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MEASURING NATIONAL WEALTH: TRADITIONAL AND EXPANDED APPROACHES

Annotation. The article overviews international experience of estimating national wealth, characterizes theoretical and methodological principles and common approaches to measuring national wealth, provides comparative analysis of traditional and expanded approaches, and estimation of their effectiveness.

Key words: National wealth, SNA, sustainable development, national wealth estimation, traditional approach, expanded approach.

Кириченко Є.М., аспірант Київського національного університету імені Тараса Шевченка**ТРАДИЦІЙНИЙ ТА РОЗШИРЕНИЙ ПІДХОДИ ДО ВИМІРЮВАННЯ
НАЦІОНАЛЬНОГО БАГАТСТВА**

Анотація. В статті проаналізовано міжнародний досвід оцінки національного багатства, розглянуто теоретико-методологічні засади та основні підходи до його вимірювання, здійснено порівняльний аналіз ефективності традиційного та розширеного підходів.

Ключові слова: Національне багатство, СНС, сталий розвиток, оцінка національного багатства, традиційний підхід, розширений підхід.

Кириченко Е.М., аспирант Киевского национального университета имени Тараса Шевченка**ТРАДИЦИОННЫЙ И РАСШИРЕННЫЙ ПОДХОД К ИЗМЕРЕНИЮ
НАЦИОНАЛЬНОГО БОГАТСТВА**

Аннотация. В статье проанализированы международный опыт оценки национального богатства, рассмотрены теоретико-методологические основы и основные подходы к его измерению, осуществлен сравнительный анализ эффективности традиционного и расширенного подходов.

Ключевые слова: Национальное богатство, СНС, устойчивое развитие, оценка национального богатства, традиционный подход, расширенный подход.

Actuality of the research. Transition of classic political economy to neoclassical, and then to postmodern economics, changed the emphasis from production relations to human wellbeing and sustainable economic development. Modern mainstream statistic approaches applied in government sector for measuring economic welfare, propose expanded concept of national wealth on the contrary to traditional one. Developed by the World Bank, national wealth indicator is used as both integral indicator for measuring national welfare, and as complementary to GDP indicator for monitoring sustainable development. Practical use of national wealth has been largely limited due to lack of standardized methodology, estimation complexity, as well as relevant data on national income and its distribution among population. Therefore, estimation methodology remains one of the key issues in development of national wealth concept.

Literature review. The core findings in this subject belong to A. Marshall, S. Kuznets, P. Samuelson and N.V. Nordhaus, T. Schulz and G. Becker, A. Kunte, K. Hamilton, J. Dixon, M. Clemens etc.

The purpose of the article is to provide a methodological overview of common approaches of measuring national wealth and to conduct comparative analysis of their effectiveness.

Main text. The fundamental principle of traditional wealth concept is characterized in A. Marshall's interpretation of subject and main purposes of modern economic theory. In Principles of Political Economy, he claimed that human should be rather excluded from the composition of national wealth, since human capital is interpreted as the *highest goal*, but not as *means* of national wealth growth [1]. If human being is considered as wealth for society, then, this wealth is noneconomic in nature, and acts as the outcome rather than the tool. Consequently, there is a confusion between the purpose of national wealth and the means of its

accumulation, between the creator of goods and goods produced to satisfy his production and non-production needs. In light of the above, there are certain doubts concerning efficiency of modern broad concepts, since even post-classical period of political economy is initially associated with natural (i.e. material) component of national wealth. Given the above, the modern economic dispute focuses on eligibility of revision of traditional approach, embodied in SNA, especially inclusion of undervalued intangible assets to SNA structure.

Since mercantilists defined national wealth as the subject of economic theory, the need arose to define its structural components, as well as quantitative methods for their estimation. Thus, evolution of national wealth concept led to development of statistical accounting of the underlying assets. English inventor and economist W. Petty introduced the basic principles of national wealth and national income assessment. For the first time in history, he calculated national wealth of England in 1664. In France, the first assessment of national wealth dates back to 1789, in the USA - 1805, and in Russia - 1864.

From the second half of 19th century, the methodological issues and approaches of estimating national wealth became crucial topics of international statistical congresses, in particular, the International Statistical Institute (ISI), found in 1885. However, reasonable statistical estimates, based on available information sources, as well as methods for calculating wealth indicators, appeared only in the first half of the 20th century. The most significant studies of national wealth in this period belong to: R. Goldsmith, who calculated the National Bank assets value in the USA for 1898-1948, 1905-1950, and 1945-1958; P. Redfern, who determined the National Bank assets value in Great Britain for 1938-1953; soviet statistician A. L. Weinstein, who in 1930s calculated the assets value of the National Bank of the Russian Empire as of January 1, 1914, showing its distribution by economic sectors and social groups.

The Great Depression and World War II proved insufficiency of laissez faire policy and led to shift towards regulatory policy. As a result, western developed countries sought to strengthen national economies through public administration. Thus, macroeconomic policies required complex statistic data. This led to emergence of the System of National Accounts (SNA), first in the USA in 1930s, and then throughout the world. Further development of national wealth concept was due to activities of the International Association for Research in Income and Wealth (IASIW), found in 1947. The main purpose of the organization is furthering of research on national and economic and social accounting, including the development of concepts and definitions for the measurement and analysis of income and wealth. IARIW defined the following fields of interest to carry out its main objectives and purposes:

- the definition, measurement, and analysis of national income and wealth;
- the distribution of income and wealth, and poverty;
- the development of systems of economic and social accounting and their use for economic policy;
- international comparisons; and other related economic and statistical matters [2].

Simon Kuznets, American economist and statistician, the chief architect of the US national accounting system, known for his interpretation of economic growth and developments in measuring national income, made fundamental contribution to national wealth concept by formulating the essence, goals, distinguishing features and scope of national wealth measure at the macro level. Generally, Kuznets defined wealth as *stock of economic goods, for which people are willing to pay*. He stated that wealth estimation is approached by listing all economic goods: commodities, institutional arrangements, human skills, natural resources, etc. placing values upon them, and summing the values into a comprehensive total. Having summarized the wealth objectives developed by R. Giffen and G. H. Knibbs, Kuznets provides his own set of *wide objectives for national wealth* in terms of its application in the national accounting system:

- 1) Comparisons of “strength” among various countries at a given moment.
- 2) Comparisons for the same country among successive points of time, in order to reveal wealth accumulation and provide a test of “progress”.
- 3) Comparisons of the stock of wealth with either yields (income) or burdens and drafts (debts, taxation, indemnities, etc.).
- 4) Determination of the relative proportions of various wealth categories in the country's total, the distribution of wealth by size being comprised among such composition studies [3].

Comparing national wealth to national income in “Studies in Income and Wealth” (1938), Kuznets made an assumption if national wealth could completely replace national income, although complex accounting methodology of the former was not standardized and widely applied. He concluded that “this formulation may seem to make too severe a demand upon national wealth estimates” due to the fact that “national income measures do answer a number of important

questions that no wealth measurement can answer". However, he was the first to emphasize undeniable advantages of national wealth compared to national income. He saw the role of national wealth as economic measure that would "*reflect not only the current year's income but also as the past and a reasonable forecast of the future*". In this case, national wealth for a certain period is more preferred in international comparisons than current national income. Kuznets also suggested that national wealth could be estimated not as a global total but by its *component parts*: "If this breakdown sheds light on such questions as the interrelations of stocks of various goods in the maintenance of large volumes of activity, dependence for maintenance upon products from abroad, specificity of capital instruments, then, national wealth measurement will contribute to the understanding and appraisal of the economic strength of nations elements that are not contained in comparisons of national incomes" [3].

The middle of the 20th century was marked by fundamental changes in the world of statistics, which led to development of international recommendations for unified calculation of systems of composite macroeconomic indicators. The United Nations Statistical Commission, as well as CMEA Standing Commission played the key role. During 1940-1950s, most capitalist countries began to develop their own SNA concepts, and finally, in 1953 the UN published the first international SNA standard. Indicators of national wealth have been integrated into the overall SNA structure since 1945. SNA53 included common industry division, as well as detailed classification of financial flows. Since then, it has been revised three times: in 1968, 1993 and 2008. However, the balance concept has not changed. Significant contributions to SNA today belong to IMF, World Bank, OECD, and *Statistical Office of the European Union* (Eurostat).

Primarily, national wealth was seen as continuous flow of production, i.e. reproduction. Its accumulation occurred as the excess of production over consumption in each production cycle, which is a long-term accumulated result of reproduction. However, with the advent and rapid development of human capital theory in the middle of the 20th century, another approach arose, according to which national wealth should also include intangible assets – scientific knowledge, level of education, work experience etc. The works of monetarists L. Walras, J. McCulloch, G. Macleod and I. Fisher were the turning point in evolution of human capital theory, where human skills, qualifications, intelligence were estimated as capital. I. Fisher's theory of comprehensive capital states that *capital is all that can generate income over certain period of time*, and human is "as material as horse or bull". I. Fisher's theory served as impetus for various alternative concepts of human capital and, as a result, contributed to uprise of independent field of economic theory. T. Schulz and G. Becker, representatives of the Chicago School and Nobel Prize winners, made evolutionary breakthrough in human capital estimation, which led to official announcement of the birth of new theory in 1962, when the *Journal of Political Economy* published an additional issue called *Investing in People* [4].

Despite the fact that neoclassical synthesis initiated reconciliation of economics with classical political economy, further evolution of national wealth concept is associated with human motives and behavior in the world of limited resources, which is on the contrary to traditional concept, however included in SNA08. P. Samuelson and N.V. Nordhaus, founders of neoclassical synthesis, consider wealth the most important economic category in welfare economics. Wealth is a sum of assets minus liabilities; it consists of assets that an individual, family, organization, or country possesses at certain period in time. Income is associated with wealth by "return" ratio - sum of cash receipts gained from property, i.e. assets, in the form of rent, interest, dividend and profit. Income received in the form of wages, salaries, remuneration or transfers is consumed and spent on the acquisition of durable goods (car, house, apartment, land, etc.), which should be attributed to the family or individual wealth [5].

Today, international organizations (World Bank, OECD, World Inequality Lab, Credit Suisse etc.) apply different approaches to quantify the total value of national wealth, which consists of hardly comparable types of assets. However, estimations bringing qualitatively incomparable components to a common denominator lead to paradoxes in assessing country's development levels and role of various factors in accumulation and growth of national wealth. Thus, according to World Bank approach, high share of human capital in structure of national wealth may indicate both the priority of high-skilled labor in developed economy and weakness of industrial development with an excess of manual labor in underdeveloped economy.

Given the above, author defines two commonly used approaches for estimating national wealth:

1. *traditional approach*: national wealth as the ratio of assets and liabilities in country's balance sheet for a certain period of time (embodied in SNA);
2. *expanded approach*: proposed and developed by the World Bank from 1990s.

Traditional wealth approach is commonly applied due to integration of national wealth indicators into SNA93 and subsequent updated versions. SNA is a comprehensive set of macroeconomic accounts, balance sheet and tables based on internationally agreed classifications and concepts. It reflects activities of all economic agents (individuals, households, firms, states, and foreign sector or the “rest of the world”) and provides comprehensive and detailed record of flows and stocks of an economy in a systematic and integrated manner. With the SNA data, economists can forecast future growth or study impacts on economy and its sectors of alternative government policies [6]. It helps to estimate the level of economic development, the growth rate, changes in consumption, savings, investment, debt and wealth.

The *System of National Accounts 2008* is the latest version of ISS standard for the national accounts (an update of SNA93). This methodology adopts an ownership rights perspective: the coverage of the assets is limited to those that are subject to property rights, i.e. those, from which their owners gain profits by holding or using them in any economic activity. SNA08 includes traditional capital assets in the asset boundary: tangible capital assets (machinery, constructions, cattle for reproduction, etc.), but also intangible assets (software, purchase goodwill, patents, etc.), and natural resources (subsoil assets, agricultural land) subject to ownership rights [7]. The basic concepts of the SNA answer the following important questions: 1) Who takes action in the economy? 2) What do they do? 3) Why do they take action? 4) How are the actions known? The answers to these questions are given in Table 1 below.

Table 1

SNA08 Main Concepts

Question	Explanation	The 2008 SNA concepts
Who?	Refers to the economic agents (institutions, firms, individuals) that perform activities in the economy.	<i>Institutional units</i> : corporations, non-profit institutions (NPIs), government units. <i>Institutional sectors (5)</i> : non-financial corporations, financial corporations, general government, households, non-profit institutions serving households (NPISHs). <i>Total economy and the rest of the world</i>
What?	Refers to the transactions and other flows and stocks, which are the objects of the economy.	<i>Transactions</i> (of goods and services; distributive transactions; transactions in financial instruments) <i>and other economic flows</i> <i>Assets and liabilities</i>
Why?	Refers to the reason why an economic agent takes an action.	<i>Classifications by purposes of expenditure</i> : 1. Classification of individual consumption by purpose (COICOP) 2. Classification of the functions of government (COFOG) 3. Classification of the purposes of non-profit institutions (COPNI) 4. Classification of outlays of producers by purpose (COPP)
How?	Refers to the recording of who, what and why	<i>Accounting rules</i> : - recording - time of recording - valuation - consolidation and netting

Source: Developed by author based on [8].

In order to report the value of national wealth, the SNA includes a balance sheet, which gives the values of various stocks of assets held by institutional units (non-financial corporations, financial corporations, general government, households and non-profit institutions serving households (NPISHs)). A stock is included into the SNA balance sheet if it meets simultaneously two criteria, or so-called “asset-boundary”:

1. The stock in question must be owned by some institutional unit or units;
2. The stock must be used in some kind of economic activity: economic benefits must be derived from stock in question by their owner(s) as a result of holding or using them over a period of time [9].

Main stocks of economic assets included by the SNA in the composition of national wealth are listed in Figure 1.

However, there are stocks, which do not meet both criteria and, therefore, not included in national wealth accounting. Non-economic natural assets are excluded when they are not subject to economic transactions or do not provide monetary surplus or profits. For example, oceans and oxygen are not subject to ownership rights and excluded from SNA. Consequently, this accounting approach excludes durable goods, human capital, and natural resources (natural forest, non-cultivated wild fish, non-economic environmental assets, etc.). Human capital is excluded because “...It is difficult to envisage “ownership rights” in connection with people, and even if this were sidestepped, the question of valuation is not very tractable” [7].

Further research was aimed at enlarging asset boundary to incorporate intangible assets that are important for welfare and growth sustainability analysis, i.e. human capital and natural assets. In 1990s, the World Bank proposed to expand the structure of national wealth, complementing it with human capital component. In 1998, the group of experts consisting of A. Kunte, K. Hamilton, J. Dixon and M. Clemens developed expanded concept of national wealth, formulated its methodological principles, and provided first estimates of wealth structural components. As stated in “Estimating National Wealth: Methodology and Results” report, the purpose of the research was “to elaborate on wealth accounting as a measure of sustainable development” [10]. *One of the key findings was that intangible assets constitute the main part of national wealth, and account for 60-80 percent in most developed economies.*

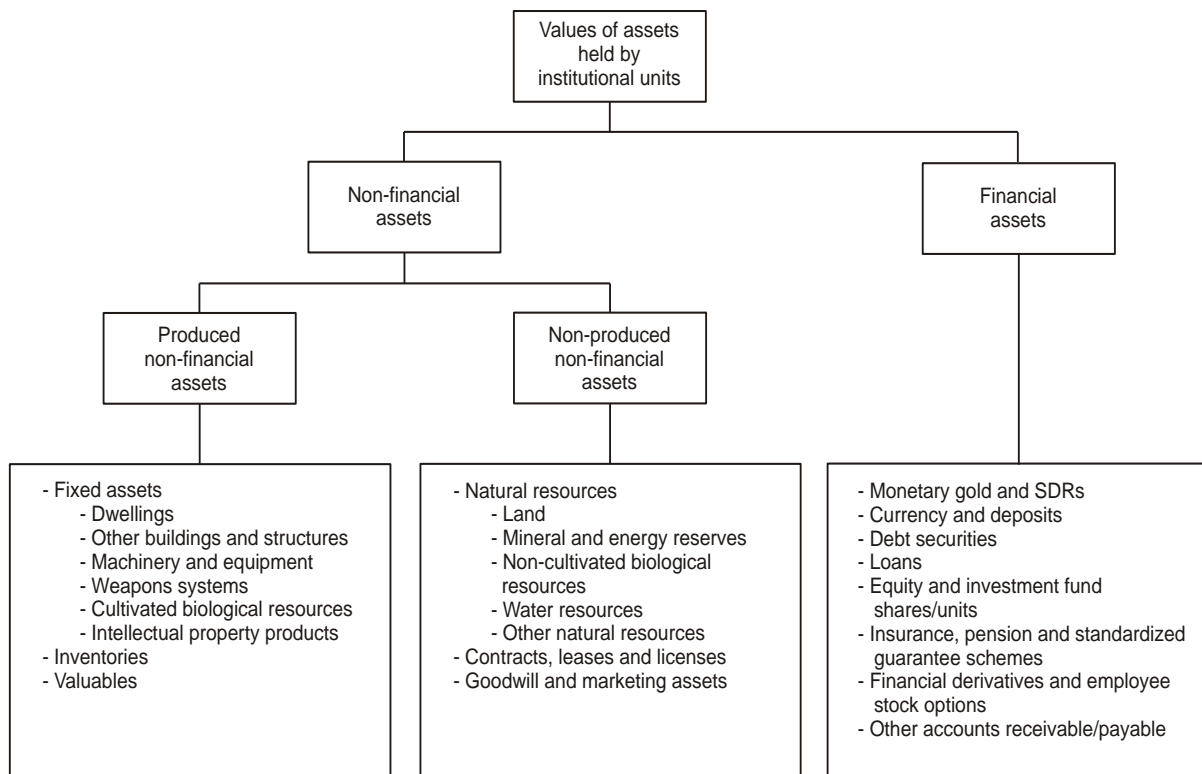


Figure 1. Components of National Wealth as Computed in the SNA

Source: the UN et al. 2009, p. 260

In 2011, based on Atkinson and Hamilton (2003) and Hamilton and Hartwick (2005) research, the World Bank published research, where national wealth comprised natural capital and so called genuine savings taking into account the effects of natural resource depletion, education and real investment on national income [11]. Then, in 2018 the World Bank experts implemented Jorgenson Fraumeni (1989, 1992a, 1992b) lifetime income approach for measuring human capital, which produces values that are consistent with the SNA asset accounts. This approach measures the stock value of human capital embodied in individuals as the total present value of expected future labor income that could be generated over the lifetime of people currently living [12]. The World Bank expanded concept of national wealth is presented in Figure 2 below.

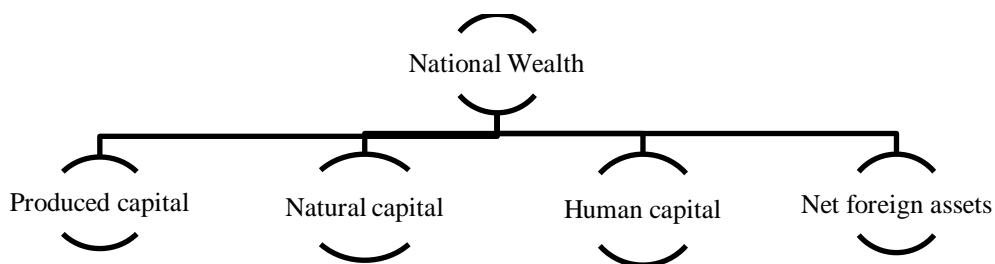


Figure 2. Structure of national wealth, expanded approach

However, none of these scientific achievements influenced revision and optimization of the SNA structure, or its replacement with more efficient accounting approach. The main reason for this is controversy of estimations, in particular, underestimation or revaluation of the components of national wealth. Despite its convenience, allowing to compare economic progress in countries worldwide, World Bank methodology does not take into account each country's specifics, which ultimately requires individual approach based on generally accepted standards.

Conclusions. Despite availability of relatively limited number of approaches proposed by international organizations (the UN, World Bank, OECD), international experience in development of national wealth accounting methodology shows that perspective of single standardized and integrated approach is distant and obscure. However, it is worth noting significant usefulness of considered approaches to identify weaknesses and adjust economic policies with sustainable goals in the long run, especially for developing countries with high share of natural resources in structure of national wealth. Unlike traditional approach, the World Bank expanded approach offers comprehensive methodology for estimating human and natural capital, and emphasizes that intangible assets account for about 60-80% of national wealth in developed western economies.

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