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ESTIMATION OF SOLVENCY OF AIRENTERPRISES-BORROWERS IN THE PROCESS OF THEIR CORPORATE CO-OPERATING WITH COMMERCIAL JARS

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Обґрунтовано методичний підхід щодо визначення корпоративного ризику як фактора загрози втрати доходів комерційного банку від кредитування авіапідприємств у процесі їх корпоративної взаємодії. Розкрито сутність та напрями (схеми) корпоративної взаємодії. Удосконалено ієрархічну модель оцінювання кредитоспроможності авіапідприємств-позичальників в процесі їх корпоративної взаємодії.

Ключові слова: кредитоспроможність, корпоративна взаємодія, авіапідприємства, учасники, позичальники, ризики, комерційні банки, оцінка, схеми, методики.

Обоснован методический подход к определению корпоративного риска как фактора угрозы потери доходов коммерческого банка от кредитования авиапредприятий в процессе их корпоративного взаимодействия. Раскрыта сущность и направления (схемы) корпоративного взаимодействия. Усовершенствована иерархическая модель оценки кредитоспособности авиапредприятий-заемщиков в процессе их корпоративного взаимодействия

Ключевые слова: кредитоспособность, корпоративное взаимодействие, авиапредприятие, участники, заемщики, риски, коммерческие банки, оценка, схемы, методики.

In the article methodical approach is reasonable in relation to determination of corporate risk as factor of threat of loss of profits of commercial bank from crediting of airlines in the process of their corporate cooperation. Essence and directions (charts) of corporate co-operation are exposed. The hierarchical model of estimation of solvency of airlines-borrowers is improved in the process of their corporate cooperation.

Keywords: solvency, corporate co-operation, airlines, participants, borrowers, risks, commercial banks, estimation, charts, methodologies.

Introduction. Financial relations between airlines and commercial banks associated in most cases with the conclusion of loan agreements and implementation of settlement services. Airline are active consumers of bank loans and objects of study as potential borrowers. At present a universal effective system for evaluating the creditworthiness of the borrower does not exist, each bank develops optimal estimation method creditworthiness of its customers' businesses, regardless of their legal form, sector specific and type of operations.

Analysis of the recent publications. The formation of methodological and methodical approach to evaluating the creditworthiness of bank borrowing companies devoted to the study Careful E., L. Didyk, V. Vitlinskiy, G. Velykoivanenko, P. Cuckoos, T. Ivanova, V. Kochetkov, M. Milyavskaya, J. Nakonechna and other authors. The research established that domestic banks have their own individual methods of evaluating the creditworthiness of the borrower companies, which are based on the current legal framework regulating the lending process [1-6].

Most existing methods for assessing the creditworthiness of the borrower is not formulated an integral criterion based on which to adequately develop comparative required quantitative analysis of the borrower's creditworthiness and the associated risk, and ultimately quite simple and objective tool for scientific study credits.

A significant number of banks in Ukraine in assessing credit risk takes into account only one of the possible external sources - the borrower's

financial capacity (objective risk associated with the borrower) [1-6]. Subjective risk, for example, changing the size of the corporate share of the borrowing companies in corporate banks are not evaluated. The practice of lending relationships of commercial banks and borrowing companies testifies to facts not last repayment is not due to lack of funds, as well as reluctance. At best, this leads to a deterioration in the financial condition of the bank, at worst - to his insolvency. So the problem makes finding a new approach to the assessment of the creditworthiness of the borrower based on subjective assessment of risk in the corporate enterprise interactions.

Statement of the Problem. The study aims to study methodological approach to determining corporate risk as a factor in the threat of loss of income from commercial bank lending to airlines in the process of corporate interaction.

The main material. The essence and direction of corporate interaction. Corporate Interaction - a set of economic relations between enterprises of different industries and different types of ownership over the creation, production and consumption of the finished product according to the principle of corporate involvement.

For aviation sector stakeholders corporate interaction are: 1) aviapromyslovi Company 2) Aircraft Company, 3) Airlines and 4) airports, 5) research institutions, 6) commercial banks.

The cause or reason corporate interaction is the formation or presence of economic interest of members in the organization of joint production, use, consumption of a particular item. The objects of common interest should be noted innovations and other intellectual property rights, and so the final product. The economic interests of participants due to the peculiarities of further useful facility corporate interaction.

With this feature the participants are integrated into the following groups: corporate developers object interactions (eg product innovation) - member 5; consumers-producers - members 1 and 2, consumers, operators - members 3 and 4; financial infrastructure - party 6.

Regardless of the features of an object formed following four schemes of corporate interaction with airlines commercial banks:

Figure 1 - corporate members. Provides participants accumulate capital through the creation of a new legal entity whose activities are directly related to the subject of corporate action (eg using innovative construction) to further ensure regular income from investments as a result of the distribution of net income.

Figure 2 - contractual union members. Provides education union contract because the contract on cooperation between airlines and credit agreements with commercial banks for single income as a result of useful corporate object interaction.

Figure 3 - corporate finance. According to this model research institution receives a loan from a bank, commercial loans and investments from airlines to create a corporate object interaction - innovative design. After the utility of developing innovative members get regular (provided by investment and commercial loans), single (on loans) income.

Figure 4 - bank corporate lending. Similarly, Figure 3, research institutions also involves a bank loan to build a corporate object interaction - innovative design. Further development has created an innovative airlines as a commercial loan, provides along with their regular income from its commercial exploitation and gradually makes repayment of bank loans and interest (provides income for commercial banks).

The process and methods of evaluating the creditworthiness of borrowers airlines. The process of evaluating the creditworthiness of the borrower airline that is a member of corporate interaction on any of the four schemes and the corresponding risk measures begins with the formation of the hierarchical structure of integrated indicators.

Components of integrated indicators of creditworthiness of the borrower airlines and corresponding measures to credit risk, which are at the lowest level of the hierarchy (,,,), in turn,

can be expressed in function of their subkryteriyiv. In general terms it can be expressed as follows:

where - the i-th component of the lower level of the integral criterion; - k-and subkryteriy i-th component.

After defining a class for each borrower subkryteriyiv - C () can be defined by its cumulative grade index - C (.) To do this, set the weights subkryteriyiv that reflect their importance with respect to the indicator. The weights are determined by a matrix of pairwise comparisons that are based on mathematical processing of questionnaires filled out by banking experts [1].

Using the additive coagulation method, we can write expressions for the borrower cumulative grade C () for the component:

$$C(K_i) = q_1 \bullet C(X_1) + q_2 \bullet C(X_2) + ... + q_n \bullet C(X_n), \quad (1)$$

where C () - Class borrower for subkryteriyem - weighting factor that determines the significance subkryteriyu component to the lower level of the integral criterion.

Stages of airline credit evaluation of the borrower. Borrower is carried out in several stages.

1. Evaluation of the current financial position of the borrower (). Class borrower on its current financial position will determine construction classification as a function of the correlation model. General view of the model is as follows:

$$Z = A_0 + A_1 \bullet X_{11} + A_2 \bullet X_{12} + ... + A_n \bullet X_{1n}, \quad (2)$$

where A_i - the estimated coefficients of the model X_k - subkryteriyi.

How subkryteriyi current financial situation put: - Absolute liquidity ratio - the proportion of working capital in the balance sheet total - return activities.

Then, substituting in equation (2) corresponding coefficients, we obtain the final expression of the model:

$$Z = -0{,}6 + 2 \bullet X_{11} + X_{12} + 3 \bullet X_{13}. \quad (3)$$

If Z = 0, the probability of occurrence of overdue loans and interest equal to 0.5, if Z <0, the probability of greater than 0.5, if Z> 0, the probability is less than 0.5.

For any constructed model can determine the interval deviation Z - (Z_1(Z < 0); Z_2 (Z > 0)). In the proposed model Z_1 = - 1, Z_2 = 1. Then you can specify the following borrowers assessment of their current financial situation: I Class (5) - Z> 1; II class (4) - Z = [0, 1]; III class (3) - Z = [-1; 0]; IV class (2) - Z <1.

2. The project, which is credited - the basis of corporate interaction (K_{112}).Subkryteriyamy this indicator are: lending facility - X_{21}; term - X_{22}; loan amount - X_{23}.

Property loans must meet the following requirements: availability of effective demand on the outcome of corporate interaction (interaction of corporate liquidity facility) competitiveness result of corporate interaction, consistency and stability of prices on the outcome of corporate interaction.

Borrowers under the credit facility are classified on the basis of the existing methods [1].

Class borrower's loan period is determined as follows:

a) if the loan is issued for the implementation of the corporate object interaction in the process of aviaposluh: II Class (4) - for up to three months of inclusively; III class (3) - for more than three months;

b) if the loan is granted for the use of corporate interaction results in the production of: II Class (4) - up to and including one year; III class (3) - for more than one year;

c) if considered a project to create an object of corporate interaction: II Class (4) - for up to three years inclusive; III class (3) - for more than three years.

Borrowers in terms of loans classified based on the existing methods [1].

Using formula (1) and acquiring values weights equal to 0.6 for the credit facility and 0.2 for the size and term of the loan, we obtain the final expression for calculating the borrower for a class project that credited, $C(K_{112})$:

$$C(K_{112})=0{,}6\bullet C(X_{21})+0{,}2\bullet C(X_{22})+0{,}2\bullet C(X_{23}), \quad (4)$$

3. Reputation (K_{12}).Subkryteriyamy this indicator are: previous experience with the borrower - X_{31}; human potential borrower - X_{32}. Borrowers from past experience with them and human resources are classified on the basis of the existing methods [1]. For example, if the significance of past experience with the borrower is 0.8, and human resources - 0.2 for their impact on the reputation of the figure, we obtain the final formula for calculating the borrower's class for his reputation $C(K_{112})$:

$$C(K_{12})=0{,}8\bullet C(X_{31})+0{,}2\bullet C(X_{32}), \quad (5)$$

4. Determining the collateral (K_2).Since the most common types of software are: guarantee or surety third party insurance, mortgage property, etc., form the borrower is determined by the following subkryteriyamy: liquidity collateral X_{41}; stable prices for the collateral X_{42}; ability of the collateral to the storage X_{43}.

Subjects collateral given attributes are classified on the basis of the existing methods [1].

Having the values of weights equal to 0.6 to 0.2 and liquidity of collateral for the stability of the price of the collateral and its ability to store, obtain the formula for calculating class borrower's collateral, provided him, $C(K_2)$:

$$C(K_2)=0{,}6\bullet C(X_{41})+0{,}2\bullet C(X_{42})+0{,}2\bullet C(X_{43}), \quad (6)$$

If the software is surety, guarantee or insurance, the class of borrowers is equal to the class of surety, guarantor or insurer according to their ability to pay. [1]

Thus, the formula for calculating class borrower according to his financial capacity will take the following form (weighting factor for the current financial state is 0.75, and for the project to be credited - 0.25):

$$C(K_{11})=0{,}75\bullet C(K_{111})+0{,}25\bullet C(K_{112}), \quad (7)$$

Definition of risk communication and corporate class borrower. To determine the credit risk associated with the borrower's creditworthiness - corporate website interactions, which will be expressed as a probability of losses the bank loan, the borrower classes are summarized assessment of its financial capacity $C(K_{11})$,reputation $C(K_{12})$, proposed security $C(K_2)$size and variability of corporate participation in corporate interaction $C(K_3)$the likelihood P_{11}, P_{12}, P_2, P_3 [1].

Using the rules of operation of the probability of events, write the formula for determining the credit risk associated with a borrower's creditworthiness (P), :

$$P=(P_{11}\bullet P_{11}^{*}+P_{12}\bullet P_{12}^{*}+P_{11}\bullet P_{12})\bullet P_2, \quad (8)$$

where P_{11} − objective risk, the likelihood of an unfavorable outcome for the bank through the financial capacity of the client and ineffective implementation of the outcome of corporate responsibility; P_{11}^{*} − same with favorable results; P_{12} − subjective risk, the likelihood of an unfavorable outcome for the bank because of the reputation of the borrower; P_{12}^{*} − same with favorable results; P_2 − risks associated with the provision of the loan, the probability of an unfavorable outcome for the bank because of problems with the software; P_3 − subjective risk, the likelihood of an unfavorable outcome for the bank because of the change in the corporate borrower's participation in corporate responsibility; P_3^{*} − same thing with a favorable outcome.

Given that the sum of probabilities of two opposing events is unity, we obtain the final formula for the calculation of total bank credit risk with respect to a particular borrower:

$$P=(P_{11}+P_{12}-P_{11}\bullet P_{12})\bullet P_2\bullet P_3, \quad (9)$$

Once the credit risk of the borrower class is set for its creditworthiness and relevant risk [1]. There are not five, but four classes of borrowers: I Class - borrowers with good credit entirely, they are almost risk-free loan to the bank; II class - borrowers with good credit, lending them the bank takes calculated risks; III class - borrowers with average credit ratings, making decisions about lending, the bank must carefully consider the possible consequences; IV class - borrowers with low credit ratings, their loans to the bank associated with undue risk, because the bank is better to refuse such a borrower in the loan.

Conclusion. The model of risk assessment of probability of loss of income taken into account bank an important component of evaluating the creditworthiness of the borrower, which is the airline - a subjective corporate risk that the value of corporate participation in corporate interaction.

Feature Methodical approach to determining corporate risk as a factor in the threat of loss of income of commercial banks is to establish the relationship between the values of corporate participation borrower and paid credit obligations.

Thus, the value of corporate involvement depends on the amount of income (regular or one-time), which is the airline - participant in the process of corporate interaction, namely those funds are the source of repayment of bank loan and pay interest on it.

Considering the variability of corporate participation airline borrowing in the corporate interaction allows the bank in a timely manner to form an additional financial provision for losses as a result of lack of funds or reducing the amount of suspension of cash flows for the obligations of the borrower.

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ОЦІНЮВАННЯ КРЕДИТОСПРОМОЖНОСТІ АВІАПІДПРИЄМСТВ-ПОЗИЧАЛЬНИКІВ У ПРОЦЕСІ ЇХ КОРПОРАТИВНОЇ ВЗАЄМОДІЇ ІЗ КОМЕРЦІЙНИМИ БАНКАМИ

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