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EMPIRICAL ANALYSIS OF COMPANY FINANCIAL LEVERAGE

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ABSTRACT

Beyond the financial performance assessed on the basis of profit and loss account, evaluating a company`s financial leverage is key indicator that investors and creditors are concerned most. It is made from the perspective of its ability to cope with due debts. A situation that was often encountered by companies was insolvency, currently threatening all companies around the world. Considering aforementioned facts, we empirically analyzed 278 manufacturing companies in Uzbekistan over 2018-2021 to identify what external factors are the most affecting companies' long-term position. Analysis show that among all other factors interest rate, tax burden and overall business environment (proxied by Doing business index) show statistically significant impact on companies long-term financial solvency.

KEYWORDS— financial ratio, econometric analysis, leverage, performance, position.

INTRODUCTION

A The choice between equity and debt that businesses face when financing financial needs related to ongoing operations and/or investments has never been easy. Both types of financing have advantages and disadvantages, and the optimal capital structure is still a controversial issue in corporate finance.

Although the main advantage of equity financing is that it does not impose a financial burden on the company, since there are no regular payments to shareholders, using it means giving up ownership of the business and sharing decisions with other shareholders. Increased debt financing also has advantages as it reduces the overall tax burden due to tax-deductible interest, but increases firms' exposure to solvency risks and market fluctuations during economic downturns.

In particular, the Global Financial Crisis of 2007–2009 led to a significant increase in global debt, from 292 percent of global gross domestic product (GDP) in 2008 to 318 percent in 2018. The main contribution to this growth comes from entities operating in the non-financial sector. Along with public debt, their share of global GDP rose from 78 to 92 percent and from 62 to 86 percent, respectively, an increase of about 23 trillion euros .

There was also an increase in the total debt of non-financial corporations in the EU 27 member states. According to the European Commission, the financial debt of corporations increased from 97.7 percent of GDP in 2009 to 99.8 percent in 2019. On the one hand, the growth of corporate debt is the result of investment and growth opportunities, as well as the diversification of financing sources and the special use of bond financing, on the other hand, the high level of corporate debt has posed a serious threat to the global economy. Because the global default rate of non-financial corporations has been higher than the long-term average even before the COVID-19 pandemic .

During the global pandemic caused by the coronavirus (COVID-19), high levels of non-financial corporate debt have become a central theme in the economy. At the beginning of the pandemic, companies suffered serious losses due to various restrictions, which led to the inability to meet their financial obligations when the debt payment period expired. However, the negative impact of the pandemic on the company's financial situation was not uniform across industries and sectors. The most affected sectors were accommodation and food services, transportation, automotive and basic metals, and to a lesser extent wholesale and retail trade. Information and communication services, food and pharmaceuticals, and computer and electronics manufacturing fared well as consumer demand declined, leading to lower production and sales. In this perspective, Ebeke et al analyzed the extent to which the measures taken during the pandemic helped maintain business liquidity and improve insolvency, using financial data on more than 4 million companies in Europe. The results of the analysis revealed that the insolvency rate has increased from 12% to 32% in the wholesale and retail sector (4-20% before the pandemic). This was the sector with the lowest share of insolvent firms in the total number of firms, second only to the information and communications sector.

In this context, this study is aimed at analyzing the dynamics of financial indicators of companies operating in Uzbekistan, and we focus on the relationship between indebtedness and solvency risk, as well as other areas of business activity (for example, liquidity, asset efficiency and profitability).

LITERATURE REVIEW

It should be noted that one of the main directions of research in the field of corporate finance is to study the causes of financial problems that can lead to crisis and bankruptcy and to develop appropriate proposals for their elimination.

One of the first and most common methods of assessing bankruptcy is the approach developed by Altman. Beaver was also the first researcher to define financial distress as a situation where total assets cannot cover total liabilities. The Altman model, which takes into account profitability, liquidity, solvency and efficiency indicators in the Multiple Linear Discriminant Model (MDA), has been improved by various scientists to assess whether the company is at risk of bankruptcy over time. As a result, the importance of this model has expanded at the international level, and it has been extensively tested in companies and sectors around the world. In addition, researchers have used several statistical and econometric methods to study capital structure, solvency risk, or financial distress other than the Altman model.

Over the past two decades, research on financial stress and solvency risk has begun to allow for more precise analysis thanks to the emergence and further development of artificial neural networks, machine learning, and artificial intelligence. In particular, Odom and Sharda for the first time used the Artificial Neural Network (ANN) methodology to predict the bankruptcy of American companies using the same financial indicators as in Altman's research. Their results showed a higher accuracy compared to the Multiple Linear Discriminant Model (MDA). Over time, many studies have confirmed that ANN methods are effective methods for identifying financial distress and assessing bankruptcy risk from logistic regression and MDA .

Financial statement analysis is an integral and important part of the broader field of business analysis, and business analysis is the process of evaluating a company's economic prospects and risks. It includes analysis of the company's business environment, its strategies, financial position and performance. Business analysis is useful for a wide range of business decisions, such as whether to invest in stocks or debt securities, whether to lend through short-term or long-term loans, how to value a business in an initial public offering (IPO), and how to evaluate restructuring, including mergers, acquisitions acquisition and allocation.

Financial statement analysis is the application of analytical tools and techniques to general purpose financial statements and related data to derive ratios and conclusions useful in business analysis. Financial statement analysis reduces reliance on guesswork and intuition when making business decisions. As a result, it reduces the uncertainty of business analysis. However, this does not reduce the need for expert opinion, but instead creates a systematic and effective basis for business analysis. Proper analysis and interpretation of data is critical to good business analysis. This is the role of financial statement analysis. Through it, the analyst better understands and interprets both qualitative and quantitative financial data, so that reliable conclusions can be drawn about the company's prospects and risks .

The most common methods of analyzing the financial performance of enterprises, including analytical procedures based on the analysis of solvency indicators. These analytical procedures are based on statistical models involving individual proportions .

The current methodology for assessing the solvency of an economic entity, established in the regulatory documents of the Republic of Uzbekistan, is based on the calculation of liquidity indicators, i.e. absolute and current liquidity indicators, cash liquidity ratio, solvency indicator for current liabilities.

Also, the assessment of the solvency of the economic entity is carried out by applying the methodology of the Audit expert to compare the structured assets in order of decreasing liquidity with the structured liabilities in the order of payment. Adherence to the required ratio allows to estimate the accounting liquidity and, as a result, the solvency margin of the economic entity. The problem of assessing solvency when using the audit expert's methodology lies in the uncertainty of the equity capital and the different structures of the company's liabilities. As a rule, own funds, which are considered as a "safety margin" in the assessment of solvency, consist of the authorized capital invested by the owners of

the economic entity and the profit received during the entire activity of the enterprise. But capital also includes other things, such as additional or reserve capital that cannot be used to pay liabilities. Therefore, without a detailed analysis of the capital structure, it is not appropriate to compare its total amount with the company's liabilities.

For this reason, in order to correctly choose the analysis methodology and thereby ensure the accuracy and reliability of the analysis results, we analyze the financial results and status of enterprises operating in Uzbekistan based on the universal methodology based on generally accepted ratios.

In this, first of all, it is necessary to study the indicators most often used in research and to select the necessary ratios based on this.

The chart below summarizes the indicators used to assess the financial results and status of enterprises.

The indicators shown in the above diagram are mainly useful for external users to make appropriate decisions about the enterprise. Among the main external users who are interested in the financial results and status of the enterprise, the following can be included.

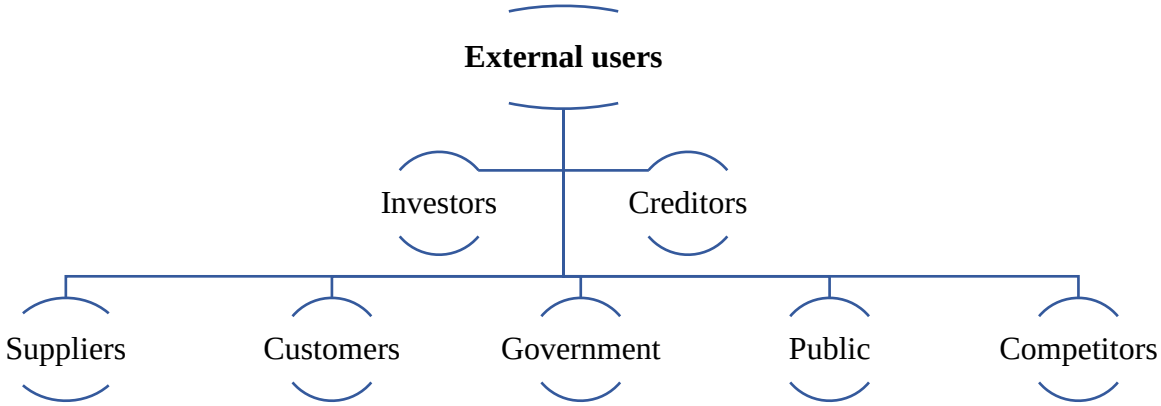


Figure 1. Users of enterprise financial statements

When interpreting financial statements, it is important to identify the users of the financial statements and the information they need. External users select some of the information about the financial result and status of the enterprise as key indicators and analyze them in depth. In particular:

- **Investors** and potential investors are more interested in the potential profitability of the enterprise and the security of their investments. In determining future profitability, it can be estimated based on the past performance of the enterprise using the information shown in the profit or loss statement. The security of their investments is determined by the financial stability and solvency of the enterprise based on the information shown in the financial statement (accounting balance sheet).
- **Lenders** are mostly concerned about timely repayment of their funds. This will depend on the solvency of the enterprise, which should be identified in the statement of financial position. Long-term loans can also be backed by "security" issued by the

business over certain assets. The value of these assets is shown in the statement of financial position.

- **Suppliers** are more concerned about whether the company pays for the goods delivered on time or not. New suppliers may therefore also require assurances about the financial health of the business before agreeing to supply goods.

- **Customers** are more interested in the company's ability to regularly supply them with goods in the future. This is especially true if the customer is dependent on the business for specialized supplies.

- **State authorities -** in order to plan financial and industrial policy, state authorities need to know how the economy works. Tax authorities also use financial statements as a basis for assessing the amount of tax payable by a business.

When analyzing the indicators shown in Figure 1, it is important to identify and analyze the following for each indicator:

1. What does an indicator literally mean?
2. What does the change in the indicator mean?
3. What is the generally accepted norm?

When assessing the long-term financial results and status of enterprises, it is important to evaluate not only the internal factors of Indian enterprises, but also taking into account the influence of external factors.

Therefore, it is necessary to perform an econometric analysis in order to determine the factors affecting the financial stability of enterprises operating in industrial production and to evaluate their level of influence.

METHODOLOGY AND RESULTS

We use a panel data set to perform our analyses. A panel data set allows to increase the number of observations due to the fact that it is a cross-section of years and different enterprises. The model also controls for unobservable and firm-specific characteristics and time effects[1].

In the analysis of the impact of incentives given to encourage technological modernization on the capital investment or net income of enterprises, the following initial equation was formulated:

$$Y_{it} = \alpha + \beta X_{it} + \delta Z_{it}' + \varepsilon_{it}$$
$$i = 1, 2, 3, \ldots, N$$
$$t = 2018, 2021, \ldots, T$$

where, Y_{it} - is the ratio of existing Debt to equity capital of t company in year i (Financial Leverage (FL)); α – point of intersection (intercept); b and d are standardized coefficients;

[1] Hsiao C., «Analysis of Panel Data».: 2nd edition, Cambridge : Econometric Society monographs Vol. 34. Cambridge University Press., 2003.

X – external factors; Ź – set of controlling (internal) factors; ε_{it} – standard error *(composite error term)*.

Data on indicators selected as dependent, optional and controlling variables were obtained from the database of the State Tax Committee and the World Bank. Tables 1 and 2 provide us with a summary of the selected variables.

Table 1. Information about variables[2]

Variables	Brief description	Source
Dependent variable, *(Y_{it})*		
Financial Leverage	Calculated on the basis of accounting balance data.	STC of Uzbekistan
Voluntary variables and Controlling variables		
Net profit (loss)	Information on line 270 of the statement of financial results.	STC of Uzbekistan
Tax burden	The burden of all taxes and mandatory fees paid by businesses.	World Bank Open Database
Interest rate	Bank borrowing rate for short and medium term financing needs of the private sector.	World Bank Open Database
Long term investment	Information on line 030 of the accounting balance.	STC of Uzbekistan
Doing Business index	"Ease of doing Business" index of the World Bank.	World Bank Open Database

Analyzes are based on data on business entities that have used benefits over two-, three-, and four-year periods. Table 2 provides statistical information on selected determinants for the period covered. According to it, in 2018-2021, a total of 278 business entities had an average Financial Leverage indicator of 42.1 percent.

Table 2. Statistical information about variables[3]

Variables	Number of firms	Mean	Standard error	Min.	Max.
Financial Leverage	278	42.1	25.0	0	1.1
Net profit (loss)	278	2050.51	31506.91	-25822.36	891274.2
Tax burden	278	39.166	1.370	38.1	41.1
Interest rate	278	14.224	0.821	13.524	15.376
Long term investment	278	380.973	2083.508	0	25676.22
Doing Business index	278	63.461	2.237	61.675	66.613

[2] Prepared by the authors based on the information of the State Tax Committee and the World Bank.
[3] Prepared by the authors based on the information of the State Tax Committee and the World Bank.

Ordinary Least Squares (OLS), Fixed Effects (FE) and Random Effects (RE) models were used in the analysis. in the annual analysis) while the OLS model was shown to be the most appropriate model for the characteristics of our data set (see Table 3).

The Random Effects (RE) model assumes that there is no correlation between the discretionary variables and allows us to consider how only the amount of incentives granted may affect capital investment over time, without considering the characteristics of enterprises[4].

The Variance Inflation Factor (VIF) test was performed in order to check the level of multicollinearity between the selected arbitrary variables. The test results showed that the degree of mutual reflection of all optional variables is less than 5 orders of magnitude (see Table 17), that is, the level of errors that may occur as a result of multicollinearity is statistically insignificant[5].

Also, in order to eliminate the existing "heteroskedasticity" problem, a robust specification was chosen (see Table 3).

Table 3. Regression analysis results

Financial Leverage	Model		
	[1]Coeff.	[2]Std. Err.	[3]VIF
Long term investment , *(log)*	0.802*	0.020	1.03
Net profivt (loss), *(log)*	0.101**	0.040	2.45
Tax burden, *(%)*	-0.296**	0.140	1.99
Interest rate, *(%)*	-0.400*	0.238	2.15
Doing Business index	1.521***	0.396	24.59
Constant, *(α))*	15.680*	8.055	-
Observations	731		
Number of entities	278		
R^2	0.104		
F-statistics	19.20***		

Significance levels: ***p<0.01; **p<0.05; *p<0.1

[1] Coefficients means β & δ $Y_{it} = \alpha + \beta X_{it} + \delta Z_{it} + \varepsilon_{it}$ даги β ва δ ни англатади.

[2] *Robust* standard errors means deviation form $Y_{it} = \alpha + \beta X_{it} + \delta Z_{it} + \varepsilon_{it}$.

[3] VIF test: If VIF < 5, NO *"multicollinearity"*.

The analysis of factors affecting the financial stability (financial leverage) of enterprises during the years 2018-2021 showed that almost all of the selected variables have a statistically significant level of influence.

In particular, a 1 percent increase in long-term investments and net profit indicates the probability of increasing the Financial Leverage indicator of business entities by 0.802 and 0.101 percent, respectively. However, it showed that a one percent increase in the tax burden and borrowing interest rate in the economy causes the financial stability of enterprises to deteriorate by 0.296 and 0.400 percent, respectively.

The Doing Business index, which reflects the general business environment in the country, also showed a positive relationship with the Financial Leverage indicator. Based on the results of the regression, the index of Doing Business index to one unit showed

[4] Gujarati D. N., Porter D. C., «Basic Econometrics».: Fifth edition, New York: McGraw-Hill/Irwin., 2009.
[5] Gujarati D. N., Porter D. C., «Basic Econometrics».: Fifth edition, New York: McGraw-Hill/Irwin., 2009.

that the financial stability of enterprises operating in Uzbekistan will improve by 1.521 percent.

CONCLUSION

The study shows that financial statements are key source of the financial analysis of the companies. The most important aspects of company analysis are financial performance and position of the entities.

In order to get reliable and accurate results about company's long-term solvency position and sustainability, it is found that besides ratio analysis empiric analysis are also necessary. Furthermore, company`s financial analysis should not be limited with company related internal data but also external (financial, economic and other) factors must be considered.

Econometric analysis show that companies financial leverage is significantly affected by external factors such as interest rate, tax burden and overall business environment proxied by doing business index.

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