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Determinants of the capital structure of TSL sector enterprises

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1. Introduction

The TSL (Transport, Spedition, Logistics) sector belongs to industries with a high development potential, both in the world and Poland. In recent years, the dynamic development of the TSL industry has been observed in Poland, which is mainly due to the attractive location of the country - on communication routes connecting the West and the East of Europe and the labor market resources. The important role of the TSL sector in the socio-economic development of Poland is demonstrated by the fact that, for example, logistics processes are included in the areas of smart specializations of many Polish regions, which are included in their strategic documents (among others Regionalna Strategia Innowacji… 2014; Regionalna Strategia Rozwoju… 2016). In order to meet the need for the diagnosis of the TSL industry in Poland, the research presented in the article was carried out.

The undertaken research is also important from the point of view of corporate finances. The capital structure has been of interest for researchers in the field of financial theory for over 60 years. The interest in this subject has increased after publishing the article by M. Modigliani and M.H. Miller titled:

„The Cost of Capital, Corporation Finance and the Theory of Investment" (Modigliani, Miller 1958)" and „Corporate income taxes and the cost of capital: a correction" (Modigliani, Miller 1963). Since the publication of Modigliani and Miller's works, numerous research papers have been written describing and explaining the theory of capital structure (Myers 1984; Harris, Raviv 1991). However, literature surveys show that relatively few studies on the structure of capital and the factors shaping it can be applied to the TSL industry. It is in many studies that the attention is drawn to the fact that an important factor affecting the structure of capital of an enterprise is the field of its activity (Bera, Prędkiewicz 2015). It also results from assumptions of one of the theories, which is used to explain the capital structure of an enterprise - of the static trade offtheory. Enterprises strive to achieve an optimal capital structure, and the „sector practice" can be used as a target in this situation. Some empirical studies have shown that there are different financing patterns in individual industries (Van Caneghem, Van Campenhout 2012). However, the analysis of the literature on the subject shows that there are too few studies on the capital structure of enterprises in specific industries (among others Serghiescu, Vaidean 2014; Jędrzejczak-Gas 2014), including the TSL industry (Kaźmierska-Jóźwiak, Sekuła 2016; Kuhnhausen, Stieber 2014). Therefore, this study is an attempt to fill the gap in the research on the capital structure of enterprises in the TSL industry.

The aim of this article is to identify and examine the strength and direction of the impact of selected factors on the capital structure of enterprises in the TFL sector in Poland. The article consists of two parts. The first part explains the issues related to defining the concept of capital structure and includes identification of capital structure determinants based on the literature. The second part shows research methods, describes the sample, defines variables and presents results of the research. The TSL sector enterprises listed on the NewConnect market (https://newconnect.pl)[1] were the subject of the research. It was to achieve the set goal that the correlation analysis and the linear regression method were used.

1 The NewConnect is an equity market, based on an alternative trading system operated by the Warsaw Stock Exchange (Giełda Papierów Wartościowych w Warszawie S.A.) The market has been operating since 2007. The NewConnect is a modern market financing the development of SMEs at various stages of development and operating in very different industries.

2. The concept of the capital structure

In the literature of the subject, there are presented various definitions of the capital structure[2]. It is most commonly identified with the structure of the company's liabilities, also called the financing structure, and is defined as the share of equity and foreign capital in financing company's operations (Masulis 1988; Higgins 1992; Ross, Westerfield, Jaffe 1996; Jerzemowska 2004).

According to another approach, the structure of capital is synonymous with the structure of fixed capital, which finances fixed assets and part of current assets. The capital structure is thus defined as a ratio of the value of long-term debt to equity (Weston, Copeland 1992, p. 493; Moyer at al. 1992, p. 518).

It is in the literature on the subject that there is also an opinion that the concept of the capital structure covers all the funds used in an enterprise, which entail financial costs, i.e. equity, long-term foreign capital and a part of short-term foreign capital from which the enterprise pays interest. It is in this approach that short-term liabilities, which do not entail interest payments, are excluded from the financing structure (Modigliani, Miller 1963; Gajdka 2002; Skowronek-Mielczarek 2005).

While analyzing the above-mentioned approaches to the capital structure, it is worth noting that the main differences relate to determining how much foreign capital should be included in the capital structure (all the foreign capital, only long-term liabilities or only liabilities entailing interest payments).

It is in this paper that the broadest possible approach was adopted i.e. the structure of the company's capital is synonymous with the share of equity and foreign capital in the financing of the company's assets.

3. The determinants of the enterprise capital structure in the light of the literature research

Based on the literature review and empirical research, it can be concluded that these are the trade off-theory (Kraus, Litzenberger 1973), the agency-theory (Jensen, Meckling 1976) and the pecking-order theory (Myers 1984; Myers, Majluf 1984) which are primarily used to explain the capital structure of an enterprise. The most frequently analyzed capital structure determinants are: the

2 Different approaches to defining the structure of capital have been presented, among others in: A. Duliniec (2001, pp. 13-17).

structure of assets, profitability, size of an enterprise, development prospects, non-interest tax shield, liquidity and effective tax rate (m.in. Fan et al. 2012, pp. 23–56; Kuhnhausen, Stieber, 2014, pp. 1–50; Serghiescu, Vaidean, 2014, pp. 1447-1457; Chen et al. 2013, pp. 1-13; Jaworski, Czerwonka 2017, pp. 133-142). However, the empirical studies carried out so far do not provide clear answers as to the direction and strength of the impact of specific factors.

According to the agency-theory, which was formulated by M. Jansen and W. Meckling (1976) in 1976, a high level of debt leads to improvement of business management procedures and reduces agency costs. A higher share of fixed assets in the capital structure means that more fixed assets can be used as collateral for debt. Therefore, it is assumed that enterprises with a higher share of fixed assets in total assets use more debt as a source of financing (Titman, Wessels 1988, pp. 1–19; Rajan, Zingales 1995, pp. 1421–1460; Fan et al. 2012, pp. 23–56; Frank, Goyal 2009, pp. 1–37).

However, a significant share of fixed assets in total assets may also mean that the company has a suitable base for generating operational flows and this, according to the pecking-order theory can lead to the conclusion that such a company will avoid debt because it is able to generate its own resources to finance its operations. The negative relationship between the structure of assets and indebtedness is confirmed by the research by J. Jaworski and L. Czerwonka (2017), L. Booth at al. (2001).

In addition, it is also important whether the relationship between the structure of assets (the share of fixed assets in total assets) is examined in relation to long-term or short-term debt. Some studies confirmed a positive correlation between the relative size of fixed assets and long-term debt and negative correlation in the case of short-term indebtedness (Bevan, Danbolt 2002, pp. 8–20; Kuhnhausen, Stieber 2014, pp. 1–50; Kaźmierska-Jóźwiak, Sekuła 2016, pp. 37-42; Hand, Lloyd 1982, pp. 25-30; Sogorb-Mira 2005, pp. 447-457). The structure of assets is most often defined as the ratio of fixed assets to total assets (Campbell, Jerzemowska, 2001; Mazur 2007; Rauh, Sufi, 2010; Cortez, Susanto, 2012; Imtiaz et al. 2016). However, there are also used other methods to measure it: the ratio of tangible fixed assets to total assets or the relation of the total of tangible fixed assets and inventories to total assets (Bera, Prędkiewicz 2015).

In the case of profitability, there are distinguished two approaches. According to the pecking-order theory, the greater profitability will determine lower indebtedness, as the earned profit can be used as an internal source of financing. This is confirmed by the results of the studies by S. Titman and R. Wessels (1988, pp. 1–19), R.G. Rajan and L. Zingales (1995, pp. 1421–1460), L. Booth at al. (2001,

pp. 87–130), M.Z. Frank and V.K. Goyal (2009, pp. 1–37), F. Kuhnhausen and H.W. Stieber (2014, pp. 1–50), L. Serghiescu and V.-L. Vaidean (2014, pp. 1447-1457). However, according to the signaling theory, the companies' high share of debt in the capital structure indicates their good financial condition. Thus, the studies (Tiwari, Krishnankutty 2014; Booth et al. 2001) can be shown, from which it results that more profitable enterprises use more debt in their capital structure. The profitability measurement can be made in various ways, e.g. as capital profitability, asset profitability and sales profitability (Jędrzejczak-Gas 2013).

It is in many studies that the size of an enterprise is indicated as the main determinant of incurring debts. The larger enterprises the more the market treats them as less susceptible to the risk of bankruptcy, therefore it is easier for them to raise foreign capital. The above relationship is confirmed by the research by R.G. Rajan and L. Zingales (1995, pp. 1421-1460), M.Z. Frank and V.K. Goyal (2009, pp. 1-37), which indicates that the level of corporate debt is positively correlated with the size of enterprises. The positive correlation was also confirmed by A.A. Bevan and J. Danbolt (2002, pp. 8-20), who, however, observed that the relationship is specific, which is influenced by the type of debt. Their findings indicate, similarly to the studies by G. Titman and R. Wessels (1988, pp. 1-19), that large enterprises use long-term debt to a greater degree, while small enterprises use short-term debt. However, it is also possible to indicate studies, which show a negative relationship, i.e, larger entities show a lower level of indebtedness (Tiwari, Krishnankutty 2014; Oyesola 2007).

In the case of the size of an enterprise, the indicators most frequently used in empirical studies are: sales revenues (Wilimowska, Wilimowski 2010; Cortez, Susanto 2012; Nejad, Wasiuzzaman 2013) and the value of total assets (Mazur, 2007; Rauh, Sufi 2010). Sometimes, other indicators such as a number of employees are used to measure the size of enterprises (Bera, Prędkiewicz 2015). In order to eliminate the impact of sudden differences in sales revenues or total assets of individual enterprises on the calculation, some authors use the natural logarithm from the sum of assets (Serghiescu, Vaidean 2014, pp. 1447-1457; Abeywardana, Banda 2015; Imtiaz et al. 2016) or sales revenues (Kemper, Rao 2013; Dasilas, Papasyriopoulos 2015) to measure the size of an enterprises.

The dominant relationship cannot be identified in case of the variable for the development perspective. The negative relationship between development prospects (development opportunities) and the level of total indebtedness is confirmed by the studies by D.H. Chen at al. (2013, pp. 1-13), S. Titman and R. Wessels (1988, pp. 1-19), K.H. Chung (1993, pp. 83-98), R.G. Rajan and L. Zingales

(1995, pp. 1421-1460), M.Z. On the other hand, the positive correlation between the growth opportunities and debt was shown by the studies by A.K. Tiwari and R. Krishnankutty (2014), M. Mustapha at al. (2011), J. Chen and R. Strange (2005), V. Kester (1986, pp. 15–60). While the studies by A.A. Bevan and J. Danbolt (2002, pp. 8-20) show the existence of a negative correlation between the growth potential and the level of total indebtedness, however, positive in relation to short-term debt. Thus, the described relationship may be different in relation to the short-term and long-term debt.

The literature shows a wide variation in the scope of measurement of the company's development prospects. They are measured by the percentage increase in assets (Chang et al. 2009; Nunkoo, Boateng 2010; Cortez, Susanto 2012; Imtiaz et al. 2016) or the percentage increase in sales revenues (Abor, Biekpe 2009) most often. Some researchers, however, also use such measures as: the absolute value of investment expenditures (Huang, Ritter 2009), the relationship of these expenses to total assets (Campbell, Jerzemowska 2001), firms' market value divided by the firms' book value (Karadeniz et al. 2009).

A high level of liquidity of an enterprise may reduce the tendency to indebtedness (due to the problem of free cash), which has been confirmed, among others, by F. Kuhnhausen and H.W. Stieber (2014, pp. 1–50), L. Serghiescu and V.-L. Vaidean (2014, pp. 1447-1457). On the other hand, a high level of financial liquidity means higher financial security, and thus may increase the tendency of managers to indebtedness. In addition, higher financial security is positively perceived by those who lend capital, which increases the company's chances for accessing external capital. The positive relationship between the level of long-term debt and financial liquidity has been confirmed, among others, by studies by B. Kaźmierska-Jóźwiak and P. Sekuła (2016).

The most popular indicators of financial liquidity are static indicators, including the current liquidity ratio (Mazur 2007; Wilimowska, Wilimowski 2010; Abeywardana, Banda 2015). In some studies, the accelerated liquidity ratio was also used (Imtiaz et al. 2016) or the ratio of liquid assets to sales revenues (Nejada, Wasiuzzaman 2013).

The non-debt tax shield is a consequence of factors other than interest lowering the tax base. It is a substitute for the interest tax shield and results from depreciation of fixed assets and investment reliefs. Thus, an increase in debt does not necessarily lead to a reduction in the size of taxes paid by an enterprise. Thus, there may be a positive relationship between the non-interest tax shield and the increase in debt. A positive relationship was confirmed, among others, by studies by J. Jaworski and L. Czerwonka (2017), however, it is also possible to

indicate studies that show a negative relationship for the non-interest tax shield factor (Tiwari, Krishnankutty 2014).

The non-interest tax shield is most often measured by the relation of depreciation ratio to total assets (Cortez, Susnato 2012; Nejad, Wasiuzzaman 2013; Abeywardana, Banda 2015). Another way is to determine the relationship of tax reliefs to total assets (Titman, Wessels 1988, p. 43) or the share of depreciation less tax liabilities in the total revenues from sales (Campbella, Jerzemowska 2001).

The results of the conducted studies indicate that the corporate taxation may affect decisions on the structure of capital. The positive relationship between the rate of corporate income tax and business entities' debt has been noted, among others, in emerging markets Delcoure 2007; Bayrakdaroglu et al. 2013). Other studies, however, show that this relationship may also be negative (Booth et al. 2001). The measure of the effective tax rate can be the ratio of income tax to the gross profit (Łach 2012).

The results of the literature studies have given the basis for the following hypotheses:

H1: Variables: asset structure, profitability, size of the company, non-interest tax shield, financial liquidity, development prospects, effective tax rate determine significantly the level of indebtedness of enterprises from the TFL industry.

H2: Variables: asset structure, company size, non-interest tax shield, development perspectives, effective tax rate are positively correlated with the level of indebtedness of enterprises in the TFL sector.

H3: Variables: profitability, financial liquidity are negatively correlated with the level of indebtedness of enterprises from the TSL sector.

4. Research method

In the literature of the subject, there are presented two approaches in the empirical studies on determinants of the capital structure. The first of them, more frequently found, involves the analysis of the relationship between the selected factors (explanatory variable: indicators calculated on the basis of the data from financial statements) and the level of debt (variable explained) using statistical methods (correlation analysis, linear regression analysis) (among others Wilimowska, Wilimowski 2010, pp. 627-641). While the second approach indicates determinants of a given level of the ratio of equity to debt capital and the factors affecting the choice of funding sources (among others Miarecka 2004, pp. 65-77). It is in this this study that statistical

methods, correlation analysis and multi-variable regression analysis, were applied to identify factors affecting the capital structure of the surveyed enterprises.

The set of enterprises being the subject of the analysis consists of companies belonging to the TSL industry, which are listed on the NewConnect market. In the year under consideration (2017), there were available 55 financial statements of enterprises from the TSL industry on the NewConnect market website. The data comes from the years 2009-2016.

In the conducted studies, the general debt ratio was adopted as the explained variable (Y), which measures the ratio of the external capital (total liabilities and provisions for liabilities) to total assets (Y = external capital / total assets). Based on the capital structure theory and previous empirical research in this area, a list of potential determinants of the capital structure of enterprises from the TFL sector was created. Next, the above list was verified considering the limitations resulting from the availability of data and finally the following explanatory variables were adopted for the research:

X1 - structure of assets (fixed assets/total assets)
X2 - profitability (operating profit/sales revenues)
X3 - enterprise size (Logarithm of sales revenues)
X4 - non-interest tax shield (depreciation/total assets)
X5 - financial liquidity (current assets/short-term liabilities)
X6 - growth prospects (percentage change in the value of total assets)
X7 - effective tax rate (income tax/gross profit).

5. Empirical Results

The most known and used indicator of the relationship between two measurable variables is the classic Pearson correlation coefficient[3]. However, it should be remembered that a normal linear correlation coefficient can be

3 The correlation coefficients between the variables used in the model were presented in the table 1-2. This coefficient takes values from the range <-1;+1>. The sign indicates the correlation direction and the value informs about the strength. It is assumed that if the coefficient is (Zeliaś 2000, p. 82):
- less than 0,2 - there is no linear correlation between the examined variables,
- from 0,2 to 0,4 - there is a linear relationship between the variables but it is very small,
- from 0,4 to 0,7 - the linear relationship is moderate,
- from 0,7 to 0,9 - the linear relation is significant,
- above 0,9 - the linear relation is very strong.

considered an indicator of the strength of the relationship between variables, only when simultaneously:
- the independent variable is the only factor affecting the dependent variable,
- the relationship between the examined variables is linear.

However, if one of the two conditions is not met, the interpretation of the correlation coefficient as a measure of the strength of the dependence of the dependent variable on the independent variable is not justified (Guzik 2008, pp. 55-56).

In the analysis presented in this article, the first condition is not met, since the structure of capital depends on more than one variable. Therefore, the correlation coefficient can only be used to measure the similarity of the direction of changes of the two examined variables and the degree of harmonization of their courses.

The correlation coefficients between the explained variable (Y) and the explanatory variables adopted for the examinations (X1, X2, X3, X4, X5, X6, X7) are shown in table 1.

Table 1. Pearson correlation coefficients between the explained variable and explanatory variables

	X1	X2	X3	X4	X5	X6	X7
Y	-0.5799***	0.2847*	0.5738***	0.1499	-0.5177***	0.2414	0.0616

significant correlation at the level * p <0.10, ** p <0.05, *** p <0.01

Source: own study

The analysis of the correlation coefficients presented in table 1. indicates that in the companies belonging to the TSL industry in the audited period:

1. Directions of changes in the level of debt and assets structure, the level of debt and the size of the company as well as the level of indebtedness and financial liquidity were moderately similar (harmonized). The growing share of fixed assets in total assets and increasing financial liquidity were accompanied by moderately decreasing total debt. In turn, the growing size of the enterprise was accompanied by moderately increasing total debt.
2. The directions of changes in the level of indebtedness and profitability as well as the level of debt and development prospects were not similar (harmonized).
3. The total debt was not correlated with the non-interest tax shield and the effective tax rate.

It was to identify the factors affecting the indebtedness level of the surveyed enterprises and to examine the strength and direction of their impact that the

method of regression of multiple variables was also used. First, the degree of correlation of the explanatory variables with other variables was examined. It is assumed that the two highly correlated variables give similar information (in this case, the correlation is tantamount to providing the same information about the examined objects). Therefore, it is recommended to eliminate one of them. For this purpose, the Pearson correlation coefficient matrix analysis was performed (table 2).

Table 2. The correlation matrix of explanatory variables

	X1	X2	X3	X4	X5	X6	X7
X1	1.0000						
X2	0.0273	1.0000					
X3	-0.2164	0.5358	1.0000				
X4	-0.2063	-0.4700	-0.1829	1.0000			
X5	-0.2448	-0.4065	-0.4654	-0.0590	1.0000		
X6	0.0012	0.1911	0.0671	0.0501	-0.2529	1.0000	
X7	-0.1113	0.0375	0.1426	-0.0150	-0.1184	0.0992	1.0000

Source: own study

Correlation results show that even if variables are statistically significantly correlated, the value of correlation coefficients is not large enough to exclude any of the independent variables.

It is in the table 3 that linear regression coefficients between total indebtedness and explanatory variables as well as additional regression statistics are presented, among others standard error values for coefficients and constant, coefficient of determination (R^2), values of Student's t-distribution tests.

Table 3. Analysis of the impact of the selected determinants

variable	coefficient	standard error	t -Student's	p value
const	0.45214	0.24236	1.8656	0.07050*
X1	-0.58086	0.06693	-8.6783	<0.00001***

X2	-0.00037	0.00043	-0.8788	0.38552
X3	0.02203	0.01302	1.6924	0.09945*
X4	-0.01312	0.02060	-0.6370	0.52825
X5	-0.07501	0.01121	-6.6931	<0.00001***
X6	0.00040	0.00030	1.3592	0.18277
X7	-0.06388	0.03571	-1.7892	0.08224*
R -squared = 0.83358				
Adjusted R-squared = 0.80030				
F Statistics =25.04526				
significant variable at the level * p <0.10, ** p <0.05, *** p <0.01				

Source: own study

The performed studies show that the four independent variables affected the level of total indebtedness statistically significantly: the structure of assets, size of the company, financial liquidity and the effective tax rate. The matching ratio of the model, measured by the adjusted R-squared, was high and amounted to over 83%.

The indebtedness level of enterprises from the TSL sector is positively correlated only with one variable: the size of the company (at $p < 0.1$). This situation is probably related to the fact that the bigger the company, the easier access to external financing. Larger enterprises are treated by lenders of capital, e.g. banks as more reliable and safe. The positive correlation between the level of debt and the size of the company may also mean a greater tendency of the owners and managers to taking credits, who want to finance the growing scale of enterprise operations by borrowing external capital.

The level of indebtedness is negatively correlated with the three variables: the structure of assets (at $p < 0.01$), financial liquidity (at $p < 0.01$) and the effective tax rate (at $p < 0.1$).

The results of the analysis show that the structure of assets is the strongest determinant of the willingness to indebt enterprises of the TFL sector. However, the impact of the asset structure on the indebtedness level is negative. This means that the tendency to indebt enterprises of the TFL sector decreases with the increase of the share of fixed assets in total assets. This may indicate a reluctance of managers to finance non-current assets with external capital. The

second factor negatively correlated with the level of debt is financial liquidity. The greater the ability to settle current liabilities, the lower the willingness of enterprises in the industry to indebt, which may be related to the issue of free cash. The third factor negatively correlated with the level of debt is the effective tax rate.

7. Conclusions

The study examined the impact of the selected explanatory variables on decisions regarding the capital structure of TSL industry enterprises listed on the NewConnect market. The results of the study only partially confirm the hypothesis H1, because both correlation analysis and regression analysis have not confirmed the significance of all seven capital structure determinants. The correlation analysis has confirmed the significance of four determinants: asset structure, profitability, company size and financial liquidity. The regression analysis has also confirmed the statistical significance of the four determinants; these are: the structure of assets, size of the company, financial liquidity and the effective tax rate. In addition, the results of the study only partially confirm the hypothesis H1 and H3. The analysis of correlation shows that the level of indebtedness is positively correlated with the size of the enterprise and profitability, while negatively, with the structure of assets and financial liquidity. In turn, the regression analysis shows that the level of indebtedness is positively correlated only with one variable: the size of the enterprise, while negatively with the three variables: the structure of assets, financial liquidity and the effective tax rate.

However, it should be emphasized that the studies carried out concerned companies form the TSL sector, which are listed on the NewConnect market, therefore, the conclusions refer only to the analyzed entities and cannot be extended to the entire sector.

Summary

Determinants of the capital structure of TSL (Transport, Spedition, Logistics) sector enterprises

The capital structure has been of interest for researchers in the field of financial theory for over 60 years. However, literature surveys show that relatively few studies on the structure of capital and the factors shaping it can be applied to the TSL industry. The

TSL (Transport, Spedition, Logistics) sector belongs to industries with a high development potential, both in the world and Poland. In order to meet the need for the diagnosis of the TSL industry in Poland, the research was undertaken to identify and examine the strength and direction of the impact of selected factors on the capital structure of enterprises in the TFL sector in Poland. The article consists of two parts. The first part explains the issues related to defining the concept of capital structure and includes identification of capital structure determinants based on the literature. The second part shows research methods, describes the sample, defines variables and presents results of the research. The enterprises listed on the NewConnect market were the subject of the research. It was to achieve the set goal that the correlation analysis and the linear regression method were used.
Both correlation analysis and regression analysis have not confirmed the significance of all seven capital structure determinants. The correlation analysis has confirmed the significance of four determinants: asset structure, profitability, company size and financial liquidity. The regression analysis has also confirmed the statistical significance of the four determinants; these are: the structure of assets, size of the company, financial liquidity and the effective tax rate. The analysis of correlation shows that the level of indebtedness is positively correlated with the size of the enterprise and profitability, while negatively, with the structure of assets and financial liquidity. In turn, the regression analysis shows that the level of indebtedness is positively correlated only with one variable: the size of the enterprise, while negatively with the three variables: the structure of assets, financial liquidity and the effective tax rate.

***Keywords*:** *struktura kapitału, determinanty struktury kapitału, analiza korelacji, analiza regresji.*

Streszczenie

Determinanty struktury kapitału przedsiębiorstw branży TSL (Transport, Spedycja, Logistyka)
Struktura kapitału jest przedmiotem zainteresowania badaczy z zakresu teorii finansów od ponad 60 lat. Studia literatury wskazują

jednak, że stosunkowo niewiele badań dotyczących struktury kapitału i kształtujących ją czynników dotyczy przedsiębiorstw branży TSL. Branża TSL (Transport, Spedycja, Logistyka) należy do branż o wysokim potencjale rozwoju, zarówno w skali świata, jak i Polski. Wychodząc naprzeciw potrzebie diagnozy branży TSL w Polsce podjęto badania, których celem było zidentyfikowanie oraz zbadanie siły i kierunku wpływu wybranych czynników na strukturę kapitału przedsiębiorstw branży TSL w Polsce. Artykuł składa się z dwóch części. W pierwszej części, na podstawie literatury przedmiotu wyjaśniono zagadnienia związane z definiowaniem pojęcia struktura kapitału oraz dokonano identyfikacji determinant struktury kapitału. W drugiej części omówiono metody badawcze, scharakteryzowano próbę, określono zmienne oraz przedstawiono wyniki badań.

Przedmiotem badań były przedsiębiorstwa notowane na rynku NewConnect. Do realizacji postawionego celu wykorzystano analizę korelacji oraz analizę regresji liniowej.

Zarówno analiza korelacji, jak i analiza regresji nie potwierdziły istotności wszystkich siedmiu przyjętych w badaniu determi nant struktury kapitału. Analiza korelacji potwierdziła istotność czerech determinant: struktury aktywów, rentowności, wielkości firmy, płynności finansowej. Analiza regresji potwierdziła również statystyczną istotność czterech determinant, przy czy są to: struktura aktywów, wielkość firmy, płynność finansowa oraz efektywna stopa podatkowa. Z analizy korelacji wynika bowiem, że z poziomem zadłużenia pozytywnie skorelowana jest wielkość przedsiębiorstwa oraz rentowność, natomiast negatywnie – struktura aktywów i płynność finansowa. Z kolei z analizy regresji wynika, że poziom zadłużenia pozytywnie skorelowana jest tylko jedna zmienna – wielkością przedsiębiorstwa, natomiast negatywnie trzy zmienne – struktura aktywów, płynnością finansową oraz efektywna stopa podatkowa

Słowa klucze: *struktura kapitału, determinanty struktury kapitału, analiza korelacji, analiza regresji.*

JEL Classification: D81, G32, M41, O16.

References

1. Abeywardana N.L.E., Banda Y.K.W. (2015), *Impact of Observable Determinants and Unobservable Effect on Capital Structure: Evidence from Quoted Public Manufacturing Companies in Sri Lanka*, „International Journal of Business & Management", Vol. 3(6).
2. Abor J., Biekpe N. (2009), How *do we explain the capital structure of SMEs in sub- Saharan Africa?: Evidence from Ghana*, „Journal of Economic Studies", No. 36(1), pp. 83–87, https://doi.org/10.1108/01443580910923812.
3. Bayrakdaroglu A., Ege I., Yazici N. (2013), *A Panel Data Analysis of Capital Structure Determinants: Empirical Results from Turkish Capital Market*, „International Journal of Economics and Finance", Vol. 5, No. 4, pp. 131-140.
4. Bevan A.A., Danbolt J. (2002), *Capital Structure and its Determinants in the United Kingdom: A* Decompositional Analysis, „Applied Financial Economics", Vol. 12, No. 3, pp. 159–170.
5. Booth L., Aivazian V., Demirguc-Kunt A., Maksimovic V. (2001), *Capital Structures in Developing Countries* „The Journal of Finance", Vol. 56(1), p. 87-130.
6. Cambell K., Jerzemowska M. (2001), *Capital Structure Decisions Made by Companies in a Transitional Economy: The Case of Poland*, [in:] Zarzecki D. (ed.), Financial Management. Objectives – Organization – Tools, FRR in Poland, Warsaw.
7. Chang C., Lee A.C., Lee C.F. (2009), *Determinants of capital structure choice: A structural equation modeling approach*, „The Quarterly Review of Economics and Finance", No. 49(2), pp. 197–213, DOI: https://doi.org/10.1016/j.qref.2008.03.004.
8. Chen J., Strange R. (2005), *The Determinants of Capital Structure: Evidence from Chinese Listed Companies*, „Economic Change and Restructring", Vol. 38, No. 1, http://dx.doi.org/10.1007/s10644-005-4521-7.
9. Chen D.H., Chen C.D., Chen J., Huang Y.F. (2013), *Panel data analyses of the pecking order theory and the market timing theory of capital structure in Taiwan,* „International Reviev of Economics and Finance" No. 27.
10. Chung K.H. (1993), *Asset Characteristics and Corporate Debt Policy: An Empirical Test*, „Journal of Business Finance & Accounting", Vol. 20, No. 1, pp. 83–98.
11. Cortez M.A., Susanto S. (2012), *The Determinants of Corporate Capital Structure: Evidence from Japanese Manufacturing Companies*, „Journal of International Business Research" Vol. 11, No. 3.
12. Dasilas A., Papasyriopoulos N. (2015), *Corporate governance, credit ratings and the capital structure of Greek SME and large listed firms*, „Small Business Economics", No. 45, pp. 215–44.
13. Degryse H., Kappert P., Goeij P. (2012), *The impact of firm and industry characteristics on small firms' capital structure*, „Small Business Economics", Issue 38, pp. 431-447.

14. Delcoure N. (2007), *The Determinants of Capital Structure in Transitional Economies*, „International Review of Economics and Finance", No. 16, DOI: http://dx.doi.org/10.1016/j.iref.2005.03.005.
15. Duliniec A. (2001), *Struktura i koszt kapitału w przedsiębiorstwie*, Wydawnictwo Naukowe PWN, Warszawa.
16. Fan J.P.H., Titman S., Twite G. (2012), *An International Comparison of Capital Structure and Debt Maturity*, „Journal of Financial and Quantitative Analysis", Vol. 47, No. 1, pp. 23–56.
17. Frank M.Z., Goyal V.K. (2009), *Capital Structure Decisions: Which Factors are Reliably Important?* „Financial Management", No. 38, pp. 1–37.
18. Gajdka J. (2002), *Teorie struktury kapitału i ich aplikacja w warunkach polskich*, Wydawnictwo Uniwersytetu Łódzkiego, Łódź.
19. Hand J.H., Lloyd W.P., Rogow R.B. (1982), *Agency relationships in the close corporation*, „Financial Management" 1982, No. 1, p. 25–30.
20. Harris M., Raviv A. (1991), *The theory of capital structure*, „The Journal of Finance" Vol. XLVI, No. 1, March.
21. Higgins R.C. (1992), *Analysis for Financial Management*, Irwin, Homewood.
22. https://newconnect.pl
23. Huang R., Ritter J.R. (2009), *Testing Theories of Capital Structure and Estimating the Speed of Adjustment*, „Journal of Financial and Quantitative Analysis", Vol. 44, No. 2, DOI: https://doi.org/10.1017/S0022109009090152.
24. Imtiaz F., Mahmud K., Mallik A. (2016), *Determinants of Capital Structure and Testing of Applicable Theories: Evidence from Pharmaceutical Firms of Bangladesh*, „International Journal of Economics and Finance" Vol. 8, No. 3.
25. Jaworski J., Czerwonka L. (2017), *Determinanty struktury kapitału przedsiębiorstw notowanych na GPW w Warszawie. Sektor usług*, „Annales H – Oeconomia", Vol. 4, DOI: 10.17951/h.2017.51.4.133.
26. Jensen M., Meckling W. (1976), *Theory of the Firm: Managerial Behavior, Agency Costs, and Capital Structure*, „Journal of Financial Economics", Vol. 2, pp. 305-360.
27. Jerzemowska M. (red.) (2004), *Analiza ekonomiczna w przedsiębiorstwie*, PWE, Warszawa.
28. Jędrzejczak-Gas (2014), *Influence of the selected factors on the capital structure of enterprises in the construction industry*, „Management", No. 1.
29. Jędrzejczak-Gas J. (2013), *Struktura kapitału w małych i średnich przedsiębiorstwach*, Zeszyty Naukowe Uniwersytetu Szczecińskiego, Finanse, rynki finansowe, ubezpieczenia, Szczecin, pp. 583–593.
30. Karadeniz E., Kandir S.Y., Balcilar M., Onal Y.B. (2009), *Determinants of capital structure: Evidence from Turkish lodging companies*, „International Journal of Contemporary Hospitality Management", No. 21(5), pp. 594–609, DOI: https://doi. org/10.1108/09596110910967827.

31. Kaźmierska-Jóźwiak B., Sekuła P. (2016), *Determinanty struktury kapitału krajowych przedsiębiorstw towarowego transportu samochodowego,* „Przegląd Organziacji", No. 6.
32. Kemper J., Ramesh P.R.(2013), *Do credit ratings really affect capital structure?* „Financial Review" No. 48, pp. 573–595.
33. Kester W. (1986), *Capital and ownership structure: a comparison of United States and Japanese manufacturing corporations*, „Financial Management", No. 15(1), pp. 5-16.
34. Kędzior M. (2012), *Capital Structure in EU Selected Countries – Micro and Macro Determinants*, "Argumenta Oeconomica", No. 1(28).
35. Kraus A., Litzenberger R.H. (1973), *A State-Preference Model of Optimal Financial Leverage*, „Journal of Finance", Vol. 28, pp. 911-922.
36. Kuhnhausen F., Stieber H.W. (2014), *Determinants of Capital Structure in Non-financial Companies*, „Munich Discussion Paper", No. 39.
37. Łach K. (2012), *Kierunki badań nad determinantami struktury kapitału przedsiębiorstw w Polsce*, „Zeszyty Naukowe PTE" No. 12.
38. Masulis R.W. (1988), *The Debt/Equity Choice*, Ballinger Publishing Company, Cambridge.
39. Mazur K. (2007), *Determinanty struktury kapitału polskich spółek*, „Ekonomika i Organizacja Przedsiębiorstwa", No. 8.
40. Miarecka A.E. (2004), *Dostępność kapitału jako ważna determinanta rozwoju organizacji gospodarczych,* [in:] Turyn J., Szczęsny W. (ed.), Finansowe uwarunkowania rozwoju organizacji gospodarczych, Difin, Warszawa.
41. Modigliani M., Miller M.H. (1958), *The Cost of Capital, Corporation Finance and the Theory of Investment*, „American Economic Review", No. 48.
42. Modigliani M., Miller M.H. (1963), *Corporate income taxes and the cost of capital: a correction*, „American Economic Review", No. 53.
43. Moyer R.Ch., McGuigan J.R., Kretlow W.J. (1992), *Contemporary Financial Management*, West Publishing Company, St Paul.
44. Mustapha M., Ismail H. , Minai B. (2011), *Determinants of debt structure: empirical evidence from Malaysia*, in Proc. 2nd. International Conf. on. Business and Economic Research, pp. 2523-2540.
45. Myers S., Majluf N. (1984), *Corporate financing and investment decisions when frms have information that investors do not have*, „Journal of Financial Economics", Vol.13, p.187-221.
46. Myers, S. C. (1984), *The Capital Structure Puzzle,* "The Journal of Finance", Vol. 39, No. 3, pp. 575–592, DOI: 10.2307/2327916.
47. Nejad N.R., Wasiuzzaman S. (2013), *The Empirical Analysis of Capital Structure Determinants – Evidence From Malaysia*, „Engineering and Technology", No. 74.
48. Nunkoo P.K., Boateng A. (2010), *The empirical determinants of target capital structure and adjustment to long-run target: Evidence from Canadian firms*,

„Applied Economics Letters", No. 17, pp. 983–990, DOI: https://doi.org/10.1080/1744654 0802599671.
49. Oyesola R.S. (2007), *An Empirical Analysis of the Capital Structure of Selected Quoted Companies in Nigeria*, „The International Journal of Applied Economics and Finance", Vol. 1, No. 1, DOI: http://dx.doi.org/10.3923/ijaef.2007.16.28.
50. Prędkiewicz K., Prędkiewicz P. (2015), *Niektóre determinanty struktury kapitału w mikro, małych i średnich przedsiębiorstwach w Polsce – badania empiryczne*, ZN US nr 848, „Ekonomiczne Problemy Usług", No. 116.
51. Rajan R.G., Zingales L. (1995), *What Do We Know about Capital Structure? Some Evidence from International Data*, „The Journal of Finance", No. L(5), pp. 1421–1460.
52. Rauh J.D., Sufi A. (2010), *Capital Structure and Debt Structure*, „Review of Financial Studies" Vol. 23, No. 12, DOI: https://doi.org/10.1093/rfs/hhq095.
53. *Regionalna Strategia Innowacji dla Wielkopolski na lata 2015-2020. Aktualizacja. RIS3* (2014), http://iw.org.pl/wp-content/uploads/2014/11/Reginalna-Strategia-Innowacji-dla-Wielkopolski-2015-2020-RIS3.pdf (20.01.2018 – access date).
54. *Regionalna Strategia Rozwoju Inteligentnych Specjalizacji Województwa Zachodniopomorskiego 2020+. RIS3 WZ* (2016), http://www.rpo.wzp.pl/sites/default/files/ris3_wzp_20160928.pdf (20.01.2018 – access date).
55. Ross S.A., Westerfield R.W., Jaffe J. (1996), *Corporate Finance*, Irwin, Chicago.
56. Serghiescu L., , Vaidean V.-L. (2014), Determinant factors of the capital structure of a firm - an empirical analysis, „Procedia Economics and Finance", No. 15, pp. 1447 – 1457.
57. Sogorb-Mira F. (2005), *How SME uniqueness affects capital structure: Evidence from a 1994–1998 Spanish data panel*, „Small Business Economics" No. 25, p. 447–457.
58. Titman S., Wessels R. (1988), *The Determinants of Capital Structure*, „Journal of Finance", Vol. 43, No. 1, pp. 1–19.
59. Tiwari A.K., Krishnankutty R. (2014), *Determinants of capital structure: comparison of empirical evidence for the use of different estimators*, Theoretical and Applied Economics", Vol. XXI, No. 12(601), pp. 63-82.
60. Van Caneghem T., Van Campenhout G. (2012), *Quantity and quality of information and SME financial structure*, „Small Business Economics", No. 39.
61. Weston J.F., Copeland T.E. (1992), *Managerial Finance*, Cassell, London.
62. Wilimowska Z., Wilimowski M. (2010), *Wpływ czynników mikroekonomicznych na zarządzanie strukturą kapitałową polskich przedsiębiorstw,* [in:] Knosala R. (ed.), Komputerowo zintegrowane zarządzanie, t. 2, Oficyna Wydawnicza Polskiego Towarzystwa Zarządzania Produkcją, Opole.