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Which Capital Structure Theory Explains Financial Behaviour of Small and Medium-Sized Enterprises? Evidence from Poland

Która teoria struktury kapitału wyjaśnia decyzje finansowe małych i średnich przedsiębiorstw? Wyniki badań dotyczących Polski

Abstract

Small and medium-sized enterprises (SME) play a special role in the modern economy. At the same time, the difficulty in accessing sources of financing is the main barrier limiting the development of this sector. Despite this, studies of the capital structure of SMEs are performed less frequently than among large enterprises. The aim of this paper is to examine which capital structure theory best explains the financial decisions of SMEs in Poland. Additionally, an attempt is made to identify the main firm-specific capital structure determinants. The research material includes financial data from 2,820 SMEs in Poland operating in the 2011–2018 period. Static and dynamic panel models were applied to conduct the analysis. The study found that most SMEs in Poland behave in accordance with the pecking order theory. However, the results of testing the trade-off theory indicate that there may be a group of companies seeking an optimal capital structure according to the assumptions of this theory. The speed of adjustment is about 24%. The study confirmed a positive relationship between SME indebtedness and firm size. The same relationship was found for the growth rate. The opposite direction was identified for tangibility and liquidity.

Keywords:
capital structure, small and medium-sized enterprises, SME sector, pecking order theory, trade-off theory

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Streszczenie

Chociaż utrudniony dostęp do kapitału jest główną barierą rozwoju sektora małych i średnich przedsiębiorstw (MŚP), we współczesnej gospodarce odgrywają one szczególną rolę. Mimo to badania struktury ich kapitału są prowadzone rzadziej niż wśród dużych przedsiębiorstw. Celem artykułu jest zbadanie, która teoria struktury kapitału najlepiej wyjaśnia decyzje finansowe MŚP w Polsce. Dodatkowo podjęto próbę identyfikacji głównych determinant struktury kapitału na poziomie przedsiębiorstwa. Materiał badawczy obejmuje dane finansowe z 2820 MŚP w Polsce działających w latach 2011–2018. Do przeprowadzenia analizy wykorzystano statyczne i dynamiczne modele panelowe. Badanie wykazało, że większość MŚP w Polsce zachowuje się zgodnie z teorią hierarchii źródeł finansowania. Wyniki testowania teorii substytucji wskazują jednak, że może istnieć grupa firm poszu-

Słowa kluczowe:
struktura kapitału, małe i średnie przedsiębiorstwa, sektor MŚP, teoria hierarchii źródeł finansowania, teoria substytucji

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kujących optymalnej struktury kapitału zgodnie z założeniami tej teorii. Szybkość dostosowań do docelowej struktury kapitału wynosi ok. 24%. Badanie potwierdziło dodatnią zależność między zadłużeniem MŚP a wielkością przedsiębiorstwa. Ten sam kierunek zależności stwierdzono w przypadku tempa jego wzrostu. Przeciwny kierunek zidentyfikowano dla udziału aktywów trwałych w aktywach ogółem oraz płynności finansowej.

Introduction

Capital structure decisions constitute one of the key areas of corporate financial management. The origins of this research date back to 1958 when **Modigliani and Miller [1958]** published an article proving the independence of firm value from capital structure under perfect market conditions. In the following years, the authors incorporated market imperfections into their model, including corporate income tax and personal income tax. This resulted in deviations from the original results. The discussion and criticism of Modigliani and Miller's model led to the formation of further theories of capital structure. Two of these theories are relevant to small and medium-sized enterprises (SME): (i) the trade-off theory, and (ii) the pecking order theory [**Kumar et al., 2020**; **Martinez et al., 2019**].

For many years, these theories have been tested globally among large enterprises. Research on the capital structure of SMEs has less tradition. Meanwhile, in contemporary economies, this sector has played a special role, developing dynamically all the time as an incubator of innovation and a source of competitiveness and flexibility of the economy. At the same time, the main barrier to its development has been the difficulty in accessing sources of finance [**Baños-Caballero et al., 2016**]. Hence, research on the capital structure of SMEs is particularly important.

Most of the research on the capital structure of SMEs is directed towards identifying the factors shaping firms' financial decisions using static multiple regression models, mainly in developed economies. Research in economies with a relatively short market tradition is undertaken less frequently. At the same time, there is an equally short tradition in the SME sector of testing capital structure theories based on dynamic panel models [**Kumar et al., 2020**; **Martinez et al., 2019**].

The aim of this paper is to investigate which capital structure theory best explains the financial decisions of SMEs in Poland. Additionally, an attempt is made to identify the main firm-specific capital structure determinants.

The study has a twofold contribution to the literature. First, it showed that most SMEs in Poland make financial decisions in accordance with the pecking order theory. However, the results of testing the trade-off theory indicated that there may be a certain group of firms seeking an optimal capital structure in accordance with the assumptions of this theory. In this case, the rate of adjustment to the target capital structure was around 24%. Second, the study confirmed four significant firm-specific capital structure determinants for Polish SMEs. A positive relationship was detected between SME debt and firm size. The same relationship was found for the growth rate. The opposite relationship was identified for tangibility and liquidity. In the case of profitability and the non-debt tax shield, the study did not yield a clear answer.

The paper is organised as follows. The first part is a concise literature review with a theoretical background and analysis of empirical studies to date. Next, the material and research method are characterised. The third part of the article presents the results of the study. The article culminates with conclusions.

Literature review

Theoretical background

The introduction of income tax into the Modigliani and Miller model [**Modigliani, Miller, 1958**] initiated the development of the theory of optimal capital structure. This structure is the result of a comparison between tax benefits from the interest tax shield and the costs of bankruptcy increasing with the level of debt. The claim that firms seek to achieve the optimal financing structure defined in this way lies at the heart of the trade-off theory (TOT) [**Kraus, Litzenberger, 1973**; **Leary, Roberts, 2005**]. The pecking order theory (POT) is based on the assumption that firms take into account a certain order when choosing their financing sources. It results from the asymmetry of information between capital suppliers and management and the associated adverse selection effect. Managers who are best informed about the company's situation first use retained earnings and then supplement the financial deficit with debt. Equity issuance comes last [**Fama, French, 2002**; **Myers, Majluf, 1984**]. This theory does not predict a target capital structure.

In addition to addressing methods and sources of satisfying capital requirements, both theories (POT and TOT) make predictions about factors influencing the indebtedness (capital structure) of a company. Based on theoretical assumptions, authors such as **Frank and Goyal [2009]**, and **Rajan and Zingales [1995]** have shown that the relevant factors include tangibility, i.e. the share of fixed assets in total assets (TANG), the size of the company (SIZE), its growth (GROW), achieved profitability (PROF) and liquidity (LIQ), and the non-debt tax shield (NDTS). The direction of influence of individual factors on corporate debt according to TOT and POT is presented in Table 1.

Table 1. Indebtedness of enterprise and firm-specific factors in accordance with capital structure theories

Factors	trade-off theory (TOT)	pecking order theory (POT)
TANG	+	–
SIZE	+	+
GROW	–	+
PROF	+	–
LIQ	+	–
NDTS	–	–

Source: **Frank, Goyal [2009]**; **Rajan, Zingales [1995]**.

Empirical studies in SME sector

Studies on the capital structure of SMEs mainly focus on identifying the factors that influence corporate debt [**Kumar et al., 2020**]. The multiple regression method based on static panel models is used most commonly. Based on the detected direction of the relationship between the identified factors and debt, the theory that best explains the financial decisions of companies is indicated. The results of selected studies in this area are presented in Table 2.

Table 2. Empirical studies on determinants of SME capital structure

Author	Research sample and period	Positive determinants of debt	Negative determinants of debt	Indicated theory
Degryse et al. [2012]	99 031 Dutch SMEs observed in 2002–2005	TANG, SIZE, GROW, Industry	PROF, Tax rate	POT
Jõeveer [2013]	481 627 SMEs from 10 countries of Western Europe in 2000	TANG, SIZE	PROF	–
Harc [2015]	500 Croatian SMEs in 2005–2011	TANG, SIZE, GROW	PROF	TOT for long-term debt POT for short-term debt

Author	Research sample and period	Positive determinants of debt	Negative determinants of debt	Indicated theory
Białek-Jaworska, Nehrebecka [2015]	Polish SMEs in 1995–2012	PROF, GROW, TANG (lag), DTS	LIQ, TANG	TOT because of positive PROF, POT because of negative LIQ
Serrasqueiro et al., [2016]	2,329 Portuguese SMEs in 2007–2011	TANG, SIZE, LIQ	PROF	TOT for long-term debt POT for short-term debt
Czerwonka, Jaworski [2021]	15,242 SMEs from 6 countries of Central and Eastern Europe in 2014–2017	SIZE, GROW	TANG, PROF, LIQ, NDTS	POT

Source: Authors' own elaboration.

Research aimed at indicating which of the aforementioned theories (POT or TOT) better explains corporate financial behaviour is also carried out using methods based on dynamic panel models. They take into account periods before decisions to change debt. There is a well-established opinion in the literature that these studies, pioneered by **Shyam-Sunder and C. Myers [1999]**, and **Fama and French [2002]**, are most appropriate in detecting the pattern of corporate financial decisions. However, they are rarely used by SME researchers [**Martinez et al., 2019**]. They have been applied by **Aybar-Arias et al. [2012]**, **Kenourgios et al. [2020]**, **López-Gracia and Sogorb-Mira [2008]**, and **Mateev et al. [2013]**, among others.

The study of **López-Gracia and Sogorb-Mira [2008]** included 3,569 Spanish SMEs operating between 1995 and 2004. The results were inconclusive. Despite finding strong evidence of financial decisions consistent with POT, the authors concluded that TOT was a more relevant theory in the long term. The speed of adjustment to the optimal capital structure was about 34%. The authors identified SIZE (positive dependence), GROW, PROF and NDTS (negative dependence) as factors influencing the share of debt in the companies' capital. Spanish SMEs have also been the subject of research by **Aybar-Arias et al. [2012]**. The research sample in this study was the financial data of 947 companies from 1995 to 2005. The theory tested was TOT only. The study provided evidence that the speed of adjustment to the optimal capital structure was 26% and debt was mainly shaped by GROW (positive dependence), TANG, PROF and NDTS (negative dependence). A similar study was conducted by **Mateev et al. [2013]**, who examined 3,175 SMEs from seven countries in Central and Eastern Europe during the 2001–2005 period. A statistically significant negative effect of cash flow generation on corporate debt was detected. This meant that their decisions were more aligned with POT. Two other determinants of capital structure were also identified: GROW and TANG. Both exerted a negative effect on corporate debt.

Kenourgios et al. [2020] studied 1,120 SMEs listed on European Union stock exchanges between 2005 and 2015. They used both approaches to analyse the capital structure. Both the static and dynamic model showed that the factors positively affecting corporate debt were TANG and SIZE, while a negative effect was observed for PROF. The results for testing TOT with the dynamic model were not clear and the authors did not indicate a theory corresponding to the financial behaviour of the studied companies.

Taking into account the results presented so far, two research hypotheses can be formulated:
(H1) POT explains the financial behaviour of SMEs.
(H2) The direction of the influence of significant determinants of the capital structure of SMEs is consistent with POT.

Methodology

Research methods

The variables used in the empirical study are defined in Table 3.

Table 3. Variables used in empirical study

Variable	Abbr.	Definition
Capital structure (total debt ratio)	DR	$\frac{total\ debt}{total\ assets}$
Financial deficit	DEF	$[(\Delta fixed\ assets\ before\ depreciation + \Delta current\ assets) - (depreciation + net\ profit)] / total\ assets$
Tangibility (asset structure)	TANG	$\frac{fixed\ assets}{total\ assets}$
Size of enterprise	SIZE	$ln(total\ assets)$
Growth of enterprise	GROW	$\frac{\Delta total\ assets_{t,t+1}}{total\ assets_t}$
Profitability	PROF	$\frac{EBIT}{total\ assets}$
Financial liquidity	LIQ	$\frac{current\ assets}{current\ liabilities}$
Non-debt tax shield	NDTS	$\frac{depreciation}{total\ assets}$

Source: Authors' own elaboration.

The dependent variable is based on the total debt ratio (DR). The concept of financial deficit (DEF) was originated by **Shyam-Sunder and Myers [1999]** and developed, among others, by **Frank and Goyal [2003]** and **López-Gracia and Sogorb-Mira [2008]**. It results from changes in assests before depreciation (and dividends) reduced by internal financing (cash flow after interest and taxes). Next variables present firm-specific determinants of the enterprise's capital strucure. Their measures were adjusted to those most commonly used in previous research on SMEs (Table 1) and the structure of models applied in capital theory testing.

According to POT, companies first use internal sources of financing, followed by debt, while issuing additional equity capital is considered last. This means that a financial deficit that corresponds to the generated capital demand in a given enterprise should strongly influence the growth of the enterprise's debt. On the basis of this assumption, in order to test the pecking order theory, the following model was developed in the literature [**Shyam-Sunder, Myers, 1999**; **Frank, Goyal, 2003**; **López-Gracia, Sogorb-Mira, 2008**]:

$$\Delta DR_{it} = a + b_{POT} DEF_{it} + TANG_{it} + SIZE_{it} + PROF_{it} + e_{it}, \quad (1)$$

where:

$\Delta DR_{it} = DR_{it} - DR_{i(t-1)}$.

b_{POT} is the key coefficient in this model. If the pecking order theory is confirmed, its value should be close to 1. At the same time, the value of the coefficient a should be 0. This combination would indicate that the financial deficit in the enterprise is financed with debt when the internal resources of the enterprise are not sufficient to finance its activities.

According to TOT, companies aim to achieve an optimal capital structure and consider the advantages and disadvantages of increasing debt. The gradual process of reaching the target can be represented by a model [**López-Gracia, Sogorb-Mira, 2008**]:

$$DR_{it} - DR_{it-1} = \lambda \cdot \left(DR_{it}^{*} - DR_{it-1} \right) \quad (2)$$

where:
DR_{it}^{*} – target debt ratio,
λ – speed of adjustment.

The above equation indicates that changes in the debt ratio from period to period are induced by a desire to reach the target (DR_{it}^{*}) with the adjustment speed equal to λ [**López-Gracia, Sogorb-Mira, 2008**; **Shyam-Sunder, Myers, 1999**].

The target value of debt is unobservable, so it is necessary to introduce a variable based on the determinants of capital structure:

$$DR_{it}^{*} = \beta_0 + \beta_1 \cdot TANG + \beta_2 \cdot SIZE + \beta_3 \cdot GROW + \beta_4 \cdot PROF + \beta_5 \cdot LIQ + \beta_6 \cdot NDTS + \mu_{it} \quad (3)$$

Substituting (3) into equation (2) gives:

$$DR_{it} = \beta_0 + \beta_1 \cdot TANG + \beta_2 \cdot SIZE + \beta_3 \cdot GROW + \beta_4 \cdot PROF + \beta_5 \cdot LIQ + \beta_6 \cdot NDTS - \left(1 - \lambda\right) DR_{it-1} + \mu_{it} \quad (4)$$

The model implicitly incorporates the debt target; at the same time, it is based on values available in financial statements.

Panel data and multiple linear regression were used to estimate the parameters in the model corresponding to POT. The ordinary least square method (OLS) is the basic estimator in this case. Where individual effects are present, modified models are used. The Breusch-Pagan specification test is used to identify individual effects. The choice between a fixed-effects model and a random-effects model is made using the Hausman test [**Greene, 2003**]. If heteroskedasticity (Wald test) or autocorrelation (Wooldridge test) is detected in the model, it is advisable to use heteroscedasticity- and autocorrelation-consistent standard errors (robust HAC) [**Gujarati, Porter, 2009**].

Measures of goodness of fit of the model – the Schwarz Bayesian Information Criterion (SBC), AIC (Akaike Information Criterion), or HQC (Hannan-Quinn Criterion) – are helpful in selecting the number and type of explanatory variables [**Greene, 2003**].

Model (4) is a dynamic one, due to the lagged variable DR_{it-1}. For this reason, the generalised method of moments (GMM) was used for its estimation. In this model, an instrumental variable is used to replace the explanatory variable. In order to check whether the instrumental variable is uncorrelated with the random component, the Sargan test is applied [**Gujarati and Porter, 2009**]. The second diagnostic area of the GMM model is to test for the presence of first- and second-order autocorrelation of the random component. The Arellano-Bond tests (AR1 and AR2) serve this purpose [**Labra, Torrecillas, 2018**].

Data

The SME sector in Poland was selected for empirical research. Due to the lack of reliable financial data, the research sample did not cover micro-enterprises. It included companies that simultaneously meet the following conditions [**European Commission, 2003**]: (i) assets between EUR 2 million and EUR 43 million, (ii) revenues between EUR 2 million and EUR 50 million, and (iii) employment between 10 and 249 employees. The **Orbis database** [**2020**] was a source of research data. Financial data was taken for units for which basic values such as fixed assets, current assets, depreciation, revenue, and operating income were available throughout the study period. It was also assumed that the equity of the examined company would have to be positive. The sample excluded entities in the finance and insurance industry according to NACE rev. 2.

In order to obtain a sample distribution similar to the real distribution of the population of enterprises in Poland, the sample was stratified by size. In order to obtain a random sample in each category of enterprises, the function available in the ORBIS database to randomly mix the sample ("sort results randomly") was

used. Due to the existence of errors in the database, some variables were limited to ranges 0–1 (e.g. the share of debt in all sources of financing, and the share of fixed assets in total assets). In order to avoid outliers, the sample was also truncated by 1% from the bottom and top of the observations.

Table 4 presents descriptive statistics based on the financial data of enterprises included in the research sample. For the variables DR, TANG, SIZE, PROF, NDTS, the mean and median values show no significant differences. For GROW and LIQ, there are noticeable differences.

Table 4. Descriptive statistics of the research sample

Variable	Mean	Median	Std. Error	Min.	Max.
DR	0.4651	0.4637	0.2353	0.0107	0.9997
DEF	–0.0264	–0.0246	0.1557	–1.0610	0.5754
TANG	0.4327	0.4114	0.2795	0.0001	0.9920
SIZE	8.2770	8.2140	1.0280	5.6090	10.9300
GROW	0.0700	0.0349	0.1852	–0.4121	1.2900
PROF	0.0866	0.0641	0.0903	–0.1487	0.6184
LIQ	2.3300	1.5450	2.3970	0.1236	27.0000
NDTS	0.0314	0.0251	0.0258	0.0003	0.1690

Source: Authors' own elaboration.

In order to exclude multicollinearity between the explanatory variables, Pearson correlation coefficients were calculated for each pair of variables. In addition, on the basis of the structures of the POT and TOT models, variance inflation factors (VIF) were calculated. The results of the calculations are contained in Table 5. The Pearson coefficients do not indicate a high correlation for any pair of variables. Also, the VIFs are lower than 10 and confirm the lack of collinearity between variables.

Table 5. Correlation matrix

DR	ΔDR_{it}	DEF	DR_{t-1}	TANG	SIZE	GROW	PROF	LIQ	NDTS	
1.00	0.20	0.18	0.94	–0.25	–0.16	0.14	–0.09	–0.52	0.00	DR
	1.00	0.82	–0.07	–0.04	0.07	0.81	–0.06	–0.11	–0.09	ΔDR_{it}
		1.00	0.01	0.08	0.14	0.81	–0.34	–0.14	–0.06	DEF
			1.00	–0.25	–0.17	–0.01	–0.02	–0.48	0.03	DR_{t-1}
				1.00	0.32	–0.11	–0.36	–0.18	0.26	TANG
					1.00	0.02	–0.23	–0.03	–0.02	SIZE
						1.00	0.17	–0.04	–0.08	GROW
							1.00	0.19	0.00	PROF
								1.00	–0.06	LIQ
									1.00	NDTS
VIF	POT model	1.14		1.23	1.13		1.29			
VIF	TOT model		1.58	1.59	1.15	1.06	1.23	1.52	1.12	

Source: Authors' own elaboration.

Research outcomes

POT model

Table 6 shows the results of estimating the parameters of the model relevant to POT.

Table 6. Test of the pecking order theory. Estimates of model (1) (dependent variable DR = total debt ratio)

Model	1	2	3	4	5
Individual effects	Fixed	Fixed	Fixed	Fixed	Fixed
const	−0.1493*** (0.0215)	0.0602*** (0.0038)	−0.1634*** (0.0224)	0.0232*** (0.0014)	0.0328*** (0.0002)
DEF	0.8078*** (0.0076)	0.8111*** (0.0076)	0.8027*** (0.0077)	0.8010*** (0.0074)	0.8129*** (0.0076)
TANG	−0.0546*** (0.0088)	−0.0635*** (0.0088)			
SIZE	0.0238*** (0.0026)		0.0236*** (0.0027)		
PROF	0.0946*** (0.0164)			0.1146*** (0.0160)	
Obs.	19 674	19 674	19 674	19 674	19 674
Joint test on named regressors	3 184***	5 902***	5 845***	6 120***	11 430***
Breusch – Pagan test	934***	3 522***	3 862***	898***	4 009***
Hausman test	986***	1 018***	1 153***	922***	1 112***
S-B	−28 213	−27 985	−27 997	−28 058	−27 892
AiC	−50 487	−50 243	−50 254	−50 315	−50 141
H-Q	−43 194	−42 955	−42 966	−43 028	−42 856
Wald test	1.62E+32***	8.86E+32***	5.09E+32***	8.26E+32***	7.85E+31***
Wooldridge test	2.8083*	1.8586	1.8046	2.3985	1.8595

Significance at the * 0.1; ** 0.05; and *** 0.01 level; (standard errors in parentheses)

Source: Authors' own elaboration.

As indicated by the BreuschPagan and Hausman tests, a fixed-effects model was selected for all five analyses. Heteroskedasticity was detected in all models (Wald test). Autocorrelation was detected in one model (Wooldridge test). For this reason, robust HAC standard errors were applied in the estimations.

The parameters of the model (1) indicate a positive, statistically significant dependence of the change in corporate debt on the generated financial deficit. The parameter b_{POT} significantly differs from zero and is close to 1. Removing the capital structure determinants (TANG, SIZE and PROF; models 2, 3, 4 and 5) from the model does not change the observed dependence, only slightly worsening the goodness of the model measured by the information criteria.

The observed direction and strength of the dependence of debt on the financial deficit confirm hypothesis H1 that SMEs in Poland take financial decisions in accordance with POT. This thesis is weakened by the fact that in all the models the fixed component is statistically significant and its values differ from zero.

TOT model

The results of TOT testing are presented in Table 7.

The Sargan test indicates that the instruments in the model were specified correctly and the AR1 and AR2 tests do not indicate the presence of autocorrelation of second order (first order autocorrelation was expected). The statistically significant coefficient of variable $\mathbf{DR}_{t-1}$ indicates the dependence of current debt on its previous level. This creates a premise for the statement that there is an optimal capital structure which

companies reach at a rate equal to $\lambda = 24\%$. Thus, there is a significant group of companies in the research sample whose financial decisions are explained by TOT. The positive sign next to the SIZE variable indicates that the larger the company, the more often it follows this theory.

Table 7. Test of the trade-off theory. Estimates of model (4) (dependent variable DR = total debt ratio)

Variable	Coefficient	Z
DR_{t-1}	0.7616*** (0.0222)	34.2733
TANG	−0.0908*** (0.0141)	−6.4151
SIZE	0.0400*** (0.0056)	7.1484
GROW	0.2062*** (0.0067)	30.6257
PROF	−0.6079*** (0.0180)	−33.7924
LIQ	−0.0135*** (0.0010)	−13.7838
NDTS	−0.0757 (0.0747)	−1.0131
Obs.	16 920	
Sargan test		9.7045*
AR1		−18.3397***
AR2		1.4156

Significance at the * 0.1; ** 0.05; and *** 0.01 level; (standard errors in parentheses)
Source: Authors' own elaboration.

In both models, the relationships between debt and selected determinants of capital structure were diagnosed. A statistically significant negative relationship was observed for the variables TANG and LIQ. A positive influence on debt was identified for SIZE and GROW. The directions of these correlations are consistent with POT, which confirms hypothesis H2. The diagnosed opposite direction of the dependence of debt on the variable PROF and the lack of significant dependence on the variable NDTS weaken this claim.

Robustness check

Testing whether the effects of interest are stable is possible by removing or adding variables [**Lu, White, 2014**]. Table 6 shows five models for the dependent variable ΔDR in different configurations of the independent variables. In all these models, all coefficient estimates have the same signs, indicating stability in the direction and significance of the studied relationships.

In addition, for the robustness check, the variables SIZE and GROW based on total assets were replaced with revenue-based measures ($\text{SIZE} = \ln(\text{total sale})$; $\text{GROW} = \Delta\text{total sale}_{t,t-1} / \text{total sale}_t$). As a result of this testing, it was found that the coefficient estimated for the SIZE variable changed the sign in the POT model. For the TOT model, the coefficient of the SIZE variable did not change the sign, while for the coefficient estimated for GROW did. This is consistent with the observations of **Dang [2018]**, who found that changing the definition of the SIZE variable can lead to a change in the signs standing in front of the estimates of both the SIZE variable and the other independent variables[1]. No changes were observed in the sign of the estimate for any other variable. These estimates were not affected by changes in the definition of SIZE and GROW.

[1] Taking into consideration the fact that measures based on assets are more relevant for research focused on all resources of an enterprise [**Dang, 2018**], the authors believe that more reliable directions of the relationships between debt and SIZE and GROW are indicated in Tables 6 and 7.

Conclusion

The methodological approach of the study has been rarely applied in research on SMEs capital structure despite the fact that it is commonly used for large companies and is more relevant for capital structure theory testing than methods based on capital structure determinants. The results show that the financial behaviour of Polish SMEs is explained to a greater extent by POT. However, there are indications that some companies act adequately according to the TOT assumptions. This is particularly the case for larger companies. These results are consistent with the findings of **López-Gracia and Sogorb-Mira [2008]** and do not contradict the findings of **Aybar-Arias et al. [2012]**, **Kenourgios et al. [2020]**, and **Mateev et al. [2013]**. Thus, the study has provided strong evidence that SMEs use self-financing first, then debt. The issue of additional equity is the last. At the same time, larger SMEs are trying to get benefits from the interest tax shield incurring debt more willingly than smaller ones.

Four determinants of the capital structure of Polish SMEs were identified. An increase in the share of fixed assets in total assets and the level of liquidity caused a decrease in the indebtedness of enterprises. The opposite direction of relationships was found for the size of the enterprise and its growth rate. These relationships are in line with POT. In terms of the diagnosed number of determinants and the direction of their influence, some differences can be observed in comparison with the results of other studies (see Table 2). This means that the feature that differentiates the impact of firm-specific determinants on SME indebtedness is the time of study and/or the country of operation. This phenomenon will be the subject of further research.

The inclusion of only Polish enterprises and the lack of micro-enterprises in the sample are the main limitations of the study.

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