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Factors affecting the market value of junior mining companies listed on the Alternative Investment Market (AIM) London

Introduction

Taking into account the specific nature of junior mines, the approach to the perception of their value gives a field for discussion on the methods of their valuation and the factors that affect such value (Bell and Guj 2012; Klossek and Klossek 2014; MacDiarmid et al. 2018). The authors of the publications detailed the possibilities of applying popular methods used in business for the valuation of junior mine projects. An interesting conclusion from these publications is that junior mine companies can be treated in a similar way to start-ups –

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also in terms of potential investment risk. These companies are characterized by high risk related to the distant time horizon and the high costs of conducting exploratory works, which is directly related to the problem of financing this type of project (Brown Jr. and Burdekin 2000; Campbell 2019; Olofsson 2020). The authors highlight a specific case from 1997, when the Vancouver Composite Index fell more than 25% in a month. The risk of fraud, unreliable information, and the effect of a speculative bubble obscure the real picture of the value of companies. Even more problematic is the approach to valuing such projects. In order to know the value, one must combine economic knowledge with technical knowledge.

A valuable analysis of exploratory projects in economic terms was presented by Friedrich, Dalheimer and Wagner, drawing attention to methods helpful in determining the value of exploration projects (Friedrich-W et al. 2008). Research in this area was also conducted by Miranda, Brandao, Lazo, Ajak, Lilford and Topal, who created a valuation model for exploration projects based on the value of flexibility in managing this type of project, identical in this case with real options (Miranda et al. 2017; Ajak et al. 2019). The valuation process in the classic Koller approach focuses on measuring and managing value not only for the company's shareholders but above all for its stakeholders (Koller et al. 2005). This subtle difference affects how the value is viewed over the long term. Accounting profit or revenues are not the only factors considered in the valuation process (Ausloos 2020).

In his study, Ausloss rightly mentioned value-based management (VBM) methods, representing one stage in the evolution of econometrics. In his publication, he mentioned the essence of value measurement, the design and implementation of strategies to maximize shareholder value creation potential, the use of information and management systems, and the integration and validation of value measurement performance systems, looking for the determinants of value drivers.

The beneficiaries of changes in the approach to valuation are mining companies, including junior mines, whose strategic nature of operations requires a new focus for business models, which Drusche and Krause write about in their analysis (Drusche and Krause 2021).

The factors that have their source in strategic decisions made by the management board and shareholders are important in creating the value of junior mines – as well as conditions reflected in stock prices – related to both the prices of individual raw materials and the conditions specific to the exchange chosen by the company (Steadman 1996; Rudenno Victor 2012; Amini 2013; Haque et al. 2017; Newell and Marzuki 2018; Revest and Sapio 2019; Yun 2021). Publications show that the combination of information on the technical aspects of the project and information on how to perform on the trading floors provides an opportunity to create a management information system dedicated to the boards of exploration companies. The value created inside the company can be reflected in the form of the book value of the assets (Collins et al. 1997). The value created in the market environment is called the market value and it depends on the value of market capitalization and cash-adjusted debt (Damodaran 2007).

The concept of value in terms of the market is described by Ferguson, Kean and Pündrich in their article on capitalized expenditure on exploration in the context of IFRS-6.

It is also worth paying attention to the research of Burritt, Christ and Schaltegger who, in their publication on accounting settlements, examine the relationships exclusive to mining companies, while Bebbington and Larrinaga limit the group of companies only to those dealing with exploration. It is also worth noting the difference between the life cycle of mining companies and junior mines. The details related to a completely different business model of junior mines determine the approach to accounting accents (IFRS-6) and valuation methods which, based on research by Iddon, Hettihewa and Wright, have a direct impact on their market value (Bebbington and Larrinaga 2014; Iddon et al. 2015; Burritt et al. 2021; Ferguson et al. 2021). Therefore, when dealing with such a narrow subject, it is worth checking certain market relationships from the point of view of statistics. Research in this area but in other industries was carried out by Mishra, Mohanty, Rath, Patnaik, Pradhan, analyzing the possibilities of the multiple regression model to predict stock prices. Zizi, Mohamed and Moudden, using a logistic regression analysis approach, conducted research on failure factors for the SME sector. While Hamidi, Mansor and Asid, using the same method, analyzed companies listed on the Malaysian stock exchange in terms of investment decisions. With the help of the linear regression method, Le, Kim and le Thanh distinguished the factors influencing the financial performance of listed companies producing food (Hamidi et al. 2013; Zhang et al. 2019; Le et al. 2021; Sudiyatno et al. 2020; Zizi et al. 2020; Mishra et al. 2021).

The main objective of this paper is to identify the parameters that have a statistical impact on the market value of exploration companies listed on the London Stock Exchange. This objective is accomplished in two approaches – market-based, indicating the context of the study, and statistical, examining the relationship between the enterprise value of companies and financial parameters.

Therefore, the approach proposed in this article, which is already applicable in other industries, answers the following questions that are important from the point of view of raising awareness about exploration works and their value for stakeholders (Guj 2008):

- ◆ What is the outlook of the sector of junior mines?
- ◆ Is there a relationship between the increase in market value, the level of market value added and the book value in the analyzed sector?
- ◆ What factors, from the point of view of statistical significance, affect the market value of mining companies?

1. Conceptual framework: market and statistical methods

The research was carried out in accordance with the structure shown in Figure 1. It was divided into two parts – market analysis and statistical analysis. The purpose of the market analysis was to determine the market value added (MVA) – an indicator describing the generated surplus in relation to the book value of equity – in the context of the market value of exploratory companies (EV) and an indication of the factors determining value.
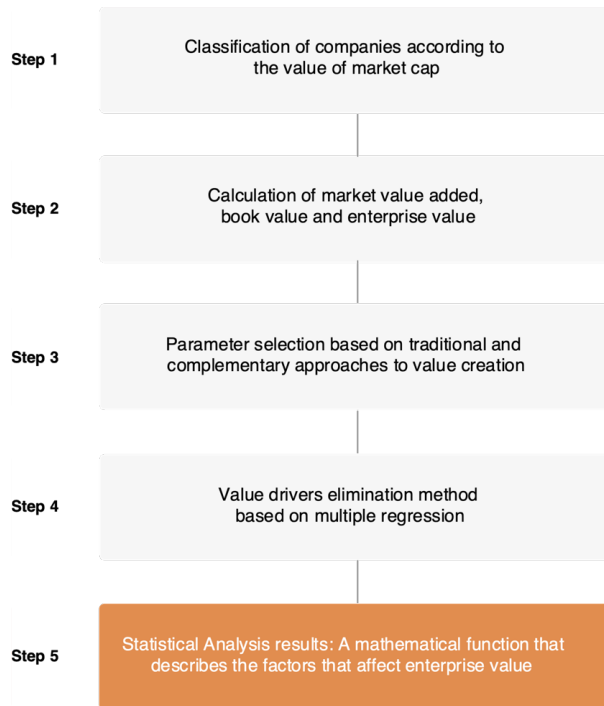
Fig. 1. Market analysis algorithm in terms of value drivers of exploration enterprises

Rys. 1. Algorytm analizy rynku w zakresie czynników determinujących wartość przedsiębiorstw eksploracyjnych

In the statistical part, a regression analysis was carried out as part of the elimination method, thus determining the factors that statistically affect the value of junior mines.

To conduct the research, it was necessary to carry out calculations – the methods and equations are presented in Subsections 1.1–1.3.

1.1. Market value, book value, and market value added

The market value, described by Equation 1, was defined in the work of Platt and Demirkan as the sum of the market capitalization value and the market value of debt adjusted for cash (Platt et al. 2010).

$$Enterprise\ Value = Market\ Capitalization + Market\ Value\ of\ Debt - Cash \qquad (1)$$

This measure is used as an alternative to normal market capitalization. The value of the enterprise captured in the above manner, based on market capitalization, also takes into account debt and cash adjustments and is thus a more precise definition of the company's value.

$$Market\ Capitalization\ of\ Shares = Shares\ Outstanding \times Stock\ Price \tag{2}$$

The level of market capitalization is determined by Equation 2, which is the product of the price of shares and their quantity on the market – shares that are also traded by institutional investors, managers, and people with access to inside information (Kuvshinov and Zimmermann 2021). Unlike the market value, the book value described by Equation 3 is based on the difference between the total value of assets and debt (Ohlson 1995).

$$Book\ Value\ of\ Equity = Total\ Assets - Total\ Liabilities \tag{3}$$

Book value, i.e. the company's value presented in the balance sheet, is a measure that is used primarily to determine the liquidation value or to check the extent to which a given company is underestimated or overestimated. The book value reflects the value of equity.

The excess of capitalization over the book value is called the market value added, described by Equation 4.

$$Market\ Value\ Added = Market\ Capitalization\ of\ Shares - Book\ Value\ of\ Equity \tag{4}$$

This ratio is calculated by the difference of the total market value of the company's shares and the value of equity, defined as the book value (Nugroho 2018). A positive MVA level proves that the company generates enough money to cover the cost of capital.

1.2. Value creation indicators

Value creation indicators are a set of metrics that describe the relationships between elements of the financial statements. One of the indicators that describes the market relationships in the traditional approach to creating value is the cost of capital, defined by the CAPM model presented in Equation 5.

$$R_a = R_f + \beta(R_m - R_f) \tag{5}$$

The CAPM model describes the relationship between the expected return and risk (Easley and O'Hara 2004; Villadsen et al. 2017). It is used to calculate the weighted average cost of capital, where CAPM relates to the cost of equity, R_a is the level of the expected profit, R_f is the risk-free rate, β is the coefficient determining the degree of correlation of stock prices with the stock exchange index and R_m the expected return from the market. The difference between the expected return on the market and the risk-free rate is called the market premium. For AIM London, the FTSE 100 AIM index was used to calculate the market premium.

The requirements for net working capital, described by Equation 6, concerns the parameters of the financial statements and shows the level of financial resources necessary to cover costs, operating expenses and debt repayment. WCR depends on the sum of the level of inventories and receivables less the value of liabilities (Barros et al. 2021).

$$\textit{Working Capital Requirements (WCR)} = \\ = \textit{Inventory + Accounts receivable – Accounts payable} \tag{6}$$

From the point of view of value creation, the level of investment expenditure is important – expenditure that is long-term and subject to depreciation.

Equation 7 shows how to calculate the level of capital expenditure, which includes investments in new real estate, land, machinery, products or technology.

$$\textit{Capital Expenditures (CapEx) = PP\&E (current) – PP\&E (prior) + Depreciation} \tag{7}$$

The effective tax rate was calculated according to the Equation 8 – profit before tax to profit after tax (Aronmwan and Okaiwele 2020).

$$\textit{Effective Tax = (Income Taxes)/(Income before Tax)} \tag{8}$$

The other indicators of value creation include the level of operating revenues and profits.

1.3. Multiple regression

In the statistical part, the multiple regression method was used, which enabled the extraction of statistically insignificant parameters (Sobczak 2007; Ganesh 2010). The remaining parameters are part of the multivariable equation, which takes the form of Equation 9.

$$y_i = \beta_0 + \beta_1 x_{i1} + \beta_2 x_{i2} + \dots \beta_p x_{ip} + \varepsilon_i \tag{9}$$

In the case of the analysis, y_i is the value of the dependent variable – the market value of junior mines listed on the London Stock Exchange, β_0 is an intercept, and $\beta_p x_{ip}$ is the value of the explanatory variable.

2. Results and discussion

First, an analysis of the market for exploratory companies listed on the London alternative stock exchange was carried out – companies were systematized in terms of their market capitalization and market added value was identified and embedded in three ranges:

low, medium and high capitalization. The analysis of average values of selected parameters of the balance sheet, profit and loss account and cash flows was also carried out.

With knowledge of the context and nature of the market, the second, statistical part of the research was started. The statistical analysis covered selected components of the financial statements and traditional measures of the value of companies, such as revenues, capital expenditure, cost of equity, effective tax rate and the need for net working capital. The result of the statistical analysis is the equation of two variables that statistically significantly affect the market value of the equity of junior mines.

2.1. Characteristics of the market
of mining companies listed on AIM London

The London market of mining companies consists of ninety-eight companies exploring and documenting mineral deposits around the world. These companies are listed on the alternative stock exchange due to the relatively low value of market capitalization – a histogram with selected ranges of market capitalization is presented in Figure 2.
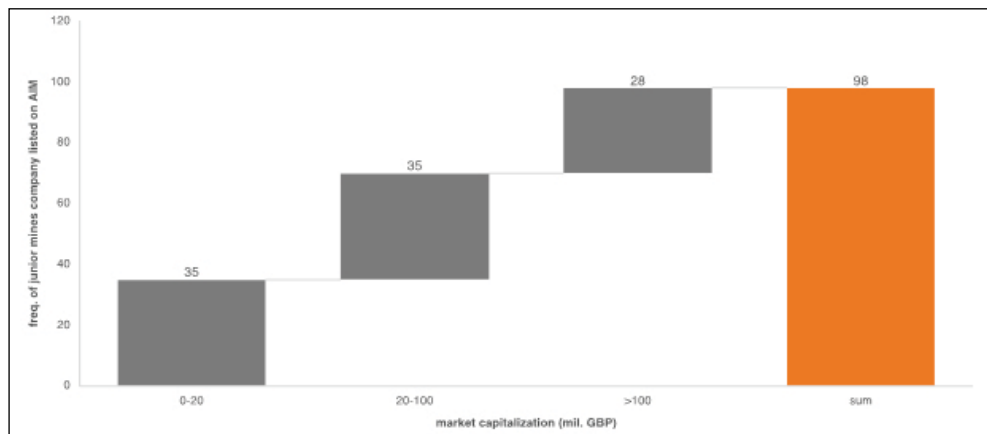

Fig. 2. Classification of exploratory companies on the AIM London Stock Exchange
by market capitalization value
Data source: https://finance.yahoo.com

Rys. 2. Klasyfikacja spółek eksploracyjnych na londyńskiej giełdzie AIM
według wartości kapitalizacji rynkowej

Three main ranges of market cap have been identified. In total, thirty-five companies are in the range of £0 to £20 million, thirty-five are in the range of £20 to 100 million, the remaining twenty-eight companies have market capitalization of over £100 million.

In the low market cap sector, as shown in Figure 3, the market value added is negative in 57% (20/35 companies) of cases. This means that the book value of equity was valued higher than was suggested by the market and the company did not generate any additional value that would affect its market valuation. A negative value may also indicate costs that have already been capitalized on the company's assets, thereby increasing the book value while not affecting the market valuation. The average book value of companies in this sector is £8.5 million. The market value added for the whole low cap sector is £–40.5 million and the average market loss relative to the market cap is 28%.
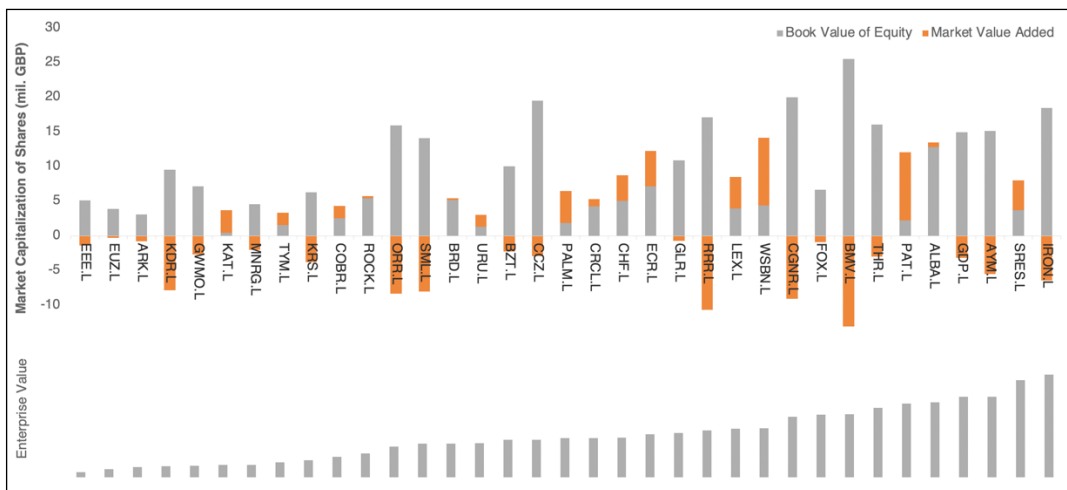

Fig. 3. Market added value for companies in the low market capitalization sector for AIM London
Data source: https://finance.yahoo.com

Rys. 3. Rynkowa wartość dodana dla spółek z sektora o niskiej kapitalizacji rynkowej na AIM w Londynie

The situation is different in the mid-cap sector, as shown in Figure 4. Of the studied companies, 80% (28/35) recorded a surplus of the market value over the book value, which proves that they achieved market added value. It also follows that midcap investors review companies and see value in taking exploration risks by investing their capital. The average book value of companies in this sector is £40.9 million. The cumulative value added for the whole mid-cap sector is over £293 million and the average market surplus over capitalization is 14%.

In the high-cap sector, as shown in Figure 5, 57% of companies (16/28) reported positive market value added value and the cumulative value for the sector as a whole is over £262 million. The average book value of companies in this sector is £291 million. In addition, the high market cap sector is characterized by an MVA with an average market loss of up to 3% relative to the total market capitalization.
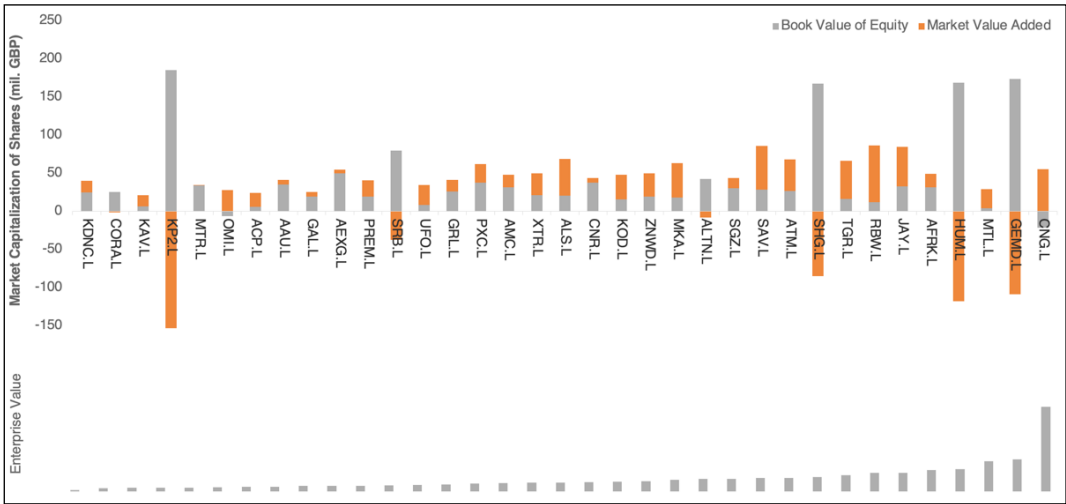
Fig, 4. Market added value for mid-cap companies for AIM London
Data source: https://finance.yahoo.com

Rys. 4. Rynkowa wartość dodana dla spółek o średniej kapitalizacji na AIM w Londynie
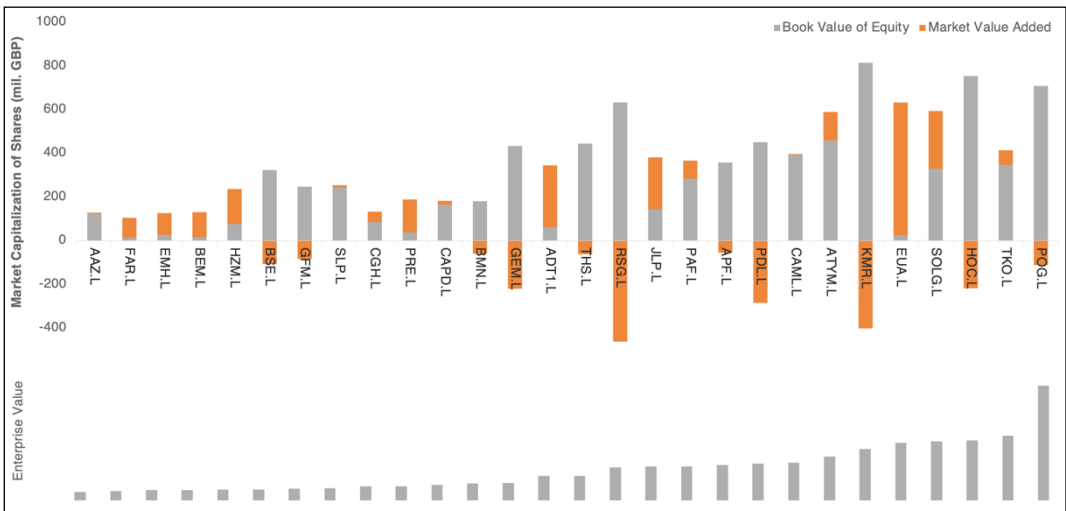
Fig. 5. Market added value for companies in the high market capitalization sector for AIM London
Data source: https://finance.yahoo.com

Rys. 5. Rynkowa wartość dodana dla spółek z sektora o wysokiej kapitalizacji rynkowej na AIM w Londynie

The differences between the proposed ranges of market capitalization – reflected in the result of the market value added – can also be seen in the balance sheet items and other parameters of financial statements, traditionally used to analyse the value of an enterprise. Table 1 lists these parameters using two breakdowns: one according to the location of the parameter, the other according to the value of market capitalization.

Table 1.   Average values of parameters affecting the value of junior mines listed on AIM London

Tabela 1.   Średnie wartości parametrów wpływających na wartość spółek juniorskich notowanych na AIM w Londynie

Selected parameters influencing the value of junior mines*	Small cap	Mid cap	Large cap
Balance sheet parameters			
Total assets (TAs)	9,639	71,338	464,285
Total equity (TEq)	5,389	35,251	253,752
Financial leverage (D/TEq)	0.79	1.02	0.83
Income statement parameters			
Revenues (Rev)	2,555	24,720	180,895
EBIT (EBIT)	(1,030)	2,874	20,204
Net income (NetInc)	(1,409)	235	(3,325)
Cash flow parameters			
Total CF from operating activities (CFOA)	(346)	5,972	38,574
Total CF from investing activities (CFIA)	(551)	(5,324)	(35,491)
Total CF from financing activities (CFFA)	1,592	3,984	11,519
Value creation indicators			
Cost of capital (CAPM)	0.5%	3%	2%
Effective tax (EfT)	3.0%	7%	26%
WCR (WCR)	73	2,120	20,204
Capital expenditures (CapEx)	2,557	40,257	411,120

Data source: https://finance.yahoo.com
* GBP in thousands.

The average level of assets in the small cap sector is more than seven times lower than in the mid-cap sector and more than forty times lower than in the sector with the highest capitalization. This state of affairs is mainly influenced by sales revenues, which may generate cash flow in the investment area, thus increasing the level of assets. The leverage ratio

for low and high cap companies ranges up to 1, while in the case of mid-cap companies (£20–100 million), the ratio is 1.02, which means that for every £1 of equity, there is £1.02 of debt. It is also worth paying attention to the average level of operating profits and net profits. Large cap companies, despite their high level of operating profits, do not report any net profit. The effective tax rate for companies with small capitalization is close to 3%, while for companies with the highest level of capitalization, it is 26%. At the cash flow level, junior companies in the small cap sector generate positive cash flows only from financing activities. However, the common feature of the entire market are the negative values of flows from investment activities which indicates the high level of investments that junior mining companies must generate in order to provide their services at a level that will ensure high credibility of the conducted research.

2.2. Statistical analysis

The aim of the statistical analysis was to extract parameters that affect the market value of exploratory enterprises. The analysis was carried out in two approaches – the traditional approach, which considers such parameters as revenues, operating profit, investment expenditure, demand for net working capital, effective tax rate and cost of equity capital, and the supplementary approach, which additionally takes into account selected parameters of the balance sheet, profit and loss accounts and cash flows. The study was carried out using the regression method including several iterations, eliminating statistically insignificant parameters and, as a result, obtaining a multivariable equation describing the relationship between the market value and the studied values.

2.2.1. Traditional value drivers of the enterprise

First, the traditional drivers of enterprise value, such as revenues, operating profit, capital expenditure, the need for net working capital, the effective tax rate and the cost of capital, were examined.

The elimination of statistically insignificant parameters was based on two statistical values – prob. F-statistic, probability that all regression model parameters are zero, and $p > |t|$ examining the strength of the relationship between the variables and the target value, separately for each of the explanatory variables. Table 2 summarizes the results of the first regression analysis.

Due to the high level of the $p > |t|$ ratio, exceeding 0.05, parameters such as operating profit and the cost of capital were not taken into account for further modeling. Moreover, the fit of the proposed model is over 70%. Table 3 shows the results of the regression analysis for the remaining parameters.

The second iteration of the regression analysis showed that each of the other variables has a statistically significant impact on the given dependent variable – as a result, a multi-

Table 2.   Results of multiple regression analysis for a company's market value –
traditional approach to value estimation

Tabela 2.   Wyniki analizy regresji wielorakiej dla wartości rynkowej przedsiębiorstwa – tradycyjne podejście
do szacowania wartości

Variables[1]	Coefficient	Std error	t	p > |t|
Revenues (Rev)	1.0041	0.207	4.851	0.000
EBIT (EBIT)	−0.2309	0.148	−1.560	0.123
CAPEX (CapEx)	0.4013	0.115	3.503	0.001
WCR (WCR)	−0.3711	0.141	−2.636	0.010
Effective Tax (EfT)	−0.2136	0.082	−2.595	0.011
Cost of equity (CAPM)	0.0503	0.061	0.825	0.412
Const. value	0.0153	0.068	0.223	0.824

[1] R-squared = 0.701, prob. F-statistic = 4.93e^{-17}.
Data source: https://finance.yahoo.com

Table 3.   Results of multiple regression analysis for the market value of an enterprise – a traditional approach
to value estimation after making adjustments for statistically insignificant parameters

Tabela 3.   Wyniki analizy regresji wielorakiej dla wartości rynkowej przedsiębiorstwa – tradycyjne podejście
do szacowania wartości po dokonaniu korekt dla parametrów nieistotnych statystycznie

Variables[1]	Coefficient	Std error	t	p > |t|
Revenues (Rev)	0.7467	0.123	6.076	0.000
CAPEX (CapEx)	0.4062	0.116	3.513	0.001
WCR (WCR)	−0.3064	0.136	−2.249	0.028
Effective tax (EfT)	−0.2475	0.079	−3.137	0.002
Const. value	−0.0095	0.067	−0.142	0.888

[1] R-squared = 0.685 prob. F-statistic = 7.07e^{-18}.
Data source: https://finance.yahoo.com

-variable equation was obtained, describing the relationship between the market value of exploration enterprises and traditional value drivers:

$$Enterprise\ Value =$$
$$= 0.7467 \cdot Rev + 0.4062 \cdot CapEx - 0.3064 \cdot WCR - 0.2475 \cdot EfT - 0.0095$$

(10)

✎ which includes parameters such as revenues (Rev.), capital expenditure (CapEx), net working capital requirements (WCR) and the effective tax rate (EfT). The fit of the model is 68.5%.

It can therefore be concluded that traditional value drivers, excluding operating profits and capital costs, have a statistically significant impact on the market value of junior mines listed on AIM London.

2.2.2. Supplementing value drivers with parameters of financial statements

The second approach to the analysis compiles variables that are reflected in the company's financial statements, but not included in the traditional approach to examining the value of companies. Such variables include total assets (TAs), total equity (TEq), net profit (NetInc) and cash flows for each type of activity – investment (CFIA), financial (CFFA) and operating (CFOA). Table 4 shows the results of the multiple regression analysis.

Table 4.   Results of multiple regression analysis for the market value of an enterprise – complementary approach to the estimation of the value of junior mining companies

Tabela 4.   Wyniki analizy regresji wielokrotnej dla wartości rynkowej przedsiębiorstwa – komplementarne podejście do szacowania wartości górniczych spółek eksploracyjnych

Variables[1]	Coefficient	Std error	t	p > |t|
Total equity (TEq)	−0.5699	0.225	−2.537	0.013
Total assets (TAs)	1.8461	0.383	4.815	0.000
Net income (NetInc)	0.3149	0.166	1.899	0.062
Cash flow from investing activities (CFIA)	−0.1119	0.167	−0.671	0.504
Cash flow from financing activities (CFFA)	0.0541	0.082	0.662	0.510
Cash flow from operating activities (CFOA)	−0.4932	0.204	−2.418	0.018
Const. value	0.0573	0.062	0.923	0.359

[1] R-squared = 0.744 prob. F-statistic = $1.95e^{-19}$.
Data source: https://finance.yahoo.com

The fit of the regression model was 74.4%. Three variables were distinguished which, due to the value of the index p > |t| being above 0.05, did not achieve statistical significance and were eliminated from further research – net profit and cash flow from investing and financing activities. Table 5 shows the results of the second iteration.

Two of the three variables were eliminated from further research – the value of equity and cash flows from operating activities. Table 6 shows the results of the final regression analysis.

Table 5.   Results of multiple regression analysis for the market value of an enterprise – a supplementary approach to the estimation of the value of mining companies after introducing preliminary adjustments for statistically insignificant parameters

Tabela 5.   Wyniki analizy regresji wielorakiej dla wartości rynkowej przedsiębiorstwa – podejście uzupełniające do szacowania wartości przedsiębiorstw eksploracyjnych po wprowadzeniu wstępnych korekt dla parametrów nieistotnych statystycznie

Variables[1]	Coefficient	Std error	t	p>|t|
Total equity (TEq)	–0.2538	0.179	–1.420	0.160
Total assets (TAs)	1.3743	0.226	6.078	0.000
Cash flow from operating activities (CFOA)	–0.2017	0.117	–1.728	0.088
Const. value	0.0555	0.063	0.882	0.381

[1] R-squared = 0.724 prob. F-statistic = $6.12e^{-21}$.
Data source: https://finance.yahoo.com

Table 6.   The results of multiple regression analysis for the market value of the enterprise – a supplementary approach to the estimation of the value of mining companies after making final adjustments for statistically insignificant parameters

Tabela 6.   Wyniki analizy regresji wielorakiej dla wartości rynkowej przedsiębiorstwa – uzupełniające podejście do szacowania wartości przedsiębiorstw eksploracyjnych po dokonaniu ostatecznych korekt dla parametrów nieistotnych statystycznie

Variables[1]	Coefficient	Std error	t	p > |t|
Total assets (TAs)	0.9308	0.068	13.642	0.000
Const. value	0.0340	0.063	0.538	0.592

[1] R-squared = 0.707 prob. F-statistic = $3.06e^{-22}$.
Data source: https://finance.yahoo.com

As a result, one variable was distinguished that affects the market value of junior mines – in this case, it is the total amount of assets. The relationship between the market value and the total asset value was written by Equation 11:

$$Enterprise\ Value = 0.9308 \cdot TAs + 0.0340 \tag{11}$$

in which the given explanatory variable is the value of assets (TAs). The equation is a linear function which is visualized in Figure 6.

It can therefore be concluded that the market value of junior mines listed on AIM London increases with the increase in the total value of assets, both tangible and intangible.
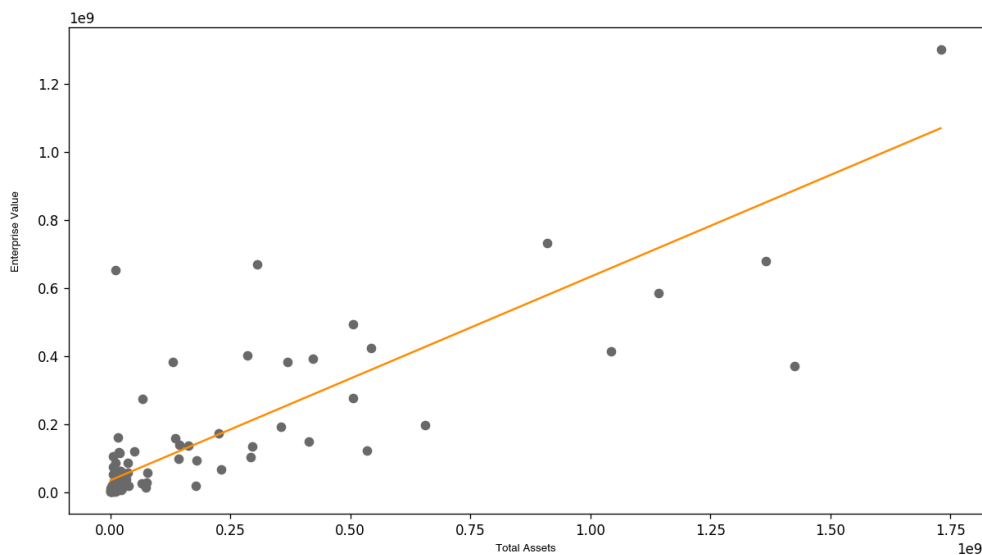
Fig. 6. Linear regression of the market value of junior mines in the complementary approach

Rys. 6. Regresja liniowa dla wartości rynkowej spółek eksploracyjnych w komplementarnym podejściu

2.2.3. Statistical model of the market value
of exploratory companies listed on AIM London

The final stage of the analysis is the aggregation of the traditional and complementary approaches. The following factors were taken into account for the regression model: sales

Table 7.   Regression model for the market value of mining companies

Tabela 7.   Model regresji dla wartości rynkowej spółek eksploracyjnych

Variables[1]	Coefficient	Std error	t	p > |t|
Revenues (Rev)	–0.0040	0.168	–0.024	0.981
CAPEX (CapEx)	–0.4550	0.165	–2.762	0.007
WCR (WCR)	–0.1888	0.111	–1.706	0.092
Effective tax (EfT)	–0.1636	0.075	–2.187	0.032
Total assets (TAs)	1.5527	0.273	5.697	0.000
Const. value	0.0683	0.059	1.161	0.250

[1] R-squared = 0.767 prob. F-statistic = $8.98e^{-22}$.
Data source: https://finance.yahoo.com

revenues, capital expenditure, net working capital requirements, effective tax rate and the total value of assets. Table 7 shows the results of the regression analysis for the aggregated parameters.

Taking into account the high level of p > |t| above 0.05, factors such as sales revenues and the need for networking capital were excluded from further research. Table 8 shows the regression analysis for the remaining parameters.

The result of the second iteration is the exclusion of another statistically insignificant parameter – the effective tax rate. Table 9 shows the multiple regression model corrected for the second iteration.

Table 8.   Regression model for the market value of mining companies

Tabela 8.   Model regresji dla wartości rynkowej spółek eksploracyjnych

Variables[1]	Coefficient	Std error	t	p > |t|
CAPEX (CapEx)	−0.4585	0.146	−3.148	0.002
Effective tax (EfT)	−0.1260	0.072	−1.751	0.084
Total assets (TAs)	1.4070	0.156	9.007	0.000
Const. value	0.0671	0.059	1.136	0.260

[1] R-squared = 0.767 prob. F-statistic = 8.98e^{-22}.
Data source: https://finance.yahoo.com

Table 9.   Regression model for the market value of mining companies

Tabela 9.   Model regresji dla wartości rynkowej spółek eksploracyjnych

Variables[1]	Coefficient	Std error	t	p > |t|
Total assets (TAs)	1.4270	0.158	9.038	0.000
CAPEX (CapEx)	−0.5004	0.146	−3.437	0.001
Const. value	0.0572	0.060	0.960	0.340

[1] R-squared = 0.747 prob. F-statistic = 2.18e^{-23}.
Data source: https://finance.yahoo.com

The end result of the analysis is a multiple regression model for exploratory companies listed on AIM London, which includes two main factors that statistically significantly affect the market value. This model is expressed by Equation 12:

$$Enterprise\ Value = 1.4270\ TAs - 0.5004\ CapEx + 0.0572 \qquad (12)$$

Where the explanatory variables are the balance sheet value of assets and the investment expenditure incurred. This equation is presented graphically in Figure 7 using a plane that displays the relationships between equity, the value of assets and capital expenditure.
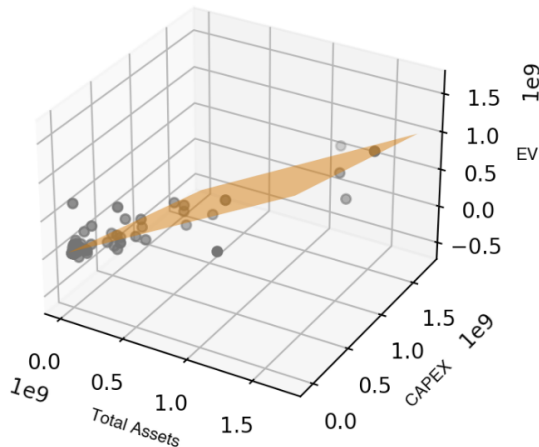

Fig. 7. Determinants of the market value of exploratory companies

Rys. 7. Determinanty wartości rynkowej spółek eksploracyjnych

Along with the increase in capital expenditure, the level of assets increases, which determines the higher market value of junior mines. The investor valuation of this type of company, which results in the market value, is therefore based both on traditional factors, such as capital expenditure, and information contained in financial statements – primarily on the total assets of the companies.

Conclusions

The main purpose of this publication was to identify the factors determining the market value of junior mines listed on AIM London. Its implementation required, first and foremost, knowledge of the characteristics of the market, particularly with regard to the following:

◆ market capitalization values for the entire junior mines segment;
◆ the division into sectors with different levels of capitalization;
◆ calculation of the market value added based on the market value and book value of equity;
◆ calculation of average values for selected components of financial statements.

The second part of the analysis was statistical in nature and its purpose was to identify factors that affect the market value. For this purpose, the following three analyses were carried out:

- regression of traditional drivers of enterprise value, such as revenues, operating profits, capital expenditures, net working capital requirements, effective tax rate and cost of capital;
- supplementary regression – analysis of selected components of financial statements, such as the balance sheet value of assets and the value of equity, net profit and the value of cash flows in the investment, and financial and operational areas;
- Aggregation of the traditional and complementary approaches and performing a regression analysis in order to isolate the value drivers of mining companies.

The conclusions from the performed analyses can be summarized in the following five points:

1. The AIM London market consists of 98 junior mines with a total market capitalization of over £10 billion.
2. There are three main capitalization sectors – a low cap sector up to £20 million, a mid cap sector between £20 million and £100 million and a high cap sector above £100 million.
3. The sector with small capitalization is the only sector with a negative level of market value, thus generating no additional value for investors.
4. Junior mines listed on AIM London have an average negative cash flow from investing activities, which proves the high capital intensity of the business and the involvement of cash in increasing the level of assets.
5. The balance sheet value of assets and capital expenditure are, from a statistical point of view, the two factors that most significantly determine the market value of junior mines listed on the London alternative investments market.

The proposed two-factor model is consistent with the data on negative cash flows in the area of investment activities. Therefore, it indicates the direction of the further search for drivers of the market value of junior mines. Further research may concern individual components of assets

Junior and directions of investment expenditure in particular sectors of capitalization. It is also worth examining the markets where there are definitely more junior companies and compare them with the stock market behavior to better understand the nature of their performance. The results of the conducted research may be used as supplementary information in the valuation of junior mine companies. It is also worthwhile to use them for the longer monitoring of exploratory markets, thus enabling more in-depth conclusions and thus influencing the quality of information we have about the market and companies. In addition, the model can be used to predict the value of junior companies based on proven statistics. Mines listed on AIM London fit perfectly into the narrative of their specificity – a high level of investment, affecting a high level of assets, which is reflected in the market value and investor decisions. Companies with a market capitalization value of less than

£20 million face a major challenge – the market clearly gives negative signals, as can be seen in the market added values. Therefore, companies have to look for ways to increase their market value – not necessarily only in terms of assets – and to diversify the directions of its generation.

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FACTORS AFFECTING THE MARKET VALUE OF JUNIOR MINING COMPANIES LISTED ON THE ALTERNATIVE INVESTMENT MARKET (AIM) LONDON

Keywords

stock exchange, junior mines, value drivers, value management, exploration projects

Abstract

The exploration of mineral resources is an area of strategic importance for the pace of further development of all industries. The results of companies deciding to carry out exploration work depend on further investments of mining companies, i.e. the entities purchasing full deposit documentation. Being at the beginning of the entire mining process, junior mines assume a high risk related to investments enabling the commencement of works without providing high guarantees of the project's success. Companies running these types of projects must seek funding in a variety of ways. One of these is to try to raise capital from the stock trading markets. However, the specificity of junior companies does not allow them to start on the main trading floors, hence the decision to enter alternative markets. In considering the broader context of the activities of junior mines, research was conducted on companies listed on the London Alternative Investment Market (AIM). In the first part, this concerned the market characteristics – the market value added values were determined for selected ranges of market capitalization. In the second part, which is a statistical study, factors that may affect their market value was checked. The analysis covered both traditional value drivers – related to revenues, the demand for net working capital, investment expenses and the cost of equity – and their supplementation with selected values of financial statements. The result of the analysis is a regression equation indicating the factors that have a statistically significant impact on the market value of junior mines listed on AIM London.

CZYNNIKI WPŁYWAJĄCE NA RYNKOWĄ WARTOŚĆ GÓRNICZYCH SPÓŁEK EKSPLORACYJNYCH NOTOWANYCH NA ALTERNATYWNEJ GIEŁDZIE PAPIERÓW WARTOŚCIOWYCH (AIM) W LONDYNIE

Słowa kluczowe

giełda, eksploracja surowców, wartość przedsiębiorstwa,
zarządzanie wartością, projekty poszukiwawcze

Streszczenie

Eksploracja surowców mineralnych to obszar o strategicznym znaczeniu dla tempa dalszego rozwoju wszystkich gałęzi przemysłu. Od rezultatów firm decydujących się na prowadzenie prac poszukiwawczych zależą dalsze inwestycje spółek wydobywczych – czyli podmiotów kupujących pełną dokumentację złoża. Będąc na początku całego procesu wydobywczego spółki eksploracyjne biorą na siebie duże ryzyko związane z inwestycjami umożliwiającymi rozpoczęcie prac, nie dając jednocześnie wysokich gwarancji sukcesu projektu. Mając na uwadze szerszy kontekst działalności spółek eksploracyjnych przeprowadzono badania firm notowanych na londyńskiej giełdzie alternatywnej (AIM). W pierwszej części dotyczącej charakterystyki rynku wyznaczono wartości Market Value Added dla wybranych przedziałów kapitalizacji rynkowej. W drugiej części, mającej charakter badań statystycznych sprawdzono jakie czynniki mogą wpływać na ich wartość rynkową. Analiza objęła zarówno tradycyjne drivery wartości – związane z przychodami, zapotrzebowaniem na kąpiel obrotowy netto, wydatkami inwestycyjnymi i kosztem kapitałów własnych – oraz ich uzupełnienie o wybrane wartości sprawozdań finansowych. Rezultatem analizy jest równanie regresji wskazujące na czynniki, które w sposób istotny statystycznie wpływają na wartość rynkową spółek junior mines, notowanych na AIM London.