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PROBLEMS OF THE ANALYSIS OF STRATEGIC FINANCIAL VALUE-BASED BENCHMARKS OF THE UKRAINIAN ENTERPRISES

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ABSTRACT. Article is devoted to problems of the organization of effective monitoring of financial indicators as a part of strategic financial value-based management by the enterprise. The main goals of offered research are to describe some analytical approaches and to modify them for effective valuation of the emerging markets enterprises (in particular, to valuate the strategic financial benchmarks of the unprofitable Ukrainian oil refineries which are absent on stock market). Finally, the author offers discriminant model which includes the main financial benchmarks of strategic corporate development (cash value added as an indicator of operating activity; total shareholders' return as a basic indicator of current quality of corporate governance; Z-score as an indicator of corporate default probability).

JEL Classification: G32, G32, G32, F43, G32, C10, C10

Keywords: cash value added, Z-score, total shareholders' return, emerging markets, strategic financial value-based management, discriminant model, multicollinearity.

Introduction

To ensure effective planning and monitoring of some set of financial indicators (reference points) of strategic development of the enterprises which are on emerging markets it is necessary to solve some practical analytical problems. Basically these problems are results of the current conditions of some local markets. For example, backwardness of stock market complicates procedure of calculation of betas of the enterprises during valuation of weighted average costs of their capital; great percent of shadow economy causes significant weight of the unprofitable enterprises, and this reason complicates correct forecasting of their cash flows. Also the problem of effective aggregation and describing of analytical results demands special research.

All specified problems characterize great urgency of the presented research.

The main *purposes* of research are: 1) to describe the efficiency of some set of offered financial indicators of strategic value-based management, 2) to solve some problems of the analysis and of describing of such indicators on example of the enterprises of emerging markets.

1. Literature review

Some works by J. Knight (1998), R. Murrin and S. Jarell (2001), G. Friedl and T. Kettenring (2009), D. Volkov (Volkov, 2005), F. Weissenrieder (1997), J. Stern (1995) and others are devoted to efficiency of calculation and valuation of some value-based financial indicators. For example, by criteria of accuracy and complexity the first three authors allocate different indicators – CFROI and CVA. Each of the listed authors using his subjective opinion offers different options of ranging of analytical efficiency of financial indicators and contradicts the other. It characterizes as called "measure for measure problem".

2. Problems of formation of the strategic financial benchmarks system and its introduction

2.1. Selection of the main financial benchmarks

To solve the "measure for measure problem" in work (Zavorotniy, 2012, pp. 192-200) we specify a cash value added indicator (CVA) by the following criteria: 1) ability to define the cost of capital, 2) considering the risk, 3) considering of future expectations, 4) accuracy of valuation of growth, 5) considering of some stages of life cycle of the enterprise, 6) ability to be used for the enterprises which aren't at stock exchange, 7) ability to be partitioned on some simple value drivers, 8) consideration of inflation, 9) consideration of cash flow, 10) ability to be an instrument of coordination and motivation.

However, only one indicator can't illustrate each aspect of economic activity of the enterprise (including quality of corporate governance and of a corporate default probability). Therefore we offered the minimum set of financial indicators (reference points) of strategic value-based management – as called development-oriented financial indicators (DOFIN): CVA, total shareholders' return (TSR) and Z-score by Altman. Besides, CVA-indicator by the version of Boston Consulting Group can be partitioned on some simple value factors, i. e. weighted average cost of capital (WACC), economic depreciation (ED), earning before interest (EBI), dynamics of brutto investments (BI) and other:

$$CVA = CFI - NCA*WACC = (EBI + D - ED) - NCA * WACC = (EBI + D - \frac{FA_d * WACC}{(1+WACC)^n - 1}] - BI * WACC,$$

CFI – net cash-flow before interest, D – depreciation, FA_d – depreciable fixed assets, n – average term of exploitation of fixed assets.

Three basic DOFIN elements cover all parts of value creation chain (author of this concept is M. Scott), among which are: 1) sales and marketing (CVA), 2) supply and production (CVA), 3) HR management (CVA), 4) finance (WACC as a part of CVA, TSR, Z-score) and, in addition, 5) quality of corporate governance (TSR).

2.2. Practical aspects of organization of the strategic financial value-based management system

2.2.1. Introduction of strategic value-based management into corporate activity

Responsibility differentiation between all functional (including financial) departments of the enterprise for planning and monitoring of DOFIN has to take place at the first stages of the organization of strategic management. We think that process of its organization has to be

defined by viable system model (VSM by S. Bier) as the most effective concept. At the heart of such model there are principles of functioning of human neurophysiologic system which proves own efficiency in the course of evolution.

At the process of studying the introduction of VSM into the organizational structure of the OJSC "Lukoil-Odessa Oil Refinery" we have made a conclusion that finance departments with functions of development, planning and monitoring of DOFIN are at the second and third levels of VSM hierarchy. Thus, the main part of such work is provided by the Budgeting department (3rd level of VSM) and by the Department of costs planning and production economy (3rd and 4th levels of VSM). However, the Department of methodology and account automation (2nd and 3rd levels of VSM) develops all procedures of the analysis and coordination of functional duties.

2.2.2. Main procedures of valuation of some financial value-based benchmarks

Creation of correct procedures requires: 1) knowledge of main types of errors and bias which arise during formation of analytical base and definition of results, 2) observance of conditions of the target market development and of the internal business environment, 3) formalization of procedure of DOFIN aggregation and valuation.

The first element of such list characterizes need to avoid: the sample bias, the observation bias (for example, such process includes a regulation of identification of cases of conscious corruption of accounting data) and the forecasting bias. We have investigated the main directions of such preventive actions in (Zavorotniy, 2012, pp. 109-115).

Observance of the macroeconomic environment conditions defines a choice of certain analytical procedure most suitable for the concrete enterprise. Now let's specify nature of such influence on analytical procedures for the enterprises of emerging markets.

For the purpose of monitoring of WACC rate of the enterprise it is necessary to determine the both costs of its own and borrowed capital; for valuation of the own capital it is necessary to calculate a beta. The main problem of valuation of beta of the Ukrainian enterprises is an impossibility to use only standard (stock exchange) approach (Zavorotniy, 2012, pp. 239-244). For example, through comparison of the greatest Ukrainian stock exchange – First Share Trade System (FSTS) – with the most developed stock exchange of continental Europe – German Deutsche Boerse – we can see that the Ukrainian stock exchange has still the great potential of development: the average day volume of trade of Deutsche Boerse is 950,7 mln euros and of FSTS – 64,1 mln euros; listings of both stock markets of Deutsche Boerse consists of 328 and 238 issuers, of FSTS – only 20 (10, 2013; 11, 2013; 12, 2013).

Stock market backwardness is a result of a system lack of motivation of the Ukrainian enterprises owners to begin initial public offering. For example, shares of only one of seven domestic oil refineries are at stock exchange (and only in the demand market), that is the OJSC Lukoil-Odessa Oil Refinery. In *Figure 1* we have presented the regression of market profitability and profitability of the OJSC Lukoil-Odessa Oil Refinery shares by using empirical data on dynamics of a share index, on the distributed dividends by the enterprises-members of an index and on dynamics of a share price of OJSC Lukoil-Odessa Oil Refinery.

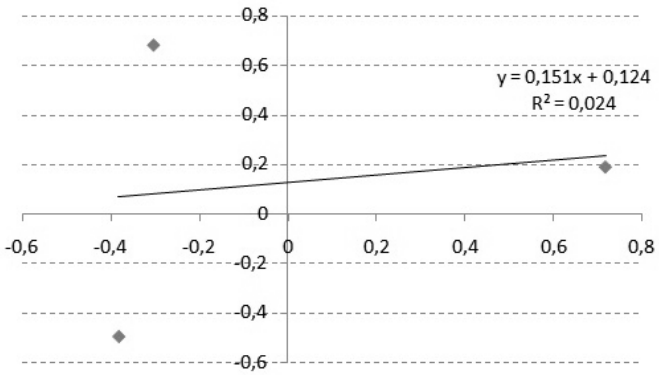


Fig. 1. Regression of annual profitability of the OJSC Lukoil-Odessa Oil Refinery shares in comparison with similar profitability of FSTS for 2009-2012, in percent

Figure 1 shows that beta is 15,1 percent. To calculate betas of other Ukrainian enterprises we have to apply comparative (market) approach by using average annual financial leverages and betas of the corporate analogs from the similar local markets (Zavorotniy, 2012, pp. 131-143). For this purpose we have to use some data of the refineries Mozyrsky Oil Refinery and OJSC Orlen Lietuva which function in the states of Belarus and Lithuania (states which also import oil). However, it is impossible because both countries in 2012 were members of two different macroeconomic associations – the Tax Union and the European Union. Ukraine wasn't member of any of them in 2012.

Table 1. Normalization of profit of the enterprises according to dynamics of their net income of the last years, ths hryvnias

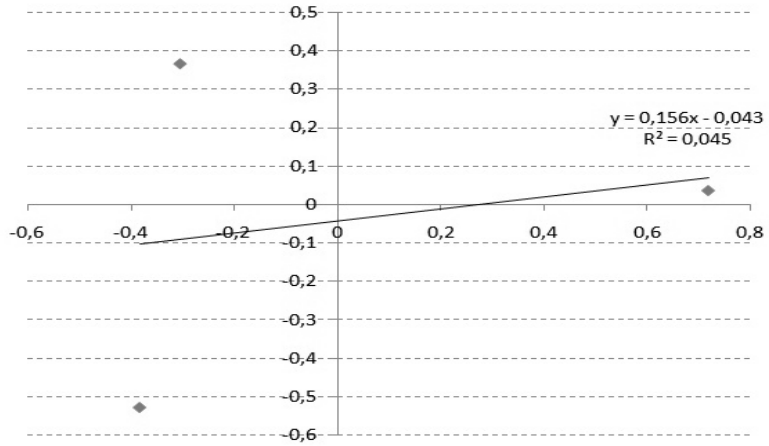
Data	Sum				Coefficient of profit normalization	
	2009	2010	2011	2012	2011	2012
1	2	3	4	5	6	7
OJSC Lisichansknaftoprodukt						
Net income	545414	638810	871992	380739		
Net profit	7828	8108	3831	-6512		0,365
Net profit normalized	7828	8108	3831	5229,413		
Net profit dynamics		0,035769	-0,5275	0,365026		
OJSC Oil refinery – Galichina						
Net income	4667453	3666988	5436429	2871883		
Net profit	77376	6008	-27768	-96609	-0,2144	-0,4717
Net profit normalized	77376	60790,51	47760,11	25230,06		
Net profit dynamics		-0,21435	-0,21435	-0,47173		

Source: Zavorotniy, 2012, p. 187; Damodaran, 2005, p. 367.

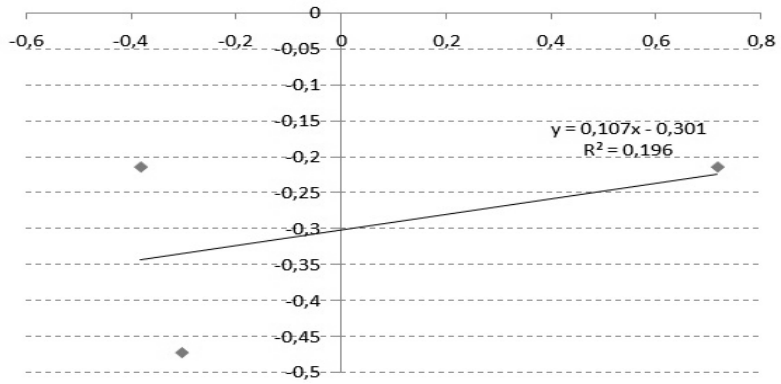
As in this case we can't use comparative approach there is an option to define betas of other Ukrainian enterprises by using of accounting approach. In this case stable unprofitability of the majority of Ukrainian oil refineries becomes an additional analytical problem (the main reasons are transfer pricing, problems of raw materials supply and modernization of production). Solution of the problem of analysis of such enterprises is to normalize their profit according to dynamics of net income as the most stable factor of economic development, See *Table 1* (Zavorotniy, 2012, p. 187; Damodaran, 2005, p. 367).

Specifics of the internal environment of two more oil refineries prevent us to add them in *Table 1*. The using of accounting approach for analysis of to two more enterprises gives negative values of beta. Such cases often take place as results of using the accounting approach to define beta; such negative results can't be explained correctly (Zavorotniy, 2012, pp. 143-148). Let's present regression on the basis of *Table 1* and data on profitability of FSTS (see *Fig. 2*).

So, *Fig. 2* shows that betas of OJSC Lisichansknaftoprodukt and OJSC Oil refinery – Galichina in 2012 were 15,6 and 10,7 percent.



a)



b)

Figure 2. Regressions of the normalized accounting profitability of the enterprises: a) OJSC Lisichansknaftoprodukt, b) OJSC Oil refinery – Galichina, according to profitability of the FSTS index in 2009-2012, in percent

Now it becomes possible to apply comparative approach to define betas by using of average annual financial leverages of the enterprises (see *Table 2*).

So, average level of risk of own capital of the enterprises in 2012 was:

$$\beta_U = \frac{0{,}138}{1+(1-0{,}21)*1{,}42} = 0{,}065.$$

Then betas of OJSC TFIC "Ukrtatnafta" and of JSC Hersonsky Oil Refinery in 2012 were:

$$\beta_{\text{Ukrtatnafta}} = 0{,}065 * [1 + (1 - 0{,}21) * 6{,}034] = 0{,}375;$$
$$\beta_{\text{Hersonsky Oil Refinery}} = 0{,}065 * [1 + (1 - 0{,}21) * 1{,}037] = 0{,}118.$$

Table 2. Analytical selection to define an average beta of industry and an average financial leverage of the Ukrainian oil refineries in 2012

No	Enterprises	betas	Average annual financial leverages
1	2	3	4
1	OJSC Lisichansknaftoprodukt	0,156	0,132
2	OJSC Odessa Oil Refinery	0,151	-1,419
3	OJSC Oil Refinery - Galichina	0,107	-13,513
4	OJSC TFIC "Ukrtatnafta"	н/д	5,125
5	JSC Hersonsky Oil Refinery	н/д	6,034
6	OJSC Naftokhimik Prikarpattya	н/д	-2,391
7	OJSC Azovsky Mastyla i Olyvy (AZMOL)	н/д	1,038
8	**Average coefficient which is corrected on extrema**	**0,138**	**1,42**

Source: own calculation.

Thus, betas of JSC Hersonsky Oil Refinery, OJSC Lukoil-Odessa Oil Refinery and OJSC Oil Refinery – Galichina were in the industry average limits – [0,107; 0,156]; beta of OJSC TFIC "Ukrtatnafta" was extreme and now shows the great specificity of the organization of economic processes at the enterprise. It becomes possible to assume that betas of two more enterprises which are not defined yet were also in the industry average limits.

Together with macroeconomic factors during valuation some specifics of the internal environment of the enterprise have also to be considered. In some cases market WACC can be defined by use of the actual (accounting) cost of financial resources of the enterprise (see *Table 3*).

Table 3. Determination of market value of financial resources in the WACC model according to some characteristics of the enterprise (Zavorotniy, 2012, p. 155)

Features of the enterprise	Cost of own capital		Cost of borrowed capital	
	accounting	market	accounting	market
1	2	3	4	5
1. The enterprise is an asset of financial and industrial group		+	+	+
2. The enterprise is the state asset	+ *	+	+	+
3. Shares of the enterprise are in different stock markets		+ **		+
4. Economic activity of the enterprise is one of the priority directions of the state economic development		+	+	+
5. Financing of the enterprise is regulated by some line of credit or an overdraft contract		+	+ ***	+

* Usually state assets are enterprises which have strategic national value or make low-profitable social-valuable activity. In this case, additional attraction by the state enterprises of own capital in the free financial market (not through the calling for the state financing) is improbable. Therefore, in our opinion, the potential value of own capital of such enterprise can be defined by use of accounting data.

** In this case, definition and comparison of the current value of financial resources in several stock markets is necessary.

*** If it is necessary to attract the small sum of the borrowed capital, we can use the accounting cost of earlier attracted borrowed capital as potential value of new credits.

Source: Zavorotniy, 2012, p. 155.

Table 3 shows that sometimes during analysis of the market value of the financial resources it becomes possible to combine the market value and accounting value of different resources in the WACC model (for example, the market value of own capital can be combined with the accounting value of borrowed resources). Important conditions of such combination are existence of all necessary accounting information and a uselessness of comparison of the cost of capital with its alternative profitability.

2.2.3. The problems of aggregation and of valuation of strategic financial benchmarks

As we have said earlier, the third direction of methodical work is devoted to formalization of procedures of aggregation and valuation of the main DOFIN indicators. We think it is necessary to construct some econometric model of dependence of the corporate value according to CVA, TSR and the indicator of a corporate default probability. Also some authors (Copeland, 2005, pp. 74-75; Damodaran, 2005, pp. 628-650) prove efficiency of P/S and P/E ratios during value-based management but we think that both these ratios and WACC shouldn't be in model because of the following reasons:

- WACC is an element of CVA. If we would add WACC in model it would cause emergence of a multicollinearity (as linear dependence between some model elements); it would make model incorrect;
- P/S and P/E ratios also linearly depend on CVA and TSR (EBI as an element of CVA is defined by the sum of net income; the sum of the distributed dividends as an element of TSR can directly depend on the sum of net profit as an element of P/E ratio).

Thus, the discriminant model of dependence of corporate market value according to some DOFIN can have the following generalized form:

$$y(P) = x_1 * \frac{CVA_n}{P_{n-1}} + x_2 * TSR_n + x_3 * Z_n + u,$$

n – reporting period, P_{n-1} – summary market value of the enterprise in the previous period, TSR_n – the total shareholders' return in the reporting period, Z_n – indicator of the corporate default probability, x_1, x_2, x_3 – parameters of discriminant model which depend on features of some financial coefficients, u – function bias.

All components of the presented discriminant model are coefficients. The $\frac{CVA_n}{P_{n-1}}$ ratio characterizes a relative changing of cash value of the enterprise in the reporting period and is an evident indicator of the current stage of its life cycle (usually its low value characterizes elder business). The model considers major factors of value from three different aspects of economic activity of the enterprise: the $\frac{CVA_n}{P_{n-1}}$ ratio covers main set of production and marketing factors of business, TSR_n ratio characterizes relations between the enterprise and investors (for the issuers which are presented at stock exchange it characterizes the stock exchange environment of the enterprise), Z_n has the mediated impact on the market value of the enterprise and characterizes the current quality of its financial management.

According to their main appointment all presented indicators provide the requirement for a function multicollinearity absence.

The main problems of practical using of the discriminant function are development and deployment of methodical recommendations about calculation of the actual values of *y(P)* for the enterprises of different branches.

Conclusions

Thus, the presented research caused the following conclusions:

1. Through use of the wide list of criteria of analytical and managerial efficiency we show the minimum structure of financial indicators (reference points) of the strategic value-based management system. So, DOFIN (as we call development-oriented financial indicators) consists of CVA, TSR and Z-score of the corporate default probability. Also these indicators can be dismembered on some simpler value drivers (WACC, economic depreciation etc.).
2. Responsibility differentiation between all functional departments for the DOFIN planning and monitoring has to correspond to the viable system model by S. Bier. This system is based on the main principles of functioning of human neurophysiological system.
3. The main ways of effective analysis of DOFIN have to be: 1) knowledge of main types of errors and bias arising at formation of analytical base and definition of results, 2) observance of conditions of the target market development and of the internal business environment, 3) formalization of procedure of DOFIN aggregation and valuation. Also the author studies problems of calculation of some DOFIN elements by using data of the Ukrainian oil refineries if it is impossible to apply standard analytical approaches.
4. During the monitoring of effectiveness of the strategic financial value-based management we have to use the discriminant model of dependence of market value of the enterprise from its production, marketing, investment environment and quality of financial management.
   The following formula shows it:

$$y(P) = x_1 * \frac{CVA_n}{P_{n-1}} + x_2 * TSR_n + x_3 * Z_n + u.$$

This function isn't multicollinear that shows its correctness.

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