The Economic Consistency and the Creditworthiness of Borrower:
the Methodical Features of Analysis Using the Concentric Matrix Models

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Abstract

Purpose – This paper is to analyze the system and the models of financial analysis in the assessment of economic consistency and the creditability of borrower. To test the process of complex express-analysis, it is utilized by the concentric matrix models by using the matrix of 5x5..

Research design, data, and methodology – The estimation of economic consistency, the creditworthiness, the complex express-analysis with application of concentric matrix models were carried out on the basis of data of the report for the 2017 of corporations POSCO and in the first half of the 2018 Daewoo Shipbuilding & Marine Engineering of South Korea.

Results – This paper focused on the unbalance of the corporate financial structure (capital, receivable) and the assessment of sustainability development, taking into account the liquidity, solvency, financial sustainability and economic viability of the enterprise.

Conclusions – this paper also consider the theoretical means of regulating receivables. The material is presented in the pedagogical context and appendix of the conclusion.

Keywords: Creditability, Economic Consistency, Methodic of Financial Analysis, Lending Technology, Concentric matrix models.

JEL Classification Code: D240, G3.

1. Introduction

The analysis of creditworthiness of organization is part of an analysis of financial condition of organization. The creditworthiness can be considered in the two aspects:

- how the ability of an economic entity to repay its liabilities on the loans received during a certain period of time;

- as an ability of organization to divert the funds from the economic turnover, to lend to another economic entity, without violating its own normal mode of operation.

The first direction is more the narrower, investigated the possibility of organization repay its debt on the loans, as a whole on its liabilities. The assessment of liquidity of organization, its economic consistency. The second approach is broader and involves the absolute financial sustainability of organization, the availability of sufficient potential.

Determining the content of definitions it should be noted that "economic consistency" is periodically updated among analysts as the procedures of analysis and the diagnostics of both separate economic operations and during the adjustment development strategies. Traditionally, the economic consistency implies maintaining a certain level of profitability, the financial stability of organization, its business activity (Figure 1).
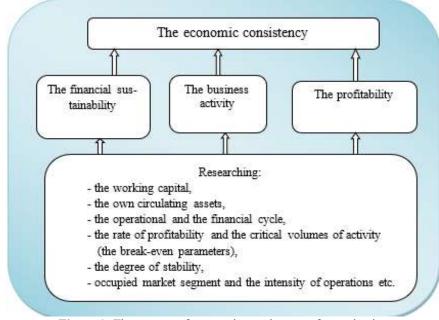

Figure 1: The content of economic consistency of organization

The economic consistency can be complete or absolute and partial, when the recovery of economic sustainability can be achieved through the partial mobilization of own resources and the attraction of external assistance. If the organization is unable to pay its liabilities, it is not able to carry out its activities, the procedure of recovery is ineffective, then this provision is called the bankruptcy.

2. The result of analyses

2.1. The peculiarities of methodic of analysis of borrower's economic consistency and the creditworthiness

Most methodic analysis of creditworthiness are based on the coefficient method. In the process of analysis of creditworthiness and the economic consistency are applied the universal indicators: of structures (specific weights), of turnover, of profitability and the special coefficients. The universal indicators are used in the assessment of different aspects of financial state and at any stage of analytical process. The second group of thematic indicators applied sporadically taking into account the set purpose and the skills of the analyst. The system of coefficients can be formed individually under the specific research and within applied tool or the model. For example, in the process of the

universal indicators analysis of the universal indicators traditionally used: the rule "6C", the system PARTS, the analysis PARSER, the analysis CAMPARI (Table 1). The analysis "5C" is actively applied in the tax management. In the process of strategic analysis, marketing research is applied the analysis PEST (or STEP). SWOT- analysis is universal tool. Evaluating these tools, it should be noted that their disadvantages include the multi-stage and the cumbersome accounting procedures. The PARTS-system, PARSER-analysis, CAMPARI-analysis can be classified as narrowly oriented. Their adaptation to other studies is accompanied by a large amount of additional accounting procedures. The advantages of above mentioned tools include the acceptable immersion in the subject of research and their effectiveness.

The universality is characterized by the rule "6C", the analysis "5C", the analysis PEST, SWOT-analysis. The list of analysis tools presented above can be supplemented by small systems based on the three coefficients: the system of indicator of Biver used in the diagnosis of bankruptcy; the technique of credit scoring D. Duran.

In addition of systems of coefficient actively used in the construction of models: the cred-it index of E. Altman and the index of Roman Lisa, the models: Tapffler, Chesser, Olson, J. Fulmer, G. Springate, J. Lego (CA-Score). Despite the fact that most of these analytical tools are focused on the assessment creditworthiness most of them are used in the process of diagnosing of bankruptcy. The CA-Score model is easy to use and relies on the three ratios. The index creditworthiness of E. Altman has been used for a long time and has been adapted to Russian conditions many times. In the practice of organizations effective is the index of Roman Lis, the model of Tapffler, G. Springate. A distinctive feature of models of Chesser, Olson, J. Fulmer is multifactorial.

Let's consider methodical peculiarities of the analysis of economic consistency of organization and the creditworthiness on the basis of reporting data for the 2017 POSCO -the largest steel corporation of South Korea.

Table 1: The analysis of creditworthiness

No	The instrument	The advantages	The disadvantages
	The analysis of creditworthiness		
1.	The rule "6C": Character – the assessment of nature of the activity, the stage of development. Capacity – the analysis of financial and production abilities, Cash – the analysis of solvency and liquidity, Collateral – the assessment of support of operation, Conditions – the assessment of conditions of activity, Control – the evaluation of financial control system in the organization.	1. Allows to evaluate the internal system of financial control. 2. The results of analysis are more complete by assessing the external operating conditions of organizations. 3. Can be used in the different sections of financial analysis.	1. The multistage research. 2. Relies on the use of a system of coefficients with a large number of indicators.
2.	PARTS -system: Purpose – the definition of purpose and the tasks. Amount – the analysis of amounts involved in the transaction. Repayment – the evaluation of system of payment and the security of credit. Term – the determination of period of operation, the financial burden. Security – the assessment of collateral for the operation (the collateral, the pledge, the guarantees, the surety, the cession, the transfer of rights, the mortgage).	Focused on the detailed analysis of operation on the credit.	Narrow range of application in the financial analysis and the cumbersome adaptation to other studies.
3.	PARSER-analysis:		

	Person – the formation of information about the borrower, the express analysis of financial condition of organization, Amount – justification of loan amount, Repayment – the analysis of loan repayment conditions, Security – the analysis of collateral operation, Expediency – the assessment of the targeted use of credit, Remuneration – the analysis of interest, the cost of credit.		
4.	**Analysis CAMPARI:** CAMPARI-analysis: Character – the evaluation of borrower's activity, Ability – the analysis of credit repayment, Means (Marge) – the analysis of need of credit, the analysis of profitability (margin)[2] on the operation. Purpose – the assessment of targeted use of credit, Amount – the analysis of size of loan, Repayment – the analysis of conditions of loan repayment, Insurance – the analysis of insurance of risk on the operation and the loan repayment.		
The management of tax			
5.	The analysis"5C": Company – the analysis of organizational and the legal form, the taxes. Costs – the analysis of costs, the tax burden . Competitors – the evaluation of competitors, the marketing analysis, Consumers - the analysis of consumers, Channels – the analysis of distribution channels of goods.	1. Focused on the detailed analysis of tax flows. 2. Includes a comprehensive marketing analysis that allows you to conduct a forward-looking analysis of expected revenue and the tax payments. 3. Can be used in different sections of economic analysis.	1. The multistage research. 2. The cumbersome calculations due to the use of a system of coefficients with a large number of indicators.
The strategic analysis, marketing and other research			
6.	PEST (or STEP)-analysis:	1. Is focused on conducting macroeconomic research.	1. The multistage and multidisciplinary research.

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[2] In general form the profitability of transaction is the ratio of total expenses of bank, except for the expenses on attraction of resources minus of other bank's incomes connected with carrying out of operation plus planned profit to assets -income-generating.

	Political – the assessment of changes in legislation, the tax policy and the state influence. Economic – the valuation of exchange rate, the inflation. Social – the assessment of demographic changes, the activity and the mobility of the population. Technological – the evaluation of new technologies, research and development work.	2. Wide and free range of the subject of research.	2. The large volume of counting procedures.
7.	SWOT Analysis: S (Strengths) – the analysis of strengths of organization, W (Weaknesses) – the analysis of weaknesses of organization, O (Opportunities) – the analysis of economic potential, T (Threats) – the risk assessment, threats.	The universal instrument applied at the level of macroeconomic research and at the level of business entities evaluation. It is successfully used in the process of controlling, in the analysis and the diagnostics of economic consistency, the estimation of probability of bankruptcy, in the strategic and operative analysis etc.	1. The wide range of research subject. 2. The cumbersome calculations.

2.2. The fragment of assessment of external conditions (The macroeconomic illustration of South Korea's position the steel market)

South Korea is the one of the largest steel producers in the world, in addition to China, Russia and Japan. The volume of steel products in the first half of 2018 amounted the 36.1 mmt (Appendix A). The export was 42,5 %. The export of products is carried out in more than the 150 countries of the world. The largest export volume in the 2018 was accounted for by China the 12 % or the 1,9 mmt, Japan – the 12 % or the 1,8 mmt, USA – the 9 % or the 1,3 mmt, Mexico – the 6 % or the 1 mmt, Thailand – the 6 % or 0,9 mmt, Vietnam – the 6 % or the 0,88 mmt. Considering the commodity structure of export, it can be noted that in the 2018 the 72 % or the 11,1 mmt are on the flat products, the 12 % or the 1,9 mmt are long products, the 8 % or the 1,2 mmt occupy the pipe products, the 6 % or the 862 thousand mmt – the stainless products, the 2 % or the 352 thousand mmt – the semi-finished steel.

The methodical peculiarities of analysis of economic solvency of POSCO: In the analyzed period the corporation is a liquid, solvent, economically wealthy company, improving its financial consistency in the 2017 (Appendix B). We note that the coefficient of autonomy and the real value of property amounted the 62,75 % and the 71,08 % respectively at the end of the analyzed period. The movement of cash flows in the corporation is liquid and profitable, as evidenced by the liquidity ratios and the profitability of cash flow. It should be noted that the first indicator is calculated as the ratio of gross positive cash flow to gross negative monetary flow. The coefficient of profitability is defined as the ratio of net cash flow to gross negative monetary flow.

The evaluation of economic consistency and the creditworthiness through all the above models has yielded the positive results except for the models of R. Lis, Tapfler, G. Springate. These models are focused on a detailed assessment of current assets and the working capital. This is due to the fact that financial concerns are caused by imbalances in the structure of borrowed capital, where the significant share of short-term loans. At the end of the analyzed period, they accounted for the 14,05 % of total assets. The system of traditional indicators can be supplemented by the indicators of debt capital (Appendix C). Also the subject of close attention is the receivable, which at the end of the analyzed period amounted to the 15,53 % in the total assets. These factors point to the risk of corporations. Let's prove the last position. In the process of integrated assessment of sustainable of development we will use the concentric matrix models. The fundamental research in the study of concentric matrices were made by U. Mereste, J. A. Luurom, V. Vensel, Y. Room, A. Root, M. Or-vet, M.S. Fledervish, M. Sapera and others. This method can be used in different modifications. When estimating profitability, the costs, the resources, the financial condition. In the latter case, in the course of detailed integrated assessment in the formation of the initial matrix 10x10 can use

such indicators as: the cash, the stocks, the receivables, the payables, the liabilities, the equity, the loans, the non-negotiable assets, the revenue, the net profit.

In this case, we will conduct a rapid analysis and form the 5x5 matrix using the following indicators: the assets and the investments, the capital and the reserves, the cost of sales, the revenue, the profit (Table 2,3). For the first two indicators it is expedient to take average value.

The interpretation of matrix coefficients is as follows:

$X12$ – the proportion of capital, reserves and the assets, investments,
$X13$ – the proportion of cost of sales and the assets, investments,
$X14$ – the turnover of assets, investments (speed, in time),
$X15$ - the efficiency of assets, investments,
$X21$– the proportion of the assets, investments and the capital, reserves,
$X23$ – the proportion of cost of sales and the capital, reserves,
$X24$ – the turnover of capital, reserves (speed, in time),
$X25$ - the efficiency of capital, reserves ,
$X31$– the proportion of the assets, investments and the cost of sales,
$X32$ – the proportion of capital, reserves and the of cost of sales ,
$X34$ – the proportion of revenue and the cost of sales,
$X35$ - the efficiency,
$X41$– the proportion of assets, investments and the revenue,
$X42$ – the proportion of capital, reserves and the revenue,
$X43$ – the proportion of cost of sales and the revenue,
$X45$ - the efficiency of sale,
$X51$– the proportion of assets, investments and the profit,
$X52$ – the proportion of capital, reserves and the profit,
$X53$ – the proportion of cost of sales and the profit,
$X54$ - the proportion of revenue and the profit.

According to the company POSCO, the following articles were included in the assets and investments based on the reporting forms: the cash and equivalents, the shot-term, long-term financial assets, the inventories, the investment in associates and joint ventures, the property, the intangible assets and other. The capital and reserves included such articles as: the share capital, the capital surplus, the hybrid bonds, the reserves, the Treasury shares, non-controlling interest and other.

Table 2: The matrix model 5* 5 integrated assessment of financial condition of organization

indicators	AI	CR	C	R	P
1.AI	X11	X12	X13	X14	X15
2.CR	X21	X22	X23	X24	X25
3.C	X31	X32	X33	X34	X35
4.R	X41	X42	X43	X44	X45
5.P	X51	X52	X53	X54	X55

1 quadrant

II quadrant

III quadrant

1Y quadrant

Table 3: The matrix model 5* 5 integrated assessment of financial condition of POSCO

	indicators	AI	CR	C	R	P
1 quadrant / III quadrant	1.AI	1,0000	0,7807	0,7187	0,0822	0,0162
		1,0000	0,8208	0,8165	0,3469	0,0464
		1,0000	1,0514	1,1361	1,1516	2,8589
	2.CR	1,2809	1,0000	0,9206	1,0534	0,0208
		1,2183	1,0000	0,9948	1,1538	0,0566
		0,9511	1,0000	1,0806	1,0953	2,7192
II quadrant / 1У quadrant	3.C	1,3914	1,0862	1,0000	1,1442	0,0226
		1,2247	1,0052	1,0000	1,1598	0,0569
		0,8801	0,9254	1,0000	1,0136	2,5165
	4.R	1,2160	0,9493	0,8739	1,0000	0,0198
		1,0559	0,8667	0,8622	1,0000	0,049
		0,8683	0,9129	0,9866	1,0000	0,4827
	5.P	61,584	0,0208	44,260	50,642	1,0000
		21,540	0,0566	17,588	20,399	1,0000
		0,3497	2,7192	0,3974	0,4027	1,0000

61,584 – on the beginning analyzed period,
21,54 - on the end of analyzed period,
0,3497 – the index.

The first and the second quadrants are indicators of estimation of proportions of means, the third and the fourth quadrants are the indices of proportions and efficiency. The complex index of stability is more precisely calculated as the geometric mean from the sum of average indices under a diagonal:

$$L = \sqrt[10]{0{,}9511*0{,}8802*0{,}9254*0{,}8684*0{,}913*0{,}9866*0{,}3498*2{,}7192*0{,}3974**0{,}4028} = 0{,}788$$

Generalizing indicator less than 1, shows not sustainable development of the company. This is defined, as indicated earlier by the imbalances in the structure of its means: the borrowed capital[3], the receivables.

For a fuller demonstration of the application of concentric matrix models, we will take the corporation Daewoo Shipbuilding & Marine Engineering, which is also a financially stability, eco-nomically consistency company in the first half of the 2018 (Appendix D). The movement of cash flows in the corporation is liquid. The estimation of economic consistency and credit-ability by means of all above models has the yielded positive result except for models of R. Lis, Tapffler, G. Springate. The reason, the same as in the corporation POSCO, the imbalances in the structure of debt capital, where a significant share of short-term loans. This indicates on the risk in the process of credit of corporation.

The company is characterized by the sustainability of development, as evidenced by the generalized indicator of development – 1,55 (more than 1):

$$L = \sqrt[10]{1{,}2274*1{,}6625*1{,}3545*1{,}8815*1{,}5329*1{,}1317*4{,}793*0{,}2561*2{,}8829*2{,}5474} = 1{,}55$$

The fragment of calculations with the help of concentric matrix models is presented in the Table 4.

Let's to see the features of concentric matrix models in the analysis of financial condition. In the research can using the next systems of coefficients:

1 variant – the matrix 6x6: the investments, the credit, the stock, the cost of sales, the revenue, the profit.

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[3] To present the several of coefficients in the appendix C.

2 variant - the matrix 6x6: the investments, the credit, the inventories, the cost of sales, the revenue, the profit.

Table 4: The matrix model 5* 5 integrated assessment of financial condition of
Daewoo Shipbuilding & Marine Engineering

indicators		AI	CR	C	R	P
1 quadrant	1.AI	1,0000	1,686	1,0507	1,348	0,3242
		1,0000	1,3736	0,632	0,7164	0,0677
		1,0000	0,8147	0,6015	0,5315	0,2086
	2.CR	0,5931	1,0000	0,6232	0,7995	0,1923
		0,728	1,0000	0,46	0,5216	0,0492
		1,2274	1,0000	0,7383	0,6524	0,2561
П quadrant	3.C	0,9518	1,6047	1,0000	1,283	0,3086
		1,5824	2,1735	1,0000	1,1336	0,107
		1,6625	1,3545	1,0000	0,8836	0,3469
	4.R	0,7419	1,2508	0,7795	1,0000	0,2405
		1,3958	1,9173	0,8821	1,0000	0,0944
		1,8815	1,5329	1,1317	1,0000	0,3926
	5.P	3,0845	0,1923	3,2408	4,1578	1,0000
		14,784	0,0492	9,3430	10,592	1,0000
		4,793	0,2561	2,8829	2,5474	1,0000

(III quadrant; 1У quadrant)

3 variant - the matrix 5x5: the real investment, the financial investment, the investment in the organization, the revenue, the profit.

4 variant - the matrix 6x6: the short-term credit, the long-term credit, the financing, the issue of securities, the revenue, the profit.

In this case we analysis the indicators of structure, the turnover, the efficiency.

2.3. The pedagogical context of theme

In this part we will dwell on the theoretical provisions of the regulation of receivables, which with sufficient amount of internal information on the company POSCO can be adapted to it.

The pedagogical context of theme: the analysis and the management will be presented in the appendix E,F.

In general, the management of receivables relies on the strategic regulation of credit and dis-count policy. The following tactical the tasks are also solved:

1. Providing liquidity of calculations.

2. Determination of optimal boundaries of the fluctuations of accounts receivable taking into account the financial and economic structure of organization's funds and the financial and economic opportunities.

3. The management of receivables by means of financial options. In particular, the use of factoring taking into account the tactical and the strategic tasks of managing performance results.

4. Development and docking of credit policy (including in relation to buyers; determination of optimal volume of financial resources involved in the commercial, consumer credit; formation of credit conditions system: the term of loan – the period of credit, the size – the credit limit, the system of discounts of price, the system of penalty sanctions, the system of estimation of buyers, the conditions of prolongation etc.).

5. Development of policy of management of turnover of funds.

6. Construction of effective system of control over the movement and timely collection of receivables (the optimal volume of receivables should be compared with the size of profits received by the firm from the sale of credit should be greater than the additional operating costs of servicing accounts receivable and the possible losses) etc.

In the process of managing receivables there is a problem of definition and modeling:

1. The volume of investment in receivables, ensuring the liquidity of settlements.

2. The need for insurance financial resources to cover a non-secure receivable.

3. The size of the increased need for financial resources.

4. The optimal value of receivables.

5. The size of the contingency fund.

The analysis of debt with factoring is present in the appendix F.

3. Conclusion

In conclusion note obtain the good result of analysis of consistency and creditworthiness of organization if application of concentric matrix models. Its organically complemented the system of indicators in the financial analysis. Detailed research and the comprehensive approach that is laid down in the method allow to give an effective result of the study. The disadvantage of method (the cumbersome) is easily compensated by the automation of calculations.

The complex analysis of creditworthiness of organization must to consist from the estimation of structure of operation, the financial condition of organization, the future of estimation of activity. In the process of analysis of financial condition of organization assumes an assessment of structure of current assets, the structure of liabilities, of loans. If we use the concentric matrix model, we must remember: about the content of the original indicators laid down at the base. Otherwise, the method will not give a more complete and accurate result or the results of the research will be theoretic. When using an analytical coefficient system, it is also important to be aware of the method of their calculation and composition. The particular attention is paid to the quality of the original information. (this is the subject of a separate publication)

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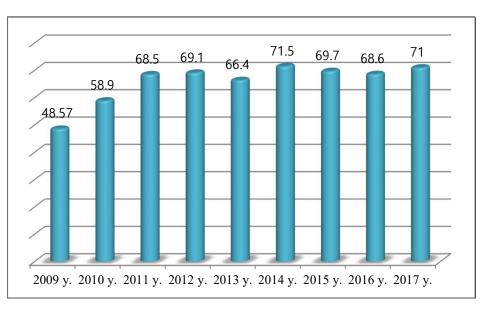
Appendix A

Figure 1: The Dynamic of Steel Production in South Korea
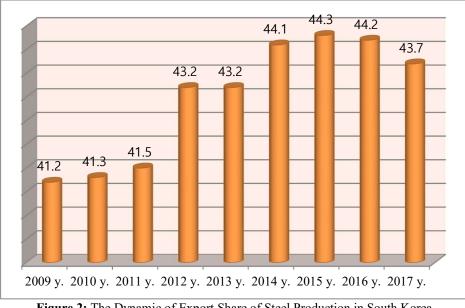in the 2009-2017

Figure 2: The Dynamic of Export Share of Steel Production in South Korea
in the 2009-2017

Appendix B

Table 1: The Fragment of Analysis of Financial State of POSCO in 2017.

The indicator Active	2016	2017	The change
1	2	3	4
1. **The non-current assets:**	61,97%	58,31%	-3,66%
1.1.The fixed assets	44,05%	41,95%	-2,10%
1.3.The investments (material, financial)	8,26%	6,96%	-1,29%
1.4. The intangible assets	7,69%	7,58%	-0,11%
1.5. Other non-current assets	1,97%	1,82%	-0,15%
2. **The current assets:**	38,03%	41,69%	3,66%
2. 1. The material circulating assets	11,82%	12,76%	0,94%
2.1.1. The reserves	11,82%	12,76%	0,94%
2.2. The accounts receivable	15,33%	15,53%	0,20%
2.3. The cash and the short-term financial investment	9,69%	12,30%	2,61%
2.4. Other current assets	1,19%	1,09%	-0,09%
Total	100,00%	100,00%	
Passive			
1.**The own capital**	60,06%	62,75%	2,68%
1.1.Share capital	0,59%	0,60%	0,01%
1.2. The reserve capital	0,84%	0,18%	-0,66%
1.3. The additional capital	3,61%	3,67%	0,06%
1.4. The funds	4,27%	4,65%	0,38%
1.5. The retained earnings	50,74%	53,65%	2,90%
2. The long-term loans	15,42%	12,20%	-3,22%
3. The short-term liabilities:	24,52%	25,05%	0,54%
3.1. The short-term loans	12,56%	14,05%	1,48%
3.2. The short-term liabilities:	5,07%	4,33%	-0,74%
3.2.1. Accounts payable	5,07%	4,33%	-0,74%
3.3. The other short-term passive	6,88%	6,67%	-0,20%
Total	100,00%	100,00%	
1. The coefficient of current liquidity	1,513956	1,62807	0,114115
2. The coefficient of normal level of coverage	1,4706914	1,49843	0,02773
3. The coefficient of liquidity of cash flow	13,9711	10,79626	-3,17492
4. The coefficient of efficiency of cash flow	12,4651	9,372494	-3,0927
5. The coefficient of autonomy	0,600643	0,62747	0,026836
6. The coefficient of real property value	0,737938	0,7107	-0,027172

Appendix C

1. The cost of the extra capital in the form of the bank credit (Cb):
$$Cb = [r * (1 - rt)] / (1 - Cb),$$
where r – the rate of bank percent, %,
rt – the rate of the profit tax, the decimal fraction,
Cb – a level of charges on attraction of the bank credit to its sum, the decimal fraction.

2. The cost of the commodity credit given in the form of a delay payment (Ccc):
$$Ccc = [Sp * 360 * (1 - rt)] / Pg,$$
where Sp – the size of the price discount at realization of cash payment "payment against documents ", %,
rt – the rate of the profit tax, a share of a unit,
Pg – the period of granting of a delay for production, days.

$$3.\ WACC = \Sigma Ki*di,$$
where Ki – the price of total a source of the capital,
di – the relative density of i-th source of means in their general sum.

$$4.\ WACC = Kstd*(1\text{-}tc)*STD/(TL+E) + Kltd*(1\text{-}tc)*LTD /$$
$$[(\ TL+E)+Kps*PS/(TL+E)+Kconv*CONV/(TL+E)+Kcs*CS/(\ TL+E)],$$

where Kstd – the cost of short-term loan means,

K std – the cost of short-term loan means,

STD – the market cost of short-term liabilities of the company,

tc – the rate of the taxation,

TL+E – the market cost of liabilities s of the company and it of share capital,

Kltd – cost of long-term extra means,

LTD – the market cost of long-term extra means,

Kps – the cost of the long-term loan liabilities means involved through of issue of the preferred shares of the company,

PS – the market cost of preferred shares of the company,

Kconv – the cost of the money resources involved by means of emission of convertible bonds or the convertible of preference shares,

CONV – the market cost of convertible bonds or the convertible of preference shares of the company,

Kcs – the cost of the financial resources involved by means of issue of simple actions,

CS – the market cost of simple actions of the company.

Appendix D

Table 1: The Fragment of Analysis of Financial State of Daewoo Shipbuilding
& Marine Engineering in the First Half of the 2018.

The Nndicator Active	The First Half of the 2017	The First Half of the 2018	The Change
1	2	3	4
1. **The non-current assets:**	41,75%	40,26%	-1,49%
1.1.The fixed assets	34,92%	34,59%	-0,33%
1.3.The investments (material, financial)	6,40%	5,20%	-1,19%
1.4. The intangible assets	0,36%	0,03%	0,33 %
1.5. Other non-current assets	0,10%	0,10%	0,00%
2. **The current assets:**	58,25%	59,74%	1,49%
2. 1. The material circulating assets	11,82%	42,20%	46,34%
2.1.1. The reserves	6,49%	12,33%	5,85%
2.2. The accounts receivable	4,12%	3,42%	-0,70%
2.3. The cash and the short-term financial investment	3,40%	3,62%	0,22%
2.4. Other current assets	8,53%	6,35%	-2,18%
Total	100,00%	100,00%	
Passive			
1.**The own capital**	54,31%	61,58%	7,27%
1.1.Share capital	3,17%	3,61%	0,45%
1.2. The reserve capital	4,08%	4,10%	0,02%
1.3. The additional capital	2,17%	0,12%	-2,05%
1.4. The funds	36,13%	50,86%	14,73%
1.5. The retained earnings	8,76%	2,89%	-5,87%
2. The long-term loans	3,96%	6,25%	2,28%
3. The short-term liabilities:	41,72%	32,17%	-9,55%
3.1. The short-term loans	14,76%	18,53%	3,77%
3.2. The short-term liabilities:	22,22%	7,43%	-14,80%
3.2.1. Accounts payable	20,98%	5,87%	-15,10%
3.3. The other short-term passive	4,74%	6,21%	1,47%
Total	100,00%	100,00%	
1. The coefficient of autonomy	0,54311	0,61582	113,39
2. The coefficient of real property value	0,83946	0,86597	103,16
3. The coefficient of maneuverability	0,48137	0,50650	105,22
4. The coefficient of constant assets	0,51862	0,49349	95,15

Appendix E

We have to finalize the debtor's model.:
1. The volume of investment in accounts receivable, providing liquidity calculations.
2. The requirements of insurance funds to cover bad debts.
3. The amount of increased demand for financial resources.
4. The optimum amount of debtors accounts receivable.
5. The amount of the reserve fund.

There are different methods for calculating these indicators. Consider some of them. The funds (F) invested in debtors:
$$F = V_p * S/c * (T_c + T_{Oc}) / 365 \qquad (1)$$

where V_p – the planned volume of sales on credit,
S/c - the ratio of production costs and the product prices in fractions,
T_c – the average period of credit buyers,
T_{oc} - the average period of delay payments on the loan in days.
For example:
Planned volume of sale of products with presentation of commodity credit = 3000 ths. Rubles.
The planned share of the cost of production in its price – 70 %.
The average period of loan granting to wholesale buyers is 30 days.
The average period of overdue payments for the loan is 15 days.
Required amount of financial resources invested in the forthcoming period in receivables = 3000 * 0,70 * (30 + 15)/365 = 258,9 ths. Rubles
The calculation of the amounts of insurance reserves can be carried out in different ways. The simplest methods include:
1. The percentage of net sales method (percentage of net sales method). The essence of method is that the amounts of deductions are defined as the multiply of factual amounts of debt to the share of losses to the net-revenue (in the previous period), if the scope of trade.

$$F_r = [D_t \backslash S] * D_a \qquad (2)$$

where D_t - the debt overdue on the types,
S – the revenue,
D_a – the amount actual debtor.

2. The method of accounting of accounts by the terms of payment (accounts receivable aging method). When using this method, in the calculate the amount of deductions is used as multiply the actual amount of debt on the interest, reflecting the differentiated share of overdue debt in the total amount.
$$F_r = [D_p \backslash D] * D_a \qquad (3)$$
where D_p - the debt overdue on the types (the debtor, which to not pay on time of contract),
D – the total amount of receivables,
D_a – the amount of actual debt.
It is possible not to accumulate funds passively in the reserve funds, but to place them, that is " the capital should bring even more capital".
For example, it is possible to place funds in the bank on deposit or in the securities etc. In this case, the valuation of funds can be carried out using the simple and complex percentages.

The stages of development of policy of attracting commercial (commodity) credit
Stage 1. Determination of type of loan and its purpose.
Stage 2. Definition of average period of use of commercial (commodity) credit. P = The average amount of debt of commercial (commodity) credit/ the one-day volume of sales of products of cost.
Stage 3. Optimization of terms of attraction of commercial (commercial) credit. Minimizing the cost of borrowed loan. The size of price discount /(1- The size of price discount) * 360/ the period of deferred payment in days. This indicator should be minimized.

Stage 4. Ensuring of effective using of credit.
Stage 5. The construction of financial control vertical of the operation.

The features of analysis of the process of decision making of receivables

The statement of problem: to provide a discount or a commercial credit (the deferred of payment).
The main stages:
1. The perspective estimation of incomes (from sales, realization).
2. The perspective estimation of cost of sales.
3. The prospective estimation of losses from no repayment of debt.
4. The perspective estimation of discounts for the pre-paid payment.
5. The perspective assessment of level of debt. In particular, the average period of turnover of debt:

$$Tc = Pz * T + Poz * To \quad (4)$$
$$Tu = [V/360] * Tc \quad (5)$$

where Pz – the percent of customers who use a discount,
T – the turnover period of customers who use a discount,
Poz – the percent of remaining customers,
To – the turnover period of the remaining customers,
V – the volume of sales.
Let's consider the example:
In particular, the sale – 50 000 th. rubles the average period of turnover of customers who use a discount - 70 %, its turnover period - 5 days, the turnover period of the remaining customers - 30 days.
Tc = 0,7* 5 + 0,3* 30 = 15 days
Tu = 50 000/ 360 * 12,5 = 1736,11 th. rubles.
6. The prospective estimation of expenses caused by freezing of capital in the debt.
7. Overall assessment of income and the expenditure for all options.
The main stages of management of organization's receivables
Stage 1. The analysis of the financial condition of supplier.
Stage 2. The development of credit policy in the organization.
Stage 3. The decision of granting of credit, the insurance of debt.
Stage 4. Change of credit policy.
Stage 5. The control over shipment of products. Preparation of debtors ' files.
Stage 6. The control over the financial condition of debtors.
Stage 7. Establishing the operational link with the debtor in case of unpaid debt.
Step 8. Preparation of claim for the recovery of overdue debt.
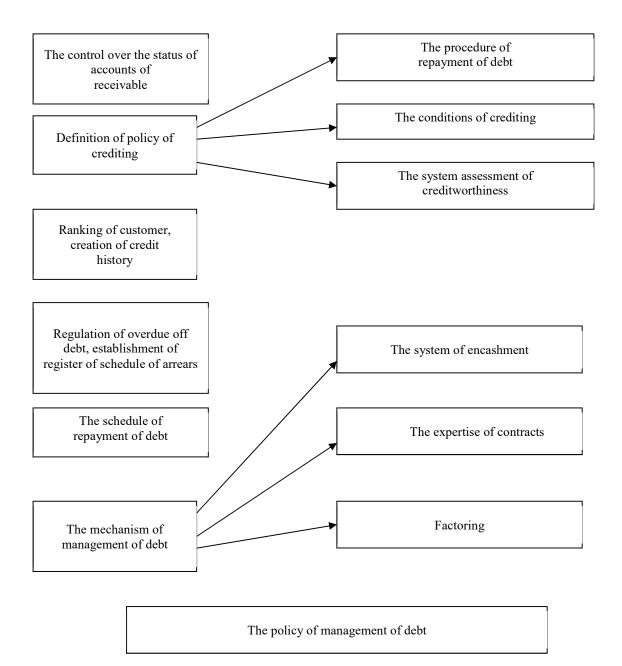Stage 9. Compensation of losses.

Figure 1: The policy of management of receivables.

Appendix F

The receivables (debtor) can regulation by factoring. Let's show the factoring operations. The international factoring operations are governed by the UNIDROIT Convention on international factoring operations (28.05.98). The Convention has been in the force since the 1 may 95 year, after the ratification.

Factoring is a brokerage commission the operation associated with the sale of the outstanding orders, the invoices of customer-supplier of bank or the factoring company, that is, the encashment of receivables. This financing under the cession of monetary order. This is a contractual obligation.

According to the Convention under the contract is to be understood factored the contract between the parties, in accordance with which the financial agent shall, at least the two of the following functions:

- financing provider, including the loan and the early payment,
- accounting (books) for outstanding amounts,
- remittance of receivables,
- protection against the insolvency of debtors,
- the encashment of debt.

The part of the factoring operation:

1. Factoring company or the department in a bank (the financial agent).
2. The client (supplier).
3. The company-buyer (borrower).

In world practice the cost of factoring services is emerging:

1. The commission (as a percentage of the invoice amount, usually at the level of the 1,5 % - 1,5%).
2. The percent levied in advance payment for submitted documents. The interest rate at the 2 %-4 % higher than the current rate of bank applied in the short-term lending.

Typically, the bank pays a lump sum the 80 % - 90 % of the value of the invoice, the 10 % - 20 % is the reserve, which will be returned after repayment of the whole amount of the debt by the debtor.

For example 1.

The accounts with 20 000 r., the pay – 80 %, the percent is the 8 %, the commission – the 1%, the credit period is the 60 days.

The payment for a loan over the 15 000 at the 60 days under the 9 %.

- the payment of interest 15 000 * 9* 60 /360 = 225
- the commission 20000* 1 = 200

The cost: the percentage plus + the expenses/ the balance for the period

425/(15000 * 60/360) = 17%

For example 2.

The amount of factoring operations is the 100 000, the advance – the 90 %, the commission – the 3%, the factor monthly interest on the advance payment is the 2 %. The firm which granted an invoice account, will receive: 100 000,

the reserve – 10 000,

the commission factor – 3 000,

the advance payment – 2 000,

Total: 85 000.

3. The fee of service charged for an exemption from the need to keep records for the insurance from the doubtful debts (charged as a percentage of the invoice amount).

4. The fee for the loan funds. If advance payment is made, the amount of the fee shall be calculated for the period between the purchase of the payment of the order and the date of encashment.

In United States, in the banks – the fees + the interest rate with daily balance. The percentage will be charged from the date of issuance of the advance payment up to the day of repayment of the debt. If the commission rate the 1,4 %, and the period of turnover the 30 days, the commissions the 16.8% annual (1,4 * 12).

In the world practice is used the 3 method of limits.

1. Determination of total limit. The each payer establishes a revolving limit, within which factoring division automatically pays tradable him orders.

2. Definition of monthly limits of shipments. The amount is set within a month can be done by shipment of the goods to a single payer.

3. The insurance on individual transactions. This method is used when the specifics of the activity of the seller involves more than a series of regular supply of products to the one-off same customers and the several transactions in the large amounts for delivery on a specific date.

The types of factoring:

1. Conventional (wide) factoring - originated the first, involves a wide range of services: registration, the insurance, accounting, etc.

2. Confidential (restricted) factoring - is widely used, involves only purchasing the commitments.

3. Indoor and outdoor factoring. The customers are notified and not notified.

4. Export and import factoring. Factoring of export - exporting clients advance by banks under the future proceeds from exports, while presenting the client of guarantees from currency and the credit risks. The varieties of factoring:

- with liability for the risk of insolvency and without recourse;
- without taking risks of insolvency, however, with recourse;
- with financing at the time of purchase;
- with financing on the time funding maturity;
- with the management of debtors accounting receivable;
- without the right of management of debtors accounting receivable.

The some advantages of the factoring:

- (for the vendor) sales volume growth, an increase in the number of buyers, the competitiveness, the ability to get a loan;
- (for the buyers) deferment of payment, reducing the risk;
- (for the bank) to increase incomes, expansion of services, increasing the number of customers.

A tool for servicing of commercial credit

(sales of goods under suspension)

5. Agency factoring - there is no administrative management of debtors receivables. The provider acts as an agent of the factoring company upon receipt of payment.
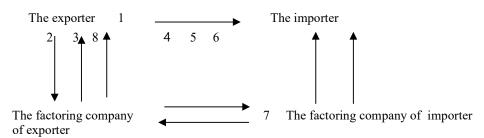
6. Discount factoring (invoice discounting) – the agreement on accounting (discounting) of invoices. The factoring company credit the client against him copies of invoices, the customs declarations and other documents confirming shipment of goods, and does not require a provider to the assignment of receivables and the debtor's notice of the nature of ongoing funding. The supplier assumes all risks of unpaid debts, administer the debtor, an encashment. The factoring company buys from a vendor payment demand order with discount. This operation is a form of funding provider.

7. Factoring without funding. The reverse operation of the discounted factoring. The factoring company controls shall an encashment incoming revenue, assumes the risk. Does not support client under cession of monetary obligations.

8. Reverse factoring is a financial product. The factoring company concludes an agreement with the buyer (the partnership agreement), the financial of provider. The buyer has the one creditor. The supplier has the whole range of factoring services.

9. The international factoring model: the two-factor, the direct export, the direct import, "back-to-back" (Figure 1).

The two-factor model

1 – the goods delivery. The exporter's invoices in the accounts contained the inscription that he is required to make payment in favour of importing factoring company.

2 – the copy of invoices as a transport document.

3 – the payment up to the 85% from the sum of delivery for purchased receivables.
4 – the assignment of debtor of receivables.
5 – the recovery of arrears.
6 – the payment (the entire risk on the factoring company).
7 – the transfer payment or issuance of a guarantee of payment.
8 - the remaining the 15% deposit less the commission.

The direct export factoring

The features: the exporter and the importer are located geographically near. The factoring company enters in the insurance company.

The direct import factoring

The feature: the exporter in the one or the two countries. The aim is to ensure payment.

Back-to-back

The accounts receivable serves as an additional guarantee for the importer. Used in the calculation of the distributors.

The contrast to the letter of credit

1. Faster than credit.
2. The percent - of the turnover. More expensive.
3. A letter of credit is a percentage paid by the buyer.
4. The letter of credit - checks the documents carefully.
5. The letter of credit – the additional services not provided.

The elements of a contract of factoring:
- the buyers whose claims will be assigned,
- the limited amount of the advance,
- the interest rate for a loan,
- the percentage fee for the processing of invoices,
- the right of recourse (recourse to supplier),
- the liability for breach of contract,
- the deadline for payment for the buyer,
- the order the commission of the factoring transaction,
- the conditions for terminating the contract,
- the period of validity etc.

Table 1: The comparative assessment of credit and factoring operations

The signs comparing	The credit	The factoring
1. The evaluation of operations on principle of according.	The operation is performed on the basis of giving back.	The repayment shall be made returnable money receivable of the client.
2. The evaluation of operations on principle of operation	The term of operations a fixed	The period is limited by the conditions of contract between the client and debtor
3. The technology of payments	The according to the schedule	In the accordance with the contract between the client and the debtor.
4. The security operations	There is	No
5. The volume of operations	Is limited and fixed	There is no clear restriction
6. The additional services	Not provided	Can be
7. The interest are expensed partial	On coast within the 1.1 rate refinancing of CB	On costs in full

Regulation of receivables (debtor) by factoring

The example (Table 2):
1. The company takes the credit for the amount of the shortfall in turnover due to the slow receipt of funds from the debtors in comparison with the time in which you need to pay accounts payable.

Are taken into the account all of the value of debts and receivables - 3,100 thousands rubles.

The credit of conditions: the rate - 20%, the term - the difference of turnover of receivables and payables. For example, 55d -20d = 35 g., Hence the credit period of 35 days.

The credit = 3100*(1 + 0,2 * 35/365) = 3160 thousand rubles

The price = 60 thousand rubles.

The rate calculated for the period = 1,93% (60/3100).

2. The company enters into a contract of factoring. Suppose that 3100 - the total value of all receivables.

The conditions: The bank buys company the full amount of receivables, loans, a certain percent of this amount. Sets the percent for credit and the percent of commission on the total value of receivables. These parameters can be the three options:

a) A loan in the amount of 80% of the accounts receivable at 20%. The fees (the commission) - 1.5% of receivables.

Suppose that 3100 - the value of all receivables. The required amount of 3100 * 0.8 = 2480 th.rubles.

The interest on loan = 3100 * 0,2 = 620 thousand rubles.

The fee = 3100 * 0,015 = 46.5 th.rubles.

The total price of factoring = 620 + 46,5 = 666,5 thousand rubles.

The real price of factoring = 666,5 / 2480 = 26,88%

Table 2: The analysis of financial operations.

Unit: Thousands rubles

The indicators	The options			
	1	П		
		a	б	c
1	2	3	4	5
1. An amount of turnover.	3100	2480	2170	2449
2. The amount of payment of the funds received	60	666,5	744	1067,33
a) the interest on loan	60	620	682	416,33
b) the reserve	-	-		558
c) the commission	-	46,5	62	93
3. The economy on the bad debts.	-	-	200	-
4. The total additional of money in circulation	3100	2480	2370	2449
5. The total cost of factoring or credit	60	666,5	744	1067,33
6. The real rate of interest, %	1,93	26,88	31,39	43,58

b) The fees are 2%. The court in the amount of 70% of receivables. The interest rate for the loan to 22%. The bad debts (in the opinion of the company) of 200 thousand rubles.

The required amount of 3100 * 0,7 = 2170 thousand rubles.

The interest on loan = 3100 * 0,22 = 682 thousand rubles

The fee = 3100 * 0,02 = 62 thousand rubles.

The total price of factoring = 682 + 62 = 744 thousand rubles.

The real price of factoring = 744/2170 = 31,39 %.

c) The accounts receivable purchased by the bank under the terms of the provision of 18%, 2% commission, the interest rate for the loan to 17%.

The reserve = 3100 * 0,18 = 558 thousand rubles.

The fee = 3100 * 0,02 = 93 thousand rubles.

The remaining amount = 3100 - 2449 = 558- 93 thousand rubles.

The interest on loan = 2449 * 0,17 = 416,33 thousand rubles.

The total price factoring = 558 + 93 + 416,33 = 1067,33 thousand rubles.

The real price of factoring = 1067,33 / 2449 = 43,58%.

The conclusions: In general formulation of the problem, the most profitable is the first option. When conditions change, this statement is changing. For example, the credit is not needed for 35 days, and the permanent and the price of credit resources, taking into account the risk of 27%. Thus, the efficiency of the operation is determined by the form of attracting additional resources turnover.