INTERNATIONAL JOURNAL OF EUROPEAN RESEARCH OUTPUT
ISSN: 2053-3578 I.F. 9.1

ANALYSIS OF TEXTILE COMPANY` FINANCIAL SECURITY IN MEZO LEVEL: IN CASE OF UZBEKISTAN

Bobir O.Tursunov
professor at International School Of Finance Technology And Science Institute
Tashkent, Republic of Uzbekistan
https://orcid.org/0000-0002-5004-375X

Abstract

Financial security is the key to conducting an independent financial and economic policy of the country. Financial security is manifested in the prevention of large capital outflows abroad, the prevention of conflicts between government bodies of various levels on the allocation of resources of the national budget system, weakening the impact of global crises, ensuring the stability of financial and economic parameters. The financial stability of a textile industry company in a particular region is determined both by the results of the production and economic activities of the company itself and by factors external to this company, including the level of economic development of the region, the potential of industrial production on its territory, cyclical fluctuations in the economic environment and other macroeconomic factors. The initial stage of a quantitative study of the financial stability of textile companys in the Republic of Uzbekistan at the regional level should be the stage of clustering regions in order to identify groups that include homogeneous regions in terms of industrial growth rates, phases of economic cyclicality of industrial dynamics.

In the article has been presented a theoretical justification, a set of algorithms, as well as the results of calculations based on data from the State Statistics Committee of the Republic of Uzbekistan, which made it possible to systematize regions according to the characteristics of growth and cyclicality of industrial production for the period 2010-2018. The typologization of the regions of the Republic of Uzbekistan is relevant for a comparative assessment of changes in the financial stability of textile companys under the influence of the crisis caused by the coronavirus pandemic, as well as in the post-crisis period.

Keywords: textile, dynamics of industrial production, financial stability of textile companys, trend-cyclical component, clustering regions, financial security.
JEL:

ISSN: 2053-3578 I.F. 9.1

1 INTRODUCTION

1.1 Actuality of theme

Financial security of business entities is a part of state's financial security, because company creates added value which forms the gross domestic product at the level of State. In addition, companies are the major taxpayers, which influence on the formation of the revenue of the state and local budgets. Consequently, the level of the companies' financial security will ensure that State can perform its functions and provide economic development, make improvements to social standards. [14]. The economic literature presents works on the analysis of the financial stability of companys, taking into account the impact of macroeconomic conditions in specific time periods. For example, in the work "Modeling the financial stability of an company taking into account macroeconomic indicators", the authors investigate the financial stability of metallurgical companys using mathematical models that include the parameters of dynamic models of macroeconomic indicators. characterizing their fluctuation in time. This provided the authors with the opportunity to take into account in the specification of models of financial stability of companys the special conditions of their activities in different periods of time.

The main hypothesis adopted by the authors during this study was as follows: the financial stability of companys at the regional level is determined not only by the peculiarities of the manifestation of general macroeconomic factors in time and in a given territory, but also by the specifics of mesoeconomic factors that determine the growth and cyclical dynamics of production by industry and sectors of the regional economy. For companys of the textile industry on the territory of the regions of the Republic of Uzbekistan, an assessment of the impact of mesofactors on financial stability can be obtained by examining the dynamics of industrial production as a whole.

1.2 Scope of research

The purpose of the study was to identify and assess the territorial specifics of the economic dynamics of industrial production in the Republic of Uzbekistan. A mathematical and statistical decomposition of the investigated dynamics of industrial production in the regions of the Republic of Uzbekistan is carried out, with the allocation of a trend-cyclical component of dynamics, which is a combination of the main trend (trend) and a cyclical component due to market factors [2]. This allows us to identify regions that have general and specific characteristics of the trend-cyclical

components of the dynamics of industrial production as a whole, which will allow taking these features into account in the study of the factors of financial security of textile companys located in these regions.

2 DATA COLLECTING

2.1 Used statistics

When carrying out 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 production in the Republic of Uzbekistan as a whole for 2010-2018.

3 LITERATURE REVIEW

3.1 Researches in textile

The last twenty years have been studies in the study of production capacity, the organization of production at industrial companys and the management of production processes were analyzed by Y. Levin, et al [3], A. Sebastiano, et al [4], C. Chien, et al [5], M. Davis, et al [6], D. Huang, et al [7], Jingfeng Shao, et al [8] and T. Koltai, et al [9], Tursunov B. and others [12;13].

Economists H. Tekin and A. Y. Polat have studied the impact of financial constraints and financial crises on money stocks as well as optimal money stocks. They proposed an alternative measure for financial constraints in the UK.[1].

Positive and negative impact of corruption in economics at macro level were investigated by Imran, S. and others. [15]. Some of these scientists has been investigated, interrelated functions had been examined, the implementation of which is the management of production capacity. Methodology for assessment the efficiency of production capacities management at textile companys were investigated by B. O. Tursunov in other works [13] and this research is a logic continue of last research part.

Uzbek professor Burkhanov A. [10] researched main indicators of textile companys' financial security assessment, Kalandarovna, A. G. [11] and others studied methodical aspects of establishing a control system over compliance with principles of decent work and social security in textile companys. But in upper researches have not been studied regional features of industrial production dynamics in the research of textile companys` financial security in Uzbekistan.

3.1 Researches dedicated to financial security

The Saaty method was successfully applied by T. Tsibizova and A. A. Karpunin [20] in assessing the quality of management processes, in particular to assess the quality of the work of teachers. The proposed approach provides an objective assessment of the quality of the daily work of a teacher associated with the current performance and student attendance, and not only with the results of intermediate final assessments.

But in all the above-mentioned research papers, the mechanism for determining the optimal management of the use of production capacity at the textile industry companys was not considered, and we made an attempt to develop a mechanism for determining the optimal management of the use of production capacity, which was tested on the textile industry. The mechanism is based on a hierarchy method that uses the choice of a Pareto-effective set of alternatives, which allows interested parties to express a subjective view of an company's value system. On the other hand, on the contrary, the method minimizes subjectivity with respect to specific alternatives.

4 METHODOLOGY

4.1 Research methods and approximation models of the trend-cyclical component of the dynamics of industrial production in the Republic of Uzbekistan

The study is based on a set of mathematical and statistical methods, including:

• assessment of the parameters of the trend-cyclical component of the dynamics of industrial production in the regions of the Republic of Uzbekistan;

• a combination grouping of the regions of the Republic of Uzbekistan by the parameters of the trend-cyclical components of the dynamics of industrial production, combining:

 grouping of regions according to the type of linear trend (upward or downward);

 grouping of regions according to the parameters of the cyclical components of the time series of industrial production growth rates.

• determination of specific economic types of regions, taking into account the results of the combination grouping.

4.2 Econometric model of the dynamics of industrial production in the Republic of Uzbekistan

The initial model for approximating the time series of industrial production growth rates in the *j*-th region of the Republic of Uzbekistan:

$$\bar{y}_j = a_0 + a_1*t + a_2 \text{Sin}(k*t) + a_3 \text{Cos}(k*t),$$

here:

$\bar{y}_j$ – calculated values of the trend-cyclical component of the time series of the annual growth rates of industrial production in the *j*-th region of the Republic of Uzbekistan;

t- year number, t = 2000,….,2018 yy.

a_0 , a_1 – model parameters that determine the trend component of the time series;

k– parameter determining the wavelength (period) of cyclic oscillations;

a_2 , a_3 – parameters of the contribution of harmonic vibrations to the general model.

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

$L = 2\pi/k$

The quality of the model is assessed using the multiple correlation coefficient (R), as well as the multiple determination coefficient (D), which makes it possible to determine the specific weight of the explained variation (the percentage of the actual values of industrial production growth rates in the region corresponding to the model trend-cyclical values).

5 ANALYSIS AND RESULTS

5.1 Estimation of the parameters of the models of the trend-cyclical component of the dynamics of industrial production in the regions of the Republic of Uzbekistan

Based on the results of building models, it was found that the above formula describes the trend-cyclical component of the studied time series rather reliably: the explained variation across regions was 55-78%.

The graphs of the most reliable models are shown below (Fig. 1-4).

The resulting model for the Republic of Uzbekistan looks like:

$$\bar{y}_1 = 108{,}19 + 0{,}096*t + 1{,}912 \text{ Sin}((-0{,}679)*t) - 1{,}155 \text{ Cos}((-0{,}6791)*t).$$

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

ISSN: 2053-3578 I.F. 9.1

The wavelength is 9.25 years, i.e. its half-life is approximately 4.5 years (Fig. 1).

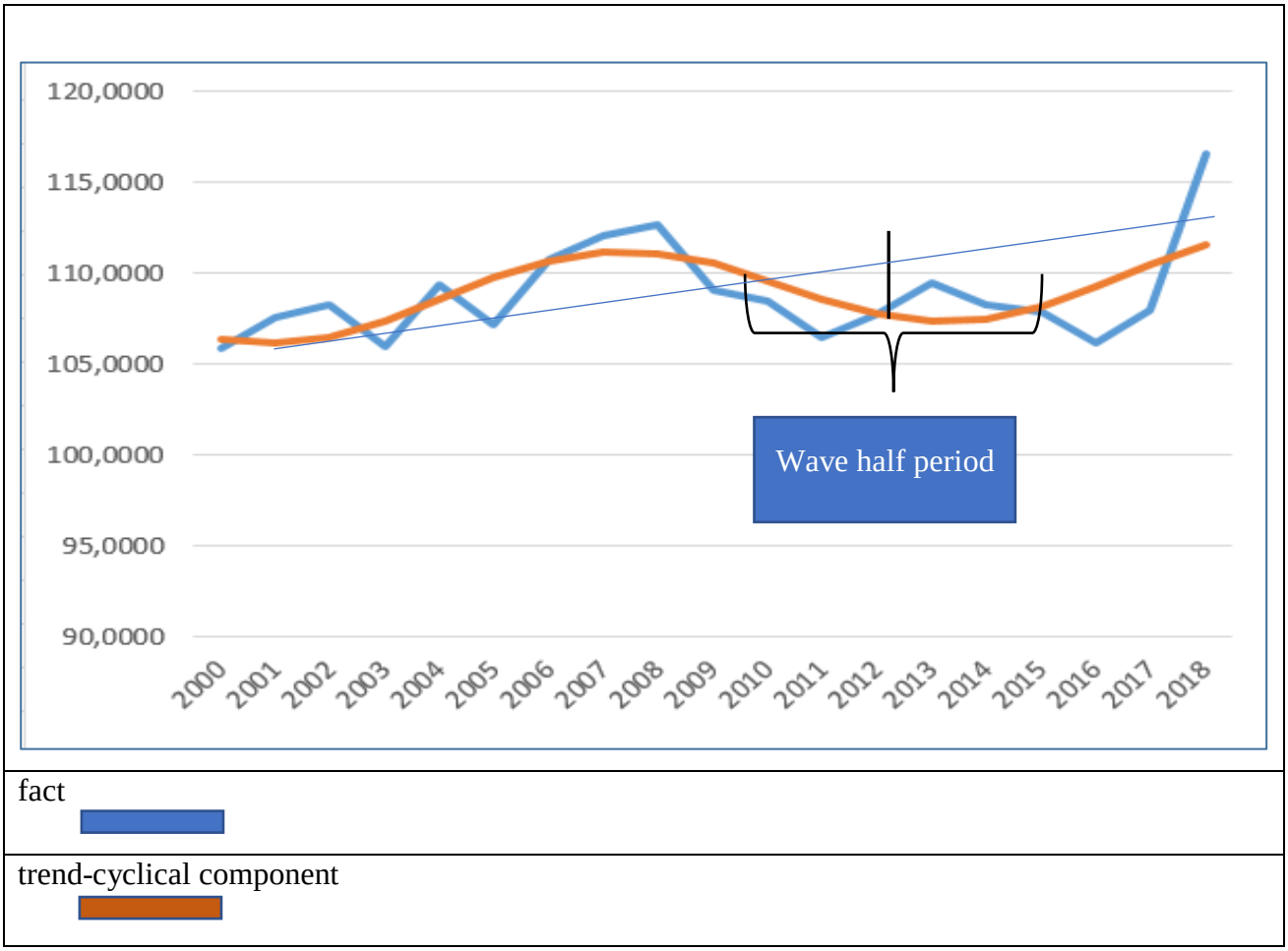


Fig. 1. Graph of the trend-cyclical component of the time series (orange line) of the annual rates of industrial production in the Republic of Uzbekistan, 2000-2018.[16]

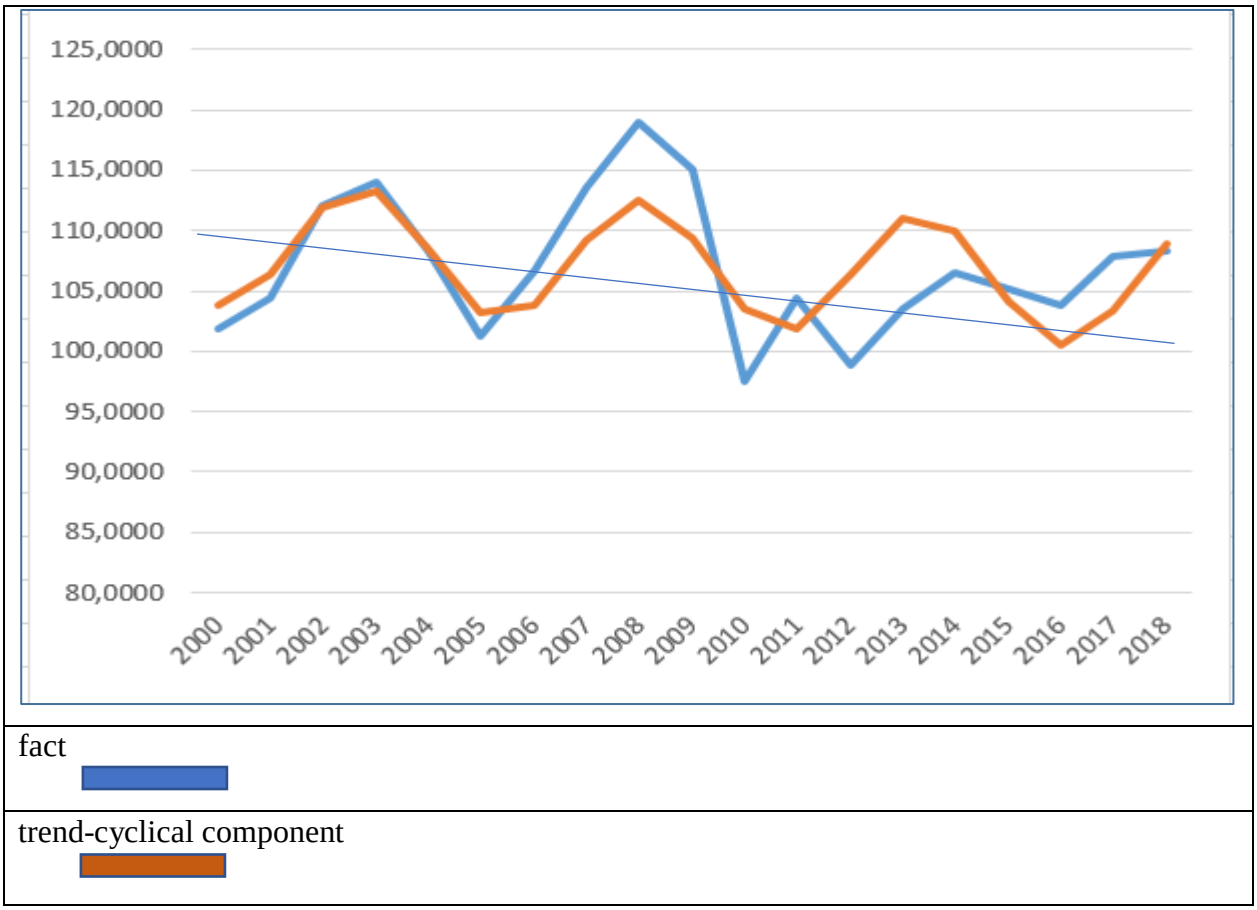
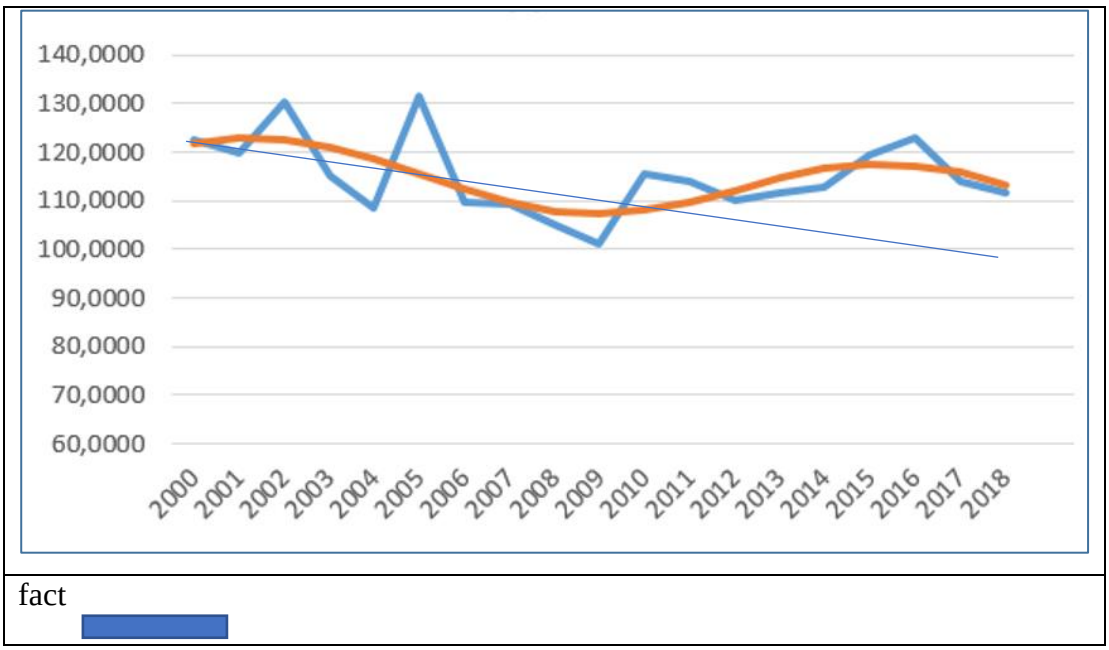


Fig. 2. Graph of the trend-cyclical component of the time series of the annual rates of industrial production in the Kashkadarya region, 2000-2018.(D=76%).[16]



ISSN: 2053-3578 I.F. 9.1

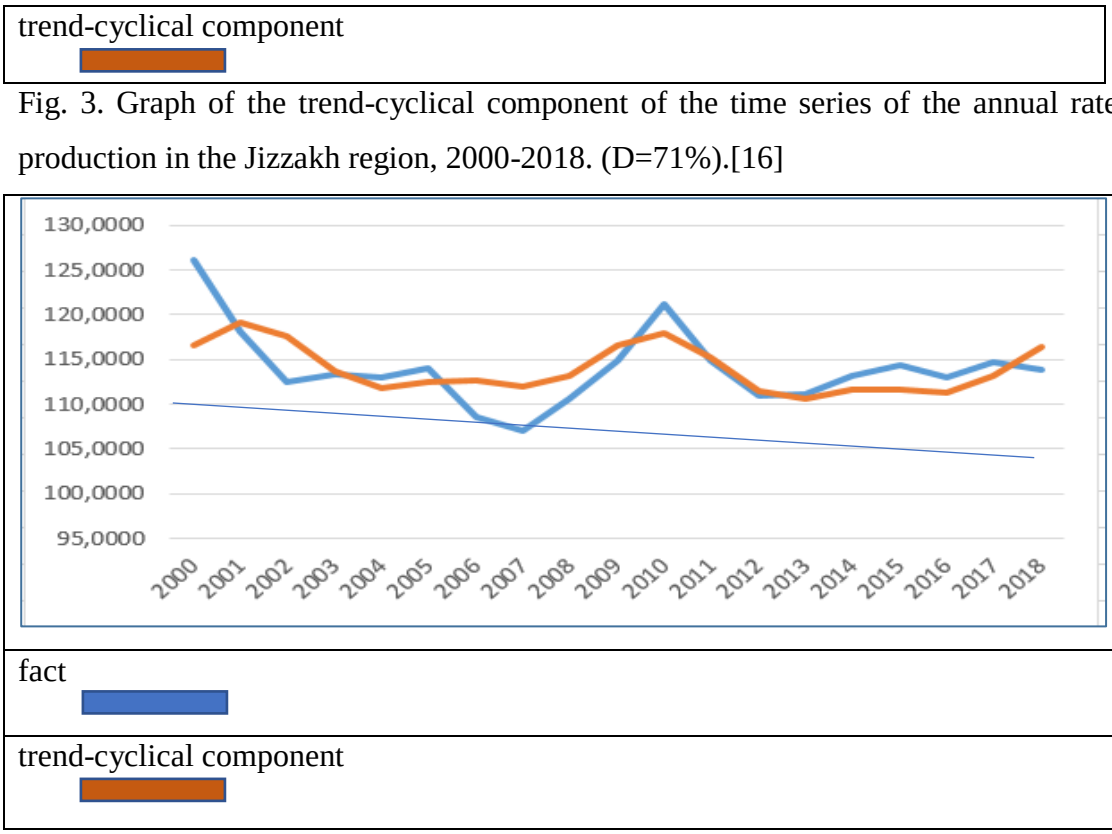


Fig. 3. Graph of the trend-cyclical component of the time series of the annual rates of industrial production in the Jizzakh region, 2000-2018. (D=71%).[16]

Fig. 4. Graph of the trend-cyclical component of the time series of the annual rates of industrial production in the Namangan region, 2000-2018. (D=78%).[16]

5.2 Cluster analysis based on the parameters of trend-cycle models

Based on the data presented in Table 1, a cluster analysis was carried out, which made it possible to determine the regions of Uzbekistan that are homogeneous in terms of the characteristics of the trend-cyclical components of dynamics (parameters a_0, a_1, a_2, a_3, k).

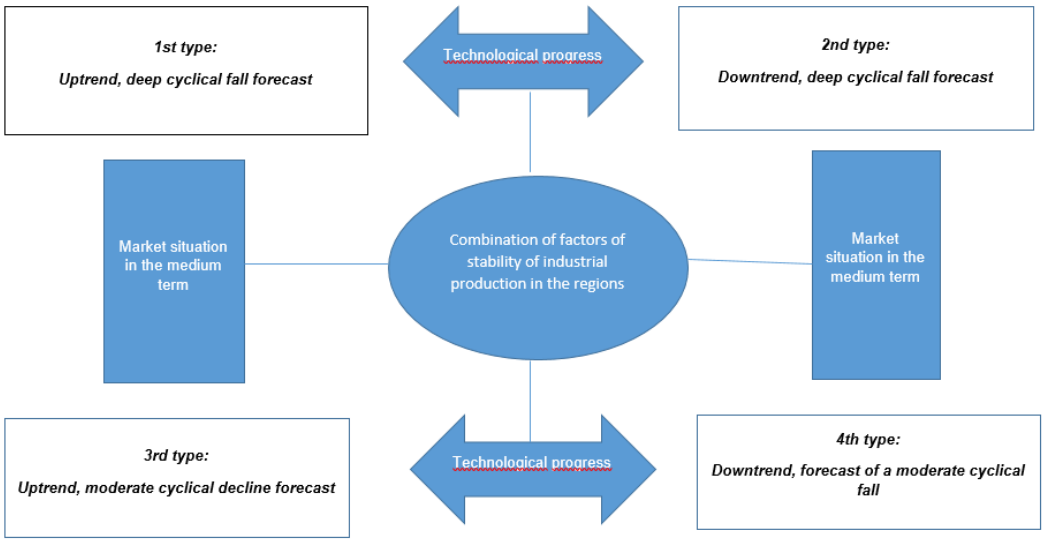


Fig. 5. Factors that determine the special types of regions of the Republic of Uzbekistan, determined by the specifics of the long-term growth trend and cyclical dynamics of industrial production.

The resulting dendrogram (Fig. 5) allows us to conclude that the regions of the Republic of Uzbekistan are divided into two groups, which are similar in the type of the main trend of industrial production and the form of conjuncture cycles.

However, the inclusion of the linear trend parameter in the cluster analysis is impractical, since its positive and negative values will cancel each other out when determining the average values of the cluster-forming variables. Therefore, the regions were subdivided into two groups: with an upward and downward linear trend (in Table 1, they are marked with the corresponding graphic symbols).

ISSN: 2053-3578 I.F. 9.1

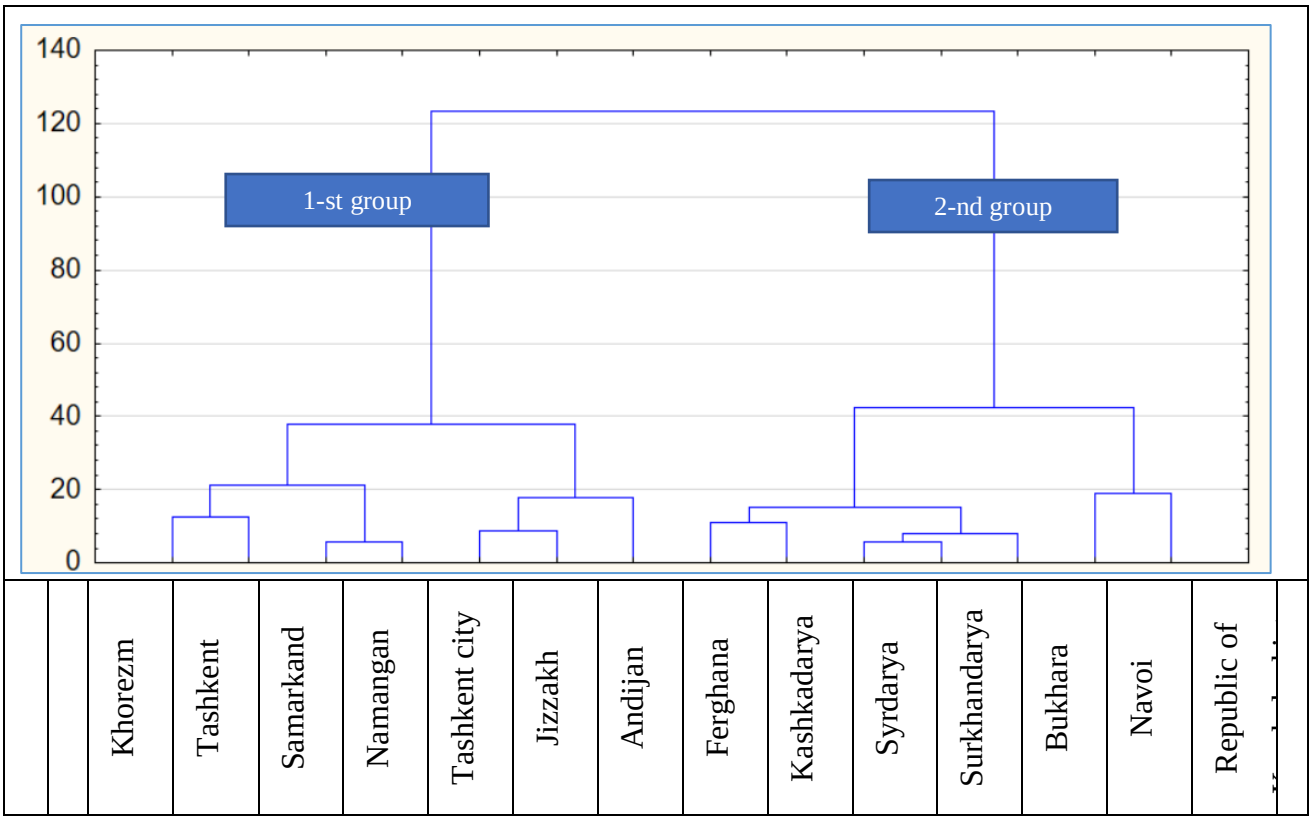
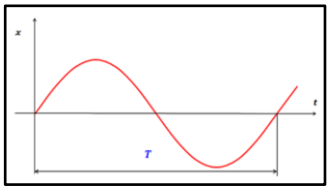


Fig. 6. Dendrogram of the distribution of regions of the Republic of Uzbekistan into homogeneous groups according to the parameters of the trend-cyclical components of the dynamics of industrial production.

ISSN: 2053-3578 I.F. 9.1

Table 1. Parameters of the models of trend-cyclical components of the dynamics of industrial production in the regions of the Republic of Uzbekistan, built according to data on annual growth rates for 2000-2018.

Regions		**Model parameters**				
	Type of trend: ascending ↗ descending ↘	***a1***	***a2***	***a3***	***k2 (abs.)***	Wave period (years) 
Republic of Karakalpakstan	↘	1,199	-6,687	6,971	2,346	4,94
Andijan	↘	-0,329	9,411	-7,224	5,484	5,72
Bukhara	↗	0,169	1,836	-2,828	2,026	4,46
Jizzakh	↘	-0,294	7,169	-6,88	2,512	8,94
Kashkadarya	↘	-0,287	-5,894	7,649	1,79	4,62
Navoi	↗	0,0009	-1,505	-0,747	3,376	9,37
Namangan	↘	-0,125	2,903	-1,604	0,573	5,47
Samarkand	↗	0,537	2,055	-6,461	5,906	5,31
Surkhandarya	↗	0,515	4,491	2,305	0,471	6,66
Syrdarya	↘	-0,151	2,773	3,885	4,376	7,17
Tashkent	↗	0,621	-1,091	4,057	0,233	7,25
Fergana	↗	-0,094	-1,605	1,001	5,891	5,33
Khorezm	↗	1,02	-4,285	8,115	1,506	6,96
Tashkent city	↗	0,722	7,017	0,982	0,746	4,21

The established average values of cluster-forming variables make it possible to determine the calculated values of the rates of industrial production for the selected clusters of regions (Fig. 7).

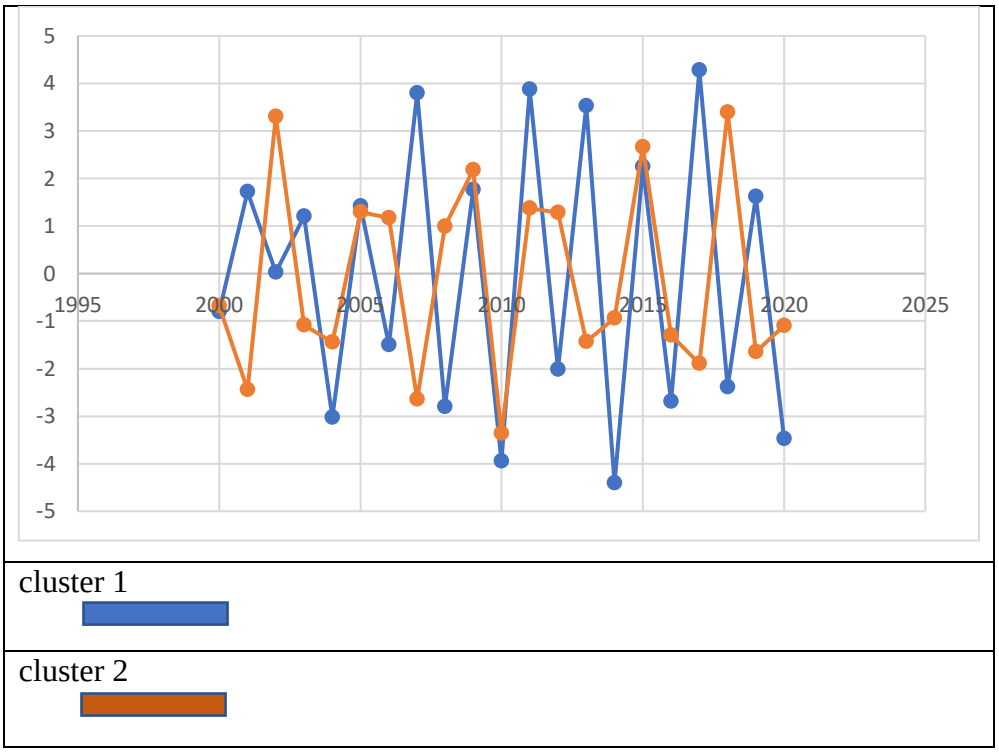


Fig. 7. Estimated for 2000-2020 values of deviations of industrial production rates for selected clusters of regions from the average annual level for 2000-2018,% - points.

5.3 Results of typologization of the regions of the Republic of Uzbekistan based on the estimation of the parameters of dynamic models of industrial production

Based on the results of evaluating the parameters of the dynamic models presented above, four types of regions have been identified that have the specifics of long-term dynamics of industrial production, determined by the features of the main trend (trend), the form of cyclicality and a combination of these components of dynamics. The composition of these regional distinguished types is presented below:

1st type:

Samarkand, Tashkent, Khorezm, Tashkent;

2nd type:

Andijan, Jizzak, Namangan,

3rd type:

Bukhara, Navoi, Surkhandarya

4th type:

Republic of Karakalpakstan, Kashkadarya, Syrdarya, Fergana.

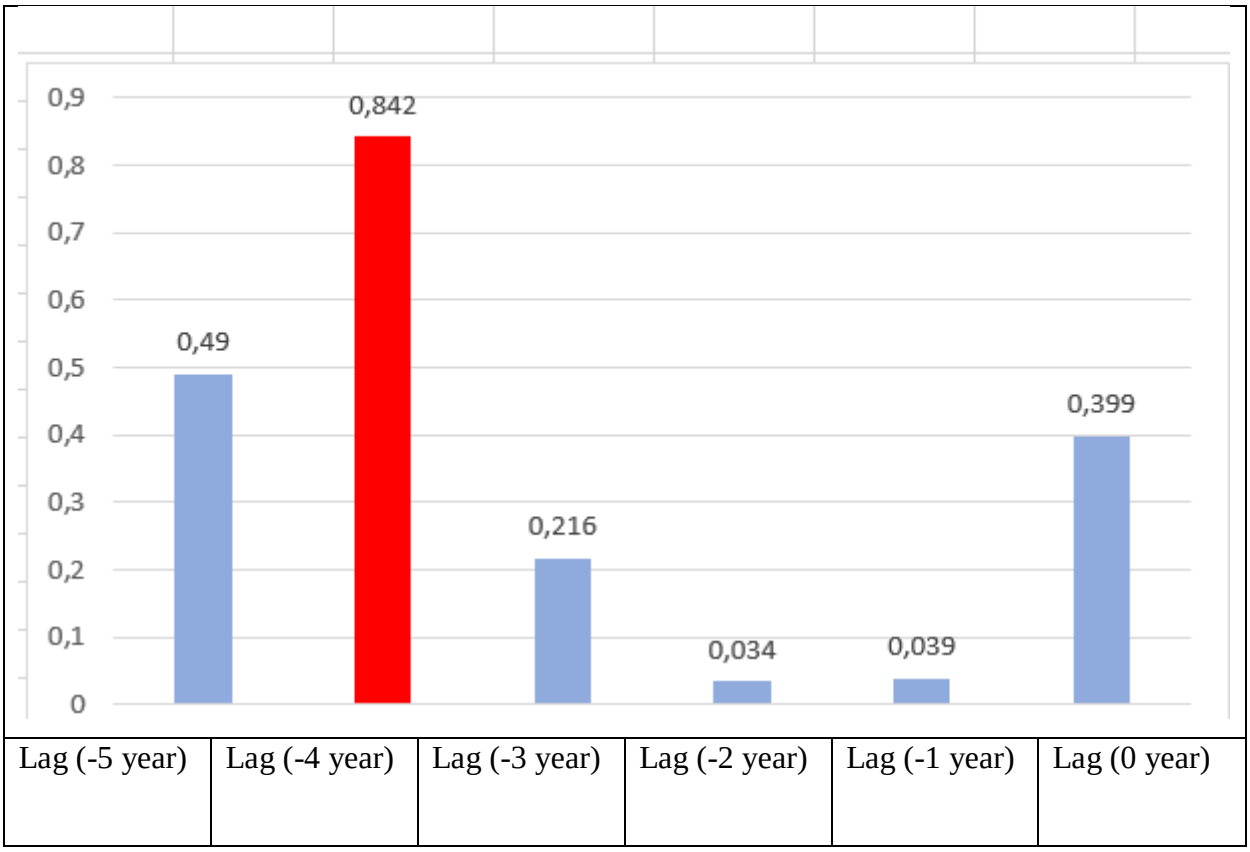


Fig.8. Paired correlation coefficients of the growth rates of industrial production in general and the production of textiles with lags of lagging influence, according to the data of the Republic of Uzbekistan for 2010-2018.

Based on data on the growth rates of industrial production by type of economic activity for 2010-2018. it was found that the general situation of industrial growth in the regions significantly affects the situation in the production of textiles. The influencing factors in this case are the general technical and technological development, improvement of infrastructure, improvement of the quality of labor, changes in the market environment, due to general market factors of supply and demand for industrial products. Calculations of the paired correlation coefficients of the annual growth rates of industrial production by type of economic activity show that the greatest response of the volume of textile production to industrial growth in the region occurs with a lag of 4 years (Fig. 9).

6 CONCLUSION

The performed calculations confirm the initial hypothesis about the need to take into account the spatial and dynamic features of industrial production in general, which are determined by both general industrial factors of technological progress and specific regional factors of cyclicality in the dynamics of the ratio of supply and demand for industrial products, in studies of the financial stability of textile companys in the regions of the Republic of Uzbekistan. The typologization of the regions of the Republic of Uzbekistan is relevant for a comparative assessment of changes in the financial stability of textile companys under the influence of the crisis caused by the coronavirus pandemic, as well as in the post-crisis period of different countries.

7 REFERENCES

1. Tekin,H.,and Polat,A.Y. (2020) Is saving vital? Evidence from the financial crisis, *Economics and Business Letters*, 9(2), 124-134.DOI: 10.17811/ebl.9.2.2020.124-134.

2. Zarova., E. *Statistical Methodology for Evaluating Business Cycles with the Conditions of Their Synchronization and Harmonization, Statistics, Statistics - Growing Data Sets and Growing Demand for Statistics*, IntechOpen, 2018, pp. 27-48.

3. Levin Y., Nediak M., Topaloglu H.: Cargo capacity management with allotments and spot market demand, *Operations Research* 60(2), 2012, pp. 351-365, https://doi.org/10.1287/opre.1110.1023

4. Sebastiano A., Belvedere V., Grando A., Giangreco A.: The effect of capacity management strategies on employees' well-being: A quantitative investigation into the long-term healthcare industry, *European Management Journal* 35(4), 2017, pp. 563-573, ttps://doi.org/10.1016/j.emj.2016.12.001

5. Chien C., Dou R., Fu W.: Strategic capacity planning for smart production: Decision modeling under demand uncertainty, *Applied Soft Computing* 68, 2018, pp. 900-909, https://doi.org/10.1016/j.asoc.2017.06.001

6. Davis M., Dempster M., Sethi S., Vermes D.: Optimal capacity expansion under uncertainty, *Advances in Applied Probability* 19(01), 1987, pp. 156-176, https://doi.org/10.2307/1427378

7. Huang D., Lin Z., Wei W.: Optimal production planning with capacity reservation and convex capacity costs, *Advances in Production Engineering & Management* 13(1), 2018, pp.

31-43, https://doi.org/10.14743/apem2018.1.271

8. Shao J.F., Li Y.: Multi-agent production monitoring and management system for textile materials and its applications, *Journal of Industrial Textiles* 40(4), 2010, pp. 380-399, https://doi.org/10.1177/1528083710380428

9. Koltai T., Stecke K.: Route-independent analysis of available capacity in flexible manufacturing systems, *Production and Operations Management* 17(2), 2008, pp. 211-223, https://doi.org/10.3401/poms.1080.0017

10. Burkhanov A., Tursunov, B. O. (2020). Main indicators of textile enterprises' financial security assessment. *Vlakna a Textil*, 27(3), 35–40. http://vat.ft.tul.cz/Archive/VaT_2020_3.html

11. Kalandarovna, A. G., Gaibnazarovich, G. S., Turgunovna, S. N., Shuxratovna, F. D., & Ortikmirzaevich, T. B. (2020). Methodical Aspects of Establishing a Control System over Compliance with Principles of Decent Work and Social Security in Textile Enterprises. *Journal of Advanced Research in Dynamical and Control Systems*, *12*(5), 73-81. https://doi.org/10.5373/JARDCS/V12I5/20201691

12. Tursunov, B. O. (2020). Mechanism for determining optimal management of use of production capacity at the textile enterprises. *Vlakna a Textil*, 27(1), 99–106. https://doi.org/10.5281/zenodo.3787291

13. Tursunov, B. O. (2019). Methodology for assessment the efficiency of production capacities management at textile enterprises. *Vlakna a Textil*, 26(2), 74–81. https://doi.org/10.5281/zenodo.3756262

14. Vitalina Delasa, Euvgenia Nosova, Olena Yafinovych. Financial Security of Enterprises. *22nd International Economic Conference – IECS 2015 "Economic Prospects in the Context of Growing Global and Regional Interdependencies", IECS 2015*. Procedia Economics and Finance 27 (2015) 248 – 266. doi: 10.1016/S2212-5671(15)00998-3

15. Imran, S. M., Rehman, H. U, and Khan, R. E. A.(2020) Effect of corruption on firm level innovation: Evidence from Pakistan, Economics and Business Letters,9(1), 41-47.DOI: 10.17811/ebl.9.1.2020.41-4

16. http://www.stat.uz