



**ICDD**

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# The rational of minimum wages

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## Abstract

Leaving labour markets to the market mechanism with flexible wages is the worst thing that can happen as the result would be a permanent destabilisation of the price level and an explosion of inequality—both of which adds to the instabilities of capitalism. Guarantee of minimum wages can play an important role to contain the destabilising potential of labour markets. They can add to the stability of price level development and help establish a type of wage dispersion preferred by society. Minimum wages do not lead to unemployment. Countries with very high wage dispersion can have high unemployment while those with low wage dispersion might ensure full employment. Looking at the distribution effect, minimum wage increases (which compress the wage structure from below) not only lead to redistribution within wage earners, but also can increase wage shares. Minimum wage policy should play an important and active role in macroeconomic management of an economy which in turn is linked with macroeconomic demand management so that the employment rate is maintained high.

**Keywords:** income distribution, labour market, Keynesian paradigm, minimum wages, monopsony, wage dispersion

# 1 Introduction

Minimum wages have to be paid per hour worked or the work performed during a given period of time. This wage cannot be reduced by collective agreements between employers and trade unions or by individual contracts. Minimum wages have the force of law which implies that all firms which are covered by the minimum wage (whole economy, region, sector, etc.) are not allowed to pay less than the minimum wage (ILO 2014).

The International Labour Organisation (ILO) reports that in 2020 out of its 187 member states 90% had a minimum wage. This percentage share varied across continents. While in Europe and Central Asia it has been 100%, in the Americas 94%, in Africa 87%, in Asia and the Pacific 86% and in the Arab States 64% (ILO 2020: 64). Minimum wages are an endogenous feature of a capitalist economy.

The article has been divided into eight sections. After the introductory section, Section Two discusses why minimum wages are important to stabilise economies. Section Three explains minimum wages in the traditional neoclassical model. Section Four looks at minimum wages in monopsonies and monopolies/oligopolies. Section Five brings together different theoretical elements and analyses the overall effects of minimum wages. A short overview about empirical investigations in the field of minimum wages is given in Section Six. Section Seven describes specific questions related to minimum wages—who decides the minimum wages, frequency of adjustment, and so on. Section Eight provides the conclusion.

## 2 The economic and social functions of minimum wages

Karl Polanyi (1944) correctly pointed out that money, nature and labour are very specific goods which need particular regulations to prevent the self-destruction of capitalism. With regard to the labour market, the problem is that labour is not a good which quickly can be produced or, in case of oversupply, destroyed. In capitalist economies, the volume of employment is not determined in the labour market. In a very simple model, macro-economic output is given by aggregate demand which is determined by consumption demand, investment demand, government demand and net foreign demand. Given the technology, a certain output volume leads to a particular employment. Of course, in case of very high demand, output can be restricted by the available labour force. If  $GDP_r$  is real gross domestic product,  $D$  aggregate demand,  $N$  employment and  $N_{max}$  the available work force<sup>1</sup>, we get

(Equation 1)  $GDP_r = GDP_r(D, N_{max})$  and

(Equation 2)  $N = N(GDP_r)$ .

This approach shows a demand constraint system, as Kornai (1979) called it, which is typical for capitalism and very much fits the basic idea of Keynes's (1936) General Theory (see also Herr 2014). It points out that full employment is only created by chance. In most historical constellations, demand does not hit the maximum of physically possible production. This implies that unemployment is the normal state of affairs. Even a superficial look at reality shows that unemployment has been existing in many developed capitalist states and an enormous surplus of labour is the normal state of affairs in most developing countries.

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1 The available workforce stands for all physical constraints to increase production, for example, the capital stock or nature.

Unemployment triggers several market processes which destabilise the economy and/or the social system. First, in case of unemployment, the competition between workers has the tendency to reduce wages. In such a competition, wages for workers who have in the eyes of employers a disadvantage – lack of skills, certain gender, belonging to a certain ethnic group, disability, etc. – can fall to extremely low levels. A sector with unacceptably low wages develops which does not allow the reproduction of workers. Productivity of societies suffers and social tensions increase. Several mechanisms can prevent an unacceptable low-wage sector: i) Trade unions can reduce the competition between workers and prevent a low-wage sector. There are not many countries in which trade unions can take over this function. ii) A social welfare system can establish a soft lower boundary of wages. In this case, workers can reject wages which are substantially below the level of social transfers. iii) If workers have the possibility to reproduce themselves and their families via an agricultural subsistence economy, this has the same effect. iv) The statutory minimum wage which prevents the explosion of a sector with extremely low wages. In almost all countries, a statutory minimum wage is the most efficient instrument to establish a wage floor.

Second, as long as increasing minimum wages are able to compress the wage structure from below, they can help to prevent escalating income inequality in societies. Wage dispersion is one of the major factors which lead to high income inequality. Too high inequality prevents sustainable economic development.

It was found that longer periods of high growth become unlikely if inequality becomes too high (see for example Ostry et al. 2014; Ostry 2015). In their comprehensive meta-analysis, Neves et al. (2016) concluded that there is a negative relationship between higher inequality especially at the lower end of income distribution and growth. The reasons are obvious: i) With more equal income distribution, the reproduction of the power of labour improves and productivity increases, for example, there are possibilities of better health-care, housing, education, etc. ii) With more equal income distribution, mobility in society will increase, which will trigger positive productivity effects. The same argument counts for gender equality. iii) Greater equality adds to social coherence and political stability. iv) High inequality reduces aggregate demand as high-income and wealthy groups have a lower propensity to consume than low-income groups (see for details, Gallas et al. 2016).

Third, in case of unemployment, competition in labour markets can lead to a general decrease of the nominal wage level. This leads us to the role of wage costs for the price level.



The most important factor for the determination of the price level is the development of nominal unit labour costs. Given the macroeconomic productivity development ( $\pi$ ) and the nominal wage level ( $w$ ), unit labour costs ( $u$ ) are given by  $u = w/\pi$ . This implies

$$(Equation 3) \quad \dot{u} = \dot{w} - \dot{\pi},$$

changes in unit labour costs ( $\dot{u}$ ) are equal to changes in the nominal wage level ( $\dot{w}$ ) minus changes in the productivity level ( $\dot{\pi}$ ). Higher wage costs increase directly costs for firm, but also indirectly as also costs for intermediate and capital goods increase. Of course, other costs play a role. Strong depreciations can substantially affect the price level via higher import prices. But even in such cases, the response of nominal wages to the fall in real wages triggered by higher import prices play a key role for price level changes. Autonomous price effects caused by developments in natural resource markets, changes the tax system or, for example, higher rents because of real estate bubbles also influence prices. Another source is demand inflation which occurs when increasing demand hits full capacity utilisation and leads to higher prices (see Equation 1).

In spite of all these factors, empirically, there is a very close relationship between changes in the price level and changes in nominal unit labour costs (Heine and Herr 2021)<sup>2</sup>. To give examples: unit labour costs in the USA increased between 2000 and 2019 on average annually by 1.54% whereas the corresponding changes in consumer prices (CP) were 1.97%, producer prices (PP) 2.22% and the GDP deflator (GP) 1.96%. The value for the European Monetary Union is  $\dot{u}$  1.42%, CP 1.74%, PP 1.51% and GP 1.93%. Interesting are the negative values of Japan with  $\dot{u}$  -1.01%, CP 0.10%, PP -0.10% and GP -0.56% (OECD 2021). The deflationary tendencies in Japan have been clearly caused by too low nominal wage increases including an insufficient use of minimum wages to enforce higher wages. The deflationary development during the Great Depression in the 1930s, to give another example, was clearly caused by massively falling nominal wages in all important industrial countries at that time (Dodig and Herr 2015). Deflation leads to disastrous economic developments. The most dangerous effects of deflation are increasing real debt levels for liabilities in domestic currency, exploding non-performing loans and financial crisis (Fisher 1933, Keynes 1936, p. 265).

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 2 The quantity theory of money which links price level changes to the quantity of money is empirically and theoretically discredited. Also, central banks gave up the quantity theory of money (Heine and Herr 2021, see also Keynes 1930).

From Equation 3 it follows that nominal wages should increase according to trend productivity development plus the target inflation rate of the central bank (or a low inflation rate)

$$(Equation 4) \quad \dot{w}_{target} = P_{target} + \pi_{trend} .$$

When the wage level increases according to this formula in the medium term the inflation rate will fluctuate around the target inflation rate. For the stability of an economy it is important that not the annual measured productivity development, which is influenced by the business cycle, is used as a guideline for wage development. The guideline should be medium-term productivity development. If trend productivity increases are 1.5% and the target inflation rate 2%, then nominal wages should increase by 3.5%. This leads to an increase of unit labour costs of 2% and a medium-term inflation rate of 2% as well. Development of the nominal wage level cannot be left to the market. "In fact, we must have some factor, the value of which in terms of money is, if not fixed, at least sticky, to give us any stability of values in a monetary system" (Keynes 1936, p. 304).

In case wage increases are too high with inflationary effects, the central bank via restrictive monetary policy can reduce growth, employment and wage increases. In case of too low increases of wages, the monetary policy, which has asymmetric power, can fail to increase wages. Here statutory minimum wages come into play which becomes a dam against deflation. To fulfil this function, minimum wages should never increase below the wage target given in Equation 4.

In many countries, especially with very weak trade unions, minimum wage development becomes a substitute for wage bargaining. This is, for example, the case in Eastern European countries or many developing countries (Du Caju et al. 2008; Van Klaveren et al. 2015). In such countries, minimum wage increases give a strong signal for the whole wage round. Here, the wage formula in Equation 4 has to become the guideline for minimum wage policy and other policies are needed to compress the wage structure from below.

To summarise: Minimum wages and its effective use are essential for the stability of a capitalist economy and society. They are necessary to prevent an exploding low-wage sector which does not allow the reproduction of the workforce, high inequality with the danger of low growth and, last but not the least, deflationary developments.

### 3 Minimum wages in the neoclassical labour market

The neoclassical standard model assumes that employment is determined in the labour market. According to this approach, in the labour market, there is a demand function, a supply function and a price which equalises demand and supply. The price is the hourly real wage rate. Pure competition is assumed, that is, single workers or firms cannot influence wages or prices and have to adjust with the quantities offered or demanded.

In Figure 1 there are two labour market segments, one for skilled ( $N_S$ ) and the other for unskilled workers ( $N_U$ ). Supply of unskilled labour ( $N_{Su}$ ) depends on real wage per hour ( $w_r$ ). If real wages increase, households following their utility maximisation strategy will sacrifice some leisure time and offer more work. This increases the total satisfaction they can achieve. Demand for unskilled labour ( $N_{Du}$ ) by firms also depends on the real wages. Given a certain capital stock and a certain technology, it is assumed that each additional hour worked produces a smaller additional output, hence the marginal product of labour is falling<sup>3</sup>.

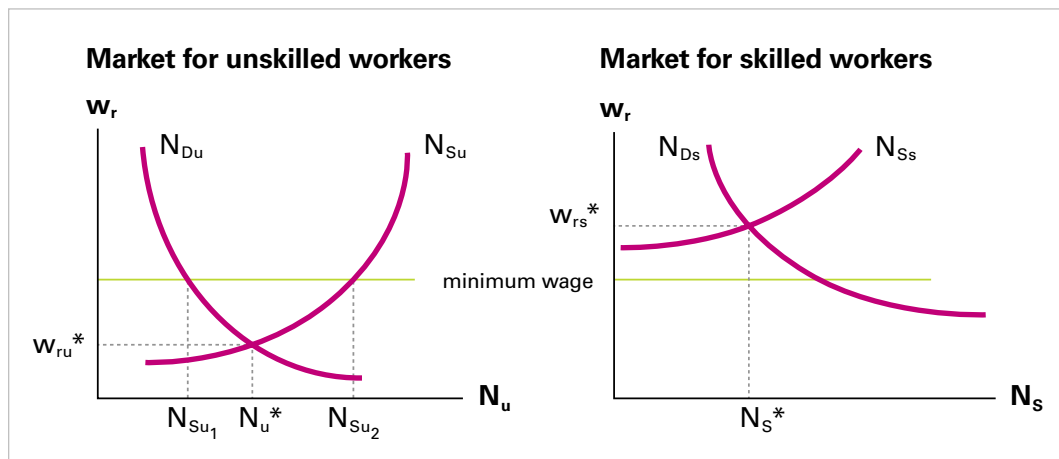


Figure 1: The neoclassical labour market

<sup>3</sup> Responsible for this effect is an 'overcrowding' effect – more and more workers share the same stock of capital.

Given the wage and the price of the product the profit maximum of a firm is reached when the marginal product of labour ( $MP_L$ ) multiplied with the price of the product ( $p$ ), the value of the marginal product, equals wage costs to produce the marginal product.<sup>4</sup>

$$(Equation 5) \quad MP_L \cdot p = w \quad \text{or} \quad MP_L = w/P$$

Equation 5 shows that firms will employ workers until the value of the marginal product is equal to the wage or, when prices and wages are given, the marginal product is equal to the real wages ( $w/P$ ). It follows that the demand curve for labour is identical with the curve of the marginal product of all firms. In Figure 1 in case of flexible real wages full employment is reached for unskilled workers at  $N_u^*$  at the real wage level  $w_{ru}^*$ .

For each labour market segment based on education, experience and any other factor, a similar market exists. The wage structure is determined by market forces according to the equilibrium in the different labour market segments. Based on productivity typically skilled workers have higher wages than unskilled workers. In Figure 1 skilled workers have a wage of  $w_{rs}^*$  with full employment at  $N_s^*$ .

A minimum wage above the equilibrium wage of unskilled workers creates unemployment. In Figure 1 unemployment for unskilled workers becomes  $N_{su2}$  minus  $N_{su1}$ . The market for skilled workers is not affected.

This model is at the centre of mainstream thinking. Friedman (1962, p.148), one of the most influential neoclassical economists after World War II, writes: "The state can legislate a minimum wage rate. It can hardly require employers to hire at that minimum all who were formerly employed at wages below the minimum. It is clearly not in the interest of employers to do so. The effect of the minimum wage is therefore to make unemployment higher than it otherwise would be." Gregory Mankiw (2001), author of one of the most influential text books in economics, observes:

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4 Let us assume the wage per hour of a baker is 12 € and the price of a bread 3 €. If more bakers are employed according to the assumption of falling marginal products each additional baker hour produces less bread, 10 breads, 8 breads until 4 breads are reached. Then Equation 5 becomes: 4 bread / hour · 3 €/bread = 12 €/hour. If the wage drops to 10 € more bakers become employed until Equation 5 is realised again.

*Like most other prices, wages are set by the market forces of supply and demand. The major difference between high-wage workers and low-wage workers is not that the former are better organised or better liked by their employers – it's that their higher productivity enhances the demand for their services. ... The living wage campaign wants to repeal the law of supply and demand and raise wages by fiat. The goal is to help low-wage workers. Unfortunately, it wouldn't work out that way. One effect of a higher wage is a reduction in the amount of labour that employers demand (para 4).*

Then usually the argument is added that minimum wages increase inequality as they make the poorest wage earners jobless. To fight poverty, Friedman (1962) recommended a negative income tax, which means that households under a certain income get transfers from the government.

The neoclassical model has several shortcomings. First, compatible with the model is a different shape of the supply curve of labour. Price changes in the labour market have strong income effects.<sup>5</sup> In a situation of very low real wages, a cut of wages leads to increasing labour supply; then, simply workers have to work longer to stabilise their income. In a situation of very high wages further wage increases may reduce labour supply as leisure time becomes now more valuable. The supply curve of labour can become S-shaped creating three equilibrium points. In such a situation, in accordance with the neoclassical paradigm, minimum wages can prevent a 'bad' equilibrium with very low wages and long working time.

Second, in spite of the popularity of the neoclassical labour market model, it is based on extremely questionable assumptions. In the Cambridge-Cambridge debate it has been proved that the smooth demand curve for labour is only guaranteed if one capital good exists (or alternatively the capital intensity in all industries is the same). As soon as there are two capital goods, changes in functional income distribution can lead to technological changes which destroy the smooth inverse relationship between wages and labour demand. Firms may demand the same number of workers in case of very low and very high wages. The demand curve of labour becomes pulverised; in a famous article; Paul Samuelson (1966) accepted this fact (see Lazzarini 2011; Herr 2020).

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<sup>5</sup> The supply curve for labour is based on the substitution effect of price changes. But price changes also have income effects. So-called Giffen goods, named after a Scottish statistician, are goods which are more demanded when their price increases. For example, it was observed that during a famine in Ireland in 1848 a rise in the price of potatoes due to the income effect led to higher demand for potatoes as households were forced to consume more potatoes and less meat to survive.

There are more shortcomings from a Keynesian perspective. First, even when Equation 5 is fulfilled, a firm will not produce if it has demand constraint. It simply will produce what it can sell and the equilibrium condition in Equation 5 will not determine the volume of employment.<sup>6</sup> Second, from a macroeconomic perspective, wages and prices are not independent from each other and the different markets are interlinked.

Let us make an example. The price of a meal is 7.50 € and restaurants sell 200 meals. To produce the meals 100 hours of work are needed. Given a wage of 10 € total wage costs are 1000 €. When other costs, including minimum profits are 500 €, total costs are 1500 €. <sup>7</sup> Divided by 200 meals, costs of a meal are 7.50 €. Now, minimum wages increase 20% and are now 12 €. Prices increase to 8.50 € and demand for meals decreases 5% to 190. Wage costs, now 95 hours multiplied with 12 € (1140 €), plus other costs, which are now 5% less (475 €), give total costs of 1615 € which exactly are covered by 190 meals for 8.50 €.

There are a number of spillover effects to other markets. Total wages earned in restaurants, now, in spite of lower employment, are 140 € higher than before. If the employed restaurant workers spend their higher income for meals, they can consume 16 meals which increase employment by eight hours. Now in restaurants, 103 hours are worked, 3 hours more. If the additional wage sum is spent on personal services like cleaning an additional 11 hours are in demand.

There are more effects. Restaurant workers will not only buy other products, the demand of the restaurant sector for intermediate products will change and if meals become inputs for other productions, for example, services in airplanes, these sectors are confronted with different costs. In the economy, now, 115 € more are spent for meals (1615 € instead of 1500 €). This can reduce demand in other sectors. Also, minimum wage increases in other sector may have positive and negative effects for the restaurant sector, etc. A partial analysis of the labour market or even only segments of it following the logic of Figure 1 is insufficient to understand changes in minimum wages (see below).

The neoclassical approach has additional problems. Econometric investigations showed that minimum wage increases did not lead to negative employment effects or even increased employment (see Section 6). This led to the revival of a special case—monopsonies in the labour market—it allowed to explain the absence of negative employment effects after minimum wage increases within the neoclassical paradigm.

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6 The neoclassical paradigm denies the possibility of demand constrains. It argues, based on Say's Law, apart from structural problems, supply always finds its demand. In substance, it assumes a barter economy without money. In such a world, the offers of goods are by definition linked to demand of goods. For capitalist economies, such an assumption is not acceptable.

7 Under pure competition it can be assumed that the profit rate is equal to the interest rate. With a lower profit rate firms in the long-run cannot exist. As soon as profits are higher new firms enter the market and bring profits down.

## 4 Minimum wages in case of monopsony and monopoly

Firms can have specific power resources which can be at least partly counteracted by minimum wages.

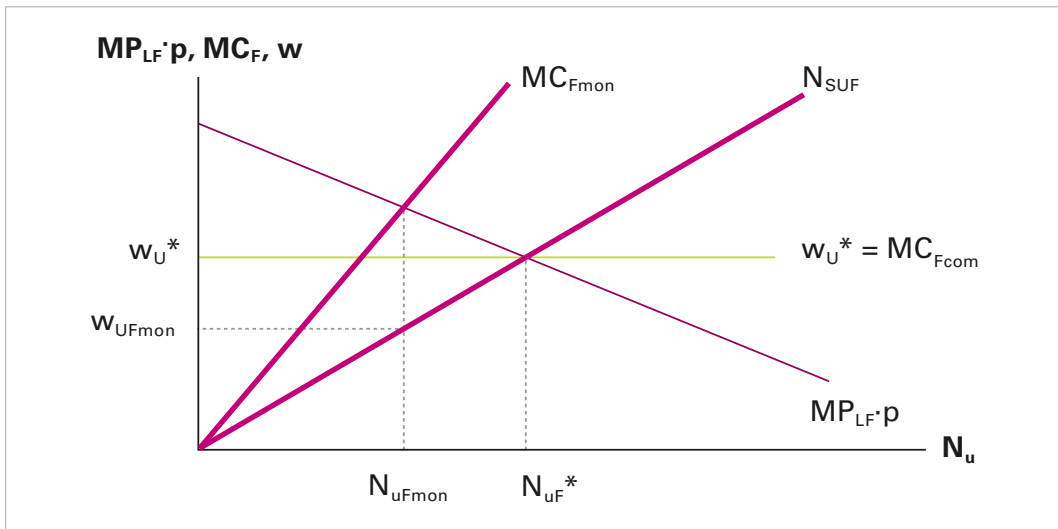
### Monopsonies in labour market

The monopsony model in the labour market gives up the assumption of pure competition and assumes that employers have the possibility to influence the wage they pay. In the extreme case, firms have a demand monopoly in their labour market (Bhaskar and Manning 2002, also see Robinson 1933). The classical example is a steel factory in a small city as the main employer which is exposed to pure competition in the steel market. The factory is able to cut wages without immediately losing all workers. The factory is confronted with a labour supply curve with the usual neoclassical shape. Firm-specific labour supply curves exist because of mobility costs of workers or imperfect information. Under this condition, firms have the variation of wages as an additional variable to maximise profits.

In Figure 2, a firm and its demand for unskilled labour is shown.  $MP_{LF} \cdot p$  shows the curve with the value of the marginal product of labour, the subscript “F” symbolises the firm level; it is the same for a monopsony for a firm as under pure competition. Under pure competition, marginal costs of increasing employment are given by the wage rate and do not change. A firm under pure competition will increase employment until the horizontal marginal cost curve ( $w_U^* = MC_{Fcom}$ ) cuts the value of the marginal product. Employment will be  $N_{UF}^*$ . A monopsony is confronted with an upward sloping supply curve of labour ( $N_{SUF}$ ). The firm’s marginal costs are not any longer, as under pure competition, a horizontal line at the value of the equilibrium wage; the marginal costs under the monopsony assumptions ( $MC_{Fmon}$ ) are increasing as shown in Figure 2.<sup>8</sup> The monopsony chooses the profit maximising employment  $N_{UFmon}$ . Before this employment level, the value of the marginal product of labour is higher than the costs of each additional hour employed. After  $N_{UFmon}$ , each additional hour involves higher costs than what can be earned as additional revenue. A monopsony starting with employment under pure competition will reduce wages with the effect of reducing employment and output. The explanation is that the cost-cutting effect is bigger than the reduction of revenues and profits increase. A firm will cut wages until  $N_{UFmon}$  is reached with the corresponding wage  $w_{UFmon}$ .

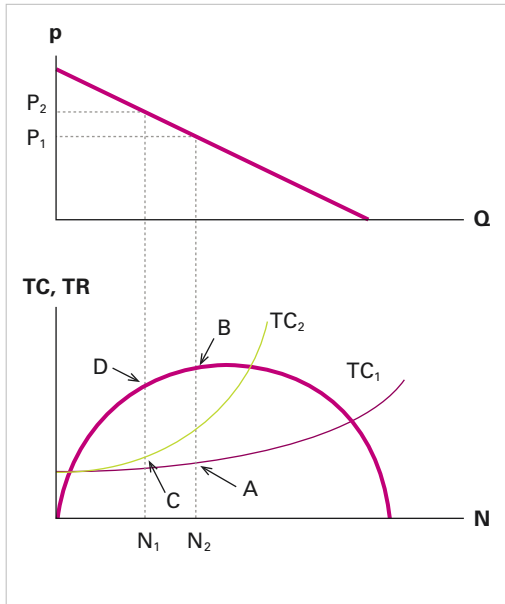
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<sup>8</sup> The marginal cost function ( $MC_{Fmon}$ ) is steeper than the supply curve of labour ( $N_{SUF}$ ). This is the case as any increase in employment not only increases the wage for the additional worker but for all workers with the same skill level.



**Figure 2:** Monopsony and minimum wages

It was Stigler (1946) who stressed that under a situation of monopsony, minimum wage increases have positive employment effects. If in Figure 2, if minimum wages are introduced at the level of  $w_U^*$ , the strategy of the firm to cut wages and output to increase profits is not possible any longer; employment jumps to  $N_{uF}^*$ . Increasing minimum wages leads to higher employment. The monopsony model became very popular because it allowed to explain that under certain conditions moderately higher minimum wages do not lead to substantial negative employment effects or even increase employment (see, for example, Card and Krüger 1995; Manning 2020). Minimum wages above the equilibrium wage under pure competition increase unemployment.



**Figure 3:** Monopoly and minimum wage increases

In case of monopsonies there are two distributional effects. First, profits of firms go down and functional income distribution increases in favour of workers. Second, distribution within the working class becomes more equal as the wage structure is compressed from below.



## Monopoly / oligopoly and minimum wages

In comparison to pure competition, in case of monopolies or oligopolies, minimum wage increases can reduce profits. Let us take a company which is the only one to offer a certain good, a monopoly. In Figure 3, in the upper part, the demand curve for the sold product, the price-sales function of the monopoly, is shown. The firm can only sell more products ( $Q$ ) if it reduces the price ( $p$ ). Total revenues ( $TR$ ) of a firm is calculated from the quantity sold and then multiplied with the price. Starting with a price of zero and then increasing the price,  $TR$  first increase and then decrease to zero.<sup>9</sup> Given the capital stock, the quantity produced depends on labour input ( $N$ ). Then  $TR$  can be made dependent on labour input (see the lower part of Figure 3). Total costs increase with labour input whereas the slope depends on the marginal productivity of labour and the price for labour. Given the cost function  $TC_1$  the monopoly chooses employment  $N_2$  with the price  $p_1$ . This is the employment which maximises profits – the difference between  $TR$  and  $TC_1$  is the biggest (see the difference between point B and point A). Now let us increase minimum wages and assume that the monopoly is affected by this. The total cost function becomes steeper. Under the new condition, the profit maximising employment is reduced to  $N_1$  with the higher price  $p_2$  and the lower profit between points C and D.

In the monopoly case, which also can be transferred to oligopolies, wage increases bite into profits. The monopoly will respond to higher wages with increasing prices and a lower production. Kalecki (1971, p. 161) discusses this effect with the example of trade unions. “High mark-ups in existence will encourage strong trade unions to bargain for higher wages since they know that firms can ‘afford’ to pay them. If their demands are granted but (...) [the mark-up is] not changed, prices also increase. ... But surely an industry will not like such a process making its products more and more expensive and thus less competitive with the products of others industries. To sum up, trade-union power restrains the mark-ups.” Kalecki’s argument can be transferred to minimum wages. However, it should be considered that many monopolies and oligopolies do not have many workers who are paid the minimum wage. In such cases, minimum wage increases do not affect these enterprises very much.

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<sup>9</sup> We can in addition assume that the monopoly has a monopsony position in the labour market.

## **5** The overall effects of wage structure compressing minimum wages

It should be kept in mind that minimum wage increases which determine the whole wage round in the extreme case do not change the wage structure but only the price level. In this section, we analyse the effects of minimum wage increases which compress the wage structure from below. Figure 4 gives an overview about the different effects.

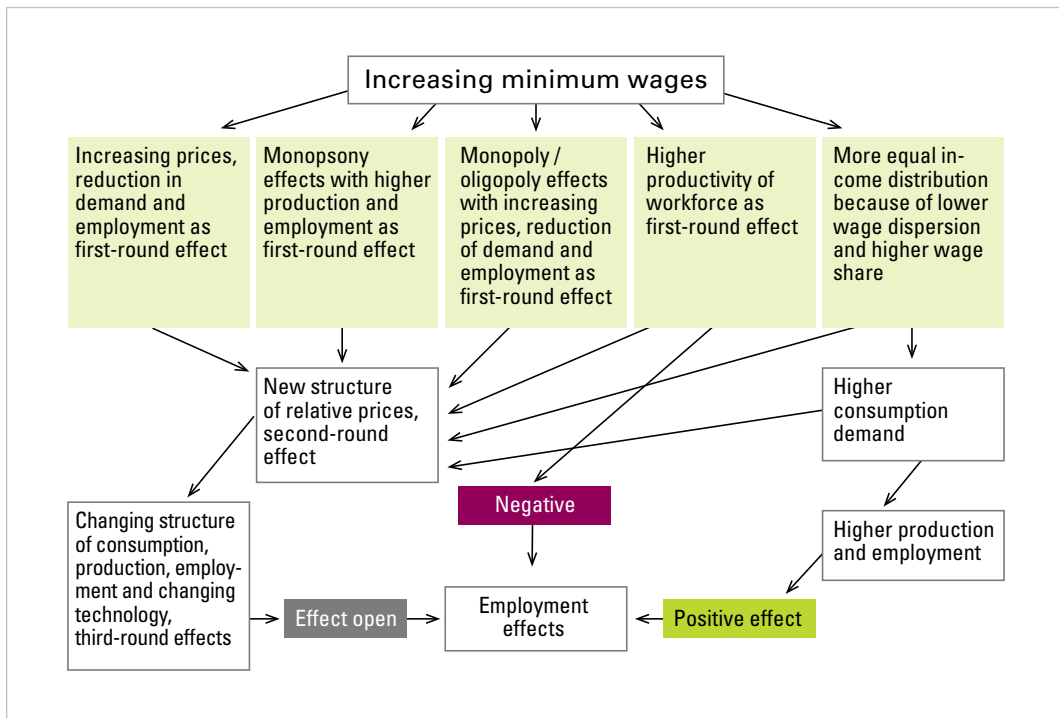
The section of the neoclassical standard model made already clear that minimum wage increases most likely lead to price increases in strongly affected sectors. In these sectors, at least in a first-round effect demand will be reduced. There will be a price level effect reflecting the increasing prices. But there are numerous spillover effects to other sectors. The result will be a second-round effect which leads to a new structure of relative prices. In a third-round effect, the structure of consumption, and production in the whole economy will change. Under the new condition, firms will chose new technologies in an unpredictable way. The total effect for employment is extremely difficult to predict and open.

Minimum wage increases in the monopsony case will lead to higher production and employment. In the monopoly/oligopoly case, production will decrease. In both cases, wages in the low-wage sector will increase and profits will decrease. These market structures influence the outcome of minimum wage increases, but it would be wrong to determine employment in an economy only via the supply side. These market structures influence how macroeconomic demand affects employment, but they do not determine employment. They influence the functional relationship between GDP and aggregate (Equation 1) and between real GDP and employment (Equation 2).

In the neoclassical world, wage dispersion depends on the marginal productivities of labour in equilibrium conditions in different labour market segments. In the approach followed here productivities together with wage dispersion which is influenced by minimum wages, bargaining systems, conventions and many other sectors determine relative prices whereas employment first of all depends on aggregate demand.<sup>10</sup>

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<sup>10</sup> In Equation 5, prices then depend on wages and marginal productivity  $p = w/MP_L$ .



**Figure 4:** Employment effects of compression of the wage structure by minimum wages

Source: Partly based on Herr et al. (2017)

Higher minimum wages stimulate productivity growth which reduces the cost pressure of minimum wage increases, but reduces the given output volume, employment. Good paid workers are better motivated and job quality and work satisfaction improves (Rehm and Pusch 2017). Overall, higher wages allow a better reproduction of working power, especially in the low wage sector. With higher wages, employers and workers have the motivation to invest more in training and education. Also, shirking and high labour turnover which increase costs can be reduced (Shapiro and Stiglitz 1984). Finally, higher wage costs not only lead to technical improvements, but also attempts to intensify work.

Minimum wage increases change income distribution which adds to changes in the system of relative prices, the structure of consumption and production and technology. Changing distribution independent of price changes modifies patterns of consumption. As lower households have a higher propensity to consume, minimum wages most likely lead to higher aggregate demand, production and employment.

The main redistribution effect of higher minimum wages is caused by a compression of the wage structure from below with higher wage increases of low-wage earners than the rest of the employees. In the case of negative employment, effects in labour market segments affected by minimum wage increases there is a counteracting distribution effects—something stressed by neoclassical economists. As overall negative employment effects are small, minimum wage increases most likely reduce income inequality (see below). Increasing wage shares leading to more equality can be expected in case of monopsonies and monopolies/oligopolies. But this effect must be considered to be relatively small as minimum wages earners usually work in smaller companies and sectors, for example, hairdressing trade, cleaning services, small restaurants, which do not have much market power.

## **6** Empirical analyses of minimum wage increases

There is an enormous number of empirical investigations about the effects of minimum wages. For example, following the difference-in-difference technique, effects of increasing minimum wages in one sector of a country are analysed when minimum wages in comparable sectors keep unchanged. In the 1990s, Card and Krueger (1995) became famous when they found no negative employment effects of increasing minimum wages in fast-food restaurants in New Jersey in comparison to Pennsylvania where minimum wages did not increase. Stewart (2004) used this method to analyse the effects of the introduction of minimum wages in the UK in 1999 and also found no negative employment effects (see also Hafner et al. 2016). A second method to find out the effects of minimum wages are panel studies which track the employment status of workers who are affected by increasing minimum wages with those who are paid slightly above the minimum wage and are not affected. Neumark et al. (2014) found in panel analysis evidence in the US of some job losses caused by minimum wage increases for very low-skilled workers, in particular, for the teens. They argue that 10% increase in the minimum wage caused a decline of 1%–2% in employment among teenagers.

However, empirical surveys are discussed controversially. Doucouliagos and Stanley (2009) conducted a meta-study of 64 minimum-wage studies published between 1972 and 2007 concentrating on teenage employment in the United States, which comprised a group of workers considered to be especially affected by minimum wages. They found “overall ... an insignificant employment effect (both practically and statistically) from minimum-wage raises” (p. 422). Belman and Wolfson (2014) surveyed studies since 2000. In the 27 minimum wage studies, there were no statistically significant negative employment effects of minimum wage increases (see also Schmitt 2013).

A recent empirical experiment was the introduction of minimum wages in Germany in 2015 which became necessary as collective bargaining coverage in Germany decreases continuously. Using the panel data, Knabe et al. (2014, p. 34) calculated the number of employees affected by the introduction of minimum wage. Following the neoclassical standard approach that firms reduce employment as long as the value of the marginal product is below the wage costs, they predicted job losses of up to 900,000 workplaces in Germany, 160,000 full-time jobs (1.6% of full-time employment in East Germany and 0.5% in West Germany). Adding the existence of monopsonies in the German labour markets, they predicted that job losses could be reduced to half compared with the standard model. Until the Covid-19 crisis in 2020, unemployment rates in Germany dropped to historic low levels in spite of an increase of minimum wages for several instances (OECD 2021).

Schmitt (2013), based on the huge number of empirical studies, concluded that firms affected by minimum wage increases, in most cases, reacted with reductions in labour turnover, improvements in organizational efficiency, reductions in wages of higher earners and price increases. Also training efforts, reducing non-wage benefits, intensifying work, stimulating demand for the own product or accepting lower profits have been adjustment channels.

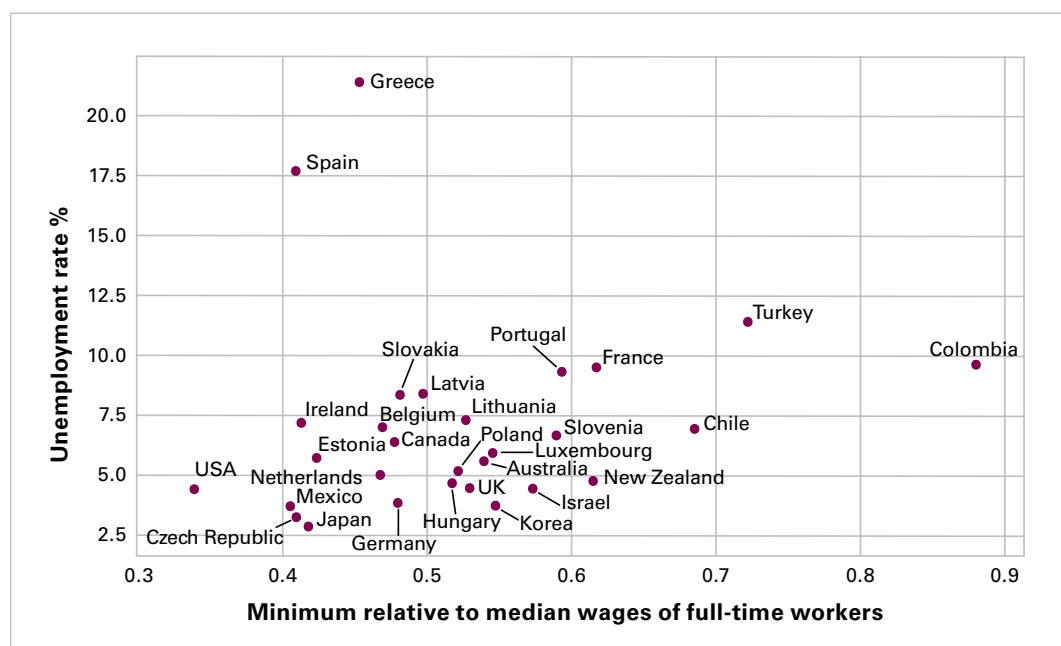
Most studies, also the above presented, use a partial equilibrium approach. This implies that spillover effects to other markets and macroeconomic repercussions, for example, an increase of aggregate demand, are completely neglected. Even if negative employment effects in some industries can be found, the effects for the whole economy can be positive (see Figure 4). For an empirical analysis taking macroeconomic effects into account, see for example Herr et al. (2017).<sup>11</sup> The report for the German Minimum Wage Commission found small positive employment effects of the introduction of the minimum wage in Germany.<sup>12</sup>

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11 For an English summary of the econometric part see Herzog-Stein et al. (2018).

12 For a Keynesian perspective see also Heise (2017).

A famous indicator to measure the level of minimum wages is the Kaitz-index which gives minimum to medium wages. Figure 5 shows the relationship between the Kaitz-index and unemployment rates in OECD countries. There is no systematic relationship between these variables.<sup>13</sup> Neoclassical economists might argue that the figure shows different dispersion of productivities of the labour force in different countries. But this is not convincing. The correct conclusion is that countries can choose the ratio between minimum wage and median wage as they want without fearing about unemployment. High wage dispersion is no remedy to fight against unemployment.



**Figure 5:** Kaitz-index and unemployment rates in OECD countries, average values from 2015 to 2019, Source: OECD (2021)

A further important empirical question is the distribution effects of minimum wages (see ILO 2020, pp. 66ff and 110ff). The distribution impact of minimum wages depends on several factors.

<sup>13</sup> Between minimum wages to average wages or the size of the low-wage sector and unemployment rates, there is no systematic relationship (OECD 2021).

First, the extent of legal coverage and level of compliance is important. For example, in 2020 in 29 countries with statutory minimum wages either agricultural workers or domestic workers are excluded from minimum wages. In a survey of 72 countries (mainly missing Arab countries) the ILO estimates that in 2019, 327 million (19% of worldwide) wage earners get the minimum wage or below.<sup>14</sup> The informal sector is not covered by minimum wage law and/or minimum wages are poorly enforced. In the world of two billion workers (724 million wage workers, the rest own-account workers), 61.2% of the world's employed population works in the informal sector. On a global level, a man in informal wage employment earns 66% and a woman 45% of the wage of a formally employed man. In spite of these differences, minimum wages have an indirect effect on the informal sector. There is a "light-house effect" as the minimum wage level has a signalling impact also for wages in the informal sector (see Boeri et al. 2010; Dinkelman and Ranchhod 2012).

Second, the level of minimum wages must be sufficiently high. The ILO reports that according to the last available data, the Kaitz index was around 55% in developed countries and around 67% in developing and emerging economies. In some countries, the Kaitz-Index is extremely low, for example, 16% for the national minimum wage in Bangladesh. The ratio of minimum wages to average wages is substantially lower; in developed countries it is 36%, in developing and emerging countries it is 37%.

Third, the structure of the workforce is important. If a big informal sector exists with mostly own-account workers or most workers affected by minimum wages are secondary earners in well-off households, minimum wages do not much affect income distribution.

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<sup>14</sup> Employees earning the minimum wage are defined as those earning between 95% and 105% of the minimum wage value.



The vast majority of empirical investigations found positive distribution effects of minimum wages (ILO 2020, pp. 86ff). In the USA, already Card and Krueger (1995) found that federal minimum wages halted and temporarily reversed the trend towards growing income inequality. Engelhardt and Purcell (2018), analysing in the US the period from 1981 to 2016, found clear evidence for positive income distribution effects of minimum wage increases. Dube (2019), looking at development in the US since early 1990s, came to the conclusion that minimum wage increases substantially reduce the shares of families with income below 50, 75, 100 and 125 % of the US federal poverty threshold. In Europe, Beramendi and Rueda (2014) found that the lack to adjust minimum wages led to a considerable increase in inequality. Engbom and Moser (2018) found that between 1996 and 2012 real minimum wages in Brazil increased by 112% and changed income distribution significantly whereas the modest negative employment effect of affected firms was largely compensated by the movement of workers to more productive firms. Distribution effects of minimum wages were also found to be positive in Mexico (Bosch and Manacorda 2010) or China (Lin and Yun 2016). Only marginal positive distribution effects of minimum wages were found in New Zealand, mainly because most minimum wage earners were secondary earners in high-income households (Alinaghi et al. 2019). A small number of studies found that moderate increases of minimum wages reduce inequality, but after a certain threshold, positive distribution effects decrease again (for the European Union see Karakitsios and Matsaganis 2018). The explanation is that very high minimum wage increases can lead to labour demand in especially affected sectors.

Globally, 47% wage earners receiving minimum wages or less are women and 53% men. As the labour force participation rate worldwide for women, in 2020, was 46.9% and for men 74.0% (World Bank 2020) the share of employed women earning the minimum wage or below is much higher. Active minimum wage policy without doubt reduces the gender pay gap (see ILO 2020, p. 66).

## **7** Dimensions of minimum wage adjustment

In this section, different important dimensions of minimum wage adjustments are discussed (Herr and Kazandziska 2011).

As mentioned in the introduction, 90% ILO-members have a minimum wage. In 2020, in over 93% of these countries, the minimum wage was set by the government, in the remaining cases by collective bargaining (ILO 2020, p. 64). In most countries, the minimum wage is fixed by the government after consultations with social partners. In many countries, tripartite bodies exist which make proposals with regard to the manner by which the minimum wage should develop. In almost all cases the government decides in case of conflict. Tripartite bodies usually are made up by representatives of trade unions, employers' organisations, government and, in some cases, experts (ILO 2014; Van Klaveren et al. 2015). For example, the UK Low Wage Commission seems to be a good model with members from trade unions, employers and experts. The Commission also writes annual report and carries out research about the low-wage sector in the country.

The Kaitz level and wage dispersion that is to be aimed at in a society should be decided by itself. Especially in developing countries, the minimum wage is fixed by the basket of goods that provides the culturally given minimum subsistence. In developing countries, this may make sense, but there are great difficulties to fix a basket. For example, should the basket include the subsistence minimum of a family or a single household? How many children should be taken into account, etc. Preferable is a societal consensus about an acceptable wage dispersion and the desired Kaitz index.

Annual increases of minimum wages should be at least according to trend productivity growth plus the target (or a low) inflation rate (Equation 4). If minimum wages take over the signalling for the whole wage round, this formula is of paramount importance to establish a nominal wage anchor for the price level. In these countries, additional steps to control a low-wage sector have to be taken. In countries in which minimum wages determine the Kaitz level, minimum wages should be adjusted to the desired level in a medium-term process. If minimum wages influence the wage structure and general wage increases are higher than in Equation 4, minimum wage should defend the reached Kaitz level and should not be used to fight inflation. But these are difficult political decisions.

In the period 2010–2019, minimum wages, on average, were adjusted to every 2.0 years in high-income countries and every 5.1 years in low-income countries (ILO 2020, p. 113). To fulfil their functions, minimum wages should be adjusted frequently, in the ideal case every year.

For transparency, only one clearly defined minimum wage should exist for all sectors in the economy. In around 50% of the countries with minimum wages this is the case. But, for example, countries like Australia, Argentina, China, India, Indonesia, Mexico, Russia, South Africa or United States have more than 50 minimum wages (ILO 2020, p. 72f.). This can happen when a national minimum exists; however, regions or even cities can decide to have a higher minimum wage (for example, the USA), and minimum wages are decided at the regional level (for example, China) or they are given for certain professions (for example, India). Such complex systems emerge and can be functional especially in big countries when productivity levels of different regions are very different or minimum wages, to a large extent, substitute wage bargaining.

## Summary

Labour markets are in capitalist economies at the bottom of the hierarchy of markets which means that they are dominated by asset and goods markets and have no mechanism to create high or even full employment. But labour markets are important for the stability of economies. Leaving the labour market to the market mechanism and having flexible wages is the worst thing that can happen. Because the result would be a permanent destabilisation of the price level and an explosion of inequality – both would add to the instabilities of capitalism. Minimum wages can play an important role to contain the destabilising potentials of labour markets.

Minimum wages do not lead to unemployment. Countries with very high wage dispersion can have high unemployment and countries with low wage dispersion full employment. Of course, sharp minimum wage increases can lead to a reduction of employment in especially affected sectors. But it would be theoretically and empirically wrong to expect unemployment rates to rise owing to increase in minimum wage. On the other hand, increasing minimum wages cannot be expected to lead to substantially higher employment. Effects on aggregate demand are not big enough.

Looking at the distribution effect, minimum wage increases which compress the wage structure from below, first of all, leads to redistribution within wage earners, but also to increasing wage shares. The latter effect must be judged overall small, as most minimum wage earners work in smaller firms and sectors which are under intensive competitive pressure. Almost all empirical investigations find positive distribution effects especially benefitting women.

In the ideal case, strong trade unions together with strong employers' organisations, based on intensive vertical and horizontal wage coordination, lead to a nominal wage development which links wage increase in all sectors to macroeconomic productivity development plus the target inflation rate. Minimum wages prevent a low-wage sector in areas where collective bargaining is insufficient. This implies that trade unions need to have a macroeconomic understanding and ensure solidarity amongst themselves in different economic sectors. The weaker the trade unions become, the more are the chances of substituting wage bargaining through minimum wage development via broad signalling effects.

Minimum wage policy should play an important and active role in the macroeconomic management of an economy and society. Minimum wage policy which prevents deflation and high wage dispersion should be linked with macroeconomic demand management which keeps employment high.

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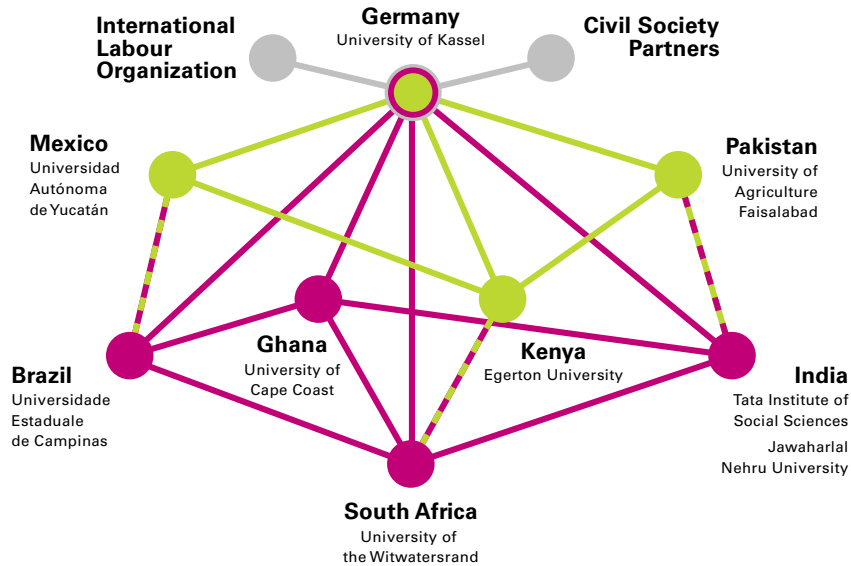
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