

The Level and Structure of Investment Outlays in Mining Companies

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Abstract

This paper presents the definitions used by Statistics Poland (GUS) in relation to investment outlays. Then it proceeds to describe how fixed assets are broken down for statistical purposes, with particular attention to machines and equipment as the investment outlays that are crucial for the functioning of hard coal mines. The paper also discusses the structure of mining companies supervised and monitored by the State Mining Authority (WUG) over the period under study. The principal goal of this article is to analyse and assess investment outlays incurred by the Polish mining industry. In order to achieve this goal, an analysis was performed of the relevant statistical data for 2005–2017 in terms of the structure of investment outlays on fixed assets. The analysis also concerned the share of the public and private sectors and small and medium-sized companies in the overall investment outlays structure. Last but not least, the data for the Mining and Quarrying section were compared with that for industry as a whole, with special attention to the analysis of data on coal mining.

Keywords: investment outlays, industry, mining

Introduction

As a powerful driver of financial value, investment has always played a special role in any business activity. And in early 21st century, with all the advancements in globalisation and technological revolution, investment has become particularly important. Investment activities are commonly viewed as a way to take advantage of future opportunities. Mining, as any other industry, needs investments to function and grow. They are necessary for companies to be able to provide competitively-priced and qualitatively satisfactory raw materials extracted from deposits coming from beds that differ in mining and geological terms. The changes that are occurring within the competitive environment, and more generally in the macro environment, are forcing businesses, including mining companies, to adjust by adapting and revising their development strategies to keep their position on the market. Without continuous investment, this is impossible. When they do not make investments, businesses lose their competitive advantage and are unable to meet the current market demands, which are ever growing on the contemporary turbulent marketplace. Issues related to broadly understood financial management in mining companies have been explored in many papers, such as (Bak 2007, Bak 2008, Brzychczy 2012, Kowal, Ranosz, Sobczyk 2017, Ogrodnik 2019a, Ogrodnik 2019b, Ranosz, Kowal 2019).

The data presented in this paper are consistent with the Polish Classification of (Business) Activities (PKD 2007), which identifies "Industry" as an additional group consisting of the following sections: "Mining and Quarrying", "Manufacturing", "Electricity, Gas, Steam and Air Conditioning Supply", and "Water Supply; Sewerage, Waste Management and Remediation Activities". This paper contains an analysis of the statistical data compiled by Statistics Poland for

2005–2017. This data comes from the Statistical Yearbooks of Industry and aggregate studies by GUS known as Statistical Bulletins. This paper relies on industry data, including Section B – Mining and Quarrying, and Section 05 – Mining of coal and lignite.

1. Investment outlays

Investment projects are implemented mainly to develop the business and improve its competitive advantage. In extreme cases, by investing in some specific resources, the company might find it easier to survive the difficult times of crisis or to accumulate the wealth necessary for its future growth. The investment process starts with finding the money needed to make the initial investment, which should bring about the expected results after some time. Investment results can include profit, increased company value, access to new markets, improved quality of goods or services, increased production, etc. Investments can be made to maintain or expand any type of resources needed by the business to operate.

The term 'investment outlays' has no single, commonly accepted, definition and has been construed using diverse interpretations in the literature and business practice. For the purposes of this paper, the definition employed by Statistics Poland in its publications was used. According to GUS, investment outlays are financial or tangible outlays the purpose of which is the creation of new fixed assets or the improvement (rebuilding, enlargement, reconstruction or modernisation) of existing capital assets, as well as outlays on so-called initial investment (GUS, 2018).

Investment outlays include outlays on fixed assets and outlays on so-called initial investment, as well as other costs connected with investment realisation. These outlays do not increase the value of fixed assets (GUS, 2018).

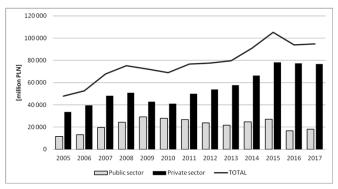


Fig. 1. Levels of investment outlays in industry between 2005 and 2017 [Source: Author, on the basis of GUS data (GUS, 2006-2018)]

Rys. 1. Poziom nakładów inwestycyjnych w przemyśle w latach 2005–2017

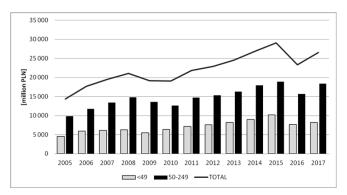


Fig. 2. Investment outlays in small and medium-sized industrial companies between 2005 and 2017 [Source: Author, on the basis of GUS data (GUS, 2006-2018)]

Rys. 2. Nakłady inwestycyjne w małych i średnich przedsiębiorstwach w latach 2005–2017

Outlays on fixed assets include outlays on (GUS, 2018):

- buildings and structures (including buildings and premises and civil engineering facilities), including construction and assembly works, design and cost-estimate documentations,
- machinery, technical equipment and tools (including instruments, moveables and endowments),
- · means of transport,
- other, i.e. detailed meliorations, land improvements, long-term plantings, interests on investment credits and investment loans for the period of investment realization (included only in the data expressed as current prices), excluding any interest not included in the value of outlays on fixed assets by entities following International Accounting Standards (IAS), as introduced on 1 January 2005.

Investment outlays can take the form of:

- · replacement investments,
- fixed asset improvement,
- · development investments.

In line with the applicable 2018 Official Statistics Survey Programme (Regulation, 2018), national economy entities running businesses included in PKD sections B, C, D or E are required to fill in such forms as F-01/I-01 – Report on income, costs, and financial result, and on outlays on fixed assets. In that form, for statistical purposes, outlays on fixed assets are divided into outlays on fixed assets under construction – just commenced during the reporting period, and outlays

on construction, improvement and acquisition of fixed assets. Total assets include land, buildings and premises and civil engineering facilities, machinery and technical equipment, means of transport, tools, instruments, moveables and endowments, livestock, cost of servicing the liabilities incurred to finance the acquisition, construction or improvement of fixed assets, and any related foreign exchange differences during the reporting period, other outlays associated with the construction of a fixed asset which will not be part of the fixed asset after its construction is completed. What needs to be added to this list are outlays on intangible fixed assets, i.e. copyrights, related proprietary rights, licences and concessions (software, deposit use documents and designs, deposit mining assessments, rights to mine the land where deposits are located), rights to inventions, patents, utility patterns, decorative patents, cost of finished development works (including the cost of development work related to deposit mining).

For hard coal mining, businesses fill in G-09.7, an additional report on investments in hard coal mining, in which investment outlays are grouped into investment buildings and purchase of finished capital goods. Investment buildings covers outlays associated with excavations, including rising headings and cross-cuts, mechanical coal processing plants, environmental protection and other investments. The purchase of finished capital goods are outlays on powered supports, extracting machines, transport equipment and other investments.

The purchase and upgrade of machines and equipment is a group of investment outlays in mining which affects mine operations. The most important machines and equipment

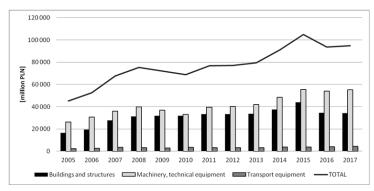


Fig. 3. Investment outlays on fixed assets in industry between 2005 and 2017 [Source: Author, on the basis of GUS data (GUS, 2006-2018)]

Rys.3. Nakłady inwestycyjne na środki trwałe w przemyśle w latach 2005–2017

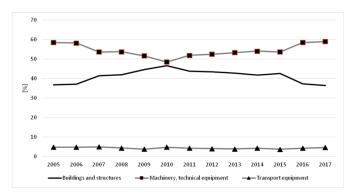


Fig. 4. Percentages of investment outlays on fixed assets between 2005 and 2017 [Source: Author, on the basis of GUS data (GUS, 2006-2018)]

Rys. 4. Udział nakładów inwestycyjnych na środki trwałe w latach 2005–2017

used in hard coal mining which require outlays include

- Powered supports
- Transport equipment
 - armoured face conveyors,
 - beam stage loaders (BMLs),
 - longwall conveyors,
 - suspended and floor-mounted monorail transport systems, and tractors,
 - underground diesel engines.
- Processing machinery and equipment related to coal processing
- Mine face machinery (air conditioners)
- Dedusting systems and ventilators
- · Compact transformer stations, switchgear cabinets
- Extracting equipment
 - coal cutting machines
 - ploughs.

2. Investment outlays in industry

Figure 1 shows the levels of investment outlays in industry between 2005 and 2017.

Over the period of 2005–2017, there was a marked increase in investment outlays across industry as a whole, from PLN 48 bn to PLN 94.7 bn. During that time, the level of investment outlays in the private sector grew by more than 200%, i.e. from PLN 33.6 bn to PLN 76.5 bn, but in the public sector the increase was not that spectacular, from PLN 11.6 bn to PLN 18.1 bn. What was also visible was a change in the ratio of the level of investment outlays in the private sector to industry in general from 74% to 80%. Exceptional-

ly high investments were recorded in 2015, when their level reached PLN 105.1 bn. In 2016, there was a marked drop in total outlays by nearly 11%. The greatest decrease was recorded for the public sector, where investment outlays were cut by more than PLN 10 bn. In 2017, the situation improved as the public sector bounced back up to record an increase in investment outlays of PLN 1.5 bn.

Between 2005 and 2017, a similar upward trend was recorded in investment outlays made by small and medium-sized industrial companies (Figure 2).

At the beginning of that period, total outlays amounted to PLN 14.3 bn, and at the end to PLN 26.6 bn. During that period the ratio of the companies that hired less than 50 employees to those that hired between 50 and 249 people was nearly constant at about 32.3%, on average.

In 2005-2017, the level of outlays on fixed assets in industry was nearly identical to investment outlays in industry. This is due to the fact that nearly 99.9% of all investment outlays were outlays on fixed assets. Figure 3 shows the structure of investment outlays on fixed assets.

Over time, the structure of investment outlays shows upward trends across all groups of outlays on fixed assets. Between 2005 and 2017, there was a 200% increase in outlays across all groups. Figure 4 shows percentages of investment outlays for the individual groups of fixed assets.

The greatest annual average percentage of total outlays was recorded for outlays on machinery, technical equipment and tools (54.8%). Outlays on buildings and structures accounted for 41.7%, and outlays on means of transport for only 4.4%. In 2017, compared to 2016, there was a 1% increase in

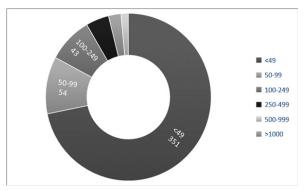


Fig. 5. Mining companies by number of employees in 2017 [Source: Author, on the basis of GUS data (GUS, 2018)]

Rys. 5. Firmy wydobywcze według liczny pracowników w 2017 r.

Tab. 1. Mining companies supervised and monitored by mining authorities in 2005–2017 [Source: Author, on the basis of WUG data (WUG, 2006–2018)]

Tab. 1. Przedsiębiorstwa górnicze nadzorowane i monitorowane przez władze górnicze w latach 2005–2018

Year	Mining companies			
	Underground companies	Opencast companies	Borehole companies	Total
2005	47	4 041	60	4148
2006	46	4 276	59	4381
2007	44	4 536	60	4640
2008	42	4 989	66	5097
2009	42	5 524	68	5634
2010	42	6 060	68	6170
2011	42	6 597	75	6714
2012	40	6 999	77	7116
2013	39	6 860	87	6986
2014	37	6 895	89	7021
2015	40	7 140	92	7272
2016	40	7 233	95	7368
2017	41	7 399	93	7533

investment outlays on fixed assets. This was due to an increase of more than PLN 1 bn in outlays on machinery, technical equipment and tools.

All in all, between 2005 and 2017, the Polish industry showed a clear upward trend in the levels of investment outlays. A very rapid growth was recorded in 2005–2008 and in 2013–2015. Unfortunately, at the end of that period, this trend was halted as investment outlays dropped by PLN 10 bn. This slowdown was brought about mainly by the public sector, where total investment outlays were cut by PLN 8.8 bn. In 2005–2017, the ratio of investment outlays by small and medium-sized companies to total outlays was, on average, about 28.7%.

3. Investment outlays in Polish mining

In 2017, the survey data presented in GUS' Statistical Yearbooks covered data from 2,248 businesses operating in "Mining and Quarrying", which accounts for more than 1% of all the surveyed entities. As many as 2,227 businesses operated in the private sector, and only 21 in the private sector. The total rate of businesses mining hard coal and lignite was only 1.9% of all respondents in the "Mining and Quarrying" section. For the public sector, this proportion was nearly 43%. About 92% (448) of the surveyed mining companies represented SMEs (Figure 5).

The largest number of surveyed companies, 351 (72%), belonged to the group of businesses with less than 50 employees. According to the State Mining Authority, in 2017, the number of mining companies supervised and monitored by mining authorities was 7,533, of which 41 were underground mining companies, 7,399 were opencast mining companies, and 93 were borehole mining companies. Those supervised and monitored mining companies employed in total 177,500 employees (WUG, 2018). The numbers of (the specific groups of) mining companies supervised and monitored by mining authorities in 2005–2017 is presented in Table 1.

In 2017, investment outlays made by the "Mining and Quarrying" section accounted for 6.5% of all investment outlays made by industrial companies. A significant increase in this proportion, from 6.5 to 10%, was recorded in 2007–2012. After 2012, there was a marked drop in the percentage of mining investments in Polish industry.

Over the period of 2005–2017, there was a considerable increase in investment outlays in Polish mining, from PLN 3.3 bn to PLN 6.1 bn (Figure 6).

This upward trend persisted in 2005–2008 and in 2010–2014. Annual average outlays for mining in general were PLN 5.8 bn, with record outlays in 2014 (PLN 8.2 bn) and in 2012 (PLN 7.7 bn). After 2014, there was a sharp decrease in

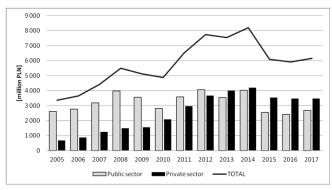


Fig. 6. Investment outlays in Polish mining between 2005 and 2017 [Source: Author, on the basis of GUS data (GUS, 2006–2018)]

Rys. 6 Nakłady inwestycyjne w polskim górnictwie w latach 2005–2017

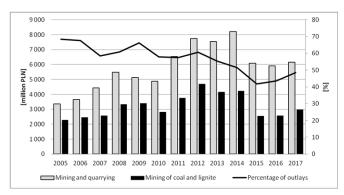


Fig. 7. Ratio of coal mining outlays to total outlays in Mining and Quarrying in 2005–2017 [Source: Author, on the basis of GUS data (GUS, 2006–2018)]

Rys. 7. Stosunek nakładów górniczych do nakładów ogółem w polskim przemyśle górniczym w latach 2006–2017

outlays – by as much as 25% in 2014–2017. Between 2005 and 2017, the ratio of outlays allocated for investments by the private sector to the outlays invested by public sector companies improved. The private sector now accounted for 56.3% of all outlays (compared to 20.5% before).

Hard coal and lignite mines are of strategic importance for Poland's energy security. Figure 7 shows the levels of investment outlays in coal mining between 2005 and 2017.

The figures for the mining industry in general show a clear upward trend. For coal mining specifically, the increase is not that sharp (15%). In 2012, coal mining incurred the greatest capital expenditures - PLN 4.7 bn, which accounted for 60.7% of all investment outlays in the "Mining and Quarrying" section. Similarly to the section as a whole, between 2014 and 2017, coal mining also showed a dramatic drop in the level of investment outlays - from PLN 4.2 to 2.9 bn, i.e. by nearly 30%. The annual average outlays in coal mining during the analysed period were PLN 3.2 bn. The black line in Figure 7 shows the percentage of outlays made by coal mining in relation to all outlays made on Mining and Quarrying as a whole (right-hand vertical axis of the graph). Throughout the examined period, this percentage was decreasing. In 2005, it was 68.4%, while at the end of that period only 47.1%. Although the importance of coal mining was diminishing throughout the analysed period, in 2015-2017 there was a noticeable increase of 16 percentage points.

Mining companies from the SME sector account for about 92% of all companies from the Mining and Quarrying section. In 2005–2017, total investment outlays made by the SME sector grew from PLN 224.7 million to PLN 1.08 bil-

lion, with businesses having up to 49 employees recording a growth from PLN 59.9 million to PLN 117.5 million, and businesses having between 50 and 249 employees recording a growth from PLN 164.8 million to PLN 361.2 million. In 2015, this upward trend ground to a halt, as there was a drop in investment outlays by more than 41% compared to the year before. In the last two years, there was a marked increase in the level of outlays made by mining companies from the SME sector by nearly 90%. Between 2005 and 2017, annual average investment outlays for the Mining and Quarrying section, SME sector, was PLN 636 million, with small businesses accounting for 45.7%, and medium-sized businesses for 54.3%. During the analysed period, there were three major shifts in the structure of total outlays, as small businesses made greater outlays than medium-sized ones. This happened in 2011 - 66% (PLN 507.8 million), in 2014 - 64.3% (PLN 622.3 million), and in 2017 – 66.5% (PLN 717.5 million). Figure 8 shows the levels of outlays made by small and medium-sized businesses in 2005-2017.

In 2005–2017, the level of outlays on fixed assets in mining was nearly identical to total investment outlays in mining. This is due to the fact that nearly 99.8% of all investment outlays were outlays on fixed assets. Figure 9 shows the structure of investment outlays on fixed assets in 2005–2017.

The highest levels of outlays were recorded for machinery, technical equipment and tools. On average, these accounted for 50% of all outlays. The runner-up in the outlays structure were outlays on buildings and structures (45.3%). With about 4% of all outlays in the Mining and Quarrying section, outlays on means of transport were on the other end of the

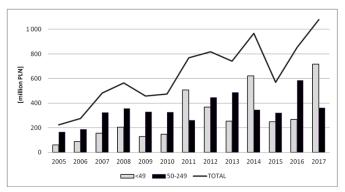


Fig. 8. Investment outlays in small and medium-sized businesses between 2005 and 2017 – Mining and Quarrying [Source: Author, on the basis of GUS data (GUS, 2006–2018)]

Rys. 8. Naklady inwestycyjne w małych i średnich przedsiębiorstwach w latach 2005–2017

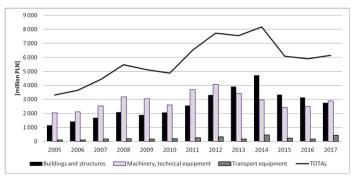


Fig. 9. Investment outlays on fixed assets between 2005 and 2016 – Mining and Quarrying [Source: Author, on the basis of GUS data (GUS, 2006-2017)]

Rys. 9. Nakłady inwestycyjne na środki trwałe w latach 2005–2016

spectrum. During the analysed period, there were upward trends across all groups of outlays.

Over the last four years, there was a small decrease in outlays across all groups of fixed assets. The year 2017 saw a 25% drop in outlays on fixed assets compared to 2014. This was generally due to smaller outlays on buildings and structures, which dropped from PLN 4.7 bn to PLN 2.7 bn.

When it comes to the percentages of investment outlays for individual groups of fixed assets within coal mining in the period under analysis, there was a noticeable shift – see Figure 10.

Outlays on machinery, technical equipment and tools initially accounted for nearly 70% of all outlays on fixed assets. Now they represent only about 50%. This decrease was balanced by an increase in outlays on buildings and structures, which grew from 30% to about 50%. The percentage of outlays on means of transport in 2005-2017 was between 1.3 and 2.5% of all outlays on fixed assets in coal mining.

To sum up, in 2005–2017, in mining, similarly to industry, there was a clear upward trend in investment outlays. A very rapid growth was recorded in 2005–2008 and in 2010-2014. Unfortunately, during the last three years of the investigated period, this trend was halted as investment outlays dropped by 25% (PLN 2 bn). This slowdown was brought about mainly by the public sector, where total investment outlays were cut by 33% (PLN 1.3 bn). In 2005–2017, the ratio of investment outlays by small and medium-sized companies operating in Mining and Quarrying to total outlays was, on average, about 11%.

Conclusions

The analysis of Statistics Poland data on investment outlays in Polish industry allows the following conclusions:

- 1. In 2005–2017, Poland's industry saw a nearly twofold increase in investment outlays. With a growth of 83%, mining had slightly poorer performance. Annual average outlays for mining in general was nearly PLN 5.8 bn, and for coal mining specifically PLN 3.2 bn.
- 2. In the analysed period, the highest levels of outlays were recorded for machinery, technical equipment and tools. On average, these accounted for 50% of all outlays. The runner-up in the outlays structure were outlays on buildings and structures (45.3%). With about 4% of investment outlays in total, outlays on means of transport were on the other end of the spectrum. A similar distribution of expenditures within the structure of investment outlays in 2005-2017 can be found across all of industry.
- 3. The presented increase in investment outlays in industry came to a halt in 2016, when there was a drop of 11% year on year, but last year saw a 1% increase. In mining, a decrease in the level of outlays, which represented a reversal of a favourable trend, was recorded already a year earlier, in 2015. From that point in time, there was a 25% decrease in investment outlays.
- 4. Although investment outlays in Polish mining between 2005 and 2017 were on the rise, the proportion of outlays by coal mining is on a decrease. In 2005, it was 68.4%, while at the end of the examined period only 47.1%. This was not only due to the rapid development and growing number of mining companies that mined minerals subject to ownership interests

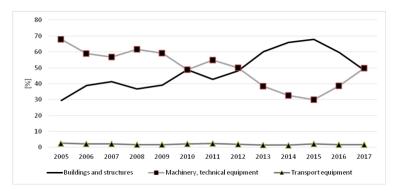


Fig. 10. Percentages of investment outlays on fixed assets between 2005 and 2017 – Hard coal and lignite [Source: Author, on the basis of GUS data (GUS, 2006–2018)]

Rys. 10. Udział nakładów inwestycyjnych na środki trwałe w latach 2005–2017 – Węgiel kamienny i brunatny

in land, but also, if not mainly, due to the restructuring of hard coal mining. During the period under analysis, the number of underground mining companies that mined hard coal dropped from 33 to 20, and the annual coal output decreased from 95 million to about 66.5 million tonnes.

5. Within the structure of the Mining and Quarrying section, small and medium-sized businesses represent 92% of all businesses. In 2005–2017, they accounted for only around 11% of all outlays. Therefore, the highest levels of investment outlays can be found in large mining companies.

6. In the analysed period, the ratio of outlays allocated for investment by the private mining sector to the outlays invested by public mining sector companies improved. The proportion of total outlays accounted for by the private sector grew from 20.5% to nearly 56%. This was, i.a., due to the above-mentioned restructuring of hard coal mining, lower output, and closing or taking over of mines by the private sector.

Since the analysed data refer to the Mining and Quarrying section as a whole, it is difficult to unambiguously determine whether these changes in investment levels were due to the situation on specific raw-material markets or rather the general economic conditions in Poland. It seems reasonable to develop indicators based on such data as output or employment levels to represent these correlations more accurately.

The analysis of investment outlays is a helpful tool that can be used by decision-makers in mining companies. Investment operations are the key drivers of their growth and affect their long-term performance, thus adding value and helping build competitive advantage.

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Wielkość i struktura nakładów inwestycyjnych przedsiębiorstw wydobywczych

W artykule przedstawiono definicje stosowane przez Główny Urząd Statystyczny związane z nakładami inwestycyjnymi. Następnie opisano podział środków trwałych stosowany w celach statystycznych ze szczególnym uwzględnieniem maszyn i urządzeń jako kluczowych nakładów inwestycyjnych umożliwiających funkcjonowanie kopalń węgla kamiennego. Przedstawiono również strukturę zakładów górniczych kontrolowanych i nadzorowanych przez Wyższy Urząd Górniczy w badanym okresie. Za zasadniczy cel artykułu przyjęto analizę i ocenę nakładów inwestycyjnych ponoszonych przez polskie górnictwo. Aby zrealizować cel pracy, dokonano analizy danych statystycznych z lat 2005–2017 pod kątem struktury nakładów inwestycyjnych przeznaczonych na środki trwałe. Przeanalizowano również udział sektora publicznego i prywatnego oraz małych i średnich przedsiębiorstw w strukturze nakładów inwestycyjnych ogółem. Porównano wyniki osiągnięte przez sekcję Górnictwo i wydobywanie do wyników całego przemysłu. Szczególną uwagę zwrócono na analizę danych dotyczących górnictwa węglowego.

 $Słowa\ kluczowe:$ $nakłady\ inwestycyjne,$ przemysł, górnictwo