SHORT PRESENTATION OF MACROECONOMIC ACCOUNTS CONTENT

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Abstract

In this article, the authors focused on presenting the system of national accounts as a system of accounts that records all the results achieved in the national economy. National accounts should be seen as a system in the sense that, from the economic agents and onwards, it is the structural opportunity to record and then base the calculations on the macroeconomic outcome indicators. In this article, the authors tried and synthesized the national accounts that are used in the national economy. It summarizes the content of each of the nine macroeconomic accounts, referring to the fact that there are still two structural steps in the national economy, records to collect the macroeconomic accounts. Each account is structurally presented based on the fact that there are two other steps respectively, the accounts of the economic and then the branches, or the system of layered accounts. The nine accounts are presented in a synthetic way, with references to how to obtain results using the recorded items.

Keywords: *macroeconomics, macroeconomic account, intermediate consumption, estimation, concept*

JEL Classification: C13, E01

Introduction

In this article, it was primarily intended to highlight the main elements that characterize macroeconomic accounts as a system. After a summary of these concentrated aspects, the main macroeconomic accounts, which by progressive cumulation from the data submitted by the economic agents to the second level of accounts of the economic sectors are presented, are completing the nine accounts which represent the concrete way of perform the calculation of the macroeconomic results indicators. The following are the reporting units, which provide the basis for completing the elements of the structure

of national accounts. Aggregated macroeconomic accounts schemes are also presented with the main indicators or aggregated macroeconomic aggregates that can be calculated on the basis of these.

Literature review

Anghelache and Anghel (2016) presented the national accounts that are used to record the activities carried out within the national economy. Anghelache and Anghel (2014) is a reference work in economic modeling. Anghelache, Mitruţ, and Voineagu (2010) analyzed the system of accounts for the results obtained in the national economy. Anghelache, Anghelache, Iarca and Marinescu (2008) analyzed a macroeconomic model applicable to a closed economy. The main elements of the macroeconomic analysis are studied by Anghelache et al (2007) and Anghelache and Capanu (2004). Aruoba and Diebold (2010) addressed a number of issues related to real-time macroeconomic monitoring. Barro and Redlick (2011) studied the macroeconomic implications of government procurement and taxes. Miller and Blair (2009) presented elements of input-output analysis. Öllera and Teterukovsky (2007) addressed the issue of quantifying the quality of macroeconomic variables. Romer and Romer (2010) studied the macroeconomic effects of tax changes.

Research methodology, data, results and discussions

- **Macroeconomic accounts as a system**

Macroeconomic accounts within the national accounts system are the central element through which the nine constituted accounts, numbered 0 to 8, record all the elements specific to the national economy circuit. Specifically, these accounts take over the items recorded successively in the accounts of the subjects (economic agents) and in the accounts of the economic sectors, synthesizing everything that has been done in the national economy.

From this point of view, the content of these accounts is different in scope, but they are closely related to each other, meaning that all economic aggregates have to be easily summed up so that by using the three methods of gross domestic product the other macroeconomic indicators, there is the possibility of calculating and then interpreting the structural elements.

The system of national accounts includes both results that have been made through the market or recorded in stocks, which are then used to concretize structural elements for the calculation of macroeconomic indicators.

An important element is intermediate consumption because it occurs in production, but it is a repeated material record. Thus, for example, if we take the structure of the accounts of the economic agents (economic subjects), we will

find that each economic agent registers in the accounting records, the concrete results he has obtained. Hence, the question arises when it comes to coagulating and restricting all the elements that are important for the calculation of the indicators that some values get a certain repeatability. We can, therefore, give a simple example to understand this aspect by those studying this phenomenon. Suppose the Renault-Dacia car manufacturing company. Specifically, a number of components, such as batteries, tires, other fine parts (injection pumps) etc., are not made at the Mioveni factory. These are purchased from leading manufacturers who, when delivering them, consider them to be finished products and include them in the calculation and reporting of results they have obtained over a period of time. In this context, it also appears that in the reports of the economic agents they appear but are also resumed by Auto-Dacia in the finished product to establish the market price. We find that the market price of, for example, Floresti tires is registered in both companies. The market price practiced by Renault-Dacia also includes these elements.

This is why this component, intermediate consumption, must be located and recorded in the production account and removed from the intermediate or final producer when calculating their gross added value. Thus, in order to get from global production, or global product, to gross domestic product, we must deduct interim expenses.

Another element in determining the content of macroeconomic accounts is represented by the prices used. Thus, we use the market price, the estimation of the indicators in the market prices, ie the price of the product using the free market. In this sense, cumulative aggregates give a value that is specific to the final result. At the same time, each company carries out the tracking of costs through production prices. Starting from the concept of Cobb-Douglas, it results that this is the cost factor, in other words, the macroeconomic indicators are also calculated in this perspective at the price of the factors. Here is a discussion that, in the algorithm used by the National Institute of Statistics is solved and the expression of the macroeconomic indicators is made in the prices of the factors or in the market prices.

Conceptually, macroeconomic indicators are, on the other hand, presented as summing up the results of all trading companies, economic agents and other profile, which realize these values, income on the territory of Romania. In this sense, we are talking about the internal market, so the concept of calculation is that of all those who earn income regardless of their residence. Take, for example, a multinational trading company that is normally based in another country. But as it generates income on the territory of Romania, it is taken into account in the calculation of the macroeconomic results indicators.

This is the concept, to say internally, that takes into account what is happening within the national borders of a state. In this way, by the methods known in the respective macroeconomic statistics, the system of national accounts, the macroeconomic indicators that have the internal expression, ie gross domestic product or net domestic product or gross domestic or net incomes, are calculated.

However, there is another way of calculating these macroeconomic indicators in the philosophy and concept of the national accounts system. Thus, the income realized by companies resident in Romania but on the territory of other states is taken into account and, from this point of view, the gross product is called gross national product, ie made by all those who are considering the fiscal reporting, ie the registration is highlighted in Romania.

There are some differences between the two concepts and indicators that can be adjusted depending on how they were considered.

In other news, the change in inventories is given by the difference between end-of-year stocks and those at the beginning of the year. As a rule, in reporting the results, the stock balance at 31 December of the year for which the calculations are made is taken as the initial stock of the following year. Thus, that difference results in a plus or a minus that is used to adjust the macroeconomic performance accounts that we have recalled.

The nine macroeconomic accounts reveal the contribution of resources or the use of macroeconomic indicators, providing the possibility of careful, even far-reaching structural analyzes, on a country's macroeconomic developments over a given period of time.

There would be other aspects to be taken into consideration but the ones presented are sufficient in this doctoral thesis which I have referred to only those that have methodological significance and which should be known in their entirety for the study of macroeconomic indicators to or one that leads to pertinent, conclusive conclusions, on the basis of which measures to adjust or correct the existing situations in the national economy are taken.

In drawing up the balance of payments and the statistics of Romania's international investment position is the responsibility of the NBR having its own Department of Statistics. Monthly and annual statements are calculated from 1993 onwards, based on the recommendations of the Payments Balance Payments Manual of F.M.I (BPM5). The NBR also acts independently from the government and can cooperate with other authorities to achieve its goals.

The legal framework for Balance of Payments calculation, which empowers the NBR to request the necessary information for the Balance of Payments calculation. In line with this regulation, commercial banks must record and report monthly transactions on the Balance of Payments.

From 1 January 2005 a new system has entered into force, the legal framework being ensured by Regulation no. 2/2004 on the reporting of foreign exchange transactions and the reporting obligation for the Balance of Payments calculation.

The NBR Payments Division collects data from all reporting banks and other sources (customs authorities, government, agencies, etc.), maintains contact with the reporting community and is responsible for methodological issues. Within the reporting community, banks code transactions based on the Balance of Payments principle, applying double-entry accounting.

The NBR cooperates with the Customs General Directorate and the National Statistics Institute (INS) on foreign trade statistics. The classification of accounts and the definitions of foreign trade statistics are broadly in line with BPM recommendations 5. In the field of national accounts, the ESA 95 principles are used.

For some components of the Balance of Payments, complementary data sources are also used, such as: Data from the General Customs Directorate and the NIS for Trade Information; exchange offices for tourists' expenses; debt management and financial analysis system (DMFAS): a database to be used to monitor Romania's external debt. Borrowers report medium- and long-term loans contracted from non-residents directly to the Ministry of Public Finance (MFP) and the NBR. While MFP manages public and publicly guaranteed external debts, the NBR monitors the external debt of the private sector; the NBR balance sheet provided by the Accounting Department, which is used in the estimation of transactions in reserve assets. Adjustments are made when changes in valuation occur as a result of fluctuations in the exchange rate; bank balances of banks, which are used for short-term assets and bank liabilities.

The International Transaction Reporting System measures a country's non-resident transactions based on actual payments. The software used automatically applies the rule of law found in the aggregation process for both income and debt. Balance of payments data has been calculated in US dollars and since June 2003 in Euro.

Whenever transactions denominated in other currencies may be converted into euro at the exchange rates applicable at that time. Balance sheet data uses the end-of-period exchange rates. Dividing in currencies is only available for reserve assets and debt flows.

Geographical distribution is available for exports and imports of general goods and for information obtained from DMFAS (loans and credits received over medium and long term, payables, public bonds, and so on).

The reporting units are as follows:

- The banking sector. Banks must report all external transactions made to their clients' account and on their own. Banks identify whether a transaction is Balance of Payments type.
- In line with the principle of double entry, an entry should also be made in the financial account for these external transactions in order to offset the corresponding changes in the bank's currency account;
- The Monetary Authority. The NBR provides data on reserve assets and other transactions involving monetary authorities;
- Sheet of public administration. The public administration provides information for specific items of the Balance of Payments, such as: expenses of the Romanian diplomatic missions abroad, received once a year from the Ministry of Foreign Affairs; some information on concessions / donations received, available from the Ministry of Public Finance (MFP); estimates of government debt cancellation; information on public or publicly guaranteed external debts available from the Ministry of Public Finance.

Balance of payments data is calculated monthly by the National Statistics Department and is disseminated approximately 45 days after the end of the reference period. The data are published on a cumulative basis, with new monthly data produced. The revised annual figures are available approximately six months after the end of the year. As a result of the data collection methodology, the classification of accounts and the definitions used in Romania for Balance of Payments are in line with the BPM methodology 5. While geographical distribution is only available for the trade balance and medium- and long-term loans, by institutional sector is available for all components of the financial account.

• **Schematic presentation of macroeconomic accounts**

The data from the macroeconomic activity are synthesized in the nine accounts in the national economy. The resulting macroeconomic indicators are calculated on the basis of the data contained in these closely correlated accounts. Each of the nine accounts is drawn up annually and is expressed in current prices.

Scheme of Goods and Services Account (Account 0)

- Value of production - PG - Import - Imp - Net taxes on products and imports - I	- Intermediate consumption - Ci - Final consumption - CF - Gross investment - Inv. B
Total goods production = Total use of goods	

Based on the elements in the account structure, the value of goods and services can be determined using the formula:

$$PB + Imp + I = C_i + CF + Inv.B + Exp \quad (1)$$

where:

PB = Production value;

Ci = Intermediate consumption;

Imp = Tax;

CF = Final consumption;

I = Net taxes on products and imports;

Inv.B = Gross investment;

Exp = Export net.

Total goods production = Total use of goods

Account 1 (Production) is completed by sectors and by economy, including flows at this level. The account is in the form of equations and expresses macroeconomic equilibrium.

For sectors, the calculation relation is the following:

$$VAB_{pp} = PB - C_i \text{ for sectors} \quad (2)$$

At the level of the national economy, the calculation relation is form:

$$PIB_{pp} = PB - C_i \text{ for the whole economy} \quad (3)$$

Account 2 (earnings) comprises the same levels (sectors and total economy). Income from activities and patrimony. Thus, resources (GDP / VAB) are expressed. It also highlights depreciation and indirect taxes. The balance of this account expresses the value of PINs per economy and VAN for each sector.

Account Scheme 2

- Depreciation - Am - Indirect taxes on products and imports - I_{ind}	- Gross value added (by sectors) - VAB_{pp} or - Gross domestic product (national economy) - GDP
- Net added value (by sectors) - VAN_{pf} or - Net domestic product (national economy) - PIN_{pf}	- Subsidies - S

Account 3 (revenue distribution) expresses primary distribution. The Revenue Distribution Account Scheme (Account 3) is as follows:

- Revenues of production factors paid abroad - VFPS	- Net domestic product (national economy) - PIN_{pf}
- National income - VN	- Revenues of inputs received from abroad - VFIS

- Revenues of Factors of Production Paid Abroad (VFPS)
- Revenues from inputs received from abroad (VFIS)
- National income (VN)
- Net domestic macroeconomic product (PINpf)

Account 4 (redistribution of income) expresses the correlation between national income (VN) and national disposable income (VND) corrected with the external relations balance.

Account Scheme 4

- Current transfers paid to other countries - TCPS	- National income - NN
- National disposable income - VND	- Current transfers received from other countries - TCIS

From the scheme, we deduce the notation's symbolism:
- Current transfers paid to other countries - TCPS
- National income - VN
- Current transfers received from other countries - TCIS
- National disposable income - VND

The balance relationship is the following:

$$VND = VN + (TCIS - TCPS) = VN + STCS \quad (4)$$

Account 5 (use of revenue)

The scheme of account 5 is presented below

- Final consumption - CF:	- National disposable income - VND
- Private consumption - Cp	

The notation symbol is the one in the layout.

Account 6 (patrimony modification) expresses funding opportunities for patrimony building. This account closes with surplus or deficit.

Patrimony Change Account Scheme (Account 6)

- Gross investment – Inv.B	- Gross savings - EB: - Net savings - E - Amortization - Am
- Patrimony transfers to other countries - TPRS	- Patrimony transfers from other countries - TPSR

The equilibrium relationship is given by expression:

$$SF = (EB – Inv.b) + (TPSR – TPRS) \quad (5)$$

Account 7 (funding for patrimony change) shows the correlation between funding and the level of debts. This account accounts for a funding surplus or a funding gap. The two measures (source of financing and debts), but a clear picture of economic solvency.

Account 8 (foreign) expresses the correlation between exports and imports.

Account schema 8

- Purchases of goods (Import) - Income from economic activity and patrimony paid to foreigners - Current transfers to abroad - Capital transfers abroad - Changing claims	- Sale of goods (Export) - Revenues from economic activity and heritage gained abroad - Current transfers from abroad - Capital transfers from abroad - Changing commitments

The schema notes are shown below:
- Buying from abroad = Imp
- Economic and patrimony paid to foreigners = VAEP
- Current transfers abroad = TCS
- Capital transfers abroad = TcpS
- Change of sales receivables abroad = Exp
- Income and wealth received from abroad = VAEPS
- Current transfers from abroad = Tcds
- Capital Transfers from abroad = TcpdS
- Modifying commitments = MA.

The equilibrium relationship is based on the summation of left-hand elements, which must be equal to the sum of the elements on the right.

As a final point of this presentation, we can express the view that these nine macroeconomic accounts contain the results obtained by aggregating and using the data provided by the economic issues taken at sectoral level and finally in the macro accounts. All nine accounts at national level include, in the final form, the results structured in the national economy.

Conclusion

The analysis of this study on macroeconomic accounts draws some conclusions. First, it is obvious that taking into account the gross added value achieved by all the subjects of the national economy, it is completed on the

three hierarchical stages at the level of the economic subjects, then at the level of the economic sectors and finally the nine macroeconomic accounts. A second conclusion is that the system of national accounts is a well-founded system, which ensures the possibility of calculating all the macroeconomic elements that can help: to highlight the results of the economy over a period of time, the magnitude of the aggregates on the basis of which the macroeconomic indicators are calculated, these being elements that underpin the possibility of time-based analysis as well as the comparison of results internally and internationally. We can also say that this system is highly usable because it can highlight the real magnitude for calculating other indicators such as gross domestic product per capita, purchasing power parity, and other statistical sizes that ensure international comparability.

References

1. Anghelache, C. and Anghel, M.G. (2016). *Bazele statisticii economice. Concepte teoretice şi studii de caz*, Editura Economică, Bucureşti
2. Anghelache, C. and Anghel, M. (2014). *Modelare economică. Concepte, teorie şi studii de caz.*, Editura Economică, Bucureşti
3. Anghelache, C., Mitruţ, C. and Voineagu, V. (2010). *Sistemul conturilor naţionale*, Editura Economică, Bucureşti
4. Anghelache, C., Anghelache, G.V., Iarca, I. and Marinescu, R.T. (2008). Modelul macroeconomic pentru o economie închisă. *Revista Română de Statistică – Supliment*, Bucureşti, decembrie 2008, 202-209
5. Anghelache, C. (coordonator) (2007). *Analiza macroeconomică – Sinteze şi studii de caz*, Editura Economică, Bucureşti
6. Anghelache, C., and Capanu, I. (2004). *Statistică macroeconomică*, Editura Economică, Bucureşti
7. Aruoba, S.B. and Diebold, F.X. (2010*).* Real-Time Macroeconomic Monitoring: Real Activity, Inflation and Interactions. *American Economic Review*, 100, 20–24
8. Barro, R. and Redlick, C. (2011). Macroeconomic Effects from Government Purchases and Taxes. *The Quarterly Journal of Economics 126* (1), 51-102
9. Miller, R.E. and Blair, P.D. (2009). *Input-Output Analysis*, Cambridge University Press, NY, USA, 2nd Ed.
10. Öllera, L.E. and Teterukovsky, A. (2007). Quantifying the quality of macroeconomic variables. *International Journal of Forecasting*, *23* (2), April–June 2007, 205–217
11. Romer, C. and Romer, D. (2010). The Macroeconomic Effects of Tax Changes: Estimates Based on a New Measure of Fiscal Shocks. *American Economic Review, 100* (3), 763–801