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RECENT DEVELOPMENTS IN FOOD CONSUMPTION IN ROMANIA – BETWEEN NECESSITY AND MODERNITY

ABSTRACT

This article analyses the recent developments in the food consumption of population in Romania, in the current period of crisis after the COVID-19 pandemic, in the context of the sharp increase of prices for the main foodstuffs and the stagnation/reduction of the real incomes of the population. The convergence trend of the food consumption pattern in Romania with that of the other EU countries for products considered nutritionally superior, for meat products respectively, is analysed. The study also presents the trends of adopting a healthy diet by the population, by switching to a vegetarian, vegan diet or replacing animal protein with plant-based protein in diet. As a general conclusion, the evolution of consumption in different categories of products reveals the existence of unsaturated demand, alongside with the need to increase nutrition quality by increasing animal protein intake and the consumption of products considered nutritionally superior (meat, fruits, vegetables).

Key words: food consumption, food diversity.

JEL Classification: E21

1. INTRODUCTION

This article analyses the recent developments in the food consumption of population in Romania, in the current period of crisis after the Covid-19 pandemic, and also in the context of desiderata regarding agriculture and food as reflected in the ideas derived from the European Green Deal and the "Farm to Fork" Strategy.

The current trends of food consumption at European level are reflected in the studies that aim to analyse food demand by estimating demand elasticity, as well as to assess the convergence between the current trends in food consumption and the desirable goals outlined by the European Green Deal and the "Farm to Fork" Strategy. The economic theory shows that the main determinants of changes in the structure of food consumption are income and prices of food products, including complementary and substitutable ones. Cultural traditions, health concerns, adoption of certain diets, climate and other environmental factors may also have a relative importance. In general, a positive correlation was noticed between the family income and the level of food consumption, in the sense that in the high-income

countries higher levels of food consumption of the population are found, both in quantitative and qualitative terms. The qualitative aspects concern products that are considered nutritionally superior, mainly products of animal origin, but also fresh products such as fruit and vegetables. However, under the influence of requirements for a healthy diet, the consumption of animal products, of meat in particular, has decreased in some West-European countries. Thus, in the period 1970–1980, the share of animal calories in the diet increased, while in the period 1980–1990 the share of animal calories remained stable or began to decrease. In the year 1990, on the average 34% of calories in diet were of animal origin at European level (27.5% in Romania in 2022).

Income is the most important determinant of food consumption. Given the convergence of economic policies and especially the integrated nature of European agricultural policies, there were reasonable expectations with regard to the convergence of the food consumption pattern in the EU countries, in the sense that the convergence of income levels would also result in the harmonisation of the level and structure of food consumption in the EU member states. Yet the empirical results show that there is no obvious convergence of the daily calorie intake of the population in different European countries. When analysing the share of calories coming from different groups of products, certain similarities can be noticed in the diets of population in certain European countries. The factors that determine these convergences can be economic factors (household income, general price level, relative food prices), demographic factors and the new consumer health concerns through orientation towards healthy products. In addition, another cause of convergence is the increase in the vertical and horizontal integration in the food chains of the agri-food companies in Europe, through technological transfers and multinational marketing strategies. The third cause is represented by the relatively similar evolution of public policies in the agri-food sector. The adoption of elements characteristic to the Mediterranean diet by the population in the Nordic countries, through the increase of fruit, vegetable or plant-based fat consumption is expected to increase in the next period. However, the identification of a particular diet of the European consumer is difficult to achieve. There are certain convergences between countries, but these would be rather based on cross-border similarities in terms of socio-economic and climatic factors. The marketing policies and the public interventions on markets also have an important role in this context.

At the same time, it is worth noting that the level of consumption per capita in certain foods seems to have reached an upper threshold in some European countries, although differences across countries continue to persist. At the same time, it can be noted that in certain countries the calorie consumption has decreased in recent years, as a result of consumption saturation. This indicates an almost rigid demand, manifested by the decrease in income influence on consumption. At the same time, due to the relatively low (or even negative) rate of population growth,

there are no significant expectations regarding the increase of food demand due to the amplification of the demographic factor.

2. STATE OF KNOWLEDGE

The changes in the structure of food consumption and the shift to a sustainable diet are also the subject of the SUSDIET (Towards Sustainable Diets in Europe) project, funded by the European Commission, which aims to identify sustainable diets, compatible with European consumers' preferences, and analyse the types of public and private policies that can favour their adoption (Irz *et al.*, 2017). Food demand is analysed in six EU countries (France, Great Britain, Spain, Sweden, Finland, Italy), using microdata from the household budget surveys, to identify the current consumer preferences and to enable the assessment of diets in terms of human health and greenhouse gas emissions. The project also aims to develop a methodology enabling the comparison of results across countries. The changes noticed in population consumption can reveal certain emerging consumer preferences. According to economic theory, consumers purchase certain products in certain quantities in order to maximise utility (or welfare) under the budget constraint condition. The data are provided by household consumption surveys, and foodstuffs were aggregated into 20 categories, considering the effect of health, the environmental impact, in parallel with the diet modelling trends. The shares of product groups in food expenditures were analysed, noting that the share of plant-based products is around 35–45% of total food expenditures, in the six analysed countries. The share of animal products in total expenditures ranges from 41% in Finland to 53% in Spain. For the empirical analysis of demand, a recently developed model is used, namely EASI (Exact Affine Stone Index), which would have certain advantages compared to AIDS (Almost Ideal Demand System) model, among which the fact that the Engel curve system for representing expenses can be polynomial of any order, thus offering greater flexibility.

The own price elasticity coefficients are calculated. These are negative for all groups of products in all analysed countries, reflecting the absence of certain Giffen goods. Most coefficients are less than one, which reveals an inelastic food demand, except for France, where in almost all groups of products the coefficients are negative, greater than one, which reveals an elastic demand with respect to price. In Italy, the demand for animal products is also elastic, with elasticity coefficients greater than one. The heterogeneity of results regarding the own price elasticity of demand results from the fact that the population diets in the analysed countries vary quite a lot as there are cultural and even climatic influences that determine food preferences. The elasticity of demand in relation to household expenditure indicates the extent to which the budget constraints (*i.e.* limited incomes) affect diet sustainability. The obtained results, represented by positive

elasticity coefficients, mostly less than one, indicate that with the increase in total expenditure, consumption also increases, yet to a lesser extent than the increase in expenditure. The value of demand elasticity coefficients in relation to total expenditure can indicate to what extent the macro-economic conditions influence the consumer basket. The model also estimates the cross elasticities, that is to what extent some pairs of food are substitutable (positive elasticity) or complementary (negative elasticity). For example, an elasticity coefficient of 0.1 of the demand for beef in relation to the price of fish is noted, which means that if the price of fish increases by 10%, consumers will prefer beef, the demand for which will increase by 1%.

A general conclusion of this study refers to the confirmation of the robustness of Engel's empirical law, in the sense that demand increases as income increases, but less than proportionally, implying the existence of positive but less than one elasticities. At the same time, the existence of a wide range of statistically significant cross-elasticity coefficients suggests that the diet may have a wider range of products and not only those traditionally considered necessity products.

Another finding is the high degree of convergence of food systems. Middle-income countries follow the trends of high-income countries in terms of the growth rate of their agri-food system and the pace of change. Thus, consumers from developing countries are using their rising incomes to improve their diets, by increasing the demand for meat, dairy products and other products with high nutritional value.

Convergence is reflected by food expenditure for the most important food categories, such as meat, vegetables and high-value products like sugar, sweets and soft drinks (Regmi *et al*., 2008). At the same time, the poor population has less healthy food preferences, having limited access to foodstuffs that are considered healthy, such as vegetables, fruit, and low-fat milk (Bakucs *et al*., 2014).

As socio-economic factors that most significantly influence the level and typology of consumption, the level of household income and income per person stand out, together with the educational level of household head. Other variables such as cultural experiences, location, occupational status, type of household are also worth mentioning. The convergence of food consumption pattern can be also noticed in the countries that recently joined the European Union (*e.g.* Hungary), against the background of increasing household incomes and the openness of the economy. As regards the changes in food consumption, it is worth noting that with economic growth, the population from the newly acceded countries spends more on meat, tending to reach the EU average. As regards concerns for a healthy diet, things seem to be mixed up. On the one hand, there is a trend to replace animal fats with plant-based fats and to increase consumption of fruit; on the other hand, there is an increase in the share of expenditure on alcoholic beverages in total food expenditure (*e.g.* in Hungary). This trend can be also noticed in Romania.

3. MATERIAL AND METHOD

This study relies on a quantitative approach based on secondary statistical data, complemented by economic analysis and interpretation. The NIS National Institute of Statistics Tempo Online Database together with Eurostat provided the primary data for this study from 2007 to 2024. The research draws data from European Commission reports especially the EU Agricultural Outlook 2023–2035 and sector-specific plant-based food consumption studies.

The analysis includes several dimensions: **descriptive statistics** together with **trend analysis** to study food consumption patterns in Romania focusing on meat dairy cereals fruits and vegetables as key product groups; comparative analysis of EU averages to determine how Romania's food consumption patterns align with those of other EU member states; elasticity indicators from secondary sources to evaluate how food demand reacts to changes in income and prices.

The analysis of household income deflation used Consumer Price Indices (CPI) with base year 2015 to calculate the actual income changes throughout the period. The nutritional structure analysis used macro-nutrient data (calories, proteins, fats, carbohydrates) from animal and plant origins to evaluate dietary quality improvements. The combination of macroeconomic trends with nutritional and behavioral aspects through this mixed-method approach provides a complete understanding of recent food consumption developments in Romania. The analysis benefits from long-term data which allows researchers to detect structural changes and new dietary patterns that result from economic pressures and EU policy requirements and consumer health priorities.

4. RESULTS AND DISCUSSIONS

4.1. FOOD CONSUMPTION DYNAMICS IN ROMANIA

After Romania's accession to the European Union, the evolution of food consumption experienced three periods: 2007–2009, when consumptions increased under the background of economic growth, mainly in nutritionally quality products, such as meat, fruit and vegetables; 2010–2015, when consumptions decreased due to the economic crisis, which primarily resulted in a decrease in incomes; 2016–2023, when consumptions increased again, with the increase of incomes.
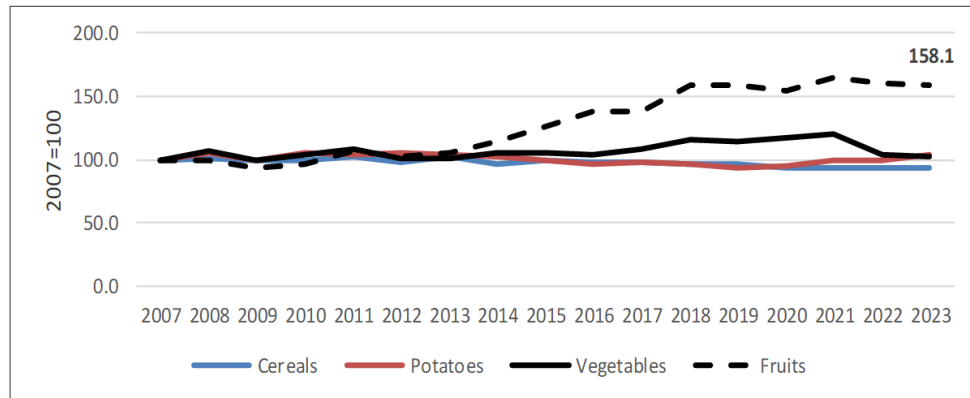
Source: Tempo on line, NIS data.
Figure 1. Dynamics of food consumption per capita in Romania, for cereals, potatoes, vegetables and fruits, 2007=100%.
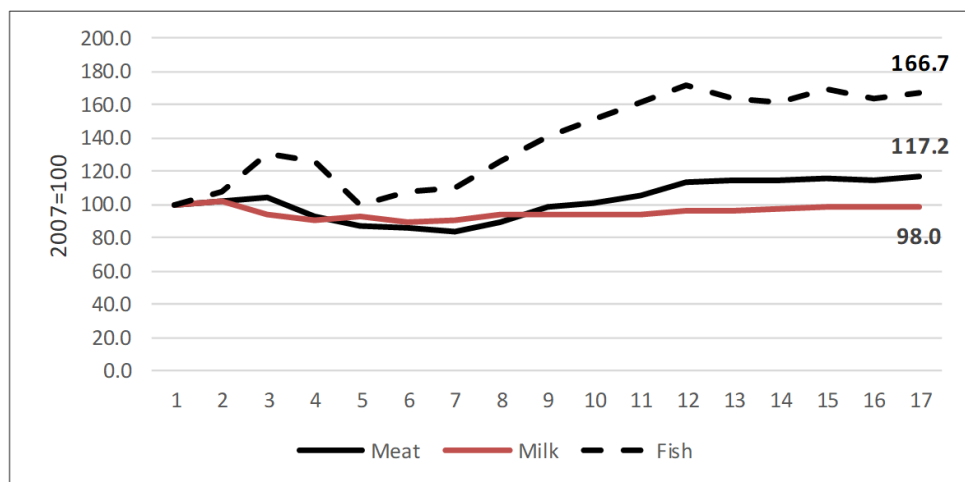
Source: Tempo on line, NIS data.
Figure 2. Dynamics of food consumption per capita in Romania, for meat, milk and fish, 2007=100%.

The top 3 increases in consumption in the period 2007–2022 include the consumption of fruit (by 66.7%), meat (by 17.2%) and fish (by 66.7%). For some of the analysed products, consumption stagnated (in dairy products), while for products like potatoes and cereals, consumption decreased, these being perceived as Giffen goods. Beef consumption also decreased by almost 40%.

Table 1

Annual meat consumption in Romania – kg/capita

	2007–2009	2010–2015	2016–2022
Beef	7.9	5.5	5.4
Pork	33.8	30.5	36.9
Poultry	21.2	19.1	26.8
Sheep and goat	2.5	2.3	2.4
Total	65.3	57.4	71.5

Source: Author's calculations based on Tempo on line, NIS data.

Table 2

Annual meat consumption, by types of meat, EU average – kg/capita [*)]

	2013	2023	2035
Beef	15.1	14.6	13.6
Pork	43.1	40.8	38.1
Poultry	22.8	26.9	28.3
Sheep and goat	1.7	1.7	1.5
Total	82.8	84.0	81.4

[*)] Quantities were converted from retail equivalent kg to carcass equivalent kg using the coefficients 0.7 for beef, 0.78 for pork, 0.88 for poultry and sheep and goat meat.
Source: EU Agricultural Outlook 2023–2035, EC, p. 18.

Meat consumption at EU level experienced a relatively modest increase in the period 2013–2023, by only 1.2 kg/capita, and a decrease by about 3% is expected by 2035. Meat consumption in the EU is estimated to decline in the next period, as a result of dietary changes and the growth of the vegetarian, flexitarian and vegan trends in the population preferences, amid concerns for a healthier diet.

The dynamics of meat consumption reflects the need to increase nutrition quality by increasing the dietary intake of animal protein and it is specific to populations who have an unsaturated food demand for food products that are considered nutritionally superior (meat, fruit, vegetables). In Romania, meat consumption significantly fluctuated in the three analysed periods. Thus, meat consumption decreased by almost 8 kg/capita in the period 2010–2015 from the 2007–2009 average, under the background of economic crisis and the wage reduction measure, to increase consistently by about 14 kg/capita (by about 24%) in the next period, 2016–2022. These evolutions indicate a very elastic, unsaturated demand for meat products, mainly for pork and poultry meat. The largest increase was noticed in poultry meat consumption, by 35% in 2022 compared to 2007, followed by pork consumption, by 17%, in the same period.

The increase in poultry meat consumption can be explained by the lower price of this type of meat and by the preference of elderly consumers, who are increasing in number. It is worth noting that total meat consumption per capita in Romania is lower by 12 kg than the European average in the recent period, 2022–2024.

4.2. NUTRITIONAL DIETARY ASPECTS

In nutritional terms, the calorie content of the diet is slightly increasing in Romania, with **27% of calories of animal origin and 73% of plant origin**, with a slight increasing trend of calories of animal origin (Table 3).

Table 3

Food consumption expressed in nutritional factors

	UM	Years		2022 as compared to 2014 (%)
		2014	**2022**	
Calories – total	number	**3320**	**3557**	107.1
– of animal origin	number	865	980	113.3
– of plant origin	number	2455	2577	105.0
Proteins – total	grams	**108.6**	**117.1**	**107.8**
– of animal origin	grams	54.5	62.7	115.0
– of plant origin	grams	54.1	54.4	100.6
Fats – total	grams	**106.6**	**123.6**	**115.9**
– of animal origin	grams	54.7	62.8	114.8
– of plant origin	grams	51.9	60.8	117.1
Carbohydrates	grams	**460.4**	**471.5**	**102.4**
– of animal origin	grams	33.4	35	104.8
– of plant origin	grams	427	436.5	102.2

Source: Population Consumption Availabilities in 2014 and 2022, NIS.

Dietary change trends in Europe envisage to reduce the consumption of animal products, meat in particular, and to reduce the share of animal products as source of protein (EU Agricultural Outlook 2023–2035, EC). Thus, **a decline in meat consumption per capita is expected, by about 1.6 kg by the year 2035, mainly by reducing the consumption of beef and pork. Poultry meat consumption is expected to increase, as this type of meat is considered healthier and its price is lower.** Dairy consumption is expected to remain stable, although some decreases in the consumption of liquid milk are possible, as a result of the increase in the consumption of plant-based protein drinks (from oats, almonds or soybean). Although these products do not fully replicate the taste and consistency of animal products, consumers are willing to diversify their protein choices and add plant-based products in their diet. Despite these trends, the products of animal origin are expected to remain the dominant source of protein in population consumption in the EU in the future (around 60%). Alternative diets will be dominated by flexitarian diets. Among plant-based products, cereals represent the most important source of protein, but the situation will change towards 2035, with the increasing role of proteins from pulses, fruit, nuts and vegetables.

In Romania, the share of products of animal origin as protein source was 53.5% in 2022.

Table 4

Source of calories in population consumption in the years 2014 and 2022

	Calories of which:	Cereals	Potatoes	Vegetables	Fruit	Sugar	Dairy	Eggs	Meat	Fats	Other
2014	3320	1320	199	124	148	237	462	58	266	453	53
2022	3557	1270	193	122	231	278	484	57	344	518	59
2014	100%	39.8	6.0	3.7	4.5	7.1	13.9	1.7	8.0	13.7	1.6
2022	100%	35.7	5.4	3.4	6.5	7.8	13.6	1.6	9.7	14.6	1.7

Source: Author's calculations based on Population Consumption Availabilities data in the years 2014 and 2022, NIS.

The share of calories from starchy foods (cereals, potatoes, vegetables) decreased between 2014 and 2022, while the share of calories from fruit, dairy, sugar, meat and fats increased. These changes provide a perspective for the qualitative improvement of the diet, rather than for an increase in the number of calories from sugar and fats.

4.3. TRENDS IN DIETARY CHANGES AT EUROPEAN LEVEL IN THE CONTEXT OF CONCERNS FOR A HEALTHY DIET

In the last decade, growing consumer concerns emerged to increase the consumption of plant-based products and plant-based alternatives to meat, beverages such as plant-based milk, soy-based cheese or yoghurts. The consumption of such products has increased five times since 2011 (starting from a very low base) (EU Agricultural Outlook 2023–2035, EC). The use of plant-based protein to compensate the decline in the consumption of animal products is an ongoing process, although these plant-based products cannot fully reproduce the taste and consistency of products of animal origin. Although the consumption trend of plant-based protein products is steadily increasing, the products of animal origin will continue to be the main protein source in the coming years.

The changes in the diet of European consumers are materialising in the amplification of the flexitarian trend, which is characterised by the preference for plant-based products, while occasionally eating meat and fish in moderation. The "flexitarian" diet seems to have been adopted by about 30% of EU consumers (EU Agricultural Outlook, 2023), being much more frequent than the vegetarian and vegan diets adopted by about 7% of consumers. The prevalence of diets based on plant protein while avoiding meat varies even more, depending on age, social status and geographical area. For example, in Germany, about 13% of young adults consider themselves vegans or vegetarians, compared to only 6% in Italy and 10% in France.

In Romania, the market for plant-based protein products has steadily increased in recent years, under the influence of increasing demand for such products. According to the estimates of a recent European project (www.smartproteinproject.eu), the sales of plant-based products increased up to 21 million euros in the year 2020. The sector is dominated by sales of simple plant-

based milk, with 14 million euros, followed by plant-based meat, with 5 million euros, and flavoured plant-based milk, with 2.7 million euros.

Among plant-based products, worth 5 million euros, the most important are plant-based sausages (1.3 million euros), vegan patés (1.2 million euros) and other plant-based meat products (1.2 million euros). The growth dynamics is also important, sales increasing from 13 million euros in 2018 to 21 million euros in 2020 (+62%), and in volume, from 5.7 million kg/l in 2018 to 8.6 million kg/l in 2020.

4.4. DYNAMICS OF FOOD PRICES

Although health and environmental concerns remain strong, the recent increase in inflation has made prices the most influential factor in food consumption.

To cope with inflation and declining purchasing power, Romanian consumers often opt for cheap, lower quality products, while reducing purchases and looking for alternatives to more expensive products.

This price sensitivity comes to the detriment of certain food categories, as consumers are less willing to pay a premium price for higher value products. To a certain extent, this would delay certain food changes and trends observable in the past. Despite short-term disruptions, the importance of healthy diets is likely to persist, as consumers have prioritised health in the post-COVID period. This is reflected in the demand for healthy foodstuffs, for products incorporating components such as vitamins or probiotics. These dietary changes as well as changes in the demand can be considered both challenges and opportunities for the EU agri-food sector.

The recent price increases have had an impact on the purchase of healthy foodstuffs and dietary change concerns. As a result, consumers have turned to more affordable retailers and reduced the volume of purchases. Consumers are sensitive to prices and are less willing to pay higher prices for premium products. This will result in a delay in the adoption of dietary changes and the shift to healthy foods in the post-COVID period, although there are signals that some consumers prioritise healthy eating. This is manifested by the increased demand for foodstuffs that contain fortifying elements such as vitamins or probiotics. These dietary changes represent an important signal and a challenge for the agri-food system.

Prices for food and non-alcoholic beverages were higher by 68% in January 2025 compared to 2015, while prices by product groups increased by 66% in cereal products, 60% in meat, 64% in dairy products, 53% in fats and oils, 61% in fruit and 100% in vegetables. These increases have escalated starting with the summer of 2021, under the background of energy price crisis and the persistent drought that followed, with an impact on agricultural production and prices. Price volatility, assessed on the basis of variation indices, was highest in the following product groups: fats and oils (19%), vegetables (17%), milk, cheese, eggs (16%) and cereal products (15%).
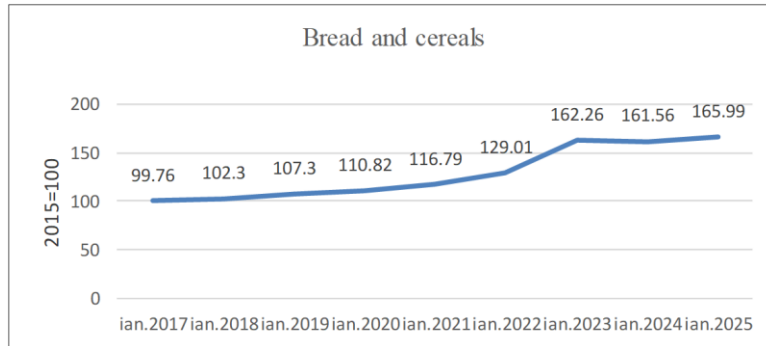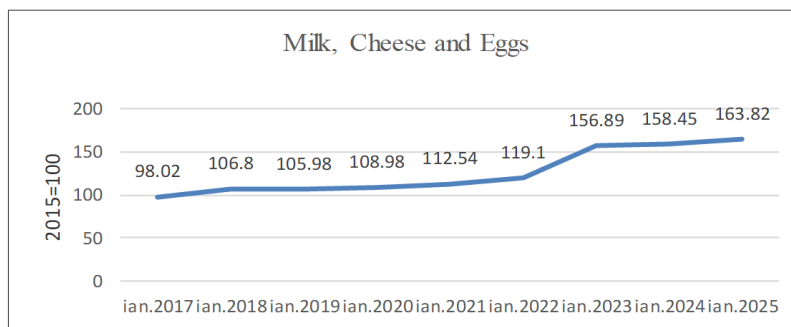
Source: Tempo on line.
Figure 3. Harmonised indices of consumer prices for bread and cereals in Romania in the period 2020–2025.
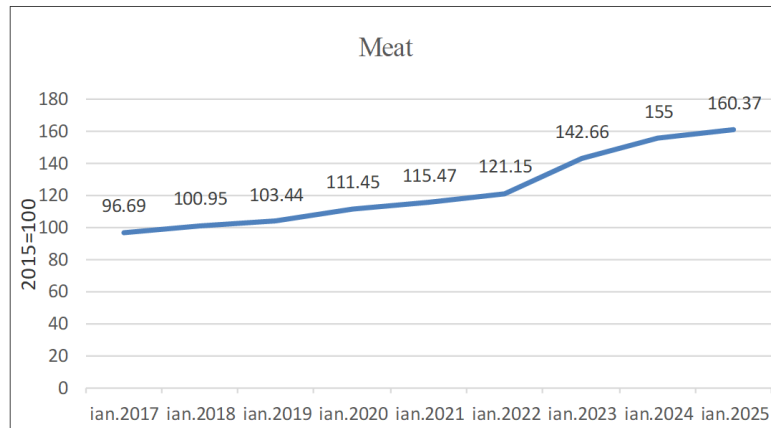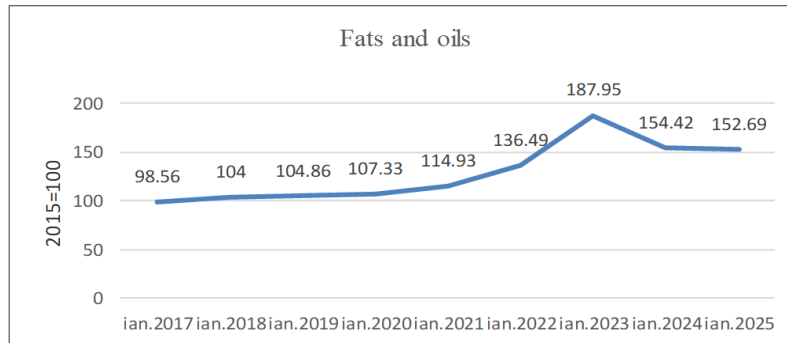

Source: Tempo on line.
Figure 4. Harmonised indices of consumer prices for meat in Romania in the period 2020–2025.
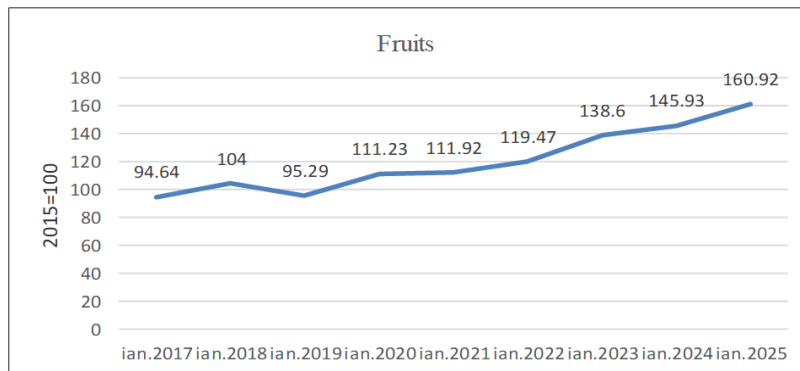

Source: Tempo on line.
Figure 5. Harmonised indices of consumer prices for milk, cheese and eggs in Romania in the period 2020–2025.
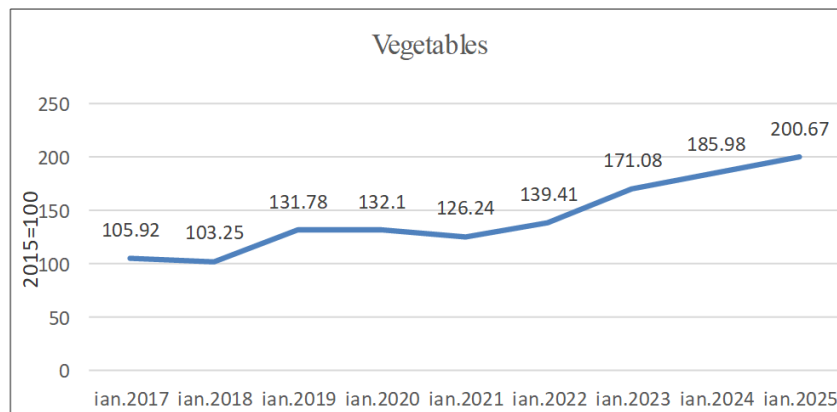
Figure 6. Harmonised indices of consumer prices for fats and oils in Romania
in the period 2020–2025.

Figure 7. Harmonised indices of consumer prices for fruits in Romania in the period 2020–2025.

Figure 8. Harmonised indices of consumer prices for vegetables in Romania in the period 2020–2025.

Total consumer prices were higher in September 2024, compared to 2015, by 51% for all commodities, out of which by 63% for food and non-alcoholic beverages, 71% for alcohol and tobacco, 45% for clothing and footwear, 72% for housing, water, electricity, gas and other fuels and by 62% for hotels and restaurants. Thus, the highest price increases were for energy and fuels and also for alcohol and tobacco.

4.5. HOUSEHOLD INCOME DYNAMICS

Total household income increased 3 times in the period 2015–2024, while cash incomes increased 3.2 times. It is worth noting that cash incomes experienced a higher increase in rural areas (3.4 times) compared to urban areas (3.2 times). The share of cash incomes in total incomes increased from 88% in 2015 to 93% in 2024 (Tables 5 and 6). This means a decline of consumption of own-produced food and an attenuation of the subsistence phenomenon that characterise rural households in particular. Nominal incomes increased more sharply in the first part of the period, *i.e.* they doubled by the year 2020, and by 2024 they further increased by about 50%.

Table 5

Total nominal incomes of households in the period 2015–2024 (RON)

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Total	2687	2945	3392	4251	4790	5216	5683	6464	7175	8210
Urban	2997	3327	3824	4924	5520	5978	6521	7227	7961	9202
Rural	2279	2447	2825	3386	3835	4240	4607	5468	6182	6909

Source: NIS, Tempo on line.

Table 6

Cash nominal incomes of households in the period 2015–2024 (RON)

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Total	2362	2632	3062	3920	4453	4840	5313	5994	6644	7637
Urban	2801	3133	3621	4711	5298	5729	6271	6920	7618	8827
Rural	1784	1980	2330	2904	3350	3701	4083	4784	5414	6075

Source: NIS, Tempo on line.

Next, by deflating incomes using the Consumer Price Index (CPI) base year 2015, the influence of inflation was removed and it was possible to see how much household incomes increased in real terms. The results can be analysed in Figure 9.

It can be seen that in nominal terms, household income in 2024 was on average 8210 RON, but in deflated terms, in 2015 prices, it was only 5296 RON. Despite this, both total incomes and deflated cash incomes increased by 100% (*i.e.* doubled) in the period 2015–2024. Deflated incomes continuously increased until

2021, to decrease afterwards in 2022–2023, due to the increase of inflation. In the year 2024 they increased again, due to interventions specific to the election year. What is worth noting, however, is the significant growth of population incomes in the analysed period, of which the public is less aware at the moment, due to the sharp increase in prices that has eroded the purchasing power in recent years.
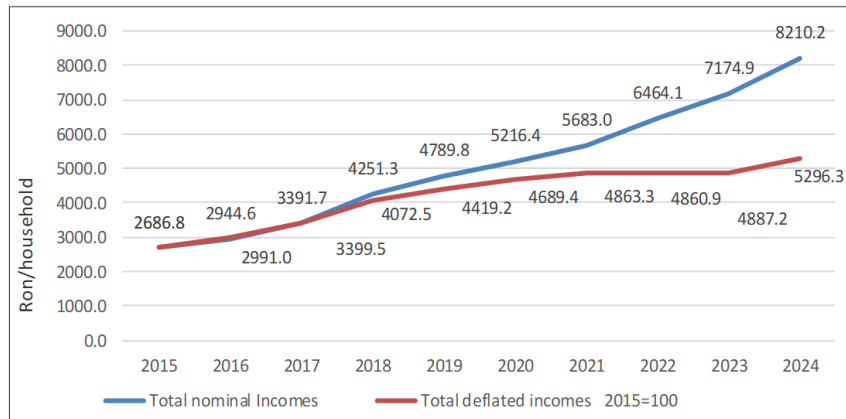
Source: Author's own calculations based on information from Tempo on line, NIS.
Figure 9. Comparison between total nominal incomes and total deflated incomes 2015=100.

5. CONCLUSIONS

The recent period (2015–2024) was characterised by a consistent growth of population incomes, which was noticed mainly in the first part of the analysed period. This increase has also led to an increase in food consumption, mainly in the products considered to have a high nutritional value, such as meat, fruit and vegetables.

In the second part of the analysed period, following the Covid crisis and under the background of unfavourable weather conditions, consumer prices escalated, not only for food but also for fuels, energy and other consumer goods. This even led to a relative decrease in the real incomes of the population in the period 2022–2023. In this situation, consumers turned to more affordable retailers and reduced the volume of purchases.

In Romania, the trend of adopting a healthy diet by giving up the consumption of animal protein has gained more and more followers. In this context, the market for plant-based protein products has steadily increased in recent years, under the influence of a growing demand from consumers that have embraced a vegetarian, vegan or flexitarian diet.

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