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ANALYSIS OF COMPANIES' INSOLVENCY

Abstract: Nowadays, constant analysis of companies' financial position is an important consideration due to several reasons. The article discusses the economic insolvency, liquidation and bankruptcy of companies in Uzbekistan, as well as, in developed countries such as the Group of Seven (G-7). In Uzbekistan, insolvency proceedings are carried out by special regulatory bodies according to the "Law on Bankruptcy and Insolvency" using several procedures. There also have been significant changes in the number of business closures in recent years, both nationally and globally.

Furthermore, potential risks and financial failures can be prevented by means of bankruptcy prediction models. This article reviews the accuracy of each model, as well as, suggests some measures against insolvency and bankruptcy.

Key words: Insolvency, bankruptcy, liquidation, financial statement, bankruptcy prediction model, judicial rehabilitation, Altman, Springate, Taffler&Tisshaw, Liss, Zavgren, Konan, linear discriminant analytical models.

Introduction. In market economy conditions, business entities, being economically independent, are involved in competition. This competitions helps someone reach prosperity, while others collapse at the same time. The winning companies, having strengthened their financial position, will gain an important place in the market. Losing businesses go bankrupt or exit the market. The company's solvency is considered the most important indicator, and it represents the stability of the company's financial situation. But if the company does not have enough funds to meet its payment obligation, this may result in bankruptcy. Therefore, the bodies and organizations involved in the business activities pay their attention more on the analysis of the financial situation and position of enterprises. Nowadays, companies use the service of an auditor to constantly monitor their financial situation, to check financial statements, including the balance sheet, income and cash flow statements, to correctly predict expected changes in advance, to prevent the impact of negative factors that lead to economic insolvency, or to apply the necessary measures on time.

Theoretical background. Economic insolvency occurs when the company is unable to pay its debts. It means that business's debts cannot be paid when they are due as the amount owed exceeds the value of the business's assets. Insolvency is, effectively, a business going bankrupt.¹ Bankruptcy and insolvency are not the same terms, additionally, there is another term which is quite similar in its meaning - liquidation. All of them refer to the financial distress of an entity.

¹ <https://www.theinsolvencyexperts.co.uk/blog/what-is-insolvency/>

Bankruptcy is a legal process, whereas insolvency is a state of financial being.² Bankruptcy is recognized by an economic court, the debtor's inability to fully satisfy the demands of creditors in terms of monetary obligations or to fully fulfill his obligation in terms of mandatory payments. If companies do not prevent the occurrence of financial distress or the state of insolvency, as a result, they may encounter serious problems such as bankruptcy or liquidation.

Liquidation (or winding-up) is a process under Company Law that results in the company ceasing to exist. A company can decide to go into voluntary liquidation in which case the company arranges voluntarily to enter liquidation.³ This is a set of measures for the suspension of the activity of a legal entity and the process of passing appropriate inspections at the tax inspectorate. This complex process takes place in several stages during 3-9 months. Liquidation is considered regarding corporates and companies, while bankruptcy is for non-corporates and individuals.

Economists developed some models to assess companies' insolvency. P.Kumar and Ravi (2007) stated that in scientific literature, bankruptcy prediction models are commonly categorized into two types: statistical and non-statistical bankruptcy prediction models⁴. It is feasible for stakeholders closely associated with a company to assess its ability to meet its debt obligations. This assessment can serve as an early warning for the company itself, enabling it to implement corrective measures when signs of financial distress are detected. Bankruptcy prediction models have been extensively applied to analyze companies across various sectors, including manufacturing firms (e.g., Altman, 1968; Taffler, 1984), corporations (e.g., Peel, 1986; Trujillo-Ponce et al., 2013), and banks (e.g., Martin, 1977; Lane et al., 1986; Canbas et al., 2005).⁵ The ability to distinguish between financially sound companies and troubled ones can minimize the anticipated costs associated with corporate or financial failure.

Research methodology. In the article, several methodologies such as analysis and synthesis, data collection, comparison, description were widely used to describe the procedures precisely. National and global statistics were applied and graphical visualization was used for comparing the research results.

Analysis and results. In the era of market relations, finding a place in the market economy for enterprises becomes the main principle of business management. In this period, the breakdown and bankruptcy of businesses become a legal state of social production. In Uzbekistan, the main legislation governing company insolvency is the Law on Bankruptcy and Insolvency, which provides the legal framework for insolvency procedures. The formation of the bankruptcy institution in our Republic began when the initial law "On bankruptcy" was adopted on May 5, 1994 (35 articles). Unfortunately, the given law was not successful or effective, in view of the fact that only 2 companies collapsed and were declared bankrupt in the first year of the adoption

² Nick Green. "Bankruptcy vs Insolvency, what is the difference?" <https://www.unbiased.co.uk/>

³ Collection Manual, June 2023. Liquidation of Companies and other Company Law issues <https://www.revenue.ie/en/tax-professionals/tdm/collection/insolvency/liquidation.pdf>

⁴ Kumar, P. R., & Ravi, V. (2007). Bankruptcy prediction in banks and firms via statistical and intelligent techniques–A review. *European journal of operational research*, 180(1), 1-28.

⁵ Machielsen, B. (2015). *The accuracy and information content of two traditional statistical methods in forecasting bankruptcy: evidence from European countries* (Master's thesis, University of Twente).

of the law. On April 12, 2022, and a new law, the Law of the Republic of Uzbekistan "On Insolvency," has been introduced. It aims to regulate relationships in the field of insolvency for legal individuals, individual entrepreneurs and entities.

The State Assets Management Agency (SAMA) and the State Committee for Privatization, Demonopolization, and Development of Competition (SCPD) are the regulatory bodies responsible for overseeing insolvency proceedings. Insolvency practitioners in Uzbekistan must be certified by the SAMA and entered into the Unified Register of Insolvency Practitioners maintained by the SAMA. The number of insolvency practitioners registered with the SAMA is around 240.

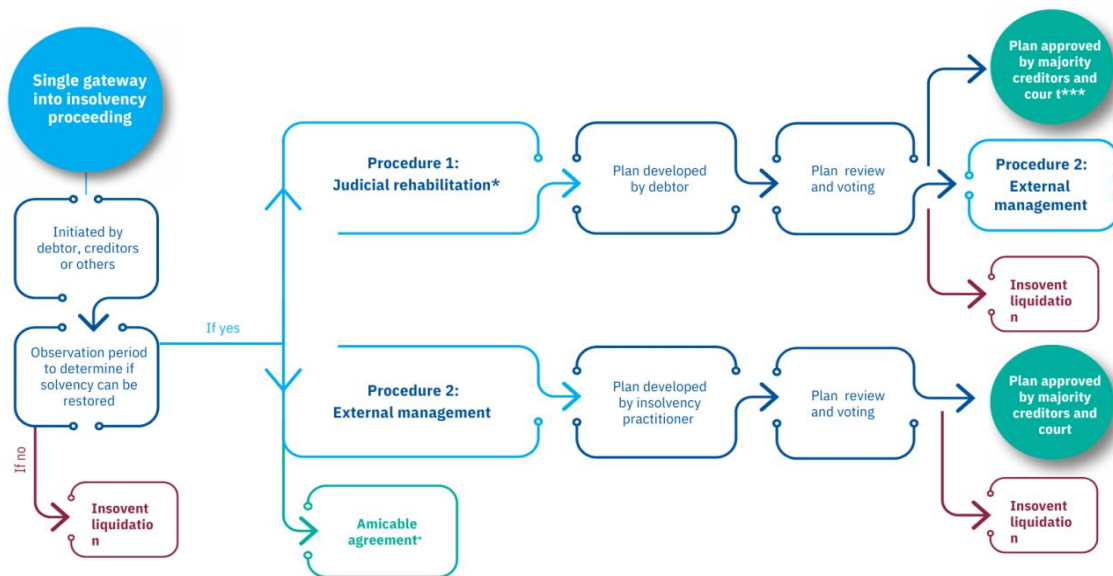


Figure-1. Single gateway into insolvency proceeding⁶

Figure-1 explains the stages of insolvency proceedings and the options available for restoring solvency. According to the Article 73 of the Insolvency Law, the insolvency proceeding can be initiated by the debtor, creditors, or other parties involved. There are two potential procedures for restoring solvency: *judicial rehabilitation* and *external management*. In judicial rehabilitation, the debtor develops a plan to overcome financial difficulties, which is reviewed and voted on by creditors and the court. In external management, an insolvency practitioner is appointed to develop the plan. If the approved plan is successfully implemented, solvency can be restored. However, if restoration of solvency is not feasible or the approved plan fails, the insolvency proceeding can lead to insolvent liquidation, where the debtor's assets are liquidated and distributed among the creditors.

⁶ Business reorganization assessment. [https://ebrd-restructuring.com/storage/uploads/documents/13472%20EBRD%20\(Uzbekistan%20Country%20Profile%20ARTWORK\).pdf](https://ebrd-restructuring.com/storage/uploads/documents/13472%20EBRD%20(Uzbekistan%20Country%20Profile%20ARTWORK).pdf)

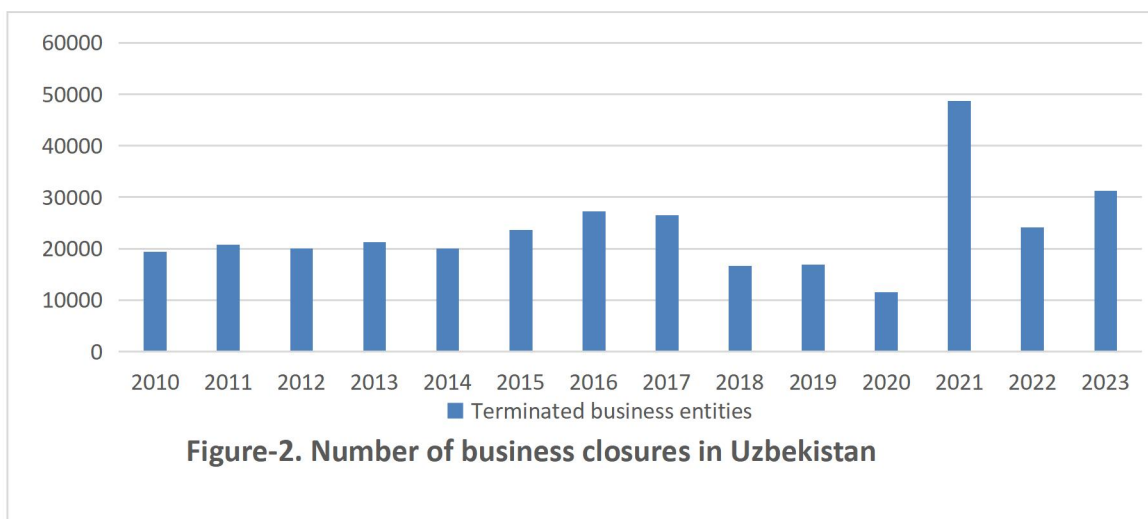


Figure-2. Number of business closures in Uzbekistan

According to the data given by Statistics Agency of Uzbekistan (Figure-2), the number of business entities whose activities have been terminated or bankrupted made up 19459 in 2010. Until 2016, the figure had remained relatively stable, after which it increased by nearly 40% to 27220 enterprises. The most noticeable change in the graph can be seen between the years 2020 and 2021 because of Covid-19, where the number of business closures was almost 4 times higher, showing 11547 and 48676 respectively. The last data announced by the Agency shows 31295 terminated business entities in Uzbekistan in 2023.

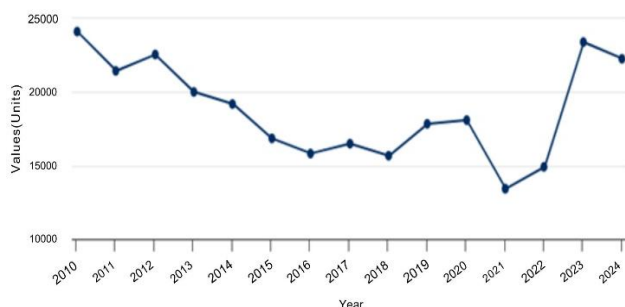


Figure-3. Total number of UK company insolvencies (units)

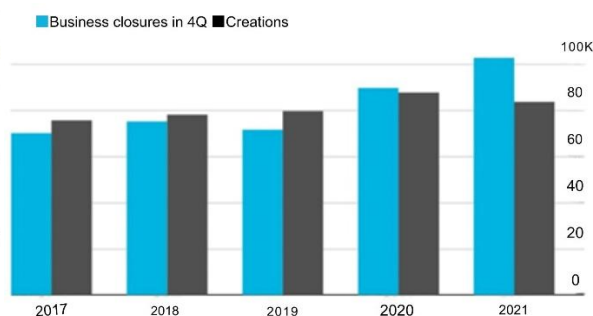


Figure-4. UK business closures

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Looking at the statistics of one of the G-7 countries, the UK has also been experiencing rise in the number of company insolvencies and closures. However, the figure is much greater compared to Uzbekistan. Insolvency specialist and corporate restructuring firm Begbies Traynor reported that during the peak of the pandemic, many businesses in the UK were heavily reliant on external support to stay afloat. According to Figure-3, in the three months leading up to September 2020, data obtained from court orders to settle debts indicated that over half a million UK companies were facing significant financial difficulties. This represented a roughly 6% increase compared to the preceding three-month period. Subsequently, there was a surge in corporate failures, with the number of UK company insolvencies rising by 54.1% in the 2021-2022 period alone.⁸ It was projected that the overall number of UK company insolvencies would further rise by 15.5% in 2022-2023, reaching a total of 20,593. Similarly, figure-4 shows that the number of company closures in the UK had also risen. The last data illustrates 102700 terminated firms in the fourth quarter of 2021, the highest figure since 2017.

⁷ Office for National Statistics

⁸ <https://www.ibisworld.com/uk/bed/number-of-uk-company-insolvencies/44129/>

Due to the significant variations in the company insolvency and bankruptcy rate, starting from 2020 the President of Uzbekistan declared that additional measures would be adopted for the financial rehabilitation of economically insolvent, loss-making and low-profit enterprises, such as:

- Establishment of the Department for the recovery of economically insolvent enterprises from the financial crisis,
- Allocation additional staff units to each of the regional offices of the Agency.
- Increased government support for insolvent companies.

A lot of experience in forecasting economic failure and determining the risk of bankruptcy has been accumulated in international practice and is always followed. The first attempts to determine economic insolvency and calculate the risk of bankruptcy were observed in the USA and European countries in the years after the Second World War.

There are some models of determining economic insolvency of companies. The two-factor model of New York University professor E.Altman is used as the most popular model for determining the economic insolvency of enterprises and predicting its bankruptcy. Other popular models include Springate, Taffler&Tisshaw, Liss, Zavgren, Konan and etc.

| Model | Accuracy (before one year) |
|-------------------------------|---------------------------------------|
| Altman | 90% |
| Springate | 92.5% |
| Taffler&Tisshaw | 97% |
| Zavgren | 82% |
| Chesser | 78% |
| Purvinis, Šukys&, Virbickaitė | 92% |

Table-1. Accuracy of classical statistical bankruptcy prediction models⁹

Models which indicate probability of insolvency have many similarities, although they can be compared by their accuracy and correctness. The models represented in Table-1 have been tested by their authors. A year before the bankruptcy occurred, Taffler&Tisshaw model showed more precise data (97%) compared to another ones, while the Chesser was the least with 78% accuracy.

Table 2. Linear discriminant analytical models of bankruptcy prediction

| Author | Model | Elements of the model |
|---|---|---|
| Altman Z'-Score model for companies whose shares are not quoted in stock exchange markets (was developed in 1983) | $Z' = 0.717X1 + 0.847X2 + 3.107X3 + 0.42X4 + 0.998X5$ $Z' > 2.90$ - “Safe” Zone $1.23 < Z' < 2.90$ - “Grey” Zone $Z' < 1.23$ - “Distress” Zone | X1= Working Capital / Total Assets X2= Retained Earnings/ Total Assets X3= EBIT/ Total Assets X4= Book Value of Equity/ Total Liabilities X5= Sales/ Total Assets |

⁹ Bercevič, E., & Jurevičienė, D. (2013). The evaluation of bankruptcy prediction models for Lithuanian companies. *Trends economics and management*, 7(13), 43-55.

| | | |
|--|---|---|
| Altman Z"-Score Model for the service companies (was developed in 1995) | $Z'' = 6.56X1 + 3.26X2 + 6.72X3 + 1.05X4$ $Z'' > 2.60$ - "Safe" Zone $1.1 < Z'' < 2.60$ - "Grey" Zone $Z'' < 1.1$ - "Distress" Zone | $X1 = \text{Working Capital} / \text{Total Assets}$ $X2 = \text{Retained Earnings} / \text{Total Assets}$ $X3 = \text{EBIT} / \text{Total Assets}$ $X4 = \text{Book Value of Equity} / \text{Total Liabilities}$ |
| Altman Z"-Score Model for emerging countries (was developed in 1995) | $Z'' = 3.25 + 6.56X1 + 3.26X2 + 6.72X3 + 1.05X4$ $Z'' > 2.60$ - "Safe" Zone $1.1 < Z'' < 2.60$ - "Grey" Zone $Z'' < 1.1$ - "Distress" Zone | $X1 = \text{Working Capital} / \text{Total Assets}$ $X2 = \text{Retained Earnings} / \text{Total Assets}$ $X3 = \text{Earnings Before Interest and Taxes} / \text{Total Assets}$ $X4 = \text{Book Value of Equity} / \text{Total Liabilities}$ |
| Springate model (was developed in 1978) | $Z = 1.03 X1 + 3.07 X2 + 0.66 X3 + 0.4X4$ Failed $Z < 0.862$ | $X1 = \text{Working Capital} / \text{Total Assets}$, $X2 = \text{EBIT} / \text{Total Assets}$, $X3 = \text{EBIT} / \text{Current Liabilities}$ $X4 = \text{Sales} / \text{Total Assets}$ |
| Taffler models | $Z = 0,53X1 + 0,13X2 + 0,18X3 + 0,16X4$ | $X1 = \text{Profit before tax} / \text{current liabilities}$ $X2 = \text{Current assets} / \text{total liabilities}$ $X3 = \text{Current liabilities} / \text{total assets}$ |
| Taffler & Tisshaw model (was developed in 1977) | If value Z exceeds 0.3, long-term prospects of a company are positive, if value Z is less than 0.2, there is a bankruptcy threat. | $X4 = \text{No-credit interval}$; $\text{No-credit interval} = (\text{Immediate Assets} - \text{Current Liabilities}) / (\text{Operating Costs} - \text{Depreciation})$ |
| Taffler model (was developed in 1973) | If value Z exceeds 0.3, long-term prospects of a company are positive, if value Z is less than 0.2, there is a bankruptcy threat. | $X4 = \text{Revenue} / \text{Total Assets}^{10}$ |

Over time, linear discriminant analytical models of bankruptcy prediction have been observed, analyzed and developed. Table-2 shows different versions of Altman, Springate, Taffler bankruptcy prediction models, which were investigated in Lithuanian companies. Since the majority of the sampled companies are privately held and not traded on a stock exchange, the model designed for publicly traded companies (Z'-Score model) was not tested. Instead, the Z"-Score model, suitable for non-traded service companies, was examined. Springate's classification rule categorizes companies as either at risk of bankruptcy (Distress Zone) or safe based on a Z-

¹⁰ Kanapickiene, R., & Marcinkevicius, R. (2014). Possibilities to apply classical bankruptcy prediction models in the construction sector in Lithuania. *Economics and Management*, 19(4), 317-332.

score threshold of 0.862. Taffler's model, which varies in terms of the X4 variable, was also analyzed. However, there are limitations, such as the exclusion of depreciation in calculating the no-credit interval (X4) and the use of EBT instead of EBIT due to the unavailability of EBIT data in Lithuanian financial statements.

The main measures taken against insolvency and bankruptcy:

- Creating favorable conditions for increasing investment attractiveness of financial and economic activities of economic entities;
- To avoid exceeding obligations (current and long-term) and establish their constant control;
- Not to miss the deadline of the debtor and creditor obligations in order to ensure the solvency of the business entity;
- Increasing working capital of business entities;
- Increasing the profitability of the economic entity;
- Taking measures to reassess assets, make a fair assessment, and form their optimal composition;
- Taking measures to increase the contribution of own funds in the financial capacity;
- Establishment of management quality management;
- Paying special attention to the issue of personnel, etc.

Conclusion. Contemplating on company solvencies is crucial in both, national and global practice. Private business entities help to maintain and stimulate the economic growth. Therefore, governments and economists have to act and apply possible measures in order to decrease the number of bankruptcies, as well as, they should be able to analyze and predict the possibility of bankruptcy using prediction models and indicators. Observing the proceedings of other countries regarding this issue would be another valuable measure. To sum up, company insolvency not only affects the businesses, but also it has a considerable impact to the economy and finance of a country. Hence, the potential risks and activities of every private business entities should be constantly analyzed and monitored.

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