THE IMPACT ASSESSMENT OF COMPETITIVENESS ON EXPORT GROWTH IN GEORGIAN MINERAL WATER SECTOR (BASED ON ECONOMETRIC MODEL)

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Introduction. The paper analyzes the dynamics of exports of the Georgian mineral water product and identifies the reasons for the upward or downward trends. The paper assesses the methodological issues of measuring the level of competition in agri-food markets in general. The paper uses a theoretical-methodological study of the issue. Comparative statistical analysis is performed according to the foreign trade statistics. The Revealed Comparative Advantage Index (RCA) and the Relative Export Advantage Index (RXA) are calculated to assess the competitiveness of the Georgian mineral water sector using the "ex-post" method. In addition, an econometric model is constructed to substantiate the relationship between cause-effect variables. The model substantiates the impact of competitiveness weighed and estimated by "Doing Business", „Index of Economic Freedom" rankings and the potential demand of partner countries weighted by trade shares, on the growth of Georgia's mineral water exports.

Aim and tasks. The main purpose of the article is to highlight the role of product competitiveness among the factors affecting export growth, to identify the main obstacles and suggest ways to overcome them. The article also analyzes the most acute problems caused by Covid 19 in the field. There are analyzed policy and forecasts in response to the complicated economic situation created by the pandemic of the main companies of the Georgian mineral water market.

Results. Based on the statistical trends, mathematical calculations and econometric model evaluations, a positive correlation between competitiveness and exports is substantiated. Also, the main points of the mineral water companies performance and state support economic policy are presented due to the pandemic situation. Taking into account the general and current problems in the sector the ways to maintain and increase the level of competitiveness of the product are identified.

Conclusions. The conducted research presents the importance of the competitiveness on the export growth. Accordingly, the article proposes ways to increase the level of competition and competitiveness. Conclusions have been made on the underlying problems in the field, including those caused by Covid 19 and beyond, and recommendations for addressing these problems have been proposed.

Keywords: competition, mineral water sector, export diversification, competitiveness indexes.

ВПЛИВ КОНКУРЕНТОСПРОМОЖНОСТІ НА ЗРОСТАННЯ ЕКСПОРТУ В СЕКТОРІ МІНЕРАЛЬНИХ ВОД ГРУЗІЇ (НА ОСНОВІ ЕКОНОМЕТРИЧНОЇ МОДЕЛІ)

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Вступ. У статті аналізується динаміка експорту грузинської мінеральної води і виявляються причини підвищувальних або понижувальних тенденцій. У статті дається оцінка методичних питань вимірювання рівня конкуренції на агропродовольчих ринках. У статті проведено теоретико-методологічне дослідження питання. Порівняльний статистичний аналіз проводиться за даними статистики зовнішньої торгівлі. Індекс виявлених порівняльних переваг (RCA) і індекс відносних експортних переваг (RXA) розраховуються для оцінки конкурентоспроможності сектора мінеральних вод Грузії з використанням методу «постфактум» («ex-post»). Крім того, побудована економетрична модель для обґрунтування зв'язку між причинно-наслідковими змінними. Модель обґрунтовує вплив конкурентоспроможності, виваженої і оціненої рейтингами «Ведення бізнесу» (Doing Business), «Індекс економічної свободи» (Index of Ecnomic Freedom), і потенційного попиту країн-партнерів, зваженого за часткою торгівлі, на зростання експорту мінеральної води Грузії.

Мета і завдання. Основна мета статті - виділити роль конкурентоспроможності продукції серед факторів, що впливають на зростання експорту, виявити основні перешкоди і запропонувати шляхи їх подолання. У статті також аналізуються найбільш гострі проблеми, викликані Covid 19 в секторі. Аналізуються політика і прогнози реагування на складну економічну ситуацію, створену пандемією основних компаній грузинського ринку мінеральної води.

Результати. На основі статистичних тенденцій, математичних розрахунків і оцінок економетричних моделей обґрунтована позитивна кореляція між конкурентоспроможністю і експортом. Також представлені основні моменти діяльності компаній мінеральної води і економічної політики державної підтримки в зв'язку з пандемічної ситуацією. З урахуванням загальних і поточних проблем в галузі визначено шляхи збереження і підвищення рівня конкурентоспроможності продукції.

Висновки. Проведене дослідження показує важливість конкурентоспроможності для зростання експорту. Відповідно, в статті пропонуються шляхи підвищення рівня конкуренції та конкурентоспроможності. Були зроблені висновки про основні проблеми в цьому секторі, в тому числі викликаних Covid 19 і не тільки, а також запропоновані рекомендації щодо вирішення цих проблем.

Ключові слова: конкуренція, сектор мінеральних вод, диверсифікація експорту, показники конкурентоспроможності.

Introduction. Water is an essential and integral product of our existence. With zero calories, sugar and alcohol, water is the oldest and best way to hydrate the human body. We need it every day at home, on the road, at work or at workout. However, recently in the world and also in Georgia, mineral water brands have managed to diversify its importance only in terms of quenching thirst or basic needs and turning mineral water consumption into a separate human lifestyle, one of the main sectors of the country's economy and culture. Brands have been working for years to increase the competitiveness and quality of mineral water products within the country, at the same time, try to develop effective export strategies, conduct marketing activities, negotiate to meet the conditions of demand in the relevant international markets.

Recently, the companies producing mineral waters have multiplied in the world or in Georgia. Consumers mostly observe the taste characteristics and in this way decide which firm product to buy. However, in addition to the taste factor, the competitiveness of the mineral water product is determined by many and important characteristics. Therefore, it is necessary to conduct a thorough study of these characteristics, assess competitiveness and, most importantly, determine its impact on the potential for increased exports based on the „ex-post" method and an econometric model.

Literature Review. Economic approaches to assessing competitiveness vary significantly by firm, sector, and overall economy (Carraresi L.1 and Banterle A. 2008) [1]. Competitiveness measurements in agriculture are often based on data from medium-sized firms [2]. Researchers in the U.S. and Europe emphasize the importance of measuring competitiveness at different stages of the agricultural and food marketing system, competitiveness and the need to measure it are reflected in the many provisions and guidelines for agricultural policy support [3].

In order to produce a competitive product, it is important for the state to create a favorable environment for business [4].

Competitiveness is nothing more than the creation of an environment for business by the state that ensures the production of competitive goods by firms operating in the country. However, in order to achieve competitive advantage, it is necessary to study the target markets. The competitiveness phenomenom is complex and wide range of variables should be adopted to evaluate it [5]. Competitiveness rates by products are sharply differentiated [6-7].

Due to the fact that mineral water is included in the top ten products of Georgia's exports, it is very important to study the competitiveness of it, work on improving it and thus increase its exports. In order to determine the impact of its competitiveness on the export of mineral water product, there is developed the econometric model and summarized the results in the article.

Disussion. France and Italy are the undisputed leaders among the world's leading exporters of mineral water products. The most competitive brands of these countries are known in the world, such as "Evian" in France and "San Pellegrino" in Italy [8]. According to 2019 data, the share of exports in total exports of France is 29.2%, while in Italy – 23.1%. The rest of the states are relatively far behind. Among them is Georgia with the 4.5% share of exports in the 5th position [9] (Fig. 1).

At the same time, it should be noted that an agreement was reached between Georgia and China in 2016, which provided for the entry of wine, mineral water and other agricultural products from Georgia to the Republic of China at zero tariffs. The signing of this agreement was extremely important for Georgia and opened significant opportunities for the country's agri-food sector.

After undergoing certain procedures, a free trade agreement with China was entered into force, and from the second half of 2017, Georgian wine, mineral waters and agricultural products entered the Chinese market without any customs duties. This means that the customs duty has been removed from Georgian mineral waters, which makes this product much more competitive [11].

Besides China, in 2016 progress was also made in Korea. In particular, at the end of 2016, Georgian mineral waters "Borjomi" and "Nabeghlavi" were placed for sale for the first time in the Pangio branch of the largest retail chain, "Hyundai Department Store". This was made possible by a number of measures taken by the Embassy to promote Georgian mineral waters and successful negotiations between the importing companies "Borjomi" and "Nabeghlavi", ANK SERVICE CO and Premier Water International [12].
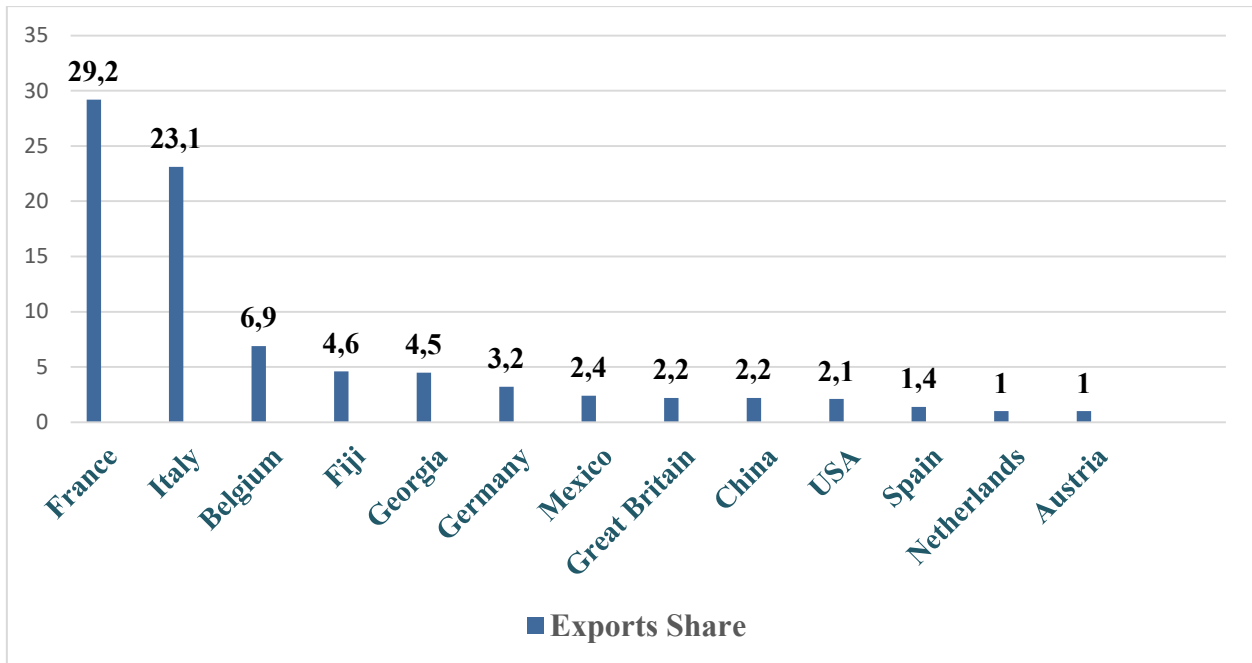

Fig. 1. List of Mineral Water (code: 220110) exporters and their exports shares in 2019
Created by author (From the total list of exporters all over the world we have selected countries with a share of exports of more than 1%)
Source: UN COMTRADE and ITC statistics [9]

Fig. 2. Exports of Georgian Mineral Water (2013-2020) (Thousand liters)
Source: National Statistics Office of Georgia [10]

It should also be noted that in 2019, the brand "Kobi" of the company "Aqua Geo" entered the US market, which has been produced in Georgia since 2008. In 2019, exports were also made to Japan. These events indicate possible positive forecasts for Georgian mineral water exports diversification.

However, so far the leading positions of Georgian Mineral Water importer countries are held by the countries of the post-Soviet space. As mentioned above, the economic and political crises in the region in 2015 had a significant impact on Georgian mineral water exports.

Due to the fact that the main importers of Georgian products are mainly the countries of the Caucasus region. If we analyze the dynamics, the main imperative countries of Georgian mineral waters are the Russian Federation, Ukraine, Lithuania, Kazakhstan and Belarus. It should be noted that the Russian Federation is not among the exporting countries of Georgia until 2013, due to its 7-year embargo, and since 2013 it is the leading country among importers [13] (Fig. 3).
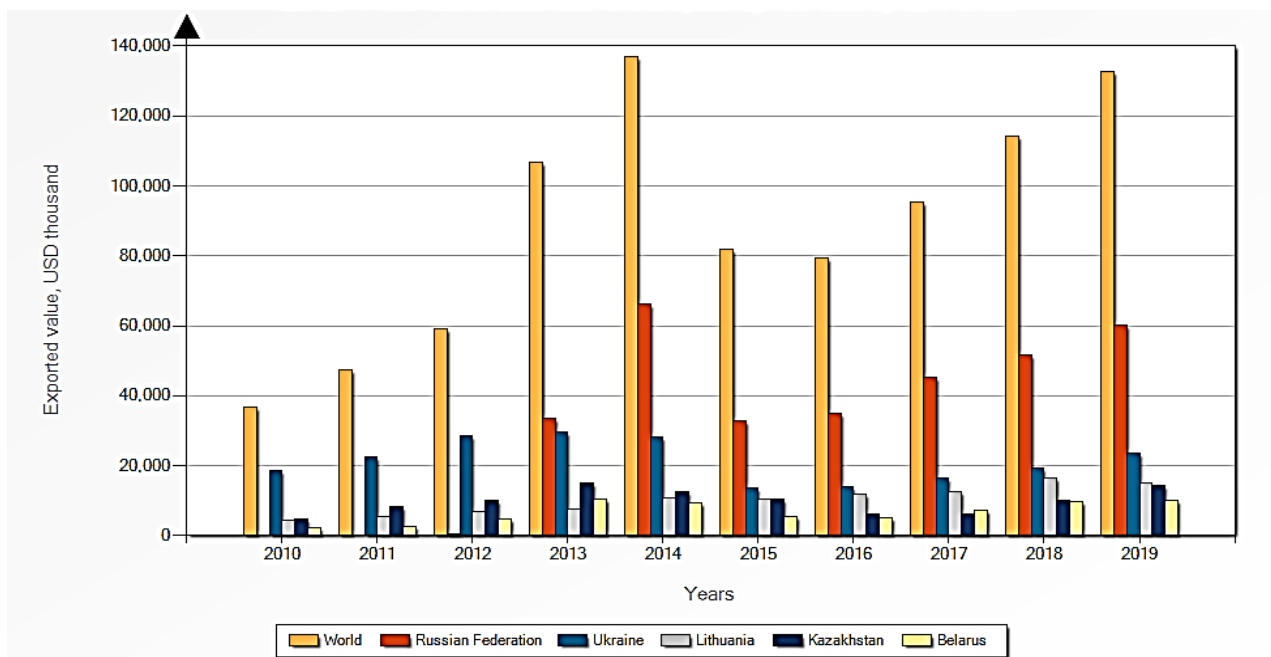

Fig. 3. List of 5 main importers for a Georgian Mineral Water by exported value in 2010-2019 (USD thousand)

Source: Trademap.org [13]

According to 2019 data, the Russian Federation still leads with 45% of the importing countries, followed by Ukraine with 18%, then Lithuania and Kazakhstan with 11% each, Belarus – 8%, Uzbekistan – 2%, USA, Azerbaijan, Israel and Moldova equals 1% each, while other countries account for 3% [14] (Fig.4).
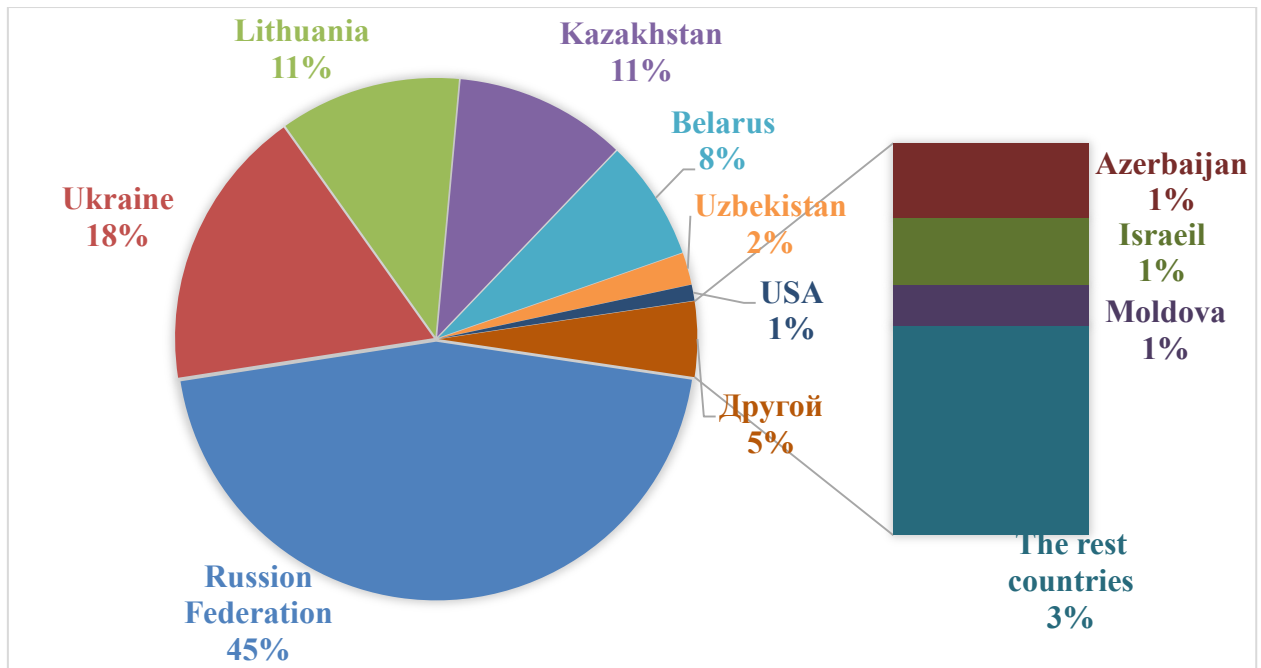
Fig. 4. Georgian Mineral Water exports by top 10 Importers in 2019 (%)
Source: Trademap.org [14]

Assessing the level of competition and access to the information are important for suppliers to enter the market, however, it is no less necessary to determine the level of competitiveness of the product. Measuring the level of competitiveness is associated with a number of challenges and it is studied by scientists from different perspectives [15].

The following indices are used to assess competitiveness based on foreign trade statistics using the "ex-post method" [16]:

Revealed Comparative Advantage Index (RCA)

$$RCA_{ij} = (X_{ij} / \sum X_{ij}) / (\sum X_{kj} / \sum \sum X_{kl}) \quad (1)$$

where:

RCA - the share of exports of a product of a given country in relation to the total exports of

that country; X - exports; i, k - product category; j, l - regions.

Relative Export Advantage Index (RXA)

$$RXA_{ij} = (X_{ij} / \sum X_{ij}) / (\sum X_{kj} / \sum \sum X_{kl}) \quad (2)$$

The RXA is the same index as the RCA. The only difference is that in the case of all exports, the exports of the country in question will not be used. This is especially important in the case of large countries with a fairly high share of international markets. For example, Georgia is a small country. Accordingly, there is no huge difference between the RCA and RXA indices for Georgia.

As a result of calculating the relevant data with (1) and (2) formulas, we obtain the following data:

$RCA_{(Georgian\ Mineral\ Water)} = (132\ 571/2\ 924\ 330) / (3\ 798\ 400/18\ 707\ 696\ 803) = 0.06889/0.000203 = 339,36$

$$339,36 > 1 \qquad (3)$$

$RCA_{(Georgian\ Mineral\ Water)} = (132\ 571/2\ 924\ 330-132\ 571) / (3\ 798\ 400/18\ 707\ 696\ 803-3\ 798\ 400) = (132\ 571/2\ 791\ 759) / (3\ 798\ 400/18\ 703\ 898\ 403) = 0.04749 / 0.000203 = 233,94$

$$233,94 > 1 \qquad (4)$$

The analysis results (3), (4) show that the Georgian mineral water sector is competitive.

The Econometric Model and its Theoretical Interpretation

To develop the econometric model, we took the "Doing Business" and "Index of Economic Freedom" rankings in the dynamics of 2000-2019 as explanatory variables of competitiveness. Also, as an additional explanatory variable, we took the foreign demand data of potential trading partners weighted by trade shares, which shows the change in the demand of Georgia's potential partners in terms of gross domestic product (GDP). The resulting variable is the volume of Georgian mineral water exports in expressed value (USD thousands). The data described above for the model are given in the following table [17] (Table 1).

Based on the selection criteria of Akaike and Schwarz, we tested the model on stationarity. Accordingly, we took the first-order difference so that there was no stationarity problem in the model. This implies that the data are subtracted from the difference from the previous year and not the given variable itself. We are dealing with a first-order difference and stationarity is not noticed in the model.

Table 1. Gathered Data for developing the model

Years	EXPORTS	FREE_IND	DOING_BUS_IND	WORLD GDP
2000	9093.315	54.3		
2001	11517.34277	58.3		
2002	17290.54	56.7		
2003	19674.58789	58.6		0.6915
2004	19303.52539	58.9		0.734
2005	32459.99219	57.1		0.792
2006	24032.91797	64.5	112	0.873
2007	24975.65625	69.3	37	0.9547
2008	30544.35	69.2	21	0.9815
2009	24562.32813	69.8	16	0.9594
2010	36814.65625	70.4	13	1
2011	47433.26	70.4	17	1.0282
2012	59289.41	69.4	12	1.0499
2013	106781.1406	72.2	9	1.0783
2014	136777.5781	72.6	14	1.0989
2015	81837.76	73	24	1.1192
2016	79434.3	72.6	23	1.1272
2017	95286.82	76	16	1.1652
2018	117834.3672	76.2	9	1.2
2019	132571.0313	75.9	6	1.2316

Sources: Ministry of Economy and Sustainable Development of Georgia

The model estimated using the least squares method has the following appearance (Fig. 5).

Dependent Variable: DLOG(EXPORT)
Method: Least Squares
Date: 01/10/21   Time: 00:42
Sample (adjusted): 2007 2019
Included observations: 13 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DLOG(WORLDGDP)	8.358327	0.982554	8.506732	0.0000
D(DOING_BUS_IND)	0.010971	0.001634	6.713284	0.0002
D(FREE_IND(-1))	0.018141	0.013397	1.354126	0.2127
D15	-0.783582	0.073010	-10.73259	0.0000
D13	0.416315	0.075316	5.527567	0.0006

R-squared	0.960392	Mean dependent var	0.131361
Adjusted R-squared	0.940589	S.D. dependent var	0.274954
S.E. of regression	0.067018	Akaike info criterion	-2.283974
Sum squared resid	0.035932	Schwarz criterion	-2.066686
Log likelihood	19.84583	Hannan-Quinn criter.	-2.328636
Durbin-Watson stat	1.903084		

Fig. 5. Estimated Econometric Model
Developed by author in Eviews Statistical Program

$$logExp_t = 8.36 World\ GDPt + 0.01 Doing\ Bus_t + 0.02 Free\ Ind_{t-1} + u_t \qquad (5)$$

Autocorrelation in residual members in regression (5) is not noticed according to Durbin-Whitson statistics. 1.90> 1.875 (dU). To test for autocorrelation in a residual member, we can also use the Breusch-Godfrey Lagrange Multiplier (LM) test. The null hypothesis of this test is the absence of autocorrelation in the residual member, while the alternative hypothesis is the existence of autocorrelation. According to the Breusch-Godfrey test, the null hypothesis is accepted with a 99% probability, which implies the absence of autocorrelation in the residual members.

According to the Glegser test, the null hypothesis about heteroscedasticity in residual members is accepted. Residuals are not in correlation, which means that we do not have random connections in the model, and therefore the variation of the residual members is constant, which makes the model more valid (Fig. 6).

Heteroskedasticity Test: Glejser

F-statistic	0.816116	Prob. F(5,7)	0.5741
Obs*R-squared	4.787435	Prob. Chi-Square(5)	0.4424
Scaled explained SS	3.284955	Prob. Chi-Square(5)	0.6561

Fig. 6. Estimated Heteroscedasticity in the model
Developed by author in Eviews Statistical Program

The residual members of the model are normally distributed, which means that it is not necessary to evaluate the coefficients of the model with a test different from the t test (Fig. 7).
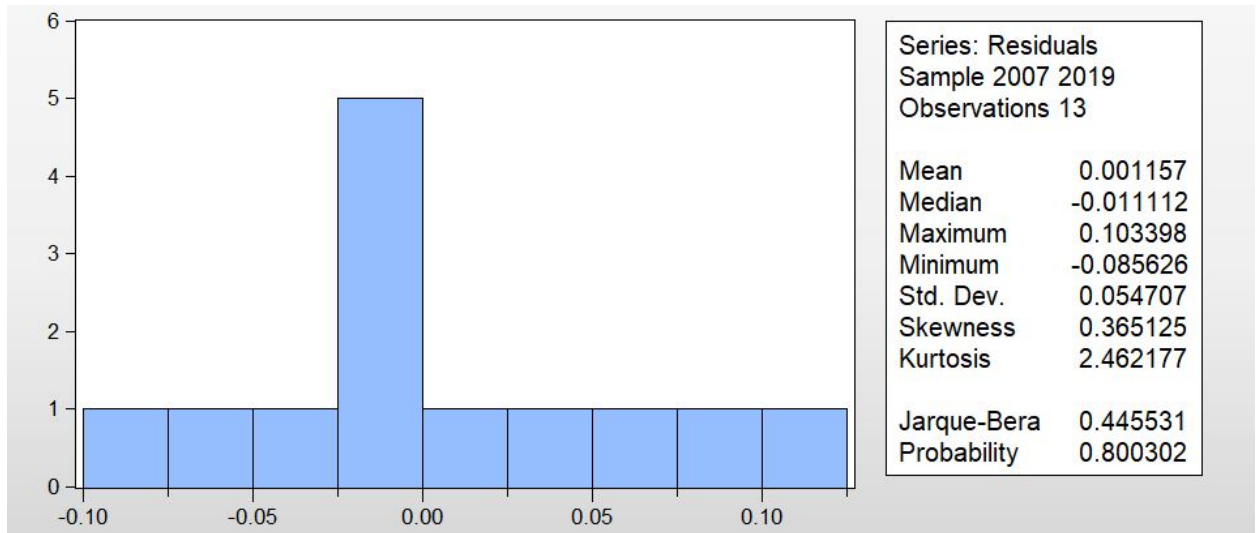
Fig. 7. Estimated Distribution of Residuals in the model
Developed by author in Eviews Statistical Program

All coefficients of the model are statistically significant. Because for all coefficients the H_1 hypothesis on statistical significance is accepted. However, the coefficients of determination and corrected determination also have quite high values (0.96; 0.94), which indicates the ability of the model with deterministic members to have a high resolution of the resultant variable.

The estimates obtained from the model are reliable because no autocorrelation is observed in the residual members. This indicates that we do not have missed statistically significant explanatory variables in the model and the model has the correct functional specification. The residual members are characterized by constant variation. As a result, the coefficients and the model are statistically significant.

As shown in the above analysis, the volume of exports in 2019 increased by 17.6% compared to 2018. In 2020, the decline mainly in the local as well as in the international mineral water market was observed, which is largely the result of a global pandemic. Forecasts for 2021 are unclear. The causes of the crisis are generated not in the economy, but are provoked by the rapid spread of a source outside the economy, from medical sector [18]. That is why each country and the world are facing the threat of a "coronomic crises" with a new term different from the classic economic crisis [19-20].

The major players in the sector today did not have any positive expectations until the end of 2020, although they continued the production process. In addition to the global pandemic, other crises in the region, both economic and political, have led to a depreciation of exchange rates in Georgia's major export markets and, in turn, reduced demand for imported products. As for the local market, the situation here is even more unfavorable for companies than in the international market. This is mainly due to the significant decrease in tourists.

As for pricing policy, freshwater and mineral water companies have been trying to maintain prices for their products in both 2020 and early 2021 at the expense of reducing the company's profit margin, however, due to the volatility of the GEL exchange rate, it is difficult to make long-term forecasts. Some companies plan to increase prices from the beginning of 2021 if the situation continues at the same pace.

As for the state support, companies operating in the Georgian market were offered several types of benefits during the two round of the pandemic in Georgia. In 2020, a government decree defined the new conditions under which the funds are allocated. The document states that the beneficiary can obtain financing for both new loans and loan restructuring. Among the beneficiary companies are companies producing mineral water products [21].

Results. Based on the "ex-post method" the Georgian mineral water sector competitiveness is Substantiated. According to the developed econometric model, the growth rate of mineral water exports is positively correlated with the competitiveness measured by current GDP values, Index of Economic Freedom, Doing Business rankings, and by shares of potential partner countries weighed by world GDP. Separately noteworthy are the qualitative reasons observed in the model, which are explained by the detection of fictitious variables (D13; D15). This is related to the events that took place in 2013 and 2015, which had an impact on the change in Georgia's mineral water exports in those years. In particular, the opening of the Russian market in 2013 is linked to the lifting of a seven-year embargo from 2005, which quadrupled Georgia's exports to Russia, including increasing Georgia's mineral water exports at the expense of Russia's open market; And 2015 is linked to a regional crisis, in particular falling oil prices, which has reduced demand from Russia and Azerbaijan.

Also, this period is connected with the Russian-Ukrainian Political crises. Accordingly, in 2015, Georgian mineral water exports decreased, which appeared in the model by detecting fictitious variables. Another important conclusion that the model gives us is the basis for the fact that while the foreign demand of the partner countries, weighted by world GDP, increases by 1%, the export of mineral waters of our country increases by 8%.

Based on the analysis developed in the article, we can identify the following ways to increase export-oriented competition [22-25]:
 −Obtaining and using timely and accurate information based on the analysis of market dynamics created by market demand in both local and international markets;
 −Market diversification;
 −Identify market segments to facilitate investment growth;
 −Making timely and effective decisions based on historical and forecast data and taking into account market drivers and constraints;
 −Creating both short-term and long-term strategies for successful operation in domestic, regional and international markets;
 −Consumer segmentation and permanent demand research;
 −Competition management in terms of pricing policy and quality control;
 −Develop strategies for entering and diversifying new markets;
 −Ongoing work on resource optimization and economies of scale;
 −Research-based activities;
 −Introduction of innovations;
 −In order to develop the competition process and determine the level of competitiveness, it is necessary to improve the relevant legal framework.

Conclusions. It is advisable for the public and private sectors to jointly develop an unified vision of export support programs. However, the programs should reflect long-term plans and not one-time benefits. Export markets need to be more diversified. Analysis of mineral water export rates, product competitiveness and companies' resource potential has shown that it is possible to increase the volume of product exports to the American and Japanese markets.

The most important problem in the region at this stage is exchange rate volatility. It should be noted that the depreciation of the exchange rate has been observed in all countries of the region, which poses a threat to economic stability and significantly increases financial risks. Lack and weakness of financial institutions, such as hedging, should not be particularly costly and should be highly affordable. Thus, financial stability and export diversification are these two major challenges that are among the most problematic ones in the sector with the general acute background caused by the pandemic. The joint work of companies and the state in this direction will contribute to the development of the sector and increase exports.

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