

DOES THE MINIMUM WAGE AFFECT THE RATE OF UNEMPLOYMENT? THE CZECH REPUBLIC CASE

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Abstract

The minimum wage growth in general as the economy recovers is the stressed topic. Many conclusions refer about the dangerous impact of the increasing minimum wage to the economy growth in the modern economies. In this paper we discuss pros and cons of the minimum wage increase. More we provide the case study from the Czech Republic in which the stagnant minimum wage was changed in the deep increase of the minimum wage in the last few years.

Finally we follow the theory of job search presented with the Christopher A. Pissarides. In this modern theory of labor market Pissarides do not assume the labor market equilibrium. This assumption is the most false assumption of the traditional job market theories. The Pissarides theory consists of three main blocks. The first is the job creation function (demand for labor), the wage function (labor supply) and the Beveridge curve. More this theory defines the labor-market tightness for the firm.

Key words: the labor-market tightness, rigidities, Beveridge curve, matching function

JEL Code: J21, J23

1 Theoretical surroundings

The paper will be built on the labor market theory presented by Pissarides (2000). With regard to the aims of the article, which are quite practical, it is mainly about identifying the effects of raising the minimum wage in the last few years in the CR. At first we define the basic labor market indicators according to Pissarides (2000). The labor supply (labor force) L generates the number of unemployed at $u \cdot L$ despite the unemployment rate u . Furthermore, the labor force L and the vacancy rate v generate the number of vacancy jobs in $v \cdot L$. The product of the number of jobs created and the workforce generates the number of new occupied jobs $m \cdot L$. Combining the function of the labor market is defined as the dependence of the number of newly created jobs on the number of unemployed and the number of vacancies. In other words, as an expression (1).

$$mL = f(uL, vL), \quad (1)$$

Suppose, furthermore, that the matching function described has a constant yield property from a range, so we can modify it to:

$$\frac{m}{v} = f\left(\frac{u}{v}\right), \quad (2)$$

The left-hand side of the equation (2) represents the probability of filling a vacancy. The term u/v represents tightness in the labor market. This is the share of unemployed in the vacancy. In other words, the likelihood of filling a vacancy depends on the tightness of the labor market. If the number of jobs for the unemployed increases, the probability of occupying the job is decreasing. The reversed value of the probability of occupation of the job represents the average time for which the vacancy is vacant.

The last string modification leads to an expression (3)

$$\frac{m}{v} * \frac{v}{u} = f\left(\frac{v}{u}\right), \quad (3)$$

This term explains how the product of the likelihood of occupying a job and the degree of tightness in the labor market depend on the degree of tightness on the labor market. But here overturned. When labor market tightness (a higher proportion of vacancy rates and unemployment rates) is growing, then the probability of finding a job increases.

If we find a variable job search intensity for the unemployed (s). The matching function changes to:

$$m = f(su, v), \quad (4)$$

In this case, the probability of finding a job negatively depends also on the intensity of job search. To analyze the effects of raising the minimum wage, the search theory uses the wage function (it can be identified with job offer by employees), job creation (job demand by firms) and Beveridge function. More about Beveridge's theory and empirical testing of this relationship since its introduction to the 1990s, for instance in Bleakley and Fuhrer (1997).

Let's begin with the job creation feature first. The company compares the yield of the occupied (J) and unoccupied place (V). In addition, the firm must consider labor productivity (p) and cost of occupation (c). Therefore:

$$\frac{q(\theta)(J - V) - pc}{V}, \quad (5)$$

Let us also consider a perfectly competitive capital market, in which case the above derived return on the occupied position must be equal to the interest rate.

$$\frac{q(\theta)(J - V) - pc}{V} = r, \quad (6)$$

Alternatively:

$$\frac{p - w - \lambda J}{J} = r, \quad (7)$$

Here λ is the rate of job loss. The product wage-adjusted product and the potential loss of jobs due to the expected value of the job must be equal to the interest rate. The following forms of job creation are in the steady state:

$$\frac{(r + \lambda)pc}{q(\theta)} = p - w, \quad (8)$$

The job creation function describes the negative dependence between the level of leakage on the labor market and the wage rate at given productivity. Secondly, we will need to interpret Beveridge's function (which is usually the relationship between vacancy rate and unemployment rate) to interpret the relationship between labor market tightness and the unemployment rate. This reflection is quite similar to the standard deduction of full employment. Let's start with it (9).

$$\Delta(uL) = \lambda(1 - u)L - \theta q(s, \theta)uL, \quad (9)$$

The left hand side represents the change in the number of the unemployed. The first member on the right represents the employees who have lost their jobs, and the other member of the right side represents the unemployed who have found a job. Once we divide the expression (9) with the work force L and assuming a steady state (the unemployment rate does not change) we import:

$$u = \frac{\lambda}{\lambda + \theta q(s, \theta)}, \quad (10)$$

Growing the level of labor market tightness in the balance reduces the unemployment rate. Identical also causes an increase in job search intensity. However, the company considers its productivity for each vacancy. This place the firm keeps unoccupied if the actual productivity is greater than the booking productivity. However, if the negative productivity-generating shocks are below the productivity of the workplace, the firm will definitely cancel that vacancy. $G(R)$ is the probability that job productivity will be lower than booking productivity.

$$u = \frac{\lambda G(R)}{\lambda G(R) + \theta q(s, \theta)}, \quad (11)$$

Thirdly, the function of pay is dependent on the motivation of the individual to work. The expected return on employment from the perspective of the unemployed is

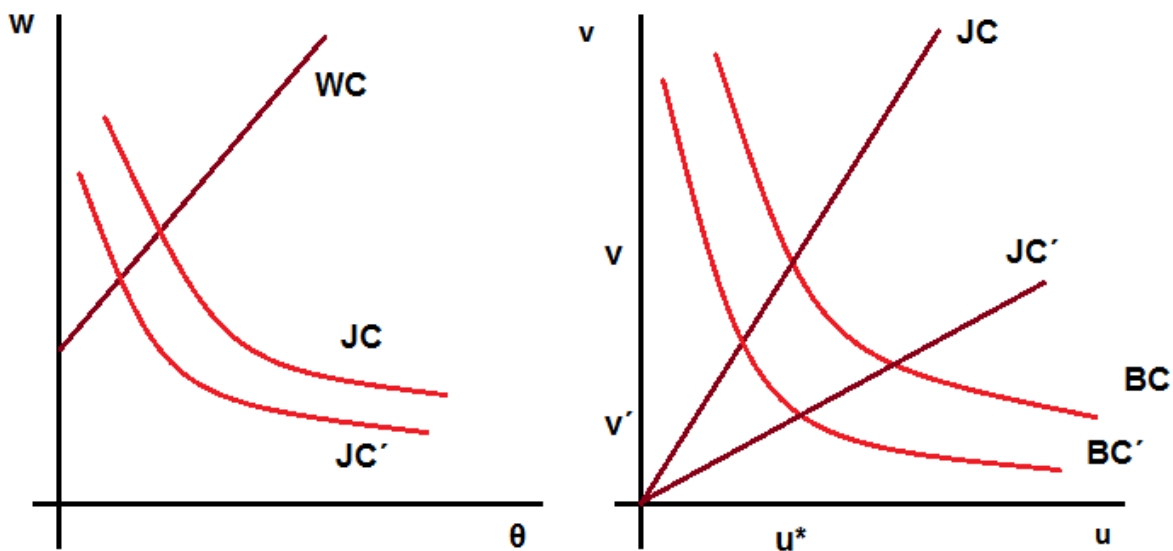
$$\frac{z + \theta q(\theta)(W - U)}{U} = r, \quad (12)$$

Here are the unemployment benefits, W is the expected value of employment, U are unemployment benefits. Assuming a perfectly competitive capital market, the left side must be equal. If, in addition, we consider the bargaining power of β , then we finally get the salary function

$$w = (1 - \beta)z + \beta p(1 + c\theta), \quad (13)$$

The wage rate required by employees depends on the bargaining power of the employee (β), the employee's product (p), the cost of filling the job (c) and the tightness on the labor market (θ). With a view to better understanding the article's conclusions, we will illustrate the impact of the increase graphically. There are two linked charts.

Fig. 1: Impact of minimum wage



Source: own chart in MS WORD

The left chart shows the labor supply (wage, WC) and job demand (job creation, JC). It is the dependence of the required and paid wage rates at the level of labor market tightness (v/u). The true graph links the unemployment rate and the vacancy rate (Beveridge BC). The degree of sealing of the labor market is implicitly a JC function. We see that the rise in the minimum

wage does not change the salary function (job offer) on the left of the chart. However, the rise in the minimum wage reduces the profits of firms and thus increases the productivity of job creation and causes job destruction (drop in job demand, JC on JC' on the left chart). The level of tightness in the labor market is decreasing. However, on the right graph, we see that the increase in job search intensity is overpowered by the rate of job destruction and job loss and causing BC to shift down (BC).

There is a definite fall in labor market tightness (not a very large drop since job intensification increases the probability of finding a job), however, the effect of introducing a minimum wage on unemployment and job vacancies is ambiguous and contradictory.

In the modern small open economy in the EU in the 21st century, we can expect an effect on the drop in vacancy rates, but little or no effect on the unemployment rate.

2 Experiences with the minimum wage in the Czech Republic after 1989

The minimum wage is, by definition, the lowest permissible salary that can be paid in that state and which therefore significantly affects some areas of the economic and social life of the countries concerned (see, for example, Schulten 2009 and 2012). In addition to this view, it is also a concept and magnitude with which various theoretical arguments and speculations can be carried out, which often do not rely on facts but rather on a priori ideological intentions and approaches. Trusted analyzes of MW are presented by Pytlíková (2002), Špeciánová (2017), Tijdens (2017) and Van Parijs et al. (2007) or generally the ILO (2018).

In the territory of today's Czech Republic (at that time still in Czechoslovakia), the minimum wage was officially introduced by law in 1991. As regards the EU countries, the legal minimum wage is set in 22 of the 28 states of the European Union (see Drarhokoupil 2016). In some other countries (notably the Nordic countries) it is not explicitly legislatively regulated but negotiated in the context of collective bargaining, and given the high level of trade union organization in the countries concerned and the high authority of the collective bargaining mechanisms, such arrangements have a significant overall societal impact.

The basic definition attributes and the social advantages of the minimum wage are undoubtedly the fulfillment of its basic functions. In this context, mention is made in particular of: Social protection function

The minimum wage should protect employees from poverty and allow them to live at the level of modest consumption and social contacts. Employers have a minimum wage to ensure a level playing field for wage competition and to prevent wage undermining of domestic

and foreign labor (see also Vavrečková and Janata, 2014). More there is the Economic-Criterion Function. Minimum wage creates prerequisites for citizens' incomes to seek, accept and perform work activities, that is, to favor people with income from socially disadvantaged people. For employers, the minimum wage is the lowest level of wage costs for employees.

It also follows from these definitions that fixing a minimum wage is in any case a factor affecting a range of macro and microeconomic variables in the economies concerned, primarily in the area of remuneration, but also in areas generally linked to the labor market and the position of market players work, ie companies and employees.

Thus, the discussion question can be to what extent and in what areas is the positive influence and where the effect is rather negative. In order to be able to assess these issues on the example of the Czech Republic, we must first map out the relevant data for a relatively long time and telling the developments in this area. To this effect, the material of the Ministry of Labor and Social Affairs of the Czech Republic "*Proposal for an increase in the minimum wage from 1 January 2018*", which was submitted to the relevant tripartite meeting, contains a number of relevant data and information. In the following lines, we will quote from this material or come from it on different levels. In order to get a more concrete picture of the different types of impacts of MM in the Czech Republic, of course we have to mention at this point its past as well as the expected future levels:

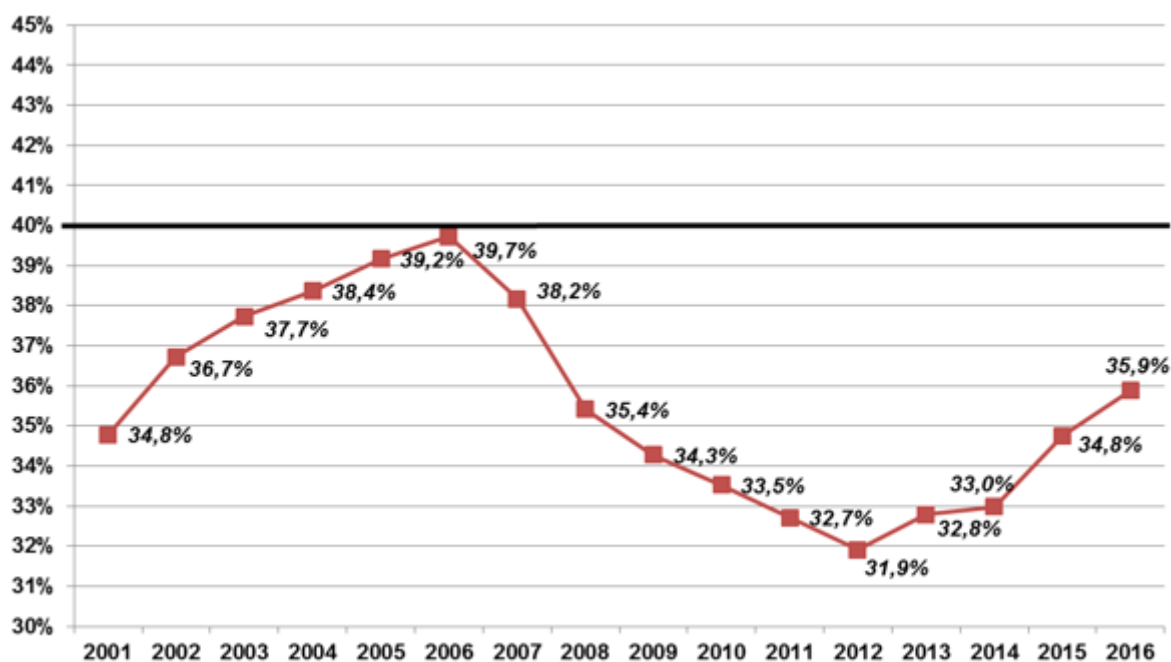
Tab. 1: Development of MW level in Czechoslovakia and the Czech Republic in CZK

Date	MW	MW/hour	2003 Jan.	6 200	36,9
1991 Feb.	2 000	10,8	2004 Jan.	6 700	39,6
1992 Jan.	2 200	12	2005 Jan.	7 185	42,5
1996 Jan.	2 500	13,6	2006 Jan.	7 570	44,7
1998 Jan	2 650	14,8	2006 July	7 955	48,1
1999 Jan.	3 250	18	2007 Jan.	8 000	48,1
1999 July	3 600	20	2013 Aug.	8 500	50,6
2000 Jan.	4 000	22,3	2015 Jan.	9 200	55
2000 July	4 500	25	2016 Jan.	9 900	58,7
2001 Jan.	5 000	30	2017 Jan.	11 000	66
2002 Jan.	5 700	33,9	2018 Jan.	12 200	

Source: Ministry of Labor and Social Affairs in the Czech Republic

A very typical feature of this development is the disruption of the continuity of MW growth in 2008, and this MW growth policy was only restored in 2013. This fact of long-term stagnation of MW is in some ways paradoxically a good option for a theoretical analysis of the positive and negative of such a step. Let's look at some other context. Minimum wage (MW) and average wage share. The ratio of minimum and average wages or median wages (see also Drahokoupil, 2016) is a very telling and largely decisive indicator. According to the above data, the Ministry of Labor and Social Affairs included in 2006 the share of minimum and average wages of 39.7%. After stagnating the minimum wage in 2007 to 2012, this share declined by 7.8 percentage points to 31.9%. With the gradual increase in the minimum wage in 2013, 2015 and 2016, this share grew and reached 35.9% last year. According to the current forecast of average wage developments, it could rise to 38.2% in 2017.

Fig. 2: Share of MW and the Average wage in the Czech Republic



Source: Ministry of Labor and Social Affairs in the Czech Republic, CZSO, own calculation

As far as the comparison within the EU is concerned, according to the latest data available for 2015, this share in the CR was the lowest and was 34.6%. A lower percentage of 0.5 percentage point was recorded only in Spain (34.1%). Forty percent of the share was not

achieved in Estonia (37.4%), Slovakia (37.9%) and Croatia (38.6%). On the other hand, the highest share was recorded in Slovenia (51.2%), Luxembourg (47.0%) and Lithuania (46.6).

MW and raising wage levels. The Ministry of Labor and Social Affairs, in connection with plans to increase MW in the Czech Republic from 1 January 2018 to CZK 12 200, also notes that the further intention of this increased increase of the minimum wage, of earnings in general is the approximation of the wage level in the Czech Republic to wages paid by employees in more advanced European countries, also with regard to the European standards enshrined in the European Social Charter and states that "at present the average annual wages in the purchasing parity the power in the Czech Republic is lower than in neighboring Slovakia or Poland, which does not correspond to the possibilities and results of the Czech economy. As regards the wage level in the Czech Republic, the following data are available (see also Beran, 2017)

The average gross monthly nominal wage per converted number of employees in the national economy reached CZK 27 589 in 2016, which represents a year-on-year nominal increase of 4.2%. The increasing nominal growth dynamics of the average wage was due to high labor demand, in particular its shortage in a number of industries and professions, and wage competition among employers. For this year and next year, the forecast of the Ministry of Labor and Social Affairs counts with an increase of the average wage in the national economy by about 4.5%.

Tab. 2: Evolution of wages in the Czech Republic

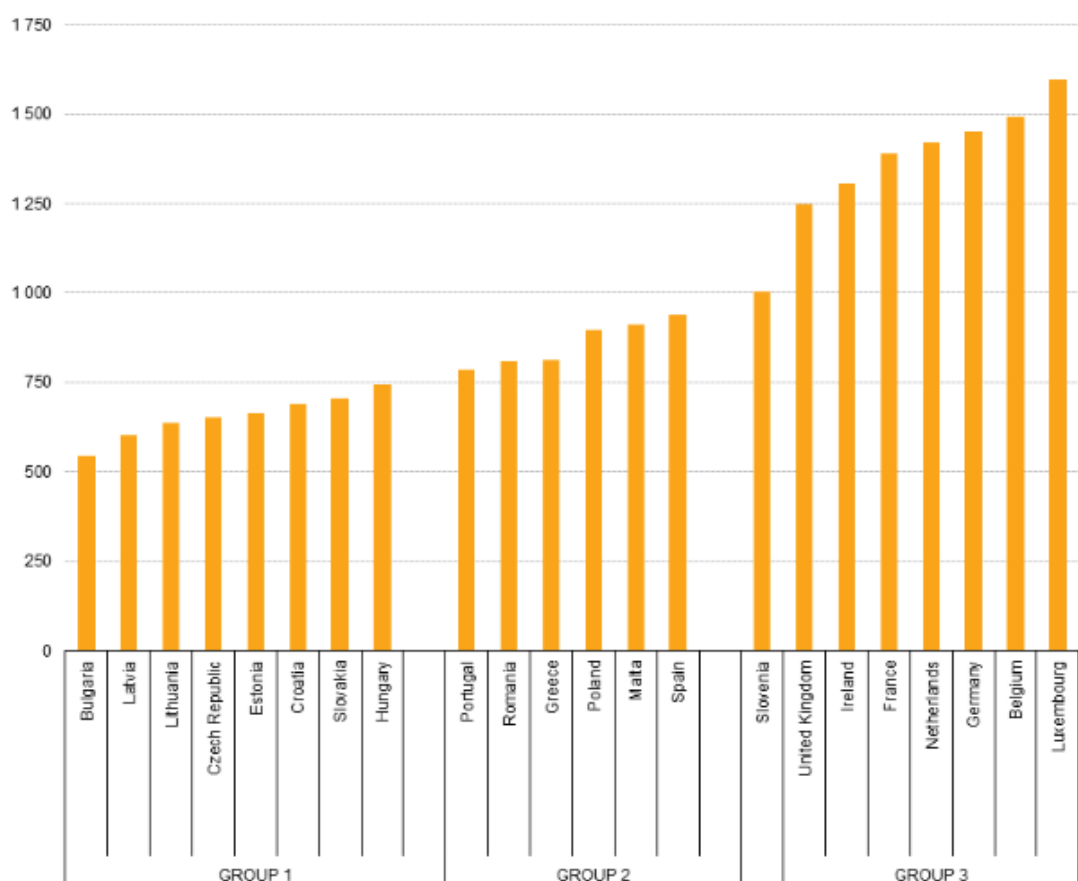
Year	2015	2016	2017*	2018*
Average monthly nominal wage in NH (in CZK / month)	26 467	27 589	28 830	30 130
- nominal wage index (%)	102,7	104,2	104,5	104,5
- real wage index (%)	102,4	103,5	102,2	102,5

Source: CZSO, estimation Ministry of Labor and Social Affairs in the Czech Republic *

Data is also given in the relevant material. Organization for Economic Cooperation and Development (OECD) 2015, according to which the average annual wage in the Czech Republic was 21 689, - US dollars (at constant prices in 2015), which was one of the lowest levels in the monitored countries. The lower average wage was recorded from European countries only in Estonia, Latvia and Hungary. More than double the level of earnings according to the statistics published by employees in Germany, Austria, Belgium or the Netherlands. As of 1 January 2017, Eurostat exceeds its threshold of € 1,300 in seven countries, including

Luxembourg, Ireland, the Netherlands, Belgium, Germany, France and the UK. Minimum wage between € 600 and € 1,300 is paid to employees of Spain, Slovenia, Malta, Greece and Portugal. In the other ten EU countries, it is in the range of 235 euros (Bulgaria) to 470 euros (Estonia). In the Czech Republic, the minimum wage according to the Eurostat database is 407 euro, the fifth lowest level in the monitored countries. The Czech Republic has the same standing in international comparison even after taking into account the price levels in individual countries, ie in the form of Purchasing Power Standard (PPS). Also unfavorable for the Czech Republic is the international comparison with other states within the so-called Visegrad Group, which shows that the lowest minimum wage is in the Czech Republic. The minimum wage in the purchasing power standard is 881 PPS in Poland, 723 PPS in Hungary, 658 PPS in Slovakia and 644 PPS in the Czech Republic. The lowest minimum wage has only Lithuania 625 PPS, Latvia 553 PPS, Romania 551 PPS and Bulgaria 501 PPS.

Fig. 3: The amount of MW in some EU countries (compared using the PPS per month) in January 2018



Source: http://ec.europa.eu/eurostat/statistics-explained/index.php/Minimum_wage_statistics

Development of some macroeconomic indicators. In the context of MM development, some macroeconomic indicators may, of course, be considered.

Tab. 3: Development of some macroeconomic indicators

Year	2014	2015	2016	2017*	2018*
GDP - yoy index (in%)	102,7	104,5	102,4	102,6	102,5
Employed in the Czech Republic (in thousands of persons)	4974,3	5 041,9	5 138,6	5 160,0	5 175,0
year-on-year increase (in thousands of persons)	37,2	67,6	96,7	21,4	15,0
- yoy index (v %)	100,8	101,4	101,9	100,4	100,3
Share of unemployed (in%)	7,7	6,6	5,6	4,7	4,6
year-on-year growth / decrease of PNO (in percentage points)	0,0	-1,1	-1,0	-0,9	-0,1
Average annual rate of inflation - yoy index (in%)	100,4	100,3	100,7	102,3	102,0

Source: CZSO, estimation MPSV*

Year 2016 has been a successful year for the Czech economy, although the economy grew slower than in the previous year. Gross domestic product increased by 2.4% yoy. The growing demand for Czech households was a key factor in economic growth. It is to be expected that similar developments will be noted in 2017. Nevertheless, we should not overlook the negative aspects of this at first glance of a great economic result, namely the unmitigated monocultural structure (automotive) and the subordinate character of the economy, especially in relation to Germany, giant debt.

Positive developments in the labor market can be seen, which, according to the Ministry of Labor and Social Affairs in the Czech Republic assessment, benefited from a favorable economic development, which was reflected in the growth of employment and the drop in unemployment. The average number of employed in all spheres of the national economy in 2016 was 5 138.6 thousand according to the CZSO Labor Force Survey. Their number grew by 96.7 thousand year-on-year, in relative terms by 1.9%. The share of unemployed persons in the population (the number of achievable job seekers aged 15 64 to the population of the same age) declined by 20 percentage points year-on-year by 1.0 percentage point to 5.6%.

However, the following problems persist:

- Inconsistency between supply and demand in the labor market from the point of view of professional and qualification and in terms of insufficient mobility conditions
- Still a relatively low level of wages that is insufficient to motivate work

- the unresolved problem of the lack of certain types of professions offered on the labor market and thus the activation of relevant retraining programs
- the associated effort of some business structures to open up more room for "imports of foreign labor and thereby increase the potential for social dumping
- high share of long-term unemployed without entitlement to unemployment benefits and generally low unemployment rate
- a persistent problem in the employment of elderly people and people with disabilities
- a potential reinforcing factor in reducing employment and returning businesses to mother countries in the context of the gradual digitization and automation of certain sectors
- labor market problems (agency employment, Schwarz system, various types of limited work)
- a possible decline in "European" sources of funding for employment policy

Conclusion

Minimum wage is a very frequent topic of various debates, whether at legislative or executive level, at the level of tripartite discussions between social actors and the government, and, of course, at the theoretical and economic level. It is no secret that these views differ and are often contradictory. The greatest degree of contradiction is undoubtedly between the attitudes of employers and trade unions. Where some emphasize the positive aspects of wage growth in both social and economic terms (see eg Keune, 2009), where they underline the effect of wage growth on overall demand and economic growth, and others argue with the rise in labor costs with a negative impact on the overall production costs and the competitiveness of businesses. This latter view is most often supported by a reference to the alleged devastating effect of rising minimum wages and consequently rising wages at all on the level of employment and thus on the alleged increase in unemployment. The tripartite discussions in 2017 showed a mismatch in raising the minimum wage level, but employers' representatives are also willing to discuss models of MW valorization for the coming years. Therefore, we can expect a steady increase in the minimum wage. It is a pity that the employer has forced such competition on the demand side of labor as we perceive it from 2017 to 2018 and the general shortage of workers in the national economy.

The paper documents that the link between MW growth and unemployment growth has no theoretical backing and there are also quantitative models that confirm this. More prominent

than theoretical models, then the practical experience is well illustrated by the period when the level of MW did not increase in the Czech Republic. Between 2007 and 2013, the level of the minimum wage in the Czech Republic has not changed, yet the situation on the labor market has deteriorated significantly at that time. On the contrary, since 2013 there has been a rather significant increase in MW, and the labor market situation is still improving. The causes of unemployment need to be looked for elsewhere, especially in the absence of growth impulses in the economy, ie, for example, in the low level of domestic demand. In this sense, the growth of the minimum wage could be more favorable in relation to economic growth and employment growth.

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