
INFLATION DOES NOT STAND STILL - THE EFFECTS ARE FELT

Prof. Constantin ANGHELACHE PhD (*actincon@yahoo.com*)

Bucharest University of Economic Studies / Artifex University of Bucharest

Assoc. prof. Mădălina-Gabriela ANGHEL PhD (*madalinagabriela_angel@yahoo.com*)

Artifex University of Bucharest

Alexandra PETRE PhD Student (*alexandra.olteanu.s1@anaf.ro*)

Bucharest University of Economic Studies

Abstract

In the last three years of the pandemic, 2020, 2021 and 2022, inflation was the element that accompanied the economic evolution. Economic development alerted, developed, and inflation increased from one period of time to another.

In this article, the authors want to highlight the fact that inflation has a particularly negative role on economic growth (Gross Domestic Product), because inflated prices can bring additional income to the state budget, but cannot bring any advantage to living conditions.

In this article I used the data published by the National Institute of Statistics and especially from the 2022 Yearbook published by the National Institute of Statistics, Eurostat data, as well as other important data, which I compared and re-processed to reach the conditions we proposed.

In this article we have extensively used graphical and tabular representations with the data that are at hand, thus managing to ensure an easier perception for those who want to study and understand the evolution of this scourge-type indicator in the Romanian economy and, more broadly, on international plan.

Keywords: prices, incomes, inflation, crises, economic evolution.

JEL classification: E20, E30

Introduction

We set out to study the evolution of inflation with existing data, starting from 2019 to 2022, and even the first two months of 2023. We aimed to highlight the fact that the consumer price index as well as the harmonized consumer price index increased from one period of time to another.

The explosion occurred in the year 2022 when the inflation growth rate was almost 16%. In 2023 there is all this slight increase from one month to the next, and on 12-month intervals there is still an increase in inflation.

Harmonized inflation includes the increase in all prices and we presented in this direction the increase in the prices of industrial products,

agricultural production, construction production, receipts from tourism and others, resulting in the fact that all costs have increased, and from the presentation of the trend of the national economy by the National Institute of Statistics that for the next 3-6 months in all areas, industry, agriculture, construction, transport and services, prices will increase.

In the context, we also referred to the fact that this increase in prices particularly affects the standard of living of the population in our country.

The crises faced by Romania's economy, like those of other countries around the world, show that they will continue, especially in Europe, also due to the armed conflict between Ukraine and the Russian Federation.

We have presented a series of data that attest to the increase in prices for groups of goods and groups of services in order to see more clearly that they affect the standard of living of the population in Romania.

Literature review

Some analysis methods, as well as the time evolution of inflation, were studied by Fiti (2010). Also, Anghelache C., Anghel M. G. (2019) addresses from a theoretical and practical point of view problems related to the collection, sorting, arrangement of statistical data series and those of economic modeling. Anghelache, Niță and Badiu, A. (2016) conducted studies on the evolution of the price index in Romania. Anghelache and Sacală (2015) presented a series of basic notions of inflation. Armantier et al. (2015) addressed a number of issues regarding inflation forecasts. Kim and Henderson (2005) addressed issues related to inflation and the influence on nominal income growth. Sylvestre (2002) addresses some theoretical and practical elements of the use of econometric tools in economics.

Methodology

For easier understanding of the opinions expressed in this study, the main methodological aspects were extracted from the methodology used by the National Institute of Statistics and Eurostat. Thus, consumer price indices (CPI) cover the monetary expenditure of goods and services for final consumption, for all types of resident households, except for institutional households, in order to provide the most relevant and accurate picture of inflation. The CPI can be seen as a method of broadly measuring the prices of a fixed expenditure pattern.

The Harmonized Index of Consumer Prices (HICP) is a set of EU consumer price indices calculated according to a harmonized approach and a single set of definitions. The HICP is mainly designed for the assessment of price stability in the euro area and the convergence of price developments in the EU, but also for comparisons of inflation at European level.

Weight - commensuration coefficient used to calculate a synthetic index (aggregate) for a group of directly incommensurable elements, with the function of establishing the relative importance of each element in the statistical group under investigation.

The monthly inflation rate represents the increase in consumer prices in a month, compared to the previous month.

The average monthly inflation rate represents the average of monthly price increases. It is calculated as a geometric mean of the monthly consumer price indices with the base in the chain from which the comparison base equal to 100 is subtracted.

The average annual inflation rate represents the increase in consumer prices in one year compared to the previous year. This rate is calculated as a ratio, expressed as a percentage, between the average price index of one year and that of the previous year, from which 100 is subtracted. In turn, the average price indexes of the two years are determined as simple arithmetic averages of the monthly indices of each year, calculated against the same base (October 1990 = 100).

The annual inflation rate represents the increase in consumer prices in one month of the current year, compared to the same month of the previous year. This rate is calculated as a ratio, expressed as a percentage, between the price index of a month of the current year and the index of the corresponding month of the previous year, calculated against the same base, from which 100 is subtracted.

Scope: Measured prices are those actually borne by consumers, so they include sales taxes on products such as value added tax.

The CPI is calculated based on the elements included in the direct consumption of the population and excludes: consumption from own resources representing the counter value of the quantities of products consumed by the population from sources other than purchases (from stock, from own production, received as a gift, etc.); investment and accumulation expenses (buying homes, construction materials used to build new homes or making capital repairs to old homes), insurance rates, fines, gambling, taxes, etc.; expenses related to the payment of labor for household production (ploughing, sowing, weeding, tending gardens and orchards, vineyards, gathering crops, mowing hay, medical treatment of animals, etc.). The CPI excludes interest and credit costs, referring to them as a financing cost, not a consumption expenditure.

The CPI is calculated as a Laspeyres index with a fixed base. Starting from January 2020, the calculation of fixed-base monthly indices is done using the average prices from 2018 (year 2018=100) and the weights from

the same year determined on the basis of average expenses from the Family Budget Survey.

Prices collected monthly are retail prices, including VAT.

The general formula for calculating the Laspeyres index is:

$$L_b = \sum I_b \left(\frac{p_o q_o}{\sum p_o q_o} \right)$$

L_{lo} = the aggregated index of the current month (l) in 2020 compared to the reference year 2018;

I_{lo} = indices of the current month compared to the average of 2018 by aggregation steps;

$\frac{p_o q_o}{\sum p_o q_o}$ = the weights related to the aggregation steps (relative importance of expenditure monthly averages per household for 2018).

Calculation of price indices at variety level:

$$i_{v_i} = \frac{p_l^{v_i}}{\overline{p_o^{v_i}}} \cdot 100$$

$p_l^{v_i}$ = the price of the variety i recorded in the current month (l);

$\overline{p_o^{v_i}}$ = the annual average of the prices of the i variety in 2018.

The price of variety i recorded in the current month ($p_l^{v_i}$) shall be calculated as a simple arithmetic mean from the three decal records, as follows:

$$p_l^{v_i} = \frac{p_{l_1}^{v_i} + p_{l_2}^{v_i} + p_{l_3}^{v_i}}{3} \quad \text{or} = \quad p_{l_1}^{v_i} \quad p_{l_2}^{v_i}$$

in which:

$p_{l_1 \dots l_3}^{v_i}$ = nominal prices for the three decades observed in the current month, for the variety v_i .

The second formula is applied for most assortments of non-food goods and services for which the collection is made only in the period 10 - 17 of the reference month.

Calculation of price indices at assortment level, as a geometric average of variety indices, according to the formula:

$$I_{l/18}^{S_i} = \sqrt[n]{\prod_{i=1}^n i_{v_i}} \quad n \leq 68$$

n = number of price/tariff collection centres.

Calculation of indices at the level of groups of food goods, non-food goods and services as a weighted arithmetic average of the indices at the level of expenditure items included in the group, as follows:

$$I_{I/18}^C = \sum I_{I/18}^{P_i} \left(\frac{w_o^{P_i}}{\sum w_o^{P_i}} \right)$$

$I_{I/18}^C$ = group price index in the current month (**I**) compared to the average of 2018;

$I_{I/18}^{P_i}$ = the price index at post level in the current month (**I**) compared to the average of 2018;

$w_o^{P_i}$ = the share of the job P_i ;

$\sum w_o^{P_i}$ = the weighting of the group of goods and services.

Form of presentation of aggregation posts

In the national system, in the construction of the CPI, a nomenclature of goods and services is used, structured on 54 posts of food products, 112 posts of non-food products and 50 service stations, significant for the consumption of the Romanian population.

In the European system, in the construction of the HICP, a classification of expenditure by consumption destination (ECOICOP – Classification of Individual Consumption by Destination) is used, which regroups the items in the national system. The ECOICOP classification ensures the comparability of indices at European level, and is structured, according to EU regulation 792/2016, on 12 detailed divisions, 47 groups, classes, sub-classes.

The CPI uses the *national* principle of consumption, tracking the consumption expenditure of residents, regardless of whether they are made within or outside the borders of the country.

The HICP measures the changes in the evolution of prices and tariffs related to goods and services that have occurred on the territory of Romania. Thus, for the construction of the HICP, the *domestic* principle is used, taking into account the consumption of all households on the territory of the country, regardless of nationality, residential or social status, except for foreign embassies located in Romania.

The weights used to calculate the CPI are obtained from the Family Budget Survey (ABF) and result from the structure of the average monthly expenditure incurred by a household for the purchase of goods and for the payment of services necessary to meet the living needs. Annually, the structure of expenditures made by the population is analyzed and updated. Thus, starting from January 2020, in the calculation of the CPI, the weights resulting from the structure of the average expenditures incurred by a household in 2018 are used.

Since 2012, Ec Regulation No. Regulation (EC) No 1114/2010 on minimum standards for the quality of HICP weightings. The implementation of the regulation, for 2020, means the use of data on the final monetary consumption expenditure of households from the national accounts for 2018 and of the expenses from the Family Budgets Survey 2018 for the calculation of the shares of the harmonized indices. The weights thus calculated are then updated to the prices of December 2019.

Data, Results and Discussion

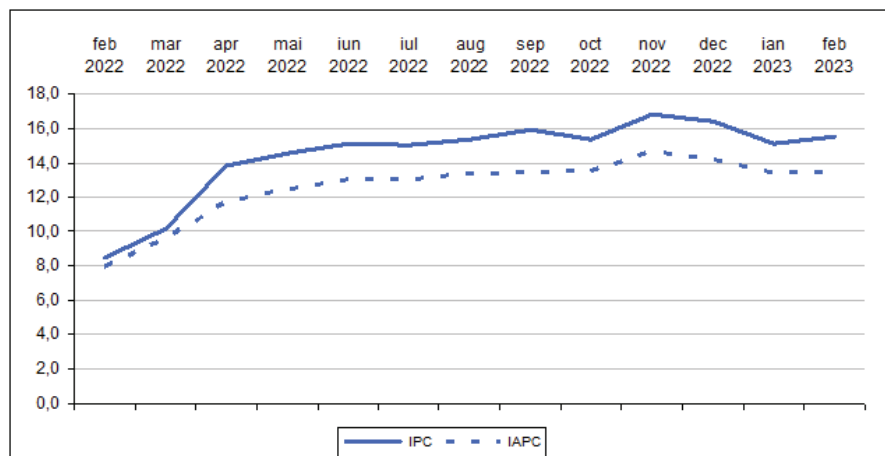
The consumer price index (CPI) is the indicator used to determine inflation at the national level. Analyzing the evolution of this indicator, we find that the consumer price index in February 2023 compared to January 2023 is 100.98%, which indicates an increase of approximately 1 percent.

Regarding the inflation rate since the beginning of the year, February 2023 compared to December 2022, it is 1.3%. At the same time, the annual inflation rate in February 2023 compared to February 2022 is 15.5%.

To highlight the evolution of consumer prices between February 2022 and February 2023, graph number 1 was drawn.

Annual change in consumer prices (%)

Chart 1



Source: INS release no. 58 / March 13, 2023

Interpreting the data taken from the National Institute of Statistics and presented graphically, we find that the average rate of change in consumer prices in the last 12 months, respectively March 2022 – February 2023,

compared to the previous 12 months, respectively March 2021 – February 2022, is 14, 9%

As for the harmonized consumer price index in February 2023 compared to January 2023, it is 100.98%. The annual rate of inflation in February 2023 compared to February 2022 calculated on the basis of the harmonized index of consumer prices (IAPC) is 13.4% and the average rate of change in consumer prices in the last 12 months, respectively March 2022 – February 2023, compared to the previous 12 months, respectively March 2021 – February 2022, determined on the basis of the IAPC is 13.0%.

Table number 1 shows the data on the evolution of the consumer price index and the average monthly inflation rate in February 2023 compared to the months of January 2023, December 2022 and February 2022.

Consumer price index and average monthly inflation rate (%)

Table 1

	February 2023 to:			Average monthly inflation rate, during the period 1.01 - 28.02	
	January 2023	December 2022	February 2022	2023	2022
Foodstuffs	101,85	103,38	122,35	1,7	1,6
Non-food goods	100,45	99,46	112,73	-0,3	0,7
Services	100,70	102,53	110,38	1,3	1,0
TOTAL	100,98	101,32	115,52	0,7	1,0

Source: INS release no. 58 / March 13, 2023

Based on the data presented in table number 1, we can state that the average rate of inflation in the period 01.01.2023 - 28.02.2023 was 0.7%, with significant increases in food goods, respectively 1.7% and in services, respectively 1.3%.

Table number 2 shows consumer price indices in February 2023 for the main goods and services.

Consumer price indices in February 2023 for the main goods and services

Table 2

Weighting coefficient	Name of goods/services	February 2023 to:		
		January 2023 %	December 2022 %	February 2022 %
10000	TOTAL	100,98	101,32	115,52
3226	TOTAL GROCERIES	101,85	103,38	122,35
510	Milling and bakery products	101,13	102,36	123,85
404	- Bread, bakery products and specialties	101,13	102,38	123,92
319	Vegetables and canned vegetables	106,35	109,57	123,25
226	Fruit and fruit preserves	102,59	104,56	116,14
82	Oil, bacon, fats	98,44	97,91	129,83
815	Meat, meat preparations and preserves	101,11	101,79	117,44
126	Fish and canned fish	102,54	103,94	122,06
492	Milk and dairy products	101,60	103,19	131,47
54	Eggs	101,33	102,43	134,59
139	Sugar, sugary products and honey	100,94	101,93	125,57
82	Cocoa and coffee	100,97	102,33	118,56
132	Alcoholic beverages	101,16	104,41	113,82
250	Other food products	101,86	104,77	118,09
4912	TOTAL NON-FOOD GOODS	100,45	99,46	112,73
529	Clothing, haberdashery, haberdashery and haberdashery	100,72	101,29	109,01
348	Footwear	100,58	101,21	109,70
347	Household products, furniture	100,47	101,50	107,63
260	Chemical articles	101,48	102,39	110,74
285	Cultural and sports products	100,64	101,35	108,07
115	- Watches, audio-video devices, sports articles	100,63	101,38	105,94
106	- Cars and spare parts	100,71	101,37	109,27
780	Hygiene, cosmetic and medical articles	101,32	101,93	109,61
365	- Drugs	100,29	100,47	105,71
834	fuel	100,01	100,78	104,67
660	Tobacco, cigarettes	100,82	102,39	107,33
797	Electricity, gas and central heating	99,31	91,30	133,14
72	Other non-food goods	102,29	103,35	116,33
1862	TOTAL SERVICES	100,70	102,53	110,38
19	Made and repaired clothing and shoes	103,55	104,20	113,30
114	Rent	101,10	101,66	108,50
227	Water, sewer, sanitation	101,13	108,09	124,15
132	Cinemas, theaters, museums, education and tourism expenses	100,50	101,60	108,91
21	Car repairs, electronics and photo works	100,84	101,94	112,99
192	Medical care	101,58	102,71	112,30
129	Hygiene and cosmetics	101,46	102,45	112,57
72	Urban transport	100,04	100,21	108,64
480	Post and telecommunications	100,05	100,32	100,37
133	Restaurants, cafes, canteens	101,57	103,93	116,24
77	Other industrial services	100,69	101,86	115,03
213	Other services	99,89	101,81	110,48

Source: INS release no. 58 / March 13, 2023

From the evolution of the data presented in table number 2, it follows that the most significant increases in February 2023 compared to the same period of the previous year were for food products (22.35%), within which we point oil, bacon, fats (29, 83%), milk and dairy products (31.47%) and eggs (34.59%). At the same time, mail and telecommunications (from the services group) had the smallest changes, i.e. an increase of only 0.37%.

Conclusions

A few immediate conclusions emerge from the study of this article. First, the inflation rate in 2021-2022 had particular effects on economic growth. In particular, the inflation rate in 2022 reached approximately 16% (the data is still provisional), had very special effects on the real growth of the economy, but also on the real standard of living of the population.

Inflation has forced all prices up. The harmonized index of inflation shows just this fact. As a result, there is little scope for increasing basic incomes for the general population (wages and pensions), with concerns, but much fewer compelling directions, leading to the increases we have talked about.

Urgent measures are required and, above all, the access to the amounts from the National Recovery and Resilience Plan that can lead to a slight economic growth, to somewhat moderate inflation but, above all, to the possibility of having at least a small increase in the level population incomes.

References

1. Anghelache C., Anghel M. G. (2019). *Modelare economică. Teorie și studii de caz, ediția a doua, revizuită și adăugită*, Editura Economică, București
 2. Anghelache, C., Niță, G., Badiu, A. (2016). *The Inflation (Consumer Prices) in the Romanian Economy*. Romanian Statistical Review Supplement, 1, 99-102
 3. Anghelache, C., Sacală, C. (2015). *Some Theoretical Aspects regarding the Inflation*. Romanian Statistical Review Supplement, 6, 5 – 11
 4. Armantier, O., Bruine de Bruin, W., Topa, G., Klaauw, W., Zafar, B. (2015). *Inflation Expectations and Behavior: Do Survey Respondents Act on their Beliefs?*. International Economic Review, 56 (2), 505-536
 5. Fiti, Z. (2010). *The Macroeconomic Performance of the Inflation Targeting Policy: An Approach Based on the Evolutionary Co-spectral Analysis*, Economic Modelling, Volume 27, Issue 1, January, Elsevier
 6. Kim, J., Henderson, D.W. (2005). *Inflation Targeting and Nominal-Income Growth Targeting: When and Why are They Suboptimal?*. Journal of Monetary Economics, 52, 1463 – 149
 7. Sylvestre, P. (2002). *Econometrie des donnees de panel*, Dunod, Paris
- *** <https://insse.ro/cms/ro>