ABOUT WAGES IN THE CZECH EDUCATION AND HEALTHCARE SECTORS AROUND THE TIME OF GLOBAL ECONOMIC RECESSION

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Abstract

Wages in the Czech education and healthcare sectors have been a widely debated issue. The present paper deals with the development of wage differentiation in the period 2003–2013 with a focus on the changes during the global economic recession. The gross monthly wage in CZK (nominal wage) was the research variable of interest, 22 wage distributions in the education and healthcare areas having been examined. The analyzed wage distributions were compared with those for all employees in the Czech Republic. Basic data used in this study were drawn from the official website of the Czech Statistical Office. Certain problems arose due to the changes in the classification of economic activities during the research period, the wages between 2003 and 2008 being classified within the ISIC standards, those in the period 2009−2013 according to the NACE nomenclature. For this reason, consistent time series are not available for the whole period. This may distort the comparison since the worldwide economic downturn began just at the end of 2008. Additional data were taken from the websites of the Ministry of Education, Youth and Sport and the Ministry of Labor and Social Affairs (for the years 2012 and 2013) and Trexima Ltd. (2013).

Key words: Wage level, wage concentration, education sector, healthcare sector, worst-paid/best-paid professions

**JEL Code:** J31, G01, E24

Introduction

Wages in the Czech education and healthcare sectors have been a widely debated issue. The present paper deals with the wage development in the above two areas compared to that on the national scale before, during and after the global recession, focusing on recent earnings of Czech teaching and medical staff. Since the income of the latter is notably affected by overtime pay, the structure of wages in the health service sector is given proper attention. The development of the

wage levels and concentrations in both the sectors and their comparison with those in other areas is also considered, the professions with the lowest and highest earnings being highlighted.

In the statistical literature, numerous Czech and foreign authors address the issue of wage or income development, among the former ones, see, e.g. (Bartošová & Bártová, 2014), (Bartošová & Longford, 2014), (Malá, 2014), (Marek, 2013), (Marek & Vrabec, 2013) or (Pavelka, Skála & Čadil, 2014), The issue of wages is also closely related to the other economic areas, see, e.g. (Lánský, Kotěšovcová & Dlasková, 2015), (Lánský & Mareš, 2015), (Pavelka & Löster, 2013), (Pivoňka & Löster, 2014), (Pivoňka & Löster, 2013) or (Šimpach & Pechrová, 2013). Various techniques, processes and methods may be used in economic data processing, e.g. (Löster, 2014), (Malá, 2013), (Malec & Malec, 2013) or (Šimpach, 2012).

1 Economic cycle

Fig. 1: Phases of the economic cycle
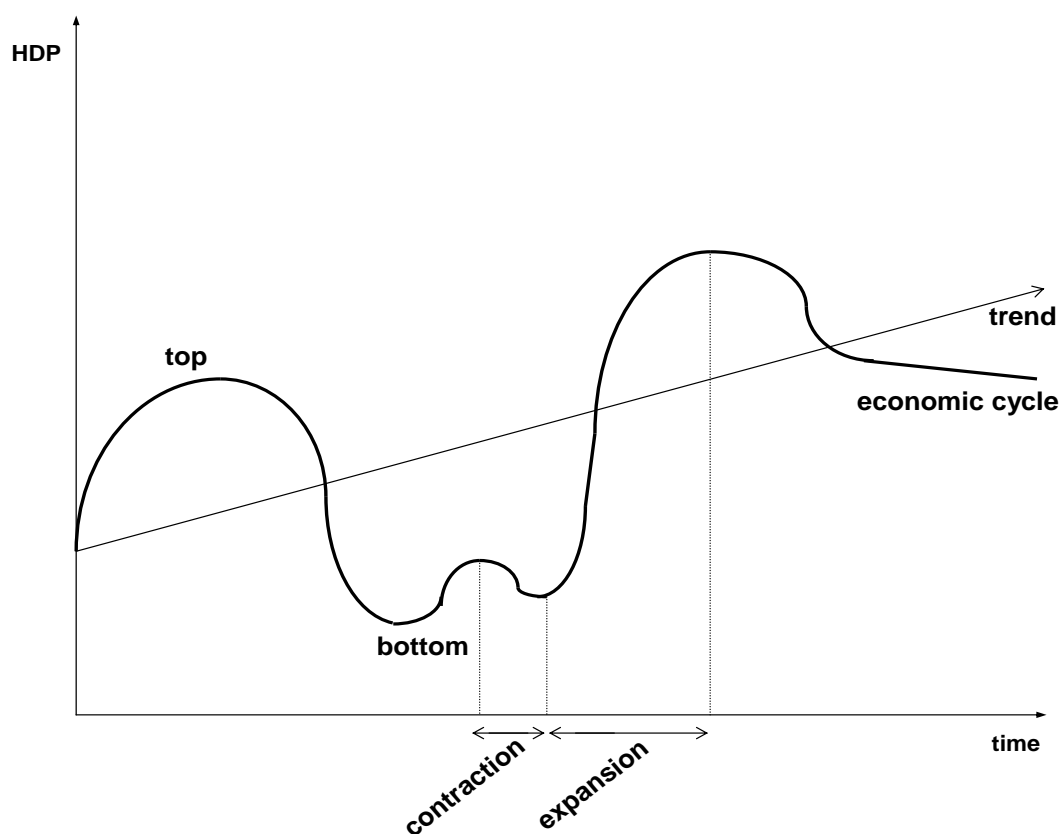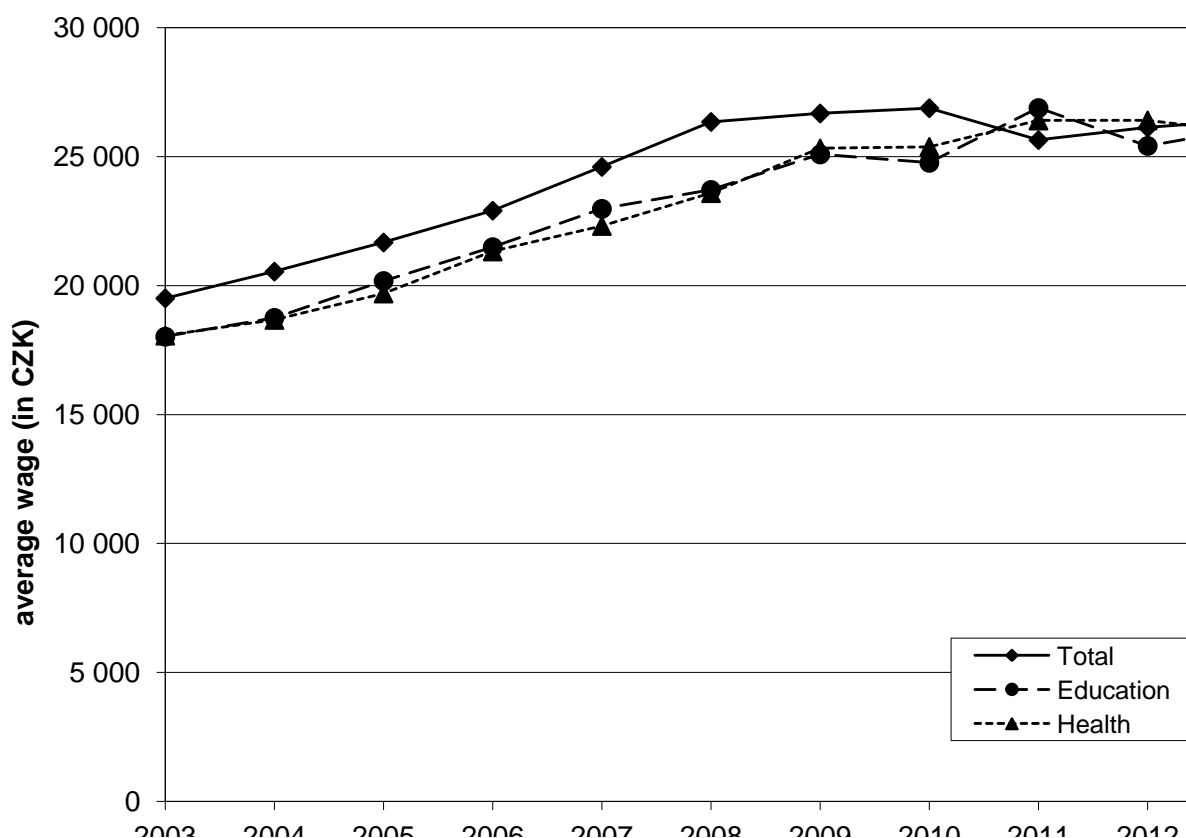

Source: own research

The economic cycle is a pattern of alternating trends that a country's economy tends to follow in a long term, these cyclical phenomena being different from short-term, temporary oscillations.

Having completed one cycle of ups and downs, the economy enters another one. Theoretically, it can be described as a sequence of four phases; see Fig. 1. This cyclical fluctuation is often measured by GDP and other macroeconomic indicators. The length of economic cycles differs depending on various factors.

2 Development of the wages in the Czech Republic between 2003 and 2013

Fig. 2 compares the development of the average gross monthly wage in both education and healthcare sectors with that of an aggregate of all employees in the Czech Republic. Fig. 3 shows the development of the coefficient of variation of gross monthly wage in both the analyzed sectors, again with the comparison of the coefficient of total wage variation.

Fig. 2: Development of the average wage in education and health (and social) care sectors in the Czech Republic between 2003 and 2013
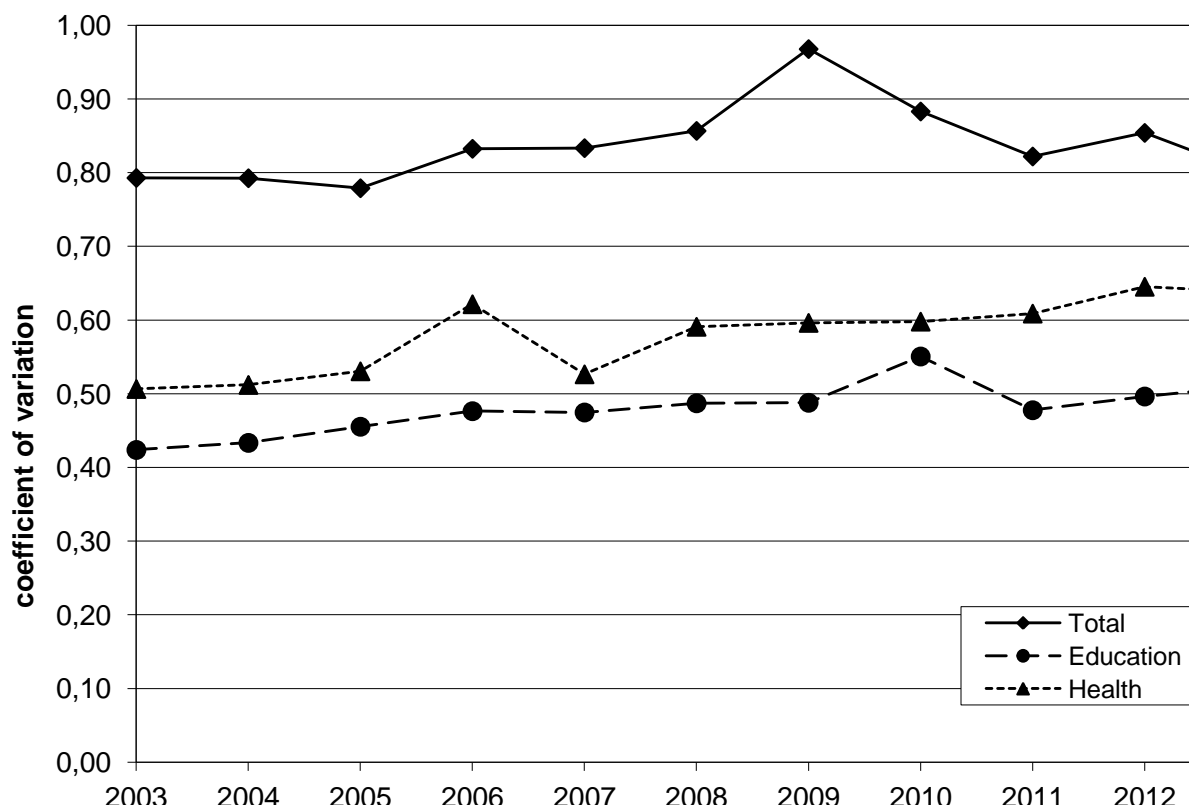

Source: own research

From Fig. 2, we can see a relatively sharp growth in the level of wages until 2009, while the average wage in both the sectors is markedly lower than that on a national scale. Wage growth in education and health care virtually stopped between 2009 and 2010, probably due to the global economic downturn. The wages in the two sectors increased again, in contrast to the national average wage, in the following period eventually reaching and even exceeding (in 2011)

the national average wage in the Czech Republic. It is evident from Fig. 3 that the relative variability of gross monthly wage in school and health systems is deeply under that of aggregate wages in the Czech Republic. However, certain caution is necessary when drawing conclusions from Figs. 2 and 3 owing to some changes in methodology during the monitored period; see below.

Fig. 3: Development of the wage coefficient of variation in education and health (and social) care sectors in the Czech Republic between 2003 and 2013

Source: own research

The average wage not being earned by approximately two-thirds of employees, Tab. 1 gives an overview of the growth of wage medians in the periods before, during and after the crisis. It shows the growth rate and the average growth rate of the median of gross monthly wage in the period 2003−2013, indicating a substantial decline in wage growth during the economic recession in the Czech Republic. Moreover, in 2011, the middle gross monthly wage decreased by 3.48 %, falling noticeably in the group of higher educated employees between 2010 and 2012. In the area of education and health care, the situation varies considerably. We can observe in Tab. 1 that at the beginning of the global downturn in 2009, the middle gross monthly wage increased by 5.37 % and 5.73 % in education and healthcare sector, respectively, wage growths

being still comparable. In 2010, however, the wages in the education system decreased by 2.62 %, while still slightly increasing (by 0.52 %) in the health service. The former sector showed a dramatic development in 2011 when the middle gross monthly wage rose by 11.40 %, while increasing only by 2.70 % in the latter area. In 2012, on the other hand, the median of gross monthly wage went down by 6.03 % in the educational sphere, while in the health sector it declined by less than 1 %. In the school system, the middle wage rose by 2.03 % in 2013, while it decreased by 1.97 % in the health sector. The table also indicates that between 2009 and 2011, the middle gross monthly wage decreased by 0.91 % a year on average, that of university-educated employees declining by 2.15 %. In this period, the level of wages was increasing in both the analyzed sectors – by 4.16 % and 1.60 % annually on average in the education and healthcare sectors, respectively. In the following period 2011−2013, the middle gross monthly wage decreased in both these areas, on average by 2.08 % per year in the former and 1.27 % in the latter sector, while the level of wages increased nationwide. The gross monthly wage in all four studied groups rose by around 3 % a year on average throughout the research period 2003−2013.

Tab. 1: The growth rate and average growth rate of gross monthly wage median in the Czech Republic between 2003 and 2013

Year	Set			
	Total	Tertiary education	Education	Health care
2003	−	−	−	−
2004	1.0582	1.0671	1.0432	1.0270
2005	1.0501	1.0550	1.0700	1.0511
2006	1.0493	1.0579	1.0539	1.0846
2007	1.0715	1.0725	1.0588	1.0440
2008	1.0629	1.0718	1.0271	1.0502
2009	1.0004	1.0167	1.0537	1.0573
2010	1.0172	0.9986	0.9738	1.0052
2011	0.9652	0.9589	1.1140	1.0270
2012	1.0189	0.9787	0.9397	0.9943
2013	1.0142	1.0188	1.0203	0.9803
Ø 2003−2009	1.0485	1.0566	1.0510	1.0522
Ø 2009−2011	0.9909	0.9785	1.0416	1.0160
Ø 2011−2013	1.0165	0.9985	0.9792	0.9873
Ø 2003−2013	1.0303	1.0288	1.0344	1.0317

Source: own research

Fig. 4: The median of gross monthly wage (in CZK) in all NACE sectors at the beginning of economic crisis (2009) and in 2013
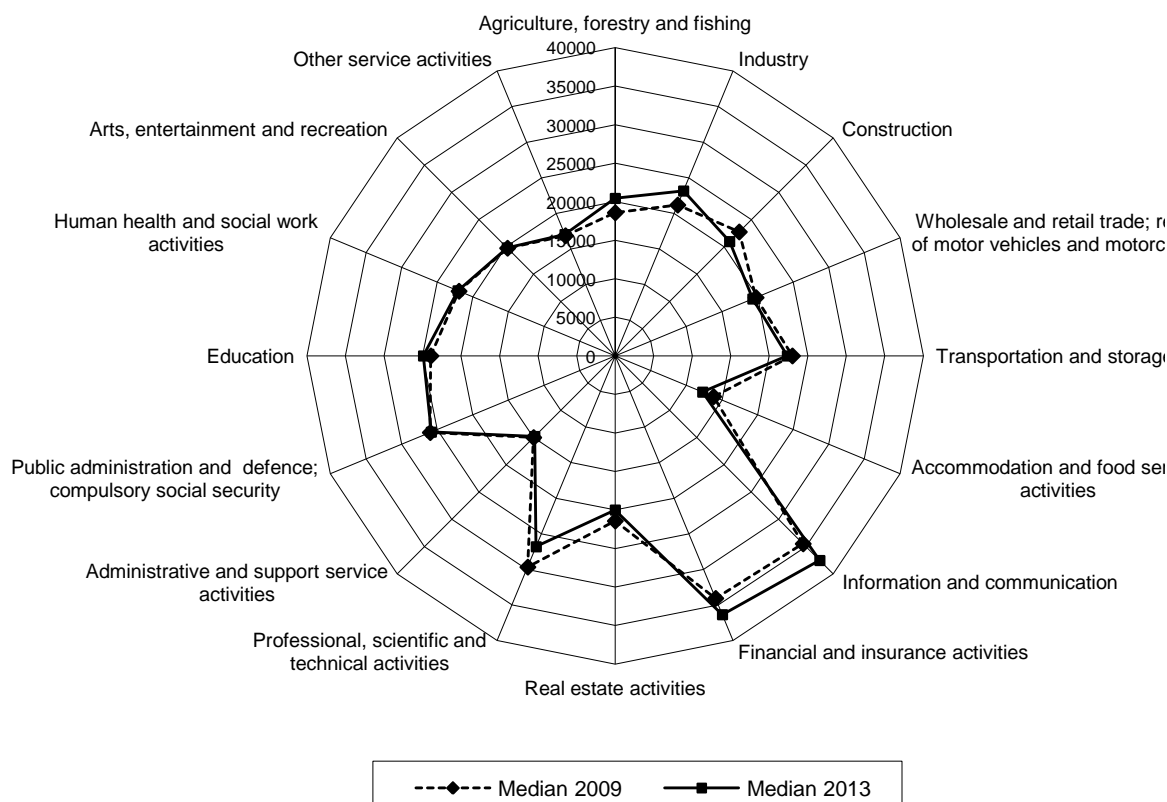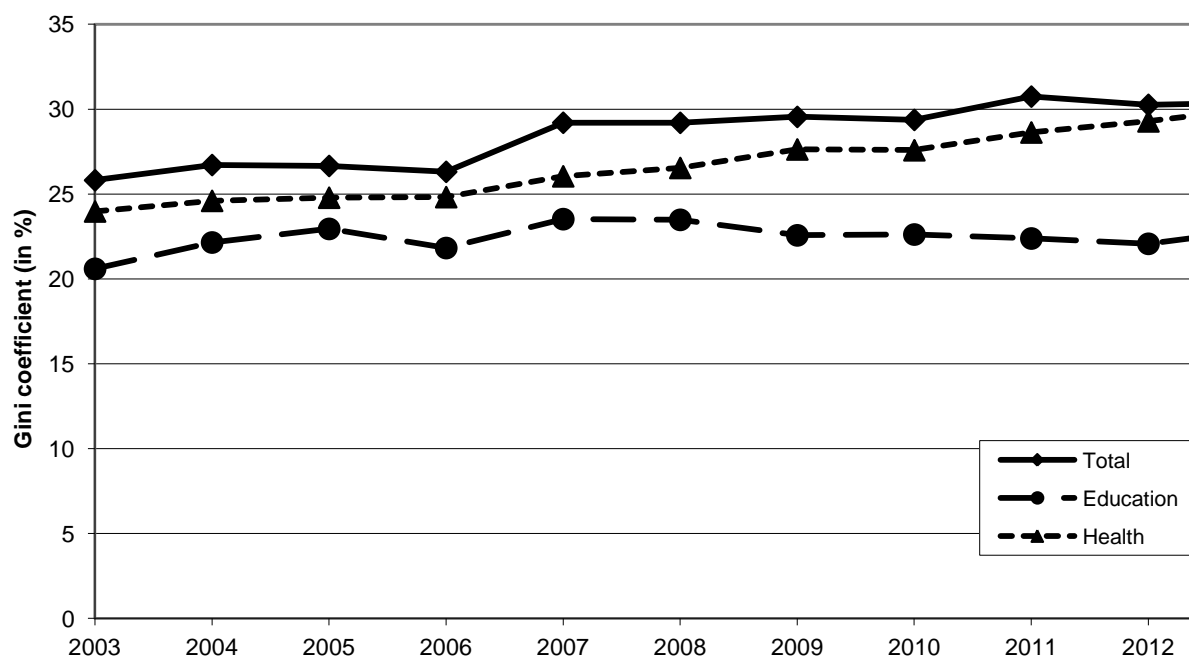

Source: own research

Fig. 4 allows a comparison of the middle gross monthly wage in education and health service with that in other sectors. We can see that the highest wages are earned in the sector of information and communication, the middle gross monthly wage being 34,483 CZK in 2009 and 37,539 CZK in 2013; certain downward bias may have been caused by the use of the interval frequency wage distribution with the same intervals for all sectors including those with the highest level of wage. The financial and insurance sector reports the second highest wage level with the median of 34,055 CZK and 36,344 CZK in the years 2009 and 2013, respectively. The employees in accommodation and food services, on the other hand, have the lowest level of wages, the median being 13,813 CZK and 12,276 CZK in the respective years. The second lowest middle gross monthly wage is recorded in administrative and support services, namely 14,980 CZK in 2009 and 14,783 CZK in 2013. In comparison with the above mentioned high- and low-paid sectors, the wages in education and healthcare areas are in the center of the scale – the middle gross monthly wage in the former being 23,928 CZK and 24,889 CZK and that in the

latter 21,949 CZK and 22,087 CZK in 2009 and 2013, respectively. The above mentioned figures are rather low in view that the majority of people employed in the two sectors are university graduates, the middle gross monthly wage of those with tertiary (2nd) degree being 35,220 CZK in 2009 and 33,626 CZK in 2013. This disproportion in earnings has been a constant focus of criticism by the Czech media and general public. (It is also observable from Fig. 4 that the wage level declined in eight out of all sixteen sectors between 2009 and 2013.)

Fig. 5: Development of the Gini coefficient of concentration in education and health (and social) care sectors in % in the Czech Republic between 2003 and 2013

Source: own research

Fig. 5 presents the development of the Gini coefficient of concentration in both monitored sectors over the period. The value of the Gini coefficient (in per cent) ranges from zero (extreme leveling – zero concentration – when all employees earn the same wage) to a hundred (extreme differentiation – maximum possible concentration – when one employee receives the entire wage). We can see from this figure that the employees in both these sectors have relatively evenly distributed wages compared to those earned nationwide. It is apparent that the pay of employees in the school system is spread more evenly than that of health care workers over the research period 2003−2013. While the concentration of wages in the healthcare area was growing steadily from 23.98 % to 30.11 % throughout the period, the development in the education sector was different. The concentration of wages in the latter area was increasing gradually (with a single dip) until the economic downturn. Then it started to slightly decline with the exception of the last year under review. On a national scale, the wage concentration shows an increasing tendency with a linear trend. Since the concentration of wages in the health sector was growing faster, it almost reached the national level in 2013.
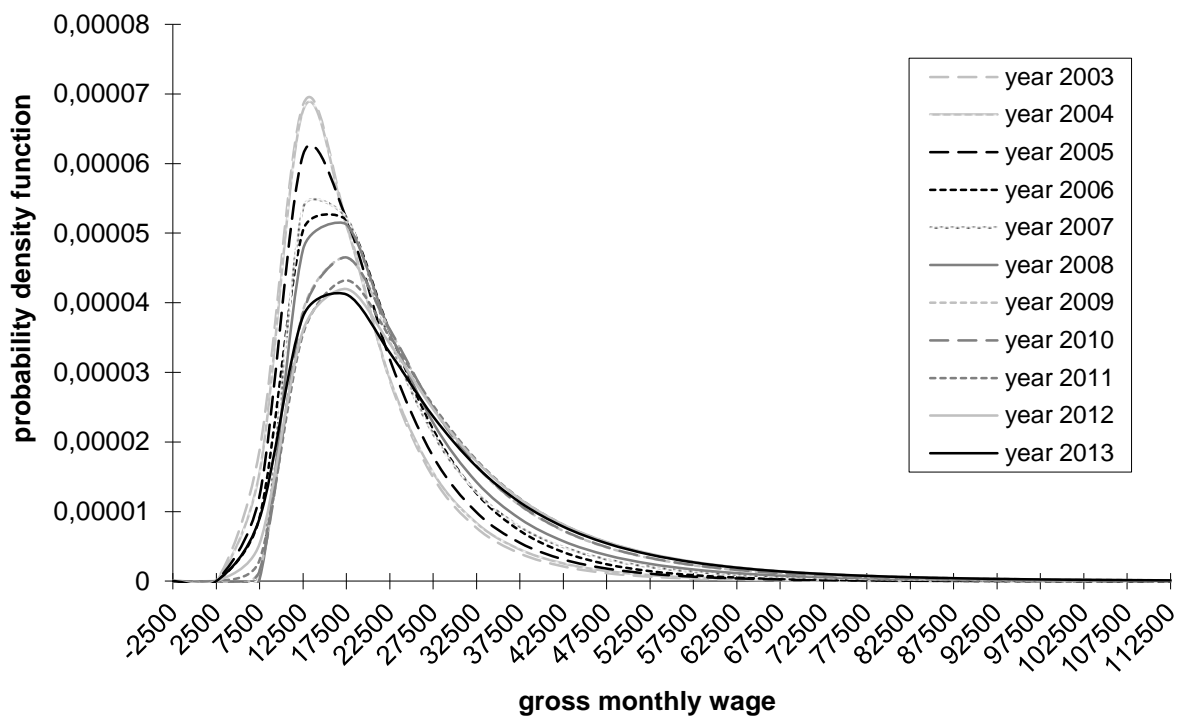
Fig. 6: Development of the model probability distribution of gross monthly wage (in CZK) in the education sector in 2003−2013
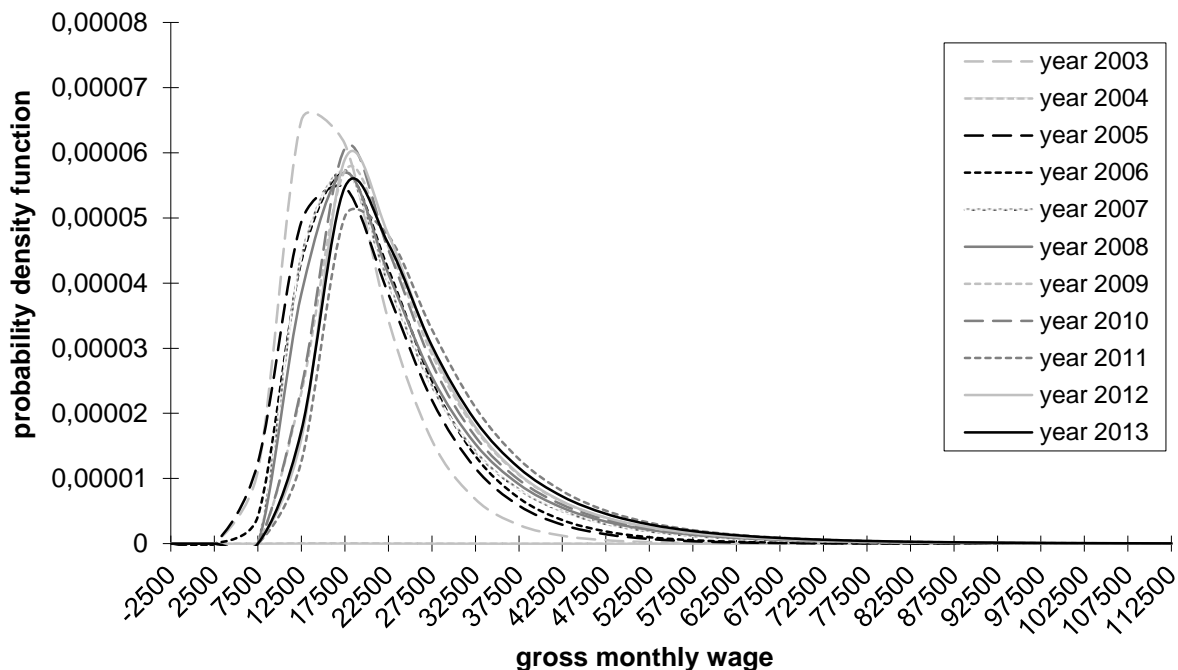
Source: own research

Fig. 7: Development of the model probability distribution of gross monthly wage (in CZK) in the healthcare sector in 2003−2013

Source: own research

Figs. 6 and 7 indicate the development of the model probability distribution in both the analyzed sectors in the monitored period. Because the data in the form of the interval frequency distribution with unequal interval widths were the source for calculations in this study, it was impossible to show the development of empirical frequency distribution. This is why the model probability distributions based on a three-parametric lognormal curve were constructed. The parameters of these curves were estimated using the L-moment method of point parameter estimation, which is known for its high accuracy.

It is evident from Figs. 6 and 7 that the wage distributions are moving slightly to the right, which is presumably due to an overall increasing wage level in both the sectors. The absolute wage variability increases gradually in time, skewness and kurtosis having a declining tendency.

3   The worst- and best-paid jobs in the Czech Republic

Czech employers are currently (i.e. in 2014) lacking about four thousand people who would be willing to do less qualified or unskilled jobs. Since they are badly paid ones, the vacancies distinctively exceed the number of applicants. Cleaners, waiters/waitresses and guards are the worst-paid jobs in the Czech Republic; see Tab. 2 presenting the middle wage of ten worst-paid occupations. The lowest middle gross monthly wage of cleaners was 10,125 CZK in 2013 including bonuses and sick leave compensations, a tenth of them having received only 8,836 CZK. (84,200 people are employed as cleaners in the Czech Republic, doing an energy-consuming, physically demanding job). However, despite the low wage and high work intensity, it is not an occupation that belongs among those with vacancies exceeding an interest of candidates. For example, in July 2014, employment agencies offered only 436 cleaner vacancies, which is the 16ᵗʰ highest number; the most (nearly 2,800) vacancies being offered to truck, bus and tram drivers. One of the reasons, why cleaner's work attracts more applicants compared to, for example, truck drivers, are markedly lower job and personal requirements. Apart from basic education or vocational certificate, employers sometimes require manual skills, three years of work experience, the knowledge of Russian or "sense of cleanliness and order". Nevertheless, the job of a cleaner has relatively demanding performance targets – an hourly quota being two hundred square meters. Thus, the cleaning staff have only six minutes for twenty square meters of office floor, including dusting the furniture and emptying the waste, the same time for cleaning the toilets, bathrooms and kitchens. Moreover, their job also includes long-term maintenance of the property, requiring proper application of cleansers and detergents.)

Generally, the job of a cleaner is undervalued by both the public and employers and, consequently, underpaid. Another badly paid job is that of a waiter/waitress – despite its demands on a long specialized training and experience, communication skills and shift work. The middle gross monthly wage was only 10,956 CZK in 2013. Again, a general underestimation of the job – sometimes increased by the amateurishness and prejudices of some restaurant and pub keepers distrusting their staff – is widespread. The same applies to the third lowest-paid occupation – security guards and watchmen. Although it is a physically and mentally demanding job with a threat of injuries or even permanent disability caused during the performance of the duties, security and surveillance staff belong among those with the lowest hourly wages and the highest job uncertainty since they are mostly hired by security agencies offering temporary employment. The median of their gross monthly wage was only 10,957 CZK in 2013. Lower than 13,000 CZK wage median was earned by kitchen staff, tailors and dressmakers, truck drivers and sellers of food, jewellery, furniture and housing goods as well.

Tab. 2: The median of gross monthly wage (in CZK) of the worst-paid jobs in the Czech Republic in 2013

Order	Profession	Median
1	Cleaners at the premises of personal services	10,125
2	Cleaners and helpers in health and social care facilities	10,601
3	Waiters and waitresses	10,956
4	Security staff, watchmen	10,957
5	Kitchen maid	11,009
6	Cleaners of production areas (excluding food and pharmaceutical manufacturing) and stores	11,121
7	Security staff and security agencies	11,127
8	Doormen	11,203
9	Cleaners and helpers in hotels, industrial and other buildings	11,310
10	Cleaners and helpers in administrative buildings	11,403

Source: Trexima, own research

Air traffic controllers, on the other hand, have the largest earnings in the Czech Republic, their wage median being 114,977 CZK a month in 2013. However, there is quite a big difference between the best- and worst-paid employees in this field, their monthly gross wages ranging from 24,093 to 250,017 CZK in 2013. The positions of senior managers in large companies and institutions are the second most remunerative jobs, the wage median amounting to 102,617 CZK

in 2013, the earnings ranging from 31,479 to 337,545 CZK. Senior doctors, financial and PR executives also rank among the top earners; see Tab. 3.

Tab. 3: The median of gross monthly wage (in CZK) of the best-paid professions in the Czech Republic in 2013

Order	Profession	Median
1	Air traffic controllers	114,977
2	Highest representatives of large companies and institutions	102,617
3	Senior doctors in the area of health	89,594
4	Executives in the financial services	87,146
5	Executives in public relations	83,300

Source: Trexima, own research

Czech hourly labour costs are 10.3 EUR per employee on average, i.e. the tenth lowest in the European Union, the second highest, however, among the post-communist countries.

In the first quarter of 2014, the wage median was 20,764 CZK in the Czech Republic, the average wage being 24,806 CZK. The latter is higher than the median because the earnings of the best-paid employees push it up, about two thirds of all employees receiving less than the national average. The median is therefore more adequate than the average since it indicates the earnings of those who are right in the middle between the best- and the worst-paid employees.

4 The wages of teachers and medical doctors

Teachers rank among the lowest-paid tertiary-qualified professionals in the Czech Republic, 70−90 % of university-educated employees in other professions earning on average more money than teachers. The average gross monthly wage of teaching staff was 25,996 CZK in 2013, having improved by 163 CZK in comparison with 2012. The wages of the rank-and-file teachers were around 24,500 CZK, headmasters and other managing staff receiving 35,000 CZK on average, as indicated by the data of the Ministry of Education, Youth and Sport. Its recent statistics also show that while the number of secondary school teachers is declining, the demand for nursery school teachers is rising due to the demographic development. In 2013, almost 206,000 people worked in regionally maintained educational establishments, i.e. in nursery, primary, secondary and higher vocational schools, conservatories or after-school care centers. They were paid 56.5 billion CZK, which was an increase of 0.8 % compared to 2012, the average amount of a discretionary bonus rising from 1,884 to 2,103 CZK compared to 2012. Teachers in higher vocational schools earn the most – about 29.500 CZK on average. Grammar

school teachers and special education centers staff get over 28.000 CZK of gross income per month, secondary vocational school teachers having by about 100 CZK less. Primary school teachers had less than 27,000 CZK on a monthly payroll last year. Nursery school teachers are at the opposite end of the wage scale, earning about 23,200 CZK a month on average in 2013. Boarding school educators still took about 300 CZK less, after-school assistants earning 21,700 CZK on average in 2013. Non-teaching staff, i.e. caretakers, cooks and administrative staff are the worst-paid in the educational sector. In 2013, they earned 14,500 CZK on average, adjusted statistics indicating even lower (13,471 CZK) average wage. In private and church schools, teachers earned an average of 25,200 CZK, non-teaching staff 18,200 CZK. Wage differences can be detected on the basis of the regional division as well. While teachers earned around 26,600 CZK on average in the regions of Ústí nad Labem, Liberec and Central-Bohemia, in those of Zlín and Hradec Králové, the average wage without other personal premiums was lower than 25,300 CZK in 2013. As for the numbers of teachers, the largest reduction was registered in secondary vocational schools (by 672, i.e. 4.6 %), the highest increase in staffing levels being recorded in nursery schools (838, 3.2 %).

Tab. 4: The average gross monthly wage of employees in the healthcare and education sectors in the Czech Republic broken down by categories in 2012 and 2013

Category of staff	Average gross monthly wage		Annual increment	
	2012	2013	(Kč)	(%)
Doctors and dentists	61,078	60,635	−443	−0.7
Pharmacists	43,213	42,271	−942	−2.2
General nurses and midwives	29,150	28,706	−444	−1.5
Other paramedical workers with professional qualifications	28,878	28,825	−53	−0.2
Paramedical workers with professional and specialized qualifications	29,016	28,831	−185	−0.6
Paramedical workers under expert supervision or direct guidance	19,510	19,281	−229	−1.2
Other specialists and dentists	26,366	26,175	−191	−0.7
Teaching staff	29,128	26,459	−2,669	−9.2
Technical and administrative staff	15,694	15,577	−117	−0.7
Workers and operational personnel	30,403	30,174	−229	−0.8

Source: www.mpsv.cz, own research

As for medical doctors and dentists, their total average gross monthly wage was 60,635 CZK in 2013, general nurses and midwives earning 28,706 CZK, the average wage of the former going down by 0.7 % and that of the latter by 1.5 % compared to 2012. A decline in the wage level is apparent in all categories of both medical and teaching staff between 2012 and 2013; see Tab. 4.

In the area of health care, particular wage components may be of interest because of the differences between the real wage and the one which would be earned according to the contract terms excluding overtime payments. This is indicated in Tab. 5 for the year 2013. Average earnings of doctors and dentists paid on the basis of standard wage regulations amounted to 58,837 CZK, the contractual wage being 30,031 CZK. Those of nurses and midwives amounted to 28,707 CZK, of which the standard wage is 18,178 CZK.

Tab. 5: The structure of the average gross monthly wage of professional healthcare workers in the Czech Republic in 2013

Wage components	Doctors and dentists	Pharmacists	General nurses and midwives	Other paramedical workers with professional qualifications	Paramedical workers with professional and specialized qualifications	Paramedical workers under expert supervision or direct guidance	Other specialists and dentists
Wage tariff	30,031	22,433	18,178	17,450	19,382	12,033	16,756
Personal allowance	6,105	7,536	1,588	2,070	2,861	1,043	3,678
Total remunera-tions	5,633	3,676	978	1,243	1,774	466	1,439
Overtime	5,818	1,836	1,020	1,866	493	979	373
Operational readiness	1,490	177	113	168	117	53	129
Other	9,759	6,201	6,829	6,029	4,018	4,707	3,737
Total wage	58,837	41,859	28,707	28,825	28,645	19,281	26,112

Source: www.mpsv.cz, own research

Differences between the wages of medical doctors in various regions of the Czech Republic may reach up to 30 thousand CZK a month, as it follows from the data of the Ministry of Labour and Social Affairs. In 2013, in the public and government sector, medical specialists (fully certified doctors) in Olomouc Region received the highest average gross monthly wage amounting to 79,108 CZK, followed by those in Pilsen Region with 76,392 CZK. The lowest

average gross monthly wage of these professionals was recorded in Liberec (40,020 CZK) and Zlín (49,593 CZK) regions, respectively. No dramatic basic-wage differences have been registered. For specialists, the basic wage oscillates around 40,000 CZK a month, the differences being caused by a high proportion of overtime pay. A closer look at the 2013 data of the Ministry of Labour and Social Affairs shows that the medical specialists in Olomouc Region were paid for more than 200 overtime hours on average, those in Pilsen, Liberec and Zlín regions being remunerated for 191, 179 and 181 extra hours per month, their overtime pay reaching more than 44 % of the total wage amount in Olomouc Region and over 30 % in Liberec and Zlin regions. Such a large number of hours worked is bad for both patients and doctors, despite the latter earning more money, since the real threat of overwork increases the risk of errors. Moreover, this traditional harmful practice discourages both medical graduates and experienced doctors from working (staying) in the Czech Republic (the former group criticising an inflexible system of further education as well). According to the Czech Medical Chamber statistics, there are 1,050−1,100 general medicine graduates each year, approximately 200 of them leaving immediately abroad instead of starting to work in the Czech health care system and another 200 fully certified doctors − more than half of them aged 30−40 years − quitting their job in the Czech Republic every year in order to get better paid and less stressed.

Doctors are not the only profession whose wage level differs from region to region. Qualified secretarial staff, for example, earned 29,074 CZK of gross monthly wage on average in the Central Bohemian Region, which was 8,653 CZK more than in the Moravian-Silesian Region in 2013. Also, sales representatives' monthly wage was around 35,743 CZK in Prague, i.e. 11,402 CZK higher than in Zlín Region. Similarly, the real wages of elementary and secondary school teachers were different from the contractual ones. Teachers earned 28,250 CZK monthly on average in Prague, but only 26,274 CZK in the Vysočina Region, the differences being likely due to the level of teaching experience and expertise.

Conclusion

It is apparent from the results of previous studies that wage growth virtually stopped during the economic recession in the Czech Republic. It is clear from Tab. 1 that the middle wage increased by only 0.04 % nationwide in 2009, yet increasing by 5.37 % and 5.73 % in education and healthcare sectors, respectively. While the national middle wage fell by 3.48 % in 2011, in the above two sectors, the middle wage rose by 11.40 % and 2.70 %, respectively. In 2012, it increased by 1.89 % in the Czech Republic, having declined in the fields of education (by 6.03

%) and healthcare. In the latter area, it kept decreasing (by almost 2 %) in 2013. The effect of the worldwide economic downturn and its aftermath upon the wage levels in the two analyzed areas was different from that in the whole Czech Republic.

The sectors recording the highest wage level are those of ICT and financial and insurance activities. The lowest wage level, on the other hand, is recorded in the sectors of accommodation and food service and administrative and support service activities. The sectors of education and healthcare are approximately in the middle of the scale.

The three best-paid professions are air traffic controllers, top representatives of large organizations and senior doctors. The worst-paid jobs, on the other hand, are cleaners, waiters/waitresses and security staff. The differences between the two groups are on the order of tens of thousands CZK.

It is to be noted that the term "wage" includes both the salaries of employees in budget-funded (state, public and non-business) organizations and the wages of employees in the private (business) sector, which is in line with the data provided by the Czech Statistical Office.

Tab. 6: Development of GDP (in millions of CZK), GDP growth rate (in %), general unemployment rate (%) and inflation rate (%) in the Czech Republic in 2003−2013

Year	Indicator			
	Gross domestic product	Growth rate	Unemployment rate	Inflation rate
2003	2,688,107	4.7	7.8	0.1
2004	2,929,172	9.0	8.3	2.8
2005	3,116,056	6.4	7.9	1.9
2006	3,352,599	7.6	7.1	2.5
2007	3,662,573	9.2	5.3	2.8
2008	3,848,411	5.1	4.4	6.3
2009	3,758,979	−2.3	6.7	1.0
2010	3,790,880	0.8	7.3	1.5
2011	3,823,401	0.9	6.7	1.9
2012	3,845,926	0.6	7.0	3.3
2013	3,883,780	1.0	6.9	1.4

Source: www.czso.cz, own research

Since the development of wages is closely linked to that of other economic indicators, Tab. 6 provides its comparison with that of GDP, unemployment and inflation rates. The Czech Republic's GDP declined only in 2009 (by 2.3 %), then increasing slowly. The unemployment

rate fluctuated between 6.7 and 7.3 %, that of inflation being quite low during the economic recession.

The present paper also addresses the issue of wage concentration in education and healthcare sectors. In both of them, the level of wage concentration lower than that in the whole Czech Republic was detected during the years 2003−2013, the concentration of wages in the latter sector being higher than that in the former. This means that the wages of employees in the education sector are more comparable than those in the health service. This is an expected outcome, as the level of wages of doctors and dentists is well above that of teachers (university-qualified employees working in both the sectors), while the wage levels of less qualified workers in both these sectors are close to each other. The wage concentration in the healthcare sector rises throughout the analyzed period and in 2013 almost reaches that in the whole Czech Republic. This means that the wages of employees in the health sector are increasingly different from each other.

Since not only university-educated people are employed in both the analyzed areas, special attention was paid to the wage level of individual job positions within each of the two sectors. It turned out that the average gross monthly wage of a Czech teacher was only 25,996 CZK, while that of a doctor or dentist was 60,635 CZK, a substantial proportion of the latter amount being overtime pay.

Acknowledgment

References

Bartošová, J., & Bártová, B. (2014). Factors Influencing the Ability of European Households to Manage with the Financial Resources. *In: The 8th International Days of Statistics and Economics, Conference Proceedings [online]*, Praha, 11.09.2014 – 13.09.2014, 74–83.

Bartošová, J., & Longford, N. (2014). A Study of Income Stability in the Czech Republic by Finite Mixtures. *Prague Economic Papers, 23*(3), 330–348-330–348.

Lánský, J., Kotěšovcová, J., & Dlasková, G. (2015). Vyplněnost položek účetních závěrek u akciových společností podle odvětví CZ-Nace. *In: Sborník Recenzovaných Příspěvků Z*

Mezinárodní Konference Hradecké Ekonomické Dny 2015, *Díl II.*, *Gaudeamus, UHK*, Hradec Králové, Czech Republic, 114-122.

Lánský, J., & Mareš, D. (2015). Struktura likvidních položek oběžných aktiv v odvětví těžba a dobývání. *In: Sborník Recenzovaných Příspěvků Z Mezinárodní Konference Hradecké Ekonomické Dny 2015*, *Díl II.*, *Gaudeamus, UHK,* Hradec Králové, Czech Republic,123-128.

Löster, T. (2014). The Evaluation of CHF Coefficient in Determining the Number of Clusters Using Euclidean Distance Measure. *In: The 8th International Days of Statistics and Economics, Conference Proceedings [online]*, Prague, 11.09.2014 – 13.09.2014, 858–869.

Malá, I. (2014). A multivariate Mixture Model for Incomes of the Czech Households in 2006-2010. *In: The 8th International Days of Statistics and Economics, Conference Proceedings [online]*, Praha, 11.09.2014 – 13.09.2014, 956–964.

Malá, I. (2013). Finite Mixtures of Lognormal and Gamma Distributions. *In: The 7th International Days of Statistics and Economics, Conference Proceedings [online]*, Prague, 19.09.2013 – 21.09.2013, 924–936.

Malec, L., & Malec, M. (2013). Application of Two-set Multivariate Statistical Methods to the Czech Republic Arrival Tourism Data. *In: The 7th International Days of Statistics and Economics, Conference Proceedings [online]*, Prague, 19.09.2013 – 21.09.2013, 937-946.

Marek, L. (2013). Some Aspects of Average Wage Evolution in the Czech Republic. *In: The 7th International Days of Statistics and Economics, Conference Proceedings [online]*, *Prague, 19.09.2013 – 21.09.2013,* 947–958.

Marek, L., & Vrabec, M. (2013). Probability Models for Wage Distributions. *In: Mathematical Methods in Economics 2013*, Jihlava: College of Polytechnics Jihlava, 575–581.

Pavelka, T., & Löster, T. (2013). Flexibility of the Czech Labour Market from a Perspective of the Employment Protection Index. *In: The 7th International Days of Statistics and Economics, Conference Proceedings [online]*, Prague, 19.09.2013 – 21.09.2013, 1090–1099.

Pavelka, T., Skála, M., & Čadil, J. (2014). Selected Issues of the Minimum Wage in the Czech Republic. *E+M Ekonomie a Management, 17*(4), 30–45.

Pivoňka, T., & Löster, T. (2014.). Clustering of Regions of the European Union by the Labour Market Structure. *In: The 8th International Days of Statistics and Economics, Conference Proceedings [online]*, Prague, 11.09.2014 – 13.09.2014,1187–1196.

Pivoňka, T., & Loster, T. (2013). Clustering of the countries before and during crisis. *In: The 7th International Days of Statistics and Economics, Conference Proceedings [online]*, Prague, 19.09.2013 – 21.09.2013, 1110–1121.

Šimpach, O. (2012). Faster Convergence for Estimates of Parameters of Gompertz-Makeham Function Using Available Methods in Solver MS Excel 2010. *In: Mathematical Methods in Economics 2012*, Opava: Universita Opava, 870–874.

Šimpach, O., & Pechrová, M. (2013). Assessing the Impact of Standard of Living on the Life Expectancy at Birth Using Vector Autoregressive Model. *In: Mathematical Methods in Economics 2013*, Jihlava: College of Polytechnics Jihlava, 921–926.

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