Wages in Czech Agricultural, Industrial and Construction Sectors

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Abstract: - The present paper focuses on the development of wage distribution in the Czech Republic in the period shortly before, during and after the global economic crisis. Special attention is paid to wage development in the agricultural sector and its comparison with the industrial and construction sectors' wage levels. The article deals with the development of statistical characteristics of the level, variability and concentration in the given period, mentioning the changes in these characteristics in the course of the economic recession. Since the relationship between the wage levels in the agricultural, industrial and construction sectors is monitored in other countries as well, the research topic can be analyzed within the whole European context, a comparison of the wage levels in the Czech Republic and other countries being drawn.

Key-Words: - Global economic recession, development of wage distribution, agricultural sector, industrial sector, construction sector, wage levels in European countries

1 Introduction

The economic situation of Czech farmers and their position within the European Union has been widely debated recently; e.g. in [1], dealing with a particular agricultural aspect of the issue. The present paper focuses on the wage development in the Czech agricultural sector in the period prior to, during and after the global economic recession. The wage development in the above sector is compared to that in two other selected economy areas, namely the industrial and construction sectors, all three chosen fields employing almost 40 percent of people in the economy; see Table 1. Moreover, wages in the industrial and construction sectors do not differ markedly from those within other economy areas, even in comparison to the wage levels both in higher- (finance and insurance, IC) and lower-paid (e.g. accommodation, food services) sectors. The research explores wage distributions in the period between 2003 and 2013.

Fig. 1 informs about an average number of employees (in thousands) divided by the agricultural, industrial and construction sectors (transposed to fully-employed persons) in the period 2005–2013, Fig. 2 providing information on survey sample sizes. We can see from these two figures that the industry is the most proportionally represented sector.

Wage and income development and distribution has become the subject of research by numerous Czech and foreign authors in recent times. As examples, we can mention [2]–[13]. The issue of wages is also closely related to the development of other key economic indicators, such as inflation, see [14], and the standard of living (the level and differentiation of wages and incomes being one of its quantifiable indicators; see [15]), additional issues of labour market being dealt with in, e.g. [16].

Different techniques can be employed when estimating the parameters of various curves and distributions; see [17]. In this paper, the method of L-moments of parameter estimation was used; see [18] or [19]. Three-parameter lognormal curves represent the basic probability theoretical distribution; see [20], simple descriptive characteristics used in the calculations being explained in [21]. The key variable in this study is the gross monthly (nominal) wage (in CZK).

The data for the calculations are taken from the official website of the Czech Statistical Office, namely "Employee ratios according to gross monthly wage bands divided by economy sectors", the survey sample information being drawn from "Numbers of employees and their average gross monthly wages classified by sectors and educational attainment". Staff numbers in particular sectors

come from the "Employment and wages" table. All the data are for the period 2003–2013.

Table 1. Ratios of employees (in %) in Czech agricultural, industrial and construction sectors (taken together) to the number of all employees in all sectors of Czech economy

Year	2003	2004	2005	2006
Ratio	48.78	39.31	39.26	38.25
Year	2007	2008	2009	2010
Ratio	39.83	38.97	37.69	37.52
Year	2011	2012	2013	2011
Ratio	37.75	39.89	39.59	37.75

Source: Own research

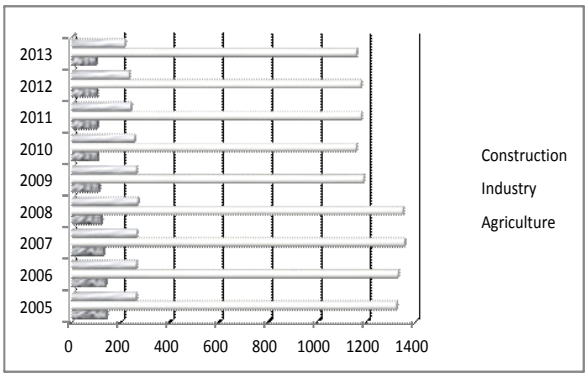

Fig. 1. Average number of employees (in thousands) divided by agricultural, industrial and construction sectors (transposed to fully-employed persons) in 2005–2013

Source: www.czso.cz

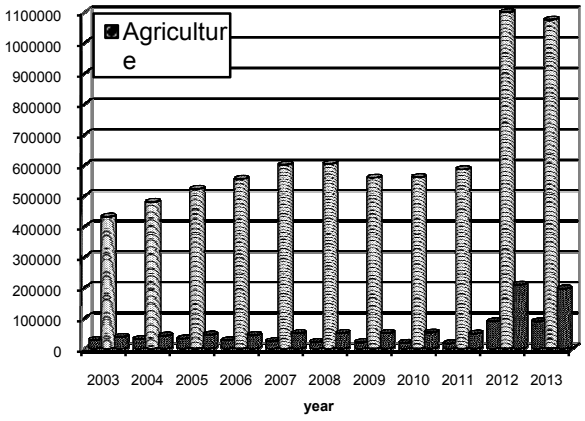

Fig. 2. Survey sample sizes

Source: www.czso.cz

It is to be noted that the results obtained may be, to a certain extent, affected by changes in the methodology. Consistent time series were not available for the whole research period, the Sector Classification of Economic Activities (valid over the years 2003–2008) having been replaced by the Classification of Economic Activities (2009–2013). It is also worth mentioning that CSO data do not distinguish between "wage" in private and "salary" in public sectors, i.e. both are covered by the term "wage". The figures from the Czech Statistical Office were supplemented by the Eurostat and Trexima company data

The data were processed using Microsoft Excel spreadsheet and SAS and Statgraphics statistical program packages.

2 The Economic Cycle

The economic cycle is a time pattern of regularly repeated stages of growth and decline in real GDP, employment dynamics, private and public consumption, investments and other economic activities. It is a never stopping cycle during which the respective phases follow in a foreseeable sequence. As shown in Fig. 3, the economic cycle consists of alternating periods of expansion (an economy recovering and growing noticeably) and contraction (hitting the bottom during a recession).

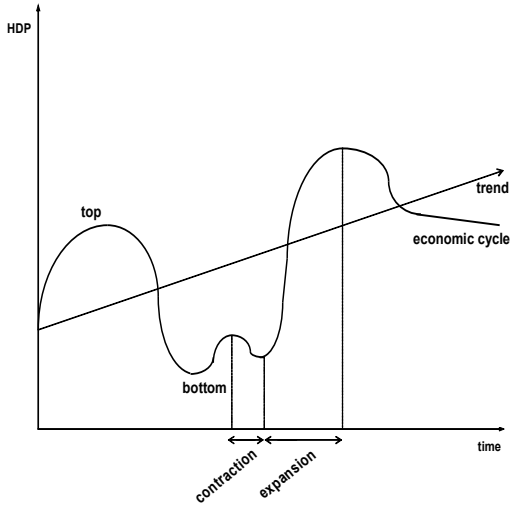

Fig. 3. Economic cycle phases

Source: [22]

If the economy is in the expansion phase, a country's real GDP and other macroeconomic variables grow markedly. The households and the government, therefore, boost their demand for goods produced by companies that respond by an increase in the production output. So that the companies can manufacture and sell more, they need to expand their production capacity by hiring new staff, increasing the capital and developing other production factors. Employment rises in the

economy, because part-timers and people who are out of job can find enough vacancies. Although the wage rates do not grow considerably yet, people dispose of sufficient income due to a higher number of hours worked, using their earnings to purchase consumer goods. Profits of established firms grow, a further expected increase in the average profit rate leading to the launch of new start-ups. Manufacturers are utilizing the existing capital goods (buildings, machinery, equipment), negotiating commercial loans for new production facilities. Banks that did not have enough loan applicants in the past start to thrive, making higher profits. In an expanding economy, the consumption and investments are on the rise.

However, an upward spiral in corporate and bank profits as well as wages and household incomes cannot rise forever. In the boom period, when the economy is at the peak of its activity, cost pressures begin to assert themselves, forcing manufacturers to raise their prices. Idle production facilities are mostly out of operation and companies – in an effort to fill in their vacancies – try to recruit retirees as well as staff of competing firms in exchange for higher hourly earnings. This in turn increases the cost of production and reduces its profitability. The households spend (on average) increasingly higher income, purchasing more consumer goods and taking out mortgages on housing, cars and other durable goods without restraint. However, sharply increasing household consumer appetite lowers the saving rate in the economy, financial products provided by the banks thus becoming more expensive. Higher prices of credits reduce the profitability of production that is further lowered by rising raw material costs, reflecting an intensified competition among loan applicants. The households – in expectation of ever rising income and being burdened by mortgages to be paid off soon – face a steady increase in prices of consumer goods. Rising production costs are reflected in the prices of products and services provided. The booming economy seems to bear superficial signs of prosperity, but intense market activities and a high level of employment, wages and prices obscure the deepening economic breakdown.

The contraction of economic activity may be seen as a healing reaction of an economy to the previous period of excessive optimism and consumption/production expansion. GDP as well as the values of other macroeconomic variables shrink. Living costs rise progressively, the households are reluctant to purchase durables, unsold stock filling up the warehouses of automobile manufacturers and building companies. Household demand for all types of products and services decreases steadily with increasing prices, the decline not being that pronounced in the case of foodstuffs or electricity as in the case of cars and real estates. Firms try to respond by clearance sales at lower prices and more cost-efficient production. They make some workers redundant, get rid of unnecessary properties and do not apply for new corporate loans. Since they are bound by wage agreements and have to pay interest on the existing loans, they do not succeed in reducing their expenditures swiftly enough in order to stabilize their profits. The decline in the rate of profit forces some companies to cut back on the production and business expenses. Investments are hampered and banks lose solvent trustworthy clients, suffering increased losses on unsettled loans and transactions. This is partly due to aggravating unemployment, partly the result of a gradual reduction in wage rates, both these factors causing the decline in consumer demand.

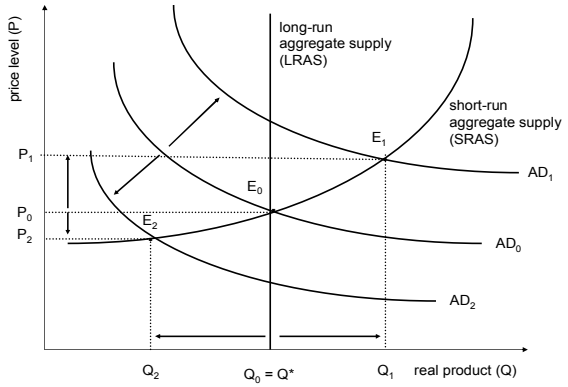

Fig. 4. Change in aggregate demand and the behavior of price level

Source: [22]

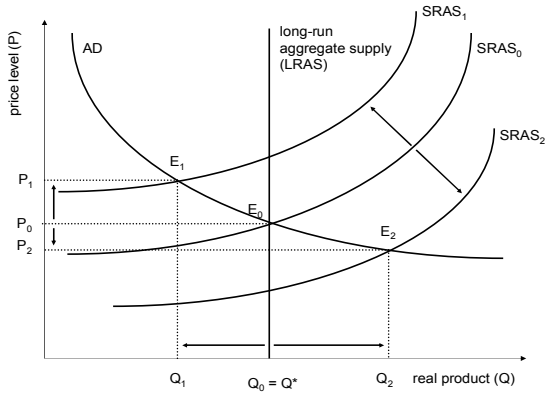

Fig. 5. Change in aggregate supply and the behavior of price level

Source: [22]

Falling prices of products and services alongside with declining prices of production factors drive the economy from the contraction to the depression phase. At this stage of economic cycle, unemployment is rather high, consumers and potential investors' expenses stagnate at a very low level, pessimism and risk aversion dominating the overall economy. Impoverished households wait for the prices to go down, postponing their purchases. Firms have pessimistic expectations, not believing in an imminent increase in demand for their products. Banks have few prospective clients, preferring not to lend to high-risk borrowers. Meager profits significantly reduce the number of businesses and banks in the economy, so that only the best-performing ones can continue to operate. The threat of bankruptcy, however, motivates company managements to rationalize and streamline business processes. Unemployment is partly compensated by a low price level. Some households increase their shopping bills again. The revitalized firms can respond flexibly, gradually taking on new staff and investing in modern facilities. Banks start extending credits again. The economy bounces back from the bottom and the economic cycle enters another phase of expansion.

The economic cycle can start by changes in aggregate demand (AD) or supply (AS). In Figs. 4 and 5, abbreviations LRAS and SRAS stand for long-run and short-run aggregate supply, respectively. If the economic cycle begins with changes in aggregate demand, the price level (P) will grow in the phase of expansion and decline during the contraction. Such a behavior of the price level is called pro-cyclical; see Fig. 4. The economic cycle can also start by changing aggregate supply. Here we ignore the situation when a sustained increase in the production potential of the economy occurs due to the discovery of new mineral resources. The production costs of companies grow or decline, reflecting fluctuations in the prices of available factors of production and causing adaptive responses that result in a change in the volumes of goods and services provided. Changes in production costs are indicated by the SRAS curve shifts; see Fig. 5.

3 The Wage Development in Agricultural, Industrial and Construction Sectors

Fig. 6 allows us to compare the average gross monthly wage in the industrial and construction sectors with that in the agricultural sector. Similarly, Fig. 7 enables a comparison of middle gross monthly wages in the above sectors. It is clear from these figures that the wage levels in the industrial and construction sectors are close to each other, while the level of wages in the agricultural sector is considerably lower in comparison to the former sectors. It is also obvious that in the period of global economic crisis, the growth of wage levels in all the three sectors virtually stopped, the earnings having fallen sharply in 2011, particularly in the construction sector. An upward trend in the wage development over the following years is much slower than before the recession, which is shown in Table 2. It follows from this table that in the pre-crisis years the average gross monthly wage in the agricultural, industrial and building sectors increased by averages of 7.36, 6.06 and 6.44 percent per annum, the middle gross monthly wage in the respective sectors rising by 7.98, 5.76 and 6.98 percent on average. In the period 2011–2013, on the other hand, the average gross monthly wage increased on average only by 2.10 and 1.42 percent a year in the agricultural and industrial sectors, respectively, in the construction sector even decreasing by average of 4.07 percent.

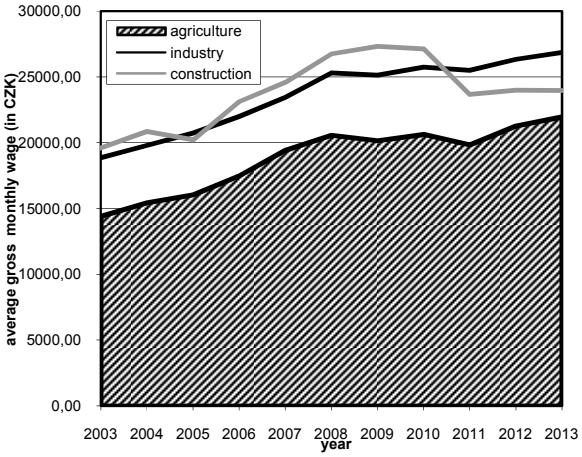

Fig. 6. Average gross monthly wage (in CZK) according to the sectors

Source: Own research

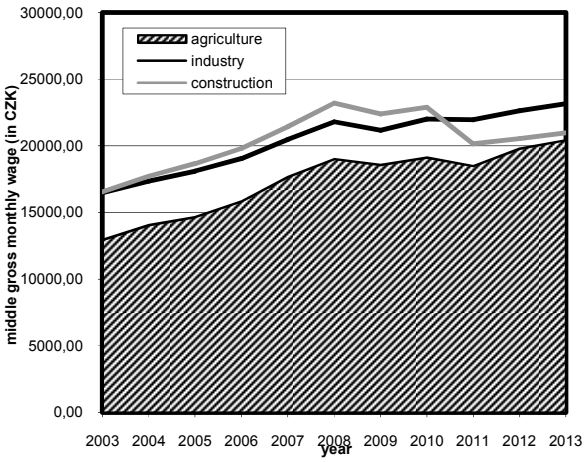

Fig. 7. Middle gross monthly wage (in CZK) according to the sectors

Source: Own research

Table 2. Annual increase (+) or decrease (-) in the level of gross monthly wage (in %)

	Agriculture		Industry	
Year	Mean	Median	Mean	Median
2003	–	–	–	–
2004	7.05	8.53	5.03	5.38
2005	3.92	4.31	4.65	4.30
2006	9.06	8.05	6.08	5.25
2007	11.10	11.45	6.55	7.58
2008	5.82	7.66	8.02	6.35
2009	-2.00	-2.36	-0.69	-2.83
2010	2.39	3.01	2.45	3.87
2011	-3.86	-3.36	-1.05	-0.18
2012	7.26	7.11	3.33	3.10
2013	3.21	3.19	2.04	2.27
Ø 2003-08	7.36	7.98	6.06	5.76
Ø 2008-11	0.52	1.14	2.12	1.74
Ø 2011-13	2.10	2.22	1.42	1.72
Ø 2005-13	4.30	4.66	3.60	3.46

	Construction	
Year	Mean	Mean
2003	–	–
2004	6.43	6.43
2005	-3.09	-3.09
2006	14.39	14.39
2007	6.38	6.38
2008	8.87	8.87
2009	2.10	2.10
2010	-0.66	-0.66
2011	-12.87	-12.87
2012	1.43	1.43
2013	-0.10	-0.10
Ø 2003-08	6.44	6.44
Ø 2008-11	-0.96	-0.96
Ø 2011-13	-4.07	-4.07
Ø 2005-13	2.04	2.04

Source: Own research

As already mentioned above, the wage level in the agricultural sector is significantly lower than in the sectors of industry and construction. In Tables 3 and 4, μ_A, μ_I and μ_C denote the expected values in the respective sectors. The null hypothesis of an equality of the expected values in the two corresponding sectors has been tested against an alternative hypothesis that the expected value in one sector is below that in another sector. The average gross monthly wage in the agricultural sector is lower than that in the industrial and construction sectors (left-sided alternative figures in Table 3) and the average gross monthly wage in the industrial sector is lower than that in the construction sector in 2003, 2004, 2006, 2007, 2008, 2009 and 2010 (left-sided alternative in Table 4), contrary to the years 2005, 2011, 2012 and 2013 (right-sided alternative in Table 4).

Table 3. Hypothesis testing of the equality of expected values $\mu_A = \mu_I$ and $\mu_A = \mu_C$

Agriculture – Industry		
Year	Alternative hypothesis	Test criterion
2003	$\mu_A < \mu_I$	-93.694
2004	$\mu_A < \mu_I$	-96.308
2005	$\mu_A < \mu_I$	-105.493
2006	$\mu_A < \mu_I$	-83.180
2007	$\mu_A < \mu_I$	-64.951
2008	$\mu_A < \mu_I$	-66.671
2009	$\mu_A < \mu_I$	-69.214
2010	$\mu_A < \mu_I$	-67.926
2011	$\mu_A < \mu_I$	-75.214
2012	$\mu_A < \mu_I$	-134.962
2013	$\mu_A < \mu_I$	-136.676
Agriculture - Construction		
Year	Alternative hypothesis	Test criterion
2003	$\mu_A < \mu_C$	-58,878
2004	$\mu_A < \mu_C$	-60.559
2005	$\mu_A < \mu_C$	-47.422
2006	$\mu_A < \mu_C$	-51.851
2007	$\mu_A < \mu_C$	-50.856
2008	$\mu_A < \mu_C$	-52.955
2009	$\mu_A < \mu_C$	-44.361
2010	$\mu_A < \mu_C$	-45.876
2011	$\mu_A < \mu_C$	-32.923
2012	$\mu_A < \mu_C$	-48.509
2013	$\mu_A < \mu_C$	-41.616

Source: Own research

In Table 3, all alternative hypotheses are left-sided, thus the critical range at a 5% significance level is $W_{0.05} = \{u: u \leq -1.645\}$ and at a 1% significance level $W_{0.01} = \{u: u \leq -2.326\}$. Critical ranges for hypothesis tests are included in Table 4. There are always two independent samples. Because of the large sample sizes, the test criterion

$$U = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}}$$

has an asymptotically standardized normal distribution assuming the null hypothesis is true. In this formula, $\bar{x}_1$ and $\bar{x}_2$ denote the averages and s_1^2 and s_2^2 the variances in the first and second sample, respectively, n_1 and n_2 indicating the sample sizes.

Table 4. Hypothesis testing of the equality of expected values $\mu_I = \mu_C$

Industry – Construction		
Year	Alternative hypothesis	Test criterion
2003	$\mu_I < \mu_C$	-9.054
2004	$\mu_I < \mu_C$	-12.555
2005	$\mu_I > \mu_C$	6.702
2006	$\mu_I < \mu_C$	-11.147
2007	$\mu_I < \mu_C$	-13.083
2008	$\mu_I < \mu_C$	-14.423
2009	$\mu_I < \mu_C$	-14.413
2010	$\mu_I < \mu_C$	-10.899
2011	$\mu_I > \mu_C$	19.490
2012	$\mu_I > \mu_C$	47.615
2013	$\mu_I > \mu_C$	70.593
Year	Critical range at 5% significance level	Critical range at 1% significance level
2003	$W_{0.05} = \{u: u \leq -1.645\}$	$W_{0.01} = \{u: u \leq -2.326\}$
2004	$W_{0.05} = \{u: u \leq -1.645\}$	$W_{0.01} = \{u: u \leq -2.326\}$
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2013	$W_{0.05} = \{u: u \geq 1.645\}$	$W_{0.01} = \{u: u \geq 2.326\}$

Source: Own research

With respect to the results shown in Table 3, it is clear that all the tests are significant, which is mainly due to large sizes of both random samples. The test of such a high power almost always leads to the rejection of the null hypothesis of equality of the expected values in both the sectors, even at a 1% significance level. We can, therefore, conclude that the level of wages in the agricultural sector is significantly lower than that in the industrial and construction sectors in the period 2003–2013. Likewise, all the tests in Table 4 came out significant as well, even at a 1% significance level, although the differences between sample wage averages in the industrial and construction sectors are not as striking as those of these two sectors compared with sample average wages in the competing agricultural sector; see Fig. 6. Thus we can draw the conclusion that the level of wages in the industrial sector is significantly lower than that in the construction sector in the years 2003, 2004 and 2006–2010. In 2005, 2011−2013, on the other hand, the level of wages in the industrial sector is significantly higher than that in the construction sector.

Fig. 8 shows the development of the quarterly time series of gross monthly wages in the three analyzed sectors. Seasonal variations in these quarterly time series of wages are the most evident in the construction and agricultural sectors. They are not avoided – however unnoticeable they may be – in the industrial sector either.

Figs. 9–11 indicate the development of a theoretical (model) wage distribution in time. There are three-parameter lognormal curves with parameters estimated employing the method of L-moments. The three-parameter lognormal distribution is the most common probabilistic approach used in modeling wage and income distributions. The advantages of the method of L-moments are known from the statistical literature; see, e.g. [18]. This method provides point parameter estimations that are sometimes even more accurate than those made by the maximum likelihood method. It is to be noted that there is the same scale on the vertical axis for all the three Figs. 9–11. A very similar development of wage distribution in the industrial and construction sectors can be observed from Figs. 10–11. If we, however, compare the wage development in these two sectors with that in the agricultural sector, we can report completely different findings in the latter. Since the wage distributions in the agricultural sector are characterized by large skewness and kurtosis, more workers earn much lower wages than in the

industrial and construction sectors. Wage distributions in the industrial and construction sectors, on the other hand, are much less skewed with very small kurtosis.

Table 5. Average gross monthly wage (in CZK) for the selected professions/jobs in agricultural sector in 2013

Profession/job	Wage
Milkmaid	15,997
Breeder, nurse of animals	14,766
Tractor driver, combine driver	21,839
Agricultural engineer, agronomist	25,320
Agricultural technician	20,864
Agricultural technologist	28,833
Zoo technician	22,575

Source: Own research

Interestingly, Table 5 provides an overview of the average gross monthly wage in the selected professions in the agricultural sector. As expected, agricultural technologists, engineers and agronomists achieve the highest, while breeders, nurses of animals and milkmaids earn the lowest average gross monthly wages.

Fig. 12 provides an overview of the concentration of gross monthly wage in the three sectors. The values of the Gini coefficient in Fig. 12 are expressed in percentages, moving from zero percent for extreme leveling (so-called zero concentration; this could theoretically occur if every employee had the same gross monthly wage) to a hundred percent for extreme differentiation (maximum concentration; the whole amount of wages is paid to one employee).

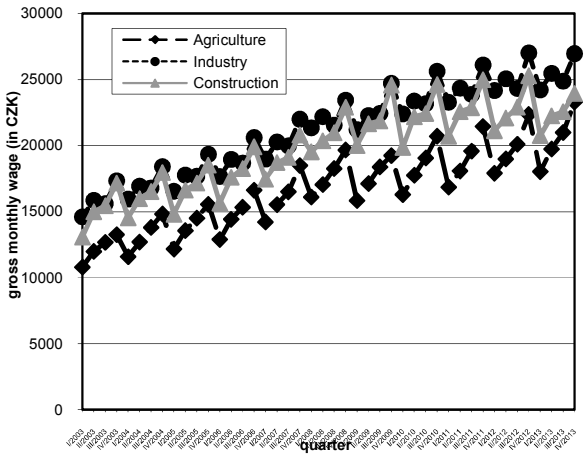


Fig. 8. Development of average gross monthly wage (in CZK) in agricultural, industrial and construction sectors

Source: Own research

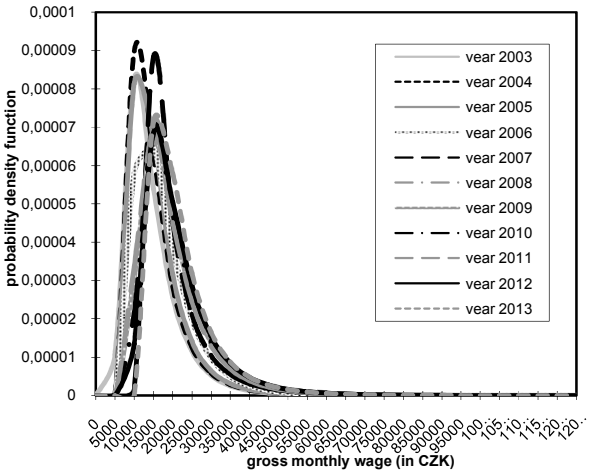


Fig. 9. Development of the probability density function in agricultural sector

Source: Own research

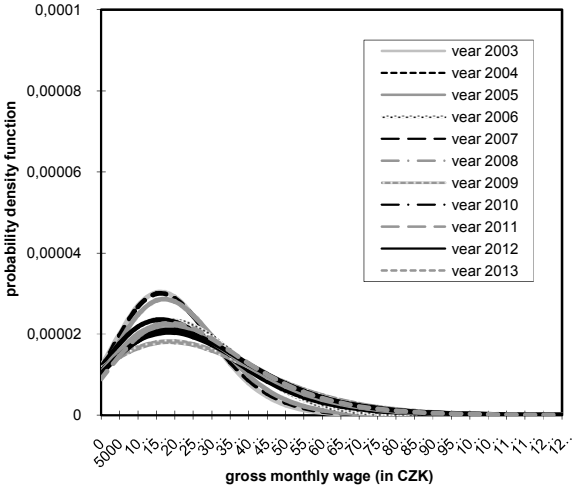


Fig. 10 Development of the probability density function in industrial sector

Source: Own research

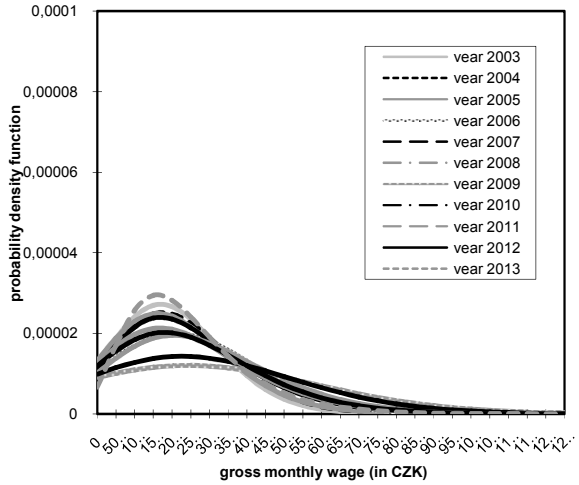


Fig. 11. Development of the probability density function in construction sector

Source: Own research

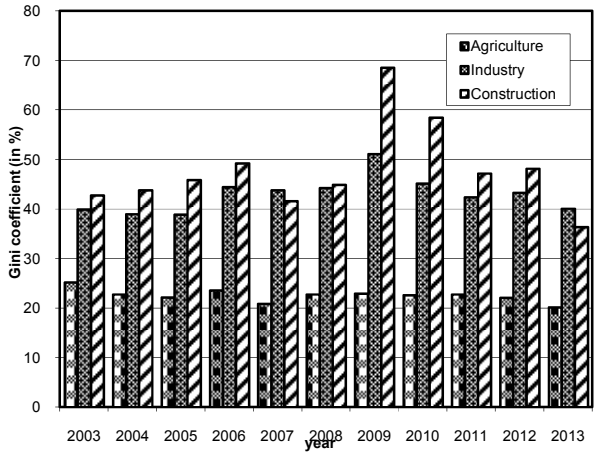


Fig. 12. Gini coefficient of concentration (in %)

Source: Own research

As expected, the smallest wage differences are reported among employees in the agricultural sector. On the other hand, a much higher concentration of wages is observable in the other two sectors, particularly in the construction sector, where the Gini coefficient reaches almost 70 percent in 2009. It is obvious from Fig. 12 that the beginning of the global economic downturn brought about a relatively large increase in the concentration of wages in all three sectors, the construction one in particular. This is due to high wages earned by employees who acquire the best educational qualifications or top job positions; see the figures for the year 2013 in Table 6. For example, the average gross monthly wage of executives in construction and surveying was 37,802 CZK, the middle gross monthly wage being 34,992 CZK. Average and middle gross monthly wages of construction engineers were 30,111 CZK and 29,096 CZK, respectively. Excavation workers, on the other hand, earn an average of 16,894 CZK in 2013, their middle wage amounting to only 16,635 CZK. Cleaners and house laborers earned 11,938 CZK on average, their middle wage being only 11,576 CZK.

Table 6. Average gross monthly wage and the middle gross monthly wage (both in CZK) in the selected professions/jobs in construction sector in 2013

Profession/job	Middle wage	Average wage
Executives in construction and surveying	34,992	37,802
Civil engineers	29,096	30,111
Construction architects	28,396	29,767
Construction technicians	25,740	26,484
Bricklayers, stove fitters, pavers and fitters of dry buildings	18,463	18,723
Carpenters and construction joiners	17,425	17,969
Skilled construction workers, building caretakers, fitters	18,678	19,106
Plumbers, pipe fitters, construction locksmiths and tinsmiths	19,036	19,630
Painters and paperhangers	17,693	17,600
Construction and operational electricians	19,914	20,265
Builder's laborers	16,017	16,093
Excavation workers and structural engineering workers	16,635	16,894
House cleaners and laborers	11,576	11,938

Source: Own research

Fig. 13 informs on the development of wage variability over the research period. Standard deviation is measured on the left (in CZK) and the coefficient of variation on the right axis. It is evident that the agricultural sector has the lowest absolute and relative variability of all three analyzed sectors, while the standard deviation of wages grows moderately until the beginning of the economic crisis, getting stabilized essentially with slight fluctuations afterwards. The variation coefficient shows a decreasing trend throughout the research period. Both absolute and relative variability are much higher in the industrial and construction sectors than in the agricultural sector, developing further on. Absolute and relative variability show an upward trend until the crisis period, then turning

downward. Developments of the standard deviation and the coefficient of variation are noteworthy in the construction sector in particular. We can observe a substantial growth in the recession period similar to the Gini coefficient, the value of the variation coefficient exceeding 100 percent in 2009 and 2010; thus the standard deviation is to be higher than the arithmetic mean. Then the values of both these characteristics revert to their before-crisis approximate levels.

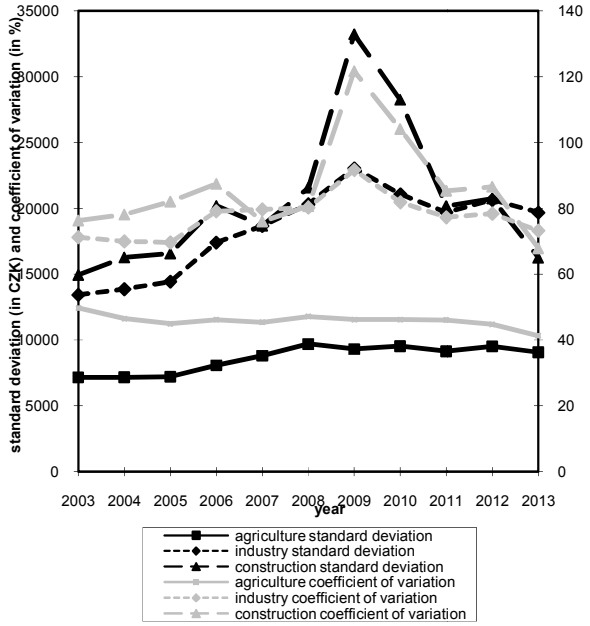


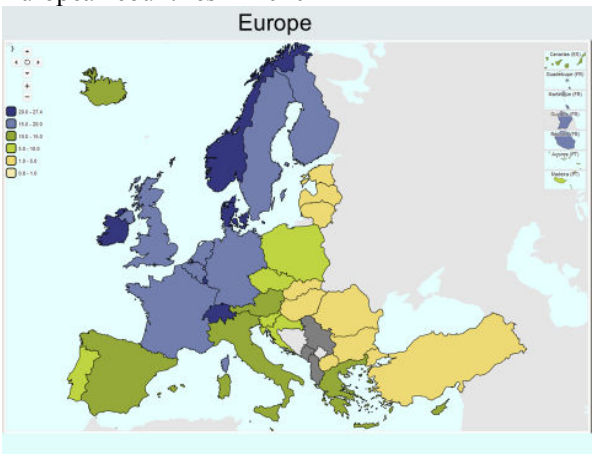
Fig. 13. Standard deviation – left axis (in CZK) and the coefficient of variation – right axis (in %) according to sectors

Source: Own research

4 Wages in European Countries

This paragraph gives an overview of the level of wages in the European countries (including Turkey whose territory extends beyond Europe), an official Eurostat website representing the source of essential data. Unfortunately, data for some European countries which were originally part of the former Yugoslavia (Serbia, Kosovo, Montenegro and Bosnia and Herzegovina) and Liechtenstein were missing. Only the data for the period ending in 2010 were available, those on gross monthly and hourly wages in the European states (including non-EU ones) and average gross monthly wages in the agricultural, industrial and construction sectors having been the subjects of the research. Within the agricultural sector, the "Skilled agricultural, forestry and fishery workers" database was used, which may override the level of wages in this sector to some extent. Moreover, data on the average wage in the agricultural sector in 2010 were lacking for some countries, e.g. Belgium, Croatia, Austria, Iceland and Switzerland. Attention was also focused on the average gross hourly wage, the nominal wage (in euros). (Some states, e.g. Norway, that have very high wage levels show high prices at the same time.) The countries are presented in the same order as they appear on the Eurostat website.

Fig. 14. Average gross hourly wage (in €) in European countries in 2010



Source: http://ec.europa.eu/eurostat

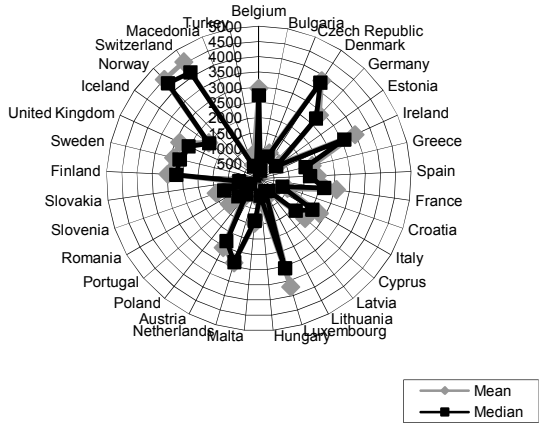
Fig. 14 provides an overview of average gross hourly wages in the European countries in 2010. Switzerland, Norway, Denmark, Luxembourg and Ireland have the highest, while Bulgaria, Romania, Macedonia, Lithuania, Latvia, Hungary, Slovakia, Estonia and Turkey report the lowest average gross hourly wages. The level of hourly wages in the Czech Republic is similar to that in Poland, Slovenia, Croatia and Portugal. The hourly wage level in countries like Finland, Sweden, the United Kingdom, Belgium, the Netherlands, Germany and France is higher than in, for example, Greece, Spain, Italy, Cyprus, Malta, Iceland and also, surprisingly, Austria.

Fig. 15 shows the average gross monthly wage and its median in individual European countries. The wage median is smaller than the arithmetic mean in all cases, indicating a positively skewed distribution, typical of wage distribution. The results in terms of the European level of gross monthly wages closely correspond to those regarding hourly wages.

Fig. 16 compares the wage levels in the agricultural, industrial and construction sectors in individual European states. We can observe

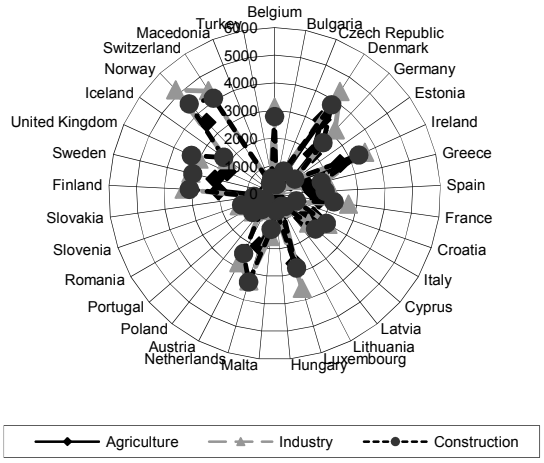
significantly lower average gross monthly wages in the agricultural sector in comparison to industrial and construction sectors in all the countries that provided the relevant data. The results show that the average gross monthly wage in the industrial sector is higher than that in the construction sector in most countries, namely Belgium, Bulgaria, Denmark, Germany, Ireland, Greece, Spain, France, Croatia, Italy, Lithuania, Luxembourg, Hungary, Malta, Austria, Poland, Romania, Slovenia, Slovakia, Finland, Sweden, Norway, Switzerland, Macedonia and Turkey. The average gross monthly wage in the construction sector exceeds that in the industrial sector only in eight countries – the Czech Republic, Estonia, Italy Cyprus, the Netherlands, Portugal, the United Kingdom and Iceland. For the Czech Republic, these results correspond to those (for 2010) in Fig. 6.

Fig. 15. Average gross monthly wage (in €) and the middle gross monthly wage (in €) in European countries in 2010



Source: Own research

Fig. 16. Average gross monthly wage (in €) in agricultural, industrial and construction sectors in European countries in 2010



Source: Own research

Further, the level of wages in the Czech Republic is slightly higher than in the Slovak Republic. In 2010, the average gross monthly wage was 907 € in the former, but only 777 € in the latter country, the middle gross monthly wage being 777 € and 653 €, respectively. The Czech Republic ranks very well among other post-communist countries in terms of average and middle wages, having the third highest average gross monthly wage (out of twelve countries; after Slovenia and Croatia).

5 Conclusion

Statistically, the level of gross monthly wage in the Czech agricultural sector is significantly lower than in the other two sectors of economy. The differences in the level of gross monthly wage between industrial and construction sectors are also statistically significant. However, this is probably due to the large sample sizes, which result in a high power of the test, thus leading to the rejection of the tested hypothesis. Furthermore, the relationship between the above sectors in terms of the level of gross monthly wage is changeable over time, both sectors reaching higher wage levels at certain times throughout the research period.

The global economic downturn brought about profound changes in the behavior of wage distribution, the growth of earnings having virtually stopped – a decline in both average and middle gross monthly wages in all three sectors analyzed having been reported even in 2011. With the recession subsiding, wages began to grow again, but in a much slower pace than in the before-crisis period. The economic downturn meant an increase in the concentration and variability, particularly in

the construction sector. It can be concluded that the behavior of the wage distribution in the agricultural sector is noticeably different from that in the other two sectors.

In an international comparison, the countries as Switzerland, Norway, Denmark, Luxembourg and Ireland have the highest level of the gross wage, both monthly and hourly, Bulgaria, Romania, Macedonia, Lithuania and Latvia, on the other hand, showing the lowest gross wage levels. The Czech Republic has a slightly higher wage level than the Slovak Republic, holding the third place among post-communist countries.

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