rate is achieved. However, the nominal wage level can increase according to the wage norm and at the same time the wage structure can change. Firstly, the wage structure can become more polarised. An example of this is the development in the United States since the 1980s. The wage level increased more or less according to the wage norm, but driving this development was a strong polarisation of wages (cp. Goldin/Katz 2007). During this period it is obvious that minimum wages in the United States were not used to prevent this polarisation. On the other hand, minimum wages can increase faster than average wages. In this case the wage structure is compressed.

Inflationary effects of minimum wages cannot be excluded from this scenario. The most extreme case is when minimum wages become the standard to fix all other wages. For example, a semi-skilled worker would earn two times the minimum wage, a skilled worker three times the minimum wage, etc. In such a case increases in minimum wages would not change the wage structure and increases in minimum wages above the wage norm would lead to unwanted inflation. An insufficient increase in minimum wages would lead to deflation.

The above case reflects an extreme assumption which is not very realistic. More realistic, albeit also an extreme case, is a scenario in which all wages increase according to the wage norm except minimum wages which increase faster. In such a constellation the inflation rate will increase a bit faster than the target inflation rate. Firstly, industries which employ workers affected by minimum wages will increase prices more than the target inflation rate. Secondly, as long as these prices are inputs of other industries, these other industries also will increase prices.

The overall conclusion is that changes in minimum wages can affect the price level. However, except in the extreme cases of using minimum wages as the standard for other wages and very strong changes in minimum wages, price level effects of changes in minimum wages can be considered small.

*Distribution effects*

It was argued above that changes in nominal wages are not able to change the distribution between wages and profits. However, minimum wages have distributional effects within the working class. Keynes (1936, p. 14) sees this point clearly: „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 of forces". As soon as minimum wages change the structure of wages, which is the normal case, the distribution within the working class will change. An increase

in minimum wages that compresses the wage structure will increase the wages of low-paid workers at the expense of other workers. For other workers the products produced by workers affected by minimum wage, usually personal services, meals in restaurants, etc., will become more costly and reduce their real income. Of course, as long as productivity is increasing the living standard of workers not affected by minimum wages must not decrease and will only increase slower than the real wages of the affected workers.

Income distribution is always a political issue as changes in the distribution will unavoidably produce winners and losers. Not all workers may like a flat wage structure, and unions that represent skilled workers may also deny their support for higher minimum wages.

*Employment effects*

We assume here the realistic case that a change in minimum wages will modify the wage structure. In such a case the analysis of employment effects becomes more complicated when compared to a situation of a uniform wage rate. Firstly, a change in the wage structure will automatically lead to a change in relative prices (a change in the structure of prices). Secondly, it will alter the distribution of income. We will discuss one effect after the other.

Let us assume that a uniform increase in minimum wages increases wages in industries in labour incentive branches with mostly low-skilled labour, e.g. in the semi-conductor industry and in the hair-dressing industry. Wages in other industries may not be affected and do not change. As a result of higher wage costs compared to other costs the semi-conductor industry will react in two ways. It will first search for a new profit maximising technology. Secondly, it will increase the prices of its products because with the new technology prices will be higher, otherwise the technology would have been used before. It is likely that part of the workforce in the semi-conductor industry will become unemployed. This depends on the degree of change in technology and on the price elasticity of semi-conductors. The new technology involves the reduction of low-skilled workers and an increase of capital inputs (new machines) and/or higher input of skilled workers. How big the net loss of employment will be is difficult to say because the production of a higher capital input also increases employment in the capital-goods producing industry. However, the story is not yet finished. Semi-conductors are inputs of many other industries which, according to their technology, are affected differently by a price increase of semi-conductors. All of the affected industries will now also switch to a new technology because the price relation of their inputs has changed. They will probably shift to a more labour intensive industry, as for them, capital inputs became more costly. And the story goes on and on. All industries which use semi-conductors will change their prices and their composition of inputs and many more industries will be affected and will change their technology, their input demand and their prices. In the end the complete structure of prices, the composition of inputs and the structure of output will have changed in the economy and it is simply not possible to find out

whether the economy will now employ less or more labour. Employment of all types of labour may have increased or decreased.[8]

Even in more simple cases the prediction of employment effects is difficult to figure out. Let us take the hair-dressing industry and assume that a change in technology is not possible and the output of the industry is not an input of other industries. In this case an increase in minimum wages increases the price of hair-dressing services according to the increase in wage costs. Given the price elasticity of demand of hair-dressing services we can calculate how many hairdressers will lose their jobs. However, in this case, too, the story is not over. The wage sum in the hairdressing industry may increase or decrease. This depends on the price elasticity of hair-dressing services. If the wage sum increases the employed hairdressers create additional demand. Let us assume they go to fitness studios which in this case experience a higher demand and probably employ unemployed hairdressers. However, we have to take into account that an increase in the wage sum in the hairdressing industry reduces the purchasing power of other consumers which now have to pay more for hairdressing services. If the wage sum in the hairdressing industry shrinks, consumers spend more of their income for other goods. Which industry in the end will be affected and how employment in the economy will change in this simpler case, is difficult to predict.
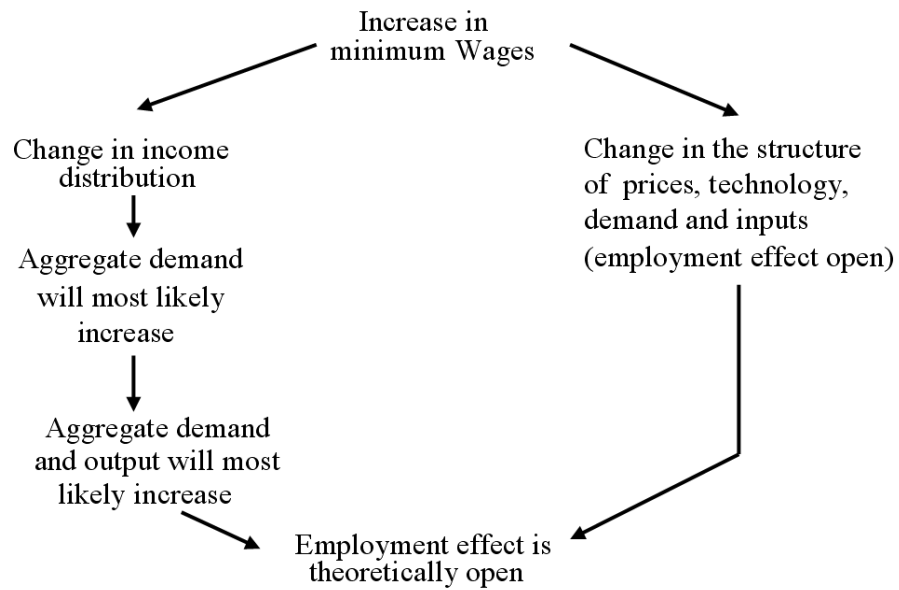
To summarise this point: Minimum wages will change the structure or wages, the structure of prices, the structure of demand for final products and the structure of demand for inputs. How employment is affected is theoretically open and extremely difficult to predict empirically.

Let us come to the second point, the change in distribution. An increase in minimum wages will lead to a change in distribution because low-income earners will benefit most from minimum wage increases. It is also very likely that low-income households will benefit from higher minimum wages. Because low-income households have a higher propensity to consume than high-income households, an increase in minimum wages will most likely increase aggregate demand. In a situation of unused capacities and unemployment this will increase output and production.[9]

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[8] This argument adheres to the tradition of Sraffa (1960) and the so-called Cambridge-Cambridge debate.
[9] Already Keynes (1936, p. 321ff.) recommended a more equal income distribution to strengthen aggregate demand.

**Diagram 1:**  **Employment Effects of Minimum Wages in the Keynesian Paradigm**

Increase in
minimum Wages

Change in income
distribution

Change in the structure
of prices, technology,
demand and inputs
(employment effect open)

Aggregate demand
will most likely
increase

Aggregate demand
and output will most
likely increase

Employment effect is
theoretically open

Increases in minimum wages change income distribution. First of all higher minimum wages will increase the incomes of workers affected by increasing wages. As far as single households are concerned this may directly push the household above the poverty line. Indirectly, minimum wages also influence the income of bigger households if members of these households benefit from minimum wage increases. If it can be expected that low-income jobs will be destroyed by higher minimum wages this can negatively affect poverty. Overall, the minimum wage must be judged as an important instrument in the fight against poverty. However, it has its limitations because not all poor people work in the formal economy and some of the poor do not work at all (children, old people etc.) (cp. Card/Krueger 1995, p. 305ff.).

## 2. 3     What can we learn?

The good news for a policy of minimum wages: *Increases in minimum wages do not have systematic employment effects, neither positive, nor negative ones*. Empirically, it also seems extremely difficult to determine whether an increase in minimum wages increases employment or not. However, in the Keynesian paradigm the main driver of employment is aggregate demand. Changes in the structure of relative prices and the resulting change in the allocation of employment and other input factors is of secondary importance for employment. This also means that Keynesian economists do not recommend changes in the wage structure for the purpose of reducing unemployment. They recommend higher demand, especially investment demand, to fight unemployment. If GDP growth is limited, not possible or not wanted, a reduction of working hours in all its different forms is the only solution left to fight unemployment. Inflationary pressures from minimum wages are usually small and tolerable. There also is no relevant limitation for minimum wage policy.

The bad news for a minimum wage policy: *Minimum wages change the wage structure and at the same time the distribution within the working class*. This fact makes it a political issue, for the union movement and whole society. Different countries can find different solutions and it is difficult to give a good theoretical answer as to which distribution is the best.

Recommendations:

- *Firstly*, minimum wages should be set at a level which affects a sufficient number of workers. Otherwise it has only symbolic meaning.
- *Secondly*, in the long run minimum wages should increase at least according to the wage norm. This means that the increase should follow the target inflation rate plus the trend productivity of the economy. Under this condition minimum wages help to prevent a deflationary development. If the wage level in the economy increases faster than given by the wage norm, minimum wages should increase according to average wages to prevent the wage structure from becoming wider.
- *Thirdly*, minimum wages can be used to change the wage structure with its distributional effects. If the wage structure should be compressed (the intention is for low-income earners to be privileged) minimum wages should increase faster than average wages until the desired wage structure is reached.

# 3. ECONOMIC EFFECTS OF MINIMUM WAGES IN THE NEOCLASSICAL PARADIGM

Firstly, we illustrate the effects of minimum wages according to the standard model. Exceptional cases are discussed in the second subsection.

## 3.1 Effects under the assumption of the standard model

For the neoclassical model a dichotomy between the real and monetary spheres is of key importance. In the long run the monetary sphere does not influence variables like growth, employment or income distribution. Money is neutral and only determines the price level; it is a veil which covers the real sphere. The labour market belongs to the real sphere. It is a market like the market for apples or shoelaces. Thus it is assumed that the labour market can find its equilibrium if the price of labour – the real wage rate – is flexible. Hence, unemployment is always a problem of the labour market and never a problem of a lack of demand. With the absence of market distortions like asymmetric information or transaction costs, the labour market will lead to full employment.[10]

This model is based on several assumptions:

- *Firstly*, workers are perfectly informed about the wages in all the firms and are perfectly mobile so they can choose where to offer their labour (no transaction costs).
- *Secondly,* as mentioned before, the labour market functions in the same way as any other market,
- *Thirdly,* nominal wage change leads to real wage change,
- *Fourthly,* there is perfect substitutability between labour and capital.

In the neoclassical world workers and employers negotiate the real wage rate; that means the basket of goods and services workers earn. Effectively, the neoclassical world is a barter economy – workers exchange a certain quantity of goods against a certain quantity of time they have to work. Of course neoclassical economists know that in the real world only money wages are determined. But they believe that changes in money wages will lead to changes in real wages. Following the quantity theory of money the price level is given by the quantity of money, whereby the latter is exogenously determined by the central bank.[11] Following the neoclassical approach the central bank is responsible for inflation and deflation and the labour market for employment or unemployment.

We start with the assumption of homogenous labour and the assumption of perfect competition. Perfect competition means that the output price and all input prices for firms are given. Diagram 2 shows such a market under the condition of perfect competition. Labour demand and labour supply depend on real wages (wr). Flexible real wages lead to an equilibrium wage rate wr* and an

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[10] For a detailed explanation of the neoclassical paradigm cp. Heine/Herr (2003).
[11] The quantity theory of money has a long tradition. For modern versions of the quantity theory cp. Irving Fisher, Milton Friedman (Monetarism I) or Robert Lucas (Monetarism II).

equilibrium employment N*. This model is based on the works of John Bates Clark (1899) which became the mainstream thinking at the beginning of the 20th century, enduring until today.

The basis for explaining labour demand in the neoclassical paradigm is the so-called macroeconomic production function. For a single firm it is trivial to say that the physical output depends on physical inputs including labour. The current key argument is that any additional unit of labour employed will reduce the additional unit of output. Thus, firms can only employ more workers if real wages decrease.[12] Usually a labour supply function is assumed which shows an increase in labour supply when real wages increase. The explanation is that higher real wages lead to higher consumption opportunities and stimulates utility maximising households to sacrifice some leisure time to work and consume more.

**Diagram 2:       The Neoclassical Standard Model with Homogeneous Labour**
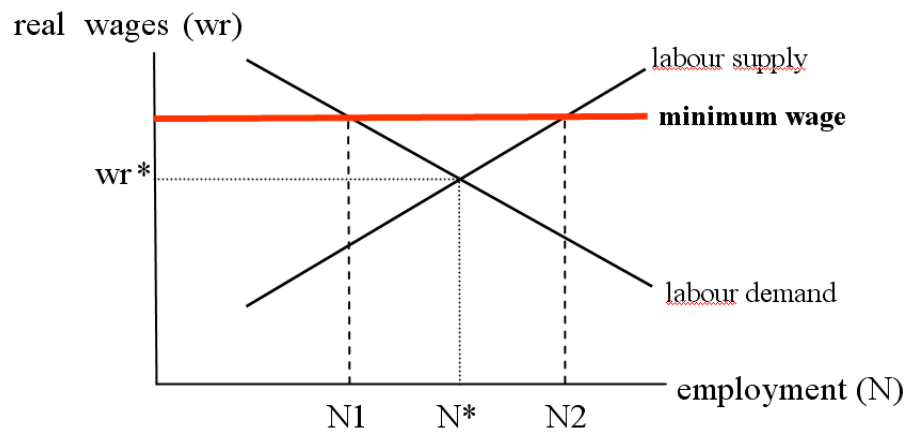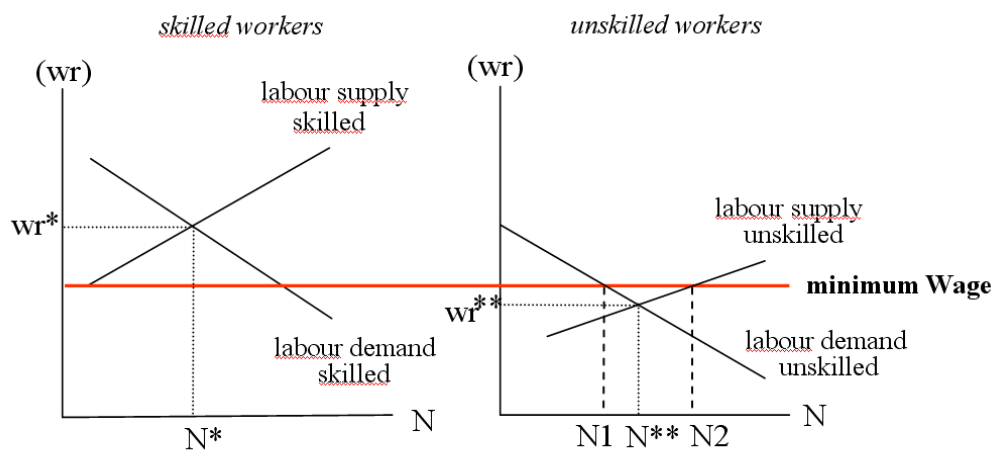


*Unemployment effect of minimum wages: N2 - N1*

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[12] Let us assume a very simple production process, for example picking apples from small apple trees and selling them. To carry out the production process only trees as capital goods (K) and labour (N) is used. Capital is calculated in number of trees, labour in number of working hours. Output (Yr) is calculated in number of apples. Apples can be consumed or used as seeds to increase the number of trees and produce more apples. Put in an equation, output is a function of the two inputs, that means $Yr = f(K, N)$. It is assumed that an ever-increasing labour input per unit capital reduces the marginal product of labour. Given a fixed labour input an increase of the number of trees reduces the marginal product of capital. The price of labour is the wage per hour; the price for capital is the interest rate. It can be shown that under the conditions of perfect competition a firm maximises profits if the real wage rate is identical with the marginal product of labour and the interest rate identical with the marginal product of capital. If P is the price for 100 apples and also the price for one apple tree, w the nominal wage rate and i the interest rate, then the profit Z of a firm is defined as: $Z = PYr - wN - iPK$. Using the production function $Yr = f(K,N)$ we get $Z = Pf(K, N) - wN - iPK$. A firm maximises its profit if labour input (N) is adjusted to the point when $dYr/dN = w/P$, the marginal product of labour is identical with the real wage rate, and capital input (K) is adjusted to the point $dYr/dK = i$, the marginal product of capital is identical with the interest rate. Thus a profit maximising firm will increase labour demand when real wages decrease, and it will increase demand for capital if the interest rates goes down.

Minimum wages which would have to be defined as minimum real wages have no place in this model. If they are below the equilibrium wage rate they are ineffective as the market wage is higher. If they are above the market wage they are dangerous because they create unemployment. In Diagram 2 a minimum wage above the market equilibrium rate is shown. The outcome of this minimum wage is unemployment. At the minimum wage level firms' labour demand is N1, households' labour supply is N2 and unemployment is N2 - N1. In conclusion, if there is an increase of minimum wages above the market clearance wage rate, the firms will make workers redundant.

In many markets we find oligopolistic and monopolistic markets. In these cases if we assume that firms have the price setting power for their own product and if at the same time input prices for them are given, minimum wages will have the same negative effects as under perfect competition.

Let us come to the case of heterogeneous labour. In Diagram 3 two labour market segments are shown, one with skilled workers and one with unskilled workers. Both segments have labour demand and labour supply functions similar to the case of homogenous labour. Without minimum wages both of these labour market segments are in equilibrium and the economy is in a state of full employment. Equilibrium wages in the market of skilled workers (wr*) are higher than in the market of unskilled workers (wr**) reflecting the lower (marginal) productivity of unskilled workers. If minimum wages are introduced to increase the wages of unskilled workers and to depress the wage structure, unemployment is created. In Diagram 3, unemployment of unskilled workers jumps from zero to N2 – N1.

**Diagram 3:      The Neoclassical Standard Model with Heterogeneous Labour**



*Unemployment effect of minimum wages for unskilled workers: N2 - N1*

To summarise, the standard neoclassical model comes to the clear conclusion that increasing minimum wages reduce employment and increase unemployment. This is based on deep neoclassical thinking that supply-side conditions determine employment and output. The conclusion is clear. Governments should not introduce minimum wages to avoid this affect. Let us remember that in the Keynesian paradigm the employment effects were open and considered secondary. There is also another difference between the paradigms. In all of its versions the neoclassical standard model deducts that minimum wages reduce profits. Both paradigms suggest that minimum wages change the structure of prices.[13]

The macroeconomic version of the neoclassical model presented above is burdened with many problems. It has to make extreme assumptions to come to its conclusion. Let us start with the macroeconomic production function which is behind the demand function for labour. Firstly, constant returns to scale have to be assumed. In the case of economies of scale the sum of wages and profits determined in the model is bigger than the income determined in the same model. Economies of scale can also lead to a situation in which the demand for labour increases with increasing real wages. This would of course mean the end of the model. In the case of diseconomies of scale the wages and profit do not add up to income. Looking at the empirical situation most industries are characterised by economies of scale. Secondly, even a production function with constant returns to scale does not exist. The theoretical destruction of the macroeconomic production function started when John Robinson (1953) asked how to measure capital. The Cambridge-Cambridge debate of the 1960s revealed that, due to "reversed capital deepening" and "re-switching", a neoclassical labour demand function simply does not exist. The only possible "solution" to make the neoclassical macroeconomic model consistent is to assume the existence of only one capital good in the whole economy. Under this assumption capital can be aggregated in physical units. Abstractions are intended as a simplification of a complex world which can facilitate analysis. But it is unsustainable to simplify the real world of many capital goods into a world with one capital good that operates in a completely different manner, simply because economists do not like the consequences of their own model.[14] Indeed, it is a disgrace that the results of the Cambridge-Cambridge debate are suppressed or simply ignored. The ideological costs of accepting that a macroeconomic production function does not exist seem too high![15]

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[13] Card/Krueger (1995, p.355ff.) analyse all standard neoclassical models. In the case of heterogeneous labour, they distinguish between two or more discrete types of labour and labour with a continuum of perfect substitutes. In all versions unemployment increases and profits decrease after the introduction of minimum wages.

[14] After Sraffa's (1960) publication neoclassical economists tried to prove that the "simple parables" based on a macroeconomic production function could also be told in a world with more than one capital good. The attempt failed (for an overview of the debate cp. Harcourt/Laing (1971).

[15] What is left from the neoclassical model if there are many capital goods? Neoclassical economists must build their models on the basis of the General Equilibrium Model. Although this model is consistent it is not able to come to strong macroeconomic conclusions (cp. Bliss 1975; Hahn 1981). For example, in a situation of disequilibrium with unemployment the model cannot recommend that a reduction in real wages is the way to full employment.

Of course, the neoclassical paradigm can be criticised from a Keynesian point of view. It can be argued, among other points, that nominal and not real wages are negotiated. Most people in capitalist societies believe that money is important. Neoclassical economists tell them that they are wrong and that in the end, money is unimportant. In Keynesian thinking employment is determined first of all by aggregate demand which determines production and employment. It seems to be far from real world development that output is always supply-determined and never depends on demand. And last but not least, a partial analysis which cuts away the labour market from the rest of the economy seems to be insufficient from a methodological point of view.

### 3.2 Exceptional Cases in the Neoclassical Model

In the debate about minimum wages several so-called exceptional cases which are based on the neoclassical labour market model have become prominent. The most famous one and widely discussed is the so-called monopsony.[16] In a monopsony a firm is confronted by perfect competition in the market of the product it produces. The output price is given. However, the firm has an influence on input prices since it is the only buyer in the market. More precisely, the firm is confronted with the usual neoclassical aggregate supply function of labour. The higher the wage the firm offers, the higher the supply of labour. In the standard model, the price for wages would be given for the firm and it could employ as many workers it wants for the market price, however, it would not be able to change the price of labour. We denote that the case of monopsony is to some extent similar to a monopoly whereby a single seller has the power to set the prices of products which are demanded by many buyers by limiting the quantity of output it intends to produce. In the situation of monopsony, the one buyer can reduce the price of labour by decreasing the quantity it demands. According to Pigou (1924) the exploitation of workers is a state in which the workers are paid less than the value of their marginal product in the company they work for and this is exactly the situation a monopsony can create. A monopsony can exist in a region with only one employer in combination with a limited mobility of the regional workforce. The latter can exist because of transaction costs (costs to drive with the car to the next city, costs to move to the next city, etc.), lack of information or other market imperfections. Even small firms can be in a monopsony constellation when market imperfections lead to a situation in which a firm is confronted with a labour supply function that increases with increasing wages. A typical example is a company-town with only one employer (e.g. mining company) that employs almost everyone in the town and faces an upward-sloped curve of the labour supply, i.e. it will have to offer a higher wage for all workers to increase employment.

The monopsony model is presented in Diagram 4. The labour supply function the firm is confronted with increases with increasing wages. Given fixed costs the

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[16] The monopsony case was first discussed by Stigler (1946), also compare the debate in Card/Krueger (1995).

total cost function without minimum wages reflects the shape of the labour supply function. The total revenue function is a straight line as the price of the produced product is given. A profit maximising firm will look for the output where the difference between total revenue minus total costs is biggest. In the diagram this is shown by the lower equilibrium A. Now let us introduce minimum wages. In this case the total cost curve is a straight line until the employment reaches the level from which the firm has to pay more to get additional workers. From this point onwards the total cost curve is again determined by the labour supply function. In the diagram a minimum wage is chosen which maximises employment and at the same time destroys all extra profits of the firm.[17] The old level of employment would produce a loss as total costs are higher than total revenue. To maximise profits, to earn at least normal profits, the firm must and will increase its employment until output B.

**Diagram 4:     Minimum Wages in the Case of a Monopsony**
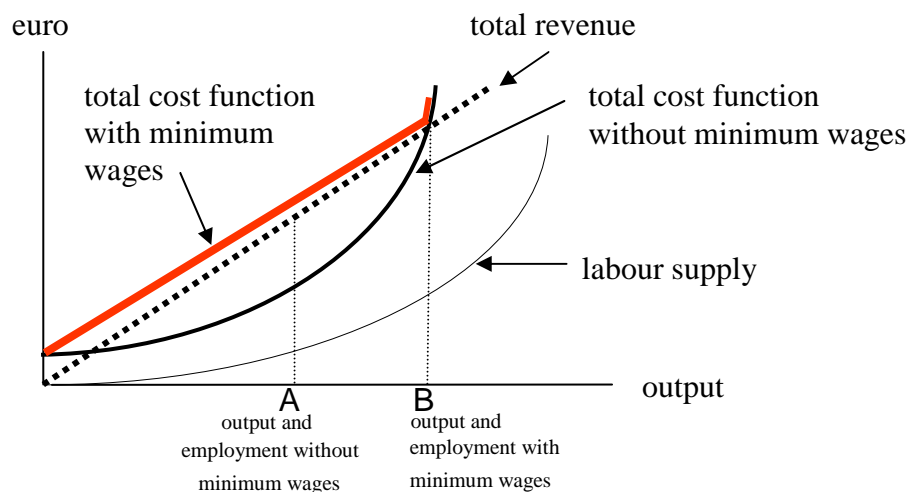


By setting an official minimum wage, a government limits the "exploitation" power of employers, obliging them to pay a higher wage. According to this model, the optimal level of minimum wage, i.e. the wage level which allows the maximum positive employment effect, is the one which would be paid under perfect competition. Such a minimum wage would completely destroy the monopsonist's power. This would also be the level at which the real wage equals the marginal product of labour. In Diagram 4 this would be the wage leading to

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[17] Normal profits are included in costs.

output B. If the minimum wage is higher than the optimal level, the profit maximising firm will reduce employment again.

Many economists who argue that minimum wage increases will not lead to unemployment and that, on the contrary, moderate minimum wage increases can even increase employment use the monopsony model. It offers the possibility of harmonising empirical findings of the absence of negative employment effects of minimum wages with arguments based on the neoclassical model. There is no doubt that the monopsony case can be found in reality, typically in the sector of small- and medium-sized businesses, for example restaurants, craftsmen, laundries, etc. The monopsony model can also be used for certain industries. However, the model lacks a macroeconomic dimension and, like all neoclassical models of the labour market, is but a partial model and explains output completely by supply-side factors. We accept the fact that monopsony can exist under specific circumstances and can be used as an argument in favour of minimum wages. However, we believe that the case of monopsony is theoretically as well as empirically of limited importance.

There are two other approaches which can explain increasing employment of minimum wages within the neoclassical paradigm (cp. Hagen 2008). The first one argues that the intensity of searching for a new job by unemployed people depends on the wage they expect to earn. Thus, higher minimum wages can stimulate research activities of the low-paid workers and reduce unemployment. If this effect is bigger than the usual negative effect of higher minimum wages, employment can increase.[18] The second argument is based on training and other costs which are unavoidable when new workers are taken on board. Because it is assumed that better paid workers do not leave the job as frequently as very low paid workers, minimum wages may reduce overall costs and lead to higher employment. Compared to the monopsony case these arguments are even less plausible as a basis for analysis of the effects of changes in minimum wages.

There is one additional case which is not discussed in the literature and which is also compatible with the neoclassical macroeconomic labour market model. The "normal" shape of the supply curve of labour is not deduced from a strict microeconomic analysis. From a microeconomic foundation many different types of macroeconomic supply functions of labour are possible (cp. Bliss 1975). When real wages become very low, any further reduction in real wages typically increases the supply of labour as people have to work more to survive. Historically, this phenomenon was demonstrated during the industrial revolution (cp. Engels 1845). In today's developing and even developed countries we also see this phenomenon as people with low income need two or three jobs to meet their subsistence needs (cp. Shipler 2004). At very high real wage rates labour supply for utility maximising households can decrease as the opportunity cost of leisure increases. Deducted on the basis of the neoclassical paradigm a more complicated supply function of labour can lead to several equilibrium

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[18] This argument was used by the German Counsel of Economic Advisers in its report in 2006 (cp. Hagen 2008).

combinations between real wages and employment. Such a case is shown in Diagram 5.

**Diagram 5:**    **The Neoclassical Model with a more Complicated Labour Supply Function**
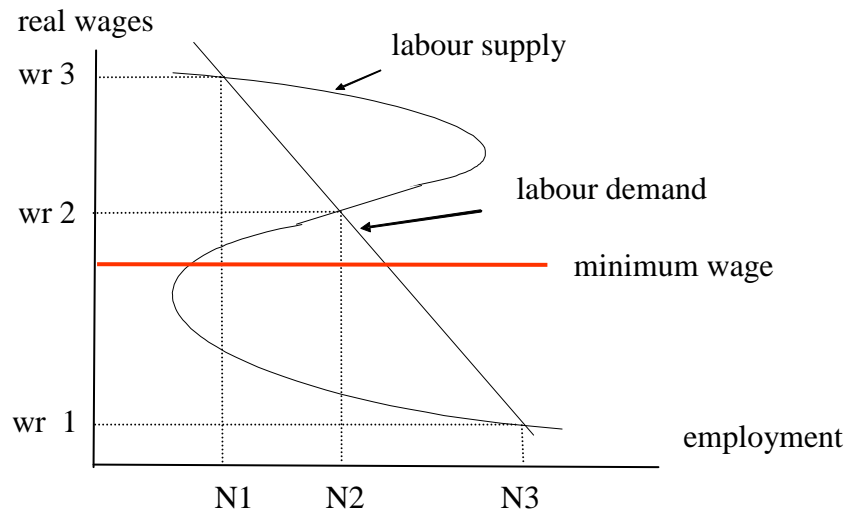


The existence of a more-than-one-equilibrium is well known from the General Equilibrium Model and leads to path-dependence of economic development. On purely theoretical grounds, it is not possible to say which equilibrium is optimal, given that utility comparisons between different individuals are not possible, and therefore it is not possible to develop a macroeconomic utility function. However, politically and socially it is arguable that a situation of very low real wages in combination with very long working hours is not preferable for a society. Minimum wages, for example, are therefore one available tool which helps to avoid undesirable equilibriums with very low real wages and long working hours (wr1 with employment N3). In addition, it is questionable whether labour supply depends on real wages. On the contrary, labour markets are institutionally highly regulated, representing socially accepted norms of working times.

# 4. CONCLUSIONS

Changes in minimum wages can affect employment, income distribution and price level. Empirical investigations in a large number of countries and historical periods show that there is no clear relationship between minimum wages and unemployment. However, there is a broad consensus that minimum wages change income distribution in favour of low-paid workers. Price level effects of minimum wages have not been in the centre of the empirical research.

In principle, for the neoclassical paradigm minimum wages have negative employment effects. In the case of homogenous labour, minimum wages above the market-clearing wage lead to unemployment. In the case of heterogeneous labour, minimum wages above the market-clearing wage for low-skilled workers will create unemployment for low-skilled workers. These iron laws of neoclassical thinking came under discussion after negative employment effects of minimum wage increases in empirical studies were difficult to find. The monopsony case - known for a long time but considered a contradictory and completely unimportant case – was a way out of the dilemma. A monopsony has the monopolistic power to push real wages of workers below the equilibrium wage in a competitive labour market. It can do this as workers depend on jobs provided by the monopsony due to regional immobility and transaction costs. The monopsony reduces output and labour demand, pushes wages below the equilibrium wage level under pure competition and in this way can achieve a monopolistic profit. This leaves room for wage policy to increase minimum wages to a level that prevents the monopsony from exploiting its demand power. However, if minimum wages are increased further unemployment will be the result. We accept the existence of monopsonies, especially in the sector of small- and medium sized enterprises. However, the monopsony approach seems to lack sufficient relevance to draw general macroeconomic conclusions and explain why empirical findings do not support the neoclassical standard model.

An alternative to the neoclassical approach is given by the Keynesian paradigm. Here a minimum wage policy has two important functions.

First: In this paradigm nominal wages become the nominal anchor for the price level.[19] Desirable nominal wage increases in this approach are equal to the trend productivity increase plus the target inflation rate of the central bank. If nominal wages increase according to this norm, wage inflation is identical to the target inflation rate. This makes the central bank happy as it does not have to fight against both inflation and deflation. The problem of deflation is not a historical phenomenon of the 1930s. In Japan after the end of the stock market and real estate market bubble in the early 1990s, wages started to decrease and deflation came back. Germany is another example where, after the start of the European Monetary Union in 1999 nominal wage increases were much too low and the country was in danger of following Japan. After the start of the subprime financial

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[19] The second important nominal anchor especially in small open countries and developing countries is the nominal exchange rate.

crisis in 2007 and its escalation in 2008, the resulting sharp recession in many countries around the world may trigger insufficient wage increases and even falling nominal wages. After three decades of dominant neoclassical thinking and neoliberal policies, labour market institutions in many countries and wage negotiation mechanisms have eroded and weakened the nominal wage anchor. In such a constellation minimum wages become extremely important. If minimum wages affect a sufficient number of employees and if they increase according to the trend productivity plus the target inflation rate of the central bank, they become a vital instrument that supports the nominal wage anchor and prevents deflationary developments.

Second: In a theoretically extreme case any increase in nominal minimum wages can change the nominal wage level without changing the wage structure. If in this case minimum wage increases are higher than the increase in trend productivity plus the target inflation rate, an unduly high inflation would result, although income distribution would not change. We have no knowledge of a country where an increase in minimum wages led to inflation. In the general case increases in minimum wages compress the wage structure, benefit low-wage earners and lead to a change in income distribution first of all within wage earners. How the wage structure should look is a political question. If unions are strong the wage bargaining mechanism can guarantee a desirable level of low wages.[20] However, in most of the countries of the world statutory minimum wages exist.

The existence of minimum wages is not sufficient to guarantee positive effects. According to our analysis minimum wage policy should be in line with the following principles:

a. Minimum wages must affect a sufficient number of employees – they must be "in touch" with the existing wage structure in a country.
b. They should be adjusted frequently, usually annually.
c. They should increase at least according to trend productivity growth plus the target inflation rate of the central bank. Otherwise they cannot help to establish a wage anchor against deflation efficiently.
d. They should increase at least in line with average wages because this is the only possibility to prevent an increase in the wage gap. As long as low wages are considered to be too low in comparison to average wages, minimum wages should increase faster than average wages.

Minimum wages can only fix nominal wages. However, a debate about "living wages", a discussion about the level of real wages needed to guarantee a decent life for low-wage earners has ensued. This debate is not in contradiction with our analysis. The debate about living wages is an important contribution to the

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[20] In Scandinavian countries there are no minimum wages. In these countries unions' wage bargaining is sufficient to prevent very low minimum wages. In Germany, for example, unions and labour market institutions have become so weak that a low-wage sector with very low wages has developed. There were no minimum wages in place which could have prevented wages in some professions and some industries from dropping.

debate about how the wage structure should be. There is no optimal theoretically determined desirable wage structure. Different unions and different groups in society may have fundamentally different interests and opinions about the preferable wage structure. Only a political process can answer the question as to which wages are acceptable for low-wage earners.

In a Keynesian perspective no relevant positive or negative employment effects resulting from changes in minimum wages can be expected. Employment in the Keynesian paradigm is not driven by processes in the labour market. Aggregate demand is important for employment which, among many other factors, depends on the expectations of firms and households, on monetary and fiscal policy and also on the distribution of income. As far as higher minimum wages lead to a more equal income distribution, a positive demand effect can be expected as low-income households consume more out of their income. Changes in the wage structure will lead to changes in the price structure and to a myriad of substitution processes including new technology choices. It is simply not possible to find a theoretically clear answer on the employment effects of changes in minimum wages. Macroeconomic analyses of changes in minimum wages may be able to draw some light on employment effects. However, the processes of change in minimum wages are very complex and the net employment effects difficult to pinpoint. We would like to emphasise here that the vast majority of empirical analyses has found only insignificant employment effects and usually no negative ones of increases in minimum wages.

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