

## Using the System of National Accounts in the Forecasting Activity

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### Abstract

Macroeconomic activity is not sufficiently concrete to be based on a thorough study, and based on concrete models to provide a vision for growth economic perspective. There Oser models used in countries that have adopted the System of National Accounts and therefore requires complexity that presents to refer to some medium-term econometric models. In this regard, we have already established a dynamic multisectoral model used by the French in the estimates it requires such a study. Whichever model forecasting is important to note, stages of implementation of such a model, which can be translated into the following summary: solutions each year on ensuring macroeconomic balance; final demand determines production knowing its level determined on account of capital and labor should be an objective envisaged; calculation in advance and then price the determining factor in terms of economic engagement in such a perspective; determination of income earned and distributed to ascertain what remains among economic operators usually talk about profit, resulting in return on invested capital. Another factor here is the return on invested capital to see the efficiency and profitability. All depend ultimately final demand which consists of household consumption and foreign exchange. Another element is the connection analogous regarding foreign trade, knowing that the ability to export and import of a country depends to some extent and how is achieved or can calculate indicators that show profitability of and under which it is envisaged the possibility of adjusting perspective. In this article the authors propose some models that can be used in analyzing and forecasting economic growth then using items you expected and shows them System of National Accounts.

### Key words

Macroeconomic account, correlation coefficient, indicator, econometric model, cost price

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### 1. Introduction

In this article, the authors started from macroeconomic accounting system used in countries that use as a form of evidence macroeconomic analysis and macroeconomic national accounts system. In this context the authors summarizes the main stages of applying the model to use synthetic system of national accounts in the business of switching to realization forecast of economic analyzes that give meaning formulated on the use of national accounts in this direction. The authors studied specifically, a macroeconomic forecasting model simulation static analysis and submit them stating that based on information from the national accounts can lead to the determination of coefficients to base future development of the national economy. Of course elements are theoretical but they enable their content to specific analysis, correlation coefficients setting, and the opportunities for assessing the future development trend of the national economy.

### 2. Literature review

Anghelache *et al.* (2016a) applies a type autoregressive model to make a forecast for the economy of Romania, on a horizon of four years, Anghelache *et al.* (2016b) utility model ARMA presents the macroeconomic forecast. Anghelache and Anghel (2016), Anghelache (2015) represents the reference works in the field of statistics and macroeconomic forecast. Fixler *et al.* (2015) analyzes the growth and inequity in the system of national accounts. Anghelache *et al.* (2006) describe the role of macroeconomic analysis and forecasting study economic development of a country. Partachi *et al.* (2013) analyzes the

macroeconomic accounts system in the development of official statistics. Anghelache and Anghelache (2012) assess the labor market in Romania. Păunică *et al.* (2009) study forecasting systems research and development. Carp *et al.* (2017) deals with the content and structure of national accounts. Blanchet and Piketty (2016) describe the role of national accounts as a data source in the study of economic inequality, Piketty *et al.* (2016) develops a theme close or the role of national accounts in national income distribution analysis of the US economy. Anghelache *et al.* (2013) presents the role of national accounts macroeconomic statistics. D'Agostino *et al.* (2013) develop on macroeconomic forecasting. McFarlane *et al.* (2014) analyze some indicators regarding Canada. Pinkovskiy and Sala-i-Martin (2014) approach the estimation of poverty, including the capitalization of national accounts data. Lehmann and Wohlrabe (2015) study the forecasting of GDP. Allan (2016) employs NAS data in forecasting the Scottish economy. Clark *et al.* (2014) approach the forecasting of the Australian budget. Stark (2014) focuses on GDP forecasting, Kirby *et al.* (2015) discuss on the accuracy of NIESR's GDP growth forecasts.

### 3. Methodology o research

National accounts allow analyzing the evolution of supply and demand of goods and services in terms of growth, development costs and corporate profits, formation and accumulation use all the agents of foreign economic relations etc. Therefore, in addition to the activity accounts last to develop prospective accounts, short-term for the current year and the future and the medium term perspective of several years.

Compilation of National Accounts, the overall economic picture and the picture of financial operations is a complex endeavor that involves primary data collection besides several successive stages of correction, balancing and review of available information.

As is apparent from the documents UNO, S.N.A. It aims at describing and analyzing both economic structures and provision of international rules unitary calculating the most important macroeconomic indicators. System of National Accounts (S.N.A.) or national accounts is the main system for recording and analyzing macroeconomic used in international statistics almost all countries, especially those with market economies. Prepare budgets every year economic forecast accounts for the current year and next year, underpinning economic development policy of the state and is mainly reflected in financial law.

Therefore, ensuring continuous information as accurate and at the same time operating system requires final accounts, half, provisional and forecast that fetter a schedule time thoughtful.

Among the models used by countries that have adopted the system of national accounts (S.N.A.) required by complexity, medium-term econometric model, the French called dynamic multisectoral (D.M.S.). This model is dynamic, sequential (results influence the economy every year coming years) and multisectoral and on it you can describe scenarios of economic development in different assumptions, the model allows simulation conditions are modified one or more variable exogenous or endogenous.

Stages of implementation of the model can be summarized as follows:

- solutions each year shall be successively realizing annual balancing permanent solutions;
- final demand determines production; knowing the level of production, determining required capital and labor by using production function;
- knowing of the foregoing and then calculate the cost price (subject knowledge salaries, social charges and taxes). Price therefore depend salary and salary depends on prices; therefore, they shall be calculated simultaneously, based on the equation between production, the use of capital, the employment level, the level of fees and taxes;
- the dividend is determined, the households and remaining businesses (profit); hence the return on capital invested and the rate occurring in determining investment;
- final demand consists of household consumption and foreign exchange. Income household consumption is determined knowing. Since income is deducted from production and price, that there is an inverse correction connection. So it went from final demand to determine production, income and consumption;
- analogue connection to external trade occurs; Export and import capacity depends on domestic price compared to the external one. Also, the export depends on the utilization of production capacity, so adjust simultaneously depends on price and production capacity;
- this scheme excludes "administration" and financial institutions.

#### 4. Determination of the macroeconomic indicators

The indicators of macroeconomic results are calculated within the system of national accounts, and they are an expression of aggregates. The aggregates result, as their name states, from the sum operation applied to the data recorded in the accounts of economic agents or sectors, or by the estimation of a measure. Aggregation can be found in practice under more forms. One of these is summarization through the use of units. There are three cases, regarding the drill-down of population in sub-populations. The sum operation can be used independently or combined with weighing.

Summing by variable is also a form of aggregation, as the values of certain variables can be summarized per units or as independent values. In this case, the weights also apply. The estimation of a global measure is a particular case of statistical data processing, when the sum operation does not apply. In this case, the determination of the focus indicator follows a rigorous pattern, based on a model.

The aggregation of macroeconomic data is strongly inter-linked with adequation: the correlation between the core contents of the indicator and the contents of the measured theoretical concept. Each indicator, and therefore each macroeconomic calculation methodology, must be based on a sound theoretical framework, which clearly details the concepts corresponding to the indicator and its calculation steps. As statistic covers fairly the same concepts used in macroeconomic science, this is not too hard to achieve. Also, this correlation must be valid for forecasting measures and indicators.

The theoretical framework must be appropriate to the economic reality and phenomena, while statistical indicators and methods follow a different path, they must be appropriate to the theoretical contents that are as closely as possible match, as a total match is not always the case. The measurement and calculation methodologies are supposed to be cost-effective. The macroeconomic data related to transactions and flows can be achieved either by process observation or following the experimental path. The reality of the national economy, at macroeconomic level, is more complex than the theoretical pattern of flows. A key aspect in this case is the differentiation between national and internal indicators. The internal/national classification of data is determined by the adequation idea.

The main macroeconomic aggregates are: the Gross Domestic Product, the operational excedent of the total economy, the mixed income of the total economy, the net income,

GDP (Gross Domestic Product), measured on market prices, indicates the final output of production activity within the country borders. Is defined on three modes:

- summarization of gross values added for various sectors/branches. From this value, the subsidies are retracted, and the taxes are added. This also indicates the balance of the economy's production account;
- the summarization of final usage of resident institutions, expressed as final consumption and gross formation of fixe capital, to which the net export is added;
- the summarization of wages, taxation on productions and imports, from which subsidies, gross operational surplus and mixed income are deducted.

A special indicator related to the GDP is the Net Domestic Product, that is:

$$NDP = GDP - \text{Fixed Capital Consumption} \quad (1)$$

The operational surplus of the total economy is the sum of gross surplus indicators for various branches or sectors. The mixed income, gross or net, of the total economy is the same indicator as the one corresponding to the households. The national income, also measured as gross or net, is formed by the following indicators:

- wages;
- taxation on production and import.

From the above summarized measures, the subsidies and net incomes related to properties are deducted, together with the operational surplus and mixed income. The gross/net approach involves operating with the same type of indicators in the described operation.

There is a relationship between the national income and the GDP:

$$NI = GDP - PI_{r/nr} + PI_{rec} \quad (2)$$

Where:

$PI_{r/nr}$  = Primary incomes received;

$PI_{rec}$  = Primary incomes paid.

The Gross National Income, measured by market prices, matches identically the Gross National Product, having the same measurement base. The National Available Income can be measured as gross or net indicator. Its calculation formula is the following:

$$NAI = \sum_{i=1}^n AI_i \quad (3)$$

That is the sum of institutional sectors' ( $i$ ) available income (AI).

Also, to be noted the correlation between NAI and National gross income (NGI):

$$NAI = NGO - \text{Current transfers paid to non-residents} + \text{Current transfers received from outside by residents} \quad (4)$$

The Total economy represents the NAI that is not used for final consumption. It can be calculated according to the formula:

$$NEc = \sum_{i=1}^n EC_i \quad (5)$$

That is the sum of economies (EC) for all institutional sectors ( $i$ ).

The balance of the foreign account of primary incomes and current transfers is the surplus/deficit of the total economy in the scope of foreign exchange operations. The financing balance of the national economy can be either positive or negative and represents the sum of financing balances of institutional sectors. In the calculation of GDP, some indicators are used, and we would like to develop on them.

The private consumption can be measured on two optics. The market-based optic is narrower, and the main indicator is supposed to include only the acquired commodities and services. This method does not include in the private consumption the measures of self-consumption, consumption from household production. In contrast, the wider optic involves the consideration of all goods and services that were used for consumption, but its application is more difficult. To overcome this, a middle solution was established, which allows the inclusion of manufactured goods that have been consumed.

The public consumption indicates the expenses made by public organizations, to acquire goods and services necessary to their own activity, as resources. The flows not related to goods and services exchange are not included in the public consumption (i.e. social insurance). The gross formation of capital includes two indicators related to the two components of capital: fixed and inventories. The main indicator is the sum of the two child measures. Gross investments represent the largest share of gross fixed capital formation. The variation of inventories is the difference between inputs and outputs related to inventories within a given interval.

*The net export designates the difference between the value of exported and imported goods/services. It also helps measure the performances of the foreign treat activity of our country.*

Private consumption represents the value of goods and services meant for consumption.

To further develop, we present below a static simulation model of macroeconomic forecasting, which operates with information provided by the N.A.S.:

$$Y = C + I + G + (E - M) \quad (6)$$

$$M = a_1 \times C + 0C_2 \times I + a_3 \times G + a_4 \times E \quad (7)$$

$$C = \text{fix } Y \quad (8)$$

$$L = yx Y \quad (9)$$

$$B=P(E -M) \quad (10)$$

Where:

Y= Gross Net Product;

C = household consumption;

I = Gross private investment;

G = consumption and gross investment of public administration;

E = exports;

M = imports;

L = the amount of work;

B = trade balance (foreign trade) in foreign currency.

Model parameters have the following meaning:

$a_i$  = propensity to import consumer;

$a_2, a_3, a_4$  = content of imported products other components of final demand;

P = inclination of edge (average) to consumption;

Y = marginal cost (average) gross national product expressed in work (the inverse of labor productivity);

$P_i$  = exchange rate expressed in a standard currency.

The first equation captures the balance of resources and use of products; the second is a function of the import; Equation (8) behavior, expressing household consumption as a function of P.N.B .; Equation (9) is a function of a single factor production, and the equation (5) captures foreign balance of trade.

The model has five equations and 8 unknowns, so it is indeterminate, and has three degrees of freedom. In order to resolve his, some of the variables may be exogenous (i.e. I and E), and other variables can become optimization objective function (for example, L and B). Considering public spending (G) as an instrument of State economic intervention, can get a simulation model that offers different variants of macroeconomic behavior.

## 5. Conclusions

In conclusion, we can say that the system of national accounts are an invaluable factual, accurate, tested and accepted on economic development in a given period of time. Based on these indicators can make a comprehensive study to highlight based on statistical and mathematical models agreed that macroeconomic outlook for the future, that is, to predict the development of the national economy in a given period of time. The authors focus on a number of sensitive elements, which give meaning and content accurate theoretical expressions that do contents of this article. Please note that based on agreed business model can reach a definite quantification of elements from which it can provide a forward-looking development of the national economy.

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