

Article

Parametric Conditions of High Financial Risk in the SME Sector

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Abstract: The sector of SME is the major force for the national economic and social development. Financial risk is one of the key threats to the activity of small and medium enterprises. The most common manifestation of the financial risk of SMEs is difficulty in financing the business and lack of funds for development. Banks are unwilling to grant loans to such companies. Moreover, it is the rising operating costs that cause shrinking profits, which may result in corporate debt, difficulty in debt repayment, and consequently, high financial risk of these entities. Numerous differences in conducting the activity of small and large enterprises intensify this risk and mean that the model of credit financing for companies is not adjusted to the capabilities and principles of the operation of small enterprises. Therefore, risk management is one of the most important internal processes in small and medium enterprises. The identification of factors that affect the level of financial risk in these entities is therefore crucial. The main objective of this research was to analyze the impact of selected parametric characteristics of the SME sector on the intensity of financial risk they take. This objective was accomplished on the basis of the survey with the participation of Polish SMEs. In order to test the adopted research assumptions, the linear regression model was used with four continuous variables for each type of the identified financial risk. Based on the final research results, the logit model was obtained for the risk of insufficient profits. It was indicated that both the internationalization of the company and the ability to manage risk are the only factors that affect a high level of risk of low income. The article ends with the discussion and the comparison with some previous research in this area.

Keywords: SME sector; financial risk; risk assessment

1. Introduction

The activity of the SME sector is an important factor of the country's economic development. Numerous studies show that small and medium enterprises provide sustainable economic growth (Seo 2017), innovation, job creation (Maksimov et al. 2017), and social integration at each level of the country's development (Kongolo 2010). Moreover, it has been proven on many occasions that SMEs play a more important economic role compared to large enterprises (Edmiston 2007; Toma et al. 2014; Okpara and Wynn 2007). Memili et al. (2015) observed a positive relationship between the economic growth and the share of SMEs in the market. Moreover, Audretsch and Mahmood (1994) claimed that, without the development of the existing SMEs and establishment of new ones, it is not possible to maintain economic growth. In turn, according to Yazdanfar and Ohman (2015), SMEs increase the level of competitiveness and innovativeness of national economies, in particular if they conduct their activities internationally (Basle et al. 2018; Chiochetti 2018; Sozuer et al. 2017). Appropriate

management of this sector is an important factor of the development of business and its environment. [Schumpeter \(1934\)](#) identified five areas that can be affected by SMEs: New products and services; access to new markets and expanding the existing ones; new methods of production; new methods of organization of industry; and research into the supply of raw materials. By creating new jobs, SMEs also contribute to an increase in household income ([Asikhia 2010](#); [Beck et al. 2005](#)). According to the European Commission, the companies of the SME sector constitute more than 98% of all enterprises and they are responsible for approximately 80% of new jobs ([Belás et al. 2015b](#)). In some countries, SMEs represent over 50% of value added ([SBA 2017](#)).

On the other hand, poor capital background of micro-, small, and medium enterprises carries high risk of financial loss and bankruptcy. The systematic development of the sector requires positive internal and external conditions in the business environment ([Beck and Demircuc-Kunt 2006](#)). Meanwhile, statistics show that, among this group of entrepreneurs, the phenomenon of bankruptcy of young companies is observed the most frequently ([Statistics Poland 2019](#)). Therefore, the main challenge to SMEs is the lack of their access to funds and credit resources. According to the analyses by [Business Tech \(2016\)](#), these enterprises have difficulty in providing financing of their operations; thus, the management of cash flows due to delays in payment is difficult, the level of sales declines, and eventually, enterprises must reach for their private funds and those of their families. The research by [Global Entrepreneurship Monitor \(GEM\)](#) confirms that this financing is difficult due to reluctance and lack of support for this sector by local institutions. Therefore, it is a group of enterprises that, on the one hand, is exposed to numerous undesirable phenomena and related financial problems and, on the other, significantly contributes to GDP growth (an annual share in the creation of Polish GDP is on average 70% among all enterprises) ([Skowrońska and Tarnawa 2018](#)). Therefore, it can be concluded that efficient risk management in these enterprises determines its survival in the market and contributes to the development of not only the entity itself, but also its market and social environment. At the same time, appropriate risk management requires the awareness, identification, planning, and prevention of numerous threats from these entities.

2. The Financial Situation of SMEs

Due to the fact that many SMEs and micro-enterprises do not register sufficient cash flows in relation to the assumed plans, one of the key threats to their activity is financial risk ([Belás et al. 2015a](#)). This means that the funds collected in these entities are mainly intended for the implementation of current operations; therefore, any increase results in reducing the budget. In such a situation, when the budget is not well planned and generating funds departs from the forecast, the company falls into financial problems.

According to statistics, in 2018, the profits of small and medium enterprises were lower by nearly 6% compared to the previous year; in turn, the loss level was by 33% higher in the analyzed period ([Statistics Poland 2018](#)). A serious challenge slowing down the development of SMEs is limited access to credit financing of activities or attracting investments ([Popa and Ciobanu 2014](#)). The survival of small and medium enterprises is directly correlated with their financial results and poses the main problem of entrepreneurs. According to [Margaretha and Supartika \(2016\)](#), the most important measurement of the company's performance is its profitability, which shows the ability of the company to generate profits in a certain time, based on the available resources. The primary objective of the company is, therefore, to maximize this indicator. At the same time, the companies of the SME sector are often young companies that encounter numerous constraints related to the financing of their activities. Many financial institutions are unwilling to grant credits to such companies. The forms of financing are more often available for enterprises aged 2–10 years, however they increase the debt of the company and reduce the generated profit ([Banerjee 2014](#)). Another solution is to search for investors. However, this process turns out to be difficult and complicated, which is presented in the research by [Stubelj et al. \(2017\)](#). On the other hand, the search for an external source of financing may be the only way for the company to stay in the market. It is associated with the concept of financial

leverage, the task of which is to employ foreign capital in order to multiply the generated profit. Numerous studies indicate that it has a positive impact on the development of the entity (Anton 2019; Honjo and Harada 2006; Hermelo and Vassolo 2007; Mateev and Anastasov 2010). Incurring debt, however, involves the risk of an increase in the variance of the rate of returns, increase in the probability of loss, increase in value (profits) exposed to loss, or increase in the likelihood of the occurrence of financial difficulties and bankruptcy (Hawawini and Viallet 2011).

The existing research in this field shows that about 60% of applications for financing are already rejected at the initial stage of discussions and the investor of high risk is eventually successfully attracted in the case of 3% of entrepreneurs (Hudson and Evans 2005; Metrick and Yasuda 2011). The inability to receive both internal and external funding is the main barrier to growth and survival of SMEs (Fajnzylber et al. 2009; Yartey 2011). Orinda and Otieno (2017) believes that the access to credits determines long-term survival of the sector companies in the market. An interesting insight into corporate finance is also presented by Law et al. (2018) who, in turn, observed the relationship between the level of expenditure on operations and the level of innovation. According to them, financial resources positively influence the innovativeness of the entity only to a certain level. This means that innovativeness is perceived as an important factor of competitiveness and the development of SMEs is not only the result of the incurred financial expenditure (Rajapathirana and Hui 2018). An important component in this respect is also an entrepreneurial and creative attitude of young entrepreneurs (Olugbola 2017). In numerous studies, it has been observed that the development of SMEs is significantly hampered by the shortage of financial resources (Zeffane and Zarooni 2008; Thevaruban 2009; Pandaram and Amosa 2010; Yartey 2011).

According to the research by Chavis et al. (2011), financial obstacles that inhibit the growth of the sector include insufficient profit, low capital, payroll, insurance cost, high operating costs, limited access to trade credit, inability to obtain external financing, inappropriate financial management of the company, inability to meet financial liabilities, and others. Larsen and Lewis (2007) also indicate insufficient capitalization, problems with short-term liquidity, insufficient initial capital, and poor financial management as the main reasons for financial problems of small and medium enterprises. Li (2015) observes another very important problem of financial management in the SME sector. Some of them do not have the accounting system and, even if most of them possess it, it is non-standardized or non-institutionalized. Yang and Zhang (2013) expand this topic to the need to establish the financial management system in enterprises, compliant with their development and changes in the business strategy. The authors suggest developing the uniform policy of credit management, particularly in relation to their suppliers and customers.

The reasons for the occurrence of financial constraints among SMEs can be found in the incorrect transfer of commercial information in the supply chain. Due to the problem of information asymmetry, small enterprises have difficulty in applying for loans (Stiglitz and Weiss 1981; Bester 1987). Reducing the phenomenon of information asymmetry between banks and SMEs may simultaneously reduce financial constraints in this sector (Kouvelis and Zhao 2018; Martin 2017) and release the necessary capital. Forkuoh et al. (2015) also add that difficulty in accessing external financing results from the inability of these companies to reliably signal the ability to repay debts. Appropriate improvement in external financing for SMEs, compliant with the research results by Yang et al. (2019), may bring measurable benefits for the entire supply chain and provide small and medium enterprises with long-term and sustainable development.

3. Financial Risk in SMEs

Limited financial resources as well as the dynamic and simultaneously fragmented market restrict the diversification of operations and assortment provided by the SME sector, which significantly increases the risk of business failure due to bankruptcy of these companies (Ojala and Isomäki 2011). Moreover, in small enterprises, the management process, as opposed to larger companies, is often neglected and has a narrower scope, which also contributes to the emergence of numerous threats

to their activity. At the same time, [Jindrichovska \(2013\)](#) noticed that the financial situation of small enterprises is directly and significantly affected by their owners. The author indicated that, among others, personal aspects are the most closely related to the probability of insolvency of enterprises, which should be taken into account in the model of estimating the risk of insolvency. These particular characteristics of the activity of the SME sector mean that the identification and measurement of their financial risk should be different than in large enterprises. The lack of resources allowing SMEs to rapidly respond to internal and external threats means that they must adopt the strategy of risk management to a greater extent than large organizations ([Verbano and Venturini 2013](#)).

At the same time, the risk is strong motivation for conducting a business ([Shpak et al. 2018](#)) and significantly affects not only the entity itself, but also its environment. The research conducted so far indicated that the most serious types of risks for entrepreneurs are financial risk and economic risk ([Christopoulos and Barratt 2016](#); [Mentel et al. 2016](#); [Neacsu et al. 2018](#)). [Saeidi et al. \(2015\)](#) observe that financial risk is associated with repayment of interest rate, inflation rate, availability of credits and loans, exchange rate, and the condition of the economy. [Bartram et al. \(2015\)](#) paid attention to a few types of financial risk, among which one can list the risk associated with assets, foreign investment risk, credit risk, or liquidity risk. Financial risk management is one of the methods of creating economic value in the company. [Z. Virglerová et al. \(2016\)](#) emphasized the essence of financial risk management in SMEs, assuming that the rapid identification of risk enables its quick reduction. Small and medium enterprises that operate in the foreign market must simultaneously cope with a higher credit risk ([Beck and Demircuc-Kunt 2006](#); [Djokic et al. 2018](#)). In order to ensure the optimal financing of the activity of SMEs, most of all, it is essential to improve the credit information system including the determination of the appropriate model of risk for this sector ([Altman et al. 2010](#)). The change in the standards for credit financing could have a positive impact on many already existing and newly established ones.

Financial risk is characterized by duality, which means that along with an increase in profits, there is an increase in the risk of losses ([Oláh et al. 2019](#)). The level of generated profits depends on operating activities, applied technologies, financial strategy, and many other factors, however it also largely depends on actions taken for the benefit of reducing financial risk ([Zhao and Zeng 2014](#)). Therefore, the task of any company is to manage financial risk in the manner that will bring greater benefits to it. An important part of financial risk of the SME sector is an increasingly higher share of foreign capital in the financing of the development of these enterprises. Such capital structure directly affects the ability to refinance the company but also results in serious financial risk and the related reduction in profits. A low share of equity limits the sovereignty of small and medium enterprises and leads to difficulty in the accomplishment of daily short-term business operations, among others, leading to deterioration of relationships with suppliers and customers. In order to prevent and reduce financial risk, the analyzed sector of enterprises should take specific actions including ([Zhao and Zeng 2014](#)) strengthening the management of the flow of cash, inventories, and receivables; rational maintenance of capital structure; establishing the internal control system; establishing the decision-making process in the field of investment management; and developing the warning system for financial risk.

4. Methodology and Research Sample

The Polish SME sector indicates a higher growth rate than the average of the European Union. Poland occupies a high position among the European countries in terms of newly established companies ([PARP 2018](#)). At the same time, the chances of survival of enterprises of this sector in the Polish market for more than a year are worse than in other EU countries. Therefore, the Polish sector belongs to the most numerous in terms of the number of new companies; on the other hand, it indicates a low rate of their survival in the market. The objective of the considerations has been to identify the type of financial risk for which it is likely to predict its high level due to the impact of selected factors of the operation of small and medium entities in Poland.

The research used the data of the survey conducted in randomly selected enterprises with no more than 249 employees. In total, 496 companies participated, among which there were micro- (60.3%), small (28.6%), and medium enterprises (11.1%). The research used the method of logistic regression, based on the logistic function. The task of the model is to determine the strength and direction of the relationship between the qualitative (class) factor or the quantitative (discrete or continuous) one and a dichotomous dependent variable. In order to employ the reasoning on the impact of independent variables on the dependent variable, the odds ratio was applied (Kmieć 2015), which determines the change in the chance of the occurrence of high financial risk when the change in the factor increases by 1 unit and the other independent variables in the model remain constant.

The empirical part of the considerations consists of four parts. The first one presents the preliminary results concerning the assessment of financial risk in the surveyed enterprises. The second one includes preliminary data necessary to create the logit model. Subsequently, the estimation of four models of logistic regression corresponding to four analyzed sources of financial risk has been conducted. The last part includes the discussion on the results and the conclusions.

The preliminary analyses indicated that financial risk is one of the most important risks (second position) for SMEs after economic risk, which means that the financial aspect of conducting activities in SMEs presents the greatest threat to them (Figure 1).

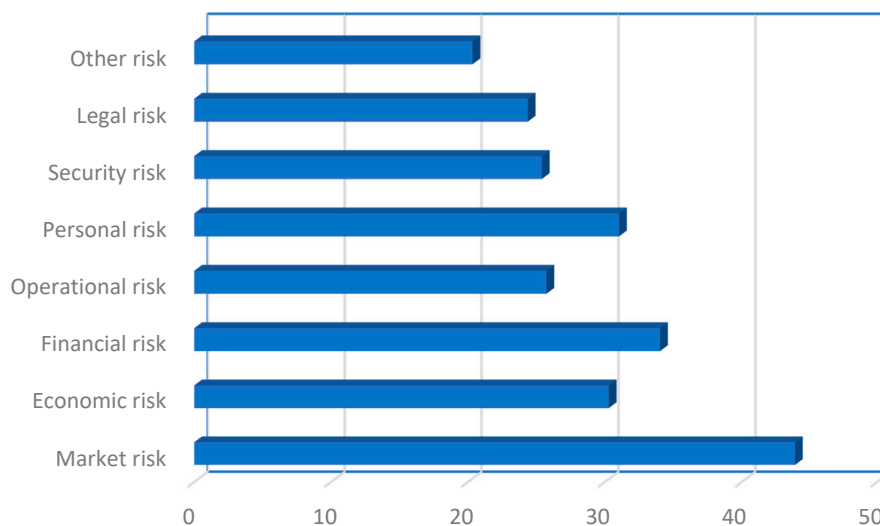


Figure 1. The assessment of the types of risk by small and medium enterprises.

At the same time, financial risk is associated with economic risk, which emphasizes the significance of the discussed topic. The ability to predict high financial risk is therefore an important part of risk management in the surveyed entities of the SME sector.

5. The Assessment of the Intensity of Financial Risk in the SME Sector

The task of the surveyed enterprises was to assess the intensity of the impact of specific phenomena and the related risks on the activity of their enterprises on a scale of 1 to 5, where 1 represented the minimum intensity and 5 meant the maximum intensity of the impact of financial risk. The basic analysis of the statistics of predictors allowed their preliminary characteristics. The preliminary structure of the origin of risk sources depending on the size of the entity, its internationalization, and experience in risk management is presented in Table 1.

Table 1 presents two extreme levels of intensity of financial risk broken down by the size of the entity, its internationalization, operating time in the market, and risk management. On the basis of the above, it can be observed that individual sources of risk most frequently occur in micro-enterprises. At the same time, this risk most often relates to companies also conducting their activities abroad. Insufficient profit of the company is the only most significantly threatening factor of financial risk for

micro-enterprises. Therefore, this variable was excluded from the further research. Financial risk is mostly determined by the financial results of the business activity, which determine the survival of the entity in the market. The objective to generate profit can be considered as the key one in ensuring the continuity of the operation of the entity. Due to the fact that more than half of the surveyed enterprises do not operate in the foreign market, the lowest risk factor is a high share of foreign capital in financing the activity. At the same time, there is a comparable share of companies operating in the market for more or less than four years. The vast majority of the surveyed entities do not take steps associated with risk management in their activities.

Table 1. The percentage of intensity of financial risk depending on the model factors.

Sources of Financial Risk	Intensity of Risk Sources	Insufficient Profit of the Company	Foreign Capital (High Share of Foreign Capital)	Unpaid Claims	Inability to Pay Obligations (Insolvency)
Size of the company					
micro- (up to 9 employees)	Low	23.4	52	42.1	39
	High	37.8	11.1	18.3	20.1
small (10–49 employees)	Low	14.1	19.4	18.6	20.9
	High	14.1	5.1	9.7	10
medium (50–249 employees)	Low	2.0	9.7	6.1	5.8
	High	7.9	2.6	4.7	4.2
Internationalization of the company					
Internationalization	Low	38.5	80.3	64.7	63.8
	High	60.2	18.1	33	33.4
No internationalization	Low	1	0.9	1.9	1.9
	High	0.3	0.9	0.3	0.8
Operating time in the market					
Up to 4 years in the market	Low	17.1	38.8	29.9	30.6
	High	27.6	6.6	14.9	15.9
Up to 5 years in the market	Low	22.3	42.3	36.9	35.1
	High	32.9	12.3	18.3	18.4
Risk management					
It does manage risk	Low	18.4	28	25.7	22.8
	High	17.7	6.6	11.1	12.1
It does not manage risk	Low	21.2	53.1	41	42.9
	High	42.8	12.3	22.2	22.3

5.1. The Input Data of the Logit Model

On the basis of the considerations, the following research questions have been formulated:

1. Does the size of the company affect the intensity of individual sources of financial risk?
2. Does internationalization of SMEs affect the intensity of the perception of sources of financial risk?
3. Does the operating time in the market affect the intensity of financial risk?
4. Does experience in risk management affect the intensity of financial risk?
5. Do the levels of sources of financial risk interdepend financially?

The formulated research questions determine the verification of the following research assumptions:

Hypothesis 1. *The time, size, and manner of conducting the activity affects the probability of the occurrence of high risk of insufficient profits.*

Hypothesis 2. *The time, size, and manner of conducting the activity affects the probability of the occurrence of high risk of foreign capital.*

Hypothesis 3. *The time, size, and manner of conducting the activity affects the probability of the occurrence of high risk of unpaid claims.*

Hypothesis 4. *The time, size, and manner of conducting the activity affects the probability of the occurrence of high risk of inability to pay obligations.*

On this basis, it is assumed that both the size of the entity, the time of its presence in the market, internationalization, and risk management allow for predicting high financial risk and, more precisely, its sources, i.e., insufficient profits, a share of foreign capital, unpaid claims, and inability to pay obligations.

The dependent variable is expressed as a dichotomous value, where 1 is the value representing a high level of financial risk and 0 represents a low level of this risk. The dependent variable is the variable referring to the four assessed sources of financial risk, where 0 represents the risk of low intensity (the assessment at the level of 1 and 2), and 1 is the risk of high intensity (the assessment at the level of 4 and 5). In order to verify the research hypothesis put forward in the introduction, the four logit models were developed to assess which factors determine the occurrence of high financial risk of insufficient profits (Y1), foreign capital (Y2), unpaid claims (Y3), and inability to pay obligations (Y4).

At the same time, in the research, taking into account the substantive value and statistical criteria, four qualitative factors (independent variables) were selected, characterizing enterprises of the SME sector. These are the model predictors which, for the purposes of the analysis, are described in Table 2. It is assumed that these predictors will increase the probability of predicting the occurrence of high financial risk.

Table 2. The characteristics of independent variables in the model.

Predictor	Variable Type	Variable Categories	Category Code
Size of the entity (X_1)	Continuous variable	Micro (up to 10 employees)	1
		Small (10–49 employees)	2
		Medium (50–249 employees)	3
Operating time in the market (X_2)	Continuous variable	Less than 1 year	1
		1–4 years	2
		5–9 years	3
		More than 10 years	4
Activities of the company in the international market (X_3)	Continuous variable	The company does not operate in the international market	0
		The company has been operating in the international for less than 1 year	1
		The company has been operating in the international market for 1–4 years	2
		The company has been operating in the international market for 5–9 years	3
Risk management in the company (X_4)	Continuous variable	The company has been operating in the international market for more than 10 years	4
		Not identified	0
		Yes, less than 1 year	1
		Yes, 1–4 years	2
		Yes, 5–9 years	3
Yes, more than 10 years	4		

The formal form of the model of the assumed logistic regression is the following (Lewicka 2016):

$$Y_n = 1 |x_1, \dots, x_4| = \frac{e^{B_0} + B_1x_1 + B_2x_2 + B_3x_3 + B_4x_4}{1 + e^{B_0} + B_1x_1 + B_2x_2 + B_3x_3 + B_4x_4} \quad (1)$$

when:

Y_n —dependent variable,

x_1, \dots, x_4 —independent variables,

B_1, \dots, B_4 —structural parameters of the model.

The variables are interrelated via the statistical relationship, which consists of the fact that the specific values of the Y variable correspond to strictly determined average values of the X variable.

5.1.1. The Results of the Estimation of the Y1 Model

This model assumes that each of the indicated factors affects the risk of the occurrence of insufficient profits. Therefore, Hypothesis 1—the time, size, and manner of conducting the activity affects the probability of the occurrence of high risk of insufficient profits—should be verified.

In the model, it should be assumed that:

1. The larger the company, the lower the probability of the occurrence of high risk.
2. If the company operates in the international market, there is higher probability of the occurrence of high risk.
3. The longer the company operates in the market, the higher the probability of the occurrence of high risk.
4. If the company deals with risk management, the probability of the occurrence of high risk is lower.

In order to verify the correctness of the logistic regression No. 1, the likelihood ratio test was carried out, which enabled the verification of joint significance of all the factors in the model. On the basis of the estimates of the analyzed model, it can be concluded that, jointly, all the independent variables in the model are statistically significant (Table 3). The predictors allow for predicting high risk of insufficient profits. Therefore, it can be assumed that the entire model is significant, which allows for conducting the further process of its verification.

Table 3. Test results and log likelihood value and pseudo- R^2 for the model of the risk of low profits.

Chi-square test results		
Chi-square	df	Sig.
15.365	3	0.002
Log likelihood value and pseudo- R^2		
-2 log likelihood	Cox-Snell R^2	Nagelkerke R^2
390.629	0.049	0.43
Hosmer-Lemeshow test		
Chi-square	df	Sig.
6.685	8	0.571

In order to assess the model fitting, determination coefficients were applied. For this model, the Cox–Snell R^2 statistics amounts to 0.049. Since this test never reaches the theoretical maximum of 1, the modification of this coefficient in the form of Nagelkerke R^2 is calculated. In this case, it means that the independent variables, i.e., the predictors in the model, explain 43% of the occurrence of low or high risk of insufficient profits.

The verification of the correctness of the model was carried out using the Hosmer–Lemeshow test. The obtained test result indicates the lack of significance ($p = 0.571$), which allows for the reasoning on the good model fitting. The model does not differ from the data.

Table 4 contains the summary of the values observed and predicted on the basis of the obtained model. This table allows for the reasoning on the model fitting to real data. On its basis, it can be concluded that the logistic function correctly provides for belonging to one of the two groups in 63% of the cases.

Table 5 presents the variables in the model and indicates which predictors are significant, i.e., which allow for determining the probability of the occurrence of high risk of low profits.

Table 4. Classification table in the logistic regression model for high risk of insufficient profits.

Observed	Predicted		Percentage of Correct Classification
	Low Risk Intensity	High Risk Intensity	
Low risk intensity	26	93	21.8
High risk intensity	19	165	89.7
General classification accuracy	63		

Table 5. The variables in the model of the risk of low profits.

Variables	B	Standard Error	Wald	df	Significance	Exp(B)
X ₁	0.234	0.170	1.901	1	0.168	1.264
X ₂	0.026	0.148	0.030	1	0.862	1.026
X ₃	0.218	0.073	8.970	1	0.003	1.243
X ₄	−0.226	0.084	7.295	1	0.007	0.798
Constant	−0.150	0.537	0.078	1	0.780	0.861

The significance of individual predictors was estimated on the basis of the Wald test, which indicates which of the factors significantly increase or decrease the probability of the occurrence of high risk of low profits in the SME sector. If $p < 0.5$, these predictors significantly affect the probability of the occurrence of high risk. In the case of the analyzed model, two factors, i.e., internationalization and risk management, significantly affect the probability of the occurrence of high risk of insufficient profits.

Taking into account a positive value of the coefficient— $B = 0.218$ for the variable— X_3 (the fact of internationalization), it should be assumed that the longer small and medium enterprises operate in the foreign market, the higher probability of the occurrence of high risk of low profits is. In turn, the value of $\text{Exp}(B) = 1.234$ means that the probability of the occurrence of high risk of insufficient profits in the group of companies with high internationalization is about 24% higher than in the group with low internationalization provided that the other factors remain unchanged.

A negative value of the coefficient— $B = -0.226$ for the variable— X_4 (risk management) means that the longer the company manages risk, the lower the probability of the occurrence of high risk of too low profits. $\text{Exp}(B) = 0.798$ means that the probability of the occurrence of high risk in the group of companies with long-term risk management is 20% lower than in the group of enterprises with the short-term risk management provided that the other factors remain unchanged.

Having excluded insignificant variables, there were estimated structural parameters of the model described with the formula:

$$P(Y_1) = \frac{e^{-0.150} + 0.218x_3 - 0.226x_4}{1 - e^{-0.150} + 0.218x_3 - 0.226x_4} \quad (2)$$

This simultaneously means the partial positive verification of the adopted sub-hypothesis. The obtained results allow for the assumption that high internationalization of the SME sector carries the risk of not generating profits high enough; in turn, the company's care for management of this risk, with a high degree of probability, contributes to reducing this risk. At the same time, it was not indicated that the number of employees and operating time in the market were related to the risk of low profits.

5.1.2. The Results of the Estimation of the Y2 Model

This model assumes that each of the indicated factors affects the risk of the occurrence of a high share of foreign capital in the total capital. Hypothesis 2—the time, size, and manner of conducting the activity affects the probability of the occurrence of high risk of foreign capital—should be verified.

In the model, it should be assumed that:

1. The larger the company, the lower the probability of the occurrence of high risk.

2. If the company operates in the international market, the probability of the occurrence of high risk is higher.
3. The longer the company operates in the market, the higher the probability of the occurrence of high risk.
4. If the company deals with risk management, the probability of the occurrence of high risk is lower.

On the basis of the results of the Chi-square test, it can be concluded that all the independent variables in the model are statistically insignificant (Table 6). Thus, it can be assumed that the entire model is insignificant. This is confirmed by determination coefficients. The value of the coefficient in the form of Nagelkerke R^2 means that the predictors in the model explain only 12% of the occurrence of low or high foreign capital risk.

Table 6. Test results and log likelihood value and pseudo- R^2 for the model of the risk of a high share of foreign capital.

Chi-square test results		
Chi-square	df	Sig.
2.700	4	0.609
Log likelihood value and pseudo- R^2		
-2 log likelihood	Cox-Snell R^2	Nagelkerke R^2
332.852	0.008	0.012

The indicated predictors do not allow for predicting the risk of the occurrence of a high share of foreign capital in the capital structure of enterprises of the SME sector. The logistic regression model is insignificant in this case.

5.1.3. The Results of the Estimation of the Y3 Model

This model assumes that each of the indicated factors affects the risk of the occurrence of unpaid claims. Therefore, Hypothesis 3—the time, size, and manner of conducting the activity affects the probability of the occurrence of high risk of unpaid claims—should be verified.

1. The larger the company, the lower the probability of the occurrence of high risk.
2. If the company operates in the international market, the probability of the occurrence of high risk is higher.
3. The longer the company operates in the market, the higher the probability of the occurrence of high risk.
4. If the company deals with risk management, the probability of the occurrence of high risk is lower.

The results of the Chi-square test indicate that, jointly, all the independent variables in the model are statistically insignificant (Table 7). This is confirmed by determination coefficients. The value of the coefficient in the form of Nagelkerke R^2 means that the model factors explain only 2.4% of the occurrence of low or high risk of unpaid claims.

Table 7. Test results and log likelihood value and pseudo- R^2 for the model of the risk of the occurrence of unpaid claims.

Chi-square test results		
Chi-square	df	Sig.
6.230	4	0.183
Log likelihood value and pseudo- R^2		
-2 log likelihood	Cox-Snell R^2	Nagelkerke R^2
452.870	0.017	0.024

The identified predictors do not allow for predicting the risk of the occurrence of unpaid claims in enterprises of the SME sector. The logistic regression model is insignificant in this case.

5.1.4. The Results of the Estimation of the Y4 Model

This model assumes that each of the indicated factors affects the risk of the occurrence of inability to pay obligations. Hypothesis 4—the time, size, and manner of conducting the activity affects the probability of the occurrence of high risk of inability to pay obligations—should be verified.

In this model, it should be assumed that:

1. The larger the company, the lower the probability of the occurrence of high risk
2. If the company operates in the international market, the probability of the occurrence of high risk is higher.
3. The longer the company operates in the market, the higher the probability of the occurrence of high risk.
4. If the company deals with risk management, the probability of the occurrence of high risk is lower.

The results of the Chi-square test, as in the previous cases, indicate that, jointly, all the independent variables in the model are statistically insignificant (Table 8). The value of the coefficient in the form of Nagelkerke R^2 indicates that the model independent variables explain only 4% of the occurrence of low or high risk of inability to pay obligations.

Table 8. Test results and log likelihood value and pseudo- R^2 for the model of the risk of inability to pay obligations.

Chi-square test results		
Chi-square	df	Sig.
1.060	4	0.901
Log likelihood value and pseudo- R^2		
-2 log likelihood	Cox-Snell R^2	Nagelkerke R^2
459.599	0.003	0.004

The indicated predictors do not allow for predicting the risk of the occurrence of inability to pay obligations in enterprises of the SME sector. The logistic regression model is insignificant in this case.

6. Discussion on the Results

The main hypothesis put forward in the research assumed that the time, scope, and manner of conducting the business enable the assessment of the probability of the occurrence of high financial risk in the sector of small and medium enterprises. The detailed analysis using logit models allowed the verification of this hypothesis only partially. The assessed models indicated that both internationalization and risk management are the factors affecting only the probability of the occurrence of high risk of insufficient profits whereas they do not have significant impact on the occurrence of the other sources of financial risk. It turned out that the longer small and medium enterprises operate in the foreign market, the higher the probability of the occurrence of high risk of low profits is. The probability of generating adequate profits, decreasing along with the time of the company's operation abroad, should be explained by an increase in the number of potential competitors. This is also associated with the generally prevailing trend in the SME sector, according to which more than 70% of companies go out of business after the first five years, most often due to high competition and low profitability (every third young company fails.) In relation to globalization and variability of the environment, financial risk associated with conducting a small business is thus growing steadily.

Regional factors are particularly important for the development and survival of small enterprises (Mrva and Stachová 2014). Moreover, according to Moffett et al. (2009), in the case of SMEs operating in the foreign market, there is a higher risk of failure to keep commitments due to various political and

financial environment. At the same time, [Mikušová \(2017\)](#) points out that when taking decisions on conducting a business actively, the costs of acquisition of new facilities, technologies, and processes are the most important; thus, these are the areas burdened with the largest financial risk. The companies providing services to the local market know well the habits and needs of their customers, which allows them to generate regular revenues. [Meyer and Meyer \(2016\)](#) claim that the success of SMEs is closely related to local economic conditions where each economic slowdown often carries financial problems for these companies. On the other hand, it is easier for them to take innovative actions, which affect the generated profits ([Mizla 2013](#)). As far as at the regional level, there are numerous barriers to development concerning, among others, credit financing of activities, the regional policy, or high fixed costs ([Danielak et al. 2017](#)); the process of entering the international market entails other obstacles. The research conducted among the sector of small and medium enterprises indicated that the greatest barrier is the price of products and services offered by enterprises. Another one is related to the costs of internationalization (internationalization and its barriers). Domestic companies often do not have sufficient knowledge of foreign bureaucracy, which means that they commit many related errors, which results in partial loss of profits. High risk of insufficient profits decreases if there is an increase in the commitment of these companies to the acquisition and updating of knowledge and skills adjusted to the requirements and regulations of a foreign destination.

The conducted research also demonstrated that risk management in entities of the SME sector, with a high degree of probability, contributes to reducing high risk of insufficient profits. Many SMEs do not apply risk management practices, mostly because they cannot afford to rededicate resources due to their constraints ([Marcelino-Sádaba et al. 2014](#)). This is confirmed by the research carried out by [Zoghi \(2017\)](#) among Turkish SMEs where, on average, half of them do not have formal procedures for risk management. This implies that the owners of small enterprises do not devote enough time to develop and implement risk strategies in their companies and more often show an informal approach to risk management ([Mudiyanselage and Jayathilake 2012](#)), whereas the practice of risk management indicates numerous benefits including better use of resources, greater predictability of operations, an increase in the quality of products and services, or reduction in waste. This significantly affects the level of generated profits of the company and depends on the used preventive measures ([Biała 2019](#)). This was also indicated by [Lukianchuk \(2015\)](#), in the studies of whom risk management affects better profitability of the entity and cash flows from the operating activities.

At the same, it was not indicated that the number of employees and operating time in the market are associated with the risk of low profits. All the identified predictors are also not related to the occurrence of the probability of foreign capital, inability to pay obligations and unpaid claims in enterprises of the SME sector. In turn, the research by [Amran et al. \(2009\)](#) confirmed the relationship between the size of the company and total comprehensive income among Malaysian enterprises. In turn, [Kajüter \(2006\)](#), on the basis of the analysis of German enterprises, indicated the lack of this relationship, though. The relationship between the size of the entity and the operating time and the conducted financial analysis was proven by [Ciechan-Kujawa and Goldmann \(2016\)](#), according to whom the larger the company is and the longer it operates in the market, the more complex the financial analysis of the entity is, which in turn, affects the reduction in financial risk in these companies. In 60% of the SME sector, the formal system of the complex risk management does not exist, which increases the probability of the occurrence of financial problems in these enterprises ([Kaszuba-Perz and Perz 2010](#)). Other priorities, the lack of required resources, and the opinion on the lack of benefits of the risk management system significantly impedes the process of its implementation in the analyzed sector.

7. Conclusions

Small and medium enterprises play a very important role in the economic development of every country. At the same time, this role is significantly inhibited due to financial problems of the SME sector. Many companies have difficulty in maintaining financial liquidity and debts. The lack of financial resources limits the effective development and innovativeness of these enterprises. At the

same time, the level of credit financing of these entities is very low. Some entities use foreign capital to remain in the market. All these factors contribute to an increase in financial risk in the SME sector. The ability to anticipate financial risks and to prepare for them can significantly help these enterprises to avoid bankruptcy.

The conducted research allowed for the identification of the probability of the occurrence of high financial risk in terms of parametric characteristics of the company. Finally, it was not indicated that the number of employees and operating time in the market threatened the risk of low profits. All the identified predictors, i.e., the internationalization of SMEs, operating time in the market, experience in risk management, and the size of the company, are also not associated with the occurrence of the likelihood of foreign capital, inability to pay obligations, and unpaid claims in enterprises of the SME sector. As a result, it was observed that the conducted activity abroad affects the probability of the occurrence of high risk of insufficient profits whereas taking appropriate actions related to risk management reduces this threat. Therefore, the SME sector companies, which operate in the foreign market, are recommended to manage risk with particular focus on yield management.

8. Limitations and Future Work

At the same time, the research has a few limitations. Firstly, it applies only to the SME sector, especially micro- and small enterprises, more rarely the medium ones. Therefore, the obtained results should not be generalized for large enterprises. Moreover, the low level of internationalization of the analyzed entities makes it impossible to generalize the results for global companies. At the same time, only financial risk was selected for the research, whereas the indicated parametric characteristics of entities may also determine economic risk incurred in these companies. Therefore, further research should be extended to the analysis of economic risk in these companies. It would be also advisable to assess the level of intensity of risk depending on parametric characteristics of large enterprises and global networks. It is necessary to conduct the comparative test in the field of assessment of financial risk in companies in different European countries.

Finally, the applied logit model requires zero-one categorization of variables, which results in the loss of detail of data; moreover, this model only indicates the existence of the relationship between the variables. Therefore, in further studies, it is necessary to apply the research method, which will enable taking into account a few levels of intensity of financial and economic risk and allow for proving the existence of the causal link for the identified significant relationships.

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