
THE RECENT EVOLUTION OF THE STRUCTURE OF THE MACROECONOMIC MODEL

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Abstract

The macroeconomic models are based on principles and conditions, which must be fulfilled by choosing variables, taking them into account and trying to build equations, systems of equations, by solving which to estimate the perspective of the evolution of the phenomenon under study. The changes can be summarized by presenting an alternative scheme of the structure used, of the macromodels determined, for example by demand. To have the intended effect, the presentation should focus on specifying the long-term equations. Consumption depends on expected income, personal income and interest rate. Interest has an essential role in shaping consumer demand, in the sense that, in the context in which the incomes of the population are felt, then the problem of identifying alternative sources arises. These, as a rule, are found in consumer loans or short-term loans. The cost depends on the expected income, and the investment, in the broad sense of the content, depends on the income and the size of the Gross Domestic Product and the usage costs represented by the interest rate, on the ratio between the prices of the production factors and the income available to the population, if we refer to consumption. For the study and research of this phenomenon, the authors used the statistical indicators provided by the National Institute of Statistics. Some graphical representations have been used for a better understanding of the research undertaken by the authors.

Keywords: *income, consumption, expenditure, statistical indicator, households, macroeconomics.*

JEL Classification: E21, E25

Introduction

At the macroeconomic level, the population's income is the basis of its consumption. Practically, the income that the consumer has at his disposal is the determining factor of his buying behavior, respectively of his consumption behavior. In the statistical analysis, the incomes of the population are studied according to various criteria, such as: level, form, destination, dynamics, structure, etc. The functional relationship between the increase in the population's income and the increase in its expenses is signaled by the marginal propensity to consume. This is the expression of the ratio between the change in consumption and the evolution of income, indicating how much consumption increases when disposable income increases by one unit. In the situation where a person intends to buy a good with a value higher than that allocated to current purchases, he will proceed to predict the evolution of his income, taking into account both the wage policy practiced within the entity in which he operates, and the macroeconomic context generated by government policy. Thus, he can anticipate a possible salary increase or, on the contrary, a decrease in his income, if it is in the unpleasant case of losing his job.

As part of this research, based on the data published by the National Institute of Statistics, the authors have carried out a detailed analysis of the level and structure of total income and expenditure of households and per person, registered in Romania, in the period 2022-2023.

Literature review

Anghel M.G., Anghelache C. Et al (2023) conducted a study on the evolution of the population in Romania. Anghelache C. and Anghel M.G. (2017) studied and disseminated a number of economic analyzes on the evolution of international trade of goods, international trade analysis or international trade as a factor of economic growth. Anghelache, C. (2008) carried out an extensive presentation of the formation of household incomes by sources of financing and their expenses by destinations.

The analyzes were also accompanied by the use of statistical-econometric models, based on which various estimates and forecasts were made. Fajgelbaum P. and others (2011) do a study on income, production quality and international trade. Within it, the elements related to foreign trade at present are addressed. Hill C., Smith M. (2011) published an extensive work on international trade relations and the structure of trade relations with the European Union.

Many of the existing studies considered the need for investments and the use of available funds of the European Union in order to grow the national economy. Thus, Corti, F and others (2021) are concerned with comparing

and evaluating recovery and resilience plans. D'Alfonso A. and Sapala M. (2015) are concerned with the payments made from the budgets adopted by the European Union. Darvas Z. (2020) is interested in the ability of European Union member countries to absorb available funds and the effective use of funding for recovery and resilience. Grand, D. and others dedicate their study to the analysis of existing industrial exchanges between the states that make up the European Union according to the individual capacity of each state and the structure of national economies. Herrendorf and Akos (2012) tried to identify the lowest performing business sectors of developing countries. Lee, D., Shin, H., Stulz, R. (2016) addressed in their study the condition that capital development in industry must be the main link of economic growth. Sapala M. (2020) analyzes the flexibility of the European Union budget in the multiannual financial framework.

Data, results and discussion

In economic theory, the term income includes the types of income related to production factors: labor, capital, land. In this context, the labor factor corresponds to the salary, the capital factor corresponds to the profit, and the land factor corresponds to the rent. Interest is also a form of income. At the same time, the income can be mixed, coming at the same time from the use of two or more factors of production. Personal income usually means current income from an activity, supplemented by transfers from the state or companies. Personal income is the main source of the purchase of economic goods.

The disposable income actually achieved by the owners of the factors of production is used for consumption. The part that is not consumed is represented by savings. The relationship between the three indicators is expressed using the calculation formula below:

$$VD = C + E \quad (1)$$

where:

VD = disposable income;

C = consumption

E = savings.

In relation (1), we obtain savings by subtracting consumption expenditure from disposable income, as follows:

$$E = VD - C \quad (2)$$

In general, each person makes a plan regarding savings, based on which he will purchase goods and services in the future. In the short term, it is noted that the increase in income is usually accompanied by an increase in the level of savings. At the same time, the decrease in income generates the decrease in savings. Under these conditions, it can be said that prices and purchasing power can be used as „choice factors”.

In statistical-econometric analyses, disposable income is considered as an independent variable, and dependent variables are consumption and savings.

• ***Total income and expenditure of households and per person, in the period 2022-2023***

Taking into account the fact that the determining factor of the population's consumption is given by the incomes obtained, which in the current period of the Romanian economy bears the imprint of the changes that have occurred within it, the analysis carried out in this research begins with the study of the total incomes, achieved at the macroeconomic level. These are made up of all cash receipts from different sources for which there is no obligation to return and income in kind, valued in lei. Thus, in the category of monetary income are included: gross wages and other wage rights, income from agriculture, income from independent non-agricultural activities, income from social benefits, income from property and income from the sale of assets from the household's patrimony, as well as other monetary income. In the category of income in kind, we find the value of the income in kind obtained by employees and beneficiaries of social benefits and the value of the consumption of agri-food and non-food products from own resources.

In 2023, the total average monthly incomes, expressed in nominal value, at the level of a household, amounted to 7174.91 lei per household, which means an increase of 11.0% compared to 2022, as can be seen from the data contained in Table no. 1.

The largest weight in household income is held by monetary income, which in 2023 was 6,644 lei per household per month, meaning a weight of 92.59%, the rest being represented by income in kind (531 .39 lei). At the same time, within monetary incomes, the largest share, namely 72.16%, corresponds to gross salaries and other salary rights (4794.18 lei), i.e. a share of 66.82% in total incomes. Also, incomes from social benefits, respectively incomes in kind, both increased compared to 2022, also contributed significantly to the formation of total household incomes.

**Total incomes of households, during the period 2022-2023
(lei per household)**

Table 1

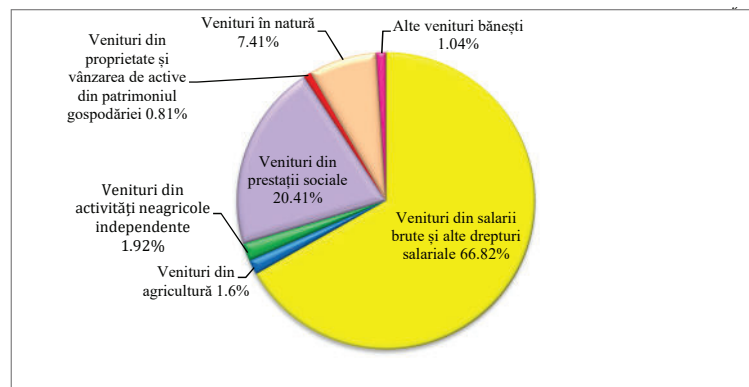
Income per household				
Income categories	2022	2023	Change* (%)	Share of total income in 2023* (%)
Income from gross wages and other wage rights	4340.33	4794.18	110.46	66.82
Income from agriculture	117.42	114.88	97.84	1.60
Income from independent non-agricultural activities	117.83	137.65	116.82	1.92
Income from social benefits	1287.33	1464.17	113.74	20.41
Income from property and the sale of household assets	60.32	58.29	96.63	0.81
Income in kind	470.40	531.39	112.97	7.41
Other monetary income	70.49	74.35	105.48	1.04
Total income	6464.12	7174.91	111.00	100.00

Source: National Institute of Statistics. Press release no. 143/10 June 2024; data systematized by the authors; * authors' calculation.

For a clearer picture of the structure of total household incomes, in the period 2022-2023, they were represented in the form of a structure graph, found below.

The structure of total household incomes, on training sources, in 2023

Graph 1



Source: the authors' representation, based on the data from the press release of the National Institute of Statistics no. 143/10 June 2024.

An important aspect is the analysis of the total average monthly expenses of the population. In table no. 2 the data relating to the total expenses of households, registered in Romania, in the period 2022-2023 are centralized. Thus, in 2023, they were 6,223 lei per household compared to 5,610.75 lei per household in 2022, representing an increase of 10.91%. In 2023, expenses were 86.73% of total revenues.

The total expenditure of households, by destination, in the period 2022-2023 (lei per household)

Table 2

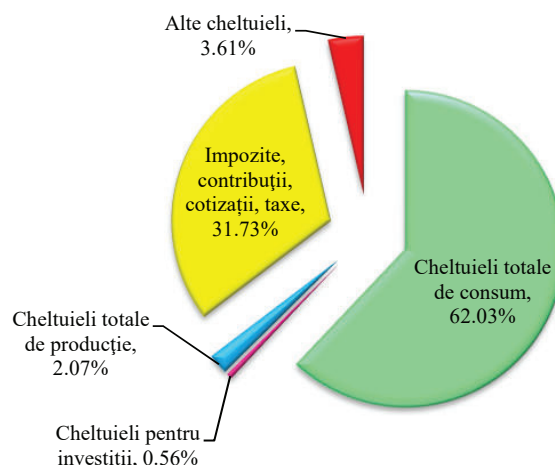
Expenditure per household				
Categories of expenditure	2022	2023	Change* (%)	Share of total expenditure in 2023* (%)
Total consumption expenditure	3450.36	3860.11	111.88	62.03
Investment expenditure	32.90	34.73	105.56	0.56
Total production costs	133.39	129.00	96.71	2.07
Taxes, contributions, dues, taxes	1799.43	1974.27	109.72	31.73
Other expenditure	194.67	224.89	115.52	3.61
Total expenditure	5610.75	6223.00	110.91	100.00

Source: National Institute of Statistics. Press release no. 143/10 June 2024; data systematized by the authors; * authors' calculation.

As can be seen, in the year 2023, almost all expenditure categories registered increases, with the exception of total production expenditure and the counter value of feed consumption from own resources (-3.29%). The largest share in the total expenditure, in 2023, belongs to the total consumption expenses (consisting of monetary consumption expenditure and the value of human consumption from own resources), i.e. 62.03%. The next destination of the expenses is represented by taxes, contributions, contributions, fees, i.e. transfers to the public and private administration and to the social insurance budgets. They have a large weight in the total expenses, i.e. almost 32%.

**The structure of total household expenditure, on training sources, in
2023**

Graph 2



Source: the authors' representation, based on the data from the press release of the National Institute of Statistics no. 143/10 June 2024.

The analysis is deepened by studying the total average monthly income and expenses recorded per person. The data relating to the values recorded by these two indicators in the years 2022 and 2023 can be found in table no. 3. Thus, in 2023, a person achieved total income of 2,871.57 lei, increasing by 11.51% compared to 2022. The largest increase in income was recorded by farmers (+13, 18%), and the lowest by the unemployed (+9.82%). In absolute value, as expected, the highest value is recorded by employees. In the case of expenses, it is found that, in 2023, they increased by 11.43% compared to 2022. The lowest increase in expenses belongs to pensioners (+10.39%), and the highest increase corresponds to the unemployed (+ 15.19%).

**Total average monthly income and expenditure *per person* (RON).
depending on the occupational status of the head of the household,
during the period 2022-2023**

Table 3

Occupational status	2022		2023		Change 2023/2022	
	Income	Expenditure	Income	Expenditure	Income	Expenditure
Employee	3208.49	2805.00	3610.75	3154.59	112.54	112.46
Farmer	1377.44	1274.08	1559.05	1415.50	113.18	111.10
Unemployed	1050.18	963.50	1153.29	1109.85	109.82	115.19
Retired	2096.91	1756.76	2318.72	1939.37	110.58	110.39
Total income / expenditure, monthly averages per person	2575.07	2235.12	2871.57	2490.59	111.51	111.43

Source: National Institute of Statistics. Press release no. 143 / June 10, 2024. data systematized by the authors.

Significant differences in both income and expenditure levels are generated by the residence environment (Table no. 2). Thus, in 2023, the difference between urban and rural environments is +1142.33 lei/person, in the case of incomes, respectively +932.56 lei/person, in the case of expenses. Thus, the level of total average monthly income per person in the urban environment was 3420 lei, 1.5 times higher than in the rural environment.

From a structural point of view, the share of gross salaries and other salary rights in total income was 72.8%, in the urban environment, higher than the one recorded in the rural environment, which was 57.1%. If in the rural environment, the income in kind from the counter value of the consumption of agri-food and non-food products from own resources, in the year 2023, was 10.7% of the total income, in the urban environment, this weight was 2.7%.

**Total average monthly income and expenditure *per person* (RON). on
residential environments, during the period 2022-2023**

Table 4

Residence environment	2022		2023	
	Total income	Total expenditure	Total income	Total expenditure
Urban	3020.63	2602.16	3420.02	2938.33
Rural	2052.57	1804.34	2277.69	2005.77
Total	2575.07	2235.12	2871.57	2490.59

Source: National Institute of Statistics. Press release no. 143 / June 10, 2024. data systematized by the authors.

At the level of a household, the average monthly expenses, in the urban environment, in 2023, were 6,840 lei, 1.3 times higher than those in the rural environment. The ratio is also maintained in the case of incomes, which are 7961 lei per household in the urban environment, in 2023, also 1.3 times higher than in the rural environment.

In 2023, according to the standard classification by destination of consumption expenses, in the total consumption expenses of households, a significant share, namely 35.0%, belongs to food products and non-alcoholic beverages, in the amount of 1351 lei per household, followed by of the monthly expenses intended for housing, water, electricity, gas and other fuels, in the amount of 587 lei per household (weight in the total average monthly consumption expenses of 15.2%). On the third position, each with a weight of 7.3% in the total average monthly consumption expenses, are the expenses for alcoholic beverages and tobacco (284 lei per household), the expenses for clothing and footwear (282 lei per household) and transport expenses (281 lei per household). With a weight of only 0.5% of the total average monthly consumption expenses related to households, the expenses allocated for education of only 18 lei represented the lowest level,

• The evolution of total incomes and expenses of households and per person, in the first quarter of 2024

In the first quarter of 2024, the total average monthly incomes were, in nominal terms, 8049 lei per household, which means 3210 lei per person, up by 15.3% compared to the first quarter of 2023, and those on a person with 14.8%.

The level and structure of total household incomes, by sources of training, in the first quarter of 2024

Table 5

Income categories	lei per household	%
Income from gross wages and other wage rights	5539.24	68.8
Income from agriculture	92.58	1.1
Income from independent non-agricultural activities	143.29	1.8
Income from social benefits	1557.64	19.3
Income from property and the sale of household assets	63.39	0.8
Other monetary income	77.00	1.0
Income in kind	576.25	7.2
Total income	8049.39	100.0

Source: National Institute of Statistics. Press release no. 178/ June 10, 2024. data systematized by the authors.

The largest share held within the total income of households is 68.8% and belongs to income from gross salaries and other salary rights (5539.24 lei per household). Significant weights are also held by income from social benefits (19.3%), as well as those in kind (7.2%).

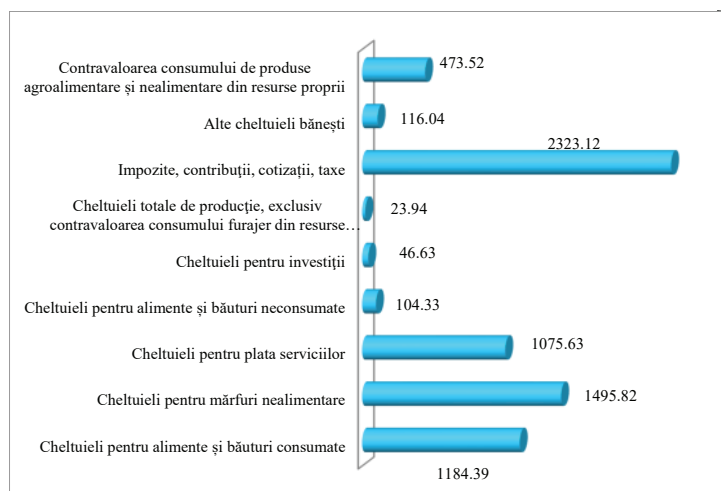
Regarding the total average monthly expenses of the population, we state that, in the first quarter of 2024, they were 6843.42 lei per household, respectively 2729 lei per person. They represented 85.0% of total revenues, up by 14.6%, and those per person by 14.0% compared to the first quarter of 2023.

Monetary consumption expenses (consisting of expenses for food and beverages consumed, expenses for non-food goods and expenses for payment of services) totaled 3755.84 lei and occupied the first position in the total expenses of households, by category of expenses. These are followed by taxes, contributions, contributions, taxes in the amount of 2323.12 lei/household.

In chart no. 3, the authors graphically represented the level of total household expenses in the first quarter of 2024.

The total expenditure of households, by expenditure category, in the first quarter of 2024 (lei)

Graph 3



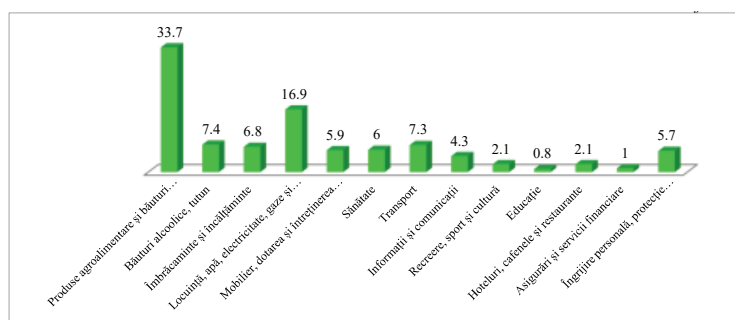
Source: the authors' representation, based on the data from the press release of the National Institute of Statistics no. 178/10 July 2024.

In the first quarter of 2024, the value of consumption of agri-food and non-food products from own resources, consisting of human consumption

(343.26 lei) and feed consumption (130.26 lei), was, on average, 473.52 lei per month household, meaning 189 lei per person, increasing by 10.7% compared to the fourth quarter of 2023.

The structure of total household expenditure, on destinations, in the first quarter of 2024 (%)

Graph 4



Source: the authors' representation, based on the data from the press release of the National Institute of Statistics no. 178/10 July 2024.

Also in the first quarter of 2024, food products and non-alcoholic beverages occupied the first place in the ranking of total average monthly consumption expenses of households, depending on the destination, with a value of 1380 lei per household, which means a share of 33, 7% In second place, we find the monthly expenses intended for housing, water, electricity, gas and other fuels, amounting to 693 lei per household, with a weight of 16.9% in the total average monthly consumption expenses. These are followed by expenses for alcoholic beverages, tobacco, in the amount of 302 lei per household, with a weight of 7.4% in the total average monthly consumption expenses.

Conclusion

The income of the population is the main factor that influences the buying behavior of the person. That is why, in the analysis of the various aspects related to the consumption of the population in Romania, the standard of living and its living conditions, the study of the incomes and expenses of the population are extremely useful. Income, received as a reward by the owners of the factors of production: labor, capital, land, takes different forms, such as: salary, profit, rent or interest.

The consumption of the population covers a wide variety of goods, some of which are essential, such as bread, meat, dairy products, fruit,

vegetables or clothing. Other goods can withstand a postponement of the satisfaction of the needs related to them, being included in the category of luxury objects. The volume, structure and dynamics of consumption reflect the degree of satisfaction of the population's physiological, social or spiritual needs. Practically, the satisfaction of any need is achieved through the consumption of goods. We mention the fact that the study of consumption at the level of products and product groups, along with the quantitative evolution, must also take into account their qualitative evolution. Consumption represents the use of economic goods, in order to satisfy personal or collective needs. In order to satisfy a certain level of desired utility, the consumer will have to use the income at his disposal as well as possible. Many times, this income is insufficient in relation to his wishes. Thus, there is the need to know the income available to the consumer and how it can be allocated to the goods and services he needs, in a certain period of time. Thus, personal consumption signifies an important component of the quality of life, respectively the standard of living.

References

1. Anghel M.G., Anghelache C., Radu, I., Radut, M.C., Dumitru, D. (2023). Analysis of the evolution of the population – source that feeds the labor force. *Romanian Statistical Review, Supplement*, no. 12, pp. 3-14 / 15-27
2. Anghelache. C., Anghel. M.G. (2017). International Trade – factor of economic growth for European Union member States. XXIII International Scientific Conference of the PGV Network. The question of borders: a new representation of the European reality. Casablanca, 14-16 September 2017, 267-278
3. Anghelache C., Anghel M.G., Strijek D.A (2022). Analiza investițiilor autohtone și străine în economia națională. *Romanian Statistical Review Supplement*, 12, 03-10
4. Anghelache, C. (2008). *Tratat de statistică teoretică și economică*, Editura Economică, București
5. Corti F. et al.. The Recovery and Resilience Facility: A springboard for a renaissance of public investments in Europe?, CEPS, January 2022
6. D'Alfonso A. and Sapala M. (2015). Payments backlog in recent EU budgets. Lessons learnt and outlook. EPRS. European Parliament, November 2015.
7. Darvas Z. (2020). Will European Union countries be able to absorb and spend well the bloc's recovery funding?. *Bruegel Blog*, 24 September 2020
8. Erosa. A., Cabrilla. A. (2008). On finance as a theory of tff. cross-industry productivity differences. and economic rents. *International Economic Review*, 49 (2), 437–473
9. Fajgelbaum. P., Grossman. G., Helpman. E. (2011). Income Distribution. Product Quality. and International Trade. *Journal of Political Economy*, 119 (4). 721-765
10. Grand. D., Le Brun. Ch., Vidil. R., Wagner. F. (2016). Electricity Production by Intermittent Renewable Sources: A Synthesis of French and German Studies. *The European Physical Journal Plus*, 131, 329–340
11. Herrendorf. B. and Akos. V. (2012). Which Sectors Make Poor Countries so Un-productive?. *Journal of the European Economic Association*, 10 (2), 323–341

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12. Hill. C.. Smith. M. (2011). International relations and the European Union. Second Edition, Oxford University Press
 13. Lee. D. Shin. H.. Stulz. R. (2016). Why does capital no longer flow more to the industries with the best growth opportunities?. NBER Working Paper Series. no 22924
 14. Sapala M.. How flexible is the EU budget? Flexibility instruments and mechanisms in the multiannual financial framework. EPRS. European Parliament. January 2020.
- *** Institutul Național de Statistică. Comunicatele de presă nr. 143/10 iunie 2024, nr. 178/10 iulie 2024