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STATISTICAL TOOLS FOR ANALYZING HOUSEHOLD SAVINGS IN UKRAINE AND THE EUROPEAN UNION

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Abstract. *This article examines the statistical tools employed to analyze household savings, with a focus on comparing the methodologies used in Ukraine and European Union member states. It outlines the theoretical foundations of the savings concept through the lens of economic thought evolution and classifies savings by economic function, asset form, and liquidity level. The role of household savings in fostering investment capacity and ensuring macro-financial stability is emphasized.*

The objective of this study is to conduct a comparative assessment of statistical approaches to the analysis of household savings in Ukraine and European Union member states, with particular emphasis on their capacity to support investment potential and macro-financial stability. The research applies general scientific methods such as analysis, comparison, synthesis, and generalization to investigate the theoretical foundations of savings, identify methodological differences in national accounting practices, and evaluate the effectiveness of statistical tools used to assess household saving behavior under varying macroeconomic conditions.

The paper assesses the effectiveness of various statistical techniques, including structural, dynamic, regression, and time series analyses. It reveals that Ukrainian households predominantly hold savings in cash and deposits, whereas EU households favour pension funds, bonds, and investment products. A major limitation in Ukrainian statistics is identified as insufficient data granularity and infrequent updates.

The article proposes measures to improve the national savings accounting system, including the integration of data sources, greater detail in financial instruments, alignment with EU methodological standards, and the enhanced use of administrative data. The development of a robust statistical infrastructure is deemed essential for evidence-based financial planning and policy-making within the context of European integration. The potential of digitalization to streamline data collection, processing, and dissemination is also discussed, with a focus on improving data quality, timeliness, and accessibility for researchers, policymakers, and public authorities.

Keywords: *household savings, statistical tools, European Union, Ukraine, SNA 2008, ESA 2010.*

Formulation of the problem. The analysis of household savings is a cornerstone of sound economic policy, directly influencing a country's investment levels, financial stability, and trajectory of economic growth. In the context of Ukraine, this analysis is impeded by significant challenges, notably the limited availability of granular statistical data and the absence of a unified accounting methodology consistent with international standards. This methodological gap critically hampers not only the assessment of domestic economic processes but also complicates comparative analysis with other nations, particularly European Union member states.

The urgency of this issue is magnified by Ukraine's strategic goal of European integration. Aligning Ukraine's statistical framework with European standards is no longer merely a technical task; it is a fundamental prerequisite for effective policy-making and integration into the European statistical space. A robust and harmonized system for tracking household savings is essential for ensuring macro-financial stability, fostering domestic investment capacity, and developing evidence-based financial planning. Therefore, a comprehensive study of statistical tools and the adaptation of Ukraine's methodology to European standards represents a scientific and practical task of paramount importance.

Analysis of recent research and publications. The multifaceted challenges inherent in the analysis of household savings, along with their significant and undeniable impact on overarching economic processes, have consistently captured the attention of the academic community and have been the subject of extensive scholarly inquiry. Within this broad field of study, the body of work produced by Ukrainian researchers is particularly noteworthy for its valuable contributions to understanding the specific dynamics of the domestic savings landscape. For instance, critical issues of the systematic classification of savings and the complex influence of various macroeconomic factors on aggregate savings levels have been meticulously detailed and explored in the research of scholars like O. Lozychenko [9], as well as I. Koloberdianko and K. Zolotova [8]. Complementing these domestic perspectives, the more granular methodological aspects that underpin the classification and accounting of savings have also been a central theme of investigation, particularly from an international standpoint. This area has been the subject of dedicated research by foreign scholars, including notable contributions from M. Grzywińska-Rapca and O. Olejarz [5], who have examined these specific technical dimensions. Other researchers have also made significant contributions to the study of statistical analysis of savings.

This article addresses several critical, unresolved and unresearched issues in the statistical analysis of household savings in Ukraine. The primary problem is the fundamental methodological disharmony between Ukraine's national statistics, based on SNA 2008, and the EU's more detailed ESA 2010 framework, which severely complicates accurate international comparisons and hinders Ukraine's European integration. This discrepancy manifests as insufficient data granularity, with Ukrainian statistics focusing narrowly on cash and deposits while overlooking the broader range of financial instruments like pension funds and investment products common in the EU.

Research objectives. The objective of this article is to examine the statistical tools for analyzing household savings in Ukraine and the EU, identify the main macroeconomic factors

affecting savings levels, and compare the methodological approaches to their accounting. Based on the analysis conducted, the article proposes directions for improving the methodology of statistical analysis of savings in Ukraine by European standards.

Presenting the main material. In studying this issue, it is first necessary to establish universal definitions for the key terms: “savings,” “households,” and “statistical tools”.

When considering the concept of “savings,” differences in its definition by economists across various periods and schools of economic thought are apparent. For instance, mercantilists defined savings as the result of economizing funds, insisting on the general preservation and accumulation of money (silver, gold) within states for their enrichment. Adam Smith indicated that savings are an element in the creation of effective demand and play a corresponding role in the market mechanism. Thomas Malthus and John Stuart Mill focused on a more individual aspect of savings, as a result of rising income and reduced expenses from refraining from current consumption. John Maynard Keynes, who paid special attention to savings and the paradox of their accumulation in his economic philosophy, defined them as the income remaining after all consumer expenditures. A representative of the behavioral economics school, George Katona, provided a more comprehensive definition of “savings,” dividing them into three components: contractual savings, discretionary savings, and residual savings [8, c. 2].

Based on the aforementioned definitions, we can formulate our own universal definition of this concept. Thus, savings are the portion of a household’s unused income that has not been spent on current consumption of goods and services and is set aside for future use in the form of monetary accumulations of varying liquidity, investments of varying risk, or the acquisition of assets (property).

Regarding the term “household”—according to the current legislation of Ukraine, a household is a collection of individuals who jointly reside in one dwelling or part of it, provide themselves with all necessities for life, manage a common household, and fully or partially pool and spend their funds. A household may consist of a single person [7].

The concept of “statistical tools” varies in its structure depending on the nature of the research and the subsequent use of its results. A narrower definition is presented on the State Statistics Service of Ukraine’s “Glossary for the Statistical Observation Plan”: “statistical tools – a set of statistical forms and instructions for their completion” [11]. In contrast, the European Statistical Programme presents this concept much more broadly, encompassing a set of methods, procedures, standards, summary indicators, and classifications used for collecting, processing, analyzing, and disseminating statistical data (Figure 1) [3]. Accordingly, the broader definition of statistical tools will be used hereafter to better address the research topic.

An important aspect of statistical measurement is the classification of the subject under study according to various factors and characteristics. The same applies to the classification of household savings for a better analysis of the savings themselves. George Katona’s components of savings, mentioned earlier, can also be interpreted as a classification of savings by their purpose: contractual savings – funds necessary to meet a household’s previously incurred obligations, discretionary savings – deposits and investments in banking and non-banking institutions, residual savings – unused funds, the remainder after accounting for the first two types of savings [8, c. 2].

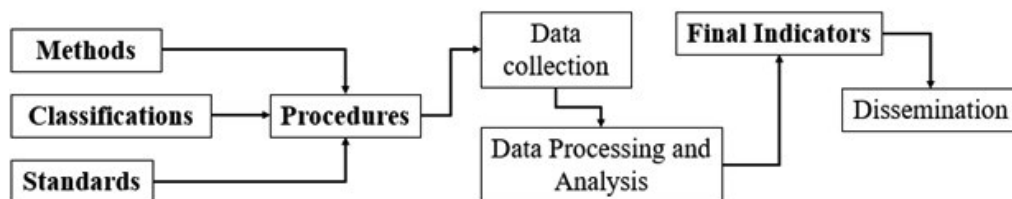


Figure 1. Statistical Tools and Process Flow in the European Framework

Source: made by the author, based on [3; 4]

Meanwhile, in the European Union (EU), savings are classified based on the European System of National and Regional Accounts (ESA 2010) and other methodologies from Eurostat and national statistical offices. After analysing available data from EU countries, the following classification factors can be highlighted:

- By form of asset preservation: monetary savings (bank deposits, current account balances), financial investments (investments in government and corporate bonds, stocks, mutual funds), pension and insurance contributions, and real estate and physical assets (housing, land, precious metals, etc.). For example, in Germany, pension savings and insurance policies constituted 37%–40% of savings from 2018–2023 [1].
- By economic function: precautionary savings (for unforeseen expenses like job loss), investment savings (funds for low-risk, income-generating assets like bonds and stocks), target savings (for specific large purchases like real estate), and speculative savings (funds invested in high-risk assets like cryptocurrencies and venture investments). For example, in Norway, with a savings rate of 8.3% (2024), target savings for purchasing real estate and financing education are popular [6].
- By liquidity: fully liquid (cash, demand deposits, funds in accounts that can be quickly accessed without significant loss of value), semi-liquid (term deposits, precious metals, stocks, where quick liquidation may result in a significant loss of value), and illiquid savings (real estate, pension accumulations, bonds). As an example, the Livret A savings accounts used in France are liquid but have a set interest rate and a maximum deposit limit [2].

According to the works of Ukrainian scholars and statistical observations, similar criteria exist for classifying savings. However, one factor can be identified that was not found in the reviewed sources concerning EU countries. This factor is the source of formation, broken down as follows: primary – formed from the use of labor (wages) and entrepreneurial skills (income); secondary – formed through social benefits and transfers from the state; and capital – savings formed from the use of capital and land owned by households [9, c. 3-4].

In the absence of data from household surveys and generally when studying household savings levels, it is necessary to consider macroeconomic factors that determine the propensity of households to save and their subsequent behavior regarding the use of these funds (Table 1).

Table 1

Macroeconomic Factors Determining Households' Propensity to Save

Factor	Impact on Savings
Inflation	Negatively affects the accumulation of savings. Inflation erodes the purchasing power of savings, as rising prices compel households to hold more money than the real value of goods.
Taxes	High taxes reduce the level of disposable income, making it difficult to cover basic needs. This limits the ability of households to save. It is known that the lower the post-tax income, the lower the propensity to save.
Income level	The propensity to save depends on the level of disposable income. Slow economic growth, high taxes, social burdens, low interest rates, and high unemployment can significantly reduce household disposable income and limit their ability to accumulate savings.
Exchange Rate	A stable exchange rate helps maintain the value of savings, which encourages households to save. Low volatility in the exchange rate reduces the risk of value loss for accumulated funds.

Source: based on [5, c. 432–433]

For example, by summarizing inflation indicators from 2010 to 2024, it can be concluded that to maintain the purchasing power of households for food at the same level, investments would need to yield at least 16.3%-17.4% annually in UAH and 4.1%-5.1% annually in USD. Consequently, with high inflation, households will either try to invest in more profitable, and therefore riskier, instruments or save in a currency with lower inflation and/or one that is strengthening against the national currency. The level of taxation has an inverse effect on the level of savings; therefore, it must be understood that as the tax burden increases, the savings and investment potential of households will decrease. Income growth will have a directly proportional effect on the level of savings, though a larger money supply in the market will amplify the negative impact of inflation on savings.

For the statistical analysis of household savings, established economic analysis methods can be used, including structural, dynamic, and regression analysis.

Structural analysis allows for the examination of the distribution of savings among different population groups and types of savings. For instance, a comparison between Ukraine and EU countries might show that in the EU, a significant portion of savings is held in pension and investment funds, whereas in Ukraine, people rely more on cash savings or short-term bank deposits.

Dynamic analysis reflects changes in the level of savings and structural shifts over time. For example, it would be evident that households react to crisis situations by using their accumulated savings, while savings levels would increase during periods of relative economic and social stability. If the level remains stagnant in the latter case, it will indicate a need for changes in macroeconomic conditions. In Ukraine, such periods would be 2014–2015 and 2022–2023.

Regression analysis focuses on assessing the impact of factors such as age, education level, and household structure on savings levels. For example, based on the authors' previous

research, the level of education had the following impact: individuals with higher education had incomes 42.9% higher than those with secondary education, and consequently, more potential funds for saving [10, c. 6–7].

Additionally, for a general initial analysis, basic statistical indicators (mean, median, variance, coefficient of variation) and time series analysis methods can be applied. For example, the moving average method can be used for short-term forecasting of future savings levels or for assessing changes in this indicator over a certain period to calculate a balanced historical indicator that can be applied to other periods for comparison.

The methodology for collecting and processing statistical data plays a key role in statistical research. It is natural that there are differences in such methodologies between Ukraine and the European Union and its member states. This is influenced by general theoretical approaches to statistics as well as the actual level of development of financial systems, institutions, and the quality of data collection and access.

The primary role in statistical research in the EU is played by the statistical office of the European Union (Eurostat) as a supranational organization, with significant contributions from the national statistical agencies of each member state, which are the key sources of primary data. They operate under uniform methodological standards, which allows for correct international comparisons.

Eurostat coordinates statistical research in EU countries, ensuring uniform data collection rules by the European System of National and Regional Accounts (ESA 2010). This system is an adapted version of the international System of National Accounts (SNA 2008) developed by the UN [4].

According to the ESA 2010 methodology, savings are defined as the part of households' disposable income that remains after paying taxes and making current expenditures. Data for processing can be collected through primary (surveys) and secondary (analysis of financial flows in the banking system, tax authorities, and other financial institutions) methods. The latter requires interaction between different institutions and subsequent data consolidation.

In Ukraine, the analysis of savings uses the System of National Accounts (SNA) 2008 methodology, where savings are accounted for in the use of disposable income account and the capital account [11].

The main differences between the EU (ESA 2010) and Ukrainian (SNA 2008) methodologies are as follows:

- Depth of detail of financial flows: In the EU, savings are assessed considering a wide range of financial assets, including pension savings, investments in insurance products, stocks, bonds, and long-term deposits; the shadow economy is also included through adjustments based on indirect indicators. In Ukraine, the main focus is on highly liquid assets (cash, bank deposits), although in recent years more attention has been given to domestic government loan bonds (OVDPs), and the shadow economy is considered to a limited extent.
- Frequency of data collection and updates: In the EU, data on savings are updated quarterly, allowing for the tracking of operational trends within a year. In Ukraine, similar data are collected annually, which complicates the analysis of short-term trends.

- Impact of household liabilities: ESA 2010 also includes a comprehensive principle where the passive side of household accounts (long-term and short-term loans, arrears on bill payments) is considered when assessing savings and investment potential. This also allows for an assessment of households' financial stability. In Ukraine, statistics on liabilities in the SNA are less detailed, and there are difficulties in assessing the debt burden due to limited access to banking and tax data, which calls into question the completeness of the data.

Considering the differences described above, we can formulate directions and possible innovations to improve approaches in Ukraine and facilitate future integration with European methodology.

In Ukraine, savings statistics are based mainly on data from sample surveys and banking sector reports. In contrast, EU countries make extensive use of comprehensive administrative data sources, including tax returns, bank transactions, and information on insurance and pension savings. Therefore, it is necessary to integrate data from various sources—the banking system, the tax service, and pension funds. Obtaining data from sources other than household surveys and developing an appropriate methodology is crucial under the conditions of limited access to statistical data in Ukraine during the period of martial law.

It is also worthwhile to introduce more detailed categories of financial assets, publish separate blocks of statistical information on savings and investment activity of the population, and display consolidated data on the website of the State Statistics Service. Corresponding institutional changes include mandatory quarterly reporting by financial institutions on the investment activity and savings of the population.

Conclusions. This research has demonstrated that a comprehensive analysis of household savings can be effectively conducted using a combination of statistical approaches, including structural, dynamic, and regression analysis. The application of these tools reveals profound differences between savings patterns in Ukraine and the European Union. In Ukraine, savings are predominantly held in the form of cash and short-term bank deposits, reflecting a liquidity preference and, potentially, a lower level of trust in complex financial instruments. This stands in stark contrast to EU countries, where households more actively utilize a diverse portfolio of financial instruments, with a significant portion of savings allocated to pension funds, insurance products, and investment funds.

The study confirms that the propensity to save is shaped by a confluence of factors, primarily the level of disposable income, educational attainment, and prevailing macroeconomic conditions. Macroeconomic drivers such as inflation, taxation, and exchange rate dynamics are particularly influential in shaping household saving behavior. Notably, education level has a direct impact, with prior research indicating that individuals with higher education earn significantly more, thereby having greater potential to accumulate savings.

However, a central finding is that the effectiveness of such analysis is constrained by methodological discrepancies. EU savings statistics, compiled under the ESA 2010 framework, are demonstrably more detailed, granular, and regularly updated every quarter, offering a more accurate and timely picture of financial trends. To bridge this gap and enhance the quality of savings analysis in Ukraine, several measures are essential. It is crucial to integrate data from

diverse administrative sources, including the banking system, tax authorities, and pension funds. Furthermore, the national accounting system must be improved by introducing more detailed categories for financial assets and transitioning to quarterly statistical updates to align with European standards.

The adoption of European methodological approaches is not merely a technical exercise; it is a strategic imperative. Such harmonization will significantly increase the effectiveness of national financial policy, help ensure long-term economic stability and foster more robust culture of long-term savings among the population. Embracing digitalization in statistical processes will further streamline data collection and processing, improving its quality, timeliness, and accessibility for policymakers and researchers alike, thereby strengthening the foundation for evidence-based governance in the context of European integration.

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СТАТИСТИЧНИЙ ІНСТРУМЕНТАРІЙ АНАЛІЗУ ЗАОЩАДЖЕНЬ ДОМОГОСПОДАРСТВ В УКРАЇНІ ТА КРАЇН ЄВРОПЕЙСЬКОГО СОЮЗУ

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Анотація. У статті здійснено дослідження статистичного інструментарію аналізу заощаджень домогосподарств у контексті порівняння підходів, застосовуваних в Україні та країнах Європейського Союзу. Розкрито теоретичні основи поняття «заощадження» в контексті еволюції економічної думки, охарактеризовано основні типи заощаджень за економічною функцією, формою активів та рівнем ліквідності. Обґрунтовано роль заощаджень у забезпеченні інвестиційного потенціалу та фінансової стабільності держави. Значну увагу приділено методологічним засадам класифікації та обліку заощаджень у межах національних рахунків, зокрема відмінностям між українською методологією (СНР 2008) та європейською системою ESA 2010.

Визначено ключові макроекономічні фактори, що формують схильність домогосподарств до заощаджень, зокрема рівень доходів, інфляцію, податкове навантаження, динаміку валютного курсу. Проаналізовано переваги використання таких методів статистичного аналізу, як структурний, динамічний, регресійний аналіз, а також методи обробки часових рядів. Показано, що в Україні переважають заощадження у формі готівки та депозитів, тоді як у країнах ЄС – у пенсійних фондах, облігаціях, інвестиційних продуктах. Зазначено, що ключовою проблемою вітчизняної статистики є недостатня деталізація показників та низька частота оновлення даних.

Запропоновано шляхи вдосконалення системи обліку заощаджень в Україні, серед яких – консолідація джерел даних, запровадження більшої деталізації фінансових інструментів, гармонізація методології зі стандартами ЄС, а також посилення ролі адміністративних джерел інформації. Підкреслено необхідність формування статистичної інфраструктури, здатної забезпечити якісну базу для аналітики та фінансового планування в умовах інтеграції до європейського статистичного простору. Окрему увагу приділено потенціалу цифровізації статистичного обліку, що дозволить автоматизувати процеси збору, обробки й оновлення даних, підвищуючи їхню точність, оперативність і доступність для кінцевих користувачів – дослідників, політиків та органів державного управління.

Ключові слова: заощадження домогосподарств, статистичний інструментарій, Європейський Союз, Україна, СНР 2008, ESA 2010.

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