CHARACTER AND INTENSITY OF THE MINIMUM WAGE INFLUENCE ON UNEMPLOYMENT IN THE CZECH REPUBLIC AND SLOVAKIA

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Abstract:

This article analyses character of the relation between the minimum wage and unemployment in the Czech Republic and Slovakia. At the same time, it estimates the extent of the effect of the minimum wage on the examined unemployment indicators. The analysis in the Czech Republic indicated the increase in unemployment as a result of the increase in the minimum wage. In Slovakia both negative and positive effects were confirmed but a negative relationship prevailed. The intensity of the influence effects was moderately strong.

Keywords:

minimum wage, unemployment, unemployment rate, correlation coefficient

JEL Classification: E24, E32, E37

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1. Introduction

Flexible labour markets are the most important factor of the dynamics of economic performance. Rigid labour markets and labour markets that are little flexible lead to the growth of unemployment and the social expenditure, they prolong recession phases and phases of phases of weak growth. Flexibility of the labour market can be enhanced by institutional factors. However, the labour market regulation has both supporters and opponents among economists and politicians. Some authors even state, that countries with a lower unemployment rate make a less use of the institution of the labour market.

One of the forms of institutional factors affecting the labour market is legislative employment protection, which includes minimum wage, pay for overtime work and mandatory non-wage benefits. Advocates of regulation of the minimum wage believe that a higher minimum wage leads to decrease in unemployment of low-income groups and guarantees a minimum living standard. The unemployed are also more willing to look for a job and to leave the welfare state system, which reduces unemployment. On the other hand, opponents of the minimum wage regulation claim that a high minimum wage pushes the employed out of the labour market and reduces their chances of succeeding on the labour market. Companies are not willing to employ workers with the marginal product of labour under the level of the minimum wage. The level of the minimum wage is related to the issue of qualification and the ability to retrain. A traditional supporter of the growth of minimum wages are trade unions. Betcherman et al. (2001) argue, that the role of the minimum wage is controversial. On one hand they mention that it ensures a minimum standard of living and that the growth of the minimum wage increases the income of workers. On the other hand the growth of the minimum wage leads to the fact that employers reduce the vacancies for workers employed at minimum wage. A different view of the minimum wage thus provides the politicians a wide space for measures against its positive and negative effect.

Based on their analysis, Butcher et al. (2012) argue that in the USA and in England, minimum wages have no significant effect on employment. They found, however, that there was an influence on inequality of wages, except for those that are not directly affected by the minimum wage. Hirsch et al. (2011) present a new explanation for a small and insignificant influence of the minimum wage on employment. Namely it is the fact that even a high increase in the minimum wage can be insignificant in comparison with an increase in other expenses, which the owner of the company usually has to deal with. They also state that the costs of the minimum wage increase go through more adjustment channels than economists generally assume. They further mention that managers generally regard reduction of employment and decrease in the number of hours worked as relatively costly measures. Sometimes they even see such measures as counterproductive and they consider them to be the measures of last resort.

The aim of this article and the empirical analysis is to assess the presence and the character of the relation between the minimum wage and unemployment in the Czech Republic and Slovakia and to estimate the approximate extent of the effect of the minimum wage on selected unemployment indicators. For this purpose the article is divided into the following parts: The second part presents an overview of results of international empirical analyses concerning confirmation or disproval of the fact that the minimum wage has an effect on employment (or rather unemployment). The third part characterizes sources of data and the method of analysis. In the fourth part we performed empirical testing of the relation between the minimum wage and unemployment in the Czech Republic and Slovakia. The conclusion provides a summary.

2. Overview of Conclusions of International Empirical Analyses of the Relation between the Minimum Wage and Employment (Unemployment)

According to Blanchard et al. (1999), in most countries a higher unemployment affects different groups of people on the labour market differently. A higher unemployment influences young workers and the less educated in a disproportionate way. The labour market institutions affect the composition of unemployment and by doing that they also have influence on wages. In these authors' opinion, because of the fixation of the minimum wage, a higher minimum wage can increase the influence of adverse shocks on unemployment of less educated workers. It can also decrease the effect of unemployment on wages.

Dube et al. (2010) revealed a strong influence of the minimum wage on incomes, but no effect on employment in the USA. The authors revealed regional and local differences in employment trends, which are not related to the minimum wage policy.

Metcalf (2007), who has tried to test the influence of the minimum wage on employment and salaries states that a decrease in employment can be mitigated by omitted sectors and monopsonies (e.g. stiffness of the labour market and effects of the effective wage). Based on an analysis the author found a significant influence of the minimum wage on the distribution of salaries and the national income. However, the adverse effect on employment was not proved. Increase in the wage inequality due to the minimum wage could have been adjusted by a number of factors operating in the opposite direction (e.g. a large offer of low-skilled immigrant workers, decrease in the power of trade unions and collective agreement coverage or increase in remuneration depending on performance).

Ederveen et al. (2004) state that the standard economic theory talks about reduction of employment as a result of increase in the minimum wage. Low-skilled workers whose wages are higher than their productivity become too expensive for their employers. However, according to the authors the empirical research in the USA suggests only a small effect of the minimum wage on employment. An increase in the minimum wage by 10% leads to a decrease in the unemployment of young people only by 1–3% and in the overall unemployment by 0.1–0.3%. The authors claim that it can be a result of a low

level of the minimum wage in the USA. Such a limited effect applies to England, where only 6–7% of workers receive the minimum wage. In Hungary the increase in the minimum wage in 2001 lead to reduction of employment opportunities, mainly in small companies. It is a consequence of a large coverage of workforce by the minimum wage. The research of these authors also imply that in the new EU countries the increase in the minimum wage leads to a significant increase in unemployment.

Manning (2012) states that the minimum wage has gained a broad support of politicians and that it is popular within the public, even though it concerns only a small number of employees. The authors come up with an alternative and they present a minimum wage for older employees (e.g. 30 years old and more), which enables them to take better into consideration low-income households. In doing so, they work on the assumption that this group does not earn much more money that young labourers. They also consider a higher minimum wage for London. Incomes here are higher than in other parts of England and therefore the common minimum wage influences employment less than it is supposed to. The alternative concept of what is called a "living" wage should make pressure on employers that pay unnecessarily low wages and on sectors that are dependent on unsustainably low salaries.

3. Characteristics of the Used Data and the Methods of the Analysis

To analyse the presence of the effect of the minimum wage on unemployment and its character, or rather to the outline of the scope of this effect in the Czech Republic and Slovakia, we used a time series of the minimum wage, expressed in the purchasing power parity (hereinafter PPP)[1]. Literature also often uses the minimum wage in national currencies or the minimum wage as a share of the average wage, or the wage median. An overview of the minimum wage development in the PPP is useful e.g. for multinational companies, which enter the Czech Republic or Slovakia. They are, among other things, interested in the level of the minimum direct costs of job creation. Expression of the minimum wage in the PPP – **purchasing power parity** – further provides essential information for foreign employees that are interested in the level of the guaranteed minimum.

The Eurostat data[2] shows us development of unemployment according to different classification. Namely, these were **unemployment rate by sex and age** (in %), **unemployment rate by education attainment level** (in %), **young people neither in employment nor in education and training (NEET) rate** (in %), **unemployment by duration of unemployment and distinction registration/ benefits** (in %), **unemployment by the type of employment sought** (in 1000 people), **previous occupations of the unemployed** (in 1000 people), **long-term unemployment as a percentage of the total unemployment** (in %), **unemployment by duration of**

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[1] Data: Eurostat, available from: http://ec.europa.eu/eurostat/data/database.
[2] Data: Eurostat, available from: http://ec.europa.eu/eurostat/data/database.

unemployment (in 1000 people), **long-term unemployment rate by regions** (in %), **unemployment rate by regions** (in %) and **number of unemployment by regions** (in 1000 people).

The time series we used have an annual frequency and cover a time horizon in the period from 2000 to 2014. Before performance of the correlation analysis we calculated year-on-year changes from the original time series. As for the minimum wage it was a year-on-year change in the PPP. The year-on-year changes of the unemployment rate by sex and age, the unemployment rate by education attainment level, young people neither in employment nor in education and training rate, unemployment by duration of unemployment and distinction registration/ benefits, long term unemployment as a percentage of the total unemployment and the long-term unemployment rate by regions were calculated in percentage points (p.p.). Year-on-year changes of unemployment by the type of employment sought, previous occupations of the unemployed and unemployment by duration of unemployment were obtained in 1000 people.

To verify the effect of the minimum wage on unemployment, differentiate its character or outline its scope in the Czech Republic and Slovakia we used correlation analysis (see charts in the introduction of empirical testing under conditions of the Czech Republic and Slovakia and in tables in the appendix).

In our case, we consider the situation when together with the increase/decrease of the minimum wage there is an increase/decrease in unemployment as a positive effect. We consider a situation when together with the increase/decrease of the minimum wage there is a decrease/increase of unemployment as a negative effect of the minimum wage on unemployment.

Furthermore, we work on the assumption that the more other factors apart from the minimum wage influence unemployment, the weaker is the relation between the variables. The correlation coefficient in the interval from 0.00 to 0.05 means that the correlation, i.e. the influence between the minimum wage and unemployment, was not proved. The correlation coefficient in the interval from 0.06 to 0.34 suggests a very weak correlation and a very weak influence. The correlation coefficient in the interval from 0.35 to 0.49 suggest weak correlation. The correlation coefficient in the interval from 0.50 to 0.74 indicates a medium correlation. The correlation coefficient in the interval from 0.75 to 0.89 indicates a strong correlation. And finally the correlation coefficient in the interval from 0.90 to 1.00 is a proof of a very strong correlation, or a very strong influence between the minimum wage and the selected unemployment indicator.

4. Empirical Testing of the Relation on the Czech Republic and Slovakia Data

In this part we present results of the empirical analysis of the presence, character and intensity of the relation between the minimum wage and unemployment from different

points of view in the Czech Republic and Slovakia on the Eurostat data, using the correlation analysis.

4.1 Mapping the Development of the Relation under the Conditions of the Czech Republic

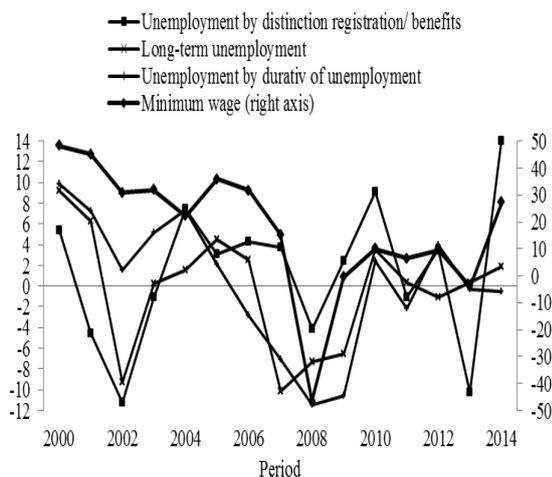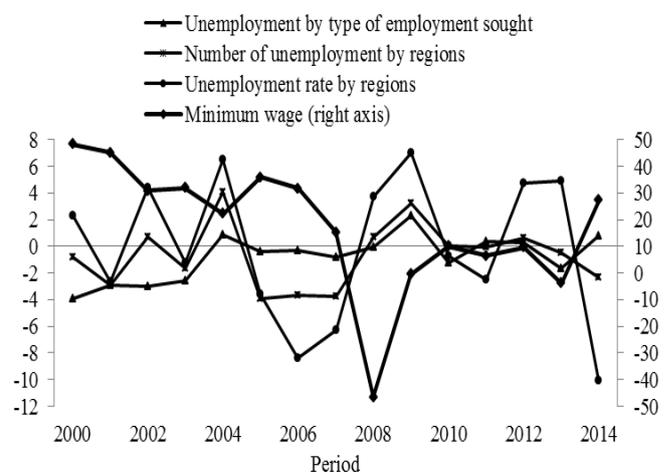| Chart č. 1: | **Selected positive values of minimum wage correlation with some unemployment indicators in the Czech Republic** (y.o.y. changes in percentage points, in number of persons) | Chart č. 2: | **Selected negative values of minimum wage correlation with some unemployment indicators in the Czech Republic** (y.o.y. changes in percentage points, in number of persons) |

Source: Eurostat, our own calculations.

The first indicator for verification of the presence and the character of the effect of the minimum wage on unemployment in the **Czech Republic** is the **overall unemployment rate**. In this case there was a very weak positive correlation of 0.32 found for women aged 50–54. The analysis of the data related to **education** suggested a weak positive relation between the minimum wage and the unemployment rate in the case of lower than primary education, primary education and secondary education in the age group 35–39 (+0.38). As for the indicator **young people neither in employment nor in education and training rate**, the minimum wage caused a weak correlation (+0.45) in the group of inactive women aged 15–19. In the case of the number of **unemployed people by the duration of unemployment** we observed a moderately strong positive dependency in the age interval of 25–64 years and the duration of unemployment 48 months and more (+0.74). For the **overall long-term unemployment** indicator a statistically significant effect was proved in the group of women aged 25–29. More specifically, it was a moderately strong positive correlation (+0.58). If we take into account **ways of registration and payment of benefits**, we find that in the group of men aged 15–19, for

the indicator of registered unemployment without benefit payment in case of unemployment lasting 3–5 months, there is a moderately strong positive correlation (+0.65). Using the **number of unemployed by the type of unemployment sought** indicator, we derive weak negative correlation with the coefficient of correlation 0.47 in the case when the unemployed used to work on full-time or part-time basis and were in the age group of 15–19. When we have a look at the number of the unemployed **by individual jobs**, there was a very weak relation localized in the case of women that used to work in services and trade (+0.16). The **unemployment rate by regions** indicator showed a very weak negative correlation in the region of Central Moravia (-0.37) for men aged 15–24. The **number of the unemployed by regional division** showed a weak negative relation with the minimum wage for the age group of 15–24 in the Central Moravia region (-0.41). The indicator of the **long-term unemployment rate by regions** suggested a presence of a weak positive correlation with the minimum wage in the Southeast region and a very weak positive correlation in the Southwest region. The correlation coefficients were 0.36 and 0.31.

4.2 Mapping the Development of the Relation under the Conditions of Slovakia

| Chart č. 3: | **Selected positive values of minimum wage correlation with some unemployment indicators in Slovakia** (y.o.y. changes in percentage points, in number of persons) | Chart č. 4: | **Selected negative values of minimum wage correlation with some unemployment indicators in Slovakia** (y.o.y. changes in percentage points, in number of persons) |

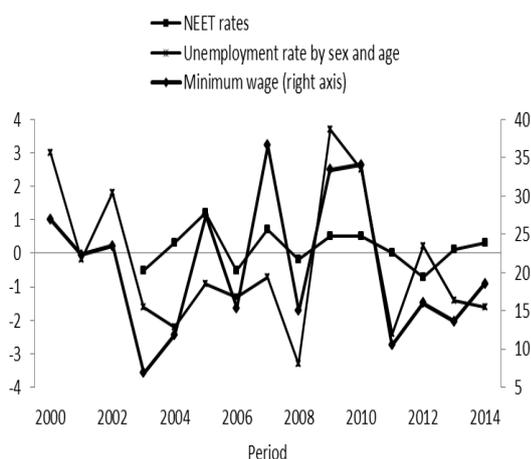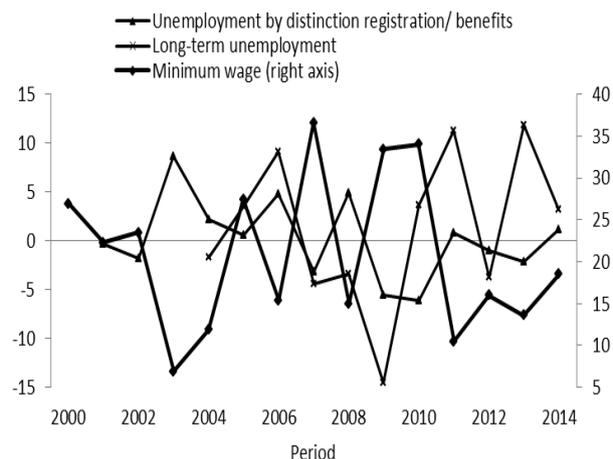

Source: Eurostat, our own calculations.

In the case of **Slovakia** we found a weak positive correlation between the minimum wage and the **unemployment rate** at the age of 40–44 years (+0.47). As for men, there was a moderately strong positive correlation at the age of 40–44 years (+0.70). When have a look at the data related to **education**, there was a strong positive correlation (+0.70) localised for the unemployed with higher secondary education and the subsequent non-university education at the age of 40–44. The minimum wage caused a moderately strong positive dependence of those, who do not want to work in the **young people neither in employment nor in education and training rate** indicator (+0.70). As for the **number of the unemployed by the duration of unemployment**, there was a moderately strong positive dependence (+0.52) of women aged 25–64 for unemployment lasting longer than 12–17 months. The **long-term unemployment** indicator indicated a moderately strong negative correlation (-0.51) for men aged 50–54. If we consider **ways of registration and benefit payment**, the unregistered unemployment without benefit payment indicator at the age 15–74 showed a moderately strong negative correlation (-0.63). At the age of 25–59 there was a strong negative relation localised (-0.77). Using the **number of unemployed by the type of unemployment sought** indicator we can deduce, that in the case of women it concerned only full-time or part-time employment. Specifically, there was a weak positive correlation with the correlation coefficient of 0.49. The number of the unemployed **by individual jobs** localised a weak positive correlation for women in the position of a machinist, machine operator or assembler (the correlation coefficient was 0.47). From the **regional point of view,** the indicator **unemployment rate** at the age of 15 and more and 24–64 showed a moderately strong positive relation with the minimum wage in the region of Western Slovakia (+0.51 and +0.50). In the region of Western Slovakia there is also a strong positive relation with the minimum wage proved for **the number of the unemployed by regions** indicator at the age of 15 and more (+0.50). The **long-term unemployment rate by regions** indicator showed there was a presence of a weak positive correlation in the region of Western Slovakia (+0.45).

5. Conclusion

To measure the relation of the minimum wage and selected unemployment indicators, we used correlation analysis. The average values of the highest correlation coefficients between the minimum wage and selected unemployment indicators in the Czech Republic suggested that the positive relation prevailed over the negative one. In Slovakia the prevailing correlation coefficient indicated a negative relation between the minimum wage and selected unemployment indicators.

In the Czech Republic the average value of the correlation coefficient with the plus sign was 0.46 and with the minus sign 0.42. The data thus supported the theoretical stream which states that increasing the minimum wage would lead to an increase in unemployment. According to our rating scale for measuring the intensity of a positive or negative influence of the minimum wage on a specific unemployment indicator, there

would be an agreement on a weak influence in both cases. The first indicator on which the minimum wage had a **positive influence** was the unemployment rate of women aged 50–54. Another case was the unemployment rate of people with lower than primary education, primary education and secondary education in the age group of 35–39. For the young people neither in employment nor in education and training rate indicator it was the group of inactive women aged 15–19. As for the number of the unemployed by the duration of unemployment it was the age interval of 25–64 with the unemployment duration of 48 months and more. For the overall long-term unemployment indicator these were women aged 25–29. Regarding ways of registration and benefit payment, we include here men aged 15–39 unemployed for 3–5 months for the registered unemployment without benefit payment indicator. In the case of the unemployed by individual jobs these are women who used to work in services or trade. The regions that have been mapped in relation to the long-term unemployment rate by regions are Southeast and Southwest. Using the number of the unemployed by the type of the employment sought we can deduce a **negative correlation** in the case when the unemployed used to work full time or part time and belonged to the age group of 15–19 years. The unemployment rate by regions indicator shows the same character of the relation for the group of men aged 15–24 in the Central Moravia region. The number of the unemployed in the regional division indicator showed an age group of 15–24 in the Central Moravia region.

In Slovakia the correlation coefficient signalizing a positive relation was lower than the correlation coefficient indicating a negative relation. Specifically, in Slovakia the average correlation coefficient with the plus sign was 0.56 and with the minus sign 0.64. The prevailing tendency in this country therefore supports the theoretical opinion that the increase in the minimum wage decreases unemployment. The first indicator for which we found a **positive effect** of the minimum wage was the unemployment rate of men aged 40–44. If we use the data related to education we can see that these were unemployed people with higher secondary education and the subsequent non-university education aged 40–44. In the young people neither in employment nor in education and training rate indicator the minimum wage raised this character of effect for people aged 25–34 who do not want to work. As for the number of unemployed women by the duration of unemployment it concerned the age of 25–64 and unemployment lasting for 12–17 months. With the number of the unemployed by the type of employment sought indicator we can refer to women who used to work full time or part time. In the case of the number of unemployed by individual jobs, this correlation was found for women working as machinists, machine operators and assemblers. In terms of regions there was the unemployment rate indicator at the age of 15 and more and 20–64 in the West Slovakia region. The number of the unemployed by regions at the age of 15 and more indicator suggests that in this context we can talk about the West Slovakia region. The long-term unemployment rate in terms of regions suggested there was this type of correlation

present in the West Slovakia region. The **negative correlation** was localised when we considered the ways of registration and benefit payment for the unregistered unemployment without benefit payment indicator at the age of 25–59. For the long-term unemployment these were men aged 50–54.

Recommendations for the economic policy measures are difficult and problematic, as judging by the character of the correlation coefficient, the effect of the increase of the minimum wage leads to the increase in the unemployment rate and the number of the unemployed, with the exception of Slovakia. Apart from that, the increase of the minimum wage has a different effect in different countries according to age, sex, duration of unemployment, way of registration and the fact whether the unemployed receives benefits or not, type of the employment contract, occupation, education and region.

Appendix

Table 1: An overview of positive and negative correlations and assessment of the intensity of the minimum wage effect on selected unemployment indicators

Indicator/ V4 Country	Positive correlation and assessment of the effect intensity		Negative correlation and assessment of the effect intensity	
Czech Republic	**0.46**	**Weak**	**0.42**	**Weak**
NEET rates	0.45	Weak	X	X
Unemployment by duration of unemployment	0.74	Medium	X	X
Unemployment by duration of unemployment and distinction registration/ benefits	0.65	Medium	X	X
Unemployment by type of employment sought	X	X	0.47	Weak
Previous occupations of the unemployed	0.16	Very weak	X	X
Long-term unemployment as a percentage of the total unemployment	0.58	Medium	X	X
Unemployment rate by education attainment level	0.38	Weak	X	X
Unemployment rate by sex and age	0.32	Very weak	X	X
Long-term unemployment rate by regions	0.36	Weak	X	X
Number of unemployment by regions	X	X	0.41	Weak
Unemployment rate by regions	X	X	0.37	Weak

Source: Eurostat, our own calculations.

Table 2: An overview of positive and negative correlations and assessment of the intensity of the minimum wage effect on selected unemployment indicators

Indicator/ V4 Countries	Positive correlation and assessment of the effect intensity		Negative correlation and assessment of the effect intensity	
Slovakia	**0.56**	**Medium**	**0.64**	**Medium**
NEET rates	0.70	Medium	X	X
Unemployment by duration of unemployment	0.52	Medium	X	X
Unemployment by duration of unemployment and distinction registration/ benefits	X	X	0.77	Strong
Unemployment by type of employment sought	0.49	Weak	X	X
Previous occupations of the unemployed	0.47	Weak	X	X
Long-term unemployment as a percentage of the total unemployment	X	X	0.51	Medium
Unemployment rate by education attainment level	0.70	Medium	X	X
Unemployment rate by sex and age	0.70	Medium	X	X
Long-term unemployment rate by regions	0.45	Weak	X	X
Number of unemployment by regions	0.50	Medium	X	X
Unemployment rate by regions	0.51	Medium	X	X

Source: Eurostat, our own calculations.

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