The Impact of Market Conditions on Pricing Decisions in Hard Coal Mines

Dariusz FUKSA[1)]

[1)] dr hab. inż., prof. AGH; AGH University of Science and Technology, Mickiewicza 30, 30-059 Kraków, Poland; email: fuksa@agh.edu.pl

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Abstract

The article presents the theoretical underpinnings of how the scale of production impacts on the unit cost of manufactured products, as well as on the economic patterns underlying associated pricing decisions. The theoretical considerations are supported by relevant calculations performed for a case study involving a real-life hard coal mine. Attention is paid to the specific nature of the mining industry and the associated impediments to applying cost formulas in the selling pricing decision-making process. The article also emphasises the necessity of taking a flexible approach to setting coal prices in the current market conditions, providing proposals of solutions that could improve the financial soundness of mines.

Keywords: unit cost, pricing decisions, hard coal mining

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Introduction

In a market economy, aligning the company's production capacity with market needs requires the management to make rational decisions based on well-prepared and well-processed information. Companies operate in a constantly evolving environment, which, on the one hand, creates opportunities for growth, but, on the other, entails a high level of business risk. In order to be able to make regular decisions about, in particular, the planning of production volume in line with the changing market demand, entrepreneurs have to employ well-suited strategies. The key strategies include, above all, cost management and optimum pricing policy.

This publication presents the theoretical underpinnings of how the scale of production impacts on the unit cost of manufactured products. The unit cost is the basis for pricing decisions and for reviewing the profitability of production across individual products. The theoretical considerations are supported by relevant calculations performed on data obtained from a case study involving a real-life hard coal mine. Examples are presented of solutions aimed at improving the financial soundness of mines operating in the difficult market conditions of decreased demand and low coal prices.

Costs and prices as the basis for production decisions

Production in industrial enterprises inherently entails costs, but it is also the key cost driver, because the extent to which various means of production are utilised in the production process depends on the output. Production costs reflect the amounts of the inputs utilised during the production process, while the final output is the effect of utilising means of production. Therefore, when devising the company's strategy regarding changes in the scale of production, it is necessary to analyse the relationship between the costs and the output [1].

In accordance with the principle of sound management, it is necessary to maintain the most favourable proportion between the output and the related production costs. The relationship between the level of costs and the output must not be shaped randomly, since it is subject to certain economic patterns in the form of the cost variability principle. This principle means that production cost per unit product changes with the changing scale of production [1, 5, 8].

The criteria for seeking optimal decision-making solutions with regard to production, namely the cost-output relationship, include the following yardsticks:

- unit cost (kj), which is the total cost of making a product unit,
- unit variable cost (kjz), i.e. variable costs per product unit,
- marginal cost (MC), calculated as the ratio of the increase (decrease) in total cost to the increase (decrease) in output,
- total cost (Kc), comprising fixed cost (Ks) and variable cost (Kz).

The sample short-run cost-output relationship is shown graphically in Figure 1. The unit cost curve has a distinctive U-shape [8]. The variable unit cost initially decreases only to start growing. The shape of its curve is similar to the graph of the unit cost curve. However, the unit cost curve goes up after the unit variable cost curve, because the former is influenced by a decreasing unit fixed cost, which is a component of the total cost. The unit fixed cost is falling continuously, because it is

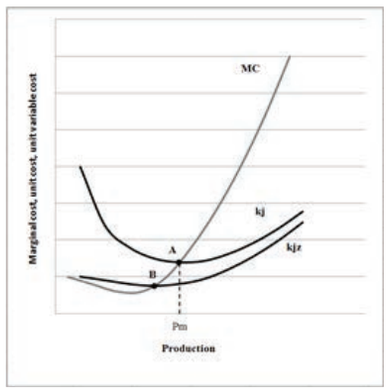

Fig. 1. Costs curves in the short term; Source: Own elaboration
Rys. 1. Krzywe kosztów produkcji w krótkim okresie; źródło: opracowanie własne

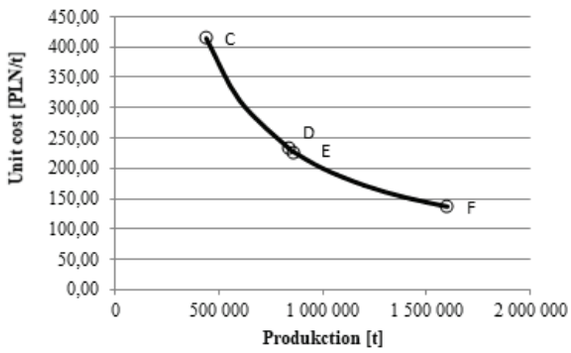

Fig. 2. Unit cost of coal mining „A"; Source: Own elaboration
Rys. 2. Koszt jednostkowy wydobycia węgla kopalni „A"; źródło: opracowanie własne

distributed between an increasing number of units. The marginal cost (MC) cuts through the unit cost curve at its lowest (point A in Figure 1), which is the technical optimal level of production for a company. The minimum value of the unit cost occurs with maximum output — when the company operates at its full production capacity. It should be noted that operating at full production capacity is not enough to achieve the minimum value of kj. It only happens when all the output has been sold. For example, if a mine extracts as much coal as its production capacity allows, but sells only part of its output, then only the quantity sold should be treated as "output." Unsold surplus coal is transported to the spoil tip and usually written off. In practice, this means a higher cost per unit of size grades sold, a lower margin on the sales of individual coal size grades, and, as a result, a risk of loss for the mine. It is as if the company was producing below its production capacity (Pm) (to the left of the Pm point in Figure 1). Undercapacity production means that the unit cost curve moves up and to the left, always leading to an increase in production costs. However, this does not necessarily predict a loss, because the profitability of production depends not only on the production costs, but also on the price at which the products are sold. A sufficient condition is for the price to exceed the unit cost of production. Depending on the market price (Figure 1), the manufacturer's decision on production in a competitive environment can be interpreted as follows:

- If the market price is higher than the minimum unit cost (point A in Figure 1), the manufacturer makes a profit.
- If the market price drops below the minimum unit cost (point A in Figure 1), but remains above the minimum unit variable cost (point B in Figure 1), it is still profitable for the manufacturer to produce despite making a loss. Continued production will cover the variable cost and some part of the fixed cost. The loss will still be lower than it would be if the business ceased its operation (loss is lower than the fixed cost).
- If the market price falls below the minimum unit variable cost (point B in Figure 1), production is no longer profitable. In such a case, it is best to cease operations, as sales revenue is lower than the associated variable cost. If production is stopped, the loss will be lower and equal to the fixed cost.

To summarise, production is profitable if the loss (S) sustained while continuing production is lower than the fixed cost.

Tab. 1. Technical and economic coefficients for mine „A"; Source: Own elaboration
Tab. 1. Wskaźniki techniczno-ekonomiczne kopalni „A"; źródło: opracowanie własne

Specification	Value
Max. Extraction [t netto]	1,600,000
Average Extraction [t/day]	5,500
Fixed cost [PLN/year]	167,784,640
Unit cost [PLN/t]	136.9
unit variable cost [PLN/t]	32.12

Tab. 2. Types and quality parameters of coal offered by „A" coal mine
Tab. 2. Rodzaje i parametry jakościowe węgla oferowane przez kopalnię „A"

Coal size grade	Type of coal	Share in extraction [%]	Calorific value [kJ/kg]	Contents [%]					
				ashes		water		sulphur	
				max	min.	max	min.	max	min.
nut coal	33	8.0	25,000	15.8	0	7	5	0.76	0
pea coal	33	7.5	24,650	15.8	0	7	5	0.77	0
fine coal I	33	35.2	24,904	18.0	16	7	5	1.1	0.9
fine coal II	32.1	46.4	19,089	28.0	24	12	8	0.80	0.76
slurry	32.1	2.9	11,000	30.0	29	20	17	1.0	0.61

Tab. 3. The optimal plan of production and sale of coal mine „A" for 2011
Tab. 3. Optymalny plan produkcji i sprzedaży węgla kopalni „A" na rok 2011

Offer: 1,600,000 ton Sold: 438,968 ton		Mine reserves: 734,180 ton Loss: -16,698,662 PLN	
Name of consumer group	**Coal size grade**	**Ilość sprzedaży netto**	**Calorific value**
		[ton]	**[kJ/kg]**
Indv. consumers 4	nut coal	69,265	25,000
Indv. consumers 4	pea coal	64,936	24,650
Indv. consumers 3	fine coal I	304,767	24,904
Dumping coal	fine coal II	401,738	19,089
Dumping coal	slurry	25,109	19,089

Tab. 4. Financial effects on different types of coal; Source: Own elaboration
Tab. 4. Efekty finansowe uzyskiwane na poszczególnych sortymentach węgla; źródło: opracowanie własne

Specification	Sortyment			Łącznie
	Nut coal	*Pea coal*	*Fines I*	
Sales volume [ton]	69,265	64,936	304,767	438,968
Selling price [PLN/ton]	495	406	343	
kjs [PLN/ton]	382.23			
kj [PLN/ton]	414.34			
c-kj (margin) [PLN/ton]	80.66	-8.34	-71.34	
Profit/loss [PLN]	5,586,610	-541,852	-21,743,420	-16,698,662

$$S < K_S \quad (1)$$

Substituting loss with the profit (Z) in the inequality (1) produces:

$$Z > -K_S \quad (2)$$

Profit is the difference between revenue (D) and total cost (Kc), which can be expressed with the formula:

$$D = K_C > -K_S$$

Total cost (Kc) comprises fixed cost (Ks) and variable cost (Kz), hence:

$$D - (K_S + K_Z) > -K_S$$
$$D - K_{S+} - K_Z > -K_S \quad (3)$$
$$D > -K_Z$$

It is clear from condition (3) that production at a given price is profitable if the revenues are greater than the variable cost that has to be incurred to start this production. The company's revenue is equal to the price (c) multiplied by the volume of sales (P). Dividing both

Tab. 5. Calculation of mine „A" profit for variant I; Source: own elaboration
Tab. 5. Obliczenia zysku kopalni „A" dla wariantu I; źródło: opracowanie własne

Specification	Coal size grade				Together
	Nut coal	***Pea coal***	***Fines I***	***Fines II***	
Sales volume [ton]	69,265	64,936	304,767	401,738	840,706
Selling price [PLN/ton]	495	406	343	170	
kjs [PLN/ton]	199.58				
kj [PLN/ton]	231.70				
c-kj (margin) [PLN/ton]	263.30	174.30	111.30	-61.70	
Profit/loss [PLN]	18,237,760	11,318,612	33,921,823	-24,785,580	38,692,615

Tab. 6. Calculation of mine „A" profit for variant II; Source: own elaboration
Tab. 6. Obliczenia zysku kopalni „A" dla wariantu II; źródło: opracowanie własne

Specification	Coal size grade					Together
	Nut coal	*Pea coal*	*Fines I*	*Fines II*	Muły	
sales volume [ton]	69,265	64,936	304,767	401,738	25,109	865,815
selling price [PLN/ton]	495	406	343	170	125	
kjs [PLN/ton]	193.79					
kj [PLN/ton]	225.91					
c-kj (margin) [PLN/ton]	269.09	180.09	117.09	-55.91	-100.91	
Profit/loss [PLN]	18,638,651	11,694,448	35,685,748	-22,460,407	-2,533,701	41,024,739

sides of the inequality (3) by the output P produces::

$$c > kjz \tag{4}$$

The inequality (4) reveals a very important rule concerning the minimum price at which the company can sell its products so that its loss is lower than the loss it would suffer by ceasing its business operations. The minimum value below which the business cannot afford to set its price is equal to the unit variable cost.

Prices are an economic category that plays a decisive role in virtually all decisions made by an enterprise and has a significant impact on the efficiency of its operations. If the price is a parameter independent of the enterprise (i.e. if it is determined by the market), its influence on the enterprise is positive. If this is the case, the company will undertake measures to reduce production costs, improve product quality, and adjust its production volume to market needs [7]. The influence of prices on the financial condition of an enterprise depends primarily on the pricing method. Two most important pricing methods include cost-based pricing and market-based pricing. These methods have been extensively discussed in numerous papers, including [1, 7]. Cost-based pricing formulas differ only in the range of costs that constitute the basis for determining the price, namely: total cost, technical cost of production, or variable cost. The choice of the appropriate cost method is most often determined by the cost accounting used in the enterprise, difficulties in accounting for overheads (management and sales costs) for particular products, or the need for making an accurate division into fixed and variable costs. It is irrelevant which cost formula is used, as each one ensures the same price as a result.

It is in the interest of each company for the price to cover all the incurred costs of manufacturing a given product and to ensure a certain level of profit. From the market (consumer) perspective, there is no direct relationship between price and cost. As a rule, the consumer is interested in the usefulness of a particular product expressed in its price, and not in the cost incurred by the producer. However, the relationship between these two categories exists, and its strength may vary. Hence, costs are one of the basic considerations for making pricing decisions [1, 6, 7].

Generally, selling prices are determined by adding a specific profit margin to the unit cost of the product. In principle, profit margin constitutes a certain percentage of the accepted base, and the base equals the unit cost of the product. Mathematically, this takes the following form:

$$c = kj + nz \tag{5}$$

where nz – percentage profit margin per production unit.

It may be the case that the selling price set by the producer, although covering production costs and guaranteeing a certain level of profit, will exceed the market price, which means that customers will not buy the product. However, setting prices in isolation from the market is justified when determining the profitability of a specific product. Taking care of the market position and recipients is equally important. Unless the enterprise is market-savvy and knows its competitors and their prices, it can be eliminated from the market. Although there are many pricing methods based on market conditions, they always amount to establishing a price level that could compete with other products. The

Tab. 7. Calculation of mine „A" profit for variant III; Source: own elaboration
Tab. 7. Obliczenia zysku kopalni „A" dla wariantu III; źródło: opracowanie własne

Specification	Coal size grade				Together
	Nut coal	*Pea coal*	*Fines I*	*Fines II*	
sales volume [ton]	69 265	64 936	304 767	401 738	840 706
selling price [PLN/ton]	495	406	343	85	
kjs [PLN/ton]	199,58				
kj [PLN/ton]	231,70				
c-kj (margin) [PLN/ton]	263,30	174,30	111,30	-146,70	
Profit/loss [PLN]	18 237 760	11 318 612	33 921 823	-58 933 309	4 544 886

possible conclusion is that the upper price limit is set by the market.

Specific conditions impacting on pricing decisions in mines

The price of a particular type of coal is determined mainly by internal and external factors. Internal factors include such coal features as size grade and quality. Coarse grades (cobble, nut coal) are sold at a higher price than small or fine coal. The quality of coal determines its calorific value, as well as its content of ash, sulphur, and water. Mines make their pricing decisions based on these parameters and their own pricing formulas.

External factors, which often ultimately determine the price of coal, are equally important. In the current market conditions (low prices of coal imported from Australia and South Africa), the price must be set to range within the market price limits. At the same time, it is also the upper (maximum) price limit which the mine may not exceed due to competition. For each mine, the lower price limit is equal to the unit cost, but this is acceptable only in the short term. It is called selling at cost, where the mine makes neither profit nor loss – it remains at the break-even point [3]. If the selling price falls below the unit cost but remains higher than the unit variable cost, the mine will make a loss. However, this loss will be lower than it would be if the mine ceased its operations, because variable costs and a portion of the fixed cost will be covered by the revenue. Regardless of the pricing method, what is relevant is the difference between the price and the unit cost (unit contribution margin), because it provides information about the (un)profitability of the business. Knowing the relationship between the price and the unit cost in the production of at least two products, the company can obtain information about the profitability of individual products. In the case of mines, coal size grades are sold at different prices at the same cost of production. Should, however, one of the coal sizes be enriched (ash removal, drying, desulphurisation), then its unit cost will be higher, and the margin lower. Another salient factor determining the efficiency of mining operations is the applied mining technology as a result of which a specific production structure is obtained, where coarse and medium grade sizes make up approx. 15-20% of the total output, and the rest is smalls and fines. Coarse sizes are sold at a price much higher than the price of smalls or fines. Then again, the strategic recipients of the mines include electricity and heat companies, which are interested in smalls and fines. In addition, the decarbonisation policy of the European Union has a decisive influence on the coal demand, which translates into a drop in coal prices. In the current market situation, Polish mining has to look for solutions that would allow it to achieve profitability for the coal price determined by the market. One solution is, naturally, cost reduction, successively implemented by government restructuring programmes (downsizing, elimination of mining capacity, or liquidation of mines). With such measures, the state is, of course, intentionally moving away from a cheap, domestic energy resource that would ensure the energy security of the country [4]. The annual increase in the unit cost of coal mining in Polish mines is primarily the result of a drop in demand on the domestic market. The domestic demand is also supplemented with imported coal (cheaper but of good quality), which translates into lower domestic output, higher unit cost per tonne of coal, and higher losses. Mines should increase their production instead of reducing it. If they did, it could cut the unit cost and render the mining sector profitable again. Surplus coal could be processed into organic chemicals, as the author observed in [4].

The specific nature of mining, especially hard coal, makes it impossible to apply in broad practice the cost-based pricing methods that work in manufacturing enterprises. Therefore, the next chapter will focus on the presentation of how the scale of coal sales impacts on the unit cost and the determination of the minimum price or the minimum sales volume that can guarantee profitability.

Sample calculations and assessment of the results

The calculations were performed for a real-life hard coal mine belonging to the coal company [2]. Due to formal reasons, its name has been changed, and the mine will be further referred to as the "A" mine. Ta-

Tab. 8. Calculation of minimum amount of sales assortment fine coal II; Source: own elaboration
Tab. 8. Obliczenia minimalna ilość sprzedaży sortymentu Miały II; źródło: opracowanie własne

Specification	Coal size grade				Together
	Nut coal	*Pea coal*	*Fines I*	*Fines II*	
sales volume [ton]	69 265	64 936	304 767	121 112,71	560 080,71
selling price [PLN/ton]	495	406	343	170	
kjs [PLN/ton]	299,57				
kj [PLN/ton]	331,69				
c-kj (margin) [PLN/ton]	163,31	74,31	11,31	-161,69	
Profit/loss [PLN]	11 311 511	4 825 248	3 446 228	-19 582 987	0

ble 1 presents the annual mining capacity of the mine along with technical and economic indicators. Table 2 includes the coal types offered by the mine, along with their quality parameters.

The optimal coal production and sales plan (Table 3) indicates that the "A" mine is a deficit mine [4]. Its annual loss amounted to PLN -16,698,662. A working assumption can be made that the mine's product mix fails to meet the customer requirements primarily in terms of quality. The mine did not use its full production capacity - the reserves amounted to 734,180 tonnes. Since the production plan is an annual plan, the coal transported to the spoil tip is conventionally written off. It should also be noted that the "A" mine had two recipients, which also adversely affected its economic situation in the conditions of the changing demand for hard coal.

The annual coal production and sales plan for mine "A" assumed the extraction of only 865,815 tonnes of coal, which represented 54% of the mine's production capacity. Of this, only 438,968 tonnes (27% of the production capacity) were sold, and the rest was moved to the spoil tip. Hence, the unit cost of extracting1 tonne of coal amounted to PLN 414.34. If the sales volume was equal to the maximum production capacity (1,600,000 tonnes), this cost would be PLN 136.9 per tonne (Tab. 1, point F in Figure 2). When analysing the financial results obtained for particular coal size grades (Tab. 4), one can draw a conclusion that apart from the Nut coal grade (the sales of which was profitable – c-kj), the mine lost PLN 8.34 and PLN 71.34 per each ton of Pea coal and Fines I, respectively. As a result, the mine's total loss amounted to PLN -16,698,662. Only the extracted coal in the amount of 438,968 tonnes should be treated as the "output" (as mentioned in the theoretical part), because the rest is treated as "loss" (dumping coal). The unit cost (PLN 414.34 /t) corresponds to point C in Figure 2.

The author adopted three hypothetical options which could improve the financial condition of the "A" mine, provided that the coal mine sold its entire coal (Tab. 3). Option I assumed that the mine had found the recipient for the 401,738 tonnes of the Fines II size grade. The calculation of the mine's profit/loss in the case of additional sales is presented in Table 5. As can be observed, due to increased sales, the fixed cost would be spread over a larger amount of coal, which would in turn reduce the unit cost to PLN 231.70 / t (point D in Figure 2) and yield a higher margin on both the existing production and the additional sales. The mine would become profitable, with its profit generated by the additional sales amounting to PLN 38,692,615.

Option II considers a situation in which the "A" mine finds an additional buyer for its Slurry size grade in the amount of 25,109 tonnes (Tab. 6). As shown by the calculations presented in Table 6, the mine would make a profit of PLN 41,024,739, while the unit cost would be further reduced (point E in Figure 2) to reach PLN 225.91/t thanks to the relative reduction of the unit fixed cost.

Finding a buyer for additional quantities of coal (lingering on spoil tips) is always profitable, even at a selling price lower than the market price. However, there is a limit value to this price. In option III, the assumed volume of sales is the same as in option I, but at half the selling price of Fines II – i.e. PLN 85/t. The calculations are summarised in Table 7. In this case, the mine's profit would decrease by 88% compared to the profit in option I, but the mine A would still remain profitable. It also proves that selling coal for exports even at lower prices, although often criticised, is the right decision.

Due to the market conditions faced by the Polish coal industry, it is important to look for answers to the following questions: What quantity should be sold at a given price in order to achieve profitability? or: At what price should a given amount of coal be sold to achieve profitability?

In the first case, the goal is to achieve a sales volume that will make it possible to strike a balance between revenues and costs (the break-even point) [3]. The mine will not make a profit, but it will not make a loss either. Selling any amount of coal above such a fixed quantity will generate profit. Hence, the author proposes the following formula for the calculation of the minimum limit of the sales volume of a given size grade at a given price:

$$P_A = \frac{Ks - P_B(c_B - kjz_B) - P_C(c_C - kjz_C) - \ldots - P_\Omega(c_\Omega - kjz_\Omega)}{c_A} \quad (6)$$

Tab. 9. Calculation of the minimum price for the assortment fine coal II; Source: own elaboration
Tab. 9. Obliczenia minimalnej ceny sprzedaży dla sortymentu Miały II; źródło: opracowanie własne

Specification	Coal size grade				Together
	Nut coal	*Pea coal*	*Fines I*	*Fines II*	
sales volume [ton]	69 265	64 936	304 767	401 738	840 706
selling price [PLN/ton]	495	406	343	73,69	
kjs [PLN/ton]	199,58				
kj [PLN/ton]	231,70				
c-kj (margin) [PLN/ton]	263,30	174,30	111,30	-158,01	
Profit/loss [PLN]	18 237 760	11 318 612	33 921 823	-63 478 195	0

Tab. 10. Loss of mine „A" at price 32,13 PLN/t; Source: own elaboration
Tab. 10. Strata kopalni „A" przy cenie 32,13 zł/t; źródło: opracowanie własne

Specification	Coal size grade				Together
	Nut coal	*Pea coal*	*Fines I*	*Fines II*	
sales volume [ton]	69 265	64 936	304 767	401 738	840 706
selling price [PLN/ton]	32,13	32,13	32,13	32,13	
kjs [PLN/ton]	199,58				
kj [PLN/ton]	231,70				
c-kj (margin) [PLN/ton]	-199,57	-199,57	-199,57	-199,57	
Profit/loss [PLN]	-13 822 931	-12 959 010	-60 821 095	-80 173 198	-167 776 233

The data compiled in Table 5 was used to calculate the minimum sales volume of the Fines II (spoil tip) that would guarantee that the mine breaks even. The results are presented in Table 8. The mine could become profitable by selling Fines II in a quantity greater than the calculated volume (121,112.71 tonnes).

In order to determine the minimum price limit above which a given coal size should be sold, the following formula should be used:

$$c_A = \frac{Ks - P_B(c_B - kjz_B) - P_C(c_C - kjz_C) - \ldots - P_\Omega(c_\Omega - kjz_\Omega)}{P_A} \quad (7)$$

The data compiled in Table 5 was used to calculate the minimum selling price of Fines II that would guarantee that the mine breaks even. The results are presented in Table 9. The mine could become profitable by selling Fines II at a price higher than the calculated selling price (PLN 73.69/t).

Furthermore, Table 10 summarises the calculations that validate the theoretical points made above – namely, the situation in which the selling price does not cover the total unit costs, but it will only be higher by, for instance, 1 grosz against the unit variable cost. According to the calculations, if the mine "A" was selling coal at such a price, its loss would be lower than if it ceased its operations. In this case, the loss would be lower than the fixed cost: PLN 167,784,640.

Summary

To summarise, it can be concluded that pricing decisions in hard coal mining are largely influenced by market conditions. The perpetual competition, mainly in terms of prices, excludes the possibility of using cost formulas in relation to certain coal size grades (particularly smalls and fines).

To determine their coal prices, mines should calculate their unit costs for the quantities of coal that are guaranteed to be sold.

Each additional sales of coal lowers the cost of one tonne of coal and has a positive effect on the financial condition of the mine, even if sold below the market price. This is of particular importance when the mine has an underutilised production capacity. If the proposed price exceeds the unit variable cost and ensures even partial coverage of fixed costs, the offer is beneficial for the mine. Due to increased sales, fixed costs will be spread over a greater number of tonnes of coal, cutting the unit cost of production and generating a higher margin both on the existing production and the production resulting from additional sales.

The proposed solutions for mines to recover financially (the determination of the minimum level of selling price or sales volume) could enable mines to maintain profit at the planned level, or at least to avoid loss.

The current market situation requires mines to be flexible in making rational pricing decisions.

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Wpływ uwarunkowań rynkowych na podejmowanie decyzji cenowych w kopalniach węgla kamiennego

W artykule przedstawiono podstawy teoretyczne dotyczące wpływu skali produkcji na koszt jednostkowy wytworzonych produktów oraz ekonomiczne prawidłowości podejmowania na jego podstawie decyzji cenowych. Rozważania teoretyczne zostały potwierdzone stosownymi obliczeniami przeprowadzonymi na przykładzie rzeczywistej kopalni węgla kamiennego. Zwrócono uwagę na specyfikę branży górniczej i związane z tym trudności w zastosowaniu formuł kosztowych ustalania cen sprzedaży. Podkreślono konieczność stosowania elastycznego podejścia do ustalania cen węgla w obecnych uwarunkowaniach rynkowych, popartą propozycjami rozwiązań umożliwiającymi poprawę kondycji finansowej kopalń.

Słowa kluczowe: koszt jednostkowy, decyzje cenowe, górnictwo węgla kamiennego