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Impact of inflation targeting on a selected indicator of the real economy

Abstract

In fulfilling its monetary policy role, i.e., ensuring price stability, the central bank chooses one of several monetary policy regimes. Important features of inflation targeting are a publicly announced inflation target, the use of macroeconomic forecasting and open communication between the central bank and the public. The aim of the paper is to present, if exists, the impact of inflation targeting on the gross wage indicator in the Czech Republic. Real economy means the economy of the Czech Republic. Among other things, the thesis will discuss some of the principles and purposes of Inflation targeting as a central bank monetary policy tool in the context of the evolution of the inflation indicator and the identification of the main factors affecting it and the role of the average gross wage indicator. Inflation, as one of the most important economic indicators that affects the behavior and decision-making of economic agents, it is desirable to monitor, understand the regularities of its development and to some extent predict it.

Key words

Average gross wage, central bank, inflation expectations, inflation targeting, monetary policy

JEL Classification

O11, G21

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Introduction

The sources of the data presented in this paper are the Czech Statistical Office (CSO) and the Czech National Bank (CNB). The data used will cover the period from 2011 to 2021. The average gross wage indicator is chosen as the real economy indicator for the purposes of this paper. Real economy means the economy of the Czech Republic. The aim of the paper is to present, if exists, the impact of inflation targeting on the gross wage indicator. Inflation can be defined as a rise in the price level that results in a reduction in purchasing power, in practice it is the depreciation of a currency against goods and services. The expression of inflation for statistical purposes is based on the measurement of net price changes using consumer price indices. That is, indices measuring the price level of a selected basket of representative products and services over two periods of comparison. The share of a given type of consumption in total household consumption represents the weight or importance of the representative items in the consumption basket. For completeness, the consumption basket includes food, non-food goods and services.

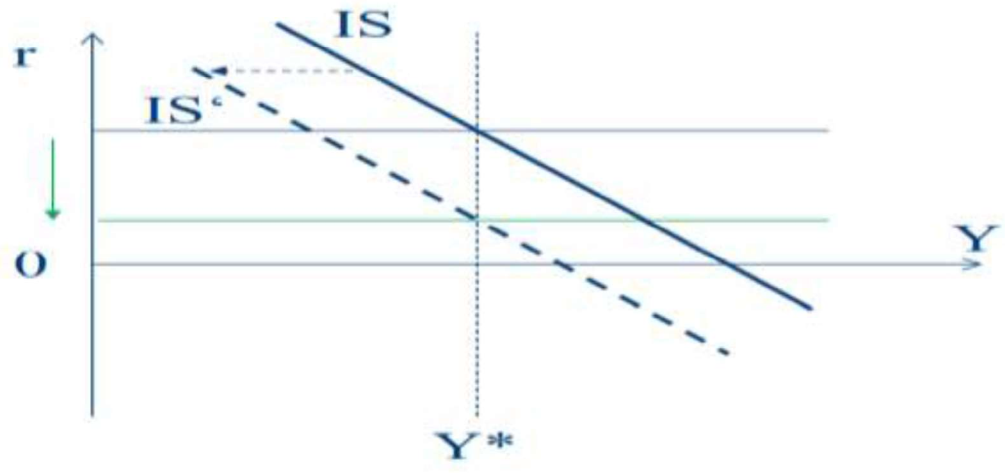
1 The inflation targeting and the average gross wages

1.1 The inflation targeting

The inflation target is usually set higher than zero inflation, or no country targets zero inflation. Because inflation measurements tend to be biased upwards, it is desirable to build in a buffer against hitting the zero bound on interest rates and the risk of deflation. Thus, empirically, a target of 2% has proven to be appropriate globally. With flexible inflation targeting, rates are set so that the forecast returns to the target given the costs to the economy, or especially when supply shocks are negative.

If demand falls, the central bank cuts nominal (and thus real) interest rates. This dampens anti-inflationary pressures and returns the economy to a state where it can use its full productive capacity. However, the situation is more complex in the case of cost shocks, where the central bank must strike a balance between stabilizing inflation and the real economy.

Figure No. 1: The role of monetary policy



Source: author's own

The current price increases can be classified as a widespread and intense phenomenon. In the second half of last year, price increases across consumer basket categories cannot be overlooked. By the end of 2022, most items have shifted to higher price growth year-on-year. The question is why prices are rising so fast. Low unemployment, rising incomes, strong demand...Typical of the Czech Republic, house prices are rising fast and core inflation is high. Interesting is that in a period of low inflation, firms' and households' expectations do not correlate with central bank announcements (Coibon et al., 2020).

High growth in regulated prices goes hand in hand with a significant/steep rise in energy prices (22% VAT on electricity and gas renewed from January 2022). Rising food and Agri commodity prices due to world events are felt by every consumer. The rise in world oil prices is the primary driver of fuel price increases.

Table No. 1: Price stability over a longer period

	Average (%)
Inflation targeting (1998)	2,8
Headline inflation targeting	2,3
2% inflation targeting	2,2
3 years	4,3
5 years	3,5
10 years	2,3

Source: CNB Inflace - Česká národní banka (cnb.cz)

In the case of the economies for which imports of this commodity from Russia are crucial, the effect is stagflation or slumpflation.

"Across the spectrum of commodities imported into the EU, particularly in countries with a higher share of industry in GDP, the real economy would be particularly affected by a sudden stop in the supply of natural gas. To a lesser extent, economic activity would be negatively affected by a halt in the supply of oil, coal and possibly other commodities." (Benecka et al.) The increase in costs due to the reduction in the supply of mainly energy and food commodities was strongly anti-inflationary. A halt in the supply of gas and oil would result in a sharp rise in the prices of these commodities, but also in a simultaneous depreciation of the exchange rates of the countries concerned. High import prices would be reflected in domestic inflation and would be much more pronounced in the case of dollar commodity prices.

The inflation rate for 2011 was 1.9%. The growth of the Czech economy had gradually slowed during the year as a result of unfavorable external developments, the associated heightened uncertainty and the ongoing domestic consolidation of public budgets. However, domestic inflationary pressures remained subdued, and inflation was slightly below the 2% target. The slightly appreciating exchange rate of the koruna also contributed to low inflation, partly dampening the price effects of high global commodity and food prices.

For 2012, the inflation rate was 3.3%. The headline inflation rate, or its increase compared to the previous year, was affected by the reduction in the VAT rate. This measure, together with the rise in world commodity prices and import prices, was the cause of the increase in the inflation rate compared to the previous year. On the other hand, developments in the domestic economy counteracted the price increases and the so-called core inflation was negative (continuing the trend of the previous period).

In 2013, the inflation rate reached 1.4%. The deepening economic recession was reflected not only in the level of headline inflation but also in core inflation. The unfavorable development of the domestic economy, accompanied by the regulator's announcement that it was ready to intervene in the area of foreign exchange reserves, ultimately weakened the koruna.

For 2014, the inflation rate was 0.4%. The main reason for the sharp reduction in the headline inflation rate can be the decline in administered prices and the market's adjustment to the change in VAT bands. Interestingly, the shift of the core inflation indicator into positive territory is largely due to the unwinding of the anti-inflationary effects of the domestic economy, but also to rising wages and import prices.

The lowest average inflation rate was 0.3% in 2015 (the lowest since 2003). A more detailed look at the inflation rate over this period shows a significant and deepening year-on-year decline in prices, mainly of fuels, due to the fall in global oil prices, as well as falling administered prices and stagnating food prices in the second half of the year. However, looking at the inflation rate adjusted for fuel prices, there was a slight increase to 1.5% at the end of the year (the highest level in seven years). Interesting in this context is the statement by the CNB Board, which said that it would not react to a positive supply shock and was prepared to tolerate an inflation rate of around zero.

The value of the indicator for 2016 was 0.7%. This year was marked by a slowdown in economic growth (more pronounced towards the end of the year) due to subdued export growth. Low prices of energy raw materials and food were the main reason. The ongoing decline in fuel prices also subsided towards the end of the year. It can also be noted that the price effects of the electronic sales register in the catering and accommodation sector were already apparent towards the end of the year.

Record low unemployment and the highest ever number of job vacancies translated into a further acceleration in wage growth in 2017. High wage growth, together with continued growth in the real economy, resulted in strong domestic inflationary pressures. At the same time, the inflationary effect of import prices resumed, which, in addition to the rise in foreign prices, was also reflected in the exchange rate of the koruna, which mostly depreciated during the year. Domestic inflation was within the tolerance band of the CNB's 2% target during the year and the average inflation rate was 2.5% over the period. In 2018, the average inflation rate was 2.1%. Historically one of the lowest unemployment rates and the highest number of job vacancies translated into a further cceleration in wage growth. High wage growth, together with continued growth in the real economy, resulted in strong domestic inflationary pressures.

Growth in the global economy slowed in 2019, which, together with uncertainty about future developments, was reflected in a slowdown in economic growth, not excluding the German economy, to which a substantial part of domestic exports is linked. Although the Czech economy also slowed, it maintained a solid growth rate and continued to generate clear domestic inflationary pressures. The persistently tight labor market led to rapid wage growth and contributed to upward pressures on consumer prices.

Global economic developments in 2020 were significantly affected by the coronavirus pandemic. The anti-epidemic measures taken impacted world trade and negatively affected economic development in virtually all countries. The result was a deep downturn in the global economy.

Rational inflation expectations influence economic behavior. Businesses can make investment decisions and consumers can choose to spend and save based on their expectations of future inflation. If these expectations align with the central bank's goals, this can contribute to stable economic conditions.

On the other hand, if there is a persistent mismatch between actual inflation and set targets, this can lead to suboptimal economic outcomes, including volatility in financial markets and uncertainty in the real economy.

1.2 The average gross wages

The interplay and certain interconnectedness of macroeconomic indicators is also generally valid in the Czech Republic. To be more informative and to understand all the connections, it would probably be beneficial to monitor inflation in relation to the development of, for example, average gross wages, or to find seasonal trends.

The average gross monthly wage represents a certain proportion of wages, excluding other personal costs, per employee per month. Wages consist of base pay, fringe benefits, payroll compensation, on-call pay, and other components that are added to an employee's paycheck for a given period. However, it does not include wage or salary compensation for periods of temporary incapacity for work or quarantine paid by the employer. The average gross monthly salary is defined by the following relationship: ∑ gross monthly wage the number of employees on the register, where gross monthly wage covers basic wage, allowances and supplements to wages, wage compensation (but does not include compensation for temporary incapacity for work paid by the employer). The number of employees on the register represents the persons employed.

There are therefore 22 different average gross salaries. The median or value in the middle of the ordered set is equal to 24 160. The standard deviation, which tells us how much the cases in the set of values examined typically differ from each other, is 6 763.58. Using the average function, we then find that the average wage between 2000 and 2021 is 24 096 CZK. Looking at the data, we immediately see that wages do not fluctuate, but rise steadily, and in neither case has there been a decrease.

2 Research objective, methodology and data

This part of the paper states its aim, detailed methodology and data used.

Table No. 2: Development of the gross wage indicator

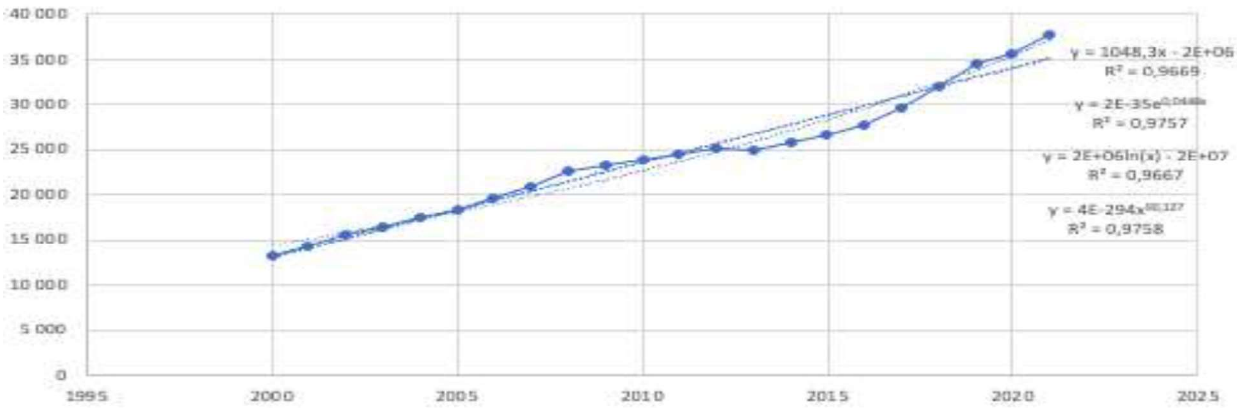
Year	Average Gross Wage	Differentiation	Growth Rate	Change (%)
2000	13 219			
2001	14 378	1 159	1,087676829	8,76768288
2002	15 524	1 146	1,079705105	7,9705105
2003	16 430	906	1,058361247	5,83612471
2004	17 466	1 036	1,063055386	6,30553865
2005	18 344	878	1,050269094	5,02690942
2006	19 546	1 202	1,065525512	6,55255124
2007	20 957	1 411	1,072188683	7,21886831
2008	22 592	1 635	1,078016892	7,80168917
2009	23 344	752	1,033286119	3,3286119
2010	23 864	520	1,022275531	2,22755312
2011	24 455	591	1,024765337	2,47653369
2012	25 067	612	1,025025557	2,50255571
2013	25 035	-32	0,998723421	-0,1276579
2014	25 768	733	1,029279009	2,92790094
2015	26 591	823	1,031938839	3,19388389
2016	27 764	1 173	1,04411267	4,41126697
2017	29 638	1 874	1,067497479	6,74974787
2018	32 051	2 413	1,08141575	8,14157501
2019	34 578	2 527	1,078843094	7,88430938
2020	35 662	1 084	1,031349413	3,13494129
2021	37 839	2 177	1,06104537	6,10453704

Source: Author's own processing. CSU data

Average growth rate ……………………………………1,05135546.

Increase from the initial value to the final value…………186%. According to the auxiliary linear model, the parameters for further calculations were calculated in the form of a table. The linear regression was also plotted using a graph, where it can be noticed that the power function has the highest degree of determination, and this is exactly the value we found for the auxiliary calculations.

Table No. 3: Point chart average gross wage



Author's own processing. CSU data

Since the difference between the variances of the test sets is statistically insignificant ($p > 0.05$), there is no significant difference in wage variability between 2000–2010 and 2011–2021.The value came out greater than alpha=0.05 hence seasonality is not evident in the time series.

Table No. 4 a) b): F-Test

Year	Average gross wage
2000	13 219
2001	14 378
2002	15 524
2003	16 430
2004	17 466
2005	18 344
2006	19 546
2007	20 957
2008	22 592
2009	23 344
2010	23 864
2011	24 455
2012	25 067
2013	25 035
2014	25 768
2015	26 591
2016	27 764
2017	29 638
2018	32 051
2019	34 578
2020	35 662
2021	37 839

2000-2010	2011-2021
13 219	24 455
14 378	25 067
15 524	25 035
16 430	25 768
17 466	26 591
18 344	27 764
19 546	29 638
20 957	32 051
22 592	34 578
23 344	35 662
23 864	37 839

Source: Author's own processing. CSU data

HO: DX=DY. H1: DX is not as DY. F- Test 0,411650368. F > alfa (0,05).

3 Results and discussion

There is a relationship between inflation targeting and gross wage developments. Inflation targeting is a monetary policy framework in which a central bank sets a target for the inflation rate and adjusts its policy instruments, such as interest rates, to achieve that target. When inflation targeting is implemented, it can affect gross wage developments in several ways. Firstly, if inflation is high, the central bank may increase interest rates and second what could happen is that this would lead to a decrease in demand for goods and services, which could lead to a decrease in economic activity and ultimately result in lower wages.

On the other hand, if inflation is low, the central bank may reduce interest rates, which could stimulate economic activity and lead to higher wages. Additionally, if inflation is expected to be low and stable in the future, this could increase confidence among businesses and workers, which could lead to higher wage growth. Overall, the relationship between inflation targeting and average gross wage developments is complex and multifaceted.

One way in which inflation targeting can affect average gross wage developments is through its impact on the labor market. When inflation is high, the central bank may increase interest rates, which can reduce the demand for labor as firms may cut back on their hiring or lay off workers. This can put downward pressure on wages, as workers may be willing to accept lower wages to remain employed. Conversely, if inflation is low, the central bank may reduce interest rates, which can stimulate hiring and lead to higher wages as firms compete for workers.

Another way in which inflation targeting can affect average gross wage developments is through its impact on the exchange rate. When central bank increase interest rates, this can make its currency more attractive to foreign investors, which can lead to an appreciation of the currency. This can make exports more expensive and reduce demand for goods and services, which can put downward pressure on wages.

Conversely, if the central bank reduces rates, this can make its currency less attractive to foreign investors, which can lead to a depreciation of the currency. This can make exports more competitive and increase demand for goods and services, which can lead to higher wages.

Inflation expectations play a crucial role in the effectiveness of inflation targeting. Clear communication of the central bank's inflation targets helps shape expectations among business, consumers and financial markets. The goal of inflation targeting is to anchor inflation expectations, especially in the long term. Well-grounded expectations help reduce inflation volatility, making it easier for businesses and households to plan for the future.

The relationship between inflation targeting and average gross wage developments is complex and multifaceted. While inflation targeting can affect average gross wage developments through its impact on interest rates, the labour market, the exchange rate, and expectations about future inflation and wage growth, the direction and magnitude of these effects can vary depending on a range of factors, including the state of the economy, the level of inflation, and the actions of other economic factors such as governments and companies.

Conclusions

We see inflation targeting as a monetary policy framework in which the central bank sets an explicit target for the rate of inflation and uses various monetary policy instruments to achieve and maintain it. Inflation is usually considered as a negative side of the economy. On the other hand, however, one cannot fail to mention the possible positive effect on the economy in the form of mild inflation.

However, the strengthening of the domestic currency against the euro will probably have an anti-inflationary effect. The average inflation rate in 2021 was 3.8%. From a macroeconomic point of view, the impact of the coronavirus pandemic on the development of the variable is also interesting. The initial phase of the pandemic actually reduced aggregate supply and demand, but the consequences for the development of inflation cannot yet be clearly indicated. The global economy recovered relatively quickly from the slump in the first half of 2020 thanks to massive monetary or monetary policy stimulus. The situation regarding developments in the transport sector and drops in supply in manufacturing companies as a result of pandemic developments (shortage of chips, etc.) are known, which ultimately resulted in supply frictions and production shutdowns.

A specific aspect that influenced the evolution of the variable over the period under review was the changes in indirect tax rates in a situation of persistent strong inflationary pressures in the domestic economy. If, on this basis, we were to identify strong inflationary factors, we should mention supply-side frictions, the significant rise in the price of oil and other commodities and, to a lesser extent, the rise in unit labor costs. Persistent supply-side frictions are likely to be a strong inflationary factor this year as well. In addition, the rise in administered prices, especially for electricity and natural gas, will have a stronger impact on the average inflation rate.

The approach to assessing the impact of wage developments on inflation is based on a twofold possible effect of wages on inflation. Wages can be both a potential cost and demand inflation factor. The distinction between wage-cost and wage-demand inflation is not straightforward. Its difficulty is evident in estimating the contribution of demand and cost inflation to headline inflation.

The impact of inflation targeting on the average gross wage indicator is indirect and depends on a variety of factors. In general, inflation targeting aims to keep inflation low and stable, which can have both positive and negative effects on wages.

On the positive side, low and stable inflation can help to create a more stable economic environment, which can lead to more investment, job creation, and higher wages. When inflation is high and volatile, it can create uncertainty for businesses and individuals, which can make it difficult to plan and lead to lower investment and wages.

On the negative side, some argue that inflation targeting can lead to a focus on controlling inflation at the expense of other economic goals, such as employment and economic growth. This could potentially lead to slower wage growth if the central bank prioritizes inflation over job creation.

Although, inflation targeting can be a powerful tool for shaping rational inflation expectations, the effectiveness of this approach depends on the credibility, transparency of the central bank and its ability to consistently adhere to announced inflation targets. A dynamic process requires constant communication, adaptability and a proven commitment to maintaining price stability.

It can be stated that inflation expectations are an integral part of both the success of inflation targeting as a monetary policy framework and the development of the gross wage indicator. They shape economic behavior, influence wage negotiations, and play a key role in maintaining overall economic stability. Alignment of inflation expectations with monetary policy objectives contributes to more predictable and sustainable economic results.

The impact of inflation targeting on the average gross wage indicator is complex and depends on a variety of factors, including the specific economic conditions in the country, the effectiveness of the central bank's policies, and the priorities of policymakers.

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