Czech employees are suffering from a decline in their real wages – Are they entitled to be paid more?

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Abstract

The article deals with development of the average gross monthly nominal and real wages in individual regions and nationally in the Czech economy during the 2011 – 2022 period, with focus on 2022, the year of galloping inflation in the Czech Republic. It examines differences between average gross monthly real wages in individual regions of the Czech Republic and the national average of gross monthly real wage in 2022 There will be a discussion on how to raise the standard of living of households again, about the possibilities of economic policy and the circumstances and consequences of increasing nominal wages. The article presents development trends of the average gross monthly nominal, real wages, and the price level for the following years 2023 and 2024. In addition, the article reveals to which year in the past the household standard of living fell, according to the development of the average gross monthly real wages, at the national level and in Czech individual regions.

Keywords: inflation, galloping inflation, real wages, nominal wages, standard of living, anti-inflationary policy, real consumption

Introduction

The aim of the article is to examine the development of average gross monthly nominal and real wages in the Czech Republic, with focus on differences among the Czech regions and to point out the development and change in standard of living, expressed in the amount of goods and services that employees and subsequently households could purchase, under conditions of rapid growth in the price level mainly in 2022.

The Czech economy has experienced an increasing trend in the standard of living until 2022. The growth of the standard of living has been accompanied by an increase in wages, both, nominal, and real until 2022. But in 2022 the growth of the price level exceeded the growth of nominal wages and real wages started to fall. The rate of inflation jumps to a double-digit or "galloping inflation" in 2022, the last time it happened in the 1990s in the Czech economy. According to the Czech Statistical Office (2023a), the average year-on-year inflation rate was 15.1% in the Czech economy in 2022. The causes of this increase in the price level lie in the deepening energy crisis supported by the ongoing Russia´s war against Ukraine. The growth in global demand for energy and the decrease in the supply of resources have become the breeding ground for a rapid rise in the price level. Economies have barely recovered from the recent coronavirus crisis and after they must struggle with these crises. Economists talk about negative supply shocks that cause the rise in the price level. Aggregate demand was revived after the pandemic crisis, and since 2021 the Czech real gross domestic product (GDP) has been growing only at a gradual rate. At the same time, the government debt of the Czech economy has been growing, and the Czech government is currently dealing with the adaptation of government expenditures to the rise in the price level, and is trying to reduce the excessive state budget deficit.

This inflationary period is not easy for all economic entities including households. Households notice that prices of goods and services are rising, but their nominal wages have not yet been adjusted for the rising price level. When considering the standard of living as a purchasing power of their wages, households go back inevitably to the past.

Literature Review

When price levels increased significantly in economies, the articles examining causes of inflation and the behaviour of economic entities in an environment of relatively high inflation began to appear. Some economists call this inflation the "quasi-inflation" and Galbraith (2023) revealed that it is difficult to explain the current inflation with use of conventional tools, such as Phillips Curve, Non-accelerating inflation rate of unemployment (NAIRU), potential output, or money-supply growth. Some of them are looking for determinants of inflation to identify economic variables that determine the trajectory of inflation as was pointed out by Kinlaw et al. (2023). Several papers deal with the influence of the rising rate of inflation on the behaviour of economic entities, such as the influence of inflation on the consumption behaviour of households. An emphasis is placed on prioritizing current consumption and purchase of durable goods, but also on the growth of household indebtedness as was examined by Ryngaert (2022), or the estimating the level of food needs saturation and changes in behaviour of households in a country (Szwacka-Mokrzycka, Lemanowicz, 2023). Another important focus is on workers´ perception of how their real wages are falling, and on their need to be paid more. Very important is the anti-inflationary policy that seeks to prevent the emergence of an inflationary spiral. Some

papers explore the effect of workers´ efforts on the level of nominal wages in an inflationary environment, seeking optimal inflation rate and "faire" wage as highlighted by Miura (2023). Firms realize that in an inflationary environment they must increase wage rates, but this step will increase their labour costs and it appears that firms are trying to limit other components of worker costs, such as bonuses and benefits or side salaries (Caloia, Parlevliet & Mastrogiacomo, 2023).

Wages and their differences are determined in labour markets with a particular type of competition. One common source of differences in wage rates is represented by human capital. In addition to educational differences due to the different human capital determining the level of wages, there are also geographical (intercity and interregional), discrimination differences (paying more or less because of gender, race, age, religion, or disability), and compensation differences, where compensation differences mean higher pay to compensate for the risk associated with job – e.g., payments to soldiers, policemen, firefighters (Cahuc, Carcillo & Zylberberg, 2014).

Several theories explaining the wage determination deviating from the market equilibrium level can be mentioned here. In the "efficiency wage theory" employees are paid more above the market rate, so they will be motivated to work harder, be more productive and less likely to leave their jobs. It is assumed that the cost reduction due to higher productivity will outweigh the cost increase of paying above average wages, and this will increase the profitability of the firms, which can reduce costs associated with employee fluctuations in industries (Mankiw, Taylor, 2021). The "wage-fund theory" says that wages are dependent on the relative amounts of capital available for the payment of employees and the size of the labour force. Wages can rise only with an increase in capital or a decrease in the number of workers. Although the size of the wage fund could change over time, at a given time it is fixed (Longe, 2009). The "residual-claimant theory of wages", according to Walker (1891), holds that wages represent the remainder of total industrial revenue after rent, interest, and profit (which were independently determined) were deducted. In the "bargaining theory" wages and other working conditions are determined by workers, employers, and unions, who determine these conditions by negotiation. In this theory there is no single economic principle or force governing wages (Davidson, 1898). With application of the "signalling theory", firms are more likely to provide higher wages to job candidates with certificates, degrees, and other credentials that "signal" more excellent knowledge or skill, and due to these qualifications, specific individuals have a higher salary than others (McCormick, 1990).

Methods and Data

According to the availability of statistical data from the Czech Statistical Office in the mid-2023, the investigated period 2011-2022 was chosen, for which complete data from all regions of the Czech economy could be found. The data on average gross monthly nominal wages, median gross monthly nominal wages, registered economic entities, and the

Harmonized Index of Consumer Prices (HICP) were taken from the databases of the Czech Statistical Office. Statistical data for conversion to real values of wages (according to the formula: the nominal wage divided by the price level) were used from the Public Database of the Czech Statistical Office, the section of Wages and labour costs. Average gross monthly real wages were calculated using the HICP, where 2015 was chosen as a base period by the Czech Statistical Office. The article pays attention to the effect of galloping inflation in 2022, to the decline in average gross monthly real wages. It examines the reduction in the purchasing power of average gross monthly nominal wages, at the national level and in all Czech regions, and finds the differences among these regions. If there was a negative supply shock, statistical methods cannot be used for a prediction the development of real wages and standard of living in the following years because disinflation is already expected in 2023 and 2024. This article aims to point out the decline in the standard of living of workers in the form of the development of real wages due to the rising price level. A discussion in the article considering other influences and consequences for companies and the economy is no less important.

Research questions

In the context of the current economic environment of rising prices the authors of this article sought answers to these two research questions (RQ1 and RQ2):

RQ1: *How did the galloping inflation of 2022 affect the level of purchasing power of national average gross monthly nominal wages in the Czech economy?*

RQ2: *What are the differences in the level of average gross monthly real wages in the regions of the Czech economy and how do the real wages differ from the national average in 2022?*

Results

First, we focus on the development of the price level. The inflation rate exceeding the 10 percent threshold per year is defined as a galloping inflation. There are no strictly defined parameters of this type of inflation. Usually, the galloping inflation is recognized as a price increase of 10 to 100% per year, sometimes economists introduce other limits, i.e., 10 to 50%. The rate of inflation is generally calculated using the price indexes. The consumer price index reflects household costs and is suitable for converting nominal wages into real ones. Table 1 shows the increase in the HICP in the Czech economy during 2011 – 2022, and in 2022 a relatively higher increase in HICP can be seen. The base period is 2015, it means that the prices of the base period are fixed to this year.

Tab. 1: The development of the Harmonized Index of Consumer Prices (HICP) in the Czech economy (basic index, 2015=100, Classification of Individual Consumption by Purpose (COICOP) during 2011-2022

Year	2011	2012	2013	2014	*2015*	2016	2017	2018	2019	2020	2021	2022
HICP (%)	94.6	98	99.3	99.8	*100*	100.7	103.1	105.1	107.8	111.4	115.1	132.1

Source: The Czech Statistical Office, authors´ processing

According to the Czech Statistical Office, in 2022 the average year-on-year inflation rate reached 15.1%, the nominal wage growth was 6.5%, but the real wage decreased by 7.5%, that indicates a significant decrease in the purchasing power of nominal wages and a decrease in the household standard of living. More specifically, in the 1st and 4th quarters of 2022, real wages fell by 6.7% and in the 2nd and 3rd quarters real wages fell by 9.8%. (Czech Statistical Office, 2023a, 2023c).

Second, national average monthly nominal wages can be found in statistics, and using the HICP as a price index, the national average gross monthly real wages can be calculated. Table 2 and Graph 1 illustrate the development of national average gross monthly nominal wages, average monthly real wages, and median gross monthly wages in the Czech economy during 2011–2022. After this calculation, a significant differences between national average gross monthly nominal and real wages can be seen, and especially in 2022 (with a reminder of HICP at the level of 132.1% and the average year-on-year inflation rate in the Czech Republic of 15.1%). In 2022, the national average gross monthly real wage was CZK32,863.7, close to the national average gross monthly real wage in 2018 that was CZK32,049.5, exactly 102.5% of 2018, and it means approximately a drop of 4 years back, measured by the criterion of the number of goods and services that households could purchase with their nominal wages, while the national average gross monthly nominal wage was CZK33,684 in 2018, and CZK43,413 in 2022, that is 128.9% of 2018 (The Czech Statistical Office, 2023e).

Tab. 2: The development of national average gross monthly nominal wages, average monthly real wages (using HICP, 2015=100), and median gross monthly wages in the Czech economy during 2011 – 2022 (CZK)

Variable/Year	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
National average gross monthly nominal wage	25,625	26,033	26,211	26,802	27,811	29,056	31,109	33,684	36,380	38,628	40,777	43,413
National median wage	21,782	21,997	22,266	22,844	23,726	24,982	26,843	29,184	31,449	33,195	35,169	37,418
National average gross monthly real wage	27,087.7	26,564.3	26,395.8	26,855.7	27,811.0	28,854.0	30,173.6	32,049.5	33,747.7	34,675.0	35,427.5	32,863.7

Source: The Czech Statistical Office, authors´ processing

Graph 1: The development of national average gross monthly nominal wages, national average gross real monthly wages (using HICP, 2015=100) and median gross monthly wages in the Czech economy during 2011–2022
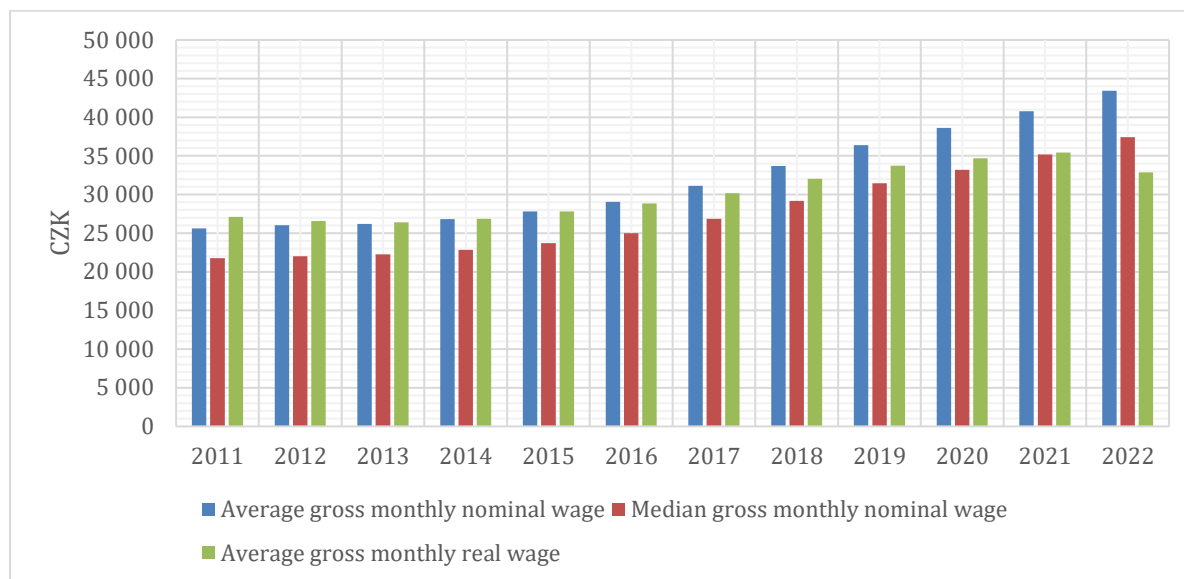
Source: The Czech Statistical Office, authors´ processing

In the examined period, the development of national average gross monthly real wage showed an increasing trend (in the last column view) except in 2022. To answer the first research question RQ1, the standard of living of employees (households) decreased on average by 4 years in 2022, due to a significant increase in the price level in this year, while the national average gross monthly nominal wage showed the increasing trend throughout the period.

Third, we focus on the development of average gross monthly nominal and real wages in fourteen regions of the Czech Republic. Table 3 contains gross monthly nominal wages in all Czech regions during 2011 – 2022 and Table 4 includes gross monthly real wages in the regions during 2011 – 2022.

Tab. 3: The development of average gross monthly nominal wages in Czech regions during 2011–2022 (CZK)

Year/ Region	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
PHA	34,403	35,356	35,155	35,343	36,371	37,387	39,782	42,502	45,888	47,602	50,494	54,015
STC	25,605	25,923	26,302	27,046	27,997	29,170	31,457	34,390	37,151	39,104	40,585	43,536
JHC	23,040	22,871	23,429	24,239	25,246	26,537	28,093	30,620	32,821	35,301	37,715	39,728
PLK	24,086	24,295	24,698	26,004	27,013	28,182	30,700	33,020	35,264	37,613	39,400	41,436
KVK	21,568	21,663	22,333	23,008	24,119	24,893	26,999	29,236	31,710	33,534	35,611	37,512
ULK	23,081	23,608	23,886	24,331	25,301	26,538	28,369	30.802	33,375	36,088	38,027	40,223
LBK	23,240	23,850	24,381	25,114	26,358	27,126	29,121	31,615	34,169	36,127	37,855	39,746
HKK	22,697	23,371	23,639	24,348	25,192	26,578	28,580	31,373	34,357	36,693	38,772	41,187
PAK	22,792	23,080	23,187	23,879	24,856	26,087	28,006	30,358	32,612	34,814	36,642	38,866
VYS	22,680	23,272	23,745	24,347	25,258	26,629	28,568	31,002	33,422	35,694	37,693	39,864
JHM	24,518	25,153	25,587	26,079	27,051	28,319	30,311	32,639	35,439	37,687	40,308	43,071
OLK	22,670	22,754	23,203	24,081	24,584	25,643	27,486	30,073	32,695	35,049	37,075	39,079
ZLK	22,461	22,517	23,117	23,755	24,554	25,953	27,565	30,317	32,759	34,928	36,641	38,869
MSK	23,909	24,340	24,397	24,667	25,475	26,388	27,991	30,364	32,826	35,260	37,265	39,631
Average	25,625	26,033	26,211	26,802	27,811	29,056	31,109	33,684	36,380	38,628	40,777	43,413

Source: The Czech Statistical Office, authors´ processing.

The Prague Region (PHA) generates traditionally the highest level of nominal and real wages, the average gross monthly nominal wage increased gradually from CZK34,403 in 2011 to CZK54,015 in 2022, but the average gross monthly real wage fell in 2022 to the level of 2018, exactly to 101.1% of 2018. The amount of the real monthly wage in the Prague Region reached 124.4% of the average value in 2022. But it should be mentioned that the Prague Region has some of the highest housing costs for households than in other regions, and in the long term it shows the lowest an unemployment rate. Because Prague is a capital city, the Prague Region has a privileged position within the Czech economy, main state administration bodies, most financial institutions, and international corporations are based here. About a quarter of Czech national GDP is generated permanently in this region (The Czech Statistical Office, 2023f). The Central Bohemian Region (STC) ranked second at 100.3% of the real national average wage. The level of real wages in this region returned to 2018 (100.7% of 2018). This region is the largest Czech region in terms of land area and population. The region is an important source of labour for the Prague Region, as it surrounds it and complements Prague´s industry. The South Moravian Region (JHM) took the third place with 99.2% of the national average real monthly wage in 2022. Real wage purchasing power went back 3 years to 2019 in this region (99.2% of 2019). The Plzen Region (PLK) and the Hradec Kralove Region (HKK) have almost the same purchasing power of real wages (95%) as a percentage of the national average wage in 2022 and took the fourth and fifth place. The purchasing power of real wages in Plzen Region returned to 2018 (99.8% of 2018) and in Hradec Kralove Region to 2018 (104.4% of 2018). The Plzen Region shows a higher level of wages, especially in the engineering and food industries, companies with foreign capital participation are located here. The Hradec Kralove Region determines its wages mainly in industry, then in agriculture and subsequently in tourism. (The Czech Statistical Office, 2023d).

Tab. 4: The development of average gross monthly real wages in Czech regions during 2011–2022 (CZK)

Year/Region	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
PHA	36,366.81	36,077.55	35,402.82	35,413.83	36,371.00	37,127.11	38,585.84	40,439.58	42,567.72	42,730.70	43,869.68	40,889.48
STC	27,066.60	26,452.04	26,487.41	27,100.20	27,997.00	28,967.23	30,511.15	32,721.22	34,462.89	35,102.33	35,260.64	32,956.85
JHC	24,355.18	23,337.76	23,594.16	24,287.58	25,246.00	26,352.53	27,248.30	29,134.16	30,446.20	31,688.51	32,767.16	30,074.19
PLK	25,460.89	24,790.82	24,872.10	26,056.11	27,013.00	27,986.10	29,776.92	31,417.70	32,712.43	33,763.91	34,231.10	31,367.15
KVK	22,799.15	22,105.10	22,490.43	23,054.11	24,119.00	24,719.96	26,187.20	27,817.32	29,415.58	30,102.33	30,939.18	28,396.67
ULK	24,398.52	24,089.80	24,054.38	24,379.76	25,301.00	26,353.53	27,516.00	29,307.33	30,960.11	32,394.97	33,038.23	30,448.90
LBK	24,566.60	24,336.73	24,552.87	25,164.33	26,358.00	26,937.44	28,245.39	30,080.88	31,696.66	32,429.98	32,888.79	30,087.81
HKK	23,992.60	23,847.96	23,805.64	24,396.79	25,192.00	26,393.25	27,720.66	29,850.62	31,871.06	32,938.06	33,685.49	31,178.65
PAK	24,093.02	23,551.02	23,350.45	23,926.85	24,856.00	25,905.66	27,163.92	28,884.87	30,252.32	31,251.35	31,834.93	29,421.65
VYS	23,974.63	23,746.94	23,912.39	24,395.79	25,258.00	26,443.89	27,709.02	29,497.62	31,003.71	32,041.29	32,748.05	30,177.14
JHM	25,917.55	25,666.33	25,767.37	26,131.26	27,051.00	28,122.14	29,399.61	31,055.19	32,874.77	33,830.34	35,019.98	32,604.84
OLK	23,964.06	23,218.37	23,366.57	24,129.26	24,584.00	25,464.75	26,659.55	28,613.70	30,329.31	31,462.30	32,211.12	29,582.89
ZLK	23,743.13	22,976.53	23,279.96	23,802.61	24,554.00	25,772.59	26,736.18	28,845.86	30,388.68	31,353.68	31,834.06	29,423.92
MSK	25,273.78	24,836.73	24,568.98	24,716.43	25,475.00	26,204.57	27,149.37	28,890.58	30,450.83	31,651.71	32,376.19	30,000.76
Average	27,087.74	26,564.29	26,395.77	26,855.71	27,811.00	28,854.02	30,173.62	32,049.48	33,747.68	34,675.04	35,427.45	32,863.74

Source: The Czech Statistical Office, authors´ processing

The Usti nad Labem Region (ULK) reached almost the average in purchasing power of real wages in 2022 (93% of the national average monthly gross real wage in 2022) and took the 6th place. This region dropped 3 years back closer to 2019 (98.3% of 2019). The 7th to 10th place was achieved by the Vysocina Region (VYS), the Liberec Region (LBK), the South Bohemian Region (JHC) and the Moravian-Silesian Region (MSK) with the similar slightly below-average values compared to the national average in 2022 (all listed regions reached 91% of the national average in 2022). The Liberec region fell to 2018 (100.02% of 2018), the Vysocina Region to 2018 (102.3% of 2018), the South Bohemian Region fell to 2019 (98.8% of 2019) and the Moravian-Silesian Region dropped to 2019 (98.5% of 2019) compared with the real wage from 2022. The Olomouc Region (OLK), the Zlin Region (ZLK) and the Pardubice Region (PAK) achieved 11th to 13th place with the same value of 90% of the national average in purchasing power of wages in 2022. The Zlin Region and the Pardubice region bounced back about 4 years in real wages due to the double-digit inflation in 2022 (ZLK to 102.0% and PAK to 101.9% of 2018). The Olomouc Region dropped back closer to 2019 (97.5% of 2019). And the last, 14th place belongs to the Karlovy Vary Region (KVK), and it is 86.4 % of the national average wage in 2022. This region with the lowest real wages fell to 2018 (exactly 102.1% of 2018) in purchasing power of wages compared to 2022. Graph 2 shows the listed order of all fourteen regions. The regions are ranked from the highest level of the average gross monthly real wage to the lowest one in 2022.

Graph 2: The ranking of Czech regions according to the level of average gross monthly real wage in 2022
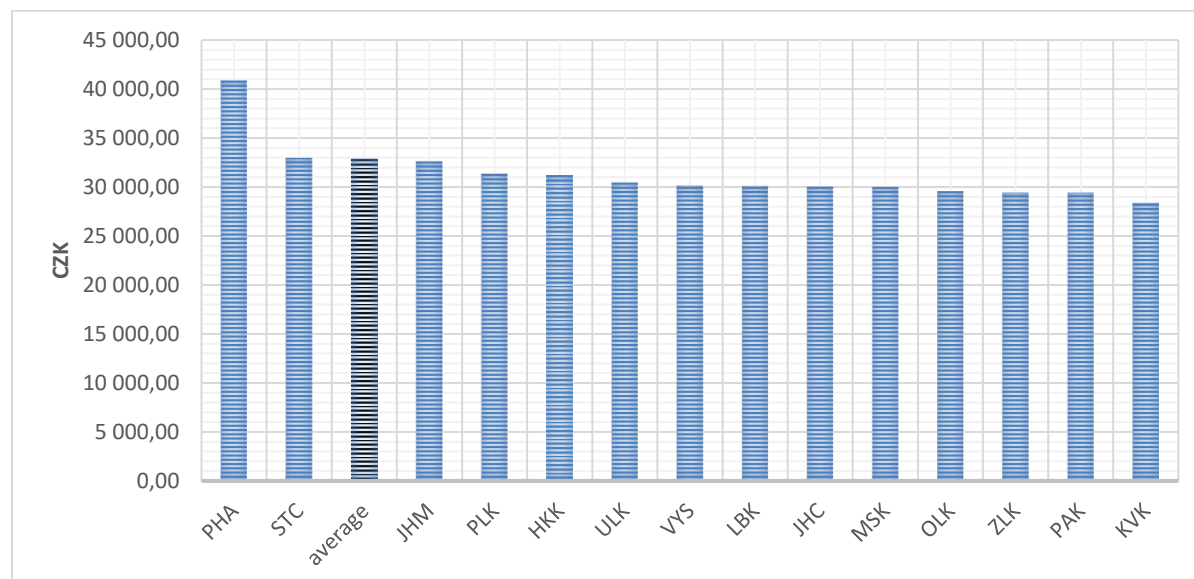
Source: The Czech Statistical Office, authors´ processing

To answer the second research question RQ2, out of a total of 14 regions of the Czech Republic, employees in 9 regions (PHA, STC, PLK, KVK, LBK, HKK, PAK, VYS and ZLK) fell to the level of their standard of living of 2018, it means 4 years back, and in 5 regions

(JHC, ULK, JHM, OLK and MSK) closer to 2019, 3 years back. There is a significant difference between the level of average gross monthly real wage in the Prague Region and other regions in 2022. The last in the graph 2, the Karlovy Vary Region, reached 69.4% of the average gross monthly real wage of the Prague Region, that is 30.6% difference. The Central Bohemian Region and the South Moravian Region recorded the living standards very closed to the national average, and the other regions are below the national average.

Discussion

The previous text documented the decline in the standard of living of Czech households due to the rise in the price level, mainly in 2022. A decrease in the purchasing power of average gross monthly nominal wages is associated with a drop in household consumption. Because household consumption is the most important component of GDP (i.e., approx. 46 % in the Czech Republic in 2022), this reality slows down the growth of the Czech economy. The price growth in 2022 affected mainly necessary goods and services. The decline in household consumption in 2022 was counted and published by the Czech Statistical Office. The household final consumption expenditure fell by 5.5% year-on-year, with the largest decline recorded in purchases of durable goods. Expenditures on food fell significantly, by more than 10% year-on-year, but the decline was also recorded for other items. Only expenses for services grew. (Czech Statistical Office, 2023g).

When the prices of necessary commodities rise, their price demand inelasticity applies. Czech households tried to save as much as they could due to the significant increase in electricity and gas prices. According to the Energy Regulatory Office in the Czech Republic, electricity consumption decreased by 3.9% year-on-year in 2022, and household energy consumption fell by 9%, that is the most significant decline in 20 years, but overall energy sales increased. (Energy Regulatory Office, 2023).

An increase in the average price level is expected to continue in the Czech economy in 2023 and 2024. In addition to market factors, inflationary pressures are created by continuing energy price increases. A double-digit or galloping inflation is expected in 2023, and real wages should continue to decline. According to the Czech Statistical Office, the real wage fell for the seventh consecutive time after the end of the 2nd quarter of 2023. The decline in real wages was most pronounced in the middle of 2022, then it has been moderating. (Czech Statistical Office, 2023h). Due to the decline in the standard of living because of galloping inflation in 2022, it can be expected that the pressure to increase nominal and consequently real wages will get stronger and stronger. It is assumed that firms cannot immediately change the amount of labour forces when real wages rise/fall as was highlighted by Krugman (2022) or Broer, Krusell & Oberg (2023). As assumed, nominal wages are rigid in the short run. Different degrees of nominal wage rigidity and their effect on employment and aggregate demand were examined by Jung (2023). Nowadays it will

depend on the response of companies if they are willing to raise nominal wages for their employees.

The results in the article showed a decline in the standard of living of employees on average and in individual regions. To answer the question of whether employees should be paid more at this time, the more precise question is how to ensure an increase in their real wages and, consequently their standard of living. An increase in real wages is possible either by increasing nominal wages or by lowering the price level (or both). Ongoing double-digit headline average year-on-year inflation is estimated by the Czech National Bank (2023) at the level of 10.8% for 2023. When considering the increase in nominal wages, which is the willingness of employers, not their obligation, consequently some firms can raise prices of their products. This will reduce the effectiveness of disinflationary macroeconomic policy and the optimal growth of nominal wages must be found preventing the acceleration of inflation, as highlighted by Kamin, Roberts (2023). The increase in nominal wages will also depend on the bargaining power of workers, who can be represented by unions, so the bargaining theory of wages comes into effect in economic practice. This power can act as another factor in influencing employment. Some data support the role of this force on employment and wage variation as was pointed out by Ellington, Martin & Wang (2023). Some companies are willing to raise nominal wages, but the second side is that they are going to reduce employee benefits. Some firms can increase nominal wages and subsequently real wages if labour productivity increases and the economic situation of firms improves, or additional demand for is generated. If the volume of capital and consequently the productivity of labour increase, firms can elevate nominal wages and the wage-fund theory can be applied in practice. This theory is being tested and one result is a positive two-way association between real wages and labour productivity, supporting the induced technical change and efficiency wages theories (Cruz, 2023). Some firms perceive how their competitors in the labour market react to wage increases and can increase the nominal wages to prevent the turnover of their employees and to motivate them to produce more, and the efficiency theory will be applied in practice.

For the economy, the growth of nominal wage rates will be associated with a reduction in employment. Furthermore, it also depends on the microeconomic policy of the government whether it provides support for the maintenance of employment in terms of nominal wage growth and growth in companies´ labour costs. For example, in Germany companies secured employment in the form of short-time jobs instead of layoffs, with a 24.1% increase in notifications, and the number of vacancies decreased by 10.3% during the energy crises (Hutter, Weber, 2023). Subsequently, these reduced working hours will not be reflected in employment. Another factor is the determination of the minimum wage in an environment of galloping inflation. If the level of minimum wage is higher than the level of equilibrium wage, then a restriction of employment will occur.

When considering the decrease in price level, fighting the double-digit rate of inflation is possible by suppressing aggregate demand (using shock, or gradualist method). The use of macroeconomic policy instruments should be conforming and should have a restrictive

effect on aggregate demand. According to Hansen, Toscani & Jing (2023) the monetary policy of countries with double-digit inflation rate will need to remain restrictive to anchor expectations and maintain subdued demand. The central bank can use restrictive policies in the form of an increase in basic interest rates, a policy of strengthening the domestic currency through foreign exchange interventions and trying to reduce the expected rate of inflation. Inflation expectation plays an important role in the policy of reducing inflation. The headline rates of inflation are expected at the level of 2.1% in 2024 and 1.7% in 2025 on the official web site of the Czech National Bank (2023). At least all economists consider all aspects including macroeconomic indicators or macroeconomic policy when forming their inflation expectations as was highlighted by Carvalho et al. (2023). Factors such as income, education, age, gender, knowledge about monetary policy (subjective and objective), or political affiliation affect the size of the inflation expected, as surveyed by Hayo, Méon (2023). The government can help reduce the price level through fiscal and microeconomic policies. When using microeconomic policy, the government intervenes in the functioning of energy markets and can set price ceilings. The government can choose restrictive or expansionary fiscal policy instruments to reduce the price level. As restrictive instruments, the government can use the reduction of government spending or the increase of income tax for the excessive profits of energy companies (a windfall tax). During the energy crisis, governments in some economies imposed this windfall tax on the excess profits of energy companies. But it depends on how this additional tax revenue is treated by a government. Vildauer, Kohler & Aboobaker (2023) emphasize the statement if additional tax revenues are redistributed towards workers, it could be an effective instrument of the anti-inflation policy. The government can choose expansionary fiscal policy instruments in the form of a decrease in indirect tax rates (e.g., VAT rates), or it can support companies most affected by the rise in energy prices with subsidies. What is an obstacle (in the case of the Czech economy), is the government´s policy of reducing the state budget deficit. Governments (including the Czech government) are also facing demands from civil servants to elevate their nominal wages, which has an undesirable pro-inflationary effect.

Conclusion

Economists expect a rising standard of living of the economy´s population in the long term. But this can be interrupted by various crises. Mainly the ongoing energy crisis in 2022 caused a significant increase in the prices of goods and services, as the energy prices will be subsequently reflected in all outputs.

This article was devoted to the issue of the development of nominal and real wages in the Czech Republic with a focus on the year 2022 characterized by factors in the form of a high rate of inflation and only a gradual economic recovery. Two research questions were stated: RQ1: How did the galloping inflation of 2022 affect the level of purchasing power of the national average gross monthly wages in the Czech economy? RQ2: What are the differences in the level of the average gross monthly real wages in individual regions of

the Czech economy and how do the real wages differ from the national average in 2022?

The results show that in the examined period 2011–2022 in the Czech economy, a growing trend of the national average gross monthly nominal wage and its median can be observed, but the national average gross monthly real wage dropped significantly in 2022. With this, real consumption, or the purchasing power of wages, and the standard of living of the population fell. Due to the galloping inflation in 2022 the purchasing power of wages in the Czech economy returned to 2018 in average and it means four years back, while the nominal wages and median wage grew up in 2022.

Individual regions of the Czech Republic differ in the purchasing power of their average grow monthly wages. The most different from the national average is the Prague Region, exceeding the national average by 24.4 percentage points in 2022, and then the last Karlovy Vary Region, that recorded a decrease of 13.6 percentage points from the national average. The faster growth of the price level in 2022 caused that employees in 9 regions fell to the level of their standard of living of 2018, that is 4 years back, and employees in 5 regions closer to 2019, 3 years back.

The decline in real wages has considerable consequences for the performance of the Czech economy. Real consumption has fallen, and real GDP growth is slowing down as a result. According to Czech National Bank (2023), real GDP is expected to fall by 0.4% annually in 2023. The year 2023 is likely to be a year of continued double-digit or galloping inflation, and real wages may decline in the following quarters as well. The first three quarters of 2023 shows a continuing decrease in real wages, -6.7% in the 1st quarter of 2023, -3.1% in the 2nd quarter of 2023, and -0.8% in the 3rd quarter of 2023, compared to the corresponding period of the previous year, according to the Czech Statistical Office (2023h, 2023i, 2023b). A creeping inflation rate is expected in 2024, and it can be said that based on the growth of nominal wages and expected disinflation, real wages are expected to rise slowly in the following year 2024 unless another crisis occurs.

For further research, authors recommend examining the factors determining wage differences between Czech regions, household costs in individual regions or comparing the effects of the decline in household standard of living with other countries, for example with neighbouring countries of the Czech Republic. There is also space for addressing various types of wage differences, at the national level or among the regions.

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