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FACTORS INFLUENCING CAPITAL STRUCTURE OF  
ENTERPRISES IN UKRAINE

ABSTRACT

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## GENERAL DESCRIPTION OF THESIS

**The relevance of the study.** In the process of making decisions about financial activity of an enterprise, management faces a difficult task, for the solution of which it is necessary to determine the type of debt best to use (short or long term), features of debt securities, amount of debt, amount of additional attracted share capital, amount of retained earnings. It is assumed that company's decision to attract additional financing is made taking into account the main purpose of any enterprise - to increase its value. That is why researchers are still trying to find out the optimal capital structure of an enterprise and to explore factors that shape it.

Intensive research in the field of the capital structure began after F. Modigliani and M. Miller, who founded irrelevant theory in their seminary research in 1958. In the first stages of the research, the main focus was on finding and establishing recommendations on the optimal capital structure. Scientists from around the world have tried to come up with a formula that would become a panacea for making management decisions about financing companies. After publication of the article "The riddle of the capital structure" by S. Myers and the joint work of S. Myers and N. Madzhluf "Corporate finance and investment decisions in conditions where firms have inaccessible information to investors", attention of scientists had shifted to the study of factors that influence the formation of capital structure. The main task was to explain the reasons and nature of the various behavioral palettes in making such decisions instead of finding a universal optimum.

The modern theory of corporate finance is based on research findings for highly developed countries, mostly the United States. However, theories and concepts which operate in an advanced market economy in the US may not always be applied even to developed countries in Western Europe, not to mention countries in Central and Eastern Europe with moderate levels of development. A new field of research, the main objects of which were transitional economies of post-Soviet countries began to develop in the last three decades, after the collapse of the socialist system and the emergence of completely new economic conditions that were critically different from existing paradigms.

Ukraine is a country with great economic potential. The first time it has been noted by economists after the collapse of the USSR, but this potential has not been unleashed yet. Currently, investors' interest in Ukraine is increasing every month. Head of the EU Delegation to Ukraine Hugo Mingarelli in early 2019 noted in his report that Ukraine's investment potential is difficult to overestimate. The main assets of Ukraine are educated and highly-skilled workforce, a traditionally developed industry, and the most fertile land on the continent. These conditions are more than sufficient to ensure the steady high economic growth in the long term if necessary funds from investors are attracted.

The study of determinants of capital structure for Ukrainian enterprises is as important as ever at this stage of development. A qualitative analysis of the factors that influence its formation will allow management of large companies to make more balanced decisions based on scientifically developed concepts. The right decisions will increase value of Ukrainian companies and their investment attractiveness.

Despite the growing interest of economists in the study of corporate finance in transition economies, the number of researches which analyze the determinants of the capital structure in Ukraine is not very big. Most papers investigate capital structure only in a particular industry or on the basis of a small sample of enterprises (5-10). Also, most of them are based on outdated information. Therefore, there is an objective need for a deeper analysis of the problem at the national level. We can use a wider time range of data and take into account new factors that have just started to become relevant.

Capital structure is the subject of active scientific discussions for national and foreign scientists. An overview of existing articles provides an opportunity to highlight the most fundamental theories which explain the factors influencing capital structure formation. Yet, the theory of irrelevance was developed by F. Modigliani and M. Miller. The trade-off theories were developed and advanced by ND. Baxter, M. Jensen, W. Meckling, E. Fisher, R. Henkel, and D. Zechner. Theories of information costs were developed by S. Ross, K. Smith, E. Donaldson, N. Mazhluf, S. Myers, B. Seifert, and H. Gonens. M. Bradley, D. Greg, and E. Han Kim agree

with the theory of contract costs. E. Novorozhkin, P. Bayer, and N. Delcourt investigated the factors that shape the capital structure in transition and developing economies.

**The study hypothesis** is based on existing statistically significant relationship between company size, material assets, profitability, growth prospects, tax shield, business risk, liquidity, the likelihood of bankruptcy and the level of leverage of joint-stock companies in Ukraine.

**The aim and objectives of the study.** The purpose of the master's thesis is to identify microeconomic factors influencing the capital structure formation process of the largest joint-stock companies of Ukraine.

To achieve this goal, the following tasks were decided:

- to review fundamental theories on capital structure;
- to systematize the results of modern empirical studies of the capital structure of companies;
- to provide a rationale for the list of determinants of enterprise capital structure for constructing a multivariate regression model;
- to carry out a general analysis of the financial statements of enterprises;
- to carry out an empirical analysis of the factors influencing the capital structure of enterprises in Ukraine;
- to justify the degree of influence of significant determinants on the total amount of credit funds, the amount of short- and long-term funds attracted by Ukrainian enterprises during 2013-2018;
- to provide guidance on the practical use of the research results.

**The object of the study** is the process of managing the formation of the capital structure of joint-stock companies.

**The subject of the study** is theoretical and methodological principles and practical aspects of managing the structure of joint stock companies capital in Ukraine.

**Research methods.** In order to accomplish these tasks, general scientific and specific economic methods of research were used. Common scientific methods include classification, comparison, graphical method, scientific abstraction method (for highlighting the most significant phenomena and trends), economic analysis (for detailed study of individual components of the phenomenon), economic synthesis (for studying how individual components of one phenomenon interact). Specific economic methods of research were used in the article: analytical modeling (to describe the process of capital structure formation in mathematical language and identify causes of these relations), economic and mathematical methods (to construct a multivariate regression model), factor analysis (to estimate the impact of the determinants on the capital structure) and statistical analysis (to analyze the dynamics of financial statements).

**Informational basis:** legislative and regulatory acts of Ukraine on financial activities of joint stock companies, official materials of the State Statistics Service of Ukraine, official materials of the National Bank of Ukraine, annual reports of the selected enterprises (JSC "UkrGazVydobynya", PJSC "Ukrnafta", JSC "NaftoGasVydobuvannya", JSC "Mining Company" UkrNaftoBurinia ", JSC" Northern Mining and Processing Plant ", JSC" Southern Mining and Processing Plant " PJSC "Poltava Mining and Processing Works", PJSC "Central Mining and Processing Works", PJSC "Kryvyi Rih Iron Ore Combine", PJSC "UkrGazVydobok", PJSC "ArcelorMittal Krybry Carr" Zaporizhstal ", JSC "Mariupol Iron and Steel Works named after Illich", JSC "UkrTransGas", JSC "UkrPoshta", JSC "Ukrtransnafta", JSC "International Airlines of Ukraine", JSC "Joint-Stock Company" Kyivvodocanal ", Dnipro, JSC Tobacco Company JSC - Pryluky, JSC Philip Morris Ukraine, JSC International Ukraine, JSC Motor Sich, JSC Centrenergo, JSC APK-Invest, JSC Kyivstar, PJSC "San InBev Ukraine"), scientific publications of national and foreign authors.

The novelty of the results of the research is in expanding the range of potential microeconomic factors influencing the capital structure of Ukrainian joint-stock companies and conducting the analysis based on the most relevant data .

*improved:*

– a theoretical approach to the estimation of factors of influence on the capital structure of enterprises which, unlike the existing ones, consider influence of factors such as probability of bankruptcy, growth prospects (both short- and long-term) and riskiness of an enterprise.

*were further developed:*

– analysis of capital structure formation process in Ukraine during 2013-2018 years, which allow us to take into account the most recent changes in economic and political environment;

– assessing the level of influence of the determinants of the capital structure in the short and long term, which allows to make more fundamental and substantial conclusions about the process of capital structure formation in Ukraine;

– ways to increase the creditworthiness of joint-stock corporations which are built upon the level of reliance on debt financing and allow to implement individual approach to companies.

**Publications.** According to the results of the master's study, two scientific articles were prepared and published "Analysis of Optimal Capital Structure of Technology Companies" (December 2019) and "Determinants of Capital Structure of Joint Stock Companies in Ukraine" (January 2020).

**Volume and structure of the master's study.** The work consists of an introduction, four sections, a conclusion and a list of references. The total volume of the work is 73 pages of text. The list of references includes 50 items. The work contains 9 tables, 16 figures, 1 appendix.

The first section will review such fundamental theories of capital structure as the theory of irrelevance of capital structure, theories of bankruptcy-related costs, trade-off theories related to the existence of agency costs, theories of signaling information, theories of hierarchy, theories contractual costs. The following is a brief summary of the results of current research on the determinants of capital structure,

in particular for transitional economies. This forms the basis for further research in the next section.

The second section describes methodology for research of the impact of factors on the capital structure of Ukrainian enterprises. The first part of the second section explains the impact of commonly used specific microeconomic determinants of capital structure and other factors that are often taken into account in choosing a capital structure but cannot be measured and analyzed quantitatively. In the second part of the second section, the choice of variables of the regression model is justified and a general model is built, a schematic list of the analysis stages and methods that will be used to analyze the model are also provided.

Due to the second section methodology, the third section provides an empirical analysis of Ukrainian joint-stock companies capital structure determinants, characterizes the sample, provides a general description of the capital structure and financial results of enterprises, analyzes the descriptive statistics of the sample and conducts regression analysis of the determinants of the capital structure built by the method of least squares.

The fourth section analyzes the results of the regression analysis of the factors affecting the capital structure with respect to each individual factor, provides recommendations to stakeholders on the practical application of the results, identifies directions for further studies of the process of forming the capital structure of enterprises in Ukraine.

## MAIN CONTENTS OF THE MASTER'S THESIS

**The introduction** justifies the relevance of the research topic, defines the aim, tasks, subject, and object of the study, defines the hypothesis of the study, methods of research, explains the scientific and personal motives for conducting the research, reveals the scientific novelty of the obtained results.

**The first section “Review of literature on basic theories of capital Structure”** analyzes fundamental theories of capital structure, such as the theory of irrelevance of capital structure, bankruptcy-related trade-off theory, trade-off theory

of agency costs, signal information theory, pecking order theory, contract cost theory. The main ideas of each of the fundamental theories are determined:

1. The theory of irrelevance of capital structure: in a world where there are no taxes, financing a company through debt does not affect the value of a company; an optimal capital structure doesn't exist.

2. Bankruptcy Cost Trade-Off Theory: there is an optimal capital structure that can be achieved by balancing the benefits of borrowing capital and bankruptcy costs considering all other factors fixed.

3. Conflict of Interests Trade-Off Theory: in order to achieve an optimal capital structure, it is necessary to find a point that minimizes the overall costs associated with conflicting interests of confronting stakeholder groups.

4. Signal Information Theory: If managers consider their firms undervalued, they will prefer attracting debt financing rather than owner funds, if the company is considered overvalued, the most optimal way of financing is equity.

5. Pecking Order Theory: first of all a firm will use internal financing (retained earnings) to meet its financial obligations, debt, hybrid securities, at least the issue of shares will be used because attracting capital through additional issue sends negative market signals.

6. Contract Cost Theory: Firms whose value is largely comprised of the present value of intangible investment opportunities will seek to achieve lower financial leverage ratios.

The following is a brief summary of the results of the research on the determinants of capital structure for transitional economies.

**The second section “Methodology for investigating factors influencing the capital structure of enterprises”** is devoted to the justification of theoretical models and procedures used to solve the research goals of the master's thesis.

Here is the list of the most commonly investigated microeconomic factors used in the research, the significance of their influence on the capital structure and the fairness of analyzing each of them in this study. To deepen the analysis, it was decided to determine debt ratio, long-term debt ratio and short-term debt ratio as



independent variables. Table 1 provides a brief description of the variables used in the model and how they were calculated.

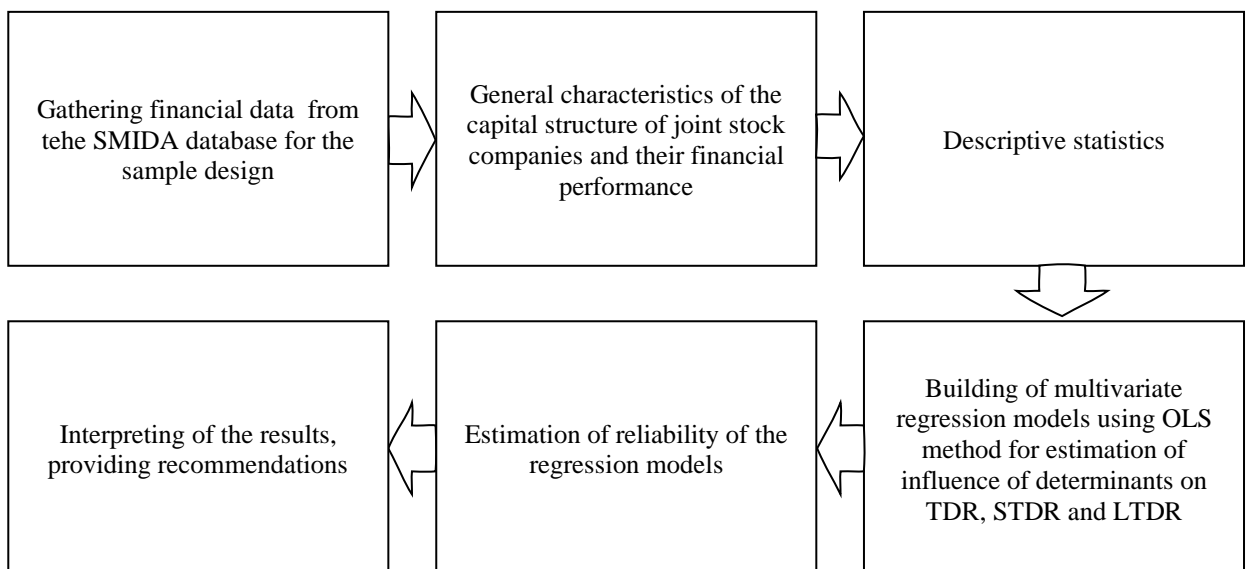
Table 1

## Variables and methods of their calculation

	Indicator	Calculation
Dependent variables		
Debt ratio	TDR	Total liabilities / total assets
Short-term debt ratio	STDR	Short-term liabilities / total assets
Long-term debt ratio	LTDR	Long-term liabilities / total assets
Independent variables		
Size	SIZE	LN (total assets)
Profitability	PROF	EBIT / total assets
Tangible assets	TANG	Fixed assets / total assets
Growth	GROW_FA	Expenses for the acquisition of fixed assets / total assets
Future growth	GROW_RD	Other operating expenses / total assets
Liquidity	LIQ	Current assets / current liabilities
Riskiness	RISK	VAR (operating income) / total assets
Probability of bankruptcy	BANKR	Tereshchenko's model
Tax shield	TAX	Paid income tax / total assets

In order to conduct the research 3 dependent variables and 9 independent variable were used. Thus, influence of size, profitability, tangible assets, growth, future growth, liquidity, riskiness, probability of bankruptcy and tax shield on debt ration, short-term debt ratio and long-term debt ratio is investigated.

Further guidance on the study is presented in picture 1.



Pic. 1 Further guidance on the study

Further guidance on the study includes gathering annual financial data from financial reports of the firms being analyzed, sample design, a brief description of the general financial performance of the companies in dynamics, analyzing of descriptive statistics to provide summaries about the sample and the measures. Then we are going to build three regression models for estimating the influence of a company's features on its debt level, prove the significance of the models and interpret the results.

Due to the established methodology **in the third section "Empirical analysis of the determinants of the capital structure"** an empirical analysis of the determinants of the capital structure of joint-stock companies in Ukraine is done, the sample of is characterized, general description of the structure of capital and financial results of enterprises is provided, descriptive statistics of the sample is presented and multivariate linear regression by the method of least squares is built.

A sample of 30 Ukrainian corporations (joint-stock companies) operating in various industries and having the greatest impact on Ukraine's GDP through tax deductions was formed. These are primarily mining and quarrying, manufacturing, electricity, gas, transportation, and wholesalers. The list of companies used for the analysis in this study is presented in table 2.

Table 2

The list of companies analyzed by industries

№	Name	Industry	№	Name	Industry
1	JSC"УкрГазВидобування"	Mining	16	JSC "УкрТрансГаз"	Transportation
2	JSC "Укрнафта"	Mining	17	JSC "УкрПошта"	Transportation
3	PJSC "НафтоГазВидобування"	Mining	18	JSC "Укртранснафта"	Transportation
4	PJSC "Видобувна компанія "УкрНафтоБуріння"	Mining	19	PJSC "Міжнародні Авіалінії України"	Transportation
5	PJSC "Північний гірничо-збагачувальний комбінат"	Mining	20	PJSC "Акціонерна компанія "Київводоканал"	Water supply, sewage, waste
6	PJSC "Південний гірничо-збагачувальний комбінат"	Mining	21	PJSC "КиївСпецТранс"	Water supply, sewage, waste
7	PJSC "Інгулецький гірничо-збагачувальний комбінат"	Mining	22	JSC "Інтерпайп Дніпропетровський втормет"	Water supply, sewage, waste
8	PJSC "Полтавський гірничо-збагачувальний комбінат"	Mining	23	PJSC "АТ Тютюнова компанія ВАТ - Прилуки"	Tobacco

Table 2 continued

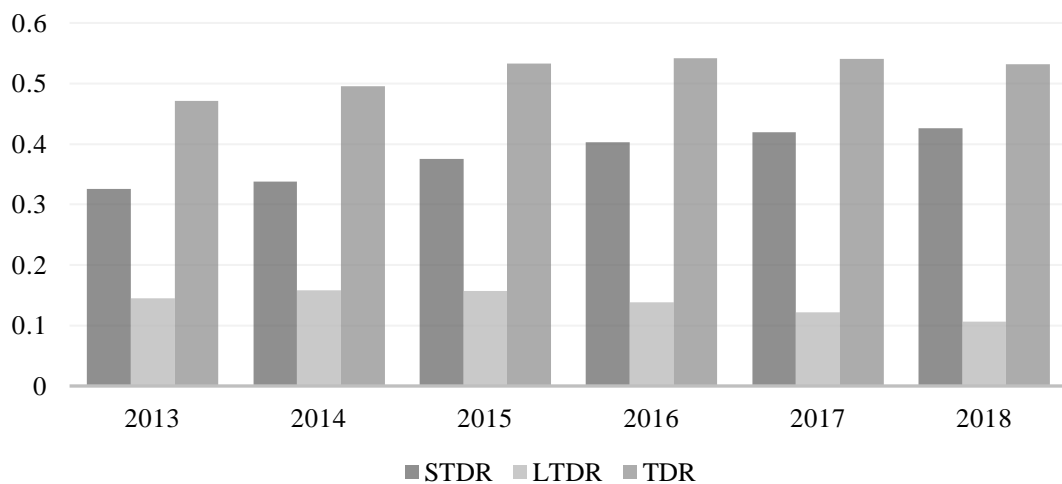
9	PJSC "Центральний гірничо-збагачувальний комбінат"	Mining	24	PJSC "Філіп Морріс Україна"	Tobacco
10	JSC "Криворізький залізорудний комбінат"	Mining	25	JSC "Джей Ті Інтернешнл Україна"	Tobacco
11	PJSC "УкрГазВидобуток"	Mining	26	JSC "Мотор Січ"	Engineering
12	JSC «АрселорМіттал Кривий Ріг»	Manufacturing	27	JSC "Центрэнерго"	Electricity
13	PJSC "Карлсберг Україна"	Manufacturing	28	PJSC "АПК-Інвест"	Agriculture
14	JSC "Запорізький металургійний комбінат "Запоріжсталь"	Manufacturing	29	PJSC "Київстар"	Communication
15	PJSC "Маріупольський металургійний комбінат імені Ілліча"	Manufacturing	30	JSC "Сан ІнБев Україна"	Alcoholic drinks

To ensure representative sampling 30 large companies were selected for the analysis. Financial and insurance entities are excluded from the analysis because of differences in the structure and features of financial reporting. Enterprises engaged in wholesale and retail trade, repair of motor vehicles and motorcycles were excluded from the analysis due to non-coincidence of the organizational form (the majority of them are limited liability companies).

The interval for the time series was selected based on data availability. Yet, the financial statements of enterprises for the period from 2012 to 2018 are analyzed. The Balance Sheet, the Statement of Financial Results and the Statement of Cash Flows for the period from 2012 to 2018 are taken from the Smida database provided by the Stock Market Infrastructure Development Agency of Ukraine. Despite the fact that the financial statements of enterprises for the third quarter of 2019 should be available at the time of conducting the research, there is no data for 2018 on Smida. Therefore, the sources of financial statements for businesses in 2018 were their annual reports, which in most cases are publicly available on their web pages. The first thing to look for when analyzing financial performance of companies in dynamics is a small number of intangible assets, assets that have no tangible or monetary expression (patents, technology, procedural knowledge or know-how). The amount of fixed assets in the economy has a clear tendency to decrease. Fixed assets decreased by 20% in 2018 compared to 2013. Total non-current assets decreased even more - by 25%, for the most part, due to reducing in fixed assets. The share of inventories remains at the same level. On the contrary, one can observe

a tendency for an increase in the share of current assets in the structure of assets of enterprises. In 2018, its value has increased by more than 30% compared to 2013.

The share of equity decreased by more than 10%. Businesses received the greatest revenue in 2018. 2017 turned out to be the most profitable year, primarily due to the high values of operating income, the least profitable is 2015. One of the reasons for the low profits in 2015 is the significant amount of other operating expenses. Picture 2 shows how, on average, the preferences of enterprises about attracting short-term or long-term debt financing changed during the period.



Pic. 2 Dynamics of corporate liabilities in 2013-2018

The share of long-term financing decreased in the capital structure of enterprises and the share of short-term financing increased. While in 2013, borrowings accounted for 47% of the capital structure, in 2018 this figure increased to 53%. It should be noted that three out of thirty companies do not use long-term liabilities and collateral, preferring short-term liabilities, only one company has a debt over total assets ratio of more than 1, which indicates it's overlending.

Descriptive statistics of the dependent and independent variables are presented in table 3.

Table 3

#### Descriptive statistics

	Mean		Error		Median		SD	
	2013	2018	2013	2018	2013	2018	2013	2018
<i>TDR</i>	0.47	0.53	0.06	0.07	0.43	0.48	0.30	0.36

Table 3 continued

<i>STDR</i>	0.33	0.43	0.04	0.07	0.26	0.35	0.24	0.36
<i>LTDR</i>	0.14	0.11	0.04	0.03	0.09	0.06	0.20	0.16
<i>SIZE</i>	15.44	16.41	0.26	0.28	15.37	16.39	1.41	1.54
<i>PROF</i>	0.16	0.17	0.03	0.05	0.13	0.14	0.18	0.26
<i>TANG</i>	0.47	0.38	0.03	0.04	0.46	0.34	0.18	0.21
<i>GROW_FA</i>	0.09	0.10	0.03	0.02	0.04	0.06	0.16	0.10
<i>GROW_RD</i>	0.08	0.05	0.02	0.01	0.03	0.03	0.12	0.07
<i>LIQ</i>	2.31	2.44	0.82	0.65	1.25	1.35	4.50	3.54
<i>BANKR</i>	8.75	8.44	1.18	1.23	8.07	6.02	6.49	6.76
<i>TAX</i>	0.03	0.03	0.01	0.01	0.02	0.02	0.04	0.03
	Variance		Range		Min.		Max.	
	2013	2018	2013	2018	2013	2018	2013	2018
<i>TDR</i>	0.09	0.13	1.48	1.82	0.06	0.05	1.55	1.88
<i>STDR</i>	0.06	0.13	1.07	1.72	0.03	0.04	1.10	1.77
<i>LTDR</i>	0.04	0.03	0.83	0.82	0.00	0.00	0.83	0.82
<i>SIZE</i>	1.98	2.37	5.10	7.10	12.45	12.44	17.55	19.54
<i>PROF</i>	0.03	0.07	0.81	1.66	-0.16	-0.57	0.65	1.09
<i>TANG</i>	0.03	0.04	0.69	0.77	0.18	0.13	0.87	0.91
<i>GROW_FA</i>	0.02	0.01	0.84	0.35	0.00	0.00	0.84	0.35
<i>GROW_RD</i>	0.01	0.00	0.48	0.29	0.00	0.00	0.48	0.29
<i>LIQ</i>	20.25	12.54	25.31	17.00	0.32	0.31	25.63	17.31
<i>BANKR</i>	42.09	45.66	31.96	28.19	0.84	-0.72	32.79	27.47
<i>TAX</i>	0.00	0.00	0.15	0.12	-0.01	-0.02	0.14	0.10

There is an increase in the average debt ratio, including a short-term one. While in 2013, half of the enterprises had a 26% share of short-term liabilities and collateral in the capital structure, in 2018 this value increased to 35%. That is, companies began to attract a third more short-term liabilities. The range of short-term debt ratios has increased and the standard deviation of the value indicates that more companies have had more values distributed further from the sample average. The average size of the companies increased slightly, but the maximum and minimum values remained practically unchanged (which also reflected in the value of excess - its value changed from negative to positive, ie the tails of the distribution became thinner). The average profitability of companies remained unchanged, but the standard deviation (as well as the range of values) doubled. If in 2013 the minimum profitability of an average company was -16%, in 2018 it decreased to -57%. The maximum value slightly increased. It should also be noted that the average share of fixed assets used in production decreased and the liquidity increased

(partially due to an increase in the share of non-current assets). The liquidity of the companies in 2018 was almost 2 times more evenly distributed than in 2013 (due to deduction in the maximum value in 2018 from 25.63 to 17.31). The average value of the bankruptcy probability, calculated using the universal discriminatory model of O. Tereshchenko, is very high. A value greater than 2 means no bankruptcy threat. An average of 8 indicates the financial sustainability and stability of the companies. The average ratio of the amount of taxes paid to the budget to the total capital remained unchanged. After excluding the share of taxes paid and the likelihood of bankruptcy, we construct 3 multivariate regressions using the OLS method. The results of economic and mathematical modeling for the first model are presented in table 4.

Table 4

## Results of multivariate regression models

Average leverage regression statistics						
Multiple R	0.81		<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>
R Square	0.66	<i>Intercept</i>	1.78	0.45	3.97	0.00
Adjusted R Square	0.61	<i>SIZE</i>	-0.05	0.03	-1.61	0.12
Standard Error	0.22	<i>PROF</i>	-1.24	0.31	-4.02	0.00
Observations	30	<i>TANG</i>	-0.56	0.23	-2.40	0.02
<i>Significance F</i>	0.00001	<i>LIQ</i>	-0.04	0.02	-1.58	0.13

Based on the obtained regression coefficients, we calculate standardized coefficients to compare the degree of their influence on the dependent variable:

$$t_y = -0.21 \times SIZE - 0.60 \times PROF - 0.32 \times TANG - 0.24 \times LIQ$$

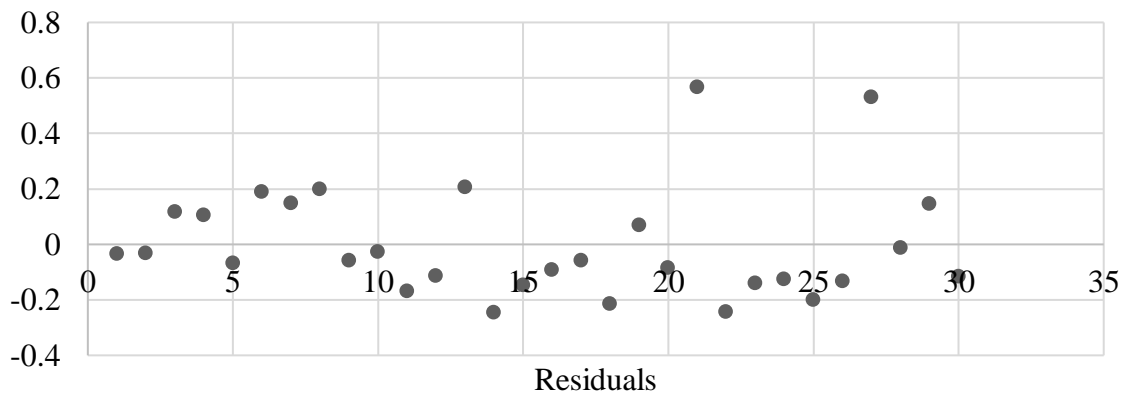
From this equation, we can conclude about the most significant influence of profitability and assets tangibility on the debt ratio.

Since F-statistics for the model is less than  $\alpha = 0.05$ , we can conclude that the model is adequate and the results obtained are reliable.

Next, we check the statistical significance of the coefficients. From the previous table, we conclude that changes in size and company's liquidity are not statistically significant.

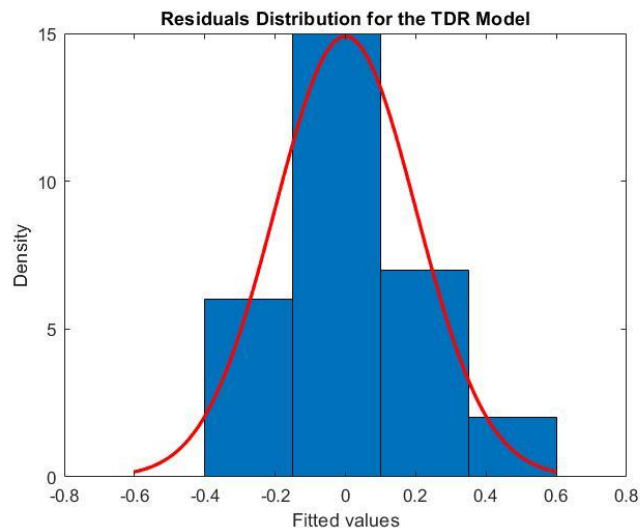
The adjusted coefficient of determination Adjusted R Squared suggests that 60.5% of changes in debt financing of enterprises can be explained by changes in independent variables.

To justify the use of the linear model we plot the residuals of the regression model (picture 3).



Pic. 3 Regression Model Residuals Distribution (TDR)

There is a general tendency to randomly scatter residues, so the use of a linear model to explain the relationships is reasonable. We will also test the normality of the residuals of the regression model by plotting a histogram and comparing it with the normal distribution of data (picture 4).



Pic. 4 Histogram of regression model residuals (TDR)

The distribution of model residuals is close to the normal distribution. After analyzing multicollinearity, confirming adequacy of the regression equation, statistical significance of the factors, normality of the residuals it can be concluded

that the amount of debt financing involved is affected by the profitability of the company and the share of fixed assets involved.

At analogous analysis of short-term and long-term debt is conducted.

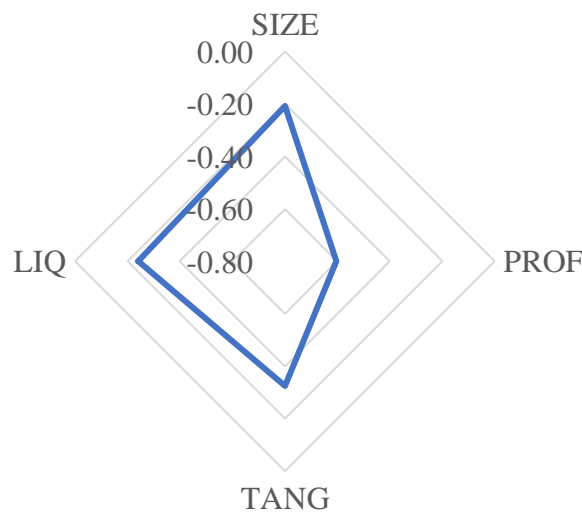
**The fourth section "Results of the regression analysis of the factors affecting the capital structure of enterprises"** analyzes the results of the regression analysis of the factors affecting the capital structure with respect to each individual factor, provides recommendations to stakeholders on the practical application of the obtained results, identifies directions for further studies of the structure of the enterprise structure formation in Ukraine. Table 5 provides a list of hypotheses to compare with the results obtained.

Table 5

#### Generalization of regression analysis results

Hypothesis	Expected result	Actual result		
		TDR	STDR	LTDR
[H1] Size	(+)	-0.21	n/d	-0.44
[H2] Tangibility of assets	(+)	-0.32	-0.63	0.43
[H3] Profitability	(-)	-0.60	-0.52	n/d
[H4] Growth	(+)	n/d	n/d	n/d
[H5] Tax shield	(+)	n/d	n/d	n/d
[H6] Business risk	(-)	n/d	n/d	n/d
[H7] Liquidity	(-)	-0.24	-0.35	n/d
[H8] Probability of bankruptcy	(-)	n/d	n/d	-0.21

Factors that affect the overall level of corporate liabilities are profitability, asset tangibility, liquidity and size are presented in picture 5.

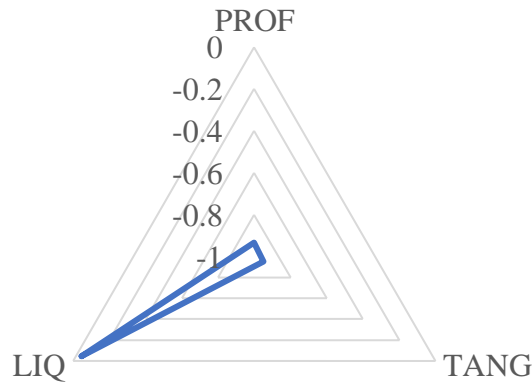


Pic. 5 Factors influencing total debt level



With the increase in profitability, assets tangibility, liquidity and size of the firm, the amount of attracted external sources of financing decreases.

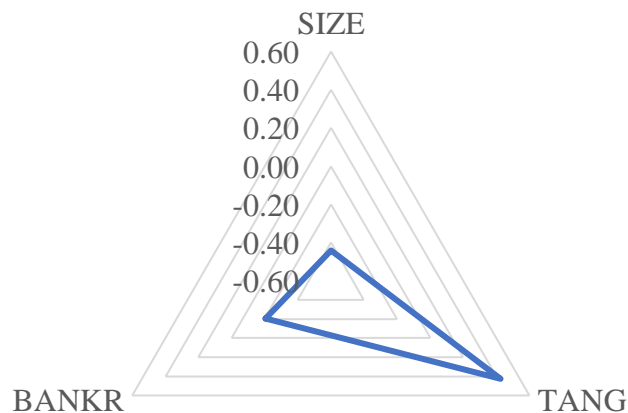
Factors that affect the amount of short-term corporate liabilities are asset tangibility, profitability, and liquidity. They are presented in picture 6.



Pic. 6 Factors influencing amount of short-term debt

As the tangible assets, liquidity and profitability of the enterprise increase, the amount of external financial resources it attracts decreases.

Factors that affect the number of long-term liabilities of enterprises are their size, volume of tangible assets and the likelihood of bankruptcy. As the assets tangibility increases, the number of liabilities increases too, while the relationship between debt, company size and the likelihood of bankruptcy is inversed (picture 7).



Pic. 7 Factors influencing amount of long-term debt

The most significant influence on the leverage of the company is made by profitability. As expected, profitability negatively affects the amount of attracted debt. This indicates that high profits reduce the need for attracting external financing. It confirms pecking order theory which tells that, due to the asymmetry of information, companies will primarily favor internal financing and attract debt capital only if there is no possibility of financing through retained earnings.

According to the obtained results, assets tangibility adversely affects the level of debt attracted by an enterprise. This contradicts to the pecking order theory and its hypothesis that there is a direct relationship between these variables. If we analyze the amount of long-term borrowed funds, the situation changes critically, and in this case, with the increase of tangible assets, the amount of long-term debt attracted increases. It should be recalled that the assets tangibility in this study is determined by the ratio of fixed assets to the total assets of the company. That is, an increase in the fixed assets of an enterprise adversely affects the volume of short-term liabilities and positively affects the volume of long-term liabilities. This is an example of how the liability maturity principle works.

The level of company liquidity is inversely related to the amount of short-term borrowing involved - the more liquid the company is, the less short-term funds it uses to finance its investment projects. The presence of inverse relationship confirms the pecking order theory that companies with higher levels of liquidity are more likely to use their own sources of funds to finance their operations.

The size of a company is inversely related to the level of total and long-term leverage, which is consistent with information asymmetry theory. Although it is easier for larger companies to obtain a bank loan, there is a negative correlation between these two indicators. This may be explained by the fact that the amount of leverage is negatively related to the amount of company information available to outside investors, who in turn will favor internal financing (conflict of interest). Also, it is easier for large firms to raise equity (for example, through share issues) because of the scale effect.

The results of this study can be used by investors, business executives, banks, other lenders, academics interested in a further in-depth analysis of the topic, and government officials involved in macro and microeconomic policymaking. Based on this, a list of recommendations is offered.

*To investors and shareholders.* External investors, as well as existing shareholders of the company, must take into account the factors that shape the capital structure of the company before carrying out any stock transactions. The results of this study are particularly relevant given the rapid growth of the stock market in Ukraine in recent years.

*To company managers.* This study demonstrates how the activity of firms influences the volume of attracted external financing. Company executives can use the results to achieve a benchmark for the optimal balance of external and internal financing in order to increase the value of the firm. For example, when it comes to reducing the amount of borrowed capital, managers should consider that the profitability of the company has a strong inverse relationship with the level of debt of the company, so to decrease the cost of capital it is sufficient to increase the profitability of the company (in the case of Ukraine, it can be done at least by profit disclosures). Management of Ukrainian corporations may rely on the results of this study to make optimal decisions about the financial policies of enterprises, taking into account the specific nature of the companies in Ukraine and their financial needs.

*To creditors.* Before establishing restrictive conditions for controlling a business, creditors should consider factors that affect the entity's capital structure to forecast and mitigate the risk of non-repayment of loans, and not to impose restrictions that will prevent the company's management from getting out of financial trouble.

*To policymakers at different levels of government.* Despite the increase in the share of equity in the capital structure of enterprises, short-term external capital is the main source of financing for most of them. Long-term lending remains a luxury for both businesses and individuals. Expensive loans are holding businesses back.

The high cost of long-term financing is a barrier for macroeconomic stabilization and further economic growth and development. Despite the relative attractiveness of inflation for the government (to raise budget revenues and increase GDP growth) and for large exporters (to raise revenues), the NBU should target inflation taking into consideration the interests of all three groups.

Last but not the least, the lack of quality open databases is one of the biggest obstacles to conducting research into the process of capital structure formation.

## CONCLUSION

The capital structure remains an open area for corporate finance research. However, most studies are focused on assessing and analyzing the capital structure of companies operating in developed countries such as the US, UK, Germany, etc. The number of works in which peculiarities of forming the capital structure of Ukrainian enterprises would be studied remains small. The main purpose of this study was to conduct a fundamental analysis to identify the factors influencing the capital structure of enterprises in Ukraine.

The results of the master's thesis become the basis for the following conclusions and recommendations for large joint-stock companies in Ukraine:

1. The majority of modern scientific research is based on fundamental theories of capital structure developed after the publication of the articles by F. Modigliani and M. Miller. The fundamental modified theory of capital irrelevance argues that to some extent increase in debt financing will increase the value of the company. The main idea of bankruptcy trade-off theory is the existence of an optimal capital structure, which can be achieved by balancing the benefits of borrowing capital and the costs of bankruptcy, considering all other factors unchanged. The main idea behind agency costs trade-off theory is the existence of an optimal capital structure, which can be achieved by balancing the benefits of borrowing capital and losses from the presence of agency costs (*ceteris paribus*). An important role is played by the analysis of management financial decisions through the prism of valuation of companies by managers in the signaling information theory. The pecking order theory structures the sources of financing to ensure the greatest independence of the company and its financial stability. According to the theory of contractual costs, the desire of a company to reduce its leverage indicates that the value of the company largely consists of the present value of intangible investment opportunities.

2. Most modern studies of the capital structure are aimed at identifying the factors that influence the formation of the capital structure at the micro- and macroeconomic levels, in terms of industries, countries, markets. Due to the scientific confirmation of the fact that there are national differences in the formation

of the capital structure, there is an increasing interest in exploring the factors affecting the capital structure of developing countries, the further growth of which is of general investment interest.

3. In order to verify hypotheses and to develop an appropriate regression model, an analysis of existing studies of the influence of microeconomic factors on the formation of capital structure in developing and transition economies was carried out. The list of determinants of the capital structure of joint-stock companies in Ukraine including the size of the company, profitability, amount of tangible assets, growth prospects, liquidity, riskiness (income volatility), probability of bankruptcy, was formed.

4. A representative sample consisting of 30 large enterprises operating in different economic fields was formed to summarize the financial statements and to conduct further research. Financial statements of joint-stock companies for the period from 2013 to 2018 were analyzed. The most stand out tendencies are low volume of intangible assets (at the level of 1%), and a decrease in fixed assets and a decrease in the share of equity financing.

5. An empirical analysis of the factors which affect the capital structure of Ukrainian enterprises was in examining descriptive statistics of the sample, calculation of dependent and independent variables (debt ratios), performing a multivariate least-squares regression assuming the existence of a linear relationship between variables.

6. The results of the regression analysis of the debt ratio of the eight above-mentioned independent variables showed that 60.5% of the change in the independent variable is explained by changes in the company's profit level and in assets tangibility. The other 5 factors found to be statistically insignificant. As expected, profitability negatively affects the amount of debt attracted. This result is a confirmation of the pecking order theory which says that due to the asymmetry of information, companies will primarily favor internal financing and attract debt capital only if there is no possibility of financing through retained earnings. Another indirect reason for the negative relationship may be the low demand for loans

because of its high cost. An increase in the number of tangible assets has a negative effect on the level of debt attracted. It confirms the principle of matching (hedging) according to which with the increase of current assets the number of long-term liabilities should decrease and the number of short-term liabilities and collateral should increase and it is comparatively may be explained by the debt structure of the companies. Thus, as the correlation coefficient between the amount of fixed assets and the amount of long-term liabilities and collaterals indicates the existence of a close positive relationship (0.78), and the correlation coefficient between the amount of fixed assets and the amount of short-term liabilities and collateral in collateral negative relationship (-0.94) and during the analyzed period enterprises preferred short-term financing (the average amount of long-term debt of all enterprises is almost 3 times lower than the amount of short-term debt, which also corresponds to individual trends for each enterprise), the impact of the assets tangibility on the of total debt attracted is negative.

The results of the regression analysis of the short-term debt ratio indicate that 65.2% of the changes in the independent change were explained by changes in the company's profitability, assets tangibility, and liquidity. It is determined that there is an inverse relationship between these variables and the short-term debt ratio. The other 5 factors are statistically insignificant.

The inverse relationship between liquidity and the volume of short-term borrowing indicates that despite the existing potential ability to attract short-term financing, companies do not do so, partly because of low demand for credit resources and again confirms the pecking order theory since that debt financing in most cases is attracted to cover temporary shortages of financial resources rather than to finance activities.

The results of the regression analysis of the ratio of long-term debt capital revealed that only 26.4% of the changes in the independent change were explained by changes in statistically significant variables - size and tangibility of assets. The other 5 factors are statistically insignificant. Company size adversely affects the number of long-term liabilities and collateral involved. This means that large

companies use less long-term debt capital, which is one of the tenets of pecking order theory and a piece of evidence that information asymmetry is less problem for large stable companies.

7. Recommendations regarding the practical use of the study results for investors, creditors, businesses and economic and financial policymakers at various levels of government were provided. Investors should take into account the analyzed factors that shape the capital structure of companies to protect themselves and avoid conflicts of interest, managers of companies in case of establishing a benchmark of the optimal balance of the volume of credit resources and own funds, should consider relationships between internal characteristics of the company and its debt level, lenders should consider these results before setting limiting conditions to control activity of the companies to assess, forecast and reduce risk. Policymakers should take into account the peculiarities of the financial condition of entities during the implementation of macroeconomic policies to ensure real economic growth.

#### АНОТАЦІЯ

Драгумірова А.Г. Фактори впливу на структуру капіталу підприємств в Україні. – Рукопис.

Магістерська робота на здобуття освітнього ступеня магістра за спеціальністю 072 «Фінанси, банківська справа та страхування» – Чорноморський національний університет імені Петра Могили, Миколаїв, 2020.

У роботі узагальнено фундаментальні теорії структури капіталу. Систематизовано результати сучасних емпіричних досліджень структури капіталу компаній. Обґрунтувати перелік потенційних детермінант структури капіталу акціонерних товариств. Здійснено узагальнюючий аналіз фінансової звітності підприємств. Здійснено емпіричний аналіз факторів впливу на структуру капіталу підприємств. Пояснено вплив факторів на загальний обсяг кредитних коштів, обсяг коротко- та довгострокових залучених ресурсів.



Надано рекомендації щодо практичного використання отриманих результатів дослідження.

Ключові слова: корпоративні фінанси, структура капіталу, акціонерні товариства, леверидж, боргове фінансування, власний капітал.

#### ANOTATION

Drahumirova A.H. Factors Influencing Capital Structure of Enterprises in Ukraine. – Manuscript.

Master's thesis for a Master's Degree in Specialty 072 "Finance, Banking and Insurance" - Petro Mohyla Black Sea National University, Mykolaiv, 2020.

The paper generalizes the fundamental theories of capital structure. The results of modern empirical studies of the capital structure of companies have been systematized. The list of potential determinants of the capital structure of joint-stock companies is substantiated. The general analysis of the financial statements of the enterprises is carried out. The empirical analysis of the factors influencing the capital structure of enterprises is carried out. The influence of factors on the total leverage, short- and long-term leverage is explained. Recommendations regarding the practical use of the results of the study are given.

Keywords: corporate finance, capital structure, joint-stock enterprises, leverage, debt financing, equity.