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## THE STAGES OF FIRM LIFE CYCLE AND CAPITAL STRUCTURE RATIOS FOR COMPANIES OF INDUSTRY

*This paper presents research on the dependency between the particular stages of a firm's life cycle and selected capital structure ratios. The findings are in line with the pecking order theory of capital structure, stating that early stages of a firm's life cycle should be characterised by the tendency for financing through debt. However, this stands in opposition to both the trade-off theory, and the research conducted on several Polish companies. The enterprises in their stages of introduction and growth were characterised by a substantially lower level of total assets to shareholders' equity ratio in their sources of finance, when compared to those in the shake-out stage. The companies in their growth stage were marked by a significantly higher level in the share of long-term commitments in sources of finance, as compared to the enterprises in their maturity, shake-out and decline stage. Also, the introduction stage showed a significantly higher level in the share of short-term commitments in sources of finance, in comparison with those being in their growth, maturity, and shake-out stage.*

**Key words:** industry companies, firm life cycle, capital structure

**JEL Codes:** G31, G32.

### Introduction

Both the launch and the continuation of a company's business activity is conditioned upon holding financial resources, the use of which are connected with building the capital structure. This, in turn, influences both the financial status of the enterprise and its value (Gawrońska, Makarska 2012, p. 45). As Bień claims (1992, p. 79), the financial condition of a company fully reflects the economic effectiveness of business activity it conducts.

In companies, it is their ultimate capital structure that is discussed the most often, or the only one possible to achieve, because in practice the optimal capital structure does not exist and is considered to be mainly a theoretical term (Siedlecki 2012, s. 382-383). Miller and Modigliani were the first to start scientific considerations of the capital structure (1958, p. 261-297), and to indicate the relation between the company value and its capital structure. Their debate did not cover the subject of the firm life cycle stages. According to the pecking order theory of the capital structure analysed by Myers (1984, p. 575-592), the company life cycle depends on the amount of revenue, which is why in the early stages companies should be more inclined to finance themselves through debt. The attitude of agency theory representatives – for example, Jensen (1986, p. 323-330) and Fosberg (2004, p. 31-38), is just the opposite. They both claim that the share of debt in the introduction stage is minor. Companies with minimal access to capital in fact generate low cash flows. According to the life-cycle hypotheses that has been gaining in

popularity for the last few years, (Siedlecki 2012, p. 384), enterprises in this particular stage do not have the appropriate historical financial information. Due to that, banks are usually reluctant to finance newly launched companies, as the short period of activity complicates their creditworthiness assessment (Duliniec 2007, p. 108). Raising capital from private equity can be an alternative that enables company growth. (Duliniec 2007, p. 107-108; Siedlecki 2012, p. 384). Franc-Dąbrowska also draws attention to the issue of the difficulty in gaining external sources of finance (2008, p. 45). She emphasises that the high costs of such operations may lead to a bankruptcy due to the loss of liquidity.

In the following stage, which is growth, companies start being creditworthy. This enables them to use leverage to raise outside funds in order to diminish the capital cost. The amount should be kept at a level that allows the financing of their business activity to generate enough income to pay the interest and bring a profit.

According to the pecking order theory, as examined by Myers (1984, p. 575-592), substituting debt with income and equity capital should be the result of income increases in the growth stage. Researchers of the agency theory (Jensen 1986, p. 323-330; Fosberg 2004, p. 31-38) underline the fact that companies boost debt and cash flows while developing.

Researchers of the trade-off theory (connected with the capital structure) observe that companies, while being in a stage of economic depression and collapse (decline stage) should decrease debt share. This can be the outcome of the reduced demand for financing investment, as well as diminishing income (Miller, Modigliani 1958, p. 261-297). The followers of the pecking order theory (Myers 1984, p. 575-592), and the agency theory (Jensen 1986, p. 323-330; Forsberg 2004, p. 31-38) express a differing view. They claim that debt should be increasing in the later stages of a firm's life cycle. The cost of both equity and foreign capital rises during this stage, which is caused by the growing operational and financial risk.

It has been only in the last twenty years that traces of some empirical research focused directly on the relation between the capital structure and theories about company life cycle can be found in literature. This subject had not really been investigated previously. Frielinghaus and others (2005, p. 9-18) put under scrutiny the relation between the capital structure and the stages of firm life cycle for South African enterprises from both the private and public sector. They used Adizes' model to define the stages of firm life cycle. They observed the statistically crucial relationship between the stage of a firm's life cycle and its capital structure. They also got results in accordance with the pecking order theory, stating that there is more debt in the early and late stages than in the maturity stage. In turn, Bulan and Yan (2010, p. 179-200) identified companies in two stages: growth and maturity. They claimed that the pecking order theory (based on the asymmetry of information between the investors and managers) better describes the financial behaviour of mature companies, not those just developing.

Pinková and Kaminková (2011, p. 255-260) analysed the impact of the firm life cycle on the capital structure of fifty medium Czech companies from the automotive sector. They classified companies on the basis of cash flow patterns suggested by Dickinson (2011, p. 1969-1994). The conducted research showed the relation between the firm life cycle and its capital structure. Moreover, they claim that the pecking order theory is connected with organisation life cycles due to their financial behaviour, as the companies in their introduction and growth stage usually use more debt than equity capital. In the case of mature organisations, the level of debt is decreasing but grows again in the decline stage.

By using data from small enterprises operating in Italy in 1996-2005, Rocca and others (2011, pp. 107-130) showed the non-linear dependency between the life stage of an economic unit and its capital structure. The research proved that after the initial stage of its life cycle, companies became more viable and were able to generate internal sources of finance, which gradually changed their capital structure.

Bhaird and Lucey (2010, pp. 357-375) stated that the companies from such sectors as manufacturing, logistics, retail, or hospitality (HoReCa), increased the use of retained earnings in financing their investment projects while “aging”. The above-mentioned authors also showed that companies with higher expenditures on research and development activity more extensively use both foreign long-term capital and internal short-term capital, especially for so-called “other” outputs. However, according to them, this is not the case for the computer software and IT services sectors.

## Research methodology

The aim of this paper is to determine the dependency between the stage of a firm’s life cycle within companies of industry and the selected capital structure ratios. Taking into account quite considerable deviations from normality in the distribution of the features in question, the Kruskal-Wallis test based on ranks was used. It is a non-parametrical equivalent of the one-way ANOVA. This test helps detect the differences between the levels of a researched feature in a few populations (groups) (Aczel 2002, p. 731). The equity ratio (the share of equity capital in sources of finance), debt load ratio (the share of both long- and short-term commitments in sources of finance) were taken as dependent variables. The firm life cycle stage constituted the independent variable (grouping one). The accordance with normal distribution was examined by Shapiro-Wilk test.

The industrial companies represented by joint-stock companies from the industry sector as classed according to the Warsaw Stock Exchange were taken as the research objects of this study. The companies in question published yearly financial statements (where the financial year was the same as the calendar year), and were listed since the date of an IPO for the whole analysed period, i.e. 1999-2012<sup>1</sup>.

The Dickinson’s model was used as the benchmark for assigning the companies to the particular stage of firm life cycle. It is based on combining the balances of cash flows coming from three types of activity: operational, financial and investment from the end of a given fiscal year. Adding the above-mentioned types, there were eight possible combinations that could be prospectively traced in cash flows, which in turn were interpreted into five theoretical stages of a firm life cycle (Dickinson 2011, p. 1969-1994) (Table 1).

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<sup>1</sup> The choice of the time span for this study was driven by getting the longest data series, and by covering the greatest number of companies undergoing this research. Taking 1998 as the starting point, as the year with the greatest number of joint-stock companies after their IPO, and analysing years 1998-2012, it turned out that there were 15 such companies. A similar situation took place in 1999. With regard to the criterion of the greatest number of companies, as well as similar macroeconomic conditions in which the companies started their activity, it was assumed that the joint stock companies launched both in 1997 and 1998 were covered by the research. The year 2012 constitutes the upper limit for the financial analyses. This is because including the following accounting periods, such as 2013 or 2014, could limit the number of the investigated companies, due to the exclusion from the Warsaw Stock Exchange, and, in turn, reducing the data used for the study. Initially, 30 companies were selected for the research. However, the lack of data in the yearly financial statements, which was essential for counting the financial ratios selected for the research, limited this number to 24 companies ultimately included in the study (Kuś, Zurakowska-Sawa 2017, p. 64-65).

**Table 1.** Firm life cycle stages based on the cash flow patterns.

Activity	Stages of the firm life cycle							
	Introduction	Growth	Maturity	Shake-out			Decline	
Investment	-	-	-	-	+	+	+	+
Operational	-	+	+	-	+	+	-	-
Financial	+	+	-	-	+	-	+	-

Source: authors' own elaboration based on Dickinson V., 2011: Cash Flow Patterns as a Proxy for Firm Life Cycle. The Accounting Review, No 86 (6), p. 1974.

**Table 2.** The number of observations according to industry types in the particular stages of firm life cycle.

Stage	Industry*	Years														Frequency of occurrence
		1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	
Introduction	EM	-	-	-	-	-	-	-	1	1	-	-	-	1	1	4
	LI	-	-	1	-	-	-	-	-	-	-	-	-	-	-	1
	C	-	-	-	-	1	1	-	1	1	1	1	-	1	-	7
	M	1	-	-	-	-	1	2	2	1	-	1	1	-	1	10
	AUT	-	-	1	-	-	-	-	1	1	-	-	-	-	-	3
	F	-	2	1	-	1	1	1	-	-	-	-	-	2	-	8
	PL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
TOTAL		1	2	3	0	2	3	3	5	4	1	2	1	4	2	33
Growth	EM	3	2	-	-	1	-	-	-	-	3	1	1	1	1	13
	LI	1	-	-	1	-	1	1	1	1	-	-	-	-	-	6
	C	1	1	1	1	-	-	2	-	1	-	1	-	1	-	10
	M	2	3	2	-	1	-	-	1	3	1	-	1	1	1	16
	AUT	1	1	-	1	1	1	1	-	-	1	-	-	-	-	7
	F	1	1	-	2	1	2	2	1	-	-	-	1	1	1	13
	PL	1	1	-	-	-	-	-	1	1	-	-	1	1	-	6
TOTAL		10	9	3	5	4	4	6	4	6	5	2	5	4	4	71
Maturity	EM	-	1	3	5	3	4	5	1	3	1	2	2	3	2	35
	LI	1	2	1	2	2	1	1	1	2	-	-	-	-	-	13
	C	1	1	1	1	1	1	-	1	-	-	-	1	1	1	10
	M	3	3	2	4	3	2	5	3	3	3	2	4	4	2	43
	AUT	1	1	1	1	1	1	1	1	1	1	1	1	1	1	13
	F	2	-	2	2	2	1	1	2	3	3	4	3	1	3	29
	PL	-	-	1	1	1	1	1	-	-	1	-	-	-	-	6
TOTAL		8	8	11	16	13	11	14	9	12	8	9	11	10	9	149
Shake-out	EM	1	1	1	-	1	-	-	3	1	1	2	1	-	1	13
	LI	-	-	1	-	1	-	-	-	-	1	1	-	-	-	4
	C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
	M	-	-	1	1	1	2	-	-	-	2	3	1	2	2	15
	AUT	-	-	-	-	-	-	-	-	-	1	1	-	-	-	2
	F	1	-	1	-	-	-	-	1	-	-	-	-	-	-	3
	PL	-	-	-	-	-	-	-	-	-	-	1	-	-	1	2
TOTAL		2	1	4	1	3	2	0	4	1	5	8	2	2	4	39
Decline	EM	1	-	-	-	-	1	-	-	-	-	-	1	-	-	3
	LI	1	-	-	-	-	1	-	-	-	-	-	1	-	-	3
	C	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1
	M	-	-	-	-	1	2	-	1	-	-	-	-	-	1	5
	AUT	-	-	-	-	-	-	-	-	-	-	-	1	1	1	3
	F	-	1	-	-	-	-	-	-	1	1	-	-	-	-	3
	PL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
TOTAL		2	1	0	0	1	4	0	1	1	2	0	3	1	2	18
TOTAL																310

\*EM-electrical machinery, LI-light industry, C-construction, M-metal industry, AUT-automotive, F-food industry, PL-plastics industry.

Source: authors' own elaboration.

The companies accepted for the study were grouped on the basis of their current stage of firm life cycle. Table 2 shows the number of observations according to the stage of a firm life cycle.

The financial data were extracted from the stock exchange annuals and the particular yearly financial statements accessed by Notoria Service database. The statistical analyses were prepared with the use of statistica.pl package.

## Research results

The researched companies financed their activity mainly by the equity capital in all stages of development (Table 3.) The mean of equity capital share in sources of finance varied from 59.54% in companies in their introduction stage, to 71.85% in those in the shake-out. Debt was dominated by short-term commitments. On the other hand, the long-term commitments debt was very low, which can be interpreted as seeking for risk minimisation.

**Table 3.** The selected descriptive statistics of the capital structure ratios

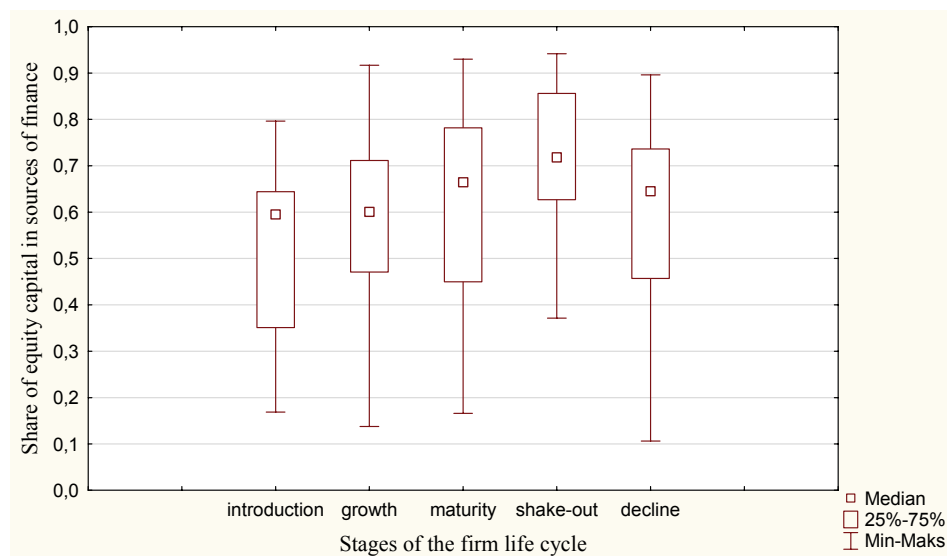
Stage	Mean	Median	Standard deviation	Kurtosis
Share of equity capital in sources of finance				
Introduction	0.5291	0.5954	0.1973	-1.0278
Growth	0.5952	0.6009	0.1832	-0.2716
Maturity	0.6233	0.6649	0.2002	-0.9185
Shake-out	0.7258	0.7185	0.1443	-0.3349
Decline	0.5867	0.6450	0.1966	0.7122
Share of long-term commitments in sources of finance				
Introduction	0.0803	0.0364	0.1040	4.4947
Growth	0.1050	0.0873	0.0910	1.2284
Maturity	0.0664	0.0287	0.0856	4.2686
Shake-out	0.0434	0.0277	0.0448	1.4866
Decline	0.0453	0.0232	0.0526	-0.9055
Share of short-term commitments in sources of finance				
Introduction	0.3762	0.3196	0.1694	-0.4824
Growth	0.2731	0.2513	0.1548	0.4670
Maturity	0.2814	0.2449	0.1598	0.1533
Shake-out	0.2123	0.2025	0.1377	0.1752
Decline	0.3455	0.3007	0.1801	3.0114

Source: authors' own elaboration.

The companies in their introduction stage (Graph 1) presented the lowest level of equity capital share in sources of finance (mean 0.5954). This coincides with the agency theory concerning the capital structure, which authors Jensen (1986, p. 323-330) and Fosberg (2004, p. 31-38) show that there is a minor share of debt in the introduction stage. As stated earlier, according to the firm life cycle theory, companies in their introduction stage cannot present the appropriate historical financial information, so banks are usually reluctant to finance these newly launched companies, as the short period of activity complicates the assessment of their creditworthiness (Duliniec 2007, p. 108).

In the case of the analysed companies the situation was slightly different – they had already been able to show some kind of financial history, which was the result of assigning to the introduction stage companies that were already active on the market, but were starting a new stage (they were in their revival), or had just issued an IPO (i.e. the

date of the first listing on stock exchange). The highest value of equity capital in sources of finance measured by mean (0.7185) was recorded in companies in their shake-out stage. This corresponds to the opinion of the trade-off theory authors (connected with the capital structure), who argue that in the stage of economic depression and collapse (decline stage) the companies should lessen debt share, which in turn can be the result of reduced demand for financing investment and decreasing income [Miller, Modigliani 1958, p. 261-297]. However, these findings appear to be contradictory to the attitude of both authors of the pecking order theory [Myers 1984, p. 575-592] and the agency theory [Fosberg 2004, p. 31-38; Jensen 1986, p. 323-330]. They argue that debt in a company should increase in later stages of the life cycle.



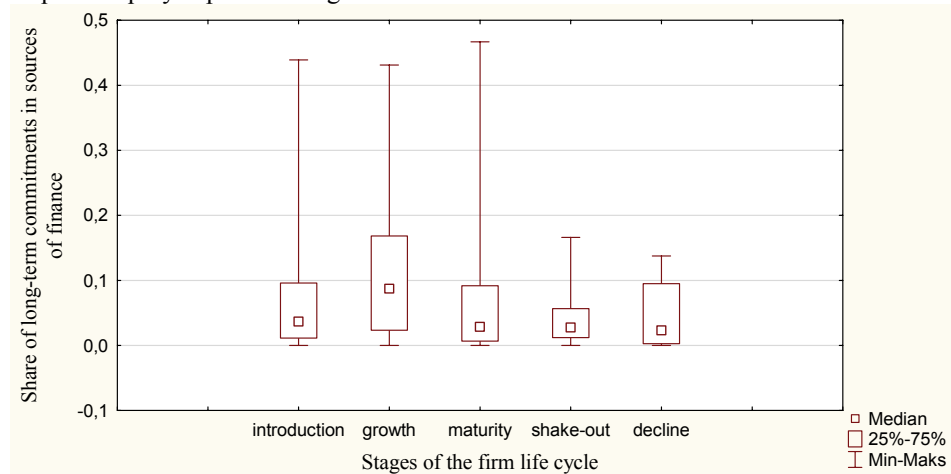
**Graph 1.** The box and whisker plot for the variable: “share of equity capital in sources of finance”  
Source: authors’ own elaboration.

Shaping the appropriate proportion between long- and short-term commitments in the structure of sources of finance is also significant for the company financial condition. Decisions taken in this field aim at reducing the cost of each type of capital, as well as mitigating the risk connected with using particular types of liabilities. The share of long-term commitments in sources of finance in every stage is presented in Graph 2. It can be observed that there is a strong, right side asymmetry of distribution (a long, right whisker) that occurs in companies in their introduction, growth and maturity stage. It means that inside the researched groups, those companies that have a share of long-term commitments in liabilities below the medium share for a given stage, are dominant.

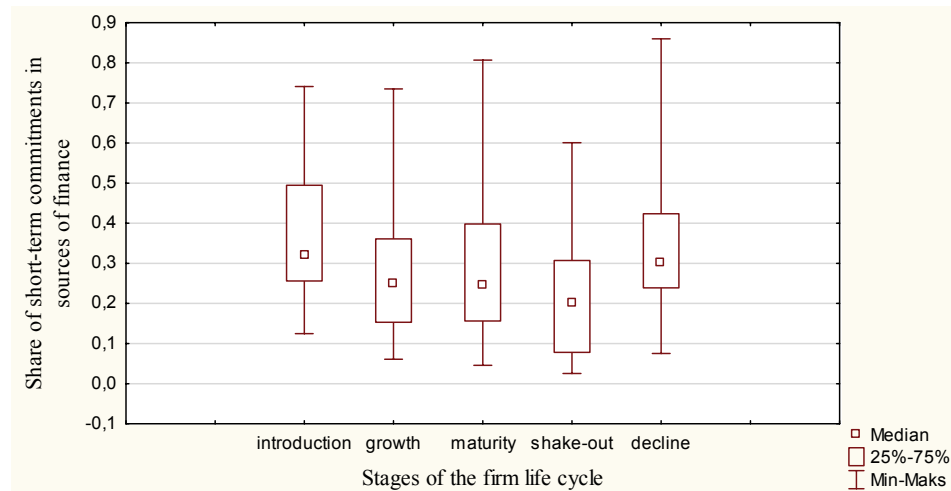
In all the analysed stages of firm life cycle the share of short-term commitments in liabilities was higher than median, which shows the occurrence of right-side asymmetry. The length of ‘whiskers’ and the symmetric position of the mean in Graph 3 also confirms this view. In the analysed set, the debt was dominated by short-term commitments, and the level of long-term commitments was very low (on the basis of

mean, it constituted 2.3% in decline stage, and up to 8.7% in growth stage), which can indicate the tendency to mitigate financial risk.

It can be also noticed that financing of the companies in question was quite protective, mainly based on equity capital, with a little help of debt and long-term loans. This could also be an action aimed at providing financial security in the period of recession or crisis. The low debt ratio of the researched companies could be also the characteristics of this group of companies that financed itself through additionally acquired equity capital coming from the market.



**Graph 2.** Box and whisker plot for the variable: “share of long-term commitments in sources of finance”  
Source: authors’ own elaboration.



**Graph 3.** The box and whisker plot for the variable: “share of short-term commitments in sources of finance”  
Source: authors’ own elaboration.

While analysing the dependencies between the industry companies’ life cycle stages and the selected capital structure ratios (share of equity capital, long- and short-term

commitments in sources of finance), one of the basic ANOVA assumptions was reviewed. It states that distribution of the dependent variable in particular groups (life cycle stages), should be normal ( $H_0$  assumes the normality of variables distribution at the level of test statistic  $p=0.05$ ). The performed Shapiro-Wilk test showed that in most cases (excluding the share of equity capital in sources of finance in growth, shake-out and decline stage) the adopted assumption was not fulfilled (in those cases values  $p<0.05$  – Table 4).

**Table 4.** The results of Shapiro-Wilk test of capital structure ratios

Stage	S-W test statistics	p-value
Share of equity capital in sources of finance		
Introduction	0.922078	0.020927
Growth	0.973821	0.143807
Maturity	0.938459	0.000004
Shake-out	0.963569	0.234128
Decline	0.932675	0.216356
Share of long-term commitments in sources of finance		
Introduction	0.720774	0.000001
Growth	0.909269	0.000082
Maturity	0.752911	0.000000
Shake-out	0.821270	0.000024
Decline	0.786873	0.000997
Share of short-term commitments in sources of finance		
Introduction	0.922669	0.021736
Growth	0.938847	0.001808
Maturity	0.942020	0.000008
Shake-out	0.934966	0.026008
Decline	0.883642	0.030072

Source: authors' own elaboration.

Taking into account the significant deviations from normality in the distribution of the researched features, The Kruskal-Wallis test based on ranks was used to define the relation between the stage of life cycle and the capital structure ratios (Table 5).

**Table 5.** The results of ANOVA Kruskal-Wallis on ranks test of capital structure ratios

Stage	N	Rank	Middle rank	Test statistics H	p-value
Share of equity capital in sources of finance					
Introduction	33	3824.00	115.8788	20.32811	0.0004
Growth	71	10037.00	141.3662		
Maturity	149	23821.00	159.8725		
Shake-out	39	7954.00	203.9487		
Decline	18	2569.00	142.7222		
Share of long-term commitments in sources of finance					
Introduction	33	5321.00	161.2424	19.59481	0.0006
Growth	71	13779.00	194.0704		
Maturity	149	21626.00	145.1409		
Shake-out	39	5229.50	134.0897		
Decline	18	2249.50	124.9722		
Share of short-term commitments in sources of finance					
Introduction	33	6779.00	205.3333	21.22298	0.0003
Growth	71	10708.00	150.8169		
Maturity	149	22857.00	153.4027		
Shake-out	39	4460.00	114.3590		
Decline	18	3404.00	189.1111		



Source: authors' own elaboration.

The use of ANOVA Kruskal-Wallis test of ranks for the equity capital share, and long- and short-term commitments in sources of finance, proved that at the level of relevance 0.05 the zero hypothesis  $H_0$ , stating that the distribution of the analysed variables is the same in each of the life cycle stages, should be rejected, giving way to an alternative hypothesis, according to which at least two stages differ in the value of the researched capital structure ratios (in all cases the attained p-value fulfilled the condition  $p < 0.05$ ).

In order to define which of the identified differences in total assets to shareholders' equity ratio, long-term commitments and share of short-term commitments in sources of finance are statistically crucial, the post-hoc test was applied (Table 6). Significant differences in the level of total assets to shareholders' equity ratio in sources of finance appeared in the introduction stage when compared with shake-out, and in the growth stage when compared with shake-out (p-value fulfilled the condition  $p < 0.05$ ). The enterprises in their stages of introduction and growth were characterised by a substantially lower level of total assets to shareholders' equity ratio in their sources of finance, as compared to those in the shake-out stage. However, the companies in maturity and decline did not show a statistically relevant diversity in comparison with companies in the remaining stages.

**Table 6.** The results of post-hoc test of the capital structure ratios.

Share of equity capital in sources of finance					
Stage	Introduction	Growth	Maturity	Shake-out	Decline
Introduction	-	p=1.000000	p=0.107371	<b>p=0.000327</b>	p=1.000000
Growth	p=1.000000	-	p=1.000000	<b>p=0.004599</b>	p=1.000000
Maturity	p=0.107371	p=1.000000	-	p=0.062591	p=1.000000
Shake-out	<b>p=0.000327</b>	<b>p=0.004599</b>	p=0.062591	-	p=0.165219
Decline	p=1.000000	p=1.000000	p=1.000000	p=0.165219	-
Share of long-term commitments in sources of finance					
Stage	Introduction	Growth	Maturity	Shake-out	Decline
Introduction	-	p=0.821448	p=1.000000	p=1.000000	p=1.000000
Growth	p=0.821448	-	<b>p=0.001535</b>	<b>p=0.007867</b>	<b>p=0.034864</b>
Maturity	p=1.000000	<b>p=0.001535</b>	-	p=1.000000	p=1.000000
Shake-out	p=1.000000	<b>p=0.007867</b>	p=1.000000	-	p=1.000000
Decline	p=1.000000	<b>p=0.034864</b>	p=1.000000	p=1.000000	-
Share of short-term commitments in sources of finance					
Stage	Introduction	Growth	Maturity	Shake-out	Decline
Introduction	-	<b>p=0.038910</b>	<b>p=0.026005</b>	<b>p=0.000178</b>	p=1.000000
Growth	<b>p=0.038910</b>	-	p=1.000000	p=0.412771	p=1.000000
Maturity	<b>p=0.026005</b>	p=1.000000	-	p=0.154465	p=1.000000
Shake-out	<b>p=0.000178</b>	p=0.412771	p=0.154465	-	<b>p=0.034253</b>
Decline	p=1.000000	p=1.000000	p=1.000000	<b>p=0.034253</b>	-

Source: authors' own elaboration.

The companies in their growth stage showed a significantly higher level of long-term commitments share in sources of finance, as compared to enterprises in their maturity, shake-out and decline stage. The findings correspond to the pecking order theory of the capital structure, stating that early stages of the firm life cycles should be characterised by the tendency for financing itself through debt. However, they are contradictory to both the trade-off theory and the agency theory, as well as the research

conducted on several Polish companies by Siedlecki (2012, p. 384-389). He observed that the later the stage of the firm life cycle, the more willing companies are to use debt.

The enterprises in the introduction stage were characterised by a substantially higher level of short-term commitments in their sources of finance, as compared to those in their growth, maturity and shake-out stage. On the other hand, the companies in their shake-out stage presented a significantly lower level of the above-mentioned ratios in comparison with the companies in decline. The results are also consistent with the pecking order theory of capital structure, according to which companies in their early stages should be inclined to finance themselves through debt, and, together with an income increase (in the middle stage), the debt should be substituted by income and equity capital, and then should be increased in the later stages.

## **Conclusions**

This paper defined the dependency between the stage of firm life cycle of the industrial companies, and the selected capital structure ratios. The conclusions below were drawn on the basis of the conducted research:

1. Stage of the firm life cycle was statistically crucial for the level of the capital structure ratios in question (the share of equity capital, long- and short-term commitments in sources of finance).
2. The statistically important differences in the level of total assets to shareholders' equity ratio in sources of finance occurred in the introduction stage when compared with shake-out, and in the growth stage when compared with shake-out. The enterprises in their introduction and growth stages had a distinctively lower level of total assets to shareholders' equity ratio in sources of finance, as compared to those in the shake-out stage. The companies in their growth stage showed a significantly higher level of long-term commitments share in sources of finance, as compared to the enterprises in the maturity, shake-out and decline stage. In turn, the organisations in their introduction stage presented a substantially higher level of short-term commitments share in sources of finance, as compared to the companies in the growth and shake-out stage. The companies in their shake-out stage were characterised by a significantly lower level of short-term commitments share in sources of finance as compared to those in decline.
3. The results of the research are in accordance with the pecking order theory, which states that in the early stages companies should be willing to finance themselves through debt, and together with an increase of income (in the middle stage), debt should later be substituted by revenue and equity capital. Next, this debt should be increased in the later stages by the companies. Such outcomes are in line with the research presented by Frielinghaus and others (2005), Rocca and others (2011), or Pinková and Kaminková (2011). On the other hand, they are only partially consistent with Bhaird and Lucey's (2010) results, as the research did not perform the analysis of the companies according to branches.
4. The companies in their initial stages of life cycle showed a substantial share of foreign capital in sources of finance, which can indicate the importance of such capital for conducting their economic activity. That is why it is very important to reinforce the supportive infrastructure concerning the laws regulating the access to

external sources of finance. Otherwise, financial barriers might block both companies' development and implementation of innovative solutions, which, as a result, may lead to the decision to quit the activity or to liquidation.

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## **Faza cyklu życia przedsiębiorstwa a struktura kapitału przedsiębiorstw przemysłowych**

### **Streszczenie**

W opracowaniu przedstawiono badania dotyczące zależności pomiędzy różnymi fazami cyklu życia przedsiębiorstwa a wybranymi miarami struktury kapitału. Wyniki przeprowadzonych badań pokryły się z teorią wydziobowaną struktury kapitału mówiącą, że we wczesnych fazach cyklu życia przedsiębiorstwa powinna występować skłonność do finansowania się długiem, natomiast są

w sprzeczności z teorią wymiany, jak również badaniami przeprowadzonymi na polskich spółkach. Przedsiębiorstwa w fazie wprowadzenia i wzrostu charakteryzowały się istotnie niższym poziomem wskaźnika udziału kapitału własnego w źródłach finansowania, w porównaniu z tymi znajdującymi się w fazie wstrząsu. Istotnie wyższym poziomem udziału zobowiązań długoterminowych w źródłach finansowania charakteryzowały się przedsiębiorstwa w fazie wzrostu, w porównaniu z przedsiębiorstwami znajdującymi się w fazie dojrzałości, wstrząsu oraz upadku. Przedsiębiorstwa w fazie wprowadzenia charakteryzowały się istotnie wyższym poziomem udziału zobowiązań krótkoterminowych w źródłach finansowania w porównaniu z przedsiębiorstwami z fazy wzrostu, dojrzałości oraz wstrząsu.

**Słowa kluczowe:** przedsiębiorstwa przemysłowe, faza cyklu życia przedsiębiorstwa, struktura kapitału.

**JEL Codes:** G31, G32.

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