Microaccounting and Macroaccounting: Characteristics and Interferences

Cristian Cenar
Iuliana Cenar
"1st of December 1918" University of Alba Iulia, Romania
cristian.cenar@uab.ro
cenar_iuliana@uab.ro

Abstract

This paper's endeavour is to emphasize the way in which national (macro) accounting is affiliated to the science of accounting, using procedures and methods, taken from economic sciences and other sciences, therefore having a strong interdisciplinary character.

An argument to support national accounting's affiliation is macro-accounting's object of study, that is the state and the movement of assets, similar to micro-accounting but at a much higher level of representation. Consequently, we presented other common similarities between national accounting and micro-accounting (enterprise accounting) by applying a series of common principles and common procedures particular to micro-accounting: account and balance sheet.

Key words: micro-accountting, macro-accounting, procedures, principles
J.E.L. classification: M41

1. Introduction

Accounting generally represents, an instrument used to quantify economic life from the organization's level to a national level. The extension of the scope of applicability of accounting from the enterprise level to the macroeconomic level (branch, sector, national economy) is achieved by national accounting.

According to the Romanian National Statistics Commission, national accounting is: „a coherent and detailed set of accounts and tables that provide a comparable and complete picture of a country's economic activity" (https://insse.ro/cms/ro/, 2020, p.205).

Similarly, Jean-Paul Piriou stated about national accounting that: „it is a general representation, a detailed and numerical report of the national economy in an accounting framework" (Piriou, 1990, p.3).

So, based on accounting rules, national accounting is a model used for presenting information that reflects all economic operations carried out by the resident economic entities.

Most economists consider national accounting to be an integrating part of the science of accounting for the following reasons:

- most of the input data from the national accounts comes from micro-accounting, more precisely from the data provided by the accounting documents prepared by the economic agents;
- the System of National Accounts records both transactions between various components of the national economy and those with foreign countries, similar to micro-accounting where the various operations between the economic agent and its external economic environment are recorded;
- national accounting uses the account, which is its own accounting procedure;
- the registration of transactions in accounts is done based on the principle of double entry which is also an accounting method.

Private firms routinely produce balance sheets. Nations should do the same (Dasgupta, 2015, p.447).

The aspects taken into consideration in supporting the arguments for a macro-accounting belonging to the science of accounting target the object of study, the general principles of financial reporting, as well as two of the most representative specific accounting procedures, namely balance sheet and account.

2. Literature review

The use of the accounting principles and the procedures for a scientific approach seems trivial, somewhat obsolete in the context of a world in a continuous transformation due to multiple factors: economic internationalization, increasing competition in technology, increasing competitiveness, labor market flexibility, the Covid 19 pandemic and its impact particularly with regard to telework and e-commerce, the economic cohesion at the European level by bridging the gap between countries, etc. But, on the other hand, the extrapolation of the accounting principles and procedures operable at a microeconomic level and a macroeconomic level has not been the subject of analysis by the specialized literature, at least at a national level.

Among the interest of the international literature for macro-accounting we mention:

- there is an accounting framework corresponding to every complete macro-economic model (Pyatt, 1991, p.181) which develops an accounting oriented towards general equilibrium, a model that represents the macro statistical systems by aggregating the journal entries of micro accounting (Nshi, 2017), integration of macro and micro sustainability issues: the need for engineering accounting (Tingey-Holyoak *et al*, 2013, p.500);
- the contribution of national accounting aggregates for a measure difference in welfare, both over time and across different economies, and to indicate whether development is sustainable (Asheim, 2003, p.113);
- the problems concerning the definition, classification, and measurement of the national accounts, also the argument that the elementary units which must be classified in national accounting are economic objects (real and financial), rather than transactions (Aukrust, 1966, reprinted 2008, p.703);
- review – and to an extent a further development – a methodology of national accounting that responds to the needs of governments when they engage in sustainability and policy analyses (Dasgupta, 2015, p.447)
- how / the way in which the evaluation of ecosystem services and ecosystem assets can be undertaken in an integrated national accounting setting (Obst *et al*, 2015, p.1), a method for assessing the reliability of national accounts statistics (Bos, 2009, p.930), sustainability and green national accounting (Asheim, 2003, Ionescu *et al*, 2020, Clarke *et al*, 2006);
- the uses of the System of National Accounts (SNA), for macroeconomic analysis, inter-temporal comparisons, international comparisons (Ouanes *et al*, 1997);
- possibilities to improve national accounts (Hansson, 2006, pp 45-64) etc.

Last but not least Peter van de Ven sustains the need for a transparent design of economic statistics from business registers to national accounts. This is meant to create a better understanding of the connections between the different sets of data which lead to increased possibilities for users to connect micro-data to macro-data (Peter van de Ven, 2017).

The macro-accounting belonging to the science of accounting and the comparative approach of the two accounting segments are not new ideas in the international literature, being exploited from 1966 by Yu (Yu, 1966).

National accounts are a macro-economic accounting system that is compiled on the basis of a globally harmonized accounting standard (Keuning, 2004, p.167)

E. Lande analyzes the relationship between macro-accounting and micro-accounting in France and considers that national accounting is a macro-accounting process, whereas its component parts are micro-accounting processes because they are concerned with a set of transactions limited by the legal boundaries of the entity in discussion, the local government authorities, companies, households, etc (Lande, 2000, p.151).

Through this action we aim at bringing an argument for the belonging of national accounting to the science of accounting, as well as identifying the common and specific elements of the two forms of accounting, derived from reporting to accounting principles and methods.

3. Research methodology

The identification of some characteristics and the interference between micro-accounting and macro-accounting involved the use of the specialized literature that addresses the issue of accounting at the level of entities, as well as that which targets the national accounts, microeconomic and macroeconomic economic aspects.

By approaching the subject which targets some characteristics and interferences between micro-accounting and macro-accounting we framed an incursion on a less travelled road from the wide field of accounting, respectively the field of macro-accounting, of science, philosophy and the reasoning of data interpretation from accounts at a national level. Our research is a qualitative one and it is desired to create premises in order to enterprise thorough studies on the segment of the technical support that indicates the present situation at the level of the national economy, but also the development perspectives of a nation.

4. Findings

4.1. The objectives of national accounting and micro-accounting

The System of National Accounts (SNA) was developed as an accounting framework within which macroeconomic data can be compiled and presented for economic analysis. It provides an internationally recognized system for organizing a continuous flow of information that is indispensable to the analysis, evaluation, and monitoring of a country's economic performance (Ouanes, 1997).

National accounting, as well as accounting, has an objective and a research method. The national accounting method uses a group of general procedures common to all sciences (observation, reasoning, comparison, grouping, classification, analysis, synthesis, aggregation, consolidation) but also specific micro-accounting procedures for analyzing the state of the national economic heritage and economic transactions.

The national accounting method constitutes the rational way to achieve the objectives, while the procedures used by macro-accounting represent the means to achieve these objectives.

The object of study for micro-accounting is on the one hand the state of the patrimony reflected by the stocks or balances of the patrimonial elements, and on the other hand by the movement of the patrimony manifested in the volume and structure of economic goods, rights and obligations. Similarly, the national accounting has as object of study the state of the national economic patrimony, but at a much higher level of representation than that of enterprise accounting kept at the level of economic agents, as well as the study of economic flows between national economy components, including their flows abroad.

When the object of study of national accounting is the economic relation quantified in standard values which are characterized by a temporal dimension, we are dealing with a flow accounting.

Therefore, the flow accounting records the movements of values, which correspond to the economic-financial operations carried out over a period of time, a fact also found in micro-accounting through the income statement of economic agencies related to the film of their activities over a period of time.

National accounting is seen in terms of the flow of values, characterized by the term, economic circuit consisting of real flows (goods, services) and cash flows (income and expenditure flows). On the one hand, due to the non-existence of a unitary physical standard for flows of goods and services but only of a usable monetary standard and flows of income and expenditure, and on the other hand the fact that a financial flow does not always correspond to a real flow, national accounting neglects real flows and reflects only the flow of financial flows.

In the situation when the object of study of the national accounting is represented by the national economic patrimony, presenting its instantaneous situation valid for a certain moment (the end of the financial exercise), we have a stock accounting. Inventory accounting should not be seen as a substitute for flow accounting but as an extension of it (Ionașcu, 1995, p.77). The stock or patrimony accounts give information on the structure and size of the patrimony of the national economy valued in monetary standard. Wealth accounts are presented in the form of a balance sheet that measures the country's wealth and its creditworthiness or debt situation to the rest of the world.

Thus, the object of national accounting is the reporting of activities (activities that generate economic relations and changes in assets), of some sectors, regions, branches and the whole national economy, involving the aggregation of accounting data and other information systems to develop macroeconomic indicators (Tabără *et al,* 2012).

4.2. Common principals of national accounting and of micro-accounting

Both national accounting and micro-accounting use common principles to achieve the objective of the research.

The main purpose in developing accounting principles is to obtain a true and fair view of the economic condition and development of an enterprise as reflected in the financial statements. However, many authors consider the accounting principles too rigid and conservative, implying an underestimation of the assets of the economic entities, inducing in the national accounts the negative effects of presenting the economic reality. Thus in this context Lauzon L.P. considers that the accounting principles have the following features (Ionescu, 2004, p.153):

- they do not represent uncontrollable or perfectly objective laws;
- they are not based on natural or abstract laws;
- they are not immutable;
- they do not have an immutable scope of coverage;
- they are not all necessarily true;
- they are more or less organized;
- they are accepted without being demonstrated;
- they do not result from unanimous acceptance, but are the result of a consensus and often a compromise.

The accounting principles that are taken from micro-accounting are mainly due to the origin of most data sources, which come from the financial statements of the economic agents, but also from the accounting practice.

We further present the accounting principles applied in national accounting and micro-accounting.

The principle of the entity: in micro-accounting and macro-accounting, this principle requires the delimitation of the economic entity's patrimony from other natural or legal entities, respectively the patrimonies of the components of the national economy (branches, sectors) including the national economic patrimony as a whole from the rest of the world. The principle requires the registration of those transactions that create legal property relationships over the assets included in the patrimony, from the point of view of the entity holding the patrimony.

In national accounting, the rest of the world is assimilated with an institutional sector, not being in reality a sector itself, but a fictitious entity, realizing a grouping of all the transactions of the resident institutional units with the non-resident units. Because it is not important to analyze the economic behavior of non-resident units, all belonging to a single fictitious global entity, called the sector of the rest of the world, being presented in terms of its influence on the national economy.

The principle of monetary quantification: requires using both in micro-accounting and macro-accounting of the same monetary standard (leu). The use of a currency as a means of measurement "allows the summation of very different objects and therefore, it allows the homogenization of a heterogeneous whole, the enterprise, to reduce this whole to several numbers, respectively one, the result" (Colasse, 2009, p.80).

Accounting law 82 from 1991 states that the accounting should be kept using a national currency, and the accounting of economic operations performed in foreign currency is kept in both national currency and foreign currency (https://static.anaf.ro/static/).

In the fields of micro-accounting and macro-accounting, there are registered only flows and inventories that can be valued or measured in monetary terms.

The principle of continuity of the activity: for micro-accounting in Order no. 1802 / 2014 for the approval of the Accounting Regulations regarding the individual annual financial statements and the consolidated annual financial statements, art. 49 (1), *assumes that the entity will continue to* *operate normally, without entering into a state of liquidation or significant reduction in business* (https://static.anaf.ro/).

This principle used in national accounting requires that the national economy cannot be liquidated, even in the face of a prolonged economic crisis regardless the generating factors.

In contrast to IAS 10 in micro-accounting, it requires to the management of financial reporting agents to assess the company’s ability to continue operating in the foreseeable future, without going into liquidation at the time of reporting. In the case of a negative scenario in which a company is forced to significantly reduce or even stop its operations, there is a risk of liquidation of assets in a short period of time at very low prices generating large differences between the net value of reported net asset and the real one.

Macro-accounting provides the evaluation of assets at current market prices, or in the absence of a market at a replacement value, and not allowing an evaluation at liquidation prices. The evaluation of the national economic patrimony does not have as an objective the measurement of its total value at a realization value of the component elements, but at a reconstitution value in the hypothesis of the continuity of the economic activity. So an enterprise has a liquidation value, but not a national economy (Ionașcu, 1995, p.80).

The principle of intangibility of the opening balance sheet: it requires in the enterprise accounts that all the elements of the balance sheet reported at the end of a financial year have the same value as the similar elements in the balance sheet that open the next financial year.

This means that even if policies, procedures, accounting methods and the identification of errors are changed in a financial year, it is forbidden to change the items in the opening balance sheet of the year, requiring them to be intangible. The respective situation can be solved by opening the balance sheet for the next financial year, except the errors that will be corrected through the carried forward result.

In national accounting, the principle does not apply directly, being induced from the enterprise accounting, through imported and processed information of the closing balance sheets of the reporting economic entities, taken over in order to prepare the centralized balance sheet of the national economy.

Failure to comply with this principle at the macroeconomic level would lead to distortions and incomparability over time of the macro-economic indicators determined on the basis of this imported information.

The principle of independence of the exercises: it requires to impose in micro-accounting the recording of income and expenses, without taking into account the time of collection or payment, but the time of invoicing, during the financial exercise (usually the calendar year) at the end of which, taking into account all such income and expenses, financial statements are prepared and reported. Therefore, the principle of independence of financial exercises requires the use of accrual accounting of economic entities in the preparation of financial statements except for information related to cash flows.

The principle in national accounts applies on the one hand as a result of taking over in the national accounts and in the balance sheet accounts, grouped temporarily over financial years, simultaneous data regarding economic agents contained by the reported financial statements. On the other hand, in national accounting the principle is taken from the very way of recording income and expenditure in the accrual accounting of the economic agents.

The principle of non-compensation: the economic agents’ accounting requires the non-compensation of the assets components and the liabilities elements from the composition of the balance sheet or of the income and expenses from the profit and loss account. In the national accounting, the principle prohibits the compensation of assets and liabilities in the balance sheet, non-clearing of resources and uses in non-financial accounts and net flows of receivables and payables from the financial accounts for the institutional sectors.

In macro-accounting, a distinction must be made between compensation and consolidation. Consolidation is applied both in micro-accounting for business groups and also in national accounts. Institutional consolidation is carried out between the institutional units of the same institutional sector, by canceling from resources and uses the value of transactions between these units, as well as financial assets or mutual debts.

The transactions between institutional units from different sectors are not consolidated in order to give a full measure to the economic phenomena. Consolidation of accounts can be achieved not only at the level of the institutional sectors but also at the level of the national economy in order to highlight the transactions of the economy with non-resident institutional units.

The rest of the world account is consolidated by definition because it does not concern the economic behavior of non-resident entities.

Regarding the compensation, it can be stated that it is also a consolidation whose result is the compensation of one part of an account in relation to the other, but all at the level of a single institutional unit, the net value obtained in this manner is then aggregated to a higher level.

This is the case for product taxes compensated by product subsidies (net product tax), stock inflows compensated by stock outflows (change in inventories), purchases compensated by sales of financial instruments (net value of the financial instrument), etc.

The *principle of the historical cost* requires keeping in the accounting the assets or liabilities of the assets at the historical cost or at the cost of entry until the moment they are taken out of the patrimony (excepting reevaluations), carried out at the same value. If, on the occasion of the inventory, possible reversible depreciations or definitive depreciations are found, it is necessary to compensate them with the value of provisions and amortizations from the amending accounts. The same rectifying structures are found in the balance sheet together with the patrimonial elements at the entry value.

There are derogations from this principle in the case of periodic reevaluations at the current price. This is the case of the reevaluations of foreign exchange transactions during the day, the traded titles and the financial instruments on term at the stock exchange quotation. In the national accounting, the assets and the liabilities from the patrimony accounts are taken over from the micro-accounting at the historical cost, being necessary a further processing in order to be registered at the current market price. So each asset will be valued as if it had been acquired or produced at the time of preparation of the equity account. Taking it out of stock from macro-accounting is also done at the current price, in contrast to the historical cost from micro-accounting. This price difference represents a loss or a gain from holding them in the national accounts.

The principle of prudence: in the accounting of economic agents, it implies at the time of the preparation of financial statements a prudent assessment, avoiding the overestimation of assets and income, but also the underestimation of liabilities and expenses, in order not to report increased profits or losses. However, the application of the principle must not lead to either an intentional undervaluation of assets and income or an overestimation of debt and expenditure, so as not to affect the neutrality and credibility of the financial statements. According to this principle, in the situation when the patrimonial elements are valued, at the end of the exercise in order to prepare the balance sheet, the inventory value is below their book value, provisions for depreciation are constituted and in the opposite case the obtained difference is not accounted for.

The principle of prudence in national accounting is applied indirectly through the data in the financial statements of the economic operators, which are taken over and processed at a national level in the national accounts and the centralized balance sheet of the national economy.

The principle of permanence of methods: in micro-accounting it implies the maintenance of the application from one period to another of the rules and norms regarding the evaluation, registration in accounting (especially since accounting entries are standardized by the Ministry of Public Finance) but also the presentation in the situations of the financial statements and the results in order to ensure the comparability of the reported information over time.

Changes in methods are, however, allowed when required by legal regulations or accounting standards, but also in the situation of obtaining better information from the users of accounting information.

In order to obtain comparable macroeconomic indicators in time and space, the principle is also applied in national accounting on the one hand by maintaining the same methods of assessment, calculation of macroeconomic indicators or aggregation methods used by macro-accounting, and on the other hand by the nature itself of the data influenced by the principle, taken from the financial statements of the economic agents.

The principle of the double entry: in micro-accounting, it involves the registration of an economic operation, obligatorily in two corresponding accounts, in the debit of one account and in the credit of the other account, of the same amount that affect the patrimonial elements and/or the same components of the result of the economic agent’s activities. The principle of the double entry is also applied in national accounting by a slightly different technical transposition through the principle of the “double double entry”, taken from the financial statements of the economic agents (Ionașcu, 1995, p.24).

This means that any type of transaction with goods and services, of distribution or financial carried out between two institutional sectors generates four entries: two entries in the accounts of each sector which relate to the object of the operation (non-financial or “purely” financial) and two others recordings for each sector representing the financial counterpart of the operation or its cash flow.

4.3. Procedures used in macro-accounting specific to enterprise accounting

The national accounting uses, in addition to common principles, also procedures specific to micro-accounting:

The account: in micro-accounting it is drawn up for each patrimonial element, highlighting their movement, through the debit and the credit structure as parts of the account, but also the value level of the patrimonial element expressed by the balance of that account. In macro-accounting, the number of accounts opened depends on the number of institutional sectors (a complete sequence of flow accounts is opened for each institutional sector) and on the number of activities in the national economy (a production account and an operating account are opened for each branch).

From micro-accounting, the income statement has the greatest resemblance to these accounts, being also a flow account, its balance having the same meaning as the final balance of the sequence of accounts that constitutes the financing capacity or need of the sector or of the national economy.

In addition, the result statement records the income and expenses for a certain period of time for an economic operator, similar to the accounts of an institutional sector that records the cash flows generated by the economic flows, in fact constituting the income and expenditure flows corresponding to a time period related to the sector.

The balance sheet: it is a specific micro-accounting procedure that ensures the double representation of the patrimonial structures of an economic agent. Similarly, in the national accounts the balance sheet reflects the national economic patrimony, presenting on the left the value of non-financial assets and financial assets, respecting the classification in the financial account, and on the right the value of liabilities consisting of financial debts and net value of the patrimony.

The national economic patrimony contains only those elements that are subject to the following conditions: the element must be part of the patrimony of a single entity, to be able to have the quality of goods (so to be able to be valued), to be registered in the capital account or in the financial account (to contribute to the actual accumulation or financial accumulation) and if it is of a financial nature, the item must be recorded in the assets of one entity and in the liabilities of another.

In micro-accounting, the balance sheets are prepared by each economic agent at the end of the financial year, while in national accounting the balance sheets or patrimony accounts are prepared at the level of institutional sectors and for the whole national economy, being a tool of analysis and synthesis of their economic status at the end of the financial year. Balance sheets are in fact inventory accounts (except for the change in equity account), which finalizes the complete sequence of sector flow accounts, presenting the final result of production, distribution, consumption, accumulation of the institutional sector or the national economy.

The use of balance sheets in micro-accounting and macro-accounting provides the link between micro-economic indicators (the most relevant are: turnover, profit, loss and costs) and macroeconomic indicators specific to national accounts (production, intermediate consumption, gross value added, gross operating surplus etc.).

Thus, two levels of analysis are identified: on the one hand the analysis of individual and among individuals behavior in the micro-economy and on the other hand the analysis of the behaviors at a collective level of homogeneous groups of individuals (Ghizdeanu, 2007, p.6).

5. Conclusions

It can be said about the national accounting that it represents a model for presenting information, even if many are of a statistical nature, based on accounting rules, which reflect all the economic operations carried out by the resident economic entities during a year.

Even if, by the way of presenting and interpreting the essential mechanisms of the national economic life, using their own statistical techniques, generating contrary opinions regarding the affiliation of national accounting to science of accounting, nevertheless as a result of the use of its own accounting principles, procedures and techniques, most economists consider macro-accounting to be an integral part of accounting science.

6. References

- Asheim, G., 2003. Green national accounting for welfare and sustainability: a taxonomy of assumptions and results, *Scottish Journal of Political Economy*, Vol. 50, No. 2, pp. 113-130, [online] Available at: <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=367462 > [Accessed 8 January 2021].
- Aukrust, O., 2008. An axiomatic approach to national accounting: an outline, *Review of Income and Wealth Serie*s 54, Number 4, pp. 703-713.
- Bos, F., 2009. The Art and Craft of Compiling National Accounts Statistics and their Implications for Reliability. *Review of Income and Wealth*, Vol. 55, Issue 4, pp. 930-958, Available at <SSRN: https://ssrn.com/abstract=1505738 or http://dx.doi.org/10.1111/j.1475-4991.2009.00353.x> [Accessed 8 January 2021].
- Clarke, M., Islam, S., 2006. National account measures and sustainability objectives: present approaches and future prospects, *Sustainable Developmen*t, John Wiley & Sons, Ltd., vol. 14(4), pp. 219-233.
- Colasse, B., 2009. *Fundamentele contabilității* (*The Foundations of Accounting)*, Tipo Moldova Publishing House, Iași, p. 80.
- Dasgupta, P., 2015. Disregarded capitals: what national accounting ignores, *Accounting and Business Research*, 45:4, pp. 447-464, DOI: 10.1080/00014788.2015.1033851.
- Ghizdeanu, I., Stănică C., Ristea C., 2007. *Utilizarea bilanțurilor contabile în analiza și prognoza macroeconomică* (*Using Accounting Balance Sheets in Macro-economic Analysis and Prognosis)*, pp. 5-20, ftp://www.ipe.ro/RePEc/WorkingPapers/cs14-1.pdf.
- Hansson, K., 2006. Improving national accounts, *Kybernetes*, Vol. 35 No. 1/2, pp. 45-64, [online] Available at <https://doi.org/10.1108/03684920610640227> [Accessed 29 January 2021].
- Ionașcu, I., 1995. *Contabilitate națională (National Accounting)*, Economică Publishing House, Bucharest, pp. 77, 24, 80.
- Ionescu, R.V., Zlati M.L., Antohi, V.M., Stanciu S., 2020. Modelling EU agriculture’s regional disparities under the national accounting system’s approach. The impact of the new economic and environmental challenges, *Economic Research - Ekonomska Istraživanja*, DOI: 10.1080/1331677X.2020.1805347.
- Ionescu, C., 2004. *Informarea financiară în contextul internaționalizării contabilității (Financial Inforrming in Giving Accounting an International Character)*, Economic Publishing House, Bucharest, p. 153.
- Yu, S.C., 1966. Microaccounting and Macroaccounting, *The Accounting Review*, pp. 8-20.
- Lande, E., 2000. Macro-accounting and micro-accounting relationships in France, *Financial Accountability & Management*, 16(2), pp 151-165.
- Nshi, K., 2017. Macro Accounting and General Equilibrium, [online] Available at SSRN: < https://ssrn.com/abstract=2905052> or <http://dx.doi.org/10.2139/ssrn.2905052> [Accessed 1 February 2021].
- Obst, C., Hein, L., Edens, B., 2016. National Accounting and the Valuation of Ecosystem Assets and Their Services, *Environmental & Resource Economics*, Springer;European Association of Environmental and Resource Economists, vol. 64(1), pp 1-23.

- Ouanes, A., Thakur, S.M., 1997. *Macroeconomic accounting and analysis in transition economies*, International Monetary Fund, [online] Available at: <https://www.elibrary.imf.org/view/books/071/04362-9781557756282-en/04362-9781557756282-en-book.xml> [Accessed 28 January 2021].
- Piriou, J.P., 1990. *La Comptabilite nationale*, La Decouverte, Paris, p.3.
- 18.Pyatt, G., 1991. SAMs, The SNA and national accounting capabilities, Review of Income and Wealth Series 37, No. 2, June 1991, pp. 177-198, [online] Available at: <http://www.roiw.org/1991/177.pdf> [Accessed 10 January 2021].
- Tabără, N., Ungureanu, M., (2012), *Considerations on the Normalization of National Accounting*, EuroEconomica Publishing House, vol. 31, no. 2, [online] Available at: <http://journals.univ-danubius.ro/index.php/euroeconomica/article/view/1212/1141> [Accessed 11 January 2021].
- Tingey-Holyoak, J., Burritt, R., Pisaniello, J., 2013. *Integration of Macro and Micro Sustainability Issues: The Need for 'Engineering Accounting'*. 10th International Symposium on Environmental Software Systems (ISESS), Neusiedl am See, Austria. pp.500-507, ff10.1007/978-3-642- 41151-9_46ff. ffhal-01457480f [online] Available at:< https://hal.inria.fr/hal-01457480/document> [Accessed 5 February 2021].
- Van De Ven, P., 2017. Present and Future Challenges to the System of National Accounts: Linking Micro and Macro. *Review of Income and Wealth*, Vol. 63, pp. S266-S286, 2017, [online] Available at <SSRN: https://ssrn.com/abstract=3079949 or http://dx.doi.org/10.1111/roiw.12331> [Accessed 29 January 2021].
- Romanian National Statistics Commission, (2020), Conturi naționale *2016-2017* (*Național Accounts 2016-2017*, p. 205. [online] Available at: <https://insse.ro/cms/ro/content/conturi-na%C5%A3ionale-2016-2017-limba-rom%C3%A2n%C4%83> [Accessed 15 February 2021].
- https://static.anaf.ro/static/10/Anaf/legislatie/OMFP_1802_2014.
- https://static.anaf.ro/static/10/Anaf/legislatie/Legea_contabilitatii.htm.