

Cluster Analysis of the Industrial Sector in Ensuring the Financial Security of Textile Enterprises of Uzbekistan

Bobir Tursunov

Head of the Department of Economic Security, Ph.D.

Tashkent State University of Economics

b.tursunov@tsue.uz

Abstract. In this paper have been provided a cluster analysis of the industrial sector in ensuring financial security in the textile industry of the country. For the purpose of preliminary analysis, the author dynamically assessed the regional differences in the values of generalization indicators of operational efficiency and factor indicators of production efficiency.

Keywords: Textile, industry, regional specificity, textile industry, mesofactors, profitability, net profit, factors, patterns.

I. INTRODUCTION

The pandemic in various countries has led to declining cotton prices, declining exports and imports, disrupting supply chains and halting production. He was forced to take emergency measures to combat the spread of the coronavirus. This process did not limit the textile industry of Uzbekistan. [14] Turning to the statistics, as of September 1, 2020, the number of industrial enterprises and organizations in the country reached 78.5 thousand. This is 15.7 percent higher than the same period last year. In particular, our textile industry has become one of the fastest growing segments of the Uzbek economy. In addition, it is a leading area for attracting foreign investment and exporting products. But 2020 has been a year of testing for the whole world. The coronavirus posed a major threat not only to human health but also to the global economy. As a result, a crisis arose in all areas. In particular, the pandemic has led to a decline in world cotton prices, declining exports and imports, supply chain disruptions and production shutdowns. As a result, countries have been forced to take emergency measures to combat the spread of coronavirus. This process, of course, did not bypass the textile industry of Uzbekistan. As a result, appropriate measures were taken in a timely manner, the activities of enterprises were restored and all jobs were saved. Production and export rates continued to grow. The main factor determining the development of any enterprise is its financial security, so the issue of managing the financial security of enterprises is relevant.

II. LITERATURE REVIEW

Ensuring the financial stability of enterprises, its gradual increase by improving financial management, the development of financial strategies of enterprises and the methodological basis for assessing financial stability have been extensively studied in the scientific works of foreign authors. A.Marshall [2], J.Mill [3], D.Ricardo [4], A.Smith [5] and many other representatives of the classical school of economic theory dealt with the issues of financial security theory.

Financial security issues, financial security threats and prevention strategies Amade S.M. [6], Amirsele A. [7], Amore L. [8], Ahmad S. [9], de Derian [10], V. Delas [11], and others.

Economists from the CIS countries have conducted a number of studies on the problems of assessing and managing the economic and financial security of enterprises, including those based on the concept of competitiveness; development of a mechanism for the implementation of the management concept aimed at creating a modern system of financial risk management in credit and financial institutions; prevention of bankruptcy and merger; analysis of the Monte Carlo model for financial risks; conceptual aspects of financial and economic risk assessment in enterprises; management of financial risks arising in the process of mergers and acquisitions on the basis of interaction with shareholders; ensuring financial stability of joint-stock companies, development of organizational and economic methods and models of financial security of enterprises, etc.

The issues of ensuring economic security and financial security at the macro and micro levels, their assessment and management were discussed by scientists of our country - A.Burkhanov [12], H.Abulkasimov [13], Pardaev M.K. [14], Ortiqova D. [15], D.I.Istamov [16], A.E.Ishmuhammedov [17], Berdiyarov [20] and others. The work of these authors will undoubtedly make a significant contribution to the theory of financial security of the enterprise. However, due to the complexity and versatility of the problem of financial security of the enterprise, not all aspects of it have been sufficiently studied in these studies. There is a need to scientifically substantiate the application of generally accepted management methods in order to ensure and assess the financial security of enterprises, to adapt the experience of foreign qualifications to the conditions of Uzbekistan, to develop a

methodology for ensuring financial security of enterprises in our country.

Problems of management of enterprise information systems and information security in our country by local economists-scientists Abdulaev M. [18] and others. The issues of economic and financial security of enterprises were discussed by economists Abulkasimov H.P. [19] and Burkhanov A.U. [10].

Initially, the concept of “financial security” was considered as part of economic security and was not separated as an independent element. Therefore, the history of the concept of "financial security" can be considered as the history of economic security.

In the encyclopedia of the financial-analytical center MaBiCo, financial security is a set of measures, methods and tools to protect corporate structures, financial activities of micro-level businesses. [23]

According to economist Gukova AV, the essence of financial security of the enterprise is based on the ability to independently develop and implement financial strategy in an uncertain and competitive environment in accordance with the objectives of the corporate strategy of the enterprise. That is, financial security is a state of affairs in which the enterprise:

- 1) allows to ensure the financial balance, stability, solvency and liquidity of the enterprise in the long run;
- 2) meets the needs of the enterprise for financial resources for sustainable expansion of the enterprise;
- 3) ensures sufficient financial independence of the enterprise;
- 4) be able to withstand existing and emerging risks and threats, which provide for financial damage to the enterprise or a negative change in the capital structure or the forced liquidation of the enterprise;
- 5) provides sufficient flexibility in making financial decisions;
- 6) provides protection of financial interests of enterprise owners. [21]

Scientist Protsenko E.A. In research, financial security is defined as the ability of a business entity to develop in a planned manner while maintaining financial and economic stability, liquidity, and the ability to expand reproduction. [22]

Another local financier, Burhanov A.U. provides a more in-depth description of financial security and financial security of the enterprise:

- financial security of the country - protection of financial interests of subjects of financial relations at all levels;
- providing the national economy and its sectors with liquid assets to meet the demand for financial resources and the implementation of relevant obligations;
- the state of stability and resilience of the financial system;
- a set of financial opportunities for the effective organization of the national economic system and ensuring sustainable economic growth.

The author also concludes that the financial security of the country serves as a source of funding and conditions for the rapid development of the national economy, as well as a source for the harmonious development of the state, society and the individual.

The financial security of the enterprise is:

- ensuring sustainable development of the enterprise;
- a necessary condition for the financial stability of the enterprise;
- the ability to prevent and eliminate potential threats to the deterioration of the financial condition of the enterprise;
- minimization of risks in the enterprise;
- the degree of protection of the enterprise from internal and external risks. [10]

However, due to the complexity and versatility of the problem of financial security of the enterprise, not all aspects of it have been sufficiently studied in these studies. There is a need to scientifically substantiate the application of generally accepted management methods in order to ensure and assess the financial security of enterprises, to adapt the experience of foreign qualifications to the conditions of Uzbekistan, to develop a methodology for ensuring financial security of enterprises in our country. At the same time, it is necessary to analyze the cyclical dynamics of the industrial sector in ensuring financial security in the textile industry of Uzbekistan.

III. RESEARCH METHODOLOGY

The research methodology was implemented in three phases. At the first stage, the parameters of the progressive trend and cyclical components of the dynamics of industrial production in the regions of the Republic of Uzbekistan were assessed. This makes it possible to identify areas that have general and specific features of the progressive and cyclical dynamics of industrial production in general. In the second stage, the regions are clustered based on the similarity of the model parameters obtained. In the third, final stage of the study, it was found that the cyclical dynamics of the textile industry depends on the dynamics of industrial production in Uzbekistan.

In conducting the study, we used data on the growth rates of industrial production in the regions of the Republic of Uzbekistan for 2000-2018, published on the website of the State Statistics Committee of the Republic of Uzbekistan. We also used data on the growth rates of textile products in the Republic of Uzbekistan in 2010-2018.

IV. ANALYSIS AND RESULTS

The economic literature provides work on the analysis of the financial stability of enterprises, taking into account the impact of macroeconomic conditions over time. Some scientists study the financial stability of enterprises in industry using mathematical models that include the parameters of dynamic models of macroeconomic indicators. Characterizing their oscillations over time. This allowed the authors to take into account the specific conditions of their activities in different periods in determining the models of financial stability of enterprises.

The same issue is relevant for the industry of the Republic of Uzbekistan in general, as well as for its textile industry. The main hypothesis adopted by the author during this study was as follows: the development (dynamics) of the textile industry in the provinces is directly related to the dynamics of industrial production in general. This hypothesis is based on the assumption (hypothesis) that by analyzing the progressive and cyclical components of the industrial production dynamics in the country, it is possible to reveal the relationship between the progressive and cyclical dynamics of production by industries and sectors of the region.[1]

The theory of economic cycles cannot explain the interaction of fluctuations in economic conditions. Economic theory explains well the stable processes in the economy. Dynamic processes and processes that require the accumulation of even more financial resources make it almost impossible to explain the behavior of the stock market from the point of view of economic theory. Attempts to explain complex economic processes using magnifying and accelerating tools were proposed by Keynes at the beginning of the development of economic theory, but these studies were not continued.

However, statistical and econometric methods are very suitable for solving the above problem. This study includes:

Assessment of the parameters of progressive and cyclical components of the dynamics of industrial production in the regions of the Republic of Uzbekistan;

Combined grouping of the regions of the Republic of Uzbekistan on the parameters of trend-cyclical components of the dynamics of industrial production, combining the following:

➤ grouping regions by types of linear trend (up or down);

Grouping regions by parameters of the series periodic component of industrial production growth rates.

Identification of specific economic types of regions, taking into account the results of combined grouping.

The proposed model for assessing the parameters of progressive and cyclical dynamics of industrial production in the j region of the Republic of Uzbekistan is as follows:

– Assessment of the parameters of progressive and cyclical components of the dynamics of industrial production in the regions of the Republic of Uzbekistan;

– Combined grouping of the regions of the Republic of Uzbekistan on the parameters of trend-cyclical components of the dynamics of industrial production:

➤ grouping regions by types of linear trend (up or down);

➤ Grouping of regions by parameters of the series periodic component of growth rates of industrial production.

– Identification of specific economic types of regions, taking into account the results of combined grouping.

$$y_j = a_0 + a_1 * t + a_2 \sin(k * t) + a_3 \cos(k * t),$$

here:

y_j – Calculated values of the components of the progressive horse cycle of the time series of annual growth rates of industrial production in the j -region of the Republic of Uzbekistan;

t – years, $t = 2000, \dots, 2018$ years.

a_0, a_1 – model parameters that define the translation component of the time series;

k – a parameter that determines the wavelength (period) of cyclic oscillations;

a_2, a_3 – parameters that contribute to the overall model of harmonic oscillations.

The formula is used to determine the wavelength (period, years):

$$L = 2\pi/k$$

The quality of the model is assessed using a multi-correlation coefficient R^2 as well as a multi-correlation coefficient (D), which allows to determine the specific gravity of the explained change (percentage of actual values of industrial production growth rates in the region correspond to standard indicators).

Based on the evaluation of the model parameters, it was found that the above model reliably described the time series under study: the explained change by regions was 55-78%.

As a result, the model produced for the Republic of Uzbekistan is as follows:

$$y_1 = 108,19 + 0,096*t + 1,912 \text{ Sin } ((-0,679)*t) - 1,155 \text{ Cos}((-0,679)*t).$$

This model explains the 66% change in the annual growth rate (D) of industrial production in the Republic of Uzbekistan as a whole.

According to the analysis of the model parameters, the Republic of Karakalpakstan, Andijan, Jizzakh, Kashkadarya, Namangan, Syrdarya regions have a type of growth trend, and the rest have a declining type. The length of the cycle of industrial production in the regions varies from 4.21 (Tashkent) to 9.37 (Navoi region).

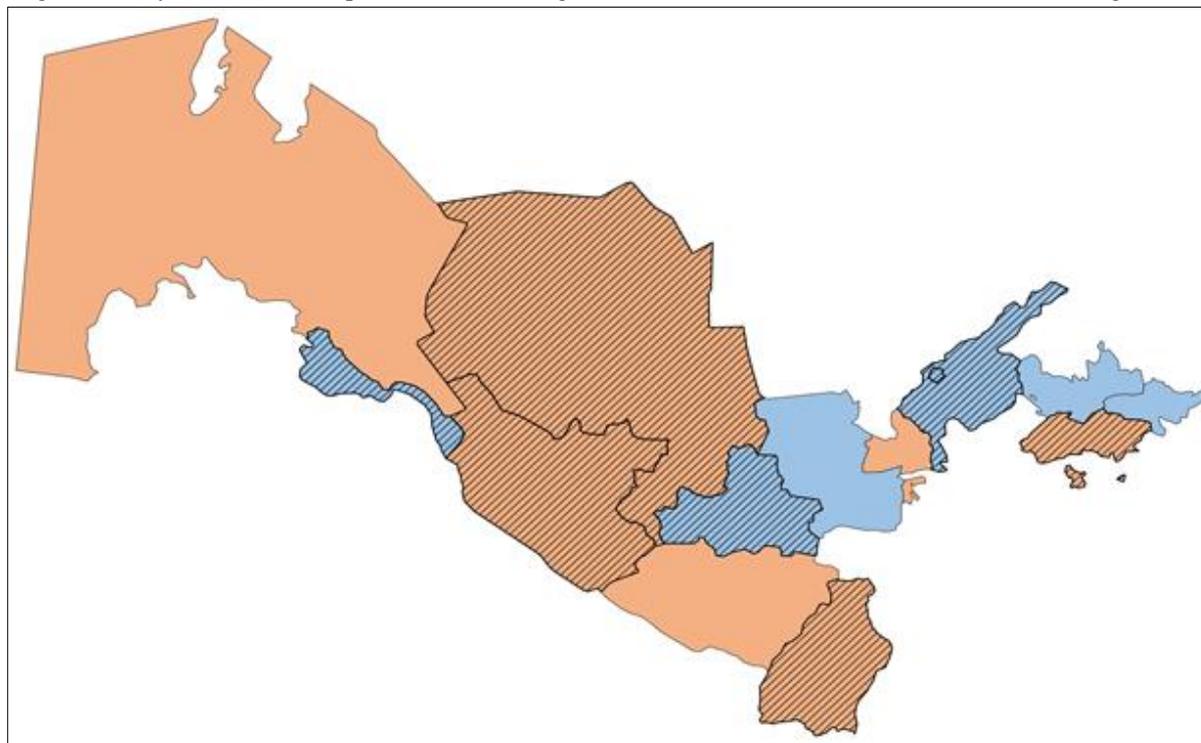


Figure 1. Results of the final combined grouping of the regions of the Republic of Uzbekistan by types of economic dynamics of industrial production

Note 1: In this figure, the areas of the first cluster are marked in blue (Andijan, Jizzakh, Namangan, Samarkand, Tashkent, Khorezm, Tashkent); in brown - the second cluster regions (Republic of Karakalpakstan, Bukhara, Kashkadarya, Navoi, Surkhandarya, Syrdarya, Fergana).

Note 2: The places marked with Shrikh indicate the regions with the highest type of economic growth: Bukhara, Navoi, Samarkand, Surkhandarya, Tashkent, Fergana, Khorezm, Tashkent.

Source: Author's calculations based on SPSS 20 program

It should be noted that the forecast data calculated according to the 2020 model in cluster regions 1 and cluster regions 2 (Figure 1) show that the growth rates of industrial production decreased compared to the average annual level. 3.5 and 0.4% points, respectively. It follows that the state of the coronavirus crisis was due to a decline in industrial production in the regions of both groups due to the regular cycle.

It should be noted that the forecast data calculated according to the 2020 model in the cluster regions 1 and cluster regions 2 show that the growth rates of industrial production decreased compared to the average annual level. 3.5 and 0.4% points, respectively. It follows that the coronavirus crisis situation was due to a decline in industrial production in both groups of regions due to the regular cyclical situation.

It should be noted that the trend-cyclical model forecast for 2020 in cluster regions 1 and cluster regions 2 gives a decrease in the growth rate of industrial production compared to the average. The annual rate is 3.5 and 0.4% points, respectively. It follows that the state of the coronavirus crisis coincided with a decline in industrial production in both groups due to the regular cyclical situation.

Based on the results of the evaluation of the parameters of the above dynamic models, four regions with long-term dynamic characteristics of the industrial trend were identified, which are determined by the main dynamic characteristics. A combination of these components of cyclicity and dynamics. The composition of these regionally known species is as follows:

Cluster 1 (1 cluster, upward type of economic growth):

Samarkand, Tashkent, Khorezm, Tashkent;

Cluster 2 (cluster 1, declining type of economic growth):

Andijon, Jizzak, Namangan,

Cluster 3 (cluster 2, type of growing economic growth): Bukhara, Navoi, Surkhandarya.

Cluster 4 (2 clusters, declining type of economic growth): Republic of Karakalpakstan, Kashkadarya, Syrdarya, Fergana.

Based on data on the growth rates of industrial production by type of economic activity in 2010-2018. It was found that the general state of industrial growth in the regions has a significant impact on the state of textile production.

Calculations of the correlation coefficients of the annual growth rates of industrial production by type of economic activity show that the largest ratio of the volume of textile production to industrial growth in the region occurs with a delay of 4 years.

It should be noted that the trend-cyclical model forecast for 2020 in cluster regions 1 and cluster regions 2 gives a decrease in the growth rate of industrial production compared to the average. The annual rate is 3.5 and 0.4% points, respectively. It follows that the state of the coronavirus crisis coincided with a decline in industrial production in both groups due to the regular cyclical situation.

V. CONCLUSION AND SUGGESTIONS

In studying the financial stability of textile enterprises in the regions of the Republic of Uzbekistan, it is necessary to take into account the cyclical factor, as crises aggravate the financial condition of the enterprise. The conducted research allowed to identify the trends of progressive and cyclical development of industrial production in the regions of the Republic of Uzbekistan, as well as to divide the regions into groups by types of progressive and cyclical development. The data obtained are of great predictive value, as they allow to forecast the dynamics of the cycle at the regional level and, therefore, to take preventive measures to mitigate the effects of the crisis for industry in different regions of Uzbekistan. Thus, the proposed model can serve to improve the economic security of Uzbekistan.

Similar data were obtained for the textile industry of the regions of Uzbekistan, which allows to predict the decline in production in the textile industry and thus take preventive measures. In addition, it was found that the cyclical dynamics in the textile industry depends on the cycle phase in the industry as a whole: for the Republic of Uzbekistan, the delay between the textile industry and the cycle phase in the industrial period is an average of 4 years. This situation can be taken into account in the development of anti-crisis measures in the textile industry, which is important in ensuring the economic security of Uzbekistan.

To reduce internal risks and threats to the financial security of the enterprise, first of all, it is necessary to control the financial security of the enterprise, according to the author, financial security service (service) should be established in large textile enterprises and they should report directly to the CEO.

In order to establish an effective system of financial security for the enterprise, it is necessary to develop appropriate documents for the enterprise, which should identify internal and external threats, as well as criteria that can be considered as a breach of financial security of the enterprise. In other words, criteria must be defined that allow the assessment of an enterprise's compliance with financial security requirements. The Financial Security Service assesses compliance with these criteria and passes the information to senior management of the enterprise.

At the same time, the principles of requirements for borrowers should be developed, which should meet the requirements of financial security of the enterprise. At the same time, the Security Service should express its opinion on the importance of the reports submitted to assess financial security (as well as to monitor compliance with the financial interests of the enterprise).

In addition, an information system should be established for comprehensive and objective monitoring, including the identification and forecasting of internal and external threats to the financial security of the enterprise. Based on the information obtained, it is necessary to develop a set of rapid and long-term measures to combat the negative factors, as well as to prevent and eliminate the possible negative consequences of threats.

REFERENCES

- [1]. Sabirov, O. S., Berdiyarov, B. T., Yusupov, A. S., Absalamov, A. T., & Berdibekov, A. I. U. (2021). Improving Ways to Increase the Attitude of the Investment Environment. REVISTA GEINTEC-GESTAO INOVACAO E TECNOLOGIAS, 11(2), 1961-1975.
- [2]. Marshall A. Principles of economic science. T. 1. and 2. - M.: Publishing house of the ROO, 1996;
- [3]. Mill J. Fundamentals of Political Economy. Per. from eng. - T. 1-3. - M: Progress, 1980-1981;
- [4]. Ricardo D. The beginning of political economy and taxation. Volume 1. Per. from eng. – M.: Gospolitizdat, 1955;

- [5]. Smith A. Research on the nature and causes of the wealth of peoples. - M: Eksmo, 2007. - Series: Anthology of Economic Thought - 960 p.
- [6]. Amadae, S.M. (2017) Perpetual anarchy: From economic security to financial insecurity. *Finance and Society*, 3(2): 188-96.;
- [7]. Amicelle, A. (2017). When finance met security: Back to the War on Drugs and the problem of dirty money. *Finance and Society*, 3(2): 106-23.
- [8]. Amoores, L. (2011) Data derivatives: On the emergence of a security risk calculus for our times. *Theory, Culture & Society*, 28(6): 24-43.;
- [9]. Ahmad S., Ng Ch., McManusc L. Enterprise risk management (ERM) implementation: Some empirical evidence from large Australian companies. *Procedia - Social and Behavioral Sciences* 164 (2014) 541 – 547;
- [10]. Der Derian, J. (1995). The value of security: Hobbes, Marx, Nietzsche and Baudrillard. In: Lipschutz, R. (ed.) *On Security*. New York, NY: Columbia University Press, 24-45.;
- [11]. Delas V., Nosova E., Yafinovykh O. Financial Security of Enterprises. *Procedia Economics and Finance* 27 (2015) 248 – 266;
- [12]. Burxanov A.U. Financial security. Textbook. Economics. 2019, 164 p.;
- [13]. Abulqosimov X.P. Economic security. T.: Akademiya, 2012, 111 - p.;
- [14]. Pardaev M.K., Aminov Z.Yu. Economic security of the enterprise and ways to ensure it. Risola. Samarkand: Zarafshon, 2008.- 47 pages;
- [15]. Artikova D. "Economic security" (Textbook). –T.: TDIU, 2010. 150 pages.
- [16]. Istamov D.I., Yu.A. Granatkin, M.M. Mukhammedov, E.N. Khodzhaev. Economic security of the enterprise and protection of trade secrets. Samarkand. 1995. - 152 pp.;
- [17]. Ishmuxammedov A.E. Economic security. Study guide. - T.: TDIU, 2004. - 176 p.
- [18]. Abdullaev M., Zaynutdinova U. Algorithmization of enterprise information systems management processes. Scientific electronic journal "Economy and Innovative Technologies". № 6, November-December, 2019, pages 144-154.(http://iqtisodiyot.tsue.uz/sites/default/files/maqolalar/17_Abdullayev_Zaynutdinova.pdf)
- [19]. Abulqosimov H.P. Economic security of the state. Study guide. –T.: Akademiya.2012.
- [20]. Berdiyarov, B. (2012). Basic Requirements Of The Basel Committee On Regulating Capital Adequacy And Liquidity Of Commercial Banks. *European Journal of Business and Economics*, 4.
- [21]. Gukova A.V. The role of financial security of an enterprise in the system of its economic security / A.V. Gukov, I. D. Anikina - [Electronic resource]. - Access mode: [http:// www. jeducation.ru/3_2006/98.html](http://www.jeducation.ru/3_2006/98.html).
- [22]. Protsenko E.A. Threats to the financial security of an enterprise and methods of neutralizing their influence. Protsenko. - [Electronic resource]. - Access mode: [http://www.rusnauka.com/ 13_NPN_2010 / Economics / 65 824.doc .htm](http://www.rusnauka.com/13_NPN_2010/Economics/65824.doc.htm).
- [23]. <http://MaBiCo.ru>