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COMPARATIVE ANALYSIS OF VALUE ADDED

Value added is a key element of gross domestic product, as well as the basis for creating the prerequisites for economic growth and development. In retail trade (as in trade in general), it reflects the difference between the cost of goods sold and the costs of their acquisition, transportation and storage, creating new economic value through the organization of trade maintenance and the provision of trade services. Value added is an indicator of the effectiveness of retail enterprises, as it demonstrates their ability to generate profit and provide additional opportunities for investment and expansion of activities. The significant importance of this indicator determines the need to study the industry specifics of the formation of added value of retail enterprises in Ukraine under the conditions of permanent shocks of recent years, which is determined by the aim of this research. Based on the analysis of empirical data of retail enterprises in Ukraine and the EU, the hypotheses formulated regarding the industry specifics of the formation of added value (namely, regarding the volume of added value of retail enterprises and its level, as well as the main factor influencing its formation) have not been confirmed for Ukraine. The verification of the truth of these hypotheses was

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КОМПАРАТИВНИЙ АНАЛІЗ ДОДАНОЇ ВАРТОСТІ

Додана вартість є ключовим елементом валового внутрішнього продукту, а також основою для створення передумов економічного зростання та розвитку. У роздрібній торгівлі (як і в торгівлі загалом) вона відображає різницю між вартістю реалізованих товарів і витратами на їх придбання, транспортування та зберігання, створюючи нову економічну цінність через організацію торговельного обслуговування та надання торговельних послуг. Додана вартість є індикатором результативності діяльності підприємств роздрібної торгівлі, оскільки демонструє їхню здатність формувати прибуток і забезпечувати додаткові можливості для інвестування та розширення діяльності. Вагоме значення цього показника обумовлює необхідність дослідження галузевих особливостей формування доданої вартості підприємств роздрібної торгівлі України за умов перманентних потрясінь останніх років, що визначено метою статті. На основі аналізу емпіричних даних підприємств роздрібної торгівлі України та ЄС сформульовані гіпотези щодо галузевих особливостей формування доданої вартості (а саме: щодо обсягу доданої вартості підприємств роздрібної торгівлі та його рівня, а також щодо основного чинника впливу на його формування) не знайшли

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carried out on the basis of the use of correlation analysis methods. The hypothesis regarding the reduction of the role of retail enterprises in the formation of added value in the national economy of Ukraine under conditions of permanent shocks and full-scale military operations was also not confirmed. It was established that the indicators of added value by production costs and gross operating rate of retail enterprises in Ukraine are characterized by instability and an overestimated level due to the following reasons: military operations and their associated consequences; macroeconomic instability; structural imbalances of the consumer market; imperfect regulatory framework; expansion of the shadow economy; different levels of labor productivity; peculiarities of consumer demand. To achieve stability and compliance with European standards, it is necessary to strengthen market transparency, tackle the shadow economy, introduce innovative technologies, improve the regulatory framework and increase the efficiency of enterprise management.

Keywords: value added, trade margin (surcharge), margin, price, gross operating margin, retail trade, EU statistics.

свого підтвердження для України. Перевірка істинності цих гіпотез проводилася на основі використання методів кореляційного аналізу. Також не підтвердилась гіпотеза щодо зменшення ролі підприємств роздрібної торгівлі у формуванні доданої вартості в національній економіці України за умов перманентних потрясінь і повномасштабних воєнних дій. Встановлено, що показники доданої вартості за витратами виробництва та валової операційної норми підприємств роздрібної торгівлі в Україні характеризуються нестабільністю та завищеним рівнем через такі причини: воєнні дії та пов'язані з ними наслідки; макроекономічна нестабільність; структурні диспропорції споживчого ринку; недосконала регуляторна база; поширення тіньового сектору економіки; різний рівень продуктивності праці; особливості споживчого попиту. Для досягнення стабільності та відповідності європейським стандартам необхідно посилювати прозорість ринку, боротися з тіньовою економікою, впроваджувати інноваційні технології, удосконалювати регуляторну базу та підвищувати ефективність управління підприємствами.

Ключові слова: додана вартість, торгова націнка (надбавка), маржа, ціна, валова операційна норма, роздрібна торгівля, статистика ЄС.

JEL Classification: M21, L81, D40, C12.

Introduction

Value added (VA) is a key component of GDP and the basis for creating the prerequisites for economic growth and development of the country's economy as a whole, its sectors, and individual business entities, as it reflects the value of a newly created product or service added at each stage of production and illustrates the efficiency of business operations of individual enterprises. The VA development allows stimulating innovation, increasing labor productivity, and contributing to the competitiveness of the economy on a global scale. In the modern world, the VA importance is growing due to the active implementation of digital technologies that change the structure of value creation in many industries. The emphasis on the VA development contributes to the improvement of business processes, the formation of new business models, and the increase in the level of well-being of the population through more efficient use of resources and the creation of high-quality products and services.

VA in retail trade reflects the difference between the cost of goods sold and the costs of their acquisition, transportation, and storage, creating new economic value through the organization of trade services and the provision of trade services. This one is an indicator of the performance of retail trade enterprises (RTE), as it demonstrates their ability to generate

trading profits and provide additional opportunities for investment and expansion of activities.

The research of the RTE added value is important for assessing their contribution to the economy, in particular to the formation of GDP, employment and the development of related industries. It also contributes to increasing the efficiency of business processes, optimizing pricing policy and strengthening competitiveness, especially in the context of digitalization. In addition, such an analysis helps to assess the social effect of the industry and its impact on the well-being of the population, which is important for both enterprises and the sphere of public administration.

One of the most influential economists of the 20th century, Samuelson, in his work "Foundations of Economic Analysis" (Samuelson, 1947), investigated the issue of added value through the prism of costs and production. The author considered the fundamental principles, including the relationship between costs, production and added value, which formed the basis for further research in macroeconomics. In addition, his work "Economics: An Introductory Analysis" (Samuelson, 1948), which became a basic textbook on economics, covers in detail the aspects of value creation in the economy, in particular through the mechanisms of production and consumption. These works are key to understanding the relationships between costs, production, and value added within a national economy.

One of the key authors who created the concept of value chain analysis is Porter. In his book Competitive Advantage: Creating and Sustaining Superior Performance (Porter, 1985), he developed a value chain model (VCM), which analyzes the stages of value creation, starting from the supply of raw materials to the delivery of the final product to the consumer. His work is the basis for understanding competitive advantage in business and the economy as a whole.

Toffler explored the issues of value added in the information society in his famous work "The Third Wave" (Toffler, 1980), which describes three main waves of human civilization development: agrarian, industrial, and information. In the information wave, according to Toffler, technology and knowledge become key factors in creating added value. He emphasizes that the main resource of the economy is information, which provides competitive advantage. Added value in this context is formed through technological innovations, expanding access to information, and changing the methods of production and consumption.

The interesting research is conducted by Coltrane, et al., in which the authors determined that adding value is the process of changing or transforming a product from its initial state to a more valuable one that is preferred in the market. Based on the study of value addition in agricultural products, researchers concluded that it can be achieved through innovation and/or coordination (Coltrain et al., 2000).

Stiglitz and Greenwald in their work "Creating a Learning Society: A New Approach to Growth, Development, and Social Progress" investigated the role of innovation and knowledge in creating added value.

The authors emphasized the importance of investments in education, science, and technology to stimulate economic growth (Stiglitz & Greenwald, 2014).

The practice of creating added value is in the circle of scientific interests of Ukrainian scientists who have studied the issues of structural transformation of the economy and the formation of added value in its key sectors (industry, agriculture, IT, etc.), the innovative component of creating added value and its impact on economic development, the impact of foreign economic activity on the formation of added value in Ukraine, as well as the processes of creating added value in the context of Ukraine's integration into European markets.

Studying scientific publications on the researched issues in recent years, Mirzoeva and Stepasyuk's works deserve attention, who noted that added value characterizes the relations between economic entities that arise in the process of production and sale of products, the elements of which are closely interconnected (Mirzoeva & Stepasyuk, 2023). Determining the value of the created DV is the basis for assessing the efficiency of the enterprise and allows you to establish the ratio of the cost of the produced product and the contribution of the enterprise itself to its production. The researchers consider the main chains of VA formation using the example of oilseed crops.

The importance of using the category of "value added" in enterprise management is also emphasized by Svitovy (2022), noting that the analysis of the magnitude and ratio of the elements of the value added makes it possible to find and involve in production reserves and economic instruments that can significantly increase the indicator under research. The author considered the features of using the category of "added value" at enterprises in the grain production industries.

The formation of the value added in agriculture and agricultural land use was studied by V. Budziak and O. Budziak. The authors identified the main chains of the formation of the value added during the use of agricultural land, investigated the nature of the formation of added value and the level of exhaustion in various forms of management and calculated the value added indicator in agriculture by regions of Ukraine (Budziak V. & Budziak O., 2021). The financial and accounting aspect of determining the added value in agricultural enterprises is considered by a team of authors (Levandivskyi et al., 2021). The formation of value and added value in the agri-food sector was also studied by Rossokha and Nechyporenko (2024). The authors identified trends in value formation in agriculture, which is based on the use of natural, material and labor factors of production and includes stages of adding value in the process of economic activity.

Tarakanov and Makoveyev analyzed the impact of logistics processes on the formation of DV in the system of commodity markets (Tarakanov & Makoveyev, 2015).

The category of "added value" in the discourse of the creative economy was studied by Proskurina (2021), who concluded that the main sources of the formation of the DV of a cultural or creative product are creative work, intangible assets of the manufacturer (brand value, presence of a patent, uniqueness of performance) and a potentially high rate of profit.

Pyroh (2024) conducted the research of modern trends in the integration of Ukraine into European VA chains and identified its features during 2000–2021. Based on recent research and publications on global LDCs, the author has established that in the post-war period, it is advisable for Ukraine to integrate into European LDCs by transforming the industry development model, which will ensure the status of a global and competitive actor in the world and European economies.

Summarizing the results of the existing work of foreign and national scientists, it can be stated that the main areas of their research were the chains of creation of value added tax (means of increasing efficiency and reducing costs), in particular the issues of Ukraine's integration into the European value added tax; the role of innovations in creating added value; the distribution of value added tax between labor, capital and the state; the sectoral structure of the economy (comparison of value added tax in the primary, secondary and tertiary sectors). In addition, a significant number of scientific studies are devoted to the theoretical and practical aspects of collecting value added tax (VAT). Many articles consider the issues of VAT administration, mechanisms of its collection, impact on the economy and possible areas of improvement. Researchers analyze the effectiveness of this form of taxation for both the state budget and business, and also study international experience in VAT applying.

As for the trade sector, the team of authors in the article "The input-output analysis for the wholesale and retail trade industry of the Kazakhstan statistics" (Kerimkhulle et al., 2023) analyzed the VA formation in the wholesale and retail trade of Kazakhstan, identifying its dynamics by stages.

Therefore, scientific research on the issue of the VA formation as a statistical indicator in the retail trade sector, as well as in trade in general, is not systematic, which complicates the search for patterns of its change, assessment of the impact of various factors and development of effective mechanisms for managing the processes of creating added value in this sector.

Given the peculiarities of retail trade as a type of economic activity, the following hypotheses are based on the research, such as: hypothesis 1 is the retail trade as an industry that performs an auxiliary function compared to industry in the national economy, carries out the transformation of the production range into a consumer range and ensures the circulation of goods, should not play a leading role in the formation of added value; Hypothesis 2 is in conditions of permanent shocks and full-scale military operations, the role of retail trade enterprises (RTE) in the formation of added value

decreases (at least does not increase), as the role of processing industry enterprises (in particular, enterprises producing weapons and ammunition) is significantly strengthened; Hypothesis 3 is the gross operating rate of any trade enterprises (including retail) should be significantly lower compared to industrial enterprises; Hypothesis 4 is the main factor influencing the volume of RTE added value is retail turnover.

The aim of the research is to identify industry patterns in the formation of added value of retail enterprises in Ukraine under conditions of permanent shocks.

The presence of a linear statistical relationship between the VA volume at production costs and key indicators of the RTE activity was assessed using the pairwise correlation coefficient in accordance with the traditional method of correlation analysis, which involves checking the statistical significance of the obtained coefficients using the Student's t-test. The construction of the correlation matrix was carried out using the Excel procedure: Data – Data Analysis – Correlation. To test the statistical hypothesis of the homogeneity of samples of gross operating margin indicators for individual groups of retail enterprises, the Anderson homogeneity criterion (also known as the Lehman-Rosenblatt criterion) was used, which involves pairwise comparison of samples and is suitable for a situation with a small number of observations.

The information base of the conducted research is official statistical data published on the website of the State Statistics Service of Ukraine and analytical reports of Eurostat on the formation of GDP in EU countries.

The first section of the article analyzes the value added at production costs of the Ukrainian RTE, compares this indicator with the processing industry and with EU countries. The second section analyzes the gross operating margin of trade enterprises of Ukraine and EU countries, compares this indicator with the processing industry sector. The third section is devoted to the study of the gross trade margin of the Ukrainian RTE and identifying factors influencing the GDP at production costs and the gross trade margin of the RTE in Ukraine based on correlation analysis. The last, fourth section identifies and characterizes the reasons for the instability of the indicators of value added at production costs and the gross operating margin of the RTE in Ukraine, as well as their overestimated level compared to EU countries.

1. Value added by production costs

One of the key economic indicators of structural business statistics, published as part of statistical information on the official website of the State Statistics Service of Ukraine (hereinafter referred to as the State Statistics Service of Ukraine) in the section "Economic Statistics" in the subsection

"Enterprise Activities"[1] (State Statistics Service of Ukraine, 2025), is value added[2] at factor cost.

This indicator is one of three alternative indicators of gross value added, calculated in accordance with the System of National Accounts (SNA 2008) (System of National Accounts 2008, 2009, 6.80, 6.81), along with indicators of gross value added at basic prices and at producer prices. VA is an indicator of the contribution of an individual producer, industry or sector of the economy to the creation of gross domestic product (GDP).

Typically, the value added indicator (not to be confused with the enterprise value added, EVA, used in financial management, in particular in the value-based management system) is not of interest to managers, owners and creditors of enterprises, since it is calculated on the conceptual principles of the 2008 National Statistical Service, which differ from the principles of accounting and financial reporting, and cannot be of significant use in the process of substantiating business decisions at the enterprise level. However, it is of fundamental importance for the purposes of developing state economic policy, monitoring the development of the national economy, macroeconomic analysis and international comparisons, and can also be used in studies of the peculiarities of the functioning of individual industries and groups of business entities. In particular, this indicator allows us to analyze the creation of new value by trade enterprises (belonging to the section "Wholesale and retail trade; repair of motor vehicles and motorcycles", code G according to NACE-2010 (National Classifier of Economic Activities 009:2010, 2010) compared to enterprises in other industries, as well as separately retail trade enterprises (code 47 according to NACE –2010). The 2008 SNA distinguishes between gross and net value added. Gross value added is calculated as the difference between the value of output and the value of intermediate consumption. Net value added involves the additional deduction of the value of consumption of fixed capital (System of National Accounts 2008, 2009, 6.74). This research further considers only gross value added, which is the basis calculating the GDP indicator.

For trade enterprises, the 2008 SNA provides for a significant feature of output measurement (compared to industrial enterprises that produce products). Their output is measured as the total value of the trade margin received for goods that they purchase for resale[3] (System of National Accounts 2008, 2009, 6.146). At the same time, the value of goods sold as part of the intermediate consumption of trade enterprises is not taken into account. Considering the role of trade enterprises in the GDP formation at production costs of all enterprises in Ukraine, it is necessary to note the significant growth of this role in recent years, especially after the beginning

[1] The official Ukrainian translation of the indicator title is controversial, as it negates the fact that it refers to the creation of new value through the contribution of the main production factors of labour and capital in accordance with the neoclassical economic theory views. The terms titles in brackets are in italics.

[2] Some sources use the word value-added (with a hyphen in written form).

[3] In the original English language: Their output is measured by the total value of the trade margins realized on the goods they purchase for resale.

of the large-scale invasion of the russian Federation in 2022. Changes in the sectoral GDP structure at production costs of enterprises during the period 2012–2023 are illustrated in *Figure 1*.

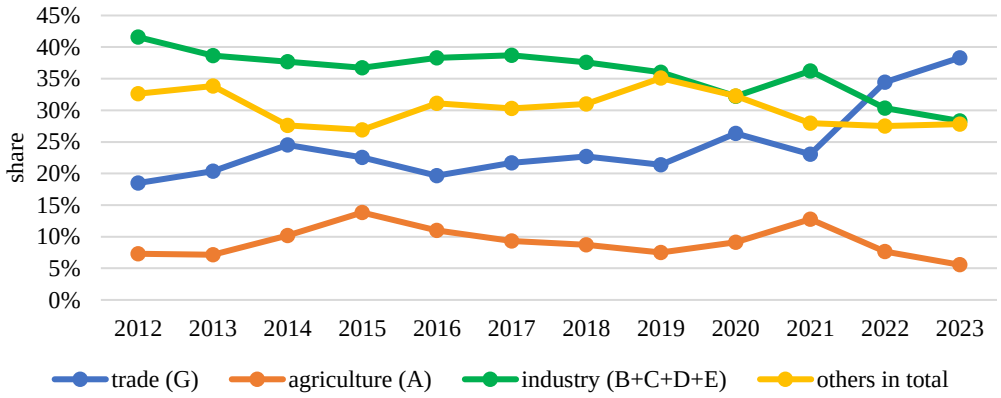
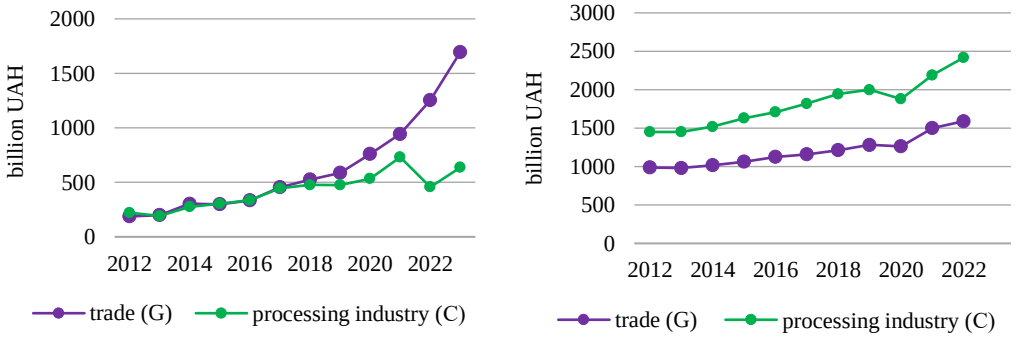


Figure 1. Structure dynamics of added value by production costs of enterprises in Ukraine for 2012–2023.

Source: author's analysis based on data (State Statistics Service of Ukraine, 2025).

According to the results of 2022–2023, the share of added value by production costs of trade enterprises exceeded the share of industrial enterprises (study *Figure 1*), which can be considered an anomaly for a country that claims the status of industrially developed and for membership in the EU. The anomaly of the situation in Ukraine is clearly evident in comparison with the EU. A comparison of added value by production costs of trade enterprises and processing industry (section C) in Ukraine and the EU (hereinafter referred to as the EU – European Union – 27 countries from 2020) is illustrated in *Figure 2*.



a) *b)*

Figure 2. Dynamics of value added at production costs of trade enterprises and the processing industry since 2012:
a) in Ukraine to 2023; *b)* in the EU to 2022.

Source: author's analysis based on data (State Statistics Service of Ukraine, n. d.; Eurostat, n. d.).

In the EU, the indicators of value added at production costs of trade enterprises are approximately 1.5 times lower than those of processing enterprises, and the ratio between the indicators of these two industries is stable. In Ukraine, after 2017, the indicators of value added at production costs of trade enterprises begin to grow exponentially, significantly exceeding the indicators of the processsing industry. According to the results of 2023, the indicators of value added at production costs of trade enterprises in Ukraine exceeded the processing industry by more than 2.6 times.

The identified anomaly in the context of national security is evidence of the absence (or failure to implement) of a state policy to increase the country's defense capabilities in the context of the war that began in 2014. If the state had stimulated the development of the defense industry (the enterprises of which mainly belong to the processing industry), mobilizing appropriate economic resources for this and providing conditions for their proper return, then a similar ratio of the indicators of added value at the production costs of trade enterprises and the processing industry in Ukraine (study *Figure 2a*) would probably be impossible.

In the structure of added value at the production costs of trade enterprises in Ukraine, one can notice an underestimated share of retail trade (G47), if compared with the structure in the EU, as evidenced by the data in *Table 1*.

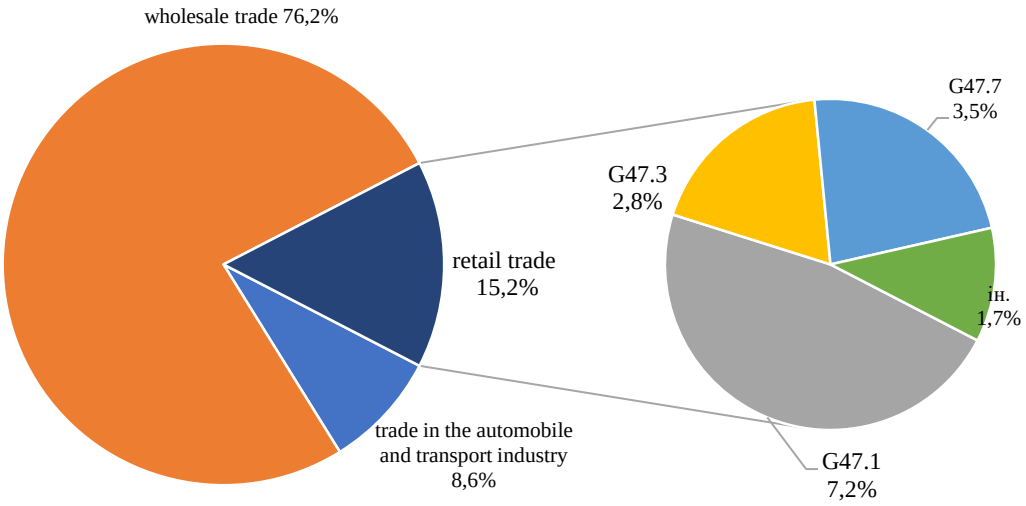
Table 1

Value added (VA) by production costs of retail trade enterprises (G47) in Ukraine and the EU from 2012 to 2023

Year/Indicator	Ukraine		EU	
	VA G47, billion UAH	share in VA of trade enterprises, %.	VA G47, billion euros	share in VA of trade enterprises, %.
2012	35.8	19.1	369.9	37.5
2013	42.4	21.3	370.4	37.8
2014	58.6	19.4	381.7	37.5
2015	55.9	18.7	397.1	37.4
2016	66.6	19.9	418.1	37.2
2017	91.3	20.1	434.0	37.5
2018	115.4	22.0	459.5	37.9
2019	133.2	22.7	488.8	38.1
2020	142.8	18.8	492.9	39.0
2021	256.9	27.2	559.2	37.3
2022	198.6	15.8	583.5	36.7
2023	257.4	15.2	н/д	н/д
Average value	121.2	**20.0**	450.5	**37.6**
Standard deviation	75.9	3.0	70.5	0.6
Coefficient of variation, %.	62.6	15.1	15.7	1.5

Source: Author's own analysis based on data (State Statistics Service of Ukraine, n. d.; Eurostat, n. d.).

The share of value added by production costs of G47 in all trade enterprises in Ukraine is approximately half as low as in the EU as a whole (study *Table 1*, the average value is highlighted in bold), and is also an order of magnitude more variable, as evidenced by the values of the coefficients of variation. The structure of value added by production costs of trade enterprises in Ukraine, including the structure of retail trade by the results of 2023, is illustrated in *Figure 3*.



Abbreviations:
MVM – Motor vehicles and motorcycles (including their repair);
G47.1 – retail trade in non-specialized stores;
G47.3 – retail sale of fuel;
G47.7 – retail sale of other goods in specialized stores;
other – other retail trade: G (47.2+47.4+47.5+47.6+47.8+47.9).

Figure 3. Structure of value added by production costs of trade enterprises in Ukraine, 2023

Source: author's analysis based on data from the State Statistics Service of Ukraine, n. d.

In 2023, almost half of the total value added at the cost of production of retail trade enterprises (study *Figure 3*) was created by retail trade enterprises in non-specialized stores (G47.1), including well-known operators of domestic supermarket chains and the largest representatives of this group: ATB-Market, Silpo-Food, Metro Cash & Carry Ukraine, Fora, Novus Ukraine. But the share of G47.1 enterprise in the total value added at the cost of production of all trade enterprises was only slightly more than 7% due to the hypertrophied share of wholesale trade enterprises. During 2012–2023, the share of G47.1 enterprise in the total VA volume at the cost of production of RTE fluctuated, as evidenced by the data in *Table 2*. The second place in importance in the RTE composition was occupied by enterprises G47.7 (retail trade of other goods in specialized stores).

Table 2

Structure dynamics of value added by production costs of retail trade enterprises in Ukraine from 2012 to 2023, %

Year/Indicator	Share of enterprises			
	G47.1	G47.3	G47.7	G(47.2+47.4+ +47.5+47.6+47.8++47.9)
2012	51.3	12.0	21.8	14.9
2013	55.9	14.9	21.1	8.0
2014	36.1	26.2	26.9	10.8
2015	57.0	9.5	24.9	8.5
2016	40.0	14.5	34.3	11.2
2017	55.7	18.3	19.0	7.1
2018	43.9	19.7	26.9	9.4
2019	53.4	12.4	26.2	7.9
2020	48.6	10.8	30.5	10.1
2021	59.9	11.5	19.2	9.4
2022	44.2	19.2	25.0	11.5
2023	47.3	18.6	23.0	11.2
Average value	49.5	15.6	24.9	10.0
Standard deviation	7.1	4.7	4.3	2.0
Coefficient of variation	14.3	29.7	17.4	20.3

Source: author's analysis based on data (State Statistics Service of Ukraine, n. d.).

In general, as shown in *Table 2*, the structure of added value by production costs of PRT in the context of individual types of economic activity changed without any noticeable patterns.

Added value by production costs of PRT in Ukraine can also be distributed depending on the size of enterprises. This distribution according to the results of 2023 is illustrated in *Table 3*.

Table 3

Composition and structure of value added by production costs of retail trade enterprises in Ukraine in 2023

Type of activity	NACE code	Enterprises*			
		large	medium	small	in total
Retail trade in non-specialized stores	47.1	94.3 (36.6%)	17.6 (6.8%)	9.8 (3.8%)	121.7 (47.3%)
Retail trade in fuel	47.3	21.0 (8.2%)	16.5 (6.4%)	10.3 (4.0%)	47.8 (18.6%)
Retail trade in other goods in specialized stores	47.7	28.6 (11.1%)	20.6 (8.0%)	10.0 (3.9%)	59.2 (23.0%)
Other retail trade	47.2+47.4+47.5+47.6+47.8+47.9	6.9 (2.7%)	9.4 (3.7%)	12.4 (4.8%)	28.7 (11.2%)
Total	47	150.8 (58.6%)	64.1 (24.9%)	42.5 (16.5%)	257.4 (100%)

** The VA amounts are indicated in billion UAH, below them in brackets the specific weight in the total volume of all RTEs is indicated.*

Source: author's analysis based on data (State Statistics Service of Ukraine, n. d.).

In 2023, the main share of value added at the production costs of retail enterprises fell on large enterprises (study *Table 3*). And the main contribution to the VA creation at the production costs of RTE was made by large retail enterprises in non-specialized stores. Such dominance of large RTE does not generally contradict the situation in the EU countries, but it draws attention to the fact that in the second year of the full-scale invasion, large enterprises G47.1 create approximately an order of magnitude (10 times) more value added compared to large enterprises producing weapons and ammunition (NACE code 25.4)[4]. If we compare large enterprises G47.1 and other types of economic activity, then in 2023 G47.1 is inferior in terms of the volume of VA creation at the production costs only to: production, transmission and distribution of electricity (code 35.1); land and pipeline transport (code 49).

2. Gross operating margin

Since the VA indicator at production costs is calculated in monetary terms, its analytical significance for the purposes of economic analysis is limited. In this regard, in the EU until 2020 (inclusive) the main indicators of structural business statistics were supplemented by a relative indicator calculated on the basis of value added at production costs, the indicator of the "gross operating rate" (gross operating rate) (Eurostat, n. d.).

The gross operating[5] rate is calculated as the quotient of dividing the gross operating surplus (gross operating surplus) – the difference between the value added at production costs and personnel costs[6] – by the volume of products (goods, services) sold according to the formula:

$$GOR = \frac{(VA-PC)}{T} = \frac{GOS}{T}, \quad (1)$$

where: *GOR* – gross operating rate;

VA – value added at factor costs;

PC – personnel costs;

GOS – gross operating surplus;

T – turnover.

A feature of the gross operating surplus in the numerator of formula (1) is that, according to the 2008 SNA, it characterizes the balancing item of the income generation account, which for enterprises is called gross profit (or gross income according to the terminology of the State Statistics

[4] By the end of 2023, the added value of production costs of large national enterprises specializing in the production of weapons and ammunition amounted to UAH 9.2 billion (State Statistics Service of Ukraine, n. d.).

[5] The operating rate is called gross in accordance with the SNA 2008, given that its calculation is based on gross value added.

[6] Commission Implementing Regulation (EU), 2020, Annex. IV, sec. F, paragraph 24)

Service of Ukraine; not to be confused with gross profit in the financial statements of enterprises, form No. 2 "Statement of financial results (Statement of comprehensive income)"), and for unincorporated business entities (individual entrepreneurs who use their own labor and unpaid labor of members of their households) – mixed income (System of National Accounts 2008, 2009, p. 7.8, 7.9). It is this gross operating surplus that is the basis for calculating the indicator "entrepreneurial income" and is the closest for enterprises to accounting profit (System of National Accounts 2008, 2009, p. 7.22–7.24), namely to the indicator "earnings before interest and taxes, depreciation and amortization", commonly known by the abbreviation EBITDA.

The available data of the State Statistics Service of Ukraine allow us to calculate the indicator of the gross operating norm of domestic business entities by type of economic activity, starting from 2012. The value of this indicator and the indicators used in calculations according to formula (1) for trade enterprises is illustrated in *Table 4*.

Table 4

Gross operating margin of trade enterprises in Ukraine from 2012 to 2023

Year	Value added by production costs, UAH billion	Personnel costs by production costs, billion UAH	Volume of products (goods, services) sold, billion UAH	Gross operating margin, %
2012	187.8	53.3	1623.6	8.3
2013	198.9	49.0	1612.1	9.3
2014	302.8	50.0	1629.7	15.5
2015	299.5	58.1	1953.3	12.4
2016	334.4	67.9	2385.7	11.2
2017	455.3	94.8	3061.7	11.8
2018	524.7	119.5	3764.4	10.8
2019	587.4	145.9	3958.4	11.2
2020	759.9	160.3	4068.2	14.7
2021	943.1	204.6	5385.0	13.7
2022	1254.1	179.6	4393.7	24.5
2023	1694.4	232.8	5694.3	25.7

Source: author's own analysis based on data (State Statistics Service of Ukraine, b. d.).

According to *Table 4*, there is a significant increase in the gross operating margin of trade enterprises in the years:

- the beginning of military operations in Ukraine in 2014;
- the introduction of quarantine restrictions in connection with the coronavirus pandemic in 2020;
- full-scale invasion – from 2022.

The dynamics of the gross operating margin of trade enterprises is illustrated more clearly and in comparison, with the EU in *Figure 4*.

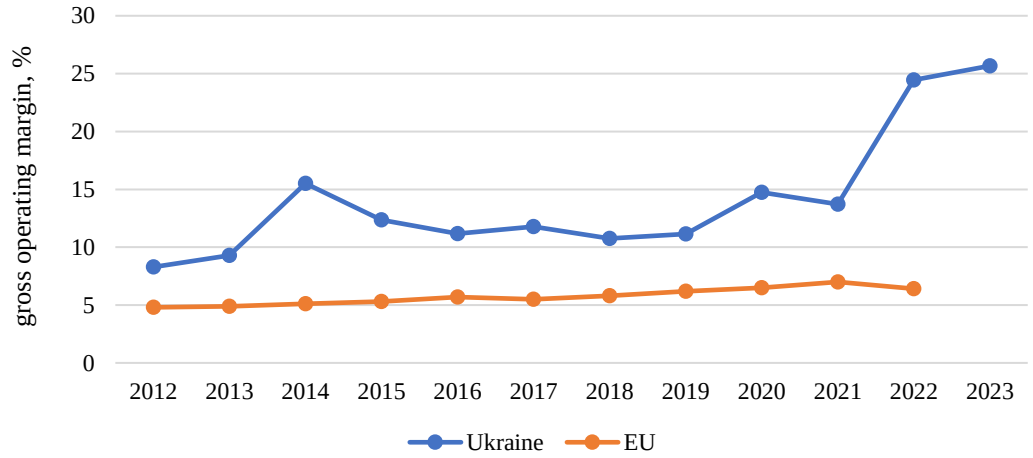


Figure 4. Dynamics of the gross operating margin of trade enterprises in Ukraine and the EU in 2012–2023

Source: author's own analysis based on data (State Statistics Service of Ukraine, n. d.; Eurostat, n. d.).

In addition to the sudden increases in the gross operating margin of trade enterprises in Ukraine in the indicated years, it is necessary to note a significant excess of this indicator compared to the values observed in the EU (study *Figure 4*). According to the results of 2022, the gross operating margin of trade enterprises in Ukraine exceeded the value for similar EU enterprises by more than 3.8 times, although in 2012 (before the beginning of the period of permanent shocks in the country) this excess was only approximately 1.7 times.

The general values of the gross operating margin, which are given in *Table 4*, have differences for trade enterprises of different sizes, which is illustrated by *Figure 5*.

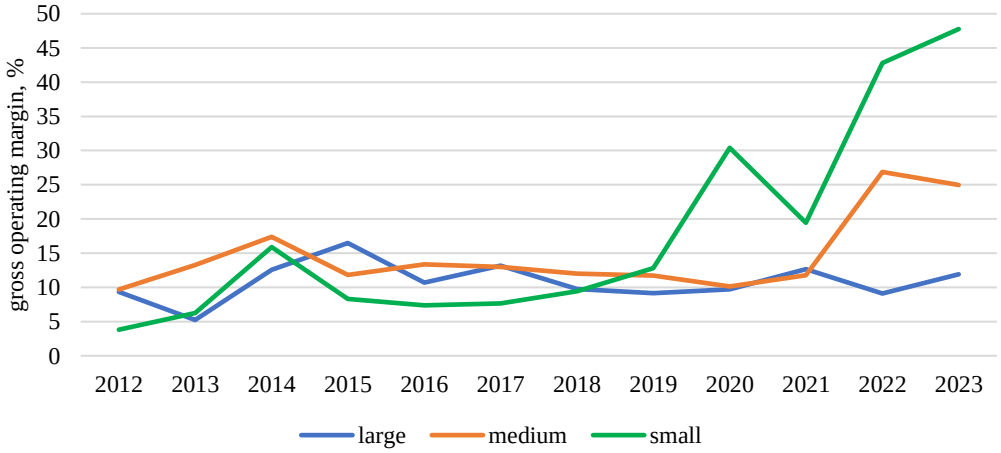


Figure 5. Gross operating margin of trade enterprises of different sizes in Ukraine for 2012–2023

Source: author's own analysis based on data (State Statistics Service of Ukraine, n. d.).

The most unstable is the value of the gross operating rate of small trade enterprises (study *Figure 5*). Its growth of more than twofold in 2020 can hypothetically be associated with quarantine restrictions under the conditions of the coronavirus pandemic, but no such changes were observed in the rest of the enterprises (in particular, the gross operating rate even decreased in medium-sized enterprises).

Common to all trade enterprises could be an increase in the gross operating rate in the year of the beginning of the war with the russian federation (2014) and the beginning of the full-scale invasion (2022). But even here there is an exception – the gross operating rate of large trade enterprises in 2022 did not increase, but noticeably decreased, unlike medium-sized and small enterprises. The absence of common features in the dynamics makes it necessary to check the statistical homogeneity of samples of the values of the gross operating rate of trade enterprises of different sizes.

In addition to instability and hypothetical heterogeneity, the gross operating margin of trade enterprises in Ukraine is inherently overestimated, as can be seen in *Figure 6* from the comparison with the gross operating margin of processing industry enterprises.

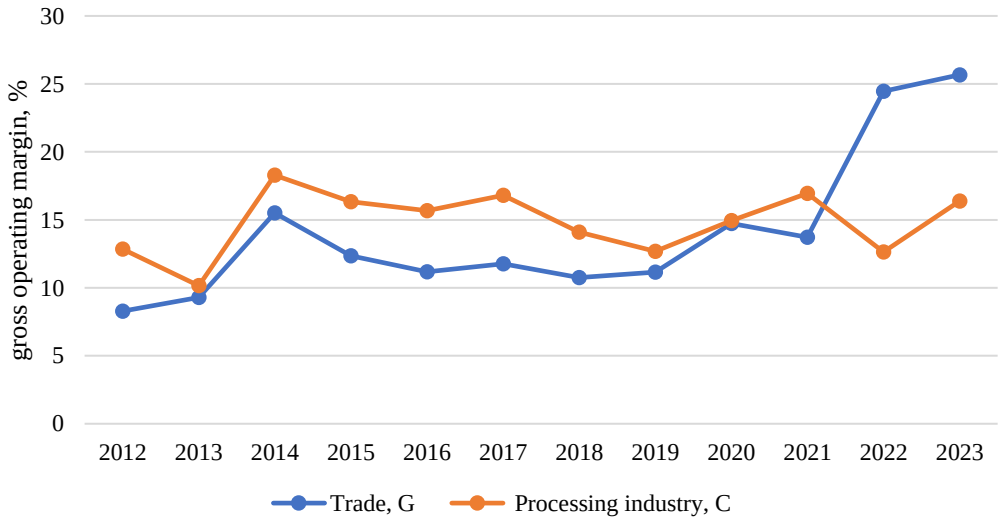


Figure 6. Gross operating margin of trade and manufacturing enterprises in Ukraine in 2012–2023

Source: author's own analysis based on data (State Statistics Service of Ukraine, n. d.).

Since 2022, the gross operating margin of trade enterprises has significantly exceeded the value in the processing industry (study *Figure 6*), which should not be observed given the economic nature of value added in trade. Since trade enterprises do not specialize in the production of new goods, but only resell purchased goods, such a ratio of gross operating margin values should be recognized as anomalous and additional research should be carried out to explain it.

Among the possible reasons for such an overestimation of the gross operating margin of trade enterprises in Ukraine are:

- overestimation of the cost of production due to an overly aggressive pricing policy (the policy of forming trade margins and discounts) in conditions of unfair competition, atrophied ethical standards in the trade business (the dominance of speculative sentiments) and inadequate (panic) management response to risks;
- underestimation of intermediate consumption and personnel costs due to wage payments "in envelopes" in order to evade payment of a single contribution to the mandatory state social insurance (ESI).

The second reason in terms of personnel costs, despite its greatest intuitive plausibility, does not explain the anomalous inter-industry correlations observed in Ukraine (such as that illustrated in *Figure 6*), since the problem of wage payments "in envelopes" is inherent not only to trade enterprises. Therefore, it is worth focusing on further in-depth research into the first reason. To verify it, it is necessary to conduct an additional study of a randomized sample of trade enterprises with an emphasis on the gross trade margin indicator (margin) and factors influencing it. However, the feasibility of such a cost study is questionable given the heterogeneity of the gross operating rate indicator of trade enterprises.

If the indicators of the gross operating rate of trade enterprises are heterogeneous (in the sense of the homogeneity of the data sample according to the theory of statistics) for individual groups of enterprises in the industry, then the analysis of average values for this industry does not make sense. Therefore, the next step is to check the homogeneity of the values of the gross operating rate of trade enterprises. First of all (given the aim of the research) it is necessary to check the statistical hypothesis about the homogeneity of the samples of indicators of the gross operating rate of retail and wholesale enterprises in Ukraine, which are visually not homogeneous (*Figure 7*).

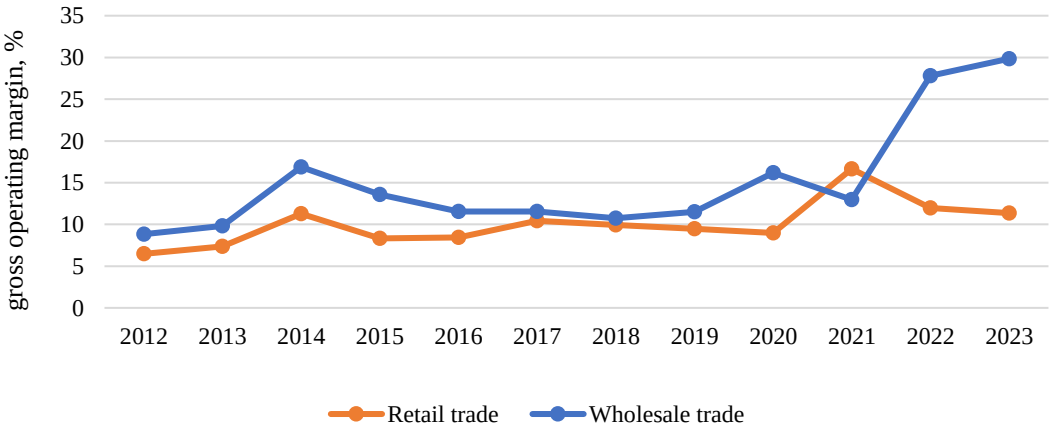


Figure 7. Gross operating margin of retail and wholesale trade enterprises in Ukraine in 2012–2023

Source: author's own analysis based on data (State Statistics Service of Ukraine, n. d.).

Samples are considered heterogeneous if the mathematical expectations of the empirical distribution functions of random variables found for these samples are not equivalent.

To test the specified statistical hypothesis, you can use the Anderson[7] homogeneity criterion with pairwise comparison of samples, which involves calculating the statistical indicator (statistics) T (Anderson, 1962):

$$T = \frac{U}{nm(n+m)} - \frac{4mn-1}{6(m+n)}, \quad (2)$$

were: $U = n\sum_{i=1}^{n}(r_i - i)^2 + m\sum_{j=1}^{m}(s_j - j)^2$

r_i and s_j are the ordinal numbers of indicators x_i and y_j in the ascending combined sample (in our case xi and yj are the indicators of the gross operating rate of retail and wholesale enterprises, respectively);

i and *j* are the ordinal numbers (ranks) of the indicators x_i and y_j in their own (separate) ascendingly ordered samples;

n and *m* are the sample size (number of observations) for retail and wholesale enterprises, respectively (*m* = *n* = 12).

The final result of calculations according to formula (2) is the value:

$$T = 0.715.$$

Taking into account the small sizes of both samples (12 observations each), the obtained calculated value of the sample indicator T is subject to adjustment (Anderson, 1962):

$$\tilde{T} = \left[(T - \varepsilon T)/\{45Var(T)\}^{1/2}\right] + 1/6, \quad (3)$$

where: $\tilde{T}$ is the modified (adjusted) calculated sample value of Anderson's statistics taking into account small samples;

εT expected value of *T* (under null hypothesis)[8]:

$$\varepsilon T=16+1/[6(m+n)]\varepsilon T=16+1/6(m+n),$$

Var(T) – variance of *T:*

$$Var(T) = \frac{1}{45}\cdot\frac{m+n+1}{(m+n)^2}\cdot\frac{4mn(m+n)-3(m^2+n^2)-2mn}{4mn}.$$

After performing algebraic transformations, formula (3) can be presented in a more convenient form for practical use:

$$\tilde{T} = \frac{T-\frac{1}{16v}-\frac{3}{256v^2}}{1+\frac{1}{m+n}-\frac{3}{8v}-\frac{9}{128v^2}}, \quad (4)$$

where: *v* is an auxiliary exponent: $v = mn / (m + n)$.

[7] In some sources it is called the "Lehman-Rosenblatt criterion".

[8] The expected value of T (under the null hypothesis) (Anderson, 1962).

The modified estimated sample value of Anderson's statistic according to formula (4) for samples of gross operating margin indicators of retail and wholesale enterprises in Ukraine is:

$$\tilde{T} = 0.721.$$

This value is greater than the critical (threshold) value of the Cramer–von Mises criterion[9] for a significance level of 5% (a typical significance level for such economic studies):

$$\tilde{T}(\alpha{=}0.05) = \omega^2(\alpha{=}0.05) = 0.461 \text{ (Pearson \& Hartley, 1972).}$$

The results obtained show that the hypothesis of homogeneity of the samples of gross operating margin values for wholesale and retail trade enterprises must be rejected as contradicting the observation data. This provides sufficient formal grounds to abandon an in-depth study of the average industry indicators of the gross operating margin of trade enterprises, focusing instead separately on retail trade enterprises.

In turn, in the composition of retail trade, the homogeneity of data on the gross operating margin of large, medium and small enterprises, as well as enterprises of individual types of retail trade (which were considered above): 47.1, 47.3, 47.7 and other types of retail trade, needs to be checked.

Visually, the values of the gross operating margin of large, medium and small retail trade enterprises in dynamics are not homogeneous, as evidenced by *Figure 8* and the data in *Table 5*.

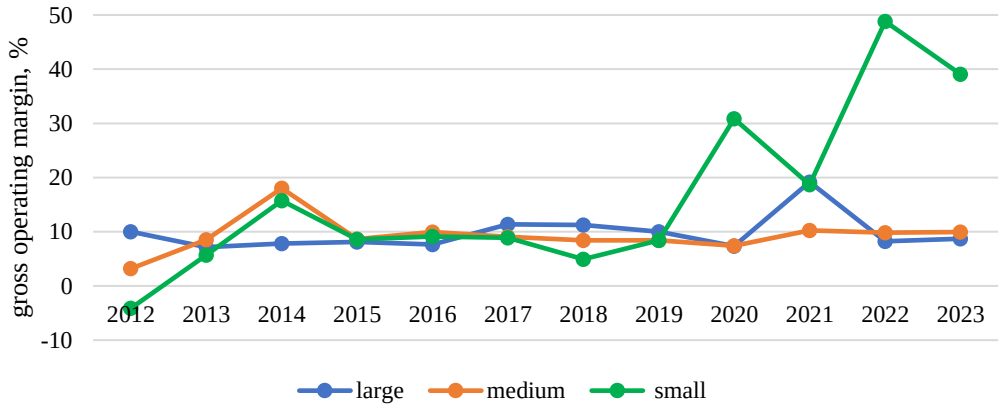


Figure 8. Gross operating margin of retailers of different sizes in Ukraine in 2012–2023[10].

Source: author's own analysis based on data (State Statistics Service of Ukraine, n. d.).

[9] The distribution function of the T statistic converges to the theoretical distribution function of the Kramer-Mises statistic; also known in the post-Soviet space as the distribution function $a_1(x)$, since the Anderson criterion is a generalization of the Kramer-Mises criterion for two samples (Anderson, 1962):

$$T = nm/(n+m) \cdot \omega^2,$$

where: ω^2 – is the Kramer-Mises statistic for one pooled sample.
Therefore, the $\tilde{T}$ critical value (α) for comparison with the calculated sample value of Anderson's statistic $\tilde{T}$ is the critical value of the Kramer-Mises statistic $\omega^2(\alpha)$, where: α is the significance level.

[10] Estimates for large and medium-sized enterprises for 2015 were used instead of classified official data on the State Statistics Service website. The indicators of value added, staff costs, and sales were estimated using the average share of large enterprises in all retailers over the period from 2012 to 2023, excluding 2015.

Table 5

Gross operating margin of retailers (G47) of different sizes in Ukraine in 2012–2023, %

Year/Indicator	Enterprises *G47*			All Enterprises *G47*
	large	medium	small	
2012	10.0	3.2	-4.1	6.5
2013	7.2	8.5	5.7	7.4
2014	7.8	18.0	15.7	11.3
2015	8.1*	8.7*	8.6	8.3
2016	7.7	9.9	9.1	8.4
2017	11.4	9.1	8.9	10.4
2018	11.2	8.4	4.9	9.9
2019	10.0	8.4	8.4	9.5
2020	7.3	7.4	30.9	9.0
2021	19.2	10.3	18.7	16.6
2022	8.2	9.8	48.8	12.0
2023	8.7	10.0	39.1	11.3
Average value	9.7	9.3	16.2	10.0
Standard deviation	3.2	3.2	14.9	2.5
Coefficient of variation	32.6	34.2	92.1	25.3

** calculated on the basis of estimated data*

Source: author's own analysis based on data (State Statistics Service of Ukraine, n. d.).

Particularly noticeable is the difference in dynamics and the range of fluctuations of the gross operating rate of small RTEs in *Figure 8* and in *Table 5*[11]. But this visual effect is not enough to establish the heterogeneity of values compared to large and medium-sized enterprises.

Pairwise comparison of samples using Anderson's homogeneity criterion according to formula (4) does not allow rejecting the statistical hypothesis of their homogeneity, which is confirmed by the data in *Table 6*.

Table 6

Matrix of modified calculated values of Anderson's statistics based on the results of pairwise comparisons of the gross operating margin of retail trade enterprises (G47) of different sizes in Ukraine for 2012–2023

Enterprises *G47*	Enterprises *G47*		
	large	medium	small
large	0		
Medium	0.117	0	
small	0.167	0.138	0

Source: author's analysis based on data (State Statistics Service of Ukraine, n. d.).

[11] The negative value of the gross operating margin of small retailers in 2012 is consistent with the SNA 2008.

None of the modified calculated values of the Anderson statistic in *Table 6* exceeds the critical value of 0.461 for the 5% significance level. Therefore, all 3 pairs of samples of gross operating rate values of retail trade enterprises of different sizes can be considered homogeneous (the opposite has not been proven).

The value of the gross operating rate of different type enterprises of retail trade in dynamics is illustrated in *Figure 9* and the data in *Table 7*.

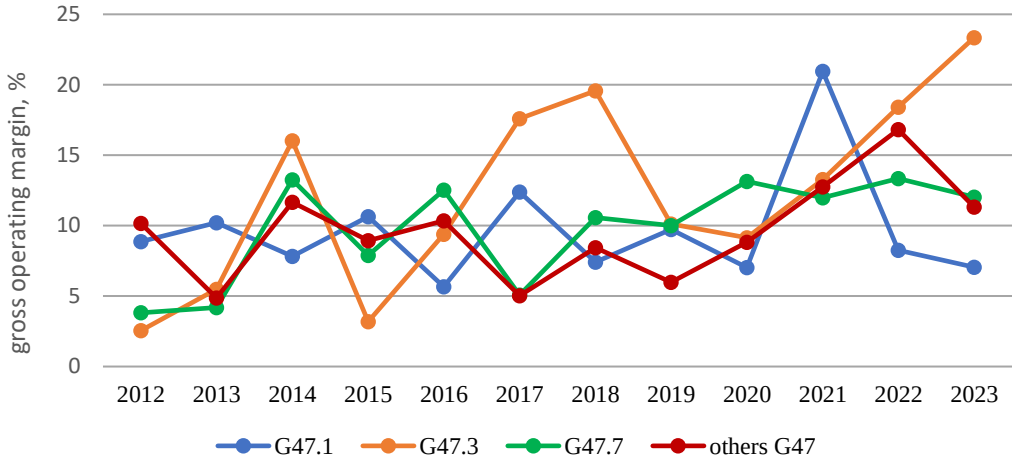


Figure 9. Gross operating margin of different type enterprises of retail trade in Ukraine in 2012–2023

Source: author's analysis based on data (State Statistics Service of Ukraine, n. d.).

Table 7

Gross operating margin of different type enterprises of retail trade (G47) in Ukraine in 2012–2023, %

Year/indicator	Enterprises G47				All enterprises G47
	G47.1	G47.3	G47.7	others G47	
2012	8.9	2.5	3.8	10.2	6.5
2013	10.2	5.5	4.2	4.9	7.4
2014	7.8	16.0	13.3	11.7	11.3
2015	10.6	3.2	7.9	8.9	8.3
2016	5.7	9.4	12.5	10.3	8.4
2017	12.4	17.6	5.1	5.0	10.4
2018	7.4	19.6	10.6	8.4	9.9
2019	9.7	10.1	10.0	6.0	9.5
2020	7.0	9.1	13.1	8.8	9.0
2021	20.9	13.3	12.0	12.8	16.6
2022	8.3	18.4	13.3	16.8	12.0
2023	7.0	23.3	12.0	11.3	11.3
Average value	9.7	12.3	9.8	9.6	10.0
Standard deviation	3.8	6.5	3.5	3.3	2.5
Variation coefficient	39.7	52.5	35.6	34.2	25.3

Source: author's own analysis based on data (State Statistics Service of Ukraine, n. d.).

The gross operating margin of different type enterprises of retail trade (study *Figure 9* and *Table 7*) demonstrates a significant variation during the study period with abrupt changes in different years for different groups of enterprises (there are no common features in the dynamics of values). Compared with enterprises of different sizes, the gross operating margin of different type enterprises of retail trade in *Figure 9* and *Table 7* visually looks more homogeneous.

The results of a pairwise comparison of data samples of gross operating margin using the Anderson homogeneity criterion according to formula (4) for enterprises of different types of retail trade are characterized in *Table 8*.

Table 8

Matrix of modified calculated values of Anderson's statistics based on the results of pairwise comparisons of gross operating margins of different type enterprises of retail trade (G47) in Ukraine for 2012–2023

Enterprises *G47*	Reference designation	enterprises G47			
		G47.1	G47.3	G47.7	others G47
Retail trade in non-specialized stores	G47.1	0			
Retail sale of fuel	G 47.3	0.266	0		
Retail sale of other goods in specialized stores	G 47.7	0.224	0.231	0	
Other retail trade	others G47	0.081	0.231	0.124	0

Source: Author's own analysis based on data (State Statistics Service of Ukraine, n. d.).

All modified calculated values of Anderson statistics in *Table 8* do not exceed the critical value of 0.461 for the 5% significance level. Therefore, all 6 pairs of samples of gross operating margin values of enterprises of different types of retail trade can be considered homogeneous (the opposite has not been proven), which allows us to proceed to a more in-depth analysis of this indicator for retail trade in general, primarily focusing on identifying possible reasons for the inflated and unstable value of the gross operating margin of retail trade in Ukraine.

3. Gross trade margin and statistical assessment of factors that determine it

As mentioned above, these reasons are related to the mechanism of formation of trade margins, on which the volume of RTE output directly depends according to the 2008 SNA. Also, a certain role is played by the features of intermediate consumption of retail enterprises in Ukraine, which is characterized by the volume and composition of turnover costs.

The amounts of received trade margins are characterized by the structural statistics indicator of enterprises "gross margin on goods for resale". This indicator is not mentioned in the 2008 SNA (System of National Accounts 2008; 2009), but is provided for by the Regulation of the European

Parliament and of the Council on European business statistics and can also be called gross trade margin (Commission Implementing Regulation (EU), 2020, Annex IV, Section F, paragraph 21)[12].

In Ukraine, the gross margin on resale of goods (gross trade margin[13]) is published by the State Statistics Service together with the cost of goods and services purchased in the reporting year for resale (purchases of goods and services for resale) and income from the sale of fixed assets (sales of tangible investment goods). Data is available by type of economic activity of enterprises (RTE including) since 2012.

If the overstated volumes of RTE in Ukraine are primarily associated with overstated trade margins, then there should be a strong statistical relationship between the indicators of value added at production costs and gross trade margin, which is characterized by a pairwise correlation coefficient close to unity. In this case, the values of the indicators should be cleaned of the inflationary component, which distorts (in this case artificially inflates) the correlation.

As shown in *Table 9*, the statistical relationship between these indicators is quite significant.

Table 9

Gross trade margin and value added by production costs of retailers in Ukraine from 2012 to 2023

Year/Indicator	In actual prices, billion UAH		Consumer price index (base, up to 2021)	In comparative prices in 2021, UAH billion	
	gross trade margin	value added at production costs		gross trade margin	value added at production costs
2012	55.6	35.8	0.343	161.8	104.2
2013	58.7	42.4	0.342	171.3	123.8
2014	56.0	58.6	0.384	145.9	152.7
2015	60.0	55.9	0.571	105.0	97.9
2016	76.6	66.6	0.650	117.8	102.4
2017	94.1	91.3	0.744	126.5	122.8
2018	147.0	115.4	0.825	178.2	139.9
2019	168.1	133.2	0.890	188.8	149.7
2020	187.7	142.8	0.914	205.4	156.3
2021	290.3	256.9	1	290.3	256.9
2022	236.7	198.6	1.202	196.9	165.2
2023	238.2	257.4	1.357	175.5	189.7
Correlation coefficient	1	0.974	–	1	**0.878**

Source: Author's analysis based on data (State Statistics Service of Ukraine, n. d.).

[12] The EU regulation defines this indicator as follows: Corresponds to the return on the activity of purchase and resale without further processing. It is calculated from net turnover related to trading activities of purchase and resale without further processing, total purchases for resale and changes in stock of goods and services purchased for resale. Also called gross trading margin.

[13] The following is the indicator title.

The pairwise correlation coefficient between the gross trade margin and the added value at production costs was 0.878 (study *Table 9*). Its verification using the Student's t-test revealed that the coefficient is statistically significant, since the actual value of the t-test (5.805) exceeds the critical (2.228) for the significance level α=0.05 (a typical level for such economic studies).

The presence of such a fairly significant statistical relationship is an argument in favor of the statement that the main reason for the overestimated VA value at production costs and, accordingly, the gross operating RTE rate in Ukraine is the overestimated value of the gross trade margin.

It is not excluded that there are common factors influencing the added value at production costs and the gross trade RTE margin in Ukraine, which determine the identified significant statistical relationship. A priori, such common influencing factors may be turnover, distribution costs, number of stores, retail space and number of employees in full-time equivalent of the retail trade, as well as inflation, characterized by the consumer price index. The linear statistical relationship of these indicators with value added at production costs and gross trade margin is illustrated in *Table 10*.

From the data in *Table 10* it follows that a posteriori turnover is not a common factor of influence for the added value at production costs and gross trade margin of retail trade enterprises in Ukraine (the correlation coefficients for turnover are statistically insignificant), which casts doubt on the stereotypical ideas about the determining role of this indicator for retail trade and the national economy as a whole. Instead, indicators of production costs (which for trade enterprises actually reflect the costs of circulation), the number of retail stores and their area may be common factors of influence for the added value at production costs and gross trade margin, which follows from the values of the correlation coefficients given in *Table 10*. The closest statistical relationship was found between the gross trade margin and the trading area of retail trade stores. However, in order to formulate final conclusions regarding the factors influencing the absolute value added by production costs and the relative gross operating margin, additional in-depth research is necessary.

Regarding the dynamics of the gross operating RTE margin in Ukraine, it is possible to state the absence of any visually noticeable patterns (study *Figures 7–9*), in connection with which there are grounds to suggest that this indicator performed a random walk during the study period (like the random walk of the market share price). The argument in favor of this assumption is that the logarithmic growth rates of the gross operating margin have a distribution that resembles a normal one. However, a formal test of the statistical hypothesis of a normal distribution is impossible due to the small amount of data.

Table 10

Key indicator correlation matrix of retail trade enterprises in Ukraine from 2012 to 2023 (value indicators in comparative prices of 2021)

№	Indicator	Symbol	VA	GTM	PC	RSs	RSA	AN	GT	CPI
1	Value added at production costs	VA	1							
2	Gross trade margin	GTM	0.878 (5.805)	1						
3	production costs**	PC	0.736 (3.439)	0.834 (4.789)	1					
4	number of retail stores at the beginning of the year	RSs	0.881 (5.881)	0.812 (4.399)	0.740 (3.482)	1				
5	retail sales area at the beginning of the year	RSA	0.804 (4.280)	0.882 (5.931)	0.725 (3.330)	0.828 (4.665)	1			
6	average number of employees in full-time equivalent	AN	0.317 (1.058)	0.603 (2.389)	0.572 (2.203)	0.307 (1.020)	0.419 (1.460)	1		
7	turnover of goods***	GT	0.134 (0.426)	0.245 (0.800)	0.360 (1.220)	0.262 (0.860)	0.118 (0.376)	0.783 (3.978)	1	
8	consumer price index, annual chain average	CPI	–0.216 (0.701)	–0.439 (1.547)	–0.525 (1.950)	–0.235 (0.765)	–0.309 (1.028)	–0.729 (3.370)	–0.525 (1.952)	1

**In brackets under each pairwise correlation coefficient, the actual value of the Student's t-test is given to test statistical significance by comparing it with the critical value of 2.228 for the significance level α=0.05. Significant correlation coefficients are highlighted in bold.*

*** The State Statistics Service of Ukraine does not publish the indicator of turnover costs separately for trade enterprises, but instead publishes the indicator of production costs by type of economic activity of enterprises in the section "Economic Statistics" in the subsection "Enterprise Activities".*

**** The indicator "Retail turnover of retail trade enterprises (legal entities)" is used according to the State Statistics Service data on wholesale and retail turnover of wholesale and retail trade enterprises in the section "Economic Statistics" in the subsection "National Trade".*

Source: author's analysis based on data (State Statistics Service of Ukraine, n. d.).

4. Causes of instability of value-added indicators in the retail trade of Ukraine and their differences with the EU countries

The reasons for the instability of the indicators of value added at production costs and gross operating margin of retail trade in Ukraine, as well as their overestimated level compared to EU countries, can be explained by the influence of a number of factors.

Military actions and their associated consequences. Loss of retail facilities, damage to infrastructure, disruptions in supply chains, high logistics costs, and shortages of goods have significantly affected the retail sector, where many business entities are forced to reduce staff or change business models to adapt. As a result, there has been a noticeable increase in prices for consumer goods, which has created additional pressure on the indicators of value added and gross operating margin.

Macroeconomic instability. Political crises, military actions, and economic turbulences significantly affect the activities of retail trade. The unpredictability of the economic environment complicates planning, contributes to increased costs, and negatively affects the stability of the indicators of value added and gross operating margin.

Rising energy prices, transportation, and the purchase of imported goods in Ukraine had a significant impact on the final cost of goods in 2022–2024. The main reasons were the increase in the cost of energy resources, food raw materials, logistics disruptions due to the war, and exchange rate fluctuations. The cost of energy resources reached record levels in the EU, which also affected overall inflation in Ukraine. Prices for imported goods increased due to the devaluation of the hryvnia, additional transportation costs, and difficulties in ensuring stable supplies during the war period.

Exchange rate fluctuations directly affect the prices of imported goods, which is due to the peg of their value to a foreign currency. In 2022–2024, Ukraine experienced significant dependence on imported products, especially electronics, medicines, and food. Forecasts for 2025 predict that import dependence will remain high, and exchange rate policy will be a significant factor in pricing, especially for goods imported from the EU and Asia. According to expert estimates, any significant depreciation of the hryvnia exchange rate could lead to a new jump in prices.

In 2025, inflation in Ukraine continues to be high, which worsens the purchasing power of the population. According to forecasts of the Kyiv School of Economics (Interfax, 2025, January 17), the average annual inflation in 2025 will be 12.1%. The main reasons for this are a significant increase in the price of electricity, increased logistics costs and low harvests in the previous year due to drought. The National Bank of Ukraine predicts that inflationary pressure will gradually decrease in the second half of 2025 due to an improvement in the energy situation and stabilization of food prices (National Bank of Ukraine, 2024, December 12).

These factors indicate that macroeconomic instability continues to affect the final cost of goods, which primarily creates additional challenges for retail enterprises.

Structural imbalances in the consumer market. The dominance of large retail chains in the consumer market creates conditions for overpricing due to limited competition. In contrast, small and medium-sized businesses do not have such resources, which forces them to operate with lower margins or leave the market altogether, reducing its overall efficiency.

In 2023, the share of large retail chains in the Ukrainian retail market was about 50–60% of the total turnover (Sharipov, 2024, June 12). These indicators demonstrate the dominance of the largest retailers in the food and non-food trade segment, which provides a significant part of the total market turnover. The ATB, Fozzy Group, METRO and Varus chains continued to increase their presence, which contributed to market concentration. For example, ATB recorded a record revenue of UAH 181 billion in 2023, significantly ahead of its competitors.

Imperfect regulatory framework. Legal uncertainty and lack of adaptation to European standards lead to unequal business conditions. The lack of effective regulatory mechanisms contributes to manipulation of costs and pricing, distorting real indicators of added value.

Thus, a significant impact on price increases in chain retail is the practice of imposing on suppliers, through the terms of contracts, costs that are not related to the content and subject of the contracts, in particular logistics and warehousing services; marketing services; return of unsold products; payment for entering retail chains, if this happens for the first time; payment for the number of units of products sold; payment for the number of stores in which the products will be sold; payment for promotions held by the chain; annual unconditional bonuses, etc. The above actions of retail chains lead to overpricing of goods by suppliers, which causes an increase in the retail price of goods for the end consumer, and in the case of the sale of socially significant goods, this situation negatively affects the socially unprotected segments of the population, who are essentially the main buyers of socially significant goods. This can be helped by making amendments to the existing legislation on protection against unfair competition or adopting a special regulatory act that could regulate the issue of protection against unfair trade practices.

The spread of the shadow economy. A significant share of the economy operating outside the official accounting system includes opaque tax avoidance schemes. This distorts official statistics, creating the appearance of high added value.

It should be noted that the level of the shadow economy in Ukraine according to the method of "population expenditure - retail turnover" in 2021 was 22% (Ministry of Economy of Ukraine, 2022, October). In 2023, retail turnover reached UAH 1.8 trillion, increasing from UAH 1.4 trillion in 2021 by 30.5% in nominal terms and by 15.4% taking into account inflation. At the same time, the real growth (minus inflation) of population incomes in 2023 in the official segment was 3.5%. Given that the dynamics of transfers from abroad did not increase during the specified period, it can be assumed purely theoretically that legalization through trade reduced the shadow sector by more than 10% (Kushch, 2024, August 26).

Different levels of labor productivity. In the EU, the intensive use of technology, automation and innovative approaches allow for higher productivity at lower costs. In 2023, gross value added per employee in the retail sector in the EU averaged 45–55 thousand euros (Eurostat, 2024,

March 15), while in Ukraine this figure remained significantly lower, partly due to the lower capital intensity of processes and the low level of automation.

Features of consumer demand. The retail market in Ukraine, compared to the EU countries, is characterized by a significant share of basic goods, which affects the limited diversification of the assortment. Due to the lower level of income among the population, the demand for premium products is significantly lower than in the EU countries. In the European Union countries, in particular in Western Europe, the premium segment is actively developing, which allows maintaining a high level of added value and expanding the assortment aimed at different categories of consumers (Wynne-Jones, 2024, February). In the EU, premium segments are an important driver of retail growth, ensuring revenue stability even in difficult economic conditions. In Ukraine, however, rising logistics costs and infrastructure destruction during the war exacerbate the challenges of market diversification. This market structure is limited, causing fluctuations in value added and gross operating margin depending on changes in demand.

The combination of these factors creates a difficult environment for the stable functioning of retail trade in Ukraine. To reduce the instability of value-added indicators and harmonize them with European standards, structural reforms are needed aimed at stimulating competition, combating the shadow economy, improving the regulatory framework, and introducing modern technologies.

Conclusions

Retail trade enterprises play one of the decisive roles in the GDP formation in Ukraine, but they are significantly inferior to wholesale trade enterprises in terms of the share in the total volume of added value at the production costs of all enterprises of the national economy. In Ukraine, after 2017, the indicators of added value at the production costs of trade enterprises began to grow exponentially, significantly exceeding the indicators of the processing industry. In recent years, during the large-scale military invasion, it was trade that began to create the greatest added value among all industries, which necessitates a critical rethinking of Ukraine's status as an industrially developed country (at least in the traditional sense of this concept) and a corresponding adjustment of state economic policy. The role correlation of retail trade and trade in general with the role of industry in the RTE formation in Ukraine is exaggerated and can be considered evidence of the absence (or failure to implement) of a state policy of increasing the country's defense capabilities in the conditions of the war that began in 2014. This refutes hypotheses 1 and 2 formulated in the introductory part of this article.

The revealed significant excess of the gross operating margin indicator values of trade enterprises compared to industrial enterprises in Ukraine is an anomalous phenomenon given the economic nature of added value. Although

the gross operating margin values for retail and wholesale enterprises demonstrate statistical heterogeneity (therefore, formally they should not be considered generalized), they are overestimated for both types of trade (especially for wholesale in recent years). This refutes hypothesis 3 put forward in the introductory part of this article.

The research results revealed that turnover is not a common factor influencing the value added at production costs and gross trade margin of retail trade enterprises in Ukraine, which refutes hypothesis 4 formulated in the introductory part of this article about the determining role of this indicator for retail trade and the national economy as a whole.

The indicators of value added (volume of value added at production costs and gross operating margin) of the RTE throughout the entire research period are characterized not only by inflated values, but also by instability. This is inherent both for retail trade in general and for its individual varieties (types of economic activity that belong to retail trade according to the NACE) as well as enterprises of various sizes (large, medium and small) within retail trade. The largest share in the total value added by production costs of non-specialized goods during the study period was created by retail trade enterprises in non-specialized stores (code 47.1 according to the NACE), and the largest average value of the gross operating margin was demonstrated by fuel retail enterprises (code 47.3).

Despite the presence of noticeable differences for individual RTE types in Ukraine, the values of the gross operating rate indicators for these types turned out to be statistically homogeneous, which makes it possible to analyze the overall gross operating rate and, accordingly, to identify in the process of further research common patterns of the formation of added value at the costs of RTE production.

Taking into account the results obtained, it can be argued that the indicators of added value at the costs of production and gross operating RTE rate in Ukraine are characterized by instability and an overestimated level due to the following reasons: military actions and their associated consequences; macro-economic instability; structural imbalances of the consumer market; imperfect regulatory framework; the spread of the shadow economy; different levels of labor productivity; features of consumer demand.

We predict prospects for further research in determining the impact of consumer demand parameters, as well as in assessing the impact of digital technologies, automation and online trading on the indicators of gross operating margin and added value in retail trade, which will allow us to identify potential areas of modernization of the industry. An important area of further research is also the adjustment of economic policy by developing recommendations for state regulation in the sphere of trade and industry to ensure balanced economic development and strengthen the country’s defense capabilities.

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