

STATISTICAL EVALUATION OF THE DEGREE OF NOMINAL CONVERGENCE OF THE INFLATION RATE IN ROMANIA

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Abstract

Nominal convergence is a process that is characterised by the gradual harmonisation, to a relatively high degree, of the national institutions and policies of the Member States with those of the EU, in the monetary and financial fields.

The birth of nominal convergence is marked by the Maastricht Treaty, by means of which the criteria required for adopting the euro were established. One of the criteria refers to price stability (inflation rate), which is measured by the Harmonised Index of Consumer Prices. A Member State meets this criterion if it has a price performance that is sustainable and an average rate of inflation, observed over a period of one year before the examination, that does not exceed by more than 1.5 percentage point that of, at most, the three best performing Member States in terms of price stability.

The article proposes a model for the statistical evaluation of the degree to which the nominal convergence criterion related to price stability is met. The evaluation is based on the following pillars: a theoretical synthesis of the Harmonised Index of Consumer Prices, a statistical analysis concerning the evolution of inflation in Romania and the gap vis-à-vis the reference value for meeting the nominal convergence criterion.

Key words: inflation, deflation, consumer prices, taxes on product, indices, type of product, weighting system, cost of goods, living cost, quality changes, price stability, nominal convergence

The surveys conducted in Europe with regard to economic conditions reveal citizens' wish to live in an environment which is stable in terms of price evolution. Price stability is reached when, on average, prices neither increase (inflation) nor decrease (deflation) but remain steady over time.

Inflation means a general – or generalised – increase in the prices of goods and services over a long period, which leads to a decrease in the value of money and hence in its purchasing power.

Deflation is often defined as the opposite of inflation, namely the situation in which a general lasting decrease in prices is recorded.

In most countries, a simple and reasonable approach to measuring inflation is used, i.e. the Consumer Price Index (CPI).

The CPI has three main characteristics: *(i)* it is published frequently, monthly in the case of Romania; *(ii)* it is available immediately after the end of the reference period (usually after 10 days) and *(iii)* the monthly values can only be revised if there is a major change in methodology. The characteristics mentioned above made the CPI the most adequate statistical indicator for measuring overall inflation, in spite of the fact that this index only measures inflation from the perspective of the consumer.

In Romanian statistics there are two indicators that are used to measure inflation: the **national CPI** and the **Harmonised Index of Consumer Prices (HICP)**. The national CPI is used both in the field of macro-economic policies and business and in the social field.

The Harmonised Indices of Consumer Prices are developed primarily to evaluate price stability and the nominal convergence for joining the euro zone and to enable international comparisons of inflation.

Romania's preparation for EU accession involved an increase in the importance given to the Harmonised Index of Consumer Prices (HICP). The Harmonised Index of Consumer Prices is made up of a set of EU Consumer Price Indices calculated according to a harmonised methodology and a single set of definitions.

Calculation of the Harmonised Index of Consumer Prices (HICP)

There are millions of individual prices in an economy. These prices are subject to constant variation, which essentially reflects the changes in the demand for and supply of individual goods and services and shows the "relative uniqueness" of the goods and services concerned. Obviously, not all these prices can or should be taken into account but, if only few of them are analysed, they might not be representative for the overall level of prices.

The main stage in the building of the HICP consists in the analysis of the purchasing patterns of the consumers to determine the goods and services which consumers typically buy and which can implicitly be considered representative, to a certain extent, for the average consumer in an economy. They do not include only the articles purchased by the buyers on a daily basis (bread and fruit) but also durable consumer goods (cars, computers, washing machines, etc.) and frequent transactions (rents, utilities, etc.). The inclusion of these articles on a “shopping list” and their weighting according to their importance in consumers’ budgets lead to the development of a “consumer basket” (nomenclature of goods and services that are representative for consumption)¹. An army of “price controllers” checks the prices of these articles each month, in different outlets. Subsequently, the costs of the “basket” are compared over time, which allows the development of a data series for the calculation of the price index.

In Romania, on average, approximately 100,000 individual price quotations are used each month to calculate the HICP, covering 1970 types of products, available in circa 7100 stores, selected from the 68 collection centres spread across the country.

The calculation of the HICP involves two main stages:

- the calculation of price variation at the level of each type of product
- the geometric mean of the individual quotations for each article included in the same type of product;
- the resulting indices for each type of product are combined by various aggregation levels (e.g. items, groups) until obtaining the overall index.

Accuracy and improvements in measuring the HICP

One of the big international debates on the measurement of inflation was related to the theory based on which the Consumer Price Index was built. In this respect, in the USA (1996), the Report of the Boskin Commission emphasised the fact that the CPI calculated on the basis of the “fixed basket” (the index of the cost of goods) is higher by 1.1 percentage points than the living cost index, which, in the opinion of the members of this Commission, should be the only option for building the CPI. Not all the specialists in the US National Academy panel welcomed the idea. This was due to the difficulties in defining the living standard and in statistically measuring the terms on which the living standard is supposed to be based (“happiness”, “satisfaction”, “usefulness”).

¹ Goods and services according to their weight in the final monetary expenses of the households. In practice, the weights of the items that make up the basket are periodically revised in order to show the variations in consumer behaviour.

A synthesis of the differences between the two indices:

- the Index of the Cost of Goods or the Consumer Price Index (CPI) compares the costs of two “fixed baskets” of goods and services;
- the Living Cost Index (LCI) compares the cost of maintaining the same living standard.

In practice, in order to reduce the gap between the Index of the Cost of Goods (CPI), calculated by most National Statistical Offices, and the Living Cost Index as much as possible, the following aspects were taken into consideration: reducing the impact of the substitution effect; an adequate approach to the new goods and services; an adequate approach to the quality changes at the level of each product.

The *substitution effect*, reflected by the economic theory on consumer behaviour, also raises questions on the building and accuracy of the CPI. According to this theory, the consumer substitutes the products that became more expensive for other products that have recently become relatively cheaper. For a more accurate calculation of the CPI, one which takes into account the changes in consumer behaviour due to this effect, the adequate calculation formula for the elementary level was chosen and an annual analysis of households' expenses was conducted with a view to changing the weighting system in order to more accurately capture consumer behaviour at the moment when inflation is calculated.

As of 1999, with a view to meeting the international standards, the Romanian National Institute of Statistics made changes in the methodology used to calculate the CPI: the use of the geometric mean for the calculation of the index at varietal level and the updating of the weighting system, which reflects the changes in consumer behaviour from one year to another.

The annual updating of the weighting system automatically involves both the revision of the nomenclature of goods and services and the revision of the sample of stores. The revision of the nomenclatures is based on a standard procedure and is implemented, at territorial level, by the County Statistical Divisions under the direct supervision of the specialised Division of the NIS. The annual revision of the nomenclatures of goods and services aims to also include the new goods and services that, from the consumer's perspective, are representative for the period in which the index is calculated.

Another methodological aspect that is under international debate concerns the *approach to the quality changes* which take place at the level of the products included in the nomenclature. An example is provided by the market of electronic products, where this change is much more frequent: CD vs. Blu-ray, TV CRD vs. Plasma or TV LED/LCD, computers etc.

During the harmonisation of the CPI at European level, the methodological standards are revised in order to meet the requirements of the main data users and to be in agreement with the chief objective for which the index was built.

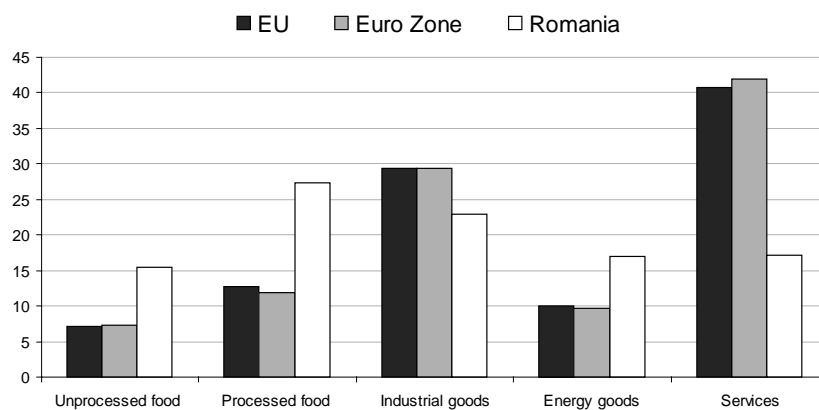
Analysis of inflation in Romania – inflation measured on the basis of European standards

Consumer behaviour in Romania is different from the one assessed for the European Union and the euro zone. This may be due both to the differences between the purchasing standard in Romania and the one assessed at the level of the two groups of countries and to the data sources based on which the weighting system is estimated.

As compared to EU and euro-zone households, the Romanian households purchase more (processed and non-processed) food goods and energy goods (electric energy, natural gas, thermal energy, fuels) and less industrial goods and services.

In Romania, the expenses for the purchase of goods account for approximately 82% and the ones for the purchase of services account for 18%, while at the level of the European Union and the euro zone 60% of the expenditures are incurred for the purchase of goods and 40% are on services.

2010 HICP weights (percentage) in Romania compared to the EU and the euro zone



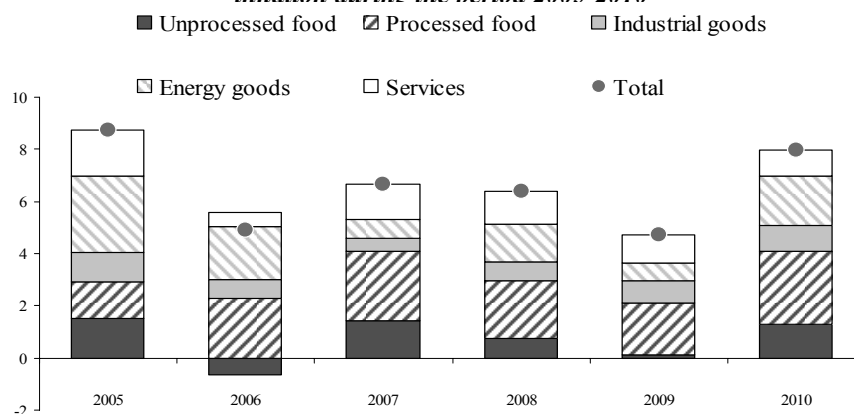
During the period 2005-2010, the most important component in the evolution of inflation in Romania was that of the processed food goods, followed by energy goods and services.

The prices of non-processed food goods are very volatile, which can

be seen in the changes from one year to the next in the contribution to overall inflation. At the end of 2006, the contribution of this component to overall inflation was negative (-0.7 percentage points), and in 2009 it merely reached 0.1 percentage points.

In spite of the pretty high weight recorded for industrial goods, the contribution of this component to the general evolution of prices was relatively constant during the period 2005-2010. This is due to the rigidity of prices recorded within this component.

Contribution of the main components to the evolution of yearly inflation during the period 2005-2010



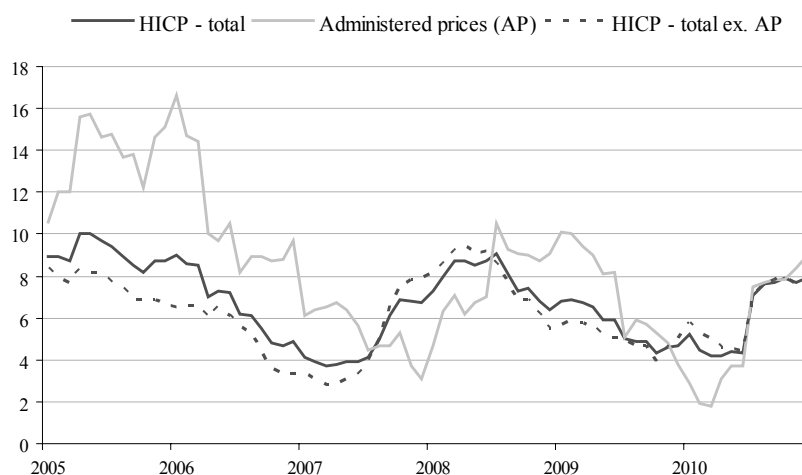
A determining factor for the evolution of inflation in Romania, which is analysed and mentioned in the reports of the Central Bank, is the impact of government decisions.

The decisions of government institutions directly or indirectly influence the evolution of consumer prices by means of price administration and taxes on products.

The administered prices are the prices of all the products and services that are fully or mainly influenced by the decisions of government institutions (central, local, including regulatory agencies).

In Romania, the weight of the products whose prices are administered dropped from 24% in 2005 to 17.8% in 2010. In the EU and the euro zone, the food goods account for approximately 11% of the total expenses of the households.

Evolution of yearly inflation during the period 2005-2010 - percentage

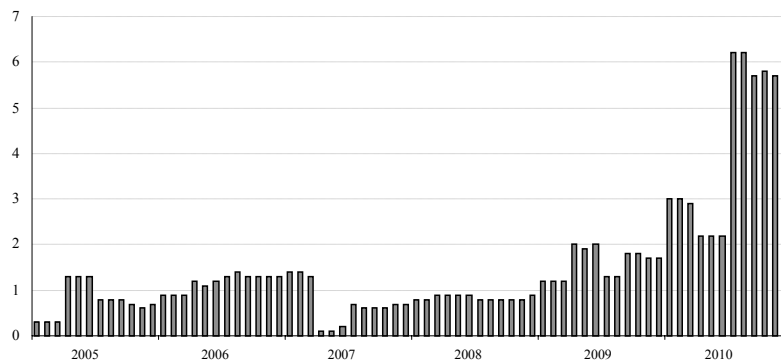


The fiscal policy decisions concerning tax increase or decrease represent another channel by means of which government institutions can influence the evolution of consumer prices.

The European Central Bank and Eurostat drew up the methodology for the calculation of the evolution of consumer prices at constant taxes. The Harmonised Index of Consumer Prices at Constant Taxes (HICP-CT) provides the upper limit of the impact of tax changes on overall inflation and does not give an accurate distribution of the impact of this change.

In 2010, besides the VAT increase (from 19% to 24%), with a theoretical impact of approximately 3.8 percentage points on overall inflation, other tax changes (e.g. excise duty) which contributed to the difference between actual inflation and inflation at constant taxes also occurred.

Impact of tax changes on yearly inflation in Romania (percentage points)



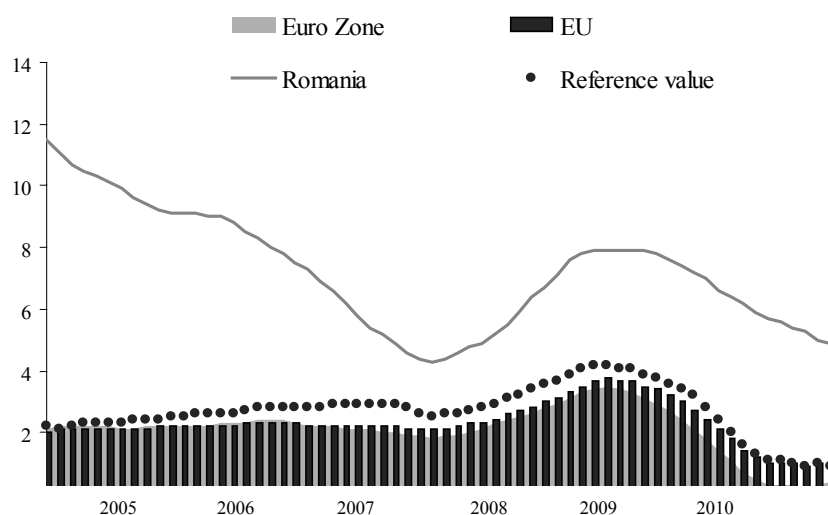
During the post-accession phase Romania is currently in, the goal is to meet the four nominal criteria set out in the Maastricht Treaty, namely price stability, exchange rate stability, a low long-term interest rate and a sustainable tax approach.

The nominal convergence criteria are to a great extent economically motivated. The motivation is related to ensuring economic and monetary stability and increasing economic performance at the level of Member States by using the best practices, which are employed as benchmarks in the evaluation of the nominal convergence criteria.

The Harmonised Index of Consumer Prices is one of the main indicators based on which the degree of nominal convergence in terms of price stability is measured.

During the period January 2005 – December 2010, the average rate of HICP inflation in Romania amounted to 6.7%, much higher than the reference value (2.5%) corresponding to the price stability criterion.

Price stability in Romania during the period 2005-2010, according to the convergence criterion - percentage



Conclusion

The most important aspect in reaching the levels established for the convergence criteria concerns the quality of the statistical indicators. Romania's Harmonised Index of Consumer Prices meets the requirements and standards set out in the European regulations on consumer prices. The methodology for the calculation of the HICP is periodically revised with a view to constantly reaching the purpose for which the development of this indicator at European level was necessary.

The methodological compliance with the European standards is monitored by Eurostat both through periodic evaluation visits and at the moment of adopting the euro.

The retrospective analysis over a longer period shows that, in Romania, the inflation measured through the consumer prices was on an obvious downward trend but it still remained high, with an average value of approximately 6.1% in 2010. This level is much higher than the 2.4% reference value corresponding to the price stability criterion.

The next methodological change in terms of consumer prices at European level concerns the harmonisation of the data sources used to calculate the weighting system. The implementation of the new standard is to take place as of 2012 and may lead, in the case of Romania, to changes in the impact of goods and services on inflation due to structure changes.

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