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COST OF EQUITY CAPITAL – MEASUREMENT DILEMMAS

Abstract

The study applies the approach of transaction cost theory to analyse the nature of equity capital. Empirical tests were conducted among agricultural entrepreneurs, followed by the construction of binary models, in order to verify the research hypothesis that cost of equity capital is zero. The practitioners in this field do not share a common view on the need to estimate the cost and the level of equity capital. It has been concluded that the cost of equity capital should be approached as a transaction cost stemming from the rarity of the benefit of the equity capital and as a more efficiently used resource, involving, as a consequence, the application of the original function of ownership rights.

Introduction

The issue of measuring the cost of equity is widely analysed, but still controversial. The need for its measurement generally raises no doubt, but there is no common agreement on how the cost of capital should be treated and how it should be estimated. An unprecedented approach is to consider measurement of the cost of equity from the point of view of the transaction cost theory. This approach may be debatable, but at a time when great importance is attached to transaction costs of the resource allocation to their most effective use, such a perspective seems to be justified. Even more rare is research taking into account the opinion of companies' management on the nature of equity cost and the need to know its level. The authors found useful the studies based on broad literature review and own research, because contrary to the findings of the need for estimating the equity cost in theory, business practice is guided by its own requirements.

Literature review

The idea of transaction costs was formulated by Coase, who presented it in *The Theory of Social Cost*, claiming that if transaction costs are zero, the outer benefits and losses do not pose any kind of "market failure"; economic entities affected by external losses and benefits always approach each other to negotiate (Blaug M. 2000; Coase R.H. 1960; Peszko A. 2006). These assumptions became the basis for new institutional economics. Daniłowska claims that new institutional economics was born in 1937, when Coase's article "The Nature of the Firm" was published (Daniłowska A. 2007).

As cited by Borcuch, according to Williamson processes and business transactions take such forms and organisational structures that contribute to savings on transaction costs (Borcuch A. 2009). The equity cost can be considered as such a cost, primarily due to its rarity. Especially as Chotkowski claims, the transaction costs are important for the activities of units aimed at solving the problem of resource scarcity (Chotkowski J. 2010). Undoubtedly, the equity remains such a scarce resource. Enterprises' development is conditioned by the creation of the value added. Contemporary finance is looking for tools that can identify and assess the benefits for owners. One of the issues widely discussed is the need (or no need) to include the cost of equity into the economic account, which would determine the actual profit (loss) from the economic activity conducted. Currently, there is no doubt about the need to estimate the cost of own capital. Yet, the way of estimating it remains problematic. Ultimately the measure of the company's financial situation should be its economic profit, not an accounting one (Cwynar A. 2005; Franc-Dąbrowska J. 2009; Rutkowski A. 2008; Sierpińska M. 1999; Szablewski A. 2008). Chrupczalski also states that these costs should be taken into account in the assessment of economic changes and effectiveness (Chrupczalski S. 2010). However, there is no common agreement on this matter. Różański discusses the methodological correctness of estimating the cost of own capital (retained earnings). His doubts are explained by the fact that the cost of capital is generally determined based on the highest estimated rate of capital from the rejected investment (alternatives). As a result, this leads to aggregation of actual and alternative capital costs (Różański J. 2005).

Methods for measurement of the equity cost are primarily applicable in companies with accounting records and to a lesser extent relate to other groups. An interesting proposal was presented by Kulawik (2008), who modified the model of capital asset pricing and introduced a correction factor β for agricultural enterprises. Adoption of individualised risk for these companies taking into account their operational activity seems to be right, and even necessary, especially in the agricultural enterprises due to the fact that their economic and financial results depend on the biological growth capacity of plants and animals, as well as climatic conditions.

In the finance literature it is generally accepted that the cheapest source of financing are retained earnings. However, this claim is not always true, especially when capital owners expect significant rates of return on the capital in-

vested by them. Research on equity cost in agricultural enterprises, including retained earnings shows that the highest equity cost (both in percentage and value terms) characterised companies with the highest rate of self-financing. At the same time, these entities were characterised by the highest level of operational risk (expressed by the adjusted β ratio), influencing the equity cost (Franc-Dąbrowska J. 2009).

Importance of these problems is also justified by the fact that in recent years there were significant fluctuations in the budget deficit, appreciation of the zloty, which made the export of agricultural products more expensive. The trade balance in agricultural products showed high volatility (from surplus to deficit), which was influenced by the "terms of trade" and exchange rate (Czyżewski A., Stępień S. 2011). In this context, "fair trade" seems to be an interesting concept. It assumes simultaneous development of producers and consumers, in particular food producers, especially given that "fair trade" is not only the exchange process; but also the development – of both producers and consumers – as a target of international trade (Stiglitz J.E., Charlton A. 2007).

In recent years, the agricultural sector experienced slow adjustment processes and extended production cycles, subject to agri-environmental conditions or the natural growth and development of plants and animals. For reducing the equity cost of capital invested in economic activity, it seems important to ensure equilibrium on the labour market and to reduce the level of unemployment rate by stimulating economic growth. It is important to maintain a low inflation rate in order to limit the process of opening the price scissors (however, keeping in mind that making the agricultural holdings eligible for Common Agricultural Policy instruments led to a process of closing the price scissors, but to an insufficient degree) (Czyżewski A., Stępień S. 2011).

While cost of equity is relatively often estimated (particularly using a model of capital goods – CAPM[1]), there are few surveys conducted among owners of capital on the need for estimating its cost. The issue of measurement of the equity cost and its dilemmas, taking into account the opinion of entrepreneurs, is worth considering. As Szablewski observes, a company generates value for its owners when total return from shares achieved by them exceeds the threshold rate, that is the rate of cost of capital invested by them (Szablewski A. 2008).

As Fiedor notes, apart from the classical depiction of transaction costs by Coase – defined as costs of using the price mechanism – a wider depiction of these costs is developed, including: 1) cost of coordinating various forms of economic activity; and 2) costs necessary for the emergence and development of the market(s) (Fiedor B. 2011). Whereas Gorynia claims that the pursuit of better use of resources is connected with the use of the primary property rights function, involving the creation of incentives to ensure higher level of internalisation of externalities. Internalisation is a process that requires incurring costs as it is

[1] It should be kept in mind that, for example, the method of estimating residual profit used in consulting: CFROI – cash flow return on investment – questions CAPM model and recommends totally different method of estimating the cost of equity (Cwynar A. 2005).

necessary to incur costs in order to produce specific information. These costs are the transaction costs (Gorynia M. 1995; Staniek Z. 2011). In accordance with the ownership right to equity capital, a group of costs associated with the desire to use it more efficiently is a cost of equity capital treated as transaction costs.

Analysis of the Buchanan's definition of this cost, conducted by Kubisz, allowed to state that: 1) the cost is borne exclusively by a person who is able to make a choice and it is not possible to shift this cost to other people; 2) the cost is a subjective phenomenon, existing only in the mind of the decision-maker; 3) the cost is based on expectations of the future events and it is a concept geared to the future; 4) the cost cannot be measured by someone else than the decision-maker, as it is not possible to directly observe internal experience of making a choice. Therefore, this cost is related to subjective utility (Kubisz R. 2011).

The research conducted by Czyżewski and Grzelak shows that the theoretical determinants of the level of transaction costs include, e.g., the degree of fullness of proprietary rights, which are either a permanent element of the institutional environment (exogenous variable) or a result of contractual arrangements. According to the theory of property rights, they are the rights of economic entities to dispose of the subject of their property, regardless of formal titles. When analysing the state property in terms of its actual holder, it must be said that "good's value for an individual is determined by what constitutes a bundle of rights that this person possesses in relation to the good" (the authors cite the views of Iwanek and Wilkin). A change of at least a part of these rights leads to a change in the assessment of the good's value, although there is no formal deed of ownership. According to Czyżewski and Grzelak, this leads to a statement that the theory of property rights poses a hypothesis that efficiency of the use of resources depends on the motivation of the holder of these resources, and this motivation is determined by the degree of fullness of property rights (Czyżewski B., Grzelak A. 2011).

Research methodology

The aim of this paper is to examine the views of the managers of agricultural entities on the cost of equity capital, its nature and needs for its measurement, as well as identification of the factors influencing its level. The following research hypothesis is formulated: the cost of equity capital is zero. The research was conducted in a group of 67 agricultural enterprises, whose management was interviewed based on a standardised questionnaire. The agricultural entities were located throughout the country. Since the sample was created from a group of companies involved in the "Ranking 300", the results should not be generalised to all agricultural enterprises in Poland, as it is commonly believed that the "Ranking 300" presents the best agricultural enterprises. If, however, the "Characteristics of farms in 2007" prepared by CSO are taken into account, there were only 379 farms of more than 500 ha (0.01%). The average size of these farms was about 815 ha of agricultural land. Taking into account the average area of agricultural land, a group of agricultural enterprises of more than 500 hectares (1 quartile of the sample) would be the

most appropriate as a reference point (relative to the surveyed companies). This comparison does not prove that the test sample corresponds to the largest agricultural enterprises according to the adopted reference point, however, it allows for the adoption of such an assumption with a fairly high level of probability. Therefore, it must be stated that the research results cannot be applied to the whole population of agricultural enterprises in Poland and it should be treated as a starting point for further analysis.

Due to the binary nature of the dependent variables considered in this research a generalised linear model is used:

$$g(E(Y/X_1 = x_1, ..., X_p = x_p)) = \beta_0 + \beta_1 x_1 + ... + \beta_p x_p \quad (1)$$

where: Y – dependent variable; $x_1, ..., X_p$ – independent variables; $\beta_0, \beta_1, ..., \beta_p$ – coefficients of the regression function; the function g is a function linking the logit

$$logit(\pi) = log \frac{\pi}{(1 - \pi)} \quad (2)$$

As a result, a linear function of explanatory variables describes the relationship of logit function of the expected value of variable Y_i and the explanatory variables. To estimate the above model the method of iteratively weighted least squares was used.

Since a relatively large number of explanatory variables, i.e. 31, was considered in this research in order to select a final model a modified classical stepwise regression method was applied. At each step a variable most significantly reducing the value of the Akaike information criterion (AIC) was selected to the model (Sakamoto Y. et al. 1983):

$$AIC = -2LLF + 2k \quad (3)$$

where: *LLF* is the logarithm likelihood function, and k is the number of parameters in the analysed model. In the case of the model (1), k is by 1 more than the number of explanatory variables.

Stepwise procedure was carried out to the point when the addition or removal from the model of any variable increased the *AIC* value. Adopting the *AIC* as a model selection criterion means that the final model may include variables which when using the Wald test – an equivalent to the Student's t-test in generalised linear models – can be considered insignificant.

Calculations related to the estimation of models were performed using "R" software.

Research results

Table 1 presents the number of indications (and their structure) for preferred measurement of the cost of equity. It was found that five out of 67 respondents (7.5%) were unable to determine any recommended level of equity cost (or had no opinion). Other respondents had an established opinion on the subject.

Table 1

Number of indications and structure of preferred level of equity cost

Estimated level of equity cost									
0-10%		11-20%		21-50%		> 51%		At bank deposits' level	
number	%	number	%	number	%	number	%	number	%
29	43.3	10	14.9	2	3.0	1	1.5	20	29.9

Source: Own elaboration.

Table 2 presents the results of data estimation with a linear probability model using a logit linking function.

The analyses conducted show that respondents who allocated their free cash to bank deposits (*x*117) and investments in securities (*x*119), were less likely to consider the cost of equity to be at a level of 0-10% (and the detailed analysis of this information shows that in the range of 0-10% dominated 0%, thus, it was considered that equity capital is free). At the same time, respondents who acknowledged, that the cost of equity capital ranges from 0 to 10%, acquired additional financing for their activity from the European Union funds (*x*124). An interesting observation seems to be the fact that this group of respondents declared additional payments by the shareholders in a situation where equity capital resources are not sufficient for the implementation of investment projects and in the case of inability to make these payments – limiting funding from external capital and investing only to the limit of owned capital resources (*x*126). Such a procedure has its background in the utility theory, as agricultural entrepreneurs in their decisions (activities) were guided by the maximisation of expected utility and not by maximising the expected income (Jajuga K., Jajuga T. 2006). This is consistent with the Simon's concept of a satisfactory profit (Simon S. 2007) and the Franc-Dąbrowska's concept of a desired profit (Kubisz R. 2011). In addition, respondents who were willing to consider previous year's net profit as the best source of financing (*x*163) were not willing to consider that the cost of equity ranges from 0 to 10%. Whereas, the respondents who recognised reserves as the most favourable source of financing (*x*164), were willing to determine the cost of equity capital at the level of 0-10%. Such an approach is consistent and indicates that the group of respondents with a preference for equity financing declared its higher interest rates and recognised that its cost was higher than in the analysed range. This is consistent with contemporary views of financiers, suggesting the estimation of the cost of equity capital and not treating it as a free source of financing (Franc-Dąbrowska J. 2009; Jajuga K., Jajuga T. 2006; Sierpińska M. 1999).

Table 2

Model 1 – variant excluding additional variables, $y = x189$

Variable	β_j rate	Standard error	Z value	Pr (>|z|)	Significance
Intercept	13.63214	6.26058	2177	0.02945	*
$x117$	-4.28510	1.64557	-2.604	0.00921	**
$x119$	-7.40413	2.68724	-2.755	0.00586	**
$x124$	2.74197	1.18036	2.323	0.02018	*
$x125$	2.79388	1.48110	1.886	0.05925	.
$x126$	7.81523	2.51616	3.106	0.00190	**
$x163$	-2.94975	1.18748	-2.484	0.01299	*
$x164$	3.27619	1.52898	2.143	0.03214	*
$x204$	-0.05394	0.03435	-1.570	0.11637	
$x216$	-4.21896	1.88641	-2.237	0.02532	*
$x226$	-0.32698	0.12918	-2.531	0.01137	*
$x233$	0.31493	0.10599	2.971	0.00297	**
$x20$	4.56994	1.55230	2.944	0.00324	**
$x222$	3.70019	1.37864	2.684	0.00728	**
$x129$	-2.72338	1.18088	-2.306	0.02110	*
$x24$	2.09576	1.25289	1.673	0.09438	.

Null deviance: 91669 for 66 degrees of freedom

Residual deviance: 47.563 for 51 degrees of freedom

AIC: 79563

Source: Own elaboration.

where:

$y = x189$ – cost of equity can be estimated in the range of 0-10%,

$x117$ – surplus profits allocated to bank deposits,

$x119$ – surplus profits allocated to investments in securities,

$x124$ – capital acquired from the European Union sources,

$x125$ – under capital shortage shareholders make payments,

$x126$ – under capital shortage investment is made up to resources possessed,

$x163$ – previous year's profit is considered to be the best source of financing,

$x164$ – reserves are considered to be the best source of financing,

$x204$ – safe level of debt is defined as the share of liabilities in total assets,

$x216$ – owned capital resources are sufficient to continue the current activities,

$x226$ – age of the enterprise's manager,

$x233$ – period in a managerial position,

$x20$ – management's aim was defined as return to shareholders,

$x222$ – level of manager's salary is not satisfactory,

$x129$ – if there is a loss, the preferred source of financing is supplementary capital,

$x24$ – management's aim is defined as rationalisation of production processes.

Another interesting observation is that agricultural entrepreneurs, specifying the structure of capital in the most classic (in terms of finance) and intuitive way as the share of liabilities in total assets ($x204$), and declaring the possession of equity capital at a level sufficient to conduct current economic activity ($x216$), did not share the opinion that the cost of equity ranges from 0 to 10%. Similar results were related to the age of the enterprise's manager (being older let to a lower likelihood to consider the equity capital to be almost free ($x226$)). While those entrepreneurs remaining longer in a managerial position ($x233$) were of the opinion that the cost of equity is low. This opinion was also shared by the respondents satisfied with their salary ($x222$), who as the aim of conducting economic activity declared rationalisation of the production processes ($x24$).

It should be emphasized that the discussed model is properly conditioned, both in formal and substantive terms.

Table 3

Model 2 – variant including additional variables, $y = x193$

Variable	β_j rate	Standard error	Z value	Pr (>|z|)	Significance
Intercept	-5.51943	4.16765	-1.324	0.18539	
$x117$	4.57340	1.72449	2.652	0.00800	**
$x204$	0.07799	0.03843	2.029	0.04244	*
$x213$	-9.11247	3.63514	-2.507	0.01218	*
$x218$	6.10212	2.20115	2.772	0.00557	**
$x226$	0.21989	0.10575	2.079	0.03759	*
$x233$	-0.32295	0.12139	-2.660	0.00780	**
$x18$	-7.46243	2.71234	-2.751	0.00594	**
$x20$	-4.64602	1.90134	-2.444	0.01454	*
$x22$	-7.14071	4.38672	-1.628	0.10357	
$x130$	-3.63568	1.71923	-2.115	0.03445	*
$x196$	1.02864	0.52984	1.941	0.05221	.

Null deviance: 81686 for 66 degrees of freedom

Residual deviance: 34.877 for 55 degrees of freedom

AIC: 58877

Source: Own elaboration.

where:

$y = x193$ – cost of equity can be estimated at the level of bank deposits,

$x117$ – surplus profits allocated to bank deposits,

$x204$ – safe level of debt is defined as the share of liabilities in total assets,

$x213$ – person easily undertaking financial risk,

$x218$ – possessed capital resources are sufficient for a full realisation of investment projects,

$x226$ – age of the enterprise's manager,

$x233$ – period in a managerial position,

$x18$ – other motives for creating an enterprise,
$x20$ – management's aim was defined as return to shareholders,
$x22$ – management's aim was defined as improvement of commercial offer,
$x130$ – capital reserve is a preferred source of financing in the case of a loss.

The analysis' results of the logit model for the dependent variable $x193$, meaning the preference for estimating the cost of equity at the level of interest rates on bank deposits, are different. There is a clear compliance between the views and financial decisions taken, and entrepreneurs who allocated their surplus free cash to bank deposits were willing to consider that the cost of equity should be defined as the level of interest rates on bank deposits. By doing so, they agreed to allocating free cash for investments that allowed them to cover the cost of equity capital. From the rationality point of view such decisions should be considered as being appropriate. In contrast to the entrepreneurs determining cost of equity capital as close to zero, the second group of respondents – with different views on the cost of equity capital, considering its level to be within the range of interest on bank deposits – determined the capital structure in the most classic (in terms of finance) and intuitive way, as the share of total assets ($x204$). At the same time, respondents, who declared themselves as ones easily taking financial risks, were inclined to estimate the cost of equity at the level of interest rates on bank deposits.

People who considered their capital resources to be sufficient for the full implementation of their investment projects were convinced to determine the cost of equity at the level of interest on bank deposits ($x218$). Unlike in the case of the first model, the tendency to estimate the cost of equity capital at the level of interest on bank deposits increased with the age of the enterprise's manager ($x226$), while decreased over the years at a managerial position ($x233$).

It seems interesting to note that managers who declared other motives of establishing their enterprise ($x18$) than the way of life and a workplace for themselves and their employees, as well as the ones whose aim was to achieve returns to shareholders ($x20$) or improving enterprise's commercial offer ($x22$), were less likely to consider that the cost of equity capital should be estimated at the level of bank deposits. This result can be interpreted as follows – the rate of return on bank deposits was not satisfactory for this group of respondents, they saw greater benefits in economic activity conducted by them.

In model 3 (Table 4), which describes the dependent variable defined as an estimation of the cost of equity capital at the level of bank deposits ($x193$) – without any additional variables – variables with the most significant impact were: $x117$, $x218$ and $x233$. It can be concluded that variables that characterised the entrepreneurs' tendency to estimate the cost of equity capital at the bank deposit level covered views, according to which the surplus profit is allocated to bank deposits, and the possessed capital resources are sufficient for the full implementation of investment projects. Whereas entrepreneurs who have been working longer at a managerial position were less willing to accept such an estimation.

A comparison of model 1 and model 2 (and model 3, which is a less extended version of model 2) leads to a conclusion that the test group of respondents was divided into two main "camps". The first group declared estimating the cost of equity capital as close to zero, while the second one – at the level of bank deposits. These positions were separate, which was reflected in the explanatory variables in each model. Closer to the contemporary approach in finance is the group of respondents declaring measurement of the cost of equity capital at the bank deposit level. This is consistent with the decisions of agricultural enterprises, where free cash is usually kept as bank deposits. Our results also allow to conclude that some part of the agricultural entrepreneurs is aware of the need for estimating the cost of equity capital, rather than treating it as a free source of financing. On the other hand, some entrepreneurs still believe that equity capital is a free source of financing, which is visible in their financial decisions.

Table 4

Model 3 – variant excluding additional variables, $y = x193$

Variable	β_j rate	Standard error	Z value	Pr (>|z|)	Significance
Intercept	-6.73331	3.57642	-1.883	0.0597	.
$x117$	1.57860	0.76073	2.075	0.0380	*
$x204$	0.04403	0.02367	1.860	0.0629	.
$x213$	-2.15374	1.19420	-1.803	0.0713	.
$x218$	1.85222	0.90516	2.046	0.0407	*
$x226$	0.11586	0.07165	1.617	0.1059	
$x233$	-0.10099	0.04965	-2.034	0.0419	*

Null deviance: 81686 for 66 degrees of freedom.

Residual deviance: 65.105 for 60 degrees of freedom.

AIC: 79105.

Source: Own elaboration.

where:

$y = x193$ – cost of equity can be estimated at the level of bank deposits,

$x117$ – surplus profits allocated to bank deposits,

$x204$ – safe level of debt is defined as the share of liabilities in total assets,

$x213$ – person easily undertaking financial risk,

$x218$ – possessed capital resources are sufficient for a full realisation of investment projects

$x226$ – age of the enterprise's manager,

$x233$ – period in a managerial position.

Conclusions and summary

The study shows that among practitioners (agricultural entrepreneurs) there is no unified opinion on the need to estimate the cost of equity capital and its level. Some entrepreneurs still treat equity capital as a free source of financing, while others believe that it is associated with a specific cost. In this group of respondents most often the cost of equity capital was estimated at the level of interest rates on bank deposits. Such an approach seems to be better justified and remains in harmony with the directions of development of the finance as an academic discipline.

Given the literature analysis, one should lean towards treating the cost of equity capital as transaction cost, resulting from the rarity of such a good as equity capital and the desire to make better use of this resource, which entails the use of primary function of property rights. This approach allows to determine the entrepreneur's economic profit, thus the final efficiency of the economic activity conducted. Although some part of the entrepreneurs does not take into account that the use of equity capital involves incurring costs, we consider such an approach as justified. In addition, we recommend informing those entrepreneurs, who treat equity capital as being free, about the need for estimating the cost of equity capital and incorporating it into the economic calculations.

Literature:

1. Aczel A.D.: Statystyka w zarządzaniu (Statistics in management). PWN, Warszawa 2000.
2. Blaug M.: Teoria ekonomii. Ujęcie retrospektywne (Economics theory. Retrospective approach). PWN, Warszawa 2000.
3. Borcuch A.: Kilka uwag na temat relacji pomiędzy ekonomią a socjologią (Several remarks on the relations between economics and sociology). Studia i Materiały. Miscellannea Oeconomicae, rok 13, nr 1, 2009.
4. Charakterystyka gospodarstw rolnych w 2007 r. (Characteristics of agricultural holdings in 2007). GUS, Warszawa.
5. Chotkowski J.: Instytucje rynkowe i koszty transakcyjne – kluczowe pojęcia nowej ekonomii instytucjonalnej (Market institutions and transaction costs – key concepts of the new institutional economics). Roczniki Nauk Rolniczych, Seria G, t. 97, z. 2, 2010.
6. Chrupczalski S., 2010; http://mises.pl/wp-content/uploads/2009/09/ekonomiczna-analiza-prawa.pdf (access on 25.07.2011).
7. Coase R.H.: The theory of social cost. Journal of Law and Economics, Vol. 3, No. 1, 1960.
8. Cwynar A.: Stopa zwrotu z kapitału przedsiębiorstwa: wybrane zagadnienia (Return on enterprise's capital: chosen issues). Kwartalnik e-Finanse, nr 1, 2005.
9. Cwynar A.: Zysk rezydualny w różnych odmianach z punktu widzenia jego kontrolowalności (Different forms of residual profit in the light of controllability). Kwartalnik e-Finanse, nr 4, 2008.
10. Czyżewski A., Stępień S.: Wspólna polityka rolna UE po 2013 r. a interesy polskiego rolnictwa (Common Agricultural Policy after 2013 and the Polish agriculture). Ekonomista, nr 1, 2011.

11. Czyżewski B., Grzelak A.: Teoretyczne i praktyczne uwarunkowania kosztów transakcyjnych na przykładzie przemysłu spożywczego w Polsce w latach 1992-2009 (Theorethical and practical transaction costs – the example of food industry in Poland in 1992-2009); http://www.sgh.waw.pl/katedry/.../Czyzewski_Grzelak_koszty_ transakcyjne.doc (access on 28.07.2011).
12. Daniłowska A.: Poziom, zróżnicowanie oraz uwarunkowania kosztów transakcyjnych kredytów i pożyczek rolniczych (Level, diveristy and determinants of transaction costs in the case of agricultural credits and loans). Rozprawy Naukowe i Monografie, nr 321. Wydawnictwo SGGW, Warszawa 2007.
13. Development Core Team: A language and environment for statistical computing. Foundation for Statistical Computing, Vienna, Austria 2005; http://www.R-project.org.
14. Fiedor B.: Prawa własności a proces transformacji gospodarczej. Spojrzenie z perspektywy nowej ekonomii instytucjonalnej (Ownership rights and economy's transformation process assessment from the perspective of new institutional economics); http://www.bibliotekacyfrowa.pl/dlibra/doccontent?id=34395 (access on 29.07.2011).
15. Franc-Dąbrowska J.: Teoretyczne i praktyczne aspekty gospodarowania zyskiem w przedsiębiorstwach rolniczych (Theoretical and practical aspects of profit management in agricultural holdings). Rozprawy Naukowe i Monografie, nr 365. Wydawnictwo SGGW, Warszawa 2010.
16. Franc-Dąbrowska J.: Udział i koszt kapitału własnego a wypłaty dywidend w przedsiębiorstwach rolniczych (Share and cost of own capital and payment of dividends in agricultural enterprises). Prace Naukowe Akademii Ekonomicznej im. Oskara Langego we Wrocławiu, nr 56. Wrocław 2009.
17. Gorynia M.: O niekonwencjonalnych doktrynach ekonomicznych w polityce transformacji (Unconventional economics' doctrines in transformation policy). Ekonomista, nr 4, 1995.
18. Jajuga K., Jajuga T.: Inwestycje (Investment). PWN, Warszawa 2006.
19. Kubisz R.: Prawa własności a efektywność ekonomiczna w teorii Ronalda Coase'a (Ownership rights and economic efficiency in Ronald Coase's theory); http://www.bibliotekacyfrowa.pl/dlibra/doccontent?id=34395 (access on 29.07.2011).
20. Kulawik J.: Analiza efektywności ekonomicznej i finansowej przedsiębiorstw rolnych powstałych na bazie majątku WRSP (Analysis of economic and financial efficiency of agricultural enterprises founded on the base of assets of Agricultural Property of the State Treasury). IERiGŻ-PIB, Warszawa 2008.
21. Peszko A.: Rada nadzorcza w procesie zarządzania przedsiębiorstwem (Boards of directors in the process of enterprise management). Difin, Warszawa 2006.
22. Różański J.: Współczesne finanse – wiele pytań, wiele kontrowersyjnych teorii i koncepcji (Modern finance – many questions, many controversial theories and concepts). Kwartalnik e-Finanse, nr 1, 2005.
23. Rutkowski A.: Modyfikacje mnożników w ocenie efektywności fuzji i przejęć (Modification of multipliers in the assessment of mergers and acquisitions). Badania Operacyjne i Decyzje, nr 3, 2008.
24. Sakamoto Y., Ishiguro M., Kitagawa G.: Akaike Information Criterion Statistics. Tokyo 1983.
25. Sierpińska M.: Polityka dywidend w spółkach kapitałowych (Dividend policy in limited liability companies). PWN, Warszawa-Kraków 1999.

26. Simon S.: Podejmowanie decyzji i zarządzanie ludźmi w biznesie i administracji (Decisions and human resource management in business and administration). Helion, Gliwice 2007.
27. Staniek Z.: Zróżnicowanie ekonomii instytucjonalnej (Diversity of institutional economics); http://jacek.kwasniewski.eu.org/file/Staniek.pdf (access on 30.07.2011).
28. Stiglitz J.E., Charlton A.: Fair trade. Szansa dla wszystkich (Fair trade for all). PWN, Warszawa 2007.
29. Szablewski A.: Zarządzanie wartością przedsiębiorstwa – logika i prawidłowości (Managing company's value – logic and regularities). Kwartalnik e-Finanse, nr 3, 2008.