

**Kateryna Vaskivska**

*Doctor of Science (Economics), Professor,  
Catholic University named after John Paul II, Lublin, Poland*

**Olha Detsyk**

*postgraduate student,  
Ivan Franko Lviv National University, Lviv, Ukraine*

## **ECONOMETRIC MODELLING OF EFFICIENCY OF FINANCIAL RESOURCES MANAGEMENT AT ENTERPRISES**

*The article gives analysis of main financial indicators of performance of a private enterprise and farming enterprise. Using econometric modelling, particularly probit-model, the authors ground efficiency of financial resources management, basing on the indicators. It is proved that efficient management of financial resources of an enterprise covers all structural components of the system of business management. It is argued that change of earnings from sales of products influences change of efficiency of financial resources management and there is a direct relation between the indicators.*

**Key words:** *management efficiency, financial resources, econometric modelling, probit-model, farming enterprise.*

### **Васьківська К. В., Децик О. І. ЕКОНОМЕТРИЧНЕ МОДЕЛЮВАННЯ ЕФЕКТИВНОСТІ УПРАВЛІННЯ ФІНАНСОВИМИ РЕСУРСАМИ НА ПІДПРИЄМСТВАХ**

*У статті проведений аналіз основних фінансових показників функціонування приватного підприємства та фермерського господарства, на основі яких, за допомогою економетричного моделювання, зокрема використання probit-моделі, підтверджено ефективність управління фінансовими ресурсами. Підкреслено, що ефективне управління фінансовими ресурсами підприємства охоплює всі структурні компоненти системи управління бізнесом. Доведено, що зміна виручки від реалізації продукції впливає на зміну ефективності управління фінансовими ресурсами і між даними показниками існує прямий зв'язок.*

**Ключові слова:** *ефективність управління, фінансові ресурси, економетричне моделювання, probit-модель, фермерське господарство.*

Efficient management of financial resources is a precondition for efficient performance of enterprises, in particular farming enterprises.

Efficient management of financial resources of enterprises covers all structural components of the system of business management. Financial conditions of an enterprise depend both on the structure of financial potential and on the structure of human and productive potential. For enterprises, financial potential is an indicator of economic activity as to efficiency of managerial decisions in financial field [2].

Growth of financial potential is possible under combination of different instruments, whose character depends on peculiarities of finances and established financial conditions of the enterprise. Analysis of financial conditions makes base for development and implementation of a complex of measures as to growth of financial potential of enterprises [5, P. 147-151].

To analyze efficiency of management of an enterprise's financial resources we make diagnostics of financial conditions of private enterprise "Edem" and farming enterprise LLC "Barth", operating in Zhovkva district of Lviv region, under almost similar economic conditions.

The private enterprise "Edem" was established according to the acting legislature of Ukraine [1] by way of integration of contributions, i.e. attraction of additional financial resources and personal savings of employees to increase their financial interest in the results of production activity. To make operational planning of financial activity at the PE "Edem" they develop complexes of

short-term planned tasks as to financial support of the main directions of economic activity of the enterprise.

For each enterprise, it is important to know its financial conditions in the future, caused by unexpected expenditures and conjuncture of the market of the kinds of products, which the enterprise produces and sells. It is essential for managers of the enterprise to know what amount of sales of the product (sale volume) will provide break-even production (zero profitability). Such volume of sales is called critical one, because its fall causes losses for the enterprise. At the same time, increase of sales above the critical amount secures profitability of production. Top managers of the enterprise should also know how volume of production and sales should be increased to obtain the expected amount of profit and how change of productive expenses, which can be corrected in short-term period, effect the value of profit.

Increase of capital productivity is a positive factor in economic activity, causing improvement of service supply.

Analyzing results of the made calculations in the table 1, one can note increase of the amount of own circulating assets. Rise of the equity to total assets ratio from 0,77 % to 0,87 % is a positive factor. However, it is not an essential improvement of financial conditions of the enterprise.

Basing on the results of financial analysis one should note that the farming enterprise "Edem" demonstrates the obvious tendency to economic growth. In the last three years, the enterprise took the leading place in supply of agricultural products in Lviv region. It can be seen at Fig. 1, demonstrating trends of change of total income and

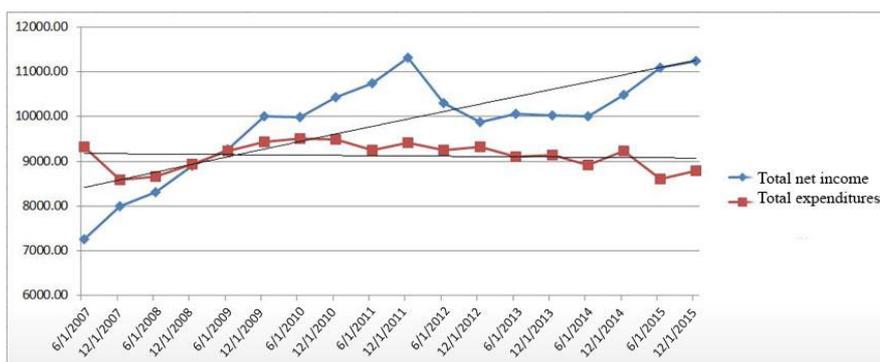
expenditures of production.

*Table 1*

**Principal absolute and relative indicators of financial firmness of Farming Enterprise “Edem” in 2013 – 2015. \***

Indicators	2013	2014	2015	Change (+,-)
Own circulating costs	6567	7391,9	5960,7	-
Supply of reserves with own circulating costs	5124,9	6733,4	5337,1	-
Ratio of supply of circulating assets with own costs	0,57	0,67	0,64	+
Equity to total assets ratio	0,77	0,73	0,87	+
Debt to equity ratio	0,02	0,02	0,01	-
Leverage ratio	1,29	1,14	1,37	-

\*calculated, basing on the source [3].



**Fig. 1. Trend of change of income and expenditures of production at the PE “Edem”. 2007 – 2015. \***

\*shaped, basing on the source [3].

As the diagram shows, net income of the company has increased since 2011, and in 2011, the enterprise achieved the regional level of products sales, causing some fall of profitability. However, since the middle of 2012, the enterprise has gradually achieved the level of net income of 2011 with the tendency to the further rise. In the last year, the company demonstrated tendency to decrease of production expenditure. Special attention should be paid to the period of the end of 2008 – beginning of 2009. It was the moment when net income exceeded expenditures for production. In other words, since the middle of 2009, the farming enterprise has become to get profit.

Speaking about the farming enterprise LLC “Barth”, it also operates demonstrating the obvious tendency to growth. It can be seen at the Fig. 2, presenting trends of changes of total income and expenditures of production for the period from January 2009 to December 2015.

Making analysis of the structure of capital and property of PE “Edem” it is reasonable to mark that:

- value of equity to total assets ratio in the period 2007 – 2008 was rather low. It can be explained by the process of the enterprise establishment and related expenditures and processes. Correctness of the mentioned assumption is proved by the fact that in the next periods the ratio was

in the standard branch limits. Share of capital assets and share of fixed assets in the structure of assets argues an easy structure of the enterprise.

- assets of the enterprise consist of unfinished capital investment, fixed assets, long-term biological assets, productive reserves, current biological assets, debts receivable, money costs. One should note that value of monetary costs did not exceed 1 % of the total balance value in the whole period of the research.

- liabilities of the enterprise consist of its nominal capital, supplementary contributed capital, reserve capital, undistributed profit (retained loss), long-term liabilities and current liabilities.

In spite of the fact that the PE “Edem” actually has had no free money costs (according to the balance information), it is a typical situation for agricultural enterprises, they mainly have no free money costs. It is caused by the seasonal character of production and high rate of resources turnover: first, all free costs are immediately contributed into production for further development of the business; second, free costs usually appear in the period of products sales (in September – November and April).

Thus, indicator of absolute liquidity of the PE “Edem” is rather low. However, all short-term liabilities are paid in time. It is proved by the

indicator of fast liquidity. Considering liquidity of the third level and comparing it to the average indicator in Ukraine, one can make conclusion that it is higher than the average one in the branch, demonstrating tendency to rise. Thus, it can prove the fact that paying capacity is high in a mediate-term period. Making additional estimation of the term of the enterprise’s assets transformation into payment instrument, one can see that usually debts receivable are paid in 19,2 days, and stock of goods can be transformed into assets in 23 days. Considering the mentioned indicators, one can make conclusion that in 2009 – 2015 the expected paying capacity of the PE “Edem” was rather high in short-term period under conditions of on time discharge of debts receivable.



**Fig. 2. – Trend of change of income and expenditures of production at the LLC “Barth”, 2009 – 2015. \***

\*shaped, basing on the source [4].

Speaking about characteristics of efficiency as to formation of the enterprise’s property, one can speak

about rather efficiently established structure. Using “the golden rule of balance” and “the golden rule of financing”, one can state the fact that the enterprise grows its financial firmness (growth of assets happens at the same rate as the growth of efficient indicators of economic activity).

Estimating profitability, we observe relation between events in development of the farming enterprise and profitability of its performance. In 2007 – 2008, all indicators of profitability had negative value and since 2009, the indicators of profitability have increased and got stable. However, there are variation in the value of profitability of own capital in the first half of 2011, caused by increase of expenses because of the enterprise entry to the regional level. With the time lag of half-year, the same variation is observed in the indicator of assets profitability, and after half-year more – in the indicator of operative profitability of sales.

Estimation of turnover indicators proves efficiency of money flows management. Considering the made calculations, one can conclude that dynamics of change of all turnover indicators was rather stable and low in the studied period. Under other equal conditions, one confirms that the farming enterprise has no problems as to payment of supplied/obtained services and growth of capital turnover rate.

Analyzing the time of transformation of the enterprise's assets into payment instrument, one can see that in average, debts receivable is discharged in 49,2 days, and stock of goods can be usually transformed into assets in 93 days. Concerning the mentioned indicators, one can make conclusions that expected paying capacity of the LLC “Barth” was rather high in short-term period under condition of on time discharge of debts receivable in 2012 – 2015.

Speaking about characteristics of efficiency as to formation of the enterprise's property, one can make conclusion about rather efficiently established structure. Using “the golden rule of balance” and “the golden rule of financing”, one can state the fact that the enterprise grows its financial stability (growth of assets happens at the same rate as the growth of efficient indicators of economic activity).

We studied relations between the peaks of crisis manifestations at the end of the first quarter of 2011 and operational profitability of the LLC “Barth”. One should pay attention to a very low indicator of operational profitability in the first half of 2011. Making estimation of dynamic change of the mentioned indicator in 2012, one can also note neutral expectations by the company as to development of the branch (it is proved by gradually rising operational profitability to the end of 2015). Indicator of profitability of the own capital though demonstrates rather high efficiency of employment of the own capital.

Estimation of turnover indicators proves efficiency of money flows management. Dynamics of change of all indicators of turnover, but coefficient of turnover and credit debts was rather stable and low in the period of 2011 – 2012. At the beginning of 2012, indicator of turnover of credit debts rapidly decreased by means of slower operational activity of the enterprise. For the period from the first to the third quarter of 2012, all

indicators of turnover demonstrated the tendency to increase. Under other equal conditions, one confirms that the farming enterprises have no problems as to payment of supplied/obtained services.

Making analysis of financial records, which characterize development of the LLC “Barth” in 2009 – 2015, one concludes that the farming enterprise has used mainly not new equipment, brought from mother company. It is seen from the indicators of depreciation coefficient and coefficient of availability. The coefficients fell in 2009 – 2013. However, in 2014, production means were partially substituted in the Ukrainian affiliation because of rise of profitability in 2013. It happened within the frames of the policy of financial activity management.

Thus, having made comparative characteristics of financial indicators of the PE “Edem” and LLC “Barth”, we can say that both enterprises operate with the obvious tendency to growth and try to optimize their financial activity by means of efficient management of financial resources.

Basing on results of the carried research one should consider all possible variants to improve efficiency of management of financial activity for Ukrainian farming.

To determine efficiency of the system of financial resources management at the PE “Edem” and LLC “Barth”, we also used econometric modelling to control growth of profitability while managing financial activity of the farming enterprise. It consisted of the following stages:

- collection of data on each enterprise by studying of financial records and strategy of the enterprise's development;
- processing of the data, their consolidation for modelling;
- shaping of probit-model of probability to increase profitability by means of introduction of changes into operation of the enterprise;
- calculation of expenditures for the process, aimed to introduce the changes into the company's operation;
- making conclusions and possibilities to make the existing models of financial potential management more efficient.

Let us make more detailed analysis of the stages.

Collection of data on each enterprise by studying its financial records. In February 2013, management of the companies made decision as to additional research on profitability change by means of financial activity management, which is based on research of financial records and strategy of development of the farming enterprise.

Processing of the data, their consolidation for modelling. Having obtained the filled questionnaires, we group the information and insert it into the table Excel. Grouping is made according to the following parameters (table 2): age of the company operation (in years); available investment into technologies and knowledges (1/0); amount of investment into technologies (in UAH); change of cost price of products (in UAH); change of earnings from sales of products (in UAH); short-term crediting (from 0 to 2); long-term crediting (1/0); change of the number of outlets of products sales (units); unexpected expenditures (1/0).

Table 2

Indicators of grouping of the data on efficiency of motivation process\*

	Title	Explanation
Independent variables	Age	Age of the company operation, 1 – the first year of activity
	Investment into technologies	Investment into technologies and knowledge (Purchase of new machinery, introduction of new technologies of feeding). 0 – absent, 1 – present.
	Amount of investment into technologies	Amount of investment into technologies.
	Change of products cost price	Change of cost price of products in comparison to the previous year
	Change of earnings	Change of earnings from products sales in comparison to the previous year
	Short-term crediting	Presence of short-term credits: More than one – 2, one – 1, less than one – 0.
	Long-term crediting	Presence of long-term credits. Present – 1, absent – 0.
	Change of the number of outlets of products sales	Number of outlets of products sales
	Unexpected expenditures	Presence of unexpected expenditures in the company. 0 – absent, 1 – present.
Dependent variable	Change of income	How profitability of the company has changed in comparison to the previous year. 0 – got lower, 1 – kept the same, 2 – got higher.

\*shaped by the author.

1. Creation of probit-model as to probability of personnel motivating by means of the introduced measures.

Specification of the model.

Probit-model is described by the formula of standard normal distribution (1) [5]:

$$prob(y_i = 1) = \Phi(\mathbf{X}_i\beta) = \int_{-\infty}^{\mathbf{X}_i\beta} \frac{1}{\sqrt{2\pi}} \exp\left(-\frac{z^2}{2}\right) dz \quad (1)$$

Its value is within the interval [0,1], and it is assumed that  $\varepsilon_i \sim N(0, \sigma^2)$ .

Let us observe the variable y, that obtains the value 0 or 1. We define y\* in the following way:

$$y_i^* = \mathbf{X}_i\beta + \varepsilon_i, \quad (2)$$

where y\* is not observed by us and we get just value y<sub>i</sub>

$$y_i = \begin{cases} 1, & \text{if } y_i^* > 0 \\ 0, & \text{otherwise} \end{cases} \quad (3)$$

We demonstrate that condition (3) creates probit-model. First, we mark:

$$\begin{aligned} prob(y_i = 1) &= prob(y_i^* > 0) = \\ &= prob(\mathbf{X}_i\beta + \varepsilon_i > 0) = \\ &= prob(\varepsilon_i > -\mathbf{X}_i\beta) = \\ &= prob\left(\frac{\varepsilon_i}{\sigma} > -\mathbf{X}_i\frac{\beta}{\sigma}\right) \end{aligned} \quad (4)$$

where  $\sigma^2$  – is dispersion  $\varepsilon$ . Parting enables move to the value  $\frac{\beta}{\sigma}$ , having standard normal distribution, i.e. zero mathematic expectation and unit variance. Value  $\frac{\varepsilon}{\sigma}$  is a standard normally distributed, and thus, it is obtained with  $\varepsilon$  calculation of its mathematic expectation (zero) and

parting to it variance  $\sigma$ . For probit-model, the distribution is symmetric and expression (4) can be demonstrated in the following way:

$$\begin{aligned} prob(y_i = 1) &= prob\left(\frac{\varepsilon_i}{\sigma} > -\mathbf{X}_i\frac{\beta}{\sigma}\right) = \\ &= prob\left(\frac{\varepsilon_i}{\sigma} < \mathbf{X}_i\frac{\beta}{\sigma}\right) = \\ &= \Phi\left(\mathbf{X}_i\frac{\beta}{\sigma}\right) \end{aligned} \quad (5)$$

Later we get likelihood function. As long as:

$$prob(y_i = 1) = \Phi\left(\mathbf{X}_i\frac{\beta}{\sigma}\right) \quad (6)$$

thus:

$$prob(y_i = 0) = 1 - \Phi\left(\mathbf{X}_i\frac{\beta}{\sigma}\right) \quad (7)$$

If observations are independent in combination, probability of the whole selection equals the product of probabilities of each observation. Let observation 1, ..., m have result y<sub>i</sub>=0, and for m+1, ..., n observations y<sub>i</sub>=1. Then:

$$L = \prod_{i=1}^m prob(y_i = 0) * \prod_{i=m+1}^n prob(y_i = 1) \quad (8)$$

$$L = \prod_{i=1}^m \left[1 - \Phi\left(\mathbf{X}_i\frac{\beta}{\sigma}\right)\right] * \prod_{i=m+1}^n \Phi\left(\mathbf{X}_i\frac{\beta}{\sigma}\right) \quad (9)$$

$$L = \prod_{i=1}^n \Phi\left(\mathbf{X}_i\frac{\beta}{\sigma}\right)^{y_i} * \left[1 - \Phi\left(\mathbf{X}_i\frac{\beta}{\sigma}\right)\right]^{1-y_i} \quad (10)$$

Calculation of probit is made immediately, even if the model is non-linear and has no exact expression for  $\Phi$ . Value of the function  $\Phi$  is calculated by numeral methods. Procedure of calculation consists of determination of estimates for probit and their further use as an initial point of search. The search is made until values of likelihood function increase. Method of quantitative estimation is one of the methods of search. Estimates of probit are found in the iterative way:

$$\beta_{f+1} = \beta_f + \mathbf{I}^{-1}(\beta_f) * \frac{\partial l}{\partial \beta_f}, \quad (11)$$

where index defines number of iteration.  $\mathbf{I}(\beta_f)$  – is estimation of informational matrix (square symmetric matrix of negative second derivatives), calculated at the last step. If difference between  $\beta_{f+1}$  and  $\beta_f$  is close to zero, search is stopped. Differences in values of coefficients at two better iterations will be close to zero, if value  $dl/d\beta$  (derivative of logarithmic function of likelihood according to corresponding parameters) is close to zero.

There is a widely spread assumption that change of a company profitability generally depends on change of earnings and cost price of products. For the research we assumed that profitability of the farming enterprise depends on age of the company performance, presence of investment into technologies and knowledge, amount of investment into technologies, short-term and long-term crediting and unexpected expenditures. Formally, it can be depicted by the following formula (12):

$$\begin{aligned} CH.IN. &= \beta_0 + \beta_1 Age + \beta_2 Inv.Techn.1 + \beta_3 Am.Inv.Techn. \\ &+ \beta_4 Ch.cost.pr.prod. + \beta_5 Ch.earn. + \beta_6 Short.cred. + \\ &+ \beta_7 Long.cred. + \beta_8 Numb.outl.prod.sales. + \beta_9 Unexp. \\ &Expend. \end{aligned} \quad (12)$$

Hypothesis.

Shaping the model, we assume that all the mentioned factors are essential and make positive impact on profitability of the farming enterprise. The most efficient are factors of change of cost price of products, change of earnings from sales, investment into technologies and knowledge (thus, coefficients should be the highest and positive ones under such variables).

Model shaping.

A separate model has been built for each enterprise. Probit-model for the LLC “Barth” (fig. 3). In the process of the model shaping we dropped the indicators of age of the company operation, presence of investment into technologies and knowledge, amount of investment into technologies, change of earnings and cost price of products, short-term and long-term credits, because the indicators are not statistically essential. It means that presence or absence of the factors makes no impact on efficiency of finance management at the farming enterprise.

Dependent Variable: ZM\_DOH  
 Method: ML – Binary Probit (Quadratic hill climbing)  
 Date 05/20/2015 Time: 19:21  
 Sample: 2003 2015  
 Included observations: 8  
 Convergence achieved after 4 iterations  
 Covariance matrix computed using second derivatives

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	-0.376277	0.486887	-0.772822	0.4396
ZM_VUR	0.000927	0.000908	1.021569	0.3070

McFadden R-squared	0.139645	Mean dependent var	0.375000
S.D. dependent var	0.517549	S.E. of regression	0.515184
Akaike info criterion	1.638359	Sum squared resid	1.592485
Schwarz criterion	1.658219	Log likelihood	-4.553435
Hannan-Quinn criter.	1.504408	Restr. log likelihood	-5.292506
LR statistic	1.478141	Avg. log likelihood	-0.569179
Prob(LR statistic)	0.224066		

Obs with Dep=0	5	Total obs	8
Obs with Dep=1	3		

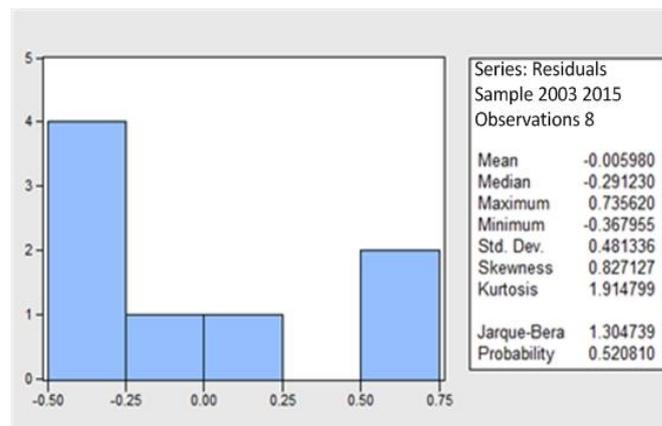
**Fig. 3. Probit-model of motivation for the LLC “Barth”\***

\*calculated by the authors.

Considering the values of p-value with probability of 90 %, one can take hypothesis that the indicators of change of earnings from sales of products influences efficiency of finance management at the enterprise. As it is seen at the figure, standard deviation of regression is rather small (0,515184), thus, one can make conclusion that the regression has been built correct. Besides, the indicator S.D. depend var (standard deviation of dependent variable) is larger than the indicator S.E. of regression (standard deviation of regression), proving that the model is essential one. Residuals are distributed normally, that is proved by histogram of distribution (fig. 4).

Probit-model for the PE “Edem” is presented at the fig. 5. In the process of the model shaping, we dropped the indicators of age of the company operation, presence of investment into technologies and knowledge, short-term and long-term credits, unexpected expenditures. It means that presence or absence of the factors at production makes no impact on efficiency of financial activity management. Considering results of the model,

one can conclude that efficiency of management of financial activity is negatively influenced by expenditures for introduction of innovation and change of earnings.



**Fig. 4. Distribution of residuals in probit-model of personnel motivation for the LLC “Barth”\***

\*developed by the authors.

Dependent Variable: ZM\_DOH  
 Method: ML – Binary Probit (Quadratic hill climbing)  
 Date 05/20/2015 Time: 21:28  
 Sample (adjusted): 2003S1 2015S1  
 Included observations: 9 after adjustments  
 Convergence achieved after 7 iterations  
 Covariance matrix computed using second derivatives

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	8.603109	14.03938	0.612784	0.5400
ZM_VUR	-0.007955	0.005731	-1.388161	0.1651
ZM_SOB_PROD	0.007189	0.004997	1.438683	0.1502
INV_TEH_2	-0.039747	0.035445	-1.121353	0.2621
ZM_KIL_PROD	2.490812	1.975502	1.260850	0.2074

McFadden R-squared	0.606590	Mean dependent var	0.444444
S.D. dependent var	0.527046	S.E. of regression	0.469877
Akaike info criterion	1.651626	Sum squared resid	0.883136
Schwarz criterion	1.761195	Log likelihood	-2.432316
Hannan-Quinn criter.	1.415176	Restr. log likelihood	-6.182654
LR statistic	7.500676	Avg. log likelihood	-0.270257
Prob(LR statistic)	0.111679		

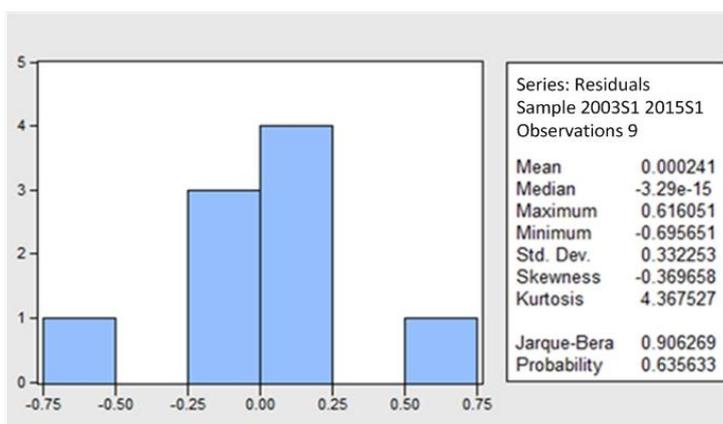
  

Obs with Dep=0	5	Total obs	9
Obs with Dep=1	4		

**Fig. 5. Probit-model of motivation for the PE “Edem”\***

\*calculated by the authors.

Considering the values of p-value with probability of 90 %, one can take hypothesis that the indicators of change of earnings, change of cost price of products, change of the number of sale outlets and amount of investment into technologies and knowledge influence efficiency of finance management at the farming enterprise. As it is seen at the figure, standard deviation of regression is rather small (0,469877), thus, one can make conclusion that the regression has been built correct. Besides, the indicator S.D. depend var (standard deviation of dependent variable) is larger than the indicator S.E. of regression (standard deviation of regression), proving that the model is essential one. Residuals are distributed normally, that is proved by histogram at the fig. 6.



**Fig. 6. Distribution of residuals in probit-model of personnel motivation for the PE “Edem”\***

\*developed by the authors.

To argue non-essential value of residuals, we also built residual correlogram (fig. 7). As it shows, residuals are “white noise”.

Date:05/20/15 Time: 22:25

Sample: 2003S1 2015S1

Included observations: 9

	Autocorrelation	Partial Correlation	AC	PAC	Q-Stat	Prob
1			-0.111	-0.111	0.1512	0.697
2			-0.026	-0.039	0.1611	0.923
3			0.464	0.463	3.7148	0.294
4			-0.208	-0.144	4.5720	0.334
5			0.063	0.060	4.6711	0.457
6			0.032	-0.230	4.7050	0.582
7			-0.220	-0.082	7.0920	0.419
8			-0.070	-0.237	7.5792	0.476

**Fig. 7. Correlogram of residuals distribution in probit-model of personnel motivation for the PE “Edem”\***

\*calculated by the authors.

Thus, considering the shaped probit-models one can make conclusion that initial hypothesis about the impact of all factors on efficiency of financial resources management is not proved. Nevertheless, one can state that change of earnings from sales of products influences change of efficiency of financial resources management and there is a direct connection between the indicators.

At the same time, let us make calculation of expenditures for the process of introduction of changes into the activity of the farming enterprise and private enterprise. Comparing expenses for the process, aimed to improve efficiency of financial resources management at the investigated enterprises in the last year, we decided to calculate the average spent costs for rise of profitability in a month and compare the result to what income it could bring in a month. Results of the calculations are presented in the table 3.

One can note that, basing on the previous research, it is determined that it is possible to improve efficiency of financial resource management by means of determination of the main factors of impact and development of a system of indicators for each separate

farming enterprise. In the given research, we used indicator of growth of production profitability as a measure of efficiency of financial resource management at the farming enterprise (the more efficient management of financial activity, the higher the indicator of production profitability is). However, each farming enterprise should be considered as an individual structure with its unique history of development and crucial factors. Thus, while for Ukrainian farming company the indicator of profitability determines efficiency of financial resource management, for German enterprise the indicator is just one in the system of coefficients. In the very research, we can shape the following recommendations for the chosen enterprises as to increase of efficiency of financial resource management:

1. For the PE “Edem”: in order to avoid inefficient use of resources it is recommended to reconsider opportunity to decrease cost price of products (possible variants: reconsider value of pigs feeding, correct feeding technology or change suppliers).

2. For the LLC “Barth”: to increase earnings from sales of products under the same conditions (gradual decrease of cost price and introduction of technological innovations).

Thus, it is seen, that the shaped model has important practical value for the investigated enterprises and should be introduced to determine essential factors for efficient management of financial resources.

Table 3

**Estimation of expenses for improvement of efficiency of finance management at the farming enterprise\***

Name of indicator	LLC «Barth»	PE “Edem”
Spent for improvement average in a month, UAH	3274,38	3363,27
Obtained income average in a month, UAH	8963,89	9756,94

\*developed by the authors.

Considering the process of financial forecasting from the position of the investigated enterprises, calculation of expected indicators and determination of the level of financial environment in the future is made for them in several stages: making of analytical balance, determination of crucial factors, and start of the calculated values of the factors. The calculations make base for financial conditions (financial relations) in long-term prospect, for strategy of operation and building of financial plan. For financial resources management in short-term prospect we propose to use financial planning as an activity on balancing and proportional organization of financial resources. Financial regulation happens at the level of entrepreneurship structures under limitations by financial regulation of distribution, exchange and consumption.

Essence of financial control as a notion is revealed in the process of study, comparison, determination, fixation of the problems of content and reflection of economic operations in records, as well as applied measures for

their solution, elimination of disorders and prevention of them in the future. Considering everything mentioned above, combined model will be the most efficient. In case of such companies as the PE “Edem” and LLC “Barth”, the model will include a planned change of production profitability, expected change of cost price of products and expected change of earnings form sales. Making calculations of expenditures of current models in comparison to the possible combined model, we obtain the following data (table 4):

Table 4

**Results of calculation of expenditures for improvement of finance management efficiency \***

Title of enterprise	Value of indicator, UAH	Relative change, %
LLC «Barth» Spent average in a month, UAH	3274,38	-6,9%
LLC «Barth» Combined model	3078,93	
PE “Edem” Spent average in a month, UAH	3363,27	-8,1%
PE “Edem” Combined model	3099,73	

\*calculated, basing on the sources [3; 4].

Thus, applying combination of the above-described methods, the PE “Edem” and LLC “Barth” will considerably improve their current methods of financial resources management.

Basing on results of the carried research, we can make conclusion that none of the used models (currently) is ideally efficient for financial resources of the farming

enterprises. Thus, they need dynamic improvement by correlation with the rule of minimal expenses and resistance to implementation, maximum correspondence to goals of the farming enterprises.

Improvement of the system of financial resources management at the farming enterprises happens by means of approaching of the forecast and planned models to a combined one. Such change will secure not just financial stability of the enterprises because of no unexpected expenditures, but also growth of financial potential, avoiding inefficient expenditures.

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**С. В. Філіна**

асистент кафедри менеджменту,  
Полтавський університет економіки і торгівлі, м. Полтава

**МЕТОДИЧНИЙ ПІДХІД ДО ПРОГНОЗУВАННЯ ЕФЕКТИВНОСТІ ДІЯЛЬНОСТІ ПІДПРИЄМСТВ ПОЛТАВСЬКОГО РЕГІОНУ НА ЗАСАДАХ ПРОЦЕСНОГО МЕНЕДЖМЕНТУ**

*Проведено аналіз діяльності торговельних підприємств споживчої кооперації Полтавського регіону. Обгрунтовано необхідність впровадження процесного менеджменту та запропоновано методичний підхід до прогнозування ефективності діяльності торговельних підприємств споживчої кооперації.*

**Ключові слова:** ефективність діяльності, процесний менеджмент, підприємство, прогнозування, оцінка.

**Filina S. METHODOICAL APPROACH TO FORECASTING OF EFFICIENCY OF ACTIVITY OF ENTERPRISES OF THE POLTAVA REGION ON THE BASIS OF PROCESS MANAGEMENT**

*The analysis of activities of commercial enterprises of consumer cooperation and the Poltava region. Grounded need to implement process management and methodical approach to forecasting the efficiency of commercial enterprises of consumer cooperatives.*

**Keywords:** efficiency, process management, enterprise forecasting, estimation.

Ефективне функціонування підприємств споживчої кооперації Полтавського регіону як ринково-адаптованої системи зумовлено, у першу чергу, продуктивною діяльністю її господарських складових – торговельних підприємств Полтавського регіону. Це потребує прийняття та виконання

ефективних управлінських рішень. Входження у конкурентне середовище, необхідність швидкого реагування на законодавчі зміни та потреби споживачів потребують застосування на торговельних підприємствах споживчої кооперації менеджменту, який буде ґрунтуватися на принципах