


Evaluating Financial Health and Stability in the Energy Industry: Analyzing Key Indicators in Times of Crisis


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ABSTRACT

Research background: In terms of evaluating the financial health and stability of the entire industry, the financial and economic analysis of individual companies is among the most critical. It is a composite of numerous fragmentary components that collectively convey information regarding individual activities.

Purpose of the article: The energy industry is assessed from the perspectives of profitability, debt coverage, equity, and efficient asset utilization through the use of individual indicators to determine the changes and impacts of recent crisis. The purpose of this paper is to assess the extent to which the financial health and stability of the selected industry have been impacted by a diverse array of economic factors.

Methods: The subsequent section of the paper is dedicated to the examination of individual relative financial indicators within the designated sector of the national economy. The industry selected for this project is classified as section D - Supply of electricity, gas, steam, and cold air by the Statistical Office of the Slovak Republic and the SK-NACE classification of economic activities. The ratio analysis is the most critical component of the paper when analyzing the economic effects on the energy industry. The optimal values are then contrasted to the resultant values, which are evaluated based on the trend of positive or negative development.

Findings & Value added: In summary, the design phase assesses computed indicators in the context of external factors during the monitored period, while the industry anticipates its future using the data. The profitability indicator was most significantly impacted by the aforementioned factors in 2022, as the sector experienced a decline. Additionally, liquidity increased until 2021. In 2022, it experienced a slight decline as a result of economic pressures. The indebtedness analysis indicated that the property could be funded by personal capital, as evidenced by the substantial self-financing. The energy sector's financial status was consistent, as evidenced by the stabilization of critical financial ratios and its resilience in the face of significant external disruptions.

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INTRODUCTION

In recent years, the Slovak Republic's economy has been significantly impacted by a variety of global events, which have, in turn, influenced individual sectors of the national economy. This paper examines individual fluctuations through financial analysis, with a particular emphasis on the individual corporations that comprise the complete energy industry. The paper compares the situation from the pre-pandemic period (2018, 2019) to the situation that occurred at the time of the COVID-19 pandemic outbreak (2020, 2021) and up to the present energy crisis, which the country has been experiencing to a significant extent since 2022, in specific years (Hodder, 2020; Krizanova & Michulek, 2022).

The objective of this paper is to evaluate the degree to which the financial health and stability of the chosen industry have been influenced by a variety of economic factors. The analysis of ratio indicators is one of the fundamental analyses that has a high informative value (Su et al., 2022). The activity indicator is used to provide information on the optimal utilization of assets. From the perspective of financing the industry through own resources, the profitability indicator is one of the most critical indicators, as it assesses the capacity to profit from assets. The liquidity indicator assesses the capacity to convert specific assets into currency when necessary. Lastly, the indebtedness indicator indicates an individual's capacity to repay their debts using either their own or external resources.

This article compares the calculated indicators with optimal values over time and convert individual fluctuations or negative impacts in the design part into potential solutions for enhancing certain indicators. The primary focus of our proposals will be the 2022 period, which is characterized by the commencement of the conflict in Ukraine and, as a result, limited gas supplies that are a substantial component of the selected energy sector. Consequently, the primary objective is to monitor the development of individual indicators and to partially foresee their future development in relation to the current political, financial, and economic situation.

THEORETICAL BACKGROUND

The national economy of Samson (2023) is derived from the effective utilization and management of resources, as well as the results of its individual components. In contrast, insufficient utilization demonstrates minimal efficacy and utility. The instructions for assessing the efficiency and economic level are distinct; however, the critical aspect is to identify the genuine distinctions and the genuine advancement of the economy through the use of statistical and financial-economic data (Filippi et al., 2023). Mubashir (2013) employs two distinct methodologies to analyze financial-economic data in his publication. Fundamental analysis is one of them, and it involves the analysis of economic, financial, and other quantitative and qualitative factors. It entails the examination of a

variety of financial indicators, including assets, liabilities, income, revenue, and expenditures, by incorporating them into the company's financial statements (balance sheet, profit and loss statement). Technical analysis is the second option, as Cohen (2023) posits that it exclusively utilizes historical data to forecast the company's future growth.

Traditional analysis is predicated on the past and does not prioritize the future, as per Parej & Davila (2009). It is beneficial if it is employed to correct incorrect actions or to reinforce successful ones. The analysis of Sivaruban (2021) is predominantly based on financial instruments, including valuation methods, financial statement analysis results, and qualitative factors. According to Kolade & Owoseni, (2022), financial analysis is merely one of numerous duties that employ ratio indicators. The financial situation and development of the company over the monitored period are demonstrated through processed analyses of individual economic indicators using selected methods (Suler & Machova, 2020).

Yang & Liu (2015) define financial analysis as an economic discipline that assists investors, creditors, and other entities in comprehending the past, assessing the present, and forecasting the future. In contrast to economic analysis, which is based on the alternative costs of production factors, financial analysis is based on explicit costs paid by businesses, as per Pokki et al. (2018). The principal concern in economic analysis is resource rent, rather than the actual financial statement profit and cost of capital. This analysis is a critical component of financial management, according to Hyrslová et al. (2017), the objective of which is to comprehensively assess the financial status of companies. In his publication, asserts that contemporary financial analysis is excessively restricted to the examination of financial reports and fails to consider the interplay between corporate strategies and practice. A comprehensive analysis should encompass an examination of the business strategy, the quality of the financial report, the company's perspective forecast, the financial rate, and the cash flow.

It can assist companies in assessing their financial situation, determining the most effective course of action, and making informed decisions in a dynamic environment by analyzing financial statements. (Panchenko, 2024). Financial statements are generally defined by Sandell (2016) as business communication between a company and its public. These comprise data regarding the organization's equity, liabilities, assets, income, expenses, and financial flows, regard financial reporting as a critical component of the financial accounting system as a whole. The foundation for the development of financial reporting standards is a conceptual framework that is generally accepted, high-quality, and scientifically based. This framework enables the comprehension and application of these standards in the compilation of financial statements when addressing new or unknown problems. The financial statement serves as a conduit for stakeholders to communicate with the company, as per Suryada & Limbunan (2022). The financial statements' contents are

contingent upon the methodology employed to compute individual data (Valaskova et al., 2022; Fana et al., 2020). The implementation of these methodologies can enhance the comparability and transparency of financial statements, thereby enabling investors to ascertain the profit or loss that a company generates.

According to Goldman (2017), the capacity to resolve current liabilities is a standard function of individual companies, as the absence of this capacity can result in a variety of challenges or complete bankruptcy. In the event of low financial liquidity, long-term assets are sold. However, these assets are exceedingly challenging to liquidate, as there may not be a current demand for a particular asset (Gallacher & Hossain, 2020). Consequently, the price must be adjusted to attract a buyer, thereby enhancing financial liquidity (Stock et al., 2018). Conversely, the overall financial result is diminished by the loss incurred during the sale. In the short term, financial liquidity is more significant than profitability from the perspective of strategy, as per. The company has the potential to enhance its performance and further development if it has excellent financial liquidity but is not profitable in the immediate term. However, profitability is of greater significance in the long term. Consequently, the primary objective is to conduct a systematic analysis of financial liquidity and profitability using financial statements and other data derived from the accounting. Economic activity was centered on the production and distribution of products for sale, as per Kolinski et al. (2016) is regarded as one of the fundamental processes in the supply chain.

The fluidity of these production processes necessitates an emphasis on factors that contribute to their specificity. The financial outcome is significantly influenced by costs, revenues, and asset turnover. Consequently, organizations prioritize the enhancement of production processes and the assessment of their accomplishments. In their publication, Santos et al. (2022) disclose that the calculated values adhere to numerous regularities. They assert that larger enterprises are generally less liquid because they make higher investments. Asset turnover or profit size have a positive and substantial impact on the financial performance of companies, while liquidity, leverage, and investments in tangible assets have a negative impact (Galbraith & Podhorska, 2021; Konecny et al., 2021).

Johnson & Nica (2021) identify the economic repercussions and transformations that have transpired as a consequence of the COVID-19 pandemic in their scientific publication. In order to evaluate the macroeconomic dynamics of the market, they focused their research on ratio analysis. Certain indicators were distinguished by a sudden increase or, conversely, a sudden decrease during the pandemic (Gajdosikova et al., 2022). They conducted a comparative analysis in five primary areas: profitability, efficiency, solvency, liquidity, and market prospects (Zhong et al., 2021; Lăzăroiu et al., 2021). In summary, they identify several indicators as the most effective

financial analysis instruments in the context of global uncertainty.

The supply chain disruptions and bottlenecks that impacted economies at the outset and throughout the pandemic were given a new impetus during the Russo-Ukrainian conflict, as a result of the imposition of various economic sanctions on Russia, according to Sokhanvar et al. (2023). Consequently, the export of gas, oil, and grain was significantly restricted, which exacerbated the socio-economic instability that was previously bolstered by the increasing prices of energy, food, and other commodities (De Stefano et al., 2021). Conversely, the expansion of global demand for goods and services increased the pressure on their prices, elucidates the necessity for countries to modify their operations in response to the conflict in Ukraine. The inflation rate was substantially elevated and the economy's preexisting issues were further exacerbated by trade restrictions, which served as a potent catalyst. The restrictions have had a long-term and pervasive impact on the majority of European companies and economies as a consequence of the significant intensification of the confrontation between the countries Vuong & Mansori (2021). Conversely, energy-saving behavior and shifts in environmental interest were positively affected by concerns regarding current crises, including the pandemic, the war in Ukraine, and climate change. The European Commission introduced a proposal in March 2022 to eliminate the regional bloc's dependence on Russian gas, following the discovery of challenges in reducing dependence on Russian energy and ensuring energy security (Zavadska & Zavadsky, 2020). They posited that this objective could be accomplished by increasing the import of liquefied natural gas, expanding the use of renewable energy sources, implementing energy-saving measures, and enhancing the utilization of hydrogen and biogas. Nevertheless, it was evident that the economic situation would be substantially exacerbated by the implementation of all measures (Fazelianov, 2023).

The industry is composed of three distinct components. The initial one is the generation of electricity, which is associated with transmission and distribution. Slovenske elektrarne, a.s. is the leading electricity producer in Slovakia, and it maintains a variety of power facilities, including nuclear, hydro, coal, and photovoltaic. Nevertheless, the factory transmits electrical energy to Slovakia through individual distributors who are legally designated based on their location of operation. The distribution companies Zapadoslovenska energetika, a.s., Stredoslovenska energetika a.s., and Vychodoslovenska energetika a.s. are listed in order from west to east. In the context of electricity distribution, companies select suppliers based on price or other supplementary services. Gas production, which is associated with the distribution of gas fuels through pipelines, is the second group. The country is predominantly reliant on natural gas imports, as Slovakia's natural gas production is insufficient. The country's main natural gas distributor was Gazprom, which was headquartered in Russia, until 2022. Howe-

ver, the distribution later shifted to include gas from other countries, including the United States, Norway, and North Africa, as a result of the conflict between the states. However, Slovensky plynarensky priemysel, a.s. is the largest and most significant natural gas supplier in the country, despite the fact that there are already a relatively larger number of suppliers. It is also a supplier that competes with other companies by offering additional services and competitive pricing. The final group pertains to the distribution of frigid air and the supply of vapor, which are typically included in one of the two categories previously mentioned. The analysis employed a variety of traditional financial performance indicators, including debt analysis, immediate liquidity indicators, and summary indicators.

RESEARCH OBJECTIVE, METHODOLOGY AND DATA

The main objective of this paper is to evaluate the degree to which the financial health and stability of the chosen industry have been influenced by a variety of economic factors.

The subsequent section of the paper is dedicated to the examination of individual relative financial indicators within the designated sector of the national economy. The industry selected for this project is classified as section D - Supply of electricity, gas, steam, and cold air by the Statistical Office of the Slovak Republic and the SK-NACE classification of economic activities. The section is divided into multiple divisions, which encompass all activities associated with the supply, operation, or provision of modifications to electricity, natural gas, or steam through the infrastructure of pipelines, piping, and power lines. Moody's ORBIS database provided financial data for 407 enterprises in the industry, which fall into a variety of size categories and are either private or public.

In order to guarantee the precision and relevance of the data utilized in the investigation, a rigorous methodology was implemented to evaluate the financial ratio indicators. The analysis employed classical financial analysis calculations, as well as well-known software like IBM Statistics. The process commenced with the collection and organization of data from a diverse array of energy sector enterprises, with a particular emphasis on those that provide electricity, gas, steam, and air conditioning. Initially, the dataset comprised 407 companies; however, it was subsequently refined to encompass only those companies that had consistently published the essential data necessary for the calculation of all selected financial indicators during the monitored period of 2018 to 2022.

- **Data Selection and Refinement:** The refinement process entailed the exclusion of companies that lacked comprehensive data for the entire period. In order to guarantee the validity of the comparative analysis, this rigorous criterion was required. The sample size was reduced to 289 enterprises as a result of this modification, which represents those that provided comprehensive and dependable data across all essential financial indicators. The sample

was distinguished by a diverse ownership structure, with private ownership accounting for approximately 80% of the total number of enterprises and public ownership accounting for the remaining 20%.

- **Enterprise Classification:** The sector was more thoroughly examined as a result of the classification of the enterprises in the sample by size. In accordance with the classification data presented in Table 1:

Table 1: Characteristics of the investigated industry

Groups of large enterprises	Legal form	
	Private property	Public ownership
Very large enterprises	3	11
Large enterprises	11	17
Middle-sized enterprises	92	25
Small enterprises	126	4
Sector	232	57

Source: author's compilation

This classification was essential for comprehending the financial dynamics and industry structure of various enterprise sizes: 14 Very large enterprises (4.84% of the sample), 28 large enterprises (9.70% of the sample), Medium-Sized Enterprises: 117 (40.48% of the sample), 130 small enterprises (44.98% of the sample).

- **Ratio Analysis Methodology:** The financial ratio analysis process entailed the calculation of key indicators, including profitability, liquidity, indebtedness, and activity ratios, for each enterprise in the sample. The average values of these indicators across individual enterprises were compared to the aggregate industry averages to calculate the ratios. This method facilitated the identification of trends and anomalies within the industry, thereby offering a comprehensive understanding of the financial health and stability of the sector over a variety of time periods.

Insights into the efficiency with which the enterprises generated profit relative to their assets and equity were provided by profitability ratios, which included measures such as return on assets (ROA) and return on equity (ROE). Key indicators, including the current ratio and quick ratio, were computed to evaluate the enterprises' capacity to fulfill immediate obligations.

- **Indebtedness Ratios:** These ratios, which include the debt-to-equity ratio, were employed to assess the risk associated with the capital structures of the enterprises and the level of financial leverage.
- **Activity Ratios:** The operational efficiency of the enterprises was evaluated by examining indicators such as inventory turnover and asset turnover ratios.
- **Data Interpretation and Presentation:** Simple tables and diagrams were employed to present the ratio analysis results, which facilitated the clear interpretation of the data. The visual representation of data

was instrumental in determining the impact of individual financial indicators on the industry's overall health. In response to external economic challenges, such as the COVID-19 pandemic and the conflict in Ukraine, each table and diagram was accompanied by a detailed interpretation that underscored the impact of these indicators on the industry's financial stability.

The methodology guaranteed that the analysis was comprehensive and representative of the sector's performance, thereby establishing a solid foundation for evaluating the financial health of the energy sector in the Slovak Republic during the monitored period. This method also facilitated the identification of critical trends and the potential implications for future industry development. Based on the above-mentioned information, a research question may be set: Are there any significant changes in the development of selected financial indicators which can influence sectoral performance as a result of latest macroeconomic changes (crisis)?

Prediction models developed in the Slovak Republic to forecast the company's future prosperity are validated by a discriminant equation that is based on their size criteria. This is due to the fact that these models are exclusively designed for a specific group of companies. Nevertheless, a general prediction model is also available, which demonstrates the calculation of the future development of Slovak companies without regard for their territorial impact, economic activity, or company size.

$$ySR = -2,255 + 0,016X2 - 0,385X4 - 6,716X7 + 2,244X10 - 0,358X11 + 0,761X15 + 0,011X22 + 5,431X27 + 0,1X28 + 0,548NACEI + 0,1NACEN - 0,285NACEQ + 0,980small + 0,326medium + 0,139RegionBA + 0,097RegionKE$$

where:

- X2 – short-term assets / short-term liabilities,
- X4 – net income / equity,
- X7 – net income / total assets,
- X10 – (long-term liabilities + short-term liabilities) / total assets,
- X11 – short-term assets / total assets,
- X15 – short-term liabilities / total assets,
- X22 – cash and equivalents / short-term liabilities,
- X27 – profitability of assets,
- X28 – return on equity (Valaskova et al., 2022).

RESULTS AND DISCUSSION

Therefore, the paper presents partial results of individual analyses and a comprehensive evaluation, as displaying all the results of the analyses in this paper is a very comprehensive and demanding undertaking in terms of the limitation of the scope. There are numerous methods for

calculating the financial performance values of an industry using the return on assets ratio. The total assets of the company were contrasted to the result of management after taxation in Table 7. Given that the indicator represents profitability in terms of assets, authors endeavor to elevate the values of the individual companies that comprise the industry, overall. In 2018, the utmost value, which is notably distinct from the others, was recorded in the case of sizable enterprises at 8.37%. The value can be interpreted as a profit of 8.37 cents that was obtained from €1 of total assets. However, the following year, 2019, there can be already seen a substantial decline in this group of companies, with a decrease of nearly 8%. This represents the lowest value of the overall record in the monitored period, at 0.40%. In 2020, they endeavored to elevate their values; however, their declining rate, in comparison to other metrics, has resulted in a mere reduction in the industry's average value over the past two years. The monitored period saw a range of 3.32 to 4.97%, with the maximum value recorded in 2019 and the lowest in the final year of 2022.

Table 2: Return on assets [ROA]

ROA [%]	2018	2019	2020	2021	2022
Very large enterprises	3.52	5.61	4.5	4.65	3.54
Large enterprises	8.37	0.4	3.04	1.76	1.05
Middle-sized enterprises	3.99	3.56	5.09	5.19	3.14
Small enterprises	3.73	4.32	5.55	6.54	3.09
Sector	4.04	4.97	4.43	4.47	3.32

Source: author's compilation

In the initial year of monitoring, the indicator's tendency is to fluctuate significantly. The value was 4.04%, and it had already increased by nearly 1% in the subsequent year of 2019. Nevertheless, this upward trend was not sustained for an extended period, as it has already experienced a 0.54% decline in 2020. The industry attempted to elevate their status in 2021; however, they were only able to achieve a 0.04% increase. The indicator experienced a substantial decline the following year, dropping by over 1% to 3.32%. This value was the lowest recorded for the entire industry during the monitored period.

The optimal values of the return on assets indicator vary significantly. On the one hand, researchers strive to optimize individual values; however, low values do not necessarily indicate an issue. A low indicator may indicate apprehension regarding the investment in innovation or the more efficient utilization of assets. In contrast, extremely high values may only have a one-time effect or, from a negative perspective, may indicate a distinct risk.

Table 3 demonstrates that only one value is within the specified range when the calculated values are examined. This pertains to the category of small enterprises in 2021, when the value was only 0.07 cents higher than the lower limit, resulting in a total value of 1.57 cents.

Once more, a slight upward trend can be observed in nearly all cases from the beginning of the monitored period, which will subsequently undergo a significant decline in 2022. This decrease was also the lowest value in the aggregate tabulation for the medium-sized enterprises, with a value of 0.72 cents. This implies that the group of medium-sized enterprises in 2022 covered €1 of payables with a mere 0.72 cents in total current assets. The industry's total liquidity was 0.79 to 0.94 cents, which did not even reach the lowest established limit. As a result, this indicator can be evaluated negatively in terms of the conversion of short-term inventory assets into currency once more.

Table 3: Total liquidity

Total liquidity [coef.]	2018	2019	2020	2021	2022
Very large enterprises	0.77	0.86	0.9	0.95	0.8
Large enterprises	0.84	0.7	0.75	0.87	0.97
Middle-sized enterprises	0.8	0.8	0.85	0.87	0.72
Small enterprises	1.15	1.27	1.47	1.57	0.89
Sector	0.79	0.84	0.9	0.94	0.82

Source: author's compilation

The company did not meet the required limits in any of the cases or did not achieve the lowest required optimal values for covering short-term liabilities with its individual indicators, either with current assets or with total financial assets, by analyzing the total liquidity. The values that emerge are either influenced by high short-term liabilities or low current assets in conjunction with short-term funds.

In the context of total indebtedness analysis, foreign capital is comprised of liabilities, reserves, and bank loans. These values are then compared to the aggregate liabilities of individual companies or the entire industry. The aggregate indebtedness of each enterprise over the five-year period under review is illustrated in Table 4. The optimal value is approximately 70%, and researchers specifically emphasize the coverage of assets with foreign capital. During the entire monitored period, the group of medium-sized enterprises achieved optimal asset coverage from foreign capital, allowing for the recording of approximate values. At the outset of the observed period, in 2018, it was 72%. The following year, it decreased by 1%, and in 2020, it decreased by 4%, resulting in a decrease to 67%. Finally, in 2021, it decreased to 61%. In the most recent year under review, there was a significant increase of 15%, resulting in a value of 76%. This was the highest value observed in the medium enterprise group during the monitored period. In 2022, the group of minor enterprises, which were able to cover the total assets of the enterprise with up to 91% of foreign capital, possesses the total utmost value.

Table 4: Total indebtedness

Total liquidity [coef.]	2018	2019	2020	2021	2022
Very large enterprises	57	58	56	59	52
Large enterprises	58	63	61	65	52
Middle-sized enterprises	72	71	67	61	76
Small enterprises	83	80	78	76	91
Sector	59	60	58	60	55

Source: author's compilation

This table's lowest line illustrates the sector's debt trajectory. The indicator's overall trend during the monitored period was relatively consistent, with only a 5% difference between the lowest and highest values. Consequently, it recorded a value of 59% in the initial year, which was 1% higher in 2019.

However, in 2020, it experienced a 2% decline. Subsequently, in 2021, the value increased by 2%, thereby restoring it to its original level of 60% from 2019. Nevertheless, the industry as a whole experienced a substantial decline of 5% in the most recent year, resulting in a 55% coverage of assets with foreign capital.

The total indebtedness indicator indicates the extent to which foreign capital is employed to finance the organization's total assets. The likelihood of attaining financial stability and profits is increased as the total indebtedness of the industry decreases. In contrast, instability is a significant danger associated with excessive debt.

The research determined the average resulting values in the analytical section of the ratio indicators. These values characterize the overall sector of the provision of electricity, steam, gas, and chilly air in terms of activity, profitability, liquidity, and indebtedness. In the majority of instances, the optimal values were compared to the calculated values, which were not consistently achieved by the provided indicators. This was influenced by a variety of financial and economic factors. The subsequent section will assess the resulting values and identify the circumstances in which they preceded the individual values of the indicators. The following indicators will be predominantly conveyed in power units (watts) due to the energy sector. However, this article will also use various measurement units to describe the situation in the Slovak Republic, as detailed in Table 5.

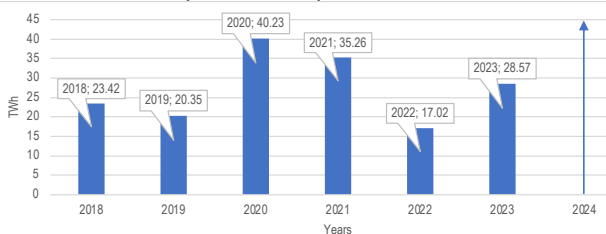
Table 5: Basic performance units

Basic units	Short	Nr. of units
terawatt	TW	1
gigawatt	GW	1 000
megawatt	MW	1 000 000
kilowatt	kW	1 000 000 000
watt	W	1 000 000 000 000

Source: author's compilation

The paper computed the turnover of total assets in the case of activity indicators. The values do not meet the minimal optimal values, as the range is from 0.72 to 0.80 turnovers. The industry compensates for its above-average values with a turnover of inventory to sales in the range of 98.35 to 126.13 times, even if it fails to utilize its assets efficiently within this coefficient. The indicator's consistent values, which were observed at the onset of the energy crisis in 2022, are the consequence of the diversification of supplies and the establishment of adequate inventories. We observe the fluctuating evolution of the average level of inventories in Slovak reservoirs for individual years in Figure 1. In 2019, we observed a nearly 3 TWh decrease in reservoirs. However, the average level of reserves increased to 40.23 TWh in 2020. Slovakia was adequately equipped to mitigate potential hazards associated with its gas reserves during the COVID-19 pandemic. Nevertheless, there was a progressive depletion of inventories, culminating in the lowest average value of 17.02 TWh in 2022. This was a direct result of the energy crisis and the consequent restrictions on the consumption of electricity or gas. The prospects for 2023 are more than favorable, despite the fact that a downward trend has been observed since 2020. The stock level was increased by an average of up to 30 TWh per year as a result of a partial reduction in energy consumption and an increase in support for the production of own electricity in Slovak power plants. Countries such as Norway, North Africa, the United States, Qatar, England, or Croatia were considered as alternative suppliers to offset the stagnation of supplies from Russia.

Figure 1: Average stock level



Source: Author's compilation

Nevertheless, Russia continues to be the primary source of natural gas, and it has plans to restock storage depots in Slovakia or neighboring countries in 2024. The entire industry intends to utilize natural gas from alternative suppliers in the future, as extraction in the Slovak Republic could only satisfy 1% of the nation's total consumption. Researchers are also considering the increased transition of the company's reserves in one year in conjunction with the anticipated increase in gas reserves.

The utmost price for gas delivery was also regulated from 2018 to 2022. Nevertheless, the year 2022 marked a significant shift in the regulation of petroleum prices, as the average values were obsoleted in favor of the tariff that each company was subject to. The same calculation method is employed to establish the price of electricity supply. However, this price includes a variety of tariffs, a fixed rate for the collection point of €1.50, and other regulated fees. The Office for the Regulation of Network

Industries significantly reduced various tariffs related to distribution at the beginning of 2021, when the first signs of an unstoppable increase in electricity or gas prices appeared. This reduction contributed to a partial decrease in the price of electricity and support for cost optimization. Nevertheless, the total cost of energy is not solely comprised of the cost of electricity or gas; it also includes other expenses that represent the costs of transportation and services associated with the operation. Specifically, the competitive conflict of individual companies is a direct consequence of the establishment of individual delivery prices and tariffs. The resulting value can have an impact on the demand for delivery, which in turn can affect the overall profitability of groups of companies and even industries.

The ultimate value of assets, equity, or sales is influenced by a variety of factors that contribute to profitability, a critical indicator of financial health (Fazelianov, 2023). The analysis revealed a fluctuating trend in profitability, which implies that returns were directly impacted by external factors. In other international studies, similar trends have been observed, as the energy sector's profitability has been affected by external shocks such as the COVID-19 pandemic and subsequent economic disruptions. For example, research conducted on the European energy market indicates that profitability experienced a decline at the outset of the pandemic, which was followed by a partial recovery in 2021 as a result of the temporary stabilization of energy prices (Panchenko, 2024). The observed increase in profitability in 2019 compared to 2018 was consistent with global trends, which benefited energy companies from stable prices and increased demand. Nevertheless, the pandemic's onset in 2020 resulted in a significant decline in profitability, which was consistent with international research on the impact of energy demand fluctuations and reduced industrial activity on returns (Gallacher & Hossain, 2020). The temporary reduction in the price ceiling in 2021 only led to a partial recovery, as profitability remained susceptible to price fluctuations. The 2022 energy crisis was a significant disruption, as the industry's profitability continued to decline as a result of the sharp increase in energy prices, which was in line with international observations. Similarly, research from other regions, including North America and Asia, emphasizes that the energy sector's profitability was significantly affected by price volatility and supply chain disruptions during this period (Su et al., 2022). Nevertheless, the industry's adaptation to new energy technologies and alternative suppliers, as well as the stabilization of prices, suggest that future profitability projections are optimistic (Sivaruban, 2021). The sector's profitability is anticipated to be influenced by the adoption of ecological resources and the advancement of electromobility, as evidenced by the global energy transition trends.

CONCLUSION

The primary objective of this paper was to assess and identify the effects of a variety of crises on the perfor-

mance of the electricity, gas, steam, and air conditioning supply sector (classified as section D in the statistical classification of economic activities) within the national economy of the Slovak Republic. The analysis was designed to evaluate the financial health and stability of this sector over the course of several years by analyzing critical financial ratios, including profitability, liquidity, indebtedness, and activity. The research examined three distinct time periods: the period prior to the pandemic, the period during the pandemic, and the onset of the conflict in Ukraine. Key discoveries consist of: **Financial Stability:** The sector maintained a stable financial position throughout the monitored period, despite the challenges it faced. **Profitability:** The industry's profitability initially exhibited growth; however, it experienced a substantial decline in 2022 as a result of the high costs of electricity and gas, as well as other constraints. The industry's output experienced a decline in demand as a result of the reduced energy consumption that customers pursued in search of alternatives. **Liquidity:** Until 2021, liquidity exhibited an upward trend; however, sanctions and other economic pressures resulted in a decline in 2022. Nevertheless, liquidity levels remained within acceptable limits, albeit slightly below optimal levels. **Indebtedness:** The sector demonstrated a high degree of self-financing, with low levels of total indebtedness, which suggests a robust ability to cover assets with equity.

The analysis also underscored that the energy sector successfully navigated the initial phases of the energy crisis, despite the adverse conditions. The sector maintained stable inventory levels, particularly in gas supplies, by leveraging domestic electricity production to meet consumption needs and implementing diversified sourcing strategies. Nevertheless, there are still future obstacles to overcome, particularly in the reduction of reliance on eastern gas imports, which are scheduled to be phased out beginning in 2023.

In summary, despite the sector's substantial obstacles, such as a substantial decline in profitability in 2022, it was able to preserve its financial stability. The results emphasize the necessity of ongoing diversification of energy sources and the expansion of domestic production to guarantee the sector's long-term resilience.

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REFERENCES

1. Arestis, P., Ferreiro, J., & Gómez, C. (2020). Quality of employment and employment protection. Effects of employment protection on temporary and permanent employment. *Structural Change and Economic Dynamics*, 53, 180-188. <https://doi.org/10.1016/j.strueco.2020.02.008>
2. Ballestar, M. T., Camina, E., Díaz-Chao, Á., & Torrent-Sellens, J. (2021). Productivity and employment effects of digital complementarities. *Journal of Innovation & Knowledge*, 6(3), 177-190. <https://doi.org/10.1016/j.jik.2020.10.006>
3. Cohen, G. (2023). Review of pacific basin financial markets and policies. *Technical analysis in investing*. 26(2). 23-28. <https://doi.org/10.1142/S0219091523500133>
4. De Stefano, V., Durri, I., Stylogiannis, C., & Wouters, M. (2021). *Platform work and the employment relationship* (No. 27). ILO Working Paper.
5. Fana, M., Torrejón Pérez, S., & Fernández-Macías, E. (2020). Employment impact of Covid-19 crisis: from short term effects to long terms prospects. *Journal of Industrial and Business Economics*, 47, 391-410. <https://doi.org/10.1007/s40812-020-00168-5>
6. Fazelianov, E. M. (2022). The energy crisis in Europe and Russian gas supplies. *Springer*. 3(4), 23-26. <https://doi.org/10.1134/S1019331622150035>
7. Filippi, E., Bannò, M., & Trento, S. (2023). Automation technologies and their impact on employment: A review, synthesis and future research agenda. *Technological Forecasting and Social Change*, 191, <https://doi.org/10.1016/j.techfore.2023.122448>

8. Gajdosikova, D., Valaskova, K., Kliestik, T., & Machova, V. (2022). "COVID-19 Pandemic and Its Impact on Challenges in the Construction Sector: A Case Study of Slovak Enterprises". *Mathematics*, 10(17), 31-30. <https://doi.org/10.3390/math10173130>
9. Galbraith, A., & Podhorska, I. (2021). Artificial Intelligence Data-driven Internet of Things Systems, Robotic Wireless Sensor Networks, and Sustainable Organizational Performance in Cyber-Physical Smart Manufacturing. *Economics, Management, and Financial Markets*, 16(4), 56–69. <https://doi.org/10.22381/emfm16420214>
10. Gallacher, G., & Hossain, I. (2020). Remote work and employment dynamics under COVID-19: Evidence from Canada. *Canadian public policy*, 46(S1), S44–S54. <https://doi.org/10.3138/cpp.2020-026>
11. Goldmann, K. (2017). Financial liquidity and profitability management in practice of polish business. *Financial environment and business development*, 4(1), 103-112. https://doi.org/10.1007/978-3-319-39919-5_9
12. Hodder, A. (2020). New Technology, Work and Employment in the era of COVID-19: reflecting on legacies of research. *New technology, work and employment*, 35(3), 262-275. <https://doi.org/10.1111/ntwe.12173>
13. Hyslova, J., Tomsik, P., & Vnouckova, L. (2017). Relation between Sustainability-Related Communication and Competitiveness in the Chemical Industry. *Acta Universitatis Agriculturae et Silviculturae Mendelianae Brunensis*. 65(1), 283-292. <https://doi.org/10.11118/actaun201765010283>
14. Johnson, E., & Nica, E. (2021). Connected Vehicle Technologies, Autonomous Driving Perception Algorithms, and Smart Sustainable Urban Mobility Behaviours in Networked Transport Systems. *Contemporary Readings in Law and Social Justice*, 12(13), 37–50. <https://doi.org/10.22381/CRLSJ13220213>
15. Kolade, O., & Owoseni, A. (2022). Employment 5.0: The work of the future and the future of work. *Technology in Society*. <https://doi.org/10.1016/j.techsoc.2022.102086>
16. Kolinsko, A., Sliwczynski, B., & Golinska-Dawson, P. (2016). Evaluation model for production process economic efficiency. *Logforum*. 2(4), 24-27. <https://doi.org/10.17270/J.LOG.2016.2.3>
17. Konecny, V., Barnett, C., & Poliak, M. (2021). Sensing and Computing Technologies, Intelligent Vehicular Networks, and Big Data-driven Algorithmic Decision-Making in Smart Sustainable Urbanism. *Contemporary Readings in Law and Social Justice*, 13(1), 30–39. <https://doi.org/10.22381/CRLSJ13120213>
18. Krizanova, A., & Michulek, J. (2022). Does Corporate Culture and Leadership Influence Employee Work Performance? Evidence from the Slovak Republic. *Ekonomicko-manazerske spektrum*, 16(2), 37-48. <https://doi.org/10.26552/ems.2022.2.37-48>
19. Lăzăroiu, G., Mihăilă, R., & Braniște, L. (2021). The Language of COVID-19 Vaccine Hesitancy and Public Health Misinformation: Distrust, Unwillingness, and Uncertainty. *Review of Contemporary Philosophy*, 20: 117–127. <https://doi.org/10.22381/RCP2020217>
20. Majid, M. A. (2020). Renewable energy for sustainable development in India: current status, future prospects, challenges, employment, and investment opportunities. *Energy, Sustainability and Society*, 10(1), 1-36. <https://doi.org/10.1186/s13705-019-0232-1>
21. Mubashir, M. (2013). Fundamental analysis of banking industry. SSRN. 4(2), 2-4. <http://dx.doi.org/10.2139/ssrn.2270986>
22. Panchenko, O., Balaziuk, O., Portovaras, T., Andrieieva, V., & Kotkovskyy, V. (2024). Analysis of Financial Statements as a Business Management Tool. *Ad Alta: Journal of Interdisciplinary Research*, 14(2). 157-161. <https://doi.org/10.33543/140139157161>
23. Parej, I., & Davila, M. (2009). Financial analysis and control – financial ratio analysis. SSRN. 4(3), 4-8. <http://dx.doi.org/10.2139/ssrn.1366523>
24. Pokki, H., Virtanen, J., & Karvinen, S. (2018). Comparison of economic analysis with financial analysis of fisheries: Application of the perpetual inventory method to the Finnish fishing fleet. *Marine policy*, 95(3), 239-247. <https://doi.org/10.1016/j.marpol.2018.05.022>
25. Popescu Ljungholm, D. (2021). COVID-19 Threat Perceptions and Vaccine Hesitancy: Safety and Efficacy Concerns. *Analysis and Metaphysics*, 20, 50–61. <https://doi.org/10.22381/am2020213>
26. Samson, S. (2023). Thirty years of development of Slovakia's Regions. *Public administration and society*, 2(4), 23-54. <https://doi.org/10.33542/VSS20231-2>
27. Sandell, N., & Svensson, P. (2016). The language of failure: the use of accounts in financial reports. *International journal of business communication*, 2(4), 23-46. <https://doi.org/10.1177/2329488414525452>
28. Santos, E., Lisboa, I., & Eugenio, T. (2022). The financial performance of family versus non-family firms operating in nautical tourism. *Sustainability*, 34(4), 24-27. <https://doi.org/10.3390/su14031693>
29. Sivaruban, S. (2021). A critical perspective of leadership theories. *Sematic Scholar*, 3(3), 1-5. <https://pdfs.semanticscholar.org/439e/7bdaae687b34bdd131ea4cd2ba9f0ea177ed.pdf>
30. Sokhanvar, A., Çiftcioglu, S., & Lee, Ch. (2023). The effect of energy price shocks on commodity currencies during the war in Ukraine. *Resuorpol*, 1(1), 1-5. <https://doi.org/10.1016/j.resourpol.2023.103571>
31. Stock, T., Obenaus, M., Kunz, S., & Kohl, H., (2018). Industry 4.0 as enabler for a sustainable development: A qualitative assessment of its ecological and social potential. *Process Safety and Environmental Protection*, 118(7), 254-267. <https://doi.org/10.1016/j.psep.2018.06.026>

32. Su, C. W., Yuan, X., Umar, M., & Lobont, O. R. (2022). Does technological innovation bring destruction or creation to the labour market? *Technology in Society*, 68(2), <https://doi.org/10.1016/j.techsoc.2022.101905>
33. Suler, P., & Machova, V. (2020). Better results of artificial neural networks in predicting CEZ share prices. *Journal of International Studies*, 13(2), 259-278. <https://doi.org/10.14254/2071-8330.2020/13-2/18>
34. Suryady, A., & Limbunan, E. (2022). Basic concept of fair value accounting method and the impact on financial statement. *SSRN*. 3(4), 23-24. <http://dx.doi.org/10.2139/ssrn.4010159>
35. SUSR. (2023, June 12). Miera zamestnanosti vo veku 15-64 podľa vzdelania a pohlavia ročné údaje. DataCube. https://datacube.statistics.sk#!/view/sk/VBD_SLOVSTAT/pr2020rs/v_pr2020rs_00_00_00_sk
36. Teshabaeva, O. N., & Kodirova, R. A. (2023). Analysis of Methods for Further Development of the Labour Market to Ensure Employment in the Digital Economy. *Best Journal of Innovation in Science, Research and Development*, 2(4), 74-78.
37. Valaskova, K., Gajdosikova, D., & Pavic Kramaric, T. (2022). How Important Is the Business Environment for The Performance of Enterprises? Case Study of Selected European Countries. *Central European Business Review*, 11(4), 85–110. <https://doi.org/10.18267/j.cebr.300>
38. Vuong, T.K., & Mansori, S. (2021). An Analysis of the Effects of the Fourth Industrial Revolution on Vietnamese Enterprises. *Manag. Dyn. Knowl. Econ.*, 3(9), 447-459. <https://doi.org/10.1438/journal/article/view/438>
39. Yang, F., & Liu, Y. (2015). A literature review of financial analysis: status and development trend. *International conference on social sciences research*, 13(1), 102-105. <https://doi.org/10.2991/icesem-17.2017.133>
40. Zavadzka, Z., & Zavadsky, J. (2020). Industry 4.0 and intelligent technologies in the development of enterprise production management. Banská Bystrica: Matej Bel University. ISBN 978-80-557-1732-6.
41. Zhong, R., Xu, X., Klotz, E., & Newman, S.T. (2021). Intelligent Manufacturing in the Context of Industry 4.0: A Review. *Engineering*, 3(5), 616-630. <https://doi.org/10.1016/J.ENG.2017.05.015>