RISK, PROFITABILITY AND VALUE OF THE LEADING STEEL PRODUCERS ON THE WORLD CAPITAL MARKETS

The purpose of the article is an assessment of risk, profitability and value as well as the relationships between these parameters for fifteen leading steel producers in the world. The research methodology uses return on assets, beta coefficient and price/book value ratio (P/BV). The research results allow us to verify negatively two research hypotheses: H1 – The largest steel producers in the world achieve a high level of return on assets and are specific for a lower risk level than the branch one; and H2 – Market value of the leading steel producers with high return on assets is higher than the book value of these enterprises.

Key words: steel producers, price/book value ratio, return on assets, beta coefficient

INTRODUCTION

Demand for steel has been specific for the rising tendency for many years, which is mostly connected with a progressing development of the global economies. In 2012, according to data from the World Steel Association, steel producers manufactured 1,5 billion tons of steel, obtaining it from both original sources and recycling [1]. In light of the above, one may conclude that the steel industry has a sales market that can provide a long-term perspective. Moreover, the main steel producers in the world are global corporations; that is, they are well-known, experienced and renowned corporations with stable position and market share.

Nevertheless, steel production is a traditional industry that is very often negatively perceived in the context of threats that it poses to the life and health of employees and natural environment. Therefore, it is currently a big challenge for steel producers to control and reduce carbon dioxide emissions in production processes [2, 3]. Another negative perception of the steel industry is also caused by promotion of an economy based on services in which traditional industries lose significance and are treated as mature or declining sectors [4]. An important role in the market assessment of steel producers is also played by economic fluctuations that have a negative impact on demand and price level [5, 6].

Taking the circumstances above into account, there is an attempt made in the present article to confront the development perspectives of steel producers that are connected with the continuous infrastructural progress of the world with the less favorable image of traditional industries and cyclic demand for steel. For this purpose,

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basic parameters of market assessment of enterprises were used: profitability, meant as return rates, value, and risk of investment. In the first part of the article, ratios are presented via which the analysis was conducted and research hypotheses stated. In the second part of the article, the research results are presented along with their synthetic summary.

METHODOLOGY

As mentioned previously, the research included an assessment of return on assets, the enterprise's market value and the risk of investment made. In the profitability assessment, return on assets (ROA) was used, calculated as the relationship between net financial result and total assets of enterprise, represented by fixed and operating assets [7, 8]:

$$ROA = \frac{NI}{A} \cdot 100 \ \%$$

where:

NI – net income,

A – total assets.

In order to include a longer research perspective in the final calculations, the average ROA value was used from three yearly periods, encompassing the years 2011-2013 [9].

In the assessment of the market value of the examined enterprises, the relationship of market price to book value was used [10]:

$$\frac{P}{BV} = \frac{P}{BV} \cdot 100 \ \%$$

where:

P - price,

BV - book value.

Market price was determined on the basis of stock quotes of steel producers and book value on the basis of the company's balance sheet. In this approach, the book value is the value of the enterprise's assets adjusted by the value of current debt. If the value of P/BV ratio is higher than 1, the investors evaluate the enterprise higher than if it results from the assets possessed. In this situation, the enterprise is over-valued in the market because of a positive perception of its development potential, also considering its current financial results. If the value of this ratio is lower than 1, then the enterprise is under-valued, which means a negative perception of its development potential.

In the assessment of risk of investment, a beta coefficient was used (β). The β coefficient determines the risk level connected with investing in the assets of a particular enterprise. This coefficient depends on, among others, the type of activity conducted by the economic subject, structure of its assets and financing sources. The β coefficient, in practice, reflects the stock price fluctuations of a particular enterprise in the view of fluctuation of the whole stock exchange index [11, 12]. The value of β may be determined on the basis of the following formula:

$$\beta = \frac{\text{cov}(r_{it}, r_{mt})}{\text{var}(r_{mt})} = \frac{\sum_{t=1}^{n}(r_{mt} - \bar{r}_m) \times (r_{it} - \bar{r}_i)}{\sum_{t=1}^{n}(r_{mt} - \bar{r}_m)^2}$$

where:

$\text{cov}(r_{it}, r_{mt})$ – covariance of return rate on an enterprise's stock and the market;

$\text{var}(r_{mt})$ – variance of the market return rate;

r_{it} – return rate on the enterprise's stock in t period;

r_{mt} – market return rate in t period;

$\bar{r}_m$ – average market return rate in t period;

$\bar{r}_i$ – average return rate on enterprise's stock in t period; and

t – period that is the basis for model parameters.

A β coefficient equal to 1 means a typical risk level; higher than 1 is specific for enterprises of increased risk and lower than 1 is characteristic for enterprises of relatively low risk. Accordingly, this means that stock prices change at the same degree as the main stock index (coefficient equal to 1), at a higher degree (coefficient higher than 1) and at a lower degree (coefficient lower than 1).

Assessment of risk, profitability and value was conducted among the 15 largest steel producers in the world [12]. A list of the producers was determined on the basis of the list published by the World Steel Association. Taking into consideration the fact that the World Steel Association included two private enterprises not listed on stock exchange (Shagang Group and Shandong Group), these two enterprises were added to the examined group.

At the beginning of the research conducted, on the basis of general theoretic rules, there were also two research hypotheses formed:

H1 – The largest steel producers in the world achieve a high level of return on assets and are specific for a lower risk level than the branch risk level,

H2 – Market value of the leading steel producers with high return on assets is higher than their book value.

RESEARCH RESULTS

A list of the examined enterprises, along with the values of the examined parameters and amount of steel production, is included in Table 1.

Table 1 **ROA, P/BV, β coefficient and production value for 15 leading steel producers in the world**

No.	Enterprise name	Production/ million ton	ROA/ %	P/BV	β
1	ArcelorMittal	93,6	0,26	0,61	2,24
2	Nippon Steel & Sumitomo Metal Corp	47,9	0,94	0,84	1,37
3	Hebei Iron & Steel Co Ltd	42,8	0,78	0,44	1,26
4	Baoshan Iron & Steel Co Ltd	42,7	4,13	0,57	1,18
5	POSCO	39,9	4,59	0,58	1,22
6	Wuhan Iron & Steel Co Ltd	36,4	-1,26	0,03	1,45
7	Shougang Fushan Resources Group Ltd	31,4	7,32	0,60	1,55
8	JFE Holdings Inc	30,4	0,51	0,74	1,73
9	Angang Steel Co Ltd	30,2	-1,42	0,59	1,69
10	Tata Steel Ltd	23,0	1,83	1,01	1,89
11	United States Steel Corp	21,4	-4,89	1,27	2,31
12	Nucor Corporation	20,1	3,29	2,01	1,34
13	Gerdau S.A.	19,8	4,11	0,83	1,90
14	Maanshan Iron & Steel	17,3	-1,14	0,50	1,18
15	Hyundai Steel Co	17,1	3,85	0,66	1,51

▢ – enterprises at the highest value of the examined parameter.

Source: own work based on financial results, stock quotes and World Steel Association data.

For three largest steel producers in the world, the average return on net assets does not exceed 1 % in a three-year period. Four out of 15 examined enterprises are non-profitable. The five enterprises with the best results obtain profitability in the range of 3 % to 5 %, which is a good result in a traditional industry. A record level of return on assets (over 7 %) is specific for Shougang Fushan Resources Group Ltd, which takes seventh place in the ranking according to its production level.

The average risk level in the branch of large steel producers calculated by Bloomberg in the beta coefficient equaled 1,09 at the beginning of 2014. This means a slightly increased risk level in the whole branch of industry. According to the data included in Table 1, the largest steel producers markedly exceed the average for the sector. The highest risk of investment is related to the branch leader – ArcelorMittal and United States Steel Corp.

According to the above, Hypothesis H1, which says that the largest steel producers in the world achieve a high level of return on assets and are specific for a low-

er risk level than the branch one, was not confirmed. Their market bargaining power and rising demand for steel do not find a direct confirmation in the financial results and stability of stock quotes.

Among the fifteen largest steel producers in the world three enterprises are over-valued; however, only the value of Nucor Corporation is doubled, which reflects a high level of financial results. United States Steel Corp is an interesting case with 27 % over-valuation and losses occurring in the entire three-year period under examination. Finally, among six enterprises with the highest P/BV ratio values, only two of them are specific for the highest ROA ratios in the examined group. It does not allow us to confirm Hypothesis H2 fully, according to which the market value of the leading steel producers with high return on assets is higher than the book value of these enterprises.

SUMMARY

On the basis of the research results presented, it may be concluded that the leading steel producers in all financial markets are characterized by an increased risk of investment, which means that their stock quotes change more rapidly than the market indexes. Furthermore, positive financial results are not always accompanied by positive market evaluation, finding its reflection in higher values of P/BV ratio. Most of the examined enterprises, despite considerable market shares and rising tendency concerning demand for steel, are under-valued [13].

The research results presented in this article require extension and fulfillment, mostly in terms of analysis of conditions in the context of local markets and analysis of stock exchange specificity where the enterprises are listed [14], [15]. The extensions mentioned indicate the directions of further research in the area of the topic of the present article.

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