

Assessment of the economic condition of small enterprises in the Lubelskie voivodship of Poland

The results of the economic condition assessment of small enterprises located in the Lubelskie voivodship were presented. In order to analyze how the corporate performance is influenced by both internal (microeconomic) and external (macroeconomic) factors the logit micro-macro models were used. The conducted simulations show clearly that the microeconomic variables have much higher influence than macroeconomic variables on the condition of small enterprises. Macroeconomic variables have higher influence on firms, which showed more typical values of the microeconomic indicators between the 1st and the 3rd quartile than the worst and best firms. It can be then stated that small companies with very poor results can hardly benefit from an economic prosperity in the country. On the other hand, the very good enterprises will hardly suffer from a recession in the economy.

Key words: small enterprise, economic condition, good condition probability, logit micro-, macro models.

Introduction. The term “condition” is derived from the Latin word *conditio* and is most often used to describe the physical abilities, health, social position and living standards. In economics, however, the “condition” means a financial standing of an enterprise resulting from its business decisions and the prospects implied by these decisions [14].

So far, a commonly accepted symptom of poor (very poor) condition has been the fact that an insolvency procedure was initiated against the enterprise. The pioneering research on the factors determining a corporate bankruptcy was done by Edward I. Altman who proposed to use multiply discriminant analysis (MDA) models as an analytical tool [1]. Huge research efforts have been done to develop modeling methods for a bankruptcy [3]. Later research examining bankruptcy favors logistic regression (logit) over MDA for both theoretical and empirical reasons. Logit model requires less restrictive statistical assumptions and offers better empirical discrimination [15]. The logit models were first applied to prediction of corporate bankruptcy by D. Martin in 1977 [11].

Logit models are applied in a large number of recent bankruptcy and financial distress studies. Using a logit regression technique on data of over 2000 US SME over the period 1994-2002 E. Altman and G. Sabato developed a one-year default prediction model, which prediction power is almost 30 percent higher than a generic corporate model [2]. D. Hensher, S. Jones and W. H. Greene applied logit models to assess the distress level of Australian public companies [8]. Logit models for default prediction of technology credit guarantee fund of Korean SMEs were developed S. . Shon and H. S. Kim [15]. Microeconometrics studies based on logit models of financial distress of 200 companies in Poland realized M. Gruszczyński [6].

At the same time the definitions of a good and a poor enterprise condition have been significantly extended. One of the solutions is the assumption that the enterprise is in a poor condition when it enters a failure path. This entry is not a declaration of bankruptcy but is determined by other symptoms [13] (e.g. financial loss, negative cash flow, decrease of production volume, etc.). Kim and others defined “good condition” enterprises as those that survived on the market for at least 8 years [9]. D. Hensher and others introduced four-state failure model to depict a wider range of distress scenarios that public companies typically face in the real world [8].

The goal of this paper is to present the results of the economic condition assessment of small enterprises located in the Lubelskie voivodship. For this purpose the logit micro-macro models were used to allow an analysis of how the corporate performance is influenced by both internal (microeconomic) and external (macroeconomic) factors.

Methodology. Only a small fraction of small enterprises reports a bankruptcy¹ (e.g. a bankruptcy is practically an unknown phenomenon for sole entrepreneurs). Moreover, the data on those small enterprise, which collapsed, is mostly unavailable. Therefore, in this research the condition of a small enterprise was assessed adopting the approach of the enterprise's entry into a failure path.

The enterprises in a poor economic condition (which have entered the failure path) have been defined as the entities, which had a negative gross financial result and the employment and sales rates of growth were below zero. If at least one of these three indicators showed positive values, the economic situation of the enterprise was classified good enough so that the enterprise was not exposed to failure.

This definition allowed to describe the economic condition of an enterprise as a binomial variable, which accommodates two values:

- 0 if the enterprise is in a poor economic condition,
- 1 if the enterprise is in a good economic condition.

The economic condition (Y), as defined above, was calculated for the companies employing between 10 and 49 people in the years of 1999-2006. Only those enterprises were selected, which submitted financial reports, i.e. which operated in two consecutive fiscal years, starting from 1999. This means that the economic condition in 2000 was assessed only for those enterprises that reported both in 1999 and 2000. Similarly, the economic condition for 2001 was assessed only for the enterprises that submitted the reports for 2000 and 2001, etc.

Based on the reports a set of economic and financial indicators (X) was calculated for each enterprise. In all cases these indicators came from the year before the one, for which the economic condition was assessed.

This set of variables describing the situation of each individual enterprise was extended with macroeconomic variables – the same for all enterprises in the region in each year (Z). To sum up, each enterprise was then characterized by a vector, first element of which accommodated the values of 0 or 1 and described the economic condition of the enterprise in the year t . The other elements of the vector accommodated real values and described various aspects of the enterprise activities (25 microeconomic indicators) and the macroeconomic situation in the year of $t - 1$ (15 variables).

Dependencies between the enterprise condition in year t (the Y_{it} variable) and the microeconomic and macroeconomic variables in year $t - 1$ were modeled using the following logit micro-macro model [3]

$$\text{Logit } Y_{it} = \ln \frac{P}{1-P} = \alpha_0 + \sum_{j=1}^k \beta_j X_{it-1j} + \sum_{l=1}^m \gamma_l Z_{t-1l} + \varepsilon_{it} \quad (1)$$

where

- X_{it-1j} – j -th explanatory variable, describing individual characteristic of the i -th enterprise in year $t - 1$ (microeconomic variable);
- Z_{t-1l} – l -th explanatory variable, describing changes of selected macroeconomic indicator in year $t - 1$ (macroeconomic variable);
- t – year $t = 1, \dots, n$;
- ε_{it} – random disturbance.

The variables were selected using the idea of the forward stepwise procedure elimination supplemented by the condition of coincidence of structural parameters of model [7].

The structural parameters of the logit models were estimated using the maximum likelihood method [5]. In this paper the likelihood function was maximized using the Hooke-Jeeves pattern

¹ In 2004 among about 155 000 of business entities, registered in the REGON system in the Lubelskie voivodship, 325 (0.2%) declared bankruptcy.

move algorithm. The significance of each parameter was assessed with the t test and the Wald chi-square test. To assess the significance of the entire set of parameters in the model the likelihood ratio test was used [5].

The fit of the logit models to the empirical data was measured by the McFadden determination coefficient, also called pseudo- R^2 [12]. Additionally the goodness of fit was valuated by the percentage of correct predictions to total number of observatories (count R –squared) [10].

The expected (theoretical) probability that $Y = 1$, as calculated by the estimated model, is

$$\hat{P} = \frac{\exp(\hat{L})}{1 + \exp(\hat{L})} = \frac{\exp(a_0 + \sum_{j=1}^k b_j X_j + \sum_{l=1}^m c_l Z_l)}{1 + \exp(a_0 + \sum_{j=1}^k b_j X_j + \sum_{l=1}^m c_l Z_l)} \quad (2)$$

As the fraction of „poor condition” enterprises is significantly lower than that of “good condition” ones (the sample is unbalanced then) the prediction procedure was based on the formula [5]

$$\begin{aligned} \hat{y}_i &= 1 & \text{if } \hat{P} > P^* \\ \hat{y}_i &= 0 & \text{if } \hat{P} \leq P^* \end{aligned} \quad (3)$$

where P^* is a fraction of „1”s in the population.

In this situation the boundary value of the logit, which allows for discrimination, is ²

$$\hat{L}_0 = \ln\left(\frac{P^*}{1 - P^*}\right) \quad (4)$$

Therefore, if we calculate the probability of good condition using the following formula

$$\hat{P}^* = \frac{\exp(\hat{L} - \hat{L}_0)}{1 + \exp(\hat{L} - \hat{L}_0)} = \frac{\exp(a_0 + \sum_{j=1}^k b_j X_j + \sum_{l=1}^m c_l Z_l - \hat{L}_0)}{1 + \exp(a_0 + \sum_{j=1}^k b_j X_j + \sum_{l=1}^m c_l Z_l - \hat{L}_0)} \quad (5)$$

We will return to the logistic probability distribution, with $P^* = 0,5$ as the threshold value discriminating between the „good condition” and „poor condition” enterprises (as in a balanced sample).

This approach allows analysis of the impact of the explanatory variables on the probability of a good condition. To find the inflection point of the logistic probability curve for the selected variable Z (macroeconomic), assuming that the other X variables (microeconomic) accommodate a certain value (e.g. all the other variables are at their median value – M), the solution of the equation

$$\hat{P}^* = 0,5 \quad (6)$$

$$\text{is } Z = -\frac{a_0 + \sum_{j=1}^k b_j X_j^M - \hat{L}_0}{c} \quad (7)$$

where

- X_j^M – the median of the j -th microeconomic variable;
- c – estimated value of the parameter at Z .

² If $P^* = 0,5$ so that we have a balanced sample $\hat{L}_0 = 0$

Data. The research was done for 5714 small enterprises from Lubelskie voivodship³, operating in five business sectors (manufacturing, building, trade, transportation, real estate), that submitted financial reports in two consecutive years in the period of 1999-2006 and did not declare bankruptcy or insolvency in this period.

The biggest section of the sample is trade, which represents more than a half of the sample, while the smallest one is transportation.

Since 2001 the share of “poor condition” enterprises in the sample decreases. In 2001 such companies contributed to 19,8% of the population, in 2006 this share was only 5,4% – the lowest number in the reference period. This is undeniably a result of a steadily improving economic situation in Poland and the Lubelskie voivodship. In the entire reference period the average share of “poor condition” enterprises was 11,1%.

The lowest share of “poor condition” enterprises was recorded in real estate.

The changes of the condition of small enterprises in the Lubelskie voivodship were closely related to the changes of socio-economic situation in the country and in the region. An improvement of this situation resulted in a decrease of the share of “poor condition” enterprises.

It is worth mentioning that the condition of small enterprises is more strongly correlated with the changes of output, demand and investments at the national than the regional level. In case of the regional factors the condition of small enterprises is strongly related (the significance level of 0,05) to the dynamics of industrial production, investments and unemployment.

A particularly strong relationship exists between the macroeconomic variables and the condition of small manufacturing companies.

The *t* test for mean differences showed that the explanatory variables selected to the research had good discriminative power concerning the economic condition of small enterprises. In case of trade 70,7% of the variables are statistically significant (at the level of 0,05) as a discriminating factor. As for the remaining sectors this share is lower than a half, reaching the lowest value (32,0%) in case of transportation. A particularly high share of statistically significant dependencies between the corporate condition and the macroeconomic variables is visible in the real estate and trade (more than two thirds). In manufacturing more than a half of the macro-economic variables show a significant relation with the condition of an enterprise. As for transportation only one out of five macroeconomic variables has significant relation to the condition.

Optimum models of economic and financial condition of small enterprises in the Lubelskie voivodship. Based on the data reported by the enterprises in the period of 1999-2006 and the data on the economic situation in Poland and the Lubelskie voivodship, the logit micro-macro models of the economic condition of small enterprises in the region were estimated.

Not surprisingly, a major part of the micro- and macro variables was strongly correlated with each other. Therefore, these variables could not be included into one model. That is why the number of explanatory variables in the optimum models was much lower than it could be suggested by the results of the dependency analysis presented above.

The probability of a manufacturing enterprise having a good condition in the next year is higher if in the current year the enterprise had lower deficit of working capital, higher productivity, higher intellectual value added, higher return on total assets, as well as the situation on the stock exchange was better, so was the general economic situation in the country.

Assuming that the microeconomic variables take the value of the first quartile, the median and the third quartile the simulation of economic condition of small manufacturing companies, depending on the rate of return for the Warsaw Stock Exchange index – WIG was conducted using the models estimated (Fig. 1, Table 1).

³ The Lubelskie is one of 16 Polish regions on NUTS2 level, located in the south-eastern part of Poland and borders on Belarus and Ukraine.

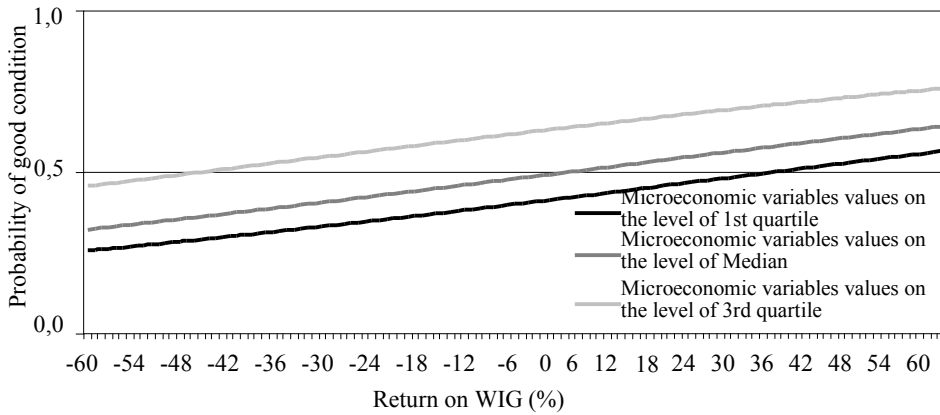


Fig. 1. Changes of the economic condition of small industrial enterprises in the Lubelskie voivodship depending on the value of microeconomic variables and the return on WIG.

Table 1

Optimum models of the condition of small enterprises in the Lubelskie voivodship

List of variables		Manufacturing	Building	Trade	Transportation	Real estate	
Constant term		1,129***	0,698**	1,139***	0,911***	1,852***	
Structural parameters for the variables	Tangible assests / Total assests	X_1				0,020***	
	Cash / Total assests	X_4			0,056**		
	Current liabilities	X_7				-0,484**	
	Current ratio	X_{12}		0,612***			
	Net working capital deficit	X_{14}	-0,239***				
	Labour productivity	X_{19}	3,695***		1,865***	4,284**	
	Intellectual value added	X_{20}	3,695**				
	Return on total assests	X_{26}	1,193***	1,760**	2,664***	2,970***	
	Return on WIG	Z_8	0,011***				
	Dynamics of sales of industrial production in the voivodship Year 1999 = 100	Z_{11}		0,036**			0,080***
	Dynamics of average real income in the voivodship. Previous year = 100	Z_{14}			0,275***		
	χ^2		115,113***	34,811***	254,056***	37,082***	31,593***
Pseudo R^2		0,123	0,085	0,117	0,169	0,144	
Count R^2 in %		66,12	59,39	63,61	70,18	72,25	

With the return on WIG of 7% the enterprises having the current year's result at the median level will be characterized by a good economic condition in the next year. If the return on WIG, a leading indicator for economic prosperity, is lower, the median – level enterprises may expect a poor economic condition. In case of an enterprise, the microeconomic variables of which are at the first-quartile level, a good condition may be expected when the return on WIG is at least 36%. As for the enterprises showing the microeconomic variables at the third-quartile level, a poor economic condition may be forecasted if the WIG index drops by 55%.

In the next year a better economic condition may be expected by those small building companies that in the current year had higher current ratio and profitability. Moreover, the higher dynamics of industrial production in the region is, the better condition may be expected.

This macroeconomic variable is rather not a cause but a symptom. It provides information that the demand for construction services increases thus improving the economic situation of the companies during the economic prosperity and the industry growth.

The condition of the small trade companies is best characterized by a model consisting of two microeconomic variables: labour productivity (X_{19}) and return on assets (X_{26}), and one macroeconomic variable – dynamics of average real income in the Lubelskie voivodship (Z_{14}). All variables have a stimulating effect, i.e. the higher values they accommodate, the higher probability of an improvement of the enterprise condition is. The inclusion of the income-related variable into the model is fully justified because the situation of trade companies depends strongly on the purchasing power of the population (Fig. 2).

The economic condition of small transportation companies depended on three microeconomic variables only: cash / total assets (X_4), labour productivity (X_{19}) and the return on assets (X_{26}). The higher values of these variables are, the higher probability of improvement of the economic condition is.

The condition of small real estate enterprises is best explained by a model including the microeconomic variables: X_1 – tangible assets / total assets, X_7 – current liabilities and the macroeconomic variable Z_{11} – dynamics of industrial production in lubelskie voievodeship. The X_7 is a destimulant variable while the other two variables are stimulants. Also in this case the condition of an enterprise is determined by the economic situation in the region (Fig. 3).

The simulations conducted show clearly that the macroeconomic variables have much higher influence on the probability of improvement of the economic condition of small enterprises (except

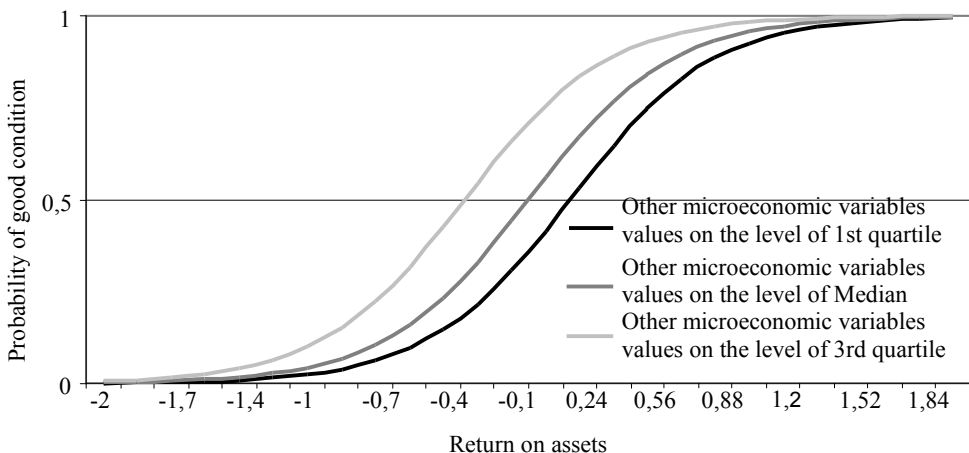


Fig. 2. Changes of the economic and financial condition of small transportation enterprises in the Lubelskie voivodship depending on the value of microeconomic variables and ROA

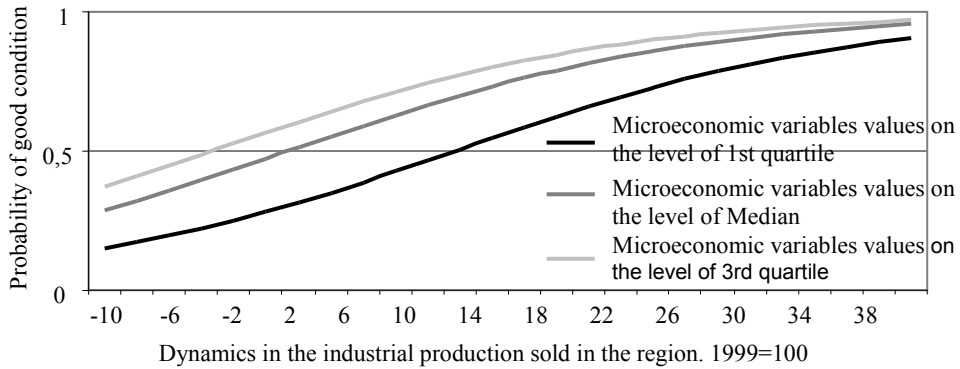


Fig. 3. Changes of the economic condition of small real estate enterprises in the Lubelskie voivodship depending on the value of microeconomic variables and the dynamics of the industrial production sold in the region.

Table 2

Increase of „good condition” probability, if the variable changes its value from the minimum to the maximum, with all the other variables accommodating the median value

Manufacturing		Building		Trade		Transportation		Real estate	
Variable	p increase	Variable	p increase	Variable	p increase	Variable	p increase	Variable	p increase
X_{14}	0,7899	X_{12}	0,7054	X_{19}	0,6042	X_4	0,5419	X_1	0,4471
X_{19}	0,5840	X_{26}	0,6499	X_{26}	0,9744	X_{19}	0,6284	X_7	0,5413 *
X_{20}	0,8903	Z_{11}	0,4116	Z_{14}	0,5302	X_{26}	0,8360	Z_{11}	0,7809
X_{26}	0,8738								
Z_8	0,1819								

* The X_7 changes from maximum to minimum.

Table 3

Increase of „good condition” probability, if the variable changes its value from the 1st to the 3rd quartile, with all the other variables accommodating the median value

Manufacturing		Building		Trade		Transportation		Real estate	
Variable	p increase	Variable	p increase	Variable	p increase	Variable	p increase	Variable	p increase
X_{14}	0,0369	X_{12}	0,1460	X_{19}	0,2022	X_4	0,1623	X_1	0,3320
X_{19}	0,1778	X_{26}	0,0569	X_{26}	0,0744	X_{19}	0,2005	X_7	0,0509*
X_{20}	0,0377	Z_{11}	0,2200	Z_{14}	0,0966	X_{26}	0,0993	Z_{11}	0,3166
X_{26}	0,0366								
Z_8	0,1042								

* The X_7 changes from maximum to minimum.

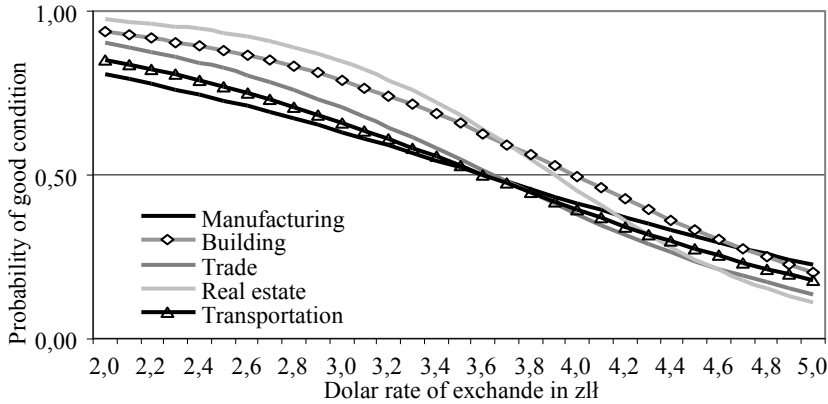


Fig. 4. Changes of the economic condition depending on the USD exchange rate, assuming that the microeconomic variables are equal to the median for each sector of the economy

the real estate), which showed typical values of the microeconomic indicators (between the 1st and the 3rd quartile), than it was in the case of the companies with extreme values of the microeconomic variables. In other words, the economic situation of both the worst and the best companies is not much affected by the economic situation in the country (Table 2-3, Fig. 4).

It can be then stated that small companies with very poor results can hardly benefit from an economic prosperity in the country. On the other hand, the very good enterprises will hardly suffer from a recession in the economy.

To assess how a macroeconomic variable affects the changes of the economic condition of small enterprises, a separate model was developed for each sector based on two microeconomic variables (X_{19} – labour productivity, X_{20} – ROA) and one macroeconomic variable Z_7 – a yearly average USD exchange rate.

A low USD exchange rate contributed to a higher probability of a good condition of small enterprises in the Lubelskie voivodship. The parameter accompanying the Z_7 variable is significant at .01 for manufacturing, building and trade, at .05 in case of real estate and at .1 in transportation (Table 4).

The small real estate companies show the highest sensitivity to the fluctuation of the USD exchange rate. A USD appreciation from PLN 2 to PLN 5 results in the decrease of the “good condition” probability by between 0,86 (1st quartile) to 0,82 (3rd quartile), depending on the values of the microeconomic variables. The lowest sensitivity can be observed for the small manufacturing companies. In this case, the same USD appreciation decreases the probability by slightly more than 0.5. It should be also stated that an improvement of the internal situation in the company, illustrated by higher values of both microeconomic variables, decreases the influence of USD exchange rate on the corporate economic condition. The improvement of the situation of the enterprise is also accompanied by the growing exchange rate, at which the “good condition” probability is lower than 0,5. The pace of this growth is much higher in case of less sensitive sectors (manufacturing, transportation). As for the manufacturing sector this probability is equal to 0,5 at the exchange rate of PLN3,61, if the microeconomic variables accommodate the 1st quartile values, and PLN4,52, if the microeconomic variables accommodate the 3rd quartile values. On the other hand, in case of the real estate, the threshold value for the exchange rate is PLN3,90, if the microeconomic variables accommodate the 1st quartile values, however, when the microeconomic variables are set at the 3rd quartile values, this threshold value increases only to PLN 4,12. In case of the building sector this increase is even lower. It is also worth mentioning that at the USD exchange rate of PLN2,5 the

Table 4

„Good condition” probability distribution depending on the yearly average USD exchange rate

Sector	Exchange rate at which $P = 0,5$			Difference of „good condition” probabilities when the USD exchange rate changes from PLN 2 to PLN 5			„Good condition” probability when the Exchange rate is PLN 2.5		
	Value of microeconomic variables (X19 and X20) on the level of:								
	1 st quartile	Median	3 rd quartile	1 st quartile	Median	3 rd quartile	1 st quartile	Median	3 rd quartile
Manufacturing	3,61	3,93	4,52	0,5810	0,5682	0,5076	0,7272	0,7800	0,8577
Building	3,98	4,03	4,18	0,7331	0,7256	0,7001	0,8802	0,8875	0,9062
Trade	3,64	3,96	4,45	0,7671	0,7393	0,6444	0,8249	0,8795	0,9341
Real estate	3,90	3,99	4,12	0,8633	0,8503	0,8238	0,9346	0,9437	0,9560
Transportation	3,61	4,09	4,69	0,6727	0,6363	0,5327	0,7695	0,8504	0,9161

“good condition” probability exceeds 0,7 for all sectors, even if the microeconomic variables for a given company reach the 1st quartile.

References

1. E. I. Altman, “Financial Ratios, Discriminant Analysis and the Prediction of Corporate Bankruptcy”, *The Journal of Finance*, Vol. XXIII, September 1968, No. 4, pp. 589-609.
2. E. I. Altman, G. Sabato, “Modeling Credit Risk for SMEs: Evidence from the US Market”, *Abacus*, Vol. 43, No. 3, pp. 332-357, September 2007
3. S. Balcaen, H. Ooghe, 35 years of studies on business failure: an overview of the classical statistical methodologies and their related problems, Working Paper 248, Universiteit Gent, Faculteit Economie en Bedrijfskunde, Gent, June 2004, pp. 1-56.
4. K. Carling, T. Jacobson, J. Linde, K. Roszbach, “Exploring relationship between Firms’ Balance Sheets and the Macro Economy”, *Journal of Financial Stability*, Vol. 1, Issue 3, April 2005, pp. 308-341.
5. W. H. Greene, *Econometric Analysis*, Fifth Edition, Prentice Hall, New Jersey, 2003 ch. 17.
6. M. Gruszczyński, “Financial distress of Companies in Poland”, *International Advances in Economic Research*, Vol. 10, No 4, November 2004
7. Z. Hellwig Z., „Przechodność relacji skorelowania zmiennych losowych i płynące stąd wnioski ekonometryczne”, *Przegląd Statystyczny*, 1 (1976).
8. D. A. Hensher, S. Jones, W. H. Greene, “An Error Component Logit Analysis of Corporate Bankruptcy and Insolvency Risk in Australia”, *Economic Record*, Vol. 83, No 260, March 2007, pp. 86-2007
9. K. S. Kim, T. L. Knotts, S. C. Jones, “Characterizing viability of small manufacturing enterprises (SME) in the market”, *Expert Systems with Applications* 34, (2008), p. 128
10. G. S. Maddala, *Introduction to econometrics*, 3rd ed., Macmillan, New York, 2001, p.334
11. D. Martin, “Early Warning of Bank Failure: A Logit Regression Approach”, *Journal of Banking and Finance*, Vol. 1, 1977 pp. 249-276.
12. D. McFadden, “Conditional logit analysis of qualitative choice behaviour”, in: Zarembka P. (ed.) *Frontiers in econometrics*, Academic Press, New York, 1974

13. Prusak B., Nowoczesne metody prognozowania zagrożenia finansowego przedsiębiorstw, Difin, Warszawa 2005, p. 17.
14. Siemińska E., Finansowa kondycja firmy. Metody pomiaru i oceny. Poltext, Warszawa 2003, pp. 11-12.
15. S. Y. Sohn, H. S. Kim, "Random effects logistic regression model for default prediction of technology credit guarantee fund", European Journal of Operational Research, 183 (2007), pp. 472-478.

Коверський М. Оцінка економічного стану малих підприємств Люблінського воєводства Польщі.

В сучасній економіці велику роль відіграють малі підприємства, а їх фінансово-економічний стан є вирішальним для рівня розвитку окремих регіонів. Висвітлено результати моделювання оцінки економічного стану малих підприємств чисельністю від 10 до 49 працівників у Люблінському воєводстві, розташованому в східній Польщі на кордоні з Білоруссю та Україною. Дослідження охоплюють 5714 малих підприємств, що належать до п'яти сфер (промисловість, будівництво, торгівля, транспорт, обслуговування нерухомості) в 1999–2006 рр. Підприємствами, які перебувають у поганому економічно-фінансовому стані (або потрапили в смугу невдач), визнано структури, що одночасно характеризуються негативним фінансовим результатом бруто та мінусовими показниками змін зайнятості та продажів. Якщо підприємство забезпечувало виконання цих трьох критеріїв, то змінна, що описувала його стан, набирала значення 0, в протилежній ситуації – значення 1. Одночасно у відповідності з фінансовими звітами для кожного підприємства обраховано з річним запізненням групу економічно-фінансових показників, що описували його стан. До групи змінних, що описують індивідуальний стан підприємства, включено групу макроекономічних змінних – щороку однакових для всіх підприємств у регіоні. Це дозволило вибудувати логіт-моделі мікро-, макро. Розрахунки, здійснені на основі оціночних моделей стимуляції, показали, що на стан малих фірм значно більший вплив мали макроекономічні чинники. До змін економічної ситуації держави і регіону були більш пристосовані фірми у середньому стані. Підприємства у поганому стані не змогли скористатися з періоду процвітання, з іншого боку – криза не мала значного впливу на ситуацію у фірмах у дуже доброму стані. Ключові слова: малі підприємства, економічний стан, вірогідність доброго стану, логіт-моделі мікро-, макророззначення.

Коверський М. Оценка экономического состояния малых предприятий Люблинского воеводства Польши.

Представлены результаты оценки экономического состояния малых предприятий Люблинского воеводства. С помощью микро- и макро- логит-моделей проанализировано влияние на состояние предприятия как внутренних (микроэкономический), так и внешних (макроэкономический) факторов. Проведенное моделирование показало, что микроэкономические переменные оказывают намного большее влияние на состояние малых предприятий, чем макроэкономические. Макроекономические переменные оказывают большее влияние на фирмы, которые между первым и третьим квартилями демонстрировали более типичные показатели макроэкономических индикаторов, чем фирмы с наихудшими и лучшими показателями. Таким образом можно говорить о том, что малые компании с очень плохими показателями едва ли могут извлечь выгоду из экономического процветания в стране. С другой стороны, очень хорошие предприятия едва ли пострадают от спада в экономике.

Ключевые слова: малые предприятия, экономическое состояние, вероятность хорошего состояния, логит-модели микро-, макроопределения.

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