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MINING AND BENEFICIATION COMPANIES LIABILITIES FIGURES CORRECTION

Abstract. *It is important to define accurately enterprise liabilities figures, because they are used in calculation of those financial ratios, based on which conclusions of enterprises financial performance are made. When determining indicators of liabilities of mining and beneficiation enterprises of Ukraine, the following factors shall be considered: company internal indebtedness (that is debt of the company to itself); loan guarantees that are provided to other enterprises of the same vertically integrated structure for which the certain company relates to; enterprise liabilities to affiliates.*

Internal indebtedness appears at enterprises because of insufficient financing of obligatory programs. Untimely fulfilment of such programs may lead to future increasing of enterprise's costs and consequently lower financial and economic results. Thus, an enterprise internal indebtedness has to be considered in the companies liabilities.

Mining and beneficiation enterprises of Ukraine belong to different vertically integrated structures and often act as guarantors for credits that are provided to other enterprises of the same structures. Such liabilities are not shown in the balance of the mining and beneficiation enterprises. But in case of insolvency or bankruptcy of enterprises being credited, the obligations of loans payment will be transferred to enterprises-guarantors (in our case to mining and beneficiation enterprises). Therefore, liability reserve of guarantees shall be created and it shall be considered in long-term liabilities of the enterprises.

Another peculiarity of mining and beneficiation enterprises operating as a part of vertically integrated structures is existence of affiliated liabilities. Two groups of affiliated liabilities shall be distinguished: absolutely affiliated (liabilities of the enterprise to other companies which are fully controlled by the same owners); conditionally affiliated (liabilities of company to other companies which are partially controlled by the owners of the same company). Absolutely affiliated liabilities shall be transferred from current to long-term liabilities; conditionally affiliated liabilities are current by their essence.

Thus, methodology of correcting of mining and beneficiating enterprise liabilities has been developed in the scope of this Article that will allow increasing of preciseness of defining of its financial and economic results and assessment of financial condition.

Keywords: *liabilities; internal indebtedness; affiliate liabilities; mining and beneficiation companies.*

JEL Classification: *L72, M41, M49*

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КОРИГУВАННЯ ПОКАЗНИКІВ ЗОБОВ'ЯЗАНЬ ГІРНИЧО-ЗБАГАЧУВАЛЬНИХ КОМБІНАТІВ

Анотація. Розроблено методику коригування зобов'язань гірничо-збагачувального підприємства з урахуванням внутрішньої заборгованості, резерву зобов'язань за гарантіями та афілійованих зобов'язань. Упровадження цієї методики дозволить підвищити точність визначення фінансово-економічних результатів і фінансових коефіцієнтів для оцінки фінансового стану підприємства.
Ключові слова: зобов'язання, внутрішня заборгованість, афілійовані зобов'язання, гірничо-збагачувальні комбінати.

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КОРРЕКТИРОВАНИЕ ПОКАЗАТЕЛЕЙ ОБЯЗАТЕЛЬСТВ ГОРНО-ОБОГАТИТЕЛЬНЫХ КОМБИНАТОВ

Аннотация. Разработана методика корректирования обязательств горно-обогатительного предприятия с учетом внутренней задолженности, резерва обязательств по гарантиям и аффилированных обязательств. Применение этой методики позволит повысить точность определения финансово-экономических результатов и финансовых коэффициентов для оценки финансового состояния предприятия.
Ключевые слова: обязательства, внутренняя задолженность, аффилированные обязательства, горно-обогатительные комбинаты.

Introduction. The indicators of the enterprise long-term and short-term liabilities are used in solvency (liquidity) evaluation calculating, some financial stability and turnover ratios (Van Horne J. C., 2003 [1]; Walsh C., 2001 [2]), and in the multivariate models for bankruptcy prediction (developed by Altman E., Taffler R., Beaver W. et al.) [3]. Based on calculation of these factors, the conclusions on financial status of an enterprise are made and certain management decisions are taken. That is why it is important to identify the indicators of long-term and short-term liabilities.

In order to determine the liabilities of the mining and beneficiation companies (MBC) in Ukraine, some sectorial features and specific conditions of the current stage of development of the national mining and metallurgical complex should be taken into account. This article is just concerned with the issue of these factors considering when determining the short- and long-term liabilities of the Ukrainian MBCs.

Brief Literature Review. The issue of evaluation, recognition, and classification of liabilities has been considered in many foreign authors' works on accounting (Drury C., Mathews M. R. et al.), including Russian authors (Kuzminskyi A. M., Sokolov Ya. V. et al.), and also Ukrainian ones (Butynets F. F., Valuiev B. I., Kindratska G. I., Sopko V. V., Tkachenko N. M. et al.), their usage in assessing the financial and economic standing – in many works on economic and financial analysis (foreign authors: Van Horne J. C., Walsh C., including Byelorussian authors: Savytska G. V., Ukrainian authors: Blank I. L., Mnykh Ye. V., Chumachenko M. G. et al.).

Solving the problem of the liabilities adjusting for subsequent usage in the MBCs' financial and economic performance determining and financial status assessment was initiated in the works of such Ukrainian authors, as Kozachenko S. V., Turylo A. M., Krugla N. M., Nusinova O. V., Zhovna A. M.

For example, taking into account the liabilities of the enterprise to itself by reducing the net profit ratio by internal indebtedness was proposed in the work [4]. «Need for modification of sales profit ... failing the scheduled capital repair in full» was also substantiated in the work [5, p. 5]. The works [6; 7] address the issue of incurrence of the enterprises liabilities, which belong to the certain structures, such as vertically integrated companies. They are so-called affiliates, i.e. «legal persons, provided that one of them controls the other or both are under the control of the third party» [8]. Therefore, it is necessary to summarize and improve the existing experience of liability adjustments.

Purpose: to develop the methodology for the MBC's liabilities adjusting in order to improve the accuracy of its financial and economic performance and financial status assessment. In order to improve the accuracy of the financial and economic results of the Ukrainian MBCs and the quality assessment of their financial status, it is necessary to adjust their long- and short-term liabilities, taking into account the factors as follows: internal indebtedness (i.e. the enterprise's debt to itself); guarantees for loans granted to other enterprises of the same vertically integrated structure, which the particular MBC belongs to; the MBC's liabilities to affiliates. These factors are to be examined peculiarly.

Results. S. V. Kozachenko states that the internal indebtedness occurs in business because of insufficient financing of the obligatory programs [4]. For example, the MBC should continuously implement the obligatory programs that require funding. Delayed implementation of these programs in the future may lead to higher expenses and cause a decrease in the financial and economic results of the enterprise. For example, if the scheduled repair is failed, the equipment will eventually worn out and will be early replaced, but it is much more expensive, than the scheduled capital repair cost; failure to fulfil the stripping operation plan causes an increase in the cost of expanding a pit perimeter, etc. This is the so-called «artificial cost savings», which, as O. M. Zhovna notes, «give rise to intra-group payables, and in the future the enterprise will have to incur significantly higher costs associated with the removal of effects of such savings» [9, p. 7].

Sometimes, the size of internal indebtedness can be quite significant, i.e. neglect of this factor, when determining the financial and economic results of the enterprise business and assessing its financial status, may cause the wrong conclusions and erroneous management decisions. Thus, it is necessary to take into account the enterprise internal indebtedness, when assessing its financial and economic performance and determining its financial status.

The internal indebtedness should be divided into short- and long-term ones (Figure 1).

The short-term indebtedness should be considered, in case the additional losses occur less than one year after the date of analysis, or they constitute less than 5% of the total internal indebtedness. If the additional losses occur later than one year after the date of analysis, or they constitute more than 5% of the
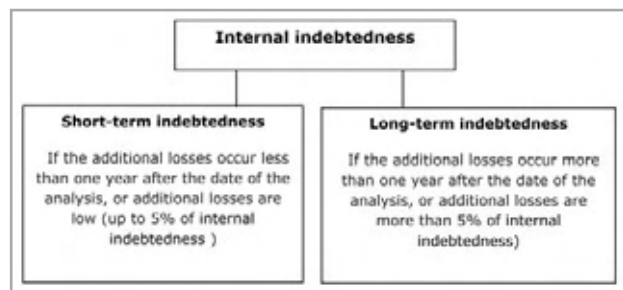

Fig. 1: **Classification of the internal indebtedness**
Source: Developed by the author

total internal indebtedness, such internal indebtedness should be considered as the long-term one.

It is necessary to correct the size of the long-term and short-term debts of the enterprise according to the above classification.

The corrected long-term debt (long-term liabilities) we propose to determine by the formula (1):

$$L_{long-t.cor.} = L_{long-t.bal.} + \sum L_{in.long-t.i} \cdot (1 + \frac{C_{gr_i}}{(1+q)^{T_i}}) , \quad (1)$$

where $L_{long-t.cor.}$ is the corrected value of long-term liabilities, UAH; $L_{long-t.bal.}$ is a value of long-term liabilities as per Balance Sheet, UAH; $L_{in.long-t.i}$ is a balance of internal long-term indebtedness under the ith budget item as of the date of assessment, UAH; $C_{gr\,i}$ is a loss growth coefficient resulted from under financing under the ith budget item, unit fractions; T_i is a period which causes the additional losses under the ith budget item.

$$C_{gr_i} = \frac{Loss_i}{Loss_{pl_i}} , \quad (2)$$

where $Loss_i$ is the loss incurred by the enterprise in the future if the budget funds under the ith item are not spent, UAH; $Loss_{pl\,i}$ is a value of budget cost under the ith item, UAH.

The loss ratio is a result of dividing the value of all losses incurred by the enterprise in the future if the budget funds are not spent, by the budget costs. Since the additional losses occur after a period, it is necessary to discount the future cash flows.

The short-term debts (current liabilities) are corrected in the same way.

The peculiarity of current development of the mining and metallurgical complex in Ukraine is the fact that almost all mining and processing enterprises belong to one or another vertically integrated structure. Under the circumstances, the mining and processing enterprises often act as guarantors for loans provided to the other enterprises of these structures. The Balance Sheets of the enterprises do not show these liabilities. However, in the event of insolvency or bankruptcy of the enterprises, which are under the loan program, the loan liabilities will be transferred to the guarantors (in our case, to the mining and beneficiation enterprises).

The Ukrainian mining and beneficiation enterprises make business in such a way that the sizes of their guarantee liabilities are quite sizeable, therefore we suggest that they should make reserve of guarantee liabilities. We offer to determine its size by formula (3):

$$L_{res.guar.n} = \sum L_{guar.kn} \cdot P_{bankr.k} , \quad (3)$$

where $L_{res.guar.n}$ is a reserve of guarantee liabilities of the nth mining and beneficiation company; $L_{guar.kn}$ is an amount of the kth company's liabilities, where the nth mining and beneficiation company is a guarantor, UAH; $P_{bankr.k}$ is the probability of the kth company entering bankruptcy, unit fractions.

The reserve of guarantee liabilities calculated in such a way should be taken into account in the long-term liabilities of the mining and processing enterprises.

The probability of bankruptcy of the companies under the loan program is used in the above formula (3). In order to determine this probability, the existing bankruptcy predicting models can be used, such as Altman's Z-score, where a certain scale determines the probability of bankruptcy.

One more aspect of mining and beneficiation enterprises as a part of vertically integrated structures is availability of affiliated liabilities i.e. liabilities to other enterprises of these structures.

Within his research, A. M. Turylo [7] proposes to conduct additional crisis diagnostics on the basis of assets protection coefficient at bankruptcy (Cp), which features the ratio of value of liabilities to affiliates of mining and processing complexes to total amount of liabilities of these enterprises. If Cp ≥ 0.5, bankruptcy possibility initiated by unaffiliated parties is low, because parties affiliated with enterprise will prevail in the bœrd of creditors.

Current affiliated liabilities shall be related to long-term liabilities in the scope of assessment of financial status of mining and concentrating enterprises [7]. This is due to the fact that enterprises of vertically integrated structure have the same owner (or group of owners) and repayment of obligations does not change overall economic condition of the whole structure, but redistributes funds between enterprises. Payment of affiliated liabilities is made, as a rule, the last thing and this is the reason why current affiliated liabilities by economic essence shall be related to long-term liabilities.

From our point of view, we need to consider the case of partially affiliated liabilities. Some of the vertically integrated structures are part of larger structures. For example, Metinvest Holding along with DTEK Holding and also other companies are parts of «System Capital Management» Holding (SCM). Owners of Metinvest Holding have indirect effect on other companies and structures within SCM. If Metinvest Holding companies have liabilities to companies not belonging to Metinvest Holding, but being part of SCM, such liabilities are conditionally affiliated. Payment of affiliated liabilities is made in accordance with the terms established in contracts.

An example of conditionally affiliated liabilities is liabilities of mining and concentrating enterprises of Metinvest Holding to PJSC «Balaklava Mining Administration»: the last one is fully controlled by Smart-Holding which in its turn is partially controlled by Metinvest Holding.

So we need to differ between two groups of affiliated liabilities (Figure 2, Figure 3):

1) Absolutely affiliated (liabilities of enterprise to other enterprises that are fully controlled by one and the same owners);

2) Conditionally affiliated (liabilities of enterprises to other enterprises that are partially controlled by owners of this enterprise due to the existence of the other owners).

As it was mentioned before, affiliated liabilities shall be transferred from current to long term liabilities in the scope of

assessment of financial and economic results or defining of financial condition of the enterprise. Conditionally affiliated liabilities are current liabilities by essence and they shall be related to this group.

Thus, corrected formula for defining of long-term liabilities is as follows:

$$L_{long.adj.} = L_{long.bal.} + \sum L_{int.long.-i} \cdot (1 + \frac{C_{gr_i}}{(1+q)^{T_i}}) + L_{res.guar.} + L_{affil.abs.} , \quad (4)$$

where $L_{affil.abs.}$ – absolutely affiliated liabilities of the company, UAH.

In its turn, as it was noted before, current liabilities of the enterprise shall be increased by amount of domestic payables and reduced by amount of absolutely affiliated liabilities.

Thus, corrected formula of the company's current liabilities calculation is following:

$$L_{cur.adj.} = L_{cur.bal.} + \sum L_{int.short.-i} \cdot (1 + \frac{C_{gr_i}}{(1+q)^{T_i}}) - L_{affil.abs.} , \quad (5)$$

where $L_{cur.bal.}$ – amount of current liabilities of the company in accordance with data of the company's balance, UAH; $L_{cur.adj.}$ – adjusted amount of current liabilities of the company, UAH; $L_{int.short.i}$ – balance of short-term domestic payables by i^{th} item of spending plan for the moment of assessment, UAH.

It is important to have respect to the fact that when defining probability of bankruptcy, affiliated liabilities of both kinds shall be excluded from the general liabilities of the company, because it is provided that bankruptcy process will not be initiated by the owners of the enterprise not depending on their part in statutory fund. Thus, component X_4 indicating ratio of assets value and total amount of liabilities shall be adjusted in Altman's Z-account formula: last figure shall be reduced, due to our approach, by the amount of affiliated liabilities of the first and second types. Formula for calculation of X_4 is as follows:

$$X_4 = \frac{TA}{L_{gen.} - L_{affil.abs.} - L_{affil.cond.}} , \quad (6)$$

where TA – total assets of the enterprise, UAH; $L_{affil.abs.}$, $L_{affil.cond.}$ – amount of absolutely and conditionally affiliated liabilities of the company, UAH.

After adjustment of given component of Altman's Z-account, its values will be improved and bankruptcy probability will be correspondingly reduced.

Conclusion. The methodology of the mining and beneficiation enterprise liabilities correcting has been developed in the undertaken research that will allow increasing of its financial and economic results defining and financial condition assessment preciseness. For this reason, it is important within the analysis to use the corrected values of long-term and short-term liabilities considering internal indebtedness, liabilities reserve by guarantees, and affiliated liabilities. The adjusted values of long- and short-term liabilities shall be used in calculation of financial ratios for assessment of financial condition.

It shall be noted that mining and beneficiation enterprises had cases of bankruptcy initiation by affiliate companies in 2005-2006. Formula of Altman's Z-account cannot be used for defining of bankruptcy possibility when bankruptcy initiative belongs to affiliates. Thus, the prospect of further research lies in matching or development of an adequate bankruptcy probability indicator.

Along with that, one of the peculiarities of Ukrainian mining and beneficiation enterprises operating in the conditions of vertically integrated structures is that the essential part of their goods is consumed by metallurgical enterprises of the same structures and receivables for goods dispatched are intra group
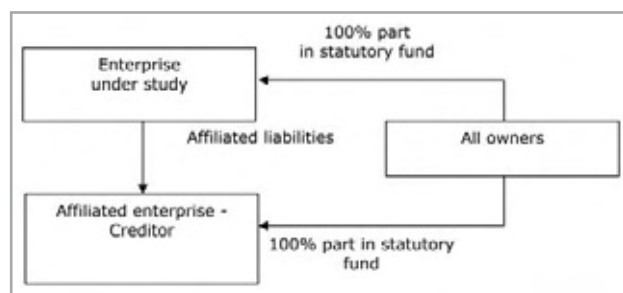

Fig. 2: **Composition of absolutely affiliated liabilities**
Source: Developed by the author

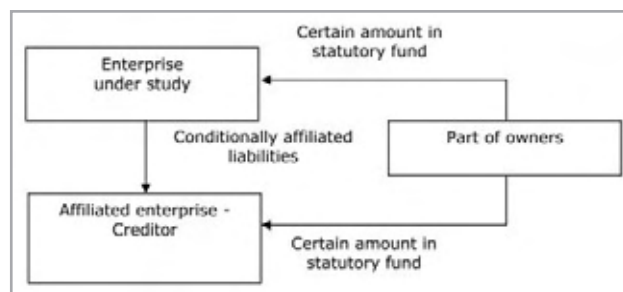*Fig. 3:* **Composition of conditionally affiliated liabilities**
Source: Developed by the author

almost in full volume. In the balance, all receivables are considered as current, though, in fact, they shall be differentiated as long-term and short-term (current) receivables. It is also an important direction for the further research.

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