## THE RAPID EVOLUTION OF INFLATION THREATENS ECONOMIC GROWTH AND MAINTAINING STABILITY

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## Abstract

In this article, the authors aim to analyze in a concrete way how the evolution of inflation has evolved and its effect on the evolution of the economy in general, as well as the effects of the data provided by the National Institute of Statistics, Eurostat. on social status, in particular.

At the end of March 2022, the average annual inflation rate was 10.2%, which is the highest recorded in Romania in the last 20 years.

This rate of inflation was determined by the complex state of crisis facing the economy of the world's states, the effects being unloaded on this unprecedented rate of inflation.

In nominal terms, a number of statistical indicators on the value and not the quantity of production obtained can be positive, but by bringing them to the real level, by deflation, we see a considerable reduction in the indices that underpin the assessment of economic growth.

Inflation is alarming, especially in the production of consumer goods and daily necessities for the entire population.

The escalation of these rising prices is making it difficult for producers to undo the result of their business, it is also influencing international trade, but it is also influencing food security in this climate.

*Of course, we must keep in mind that the strategy to be implemented aims at alternative sources of stopping the effects of inflation.* 

In order to reveal the aspects that determine the increase of inflation, we widely used statistical indicators and indices, we used the analytical, logical and interpretive method of the existence and maintenance of macroeconomic correlations and proportions, which also ensures the maintenance of macrostability. Unfortunately, the crises on which this unprecedented rise in prices is based are evolving in conjunction with endangering even the stability of economic outcomes, thereby leading to a maintenance of macroeconomic stability.

**Keywords:** *inflation, prices, indices, deflation, developments, growth.* **JEL classification:** *C10, E20* 

## Introduction

The alarming rise in inflation is a very important element that must be taken into account in the programming and strategy of the evolution of a country's economy.

Inflation leads to the depreciation of national currencies (on April 26 it was stated that the Euro had a significant depreciation leading to the parity of 1 Euro = 1.06 US). The situation of the national currencies with which the countries that are not members of the Eurogroup are working is even more alarming. Romania is also in this situation.

In other words, in this article we have presented in detail the increase in prices for the three groups of goods and services, namely food, non-food and services. They show an evolution that can be maintained for a predictable period of another 2-3 months, with more than one percentage point from one month to another.

In this context, analysts, specialized institutions that in June there can be a dramatic evolution, which will be around 12-14 percentage points.

Next, we took and analyzed, one by one, the evolution over a period of time in order to highlight the way in which this inflationary phenomenon evolves and will affect even more the maintenance of macroeconomic correlations, which would give the possibility at least a stagnation of economic results. but, by deflation, these results will not be obtained but will be further diminished.

To highlight more concretely and easily understand the evolution of this inflationary scourge, we presented the data in graphical form on the three components of the consumer price index, but also on the structure of product groups, highlighting rising prices especially for energy, natural gas, products agri-food, other goods for immediate use in the life of any household.

## Literature review

Theoretical aspects of statistical indices and their use in measuring inflation are topics that a number of researchers have addressed. Thus, Anghel, Mirea and Badiu (2018) studied fundamental elements of price indices used to measure inflation. Anghel (2015), as well as 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 and co-workers (2015) addressed a number of issues regarding inflation forecasts. Davis C.S. (2002) published a study on statistical methods for the analysis of measurements. Karanassou and Snower (2007) approached a similar topic in their research. Kim and Henderson (2005) addressed issues related to inflation and the influence on nominal income growth. In the statistical dictionary published by Isaic-Maniu Alexandru in 2003, specifications are made in relation to statistical indices and their use in measuring and analyzing inflation. Klein R.L., Welfe A., Welfe W (2003) address in detail the topic of indices in the study of the principles of economic modeling. Ten Raa T. (2004) publishes a paper on the aggregate productivity index. Schouten R., Cobben E. (2009) also conducted an extensive study on the indicators used in performing a representative synthesis.

## Methodology

In order to facilitate the 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, the consumer price index (CPI) covers the monetary expenditure of goods and services for final consumption, for all types of resident households, except institutional households, in order to provide a more relevant and accurate picture of inflation. The CPI can be seen as a broad method of measuring the prices of a fixed expenditure model.

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 designed primarily to assess 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 is a coefficient of measurement used to calculate a synthetic index (aggregate) for a group of non-measurable elements directly, having the function of establishing the relative importance of each element in the statistical community investigated.

The monthly inflation rate is the increase in consumer prices in one month compared to the previous month.

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

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 for one year and that of the previous year, minus 100. In turn, the average price indices for the two years are determined as simple arithmetic averages. of the monthly indices for each year, calculated against the same basis (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 for one month of the current year and the index for the corresponding month of the previous year, calculated against the same basis, minus 100.

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

The consumer price index is calculated on the basis of the elements that enter the direct consumption of the population and excludes: consumption from own resources representing the value of quantities consumed by the population from sources other than purchases (from stock, from own production, received as a gift, etc. .); investment and accumulation expenses (purchase of housing, construction materials used in the construction of new housing or carrying out capital repairs to old housing), insurance rates, fines, gambling, taxes, etc .; expenses related to the payment of labor for the production of the household (plowing, sowing, hoeing, care of gardens and orchards, vineyards, harvesting, mowing hay, medical treatment of animals, etc.). The CPI excludes interest and credit expenditures, referring to them as a financing cost, not as a consumption expenditure.

The CPI is calculated as a fixed base Laspeyres index. Starting with January 2020, the calculation of the monthly indices with a fixed base is made using the average prices from 2018 (2018 = 100) and the weights from the same year determined based on the average expenses from the Family Budget Survey. The prices collected monthly are retail prices, including VAT.

The general calculation formula for the Laspeyres index is:

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

 $L_{lo}$  = the aggregate index of the current month (1) from 2020 compared to the reference year 2018;

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

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

Calculation of price indices at variety level:

$$i_{v_i} = \frac{p_l^{v_i}}{p_2^{v_i}} \bullet 100$$

where:  $p_l^{V_i}$  = the price of the variety was recorded in the current month (*l*);

$$P_o^{V_i}$$
 = annual average variety prices *i* year 2018

The price of the variety was recorded in the current month ( $p_l^{V_l}$ ) it is calculated as a simple arithmetic mean of the three decadal records, thus:

$$p_{l}^{v_{i}} = \frac{p_{l_{l}}^{v_{i}} + p_{l_{2}}^{v_{i}} + p_{l_{3}}^{v_{i}}}{3} \text{ or } p_{l}^{v_{i}} = p_{l_{2}}^{v_{i}}$$

where:  $p_{I_1...I_3}^{V_I}$  = nominal prices for the three decades observed in the current month for the variety  $V_i$ .

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

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

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

where: n = number of price / tariff collection centers.

*Calculation of indices at the level of food, non-food and service groups* as a weighted arithmetic average of the indices at the level of expenditure items included in the group, thus:

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

where:  $I_{1/18}^{C_i}$  = group price index in the current month (l) compared to the year average 2018;

 $I_{l/18}^{P_{l}}$  = the item price index in the current month (l) compared to the year average 2018;

 $W_o^{P_i} = \text{job share } P_i;$  $\sum W_o^{P_i} = \text{the share of the group of goods and services.}$ 

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## Data, results and discussions

Using in the analysis carried out in this article the consumer price index (CPI), ie the indicator that can highlight inflation at national level, we find that consumer prices in March 2022, compared to February 2022, increased by 1.9%. If we take into account the harmonized index of consumer prices (HICP), the indicator used to determine inflation in the Member States of the European Union, we find that the harmonized index of consumer prices in March 2022, compared to February 2022, is 101.95 %. At the same time, the annual inflation rate in March 2022, compared to March 2021, calculated on the basis of the harmonized index of consumer prices (HICP) is 9.6%, and the average rate of consumer prices in the last 12 months (April 2021 -March 2022) compared to the previous 12 months (April 2020 - March 2021) determined on the basis of the HICP is 5.6%. The data are shown in graph number 1.







Source: INS release no. 90/12 April 2022

The inflation rate at the beginning of the year (March 2022 compared to December 2021) is 4.0%. As for the annual inflation rate in March 2022, compared to March 2021, it was 10.2%. At the same time, the average rate of consumer prices in the last 12 months (April 2021 - March 2022) compared to the previous 12 months (April 2020 - March 2021) was 6.5%. Data on the evolution of the consumer price index and the monthly average inflation rate are presented in Table 1.

					Table 1	
		March 2022 to:			Average monthly inflation rate, in the period 1 I - 31 III	
	February 2022	December 2021	March 2021	2022	2021	
Foodstuffs	102,54	105,75	111,20	1,9	0,5	
Non-food goods	101,86	103,31	110,86	1,1	1,1	
Services	100,67	102,66	106,53	0,9	0,2	
TOTAL	101,88	103,99	110,15	1,3	0,7	

## Consumer price index and average monthly inflation rate

Source: INS release no. 90/12 April 2022

Partial indices calculated by excluding certain components from the CPI are shown in Table 2.

# Partial indices calculated by excluding certain components from the CPI

	Tuble 2
	March 2022
	%
(a) Total CPI excluding alcoholic beverages and tobacco	102,04
(b) Total CPI excluding fuels	101,27
(c) Total CPI excluding regulated products *	101,96
(d) Total CPI excluding vegetables, fruit **, eggs, fuels, electricity, natural	101.17
gas and regulated products *	101,17
(e) Total CPI excluding vegetables, fruit **, eggs, fuel, electricity, natural	101 20
gas and regulated prices *, alcoholic beverages and tobacco	101,50
TOTAL	101,88

\* Products whose prices are regulated: medicines, thermal energy, C.F.R. transport, water transport, post and courier, identity card issuance services, car license, passport, water, canal, sanitation, public urban transport, rents established by the local administration

\*\* In order to meet the needs of inflation analysis more accurately, starting in September 2014, the fruit group includes, in addition to fresh fruit, citrus fruits and other southern fruits. *Source: INS release no. 90/12 April 2022* 

We find that the highest increase was in the CPI group excluding alcoholic beverages and tobacco of 2.4% followed by the CPI group excluding products whose prices are regulated by 1.96%.

In order to have a picture on the evolution of the consumer price index in March 2022, compared to the previous month, December 2021 and the corresponding month of the previous year, we will present in table number 3 the evolution of this index for the main goods and services.

		March 2022 to:			
Weighting		February	December	March	
coefficient	Name of goods / services	2022	2021	2021	
		0/0	0/0	0/0	
10000	TOTAL	101.88	103.99	110.15	
3302	TOTAL FOODSTUFFS	102.54	105.75	111.20	
535	Milling and bakery products	102,97	106,98	115,35	
342	Vegetables and canned vegetables	104,92	114,02	118,87	
78	Oil, bacon, fat	105,46	109,04	130,15	
832	Meat, meat preparations and preserves	102,05	103,86	107,83	
124	Fish and canned fish	102,38	105,35	111,58	
509	Milk and dairy products	102,44	105,07	109,31	
57	Eggs	100,49	103,64	111,80	
138	Sugar, sugar products and honey	101,23	102,48	107,56	
86	Cocoa and coffee	101,71	104,26	107,82	
127	Alcoholic beverages	101,24	102,91	105,86	
235	Other food products	101,21	102,83	106,06	
4938	TOTAL NON-FOOD GOODS	101,86	103,31	110,86	
482	Clothing, haberdashery, trimmings and haberdashery	100,51	101,35	103,96	
335	Footwear	100,60	100,95	104,55	
352	Household products, furniture	100,36	101,28	103,57	
272	Chemical articles	100,52	101,48	103,41	
314	Cultural and sports products	100,78	102,44	104,92	
103	Cars and spare parts	100,47	101,58	104,55	
784	Hygienic, cosmetic and medical articles	100,67	101,60	103,09	
376	Drugs	100,53	101,07	101,81	
803	fuel	107,67	116,56	134,16	
705	Tobacco, cigarettes	100,00	101,94	107,08	
826	Electricity, gas and central heating	100,58	96,34	111,73	
65	Other non-food goods	101,22	103,65	109,13	
1760	TOTAL SERVICES	100,67	102,66	106,53	
15	Made and repaired clothing and footwear	101,43	103,73	108,26	
98	Rent	100,35	100,94	103,72	
241	Water, sewer, sanitation	102,01	107,51	114,68	
90	Cinemas, theaters, museums, spending on education and tourism	100,18	101,36	104,42	
24	Car, electronics and photo repair	101,10	102,86	107,09	
143	Medical care	101,04	102,69	107,32	
111	Hygiene and cosmetics	100,58	102,85	106,98	
72	Urban transport	100,73	102,48	105,61	
54	Intercity transport (other modes of transport)	100,80	102,21	105,36	
530	Post and telecommunications	100,04	99,88	100,97	
103	Restaurants, cafes, canteens	100,83	103,35	107,54	
77	Other industrial services	100,89	103,07	108,12	
202	Other services	100.29	104.37	111,54	

## **Consumer price index in March 2022 for the main goods and services** *Table 3*

Source: INS release no. 90/12 April 2022

Interpreting the data presented in table number 3, we find that the largest increases in consumer prices in March 2022, compared to the same month of 2021, were recorded for food goods, respectively 11.2% and the lowest for food services. only 6.53%. However, the services also include water,

sewerage, sanitation, where the increase was 14.68%. In the same vein, in the non-food goods group we have significant increases in electricity, gas and central heating of 11.73% and minor changes in the sub-group of medicines, respectively 1.81%.

It is important to mention that the highest increase was registered in the subgroup of oil, bacon, fats, namely 30.15%, followed by the subgroup of milling and bakery products with 16.35%.

### Conclusions

The study of this article, based on data provided by the National Institute of Statistics, Eurostat, the European Union and the OECD, concludes that the current complex crisis facing the world economy, but especially the European economy, will have increasing effects. alarming effects on maintaining economic stability in every country, in the European Union and, even more broadly, worldwide.

The evolution of the average annual inflation rate is determined by the complex of crises that humanity is currently going through, which can hardly be controlled, the effects appearing every day.

The crisis of resources, primary energy, electricity, natural gas, coal makes this state of uncertainty even more acute.

In these conditions, in which the countries are facing the crisis and, on this background, due to the state of European and world security through the restrictions imposed, suffer not only the Russian Federation guilty of involvement in the war with Ukraine but especially the countries that they imposed such restrictions.

In this context, more attention will be paid to the countries that have the resources of oil, natural gas, electricity and others, in order to preserve them and influence, by refusing to deliver to other states, a deepening of the crisis in those states.

The basic element in controlling and overcoming this situation is for Romania the complete and rapid use of resources that fall through the National Recovery and Resilience Plan as well as through the amounts allocated from the consolidated budget of the European Union.

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