Financial Assessment of Greece's Top 10 Energy Enterprises Amid the Covid-19 Pandemic

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ABSTRACT

This study conducts a comprehensive financial assessment of Greece's ten largest energy companies during the tumultuous period of 2019 to 2022, amidst the unprecedented challenges posed by the COVID-19 pandemic. Employing a meticulous analysis of crucial profitability ratios, I delve into the financial resilience and adaptability of these firms within the ever-evolving energy sector landscape. My findings reveal a diverse spectrum of financial performances during the early pandemic years (2019-2020), with notable discrepancies in net profit margins. As the world transitioned to the post-pandemic era (2021-2022), I witnessed varying degrees of adaptability, with certain companies demonstrating impressive resilience while others grappled with shifting market dynamics. This research underscores the imperative of tailored financial strategies and adept cost management practices within the energy sector to effectively weather the challenges of an uncertain world. The insights gleaned offer valuable guidance to industry stakeholders and decision-makers in navigating the complex terrain of Greece's energy landscape.

Keywords: Energy Companies, Financial Resilience, COVID-19 Pandemic, Financial Ratios, Greece

INTRODUCTION

Profitability, a fundamental aspect of business performance, is a critical measure of an organization's ability to generate earnings in relation to its costs and expenses. In the realm of electricity, where supply and demand intricately balance on the precipice of economic viability, profitability ratios provide invaluable insights into the financial health and sustainability of enterprises. This comprehensive introduction embarks on an exploration of the intricate interplay between electricity and profitability, traversing various aspects, including the methods of electricity generation, the complexity of transmission and distribution networks, and the paramount role of profitability in the broader context of sustainability and economic growth.

At its essence, electricity represents the flow of energy carried by electrons through conductive materials, a flow that powers the machinery of industry, illuminates homes, and fuels countless technological innovations. The generation of electricity has evolved

significantly over the years, from rudimentary experiments with static electricity in the 18th century to the multifaceted power plants and renewable energy sources of today (Kothari & Singal, 2003). Electricity generation is characterized by its diversity, with each method offering distinct profitability implications. Traditional methods revolve around the combustion of fossil fuels, including coal, natural gas, and oil, in thermal power plants. Here, the heat generated through combustion is used to produce steam, which drives turbines to generate electrical power (IEA, 2019). These thermal power plants have been reliable sources of electricity for decades but are associated with profitability challenges linked to environmental concerns, including emissions and regulatory compliance (EIA, 2020).

Recent years have witnessed a transformative shift towards cleaner and more sustainable methods of electricity generation. Renewable energy sources, such as wind, solar, hydroelectric, and geothermal power, have surged to the forefront (REN21, 2021). Wind turbines capture the kinetic energy of the wind to turn generators, while solar panels convert sunlight into electricity. Hydroelectric power plants harness the energy of flowing water, and geothermal facilities tap into the Earth's internal heat. These renewable sources are celebrated for their potential to enhance profitability by reducing operational costs and environmental impacts associated with fossil fuels.

The efficient operation of transmission and distribution networks is indispensable for sustaining profitability within the electricity sector. High-voltage transmission lines transport electricity over long distances with minimal losses, with substations strategically positioned to step down voltage for safe distribution. Distribution lines then deliver electricity to homes, businesses, and industries at lower voltages, facilitating a wide array of applications. The maintenance and modernization of these networks represent ongoing and intricate challenges, as their reliability profoundly influences profitability. The proliferation of distributed energy resources, including rooftop solar panels and energy storage, introduces both opportunities and complexities for grid operators (Faruqui et al., 2010). The integration of these decentralized sources necessitates continual investment in grid infrastructure and digitalization (Pillai et al., 2018).

Profitability in the electricity sector is not merely a financial metric but a linchpin of sustainability and economic growth. Sustainable development, a core concept advocated by the United Nations (UN, 2015), seeks to balance economic progress, social well-being, and environmental preservation. Electricity's role in this equilibrium is pivotal. Renewable energy sources, including wind, solar, and hydropower, are central to combatting climate change and reducing carbon emissions, simultaneously enhancing profitability and environmental sustainability (IPCC, 2011). Investments in clean energy technologies, such as energy-efficient appliances and electric vehicles, have the potential to stimulate job creation and economic expansion (IRENA, 2020). Moreover, electricity serves as a catalyst for innovation, driving research, powering computational infrastructure, and sustaining the digital economy (Srinivasan, 2019). Electrification initiatives are reshaping transportation, reducing greenhouse gas emissions, and fostering economic growth (IEA, 2020). Advances in energy storage technologies enhance grid reliability and enable greater utilization of intermittent renewable energy sources (Lewis et al., 2021).

In conclusion, profitability stands as an indispensable metric within the electricity sector, reflecting an enterprise's capacity to navigate the intricate web of generation, transmission, and distribution, while contributing to sustainability and economic growth. As the world grapples with the challenges of climate change, resource management, and equitable energy access, profitability remains firmly at the forefront of discussions on the future of electricity. In the forthcoming pages, we will delve deeper into this crucial aspect, focusing on the analysis of profitability ratios for Greece's large enterprise electric power generation, transmission, and distribution companies. Through a rigorous examination of these ratios over the years 2019, 2020, 2021, and 2022, we aim to gain deeper insights into the sector's resilience and adaptability, particularly in the wake of the COVID-19 pandemic.

LITERATURE REVIEW

The electricity sector, as a critical component of modern economies, has garnered significant attention in both academic research and industry analysis. This literature review seeks to provide an overview of key themes, trends, and findings related to the profitability of electricity generation, transmission, and distribution companies, with a particular focus on Greece's large enterprises. The literature is organized into several categories, each shedding light on different aspects of profitability and its determinants within the electricity sector. Profitability within the electricity sector is a multifaceted concept influenced by various factors, ranging from the choice of generation methods to regulatory environments and market dynamics. The profitability of electric power companies, including those involved in generation, transmission, and distribution, is of paramount importance, not only for shareholders but also for the broader economy and society (Apergis & Payne, 2014; EIA, 2018).

Several factors have been identified as influential in shaping the profitability of electric power companies. One critical aspect is the choice of energy sources for electricity generation. Traditional fossil fuel-based generation methods, such as coal and natural gas, have historically been associated with specific profitability dynamics, often linked to the volatile prices of these fuels (Sioshansi, 2014; Joskow, 2011). In contrast, the adoption of renewable energy sources, such as wind and solar, is gaining traction due to their potential to reduce operational costs and environmental impacts (Sensfuß et al., 2008; Sovacool, 2016). The regulatory framework governing the electricity sector plays a pivotal role in shaping profitability. The degree of market liberalization, the presence of competitive markets, and the level of government intervention can all impact the financial performance of companies in the sector (Joskow, 2005; Stern, 2019). Regulatory changes, such as the introduction of feed-in tariffs or the implementation of emissions trading schemes, can significantly affect profitability (Friedrich et al., 2015; Newbery, 2009).

The structure of the electricity market also influences profitability. The presence of competitive markets can create opportunities for efficient companies to thrive, while monopolistic or oligopolistic market structures may lead to different dynamics (Newbery, 2005; Green & Newbery, 1992). Competition, or the lack thereof, can affect pricing

strategies, cost management, and overall financial performance (Woo et al., 2006; Stoft, 2002). To assess and analyze the profitability of electricity companies, various financial ratios and performance metrics are commonly employed in the literature. These metrics include but are not limited to Return on Assets (ROA), Return on Equity (ROE), Gross Profit Margin, and Net Profit Margin. The use of these ratios allows for a comprehensive evaluation of a company's financial health and profitability (Bhattacharyya, 2012; Pandey, 2019; Weston et al., 2019).

The outbreak of the COVID-19 pandemic in 2019 had significant repercussions across industries, including the electricity sector. The pandemic-induced economic downturn, changes in energy consumption patterns, and disruptions in supply chains posed unique challenges to electric power companies worldwide. Understanding how these challenges affected profitability is a topic of increasing interest (Hafeez et al., 2021; Chakraborty et al., 2020; Mataracioglu & Ünalmis, 2021). Greece's electricity sector, characterized by a mix of conventional and renewable energy sources, has witnessed its share of challenges and opportunities in recent years. An exploration of the literature pertaining to the Greek electricity market provides context for the subsequent analysis of large enterprise electric power generation, transmission, and distribution companies' profitability in the years 2019, 2020, 2021, and 2022 (Dikaiakos et al., 2018; Koroneos & Spachos, 2017). In the following sections, I delve deeper into the relevant studies and findings within each of these thematic areas, aiming to gain insights that will inform our analysis of Greece's electric power generation, transmission, and distribution companies' profitability.

DATA AND METHODOLOGY

For our study, we focused on Greece's 10 largest prominent electric power generation, transmission, and distribution companies. The companies in our sample are presented in table 1.

Table 1
Companies

Public Power Corporation S.A.
Independent Power Transmission Operator S.A.
Terna Energy S.A.
Enel Green Power Hellas S.A.
Elpedison Power Generation Single Member S.A.
Heron Ii Viotia Thermoelectric Power Plant S.A
Hellenic Electricity Distribution Network Operator S.A.
Iron Single Member S.A. Energeiakon Ypiresion
Volterra S.A.
Nrg Supply & Trading Energeiaki Single Member S.A.

Our research period covers the years 2019 to 2022, enabling us to analyze the financial performance of these companies during this critical timeframe. The data for these companies were sourced from the Data Prisma database (ICAP). The financial variables presented in Table 2 were collected for the years 2019-2022.

Table 2
Accounting variables of the companies

Net Income (Before Income Tax)
Shareholders' Equity
Earnings Before Interest and Income Tax (EBIT)
Capital Employed
Gross Profit
Total Revenue
Operating Profit (Operating Income)

Utilizing the aforementioned accounting variables, I have derived significant financial ratios that delineate the profitability of corporations. Table 3 displays the aforementioned indicators.

Table 3
Metrics that delineate the profitability structure of corporations

Return on equity (before income tax)
Return on capital employed (before interest & income tax)
Return on capital employed (before income tax)
Gross profit margin
Operating profitability
Net profit margin (before interest & income tax)
Net profit margin (before interest,income tax,depreciation and non-operating income)
Net profit margin (before income tax)

The examination of the indicators was conducted across a span of four years, specifically from 2019 to 2022, to observe their fluctuations between the pre-pandemic years of 2019-2020 and the post-pandemic years of 2021-2022. The eight ratios are individually presented as follows:

Return on Equity (Before Income Tax): This ratio measures the profitability of a company in relation to its shareholders' equity. It's a key indicator of how effectively the company generates profits for its equity investors before accounting for income tax. A higher return indicates efficient utilization of shareholder funds.

Return on Capital Employed (Before Interest & Income Tax): This ratio assesses the efficiency of a company's operations in generating profits relative to its total capital employed, excluding interest and income tax expenses. It helps gauge the effectiveness of capital utilization in core operations.

Return on Capital Employed (Before Income Tax): Similar to the previous ratio, this measure also evaluates profitability concerning total capital employed but does not exclude income tax expenses. It provides a broader perspective on how effectively capital is employed in generating profits.

Gross Profit Margin: This ratio reveals the proportion of revenue that remains after deducting the cost of goods sold. It's a critical indicator of a company's ability to maintain a healthy margin between its revenue and the cost of production. A higher margin suggests effective cost management.

Operating Profitability: This ratio assesses a company's ability to generate profits from its core operations, excluding non-operating income and expenses. It measures operational efficiency and profitability, focusing solely on the income derived from the primary business activities.

Net Profit Margin (Before Interest & Income Tax): This ratio calculates the proportion of revenue that translates into net profit before accounting for interest and income tax expenses. It provides insights into the company's overall profitability, indicating how much profit it retains after core expenses.

Net Profit Margin (Before Interest, Income Tax, Depreciation, and Non-Operating Income): This measure offers a broader view of profitability by excluding not only interest and income tax but also depreciation and non-operating income. It assesses the core profitability of the business, stripping away non-core elements.

Net Profit Margin (Before Income Tax): This ratio represents the percentage of revenue that converts into net profit before considering income tax expenses. It helps evaluate profitability while excluding the impact of tax, providing a clear picture of operational profitability.

RESULTS

In the following tables, we present a comprehensive analysis of eight profitability ratios for the ten largest electric power generation, transmission, and distribution companies in Greece during the years 2019 to 2022. These ratios offer valuable insights into the financial health, operational efficiency, and adaptability of these firms within a dynamic and challenging economic environment. To facilitate a comprehensive understanding of the impact of the COVID-19 pandemic on these energy companies, we compare the mean ratio values of the two pre-pandemic years (2019-2020) with the ratio values observed in 2021 and 2022. This comparative analysis enables us to assess how each company navigated the financial landscape during this period and provides insights into their resilience and ability to adapt in the face of significant economic challenges.

Table 4

Return on equity (before income tax)

Return on equity (before income tax)				
Company Name	**2019**	**2020**	**2021**	**2022**
Elpedison Power Generation Single Member S.A.	-26,87%	10,15%	48,37%	61,38%
Enel Green Power Hellas S.A.	-12,66%	4,30%	2,15%	18,54%

Hellenic Electricity Distribution Network Operator S.A.	49,82%	12,52%	1,47%	2,06%
Heron Ii Viotia Thermoelectric Power Plant S.A	-68,13%	11,22%	37,57%	72,42%
Independent Power Transmission Operator S.A.	10,05%	8,36%	5,59%	5,44%
Iron Single Member S.A. Energeiakon Ypiresion	5,53%	-1,66%	-87,51%	94,15%
Nrg Supply & Trading Energeiaki Single Member S.A.	-71,77%	-136,42%	-10,80%	10,33%
Public Power Corporation S.A.	-86,52%	3,50%	3,57%	14,20%
Terna Energy S.A.	6,97%	8,16%	11,19%	6,82%
Volterra S.A.	-16,30%	6,63%	9,45%	174,14%

In the period spanning 2019 to 2020, the financial performance of Greece's electric power generation, transmission, and distribution companies exhibited a range of trajectories. One notable success story during this time was ELPEDISON POWER GENERATION SINGLE MEMBER S.A., which transformed its profitability from a negative return of -26.87% in 2019 to a positive 10.15% in 2020. This significant improvement indicated a successful turnaround and a more efficient utilization of shareholder equity. Similarly, ENEL GREEN POWER HELLAS S.A. and HERON II VIOTIA THERMOELECTRIC POWER PLANT S.A. demonstrated commendable performance, with both companies achieving substantial gains in their return on equity. On the flip side, the period also witnessed challenges for certain companies. NRG SUPPLY & TRADING ENERGEIAKI SINGLE MEMBER S.A. faced a considerable decline in profitability, registering a return on equity of -136.42% in 2020, which indicated financial struggles. These disparities in performance were influenced by a myriad of factors, including market dynamics, operational strategies, and the ability to adapt to changing circumstances. Overall, the years 2019 to 2020 highlighted the sector's resilience, as some firms successfully navigated the turbulent economic environment, while others faced significant hurdles.

Transitioning to the years 2021 to 2022, the landscape of profitability continued to evolve for these companies. ELPEDISON POWER GENERATION SINGLE MEMBER S.A. maintained its upward trajectory, achieving an impressive return on equity of 61.38% in 2022, reflecting sustained growth and enhanced financial performance. In contrast, ENEL GREEN POWER HELLAS S.A. encountered a temporary dip in profitability, posting a return on equity of 2.15% in 2021. However, the company rebounded strongly in 2022 with a return of 18.54%, showcasing resilience and adaptability. Meanwhile, IRON SINGLE MEMBER S.A. ENERGEIAKON YPIRESION displayed a remarkable turnaround, transitioning from a negative return in 2020 to an exceptional 94.15% in 2022. This exemplifies the capacity of certain companies to effectively address challenges and capitalize on opportunities. However, it's important to note that some firms, such as HELLENIC ELECTRICITY DISTRIBUTION NETWORK OPERATOR S.A., experienced a decrease in profitability. These changes underscore the dynamic nature of the electric power sector and the varying responses of these companies to the ever-evolving economic environment. A comprehensive examination of the factors driving these shifts in profitability is essential to gain deeper insights into their financial strategies and resilience.

Table 5

Return on capital employed (before interest & income tax)

Return on capital employed (before interest & income tax)				
Company Name	**2019**	**2020**	**2021**	**2022**
Elpedison Power Generation Single Member S.A.	-2,52%	16,08%	44,19%	55,03%
Enel Green Power Hellas S.A.	1,17%	7,39%	7,39%	33,62%
Hellenic Electricity Distribution Network Operator S.A.	24,73%	7,11%	0,51%	1,45%
Heron Ii Viotia Thermoelectric Power Plant S.A	-15,73%	10,07%	25,30%	56,84%
Independent Power Transmission Operator S.A.	6,08%	4,55%	2,94%	2,79%
Iron Single Member S.A. Energeiakon Ypiresion	6,70%	-0,21%	-40,11%	34,59%
Nrg Supply & Trading Energeiaki Single Member S.A.	-36,78%	-59,62%	-68,67%	6,50%
Public Power Corporation S.A.	-22,49%	4,60%	4,56%	10,69%
Terna Energy S.A.	5,34%	5,61%	6,96%	5,53%
Volterra S.A.	-10,08%	4,78%	8,97%	156,15%

In the period of 2019 to 2020, the return on capital employed (before interest and income tax) for Greece's electric power companies displayed diverse trends. ELPEDISON POWER GENERATION SINGLE MEMBER S.A. showcased a remarkable improvement, with its return shifting from a negative -2.52% in 2019 to a positive 16.08% in 2020. This turnaround signaled better capital utilization and operational efficiency. ENEL GREEN POWER HELLAS S.A. and HERON II VIOTIA THERMOELECTRIC POWER PLANT S.A. also experienced notable gains in their returns during this period, demonstrating effective capital deployment. However, the landscape was not uniform across all companies. NRG SUPPLY & TRADING ENERGEIAKI SINGLE MEMBER S.A. faced significant challenges, with its return plunging to -59.62% in 2020. These variations were influenced by factors such as market dynamics and the effectiveness of capital management strategies. The years 2019 to 2020 emphasized the sector's ability to adapt, as some firms strategically leveraged their capital to achieve positive results, while others encountered hurdles.

Transitioning to the years 2021 to 2022, we observe further shifts in the return on capital employed for these companies. ELPEDISON POWER GENERATION SINGLE MEMBER S.A. continued its upward trajectory, recording a return of 55.03% in 2022. This indicates ongoing improvements in capital efficiency and operational effectiveness. ENEL GREEN POWER HELLAS S.A. sustained its profitability, with a consistent return of 7.39% in both 2020 and 2021, followed by a notable jump to 33.62% in 2022, reflecting adaptability and resilience. IRON SINGLE MEMBER S.A. ENERGEIAKON YPIRESION exhibited a remarkable recovery, going from a negative return in 2020 to a positive 34.59% in 2022. This exemplifies the capacity of certain companies to address challenges effectively. However, it's important to note that some firms, such as NRG SUPPLY & TRADING ENERGEIAKI SINGLE MEMBER S.A., continued to face difficulties in capital utilization, although it showed signs of improvement in 2022. These fluctuations highlight the dynamic nature of the electric power sector, and the varying responses of these companies to evolving economic

conditions. In-depth analysis is essential to comprehend the underlying factors driving these changes in capital efficiency.

Table 6

Return on capital employed (before income tax)

Return on capital employed (before income tax)				
Company Name	**2019**	**2020**	**2021**	**2022**
Elpedison Power Generation Single Member S.A.	-5,70%	7,52%	37,97%	51,29%
Enel Green Power Hellas S.A.	-5,29%	2,14%	1,06%	11,48%
Hellenic Electricity Distribution Network Operator S.A.	24,08%	6,46%	0,38%	0,51%
Heron Ii Viotia Thermoelectric Power Plant S.A	-21,40%	3,57%	21,65%	55,94%
Independent Power Transmission Operator S.A.	5,53%	4,08%	2,47%	2,32%
Iron Single Member S.A. Energeiakon Ypiresion	5,28%	-1,64%	-42,74%	31,43%
Nrg Supply & Trading Energeiaki Single Member S.A.	-38,74%	-67,91%	-71,23%	2,42%
Public Power Corporation S.A.	-24,25%	1,51%	1,81%	7,74%
Terna Energy S.A.	3,36%	3,75%	4,68%	2,95%
Volterra S.A.	-12,35%	4,78%	10,68%	156,15%

In the period from 2019 to 2020, the return on capital employed (before income tax) for the analyzed electric power generation, transmission, and distribution companies in Greece showcased diverse performance trends. ELPEDISON POWER GENERATION SINGLE MEMBER S.A. demonstrated significant improvement, with its return rising from -5.70% in 2019 to 7.52% in 2020. This positive shift signified enhanced capital efficiency and operational effectiveness. Similarly, HERON II VIOTIA THERMOELECTRIC POWER PLANT S.A. experienced notable growth in its return, signaling improved capital utilization. On the contrary, some companies, such as NRG SUPPLY & TRADING ENERGEIAKI SINGLE MEMBER S.A., faced substantial challenges, with their returns plunging to -67.91% in 2020. These variations were influenced by factors like market dynamics and the efficiency of capital management strategies. The years 2019 to 2020 underscored the sector's adaptability, as some firms strategically leveraged their capital to achieve positive results, while others grappled with difficulties.

Transitioning to the years 2021 to 2022, we observe further shifts in the return on capital employed for these companies. ELPEDISON POWER GENERATION SINGLE MEMBER S.A. continued its upward trajectory, achieving a return of 51.29% in 2022, indicating sustained improvements in capital efficiency and operational performance. ENEL GREEN POWER HELLAS S.A. maintained profitability, with a consistent return ranging from 1.06% to 11.48%, showcasing adaptability. IRON SINGLE MEMBER S.A. ENERGEIAKON YPIRESION exhibited a significant recovery, moving from a negative return in 2020 to a positive 31.43% in 2022, demonstrating the ability of certain companies to effectively

address challenges. However, it's worth noting that some firms, such as NRG SUPPLY & TRADING ENERGEIAKI SINGLE MEMBER S.A., continued to face capital utilization challenges, although they showed signs of improvement in 2022. These fluctuations highlight the dynamic nature of the electric power sector and the varying responses of these companies to evolving economic conditions. In-depth analysis is essential to comprehend the underlying factors driving these changes in capital efficiency.

Table 7
Gross Profit Margin

Gross Profit Margin				
Company Name	**2019**	**2020**	**2021**	**2022**
Elpedison Power Generation Single Member S.A.	1,64%	5,31%	6,81%	7,50%
Enel Green Power Hellas S.A.	65,53%	58,88%	60,68%	58,76%
Hellenic Electricity Distribution Network Operator S.A.	11,30%	3,14%	2,67%	7,25%
Heron Ii Viotia Thermoelectric Power Plant S.A	0,68%	18,68%	17,97%	16,25%
Iron Single Member S.A. Energeiakon Ypiresion	1,91%	1,25%	-0,33%	6,57%
Nrg Supply & Trading Energeiaki Single Member S.A.	2,88%	5,37%	-2,56%	4,68%
Public Power Corporation S.A.	2,48%	12,40%	9,70%	3,29%
Terna Energy S.A.	23,40%	14,92%	16,23%	8,15%
Volterra S.A.	0,16%	4,22%	-9,37%	2,76%

During the period of 2019 to 2020, the gross profit margins for the analyzed electric power generation, transmission, and distribution companies in Greece demonstrated diverse trends. ELPEDISON POWER GENERATION SINGLE MEMBER S.A. exhibited an upward trajectory, with its gross profit margin increasing from 1.64% in 2019 to 5.31% in 2020. This indicated improved efficiency in generating profits relative to costs. Similarly, HERON II VIOTIA THERMOELECTRIC POWER PLANT S.A. experienced significant growth in its gross profit margin, reaching 18.68% in 2020, signifying better profitability. ENEL GREEN POWER HELLAS S.A., on the other hand, maintained a high gross profit margin, although it saw a slight decrease from 65.53% in 2019 to 58.88% in 2020. NRG SUPPLY & TRADING ENERGEIAKI SINGLE MEMBER S.A. also reported positive margins, reflecting the ability to generate profits. The years 2019 to 2020 highlighted variations in the companies' profit-generating capabilities, influenced by factors like market dynamics and cost management strategies.

Transitioning to the years 2021 to 2022, we observe further changes in the gross profit margins for these companies. ELPEDISON POWER GENERATION SINGLE MEMBER S.A. continued its positive momentum, achieving a gross profit margin of 7.50% in 2022. This suggests ongoing improvements in profitability and cost management. ENEL GREEN POWER HELLAS S.A. maintained a consistent gross profit margin, ranging from 58.68% to 60.68%, indicating stable profitability. TERNA ENERGY S.A. displayed notable

improvements, with its gross profit margin increasing from 14.92% in 2020 to 16.23% in 2021 before decreasing to 8.15% in 2022. Meanwhile, IRON SINGLE MEMBER S.A. ENERGEIAKON YPIRESION showcased a significant recovery, moving from a negative gross profit margin in 2020 to a positive 6.57% in 2022. These fluctuations reflect the dynamic nature of the electric power sector and the varying responses of these companies to evolving economic conditions. A comprehensive examination of the factors influencing these changes in gross profit margins is essential to gain deeper insights into their profitability strategies.

Table 8
Operating Profitability

Operating Profitability				
Company Name	**2019**	**2020**	**2021**	**2022**
Elpedison Power Generation Single Member S.A.	-2,46%	1,11%	4,13%	4,72%
Enel Green Power Hellas S.A.	8,49%	13,19%	6,61%	18,04%
Hellenic Electricity Distribution Network Operator S.A.	11,05%	2,89%	2,02%	3,02%
Heron Ii Viotia Thermoelectric Power Plant S.A	-19,67%	6,43%	13,68%	15,87%
Independent Power Transmission Operator S.A.	74,15%	67,03%	60,79%	59,08%
Iron Single Member S.A. Energeiakon Ypiresion	0,66%	-0,19%	-2,70%	4,00%
Nrg Supply & Trading Energeiaki Single Member S.A.	-1,66%	-1,38%	-6,83%	0,28%
Public Power Corporation S.A.	-1,89%	2,11%	2,11%	-0,36%
Terna Energy S.A.	-0,28%	-19,28%	1,02%	-24,80%
Volterra S.A.	-1,48%	0,65%	-12,56%	10,53%

In the period from 2019 to 2020, the operating profitability of the analyzed electric power generation, transmission, and distribution companies in Greece exhibited varying trends. Some companies, like ELPEDISON POWER GENERATION SINGLE MEMBER S.A. and ENEL GREEN POWER HELLAS S.A., reported improvements in their operating profitability, indicating more efficient operations. ELPEDISON POWER GENERATION SINGLE MEMBER S.A. increased its operating profitability from -2.46% in 2019 to 1.11% in 2020, while ENEL GREEN POWER HELLAS S.A. saw a significant rise from 8.49% to 13.19%. However, others, such as TERNA ENERGY S.A. and VOLTERRA S.A., experienced declines in their operating profitability during this period. TERNA ENERGY S.A.'s operating profitability dropped from -0.28% in 2019 to -19.28% in 2020, indicating challenges in their operational efficiency. These variations were influenced by factors including operational strategies, market dynamics, and cost management.

Moving to the years 2021 to 2022, we observe further changes in the operating profitability for these companies. ENEL GREEN POWER HELLAS S.A. continued to showcase strong

performance, with its operating profitability rising to 18.04% in 2022. HERON II VIOTIA THERMOELECTRIC POWER PLANT S.A. also demonstrated improvement, reaching 15.87% in 2022. However, some companies, like TERNA ENERGY S.A., faced challenges, with a significant decline in operating profitability to -24.80% in 2022. These fluctuations highlight the dynamic nature of the electric power sector and the varying responses of these companies to evolving economic conditions. Analyzing the factors influencing these changes in operating profitability is crucial for understanding their operational strategies and resilience in the face of economic challenges.

Table 9

Net Profit Margin (Before Interest & Income Tax)

Net Profit Margin (Before Interest & Income Tax)				
Company Name	**2019**	**2020**	**2021**	**2022**
Elpedison Power Generation Single Member S.A.	-1,09%	2,37%	4,80%	5,06%
Enel Green Power Hellas S.A.	6,66%	45,63%	46,05%	52,82%
Hellenic Electricity Distribution Network Operator S.A.	11,35%	3,18%	2,69%	8,60%
Heron Ii Viotia Thermoelectric Power Plant S.A	-14,46%	18,15%	15,99%	16,21%
Independent Power Transmission Operator S.A.	48,81%	42,10%	31,55%	30,07%
Iron Single Member S.A. Energeiakon Ypiresion	0,83%	-0,02%	-2,53%	4,40%
Nrg Supply & Trading Energeiaki Single Member S.A.	-1,58%	-1,21%	-6,58%	0,75%
Public Power Corporation S.A.	-44,81%	6,48%	7,65%	9,39%
Terna Energy S.A.	37,76%	51,13%	30,83%	17,56%
Volterra S.A.	-1,21%	0,65%	-13,03%	10,53%

The period from 2019 to 2020 witnessed significant variations in the net profit margins (before interest and income tax) among the analyzed electric power companies in Greece. Notably, ENEL GREEN POWER HELLAS S.A. and TERNA ENERGY S.A. stood out with remarkable improvements in their net profit margins. ENEL GREEN POWER HELLAS S.A.'s net profit margin surged from 6.66% in 2019 to a substantial 45.63% in 2020, reflecting the company's ability to efficiently manage costs and generate revenue. Similarly, TERNA ENERGY S.A. displayed robust growth, witnessing its net profit margin ascend from 37.76% to 51.13% during this period. These positive trends indicated effective financial strategies and adaptability, positioning these companies favorably in the electric power sector. Conversely, several companies experienced challenges in sustaining their net profit margins. HELLENIC ELECTRICITY DISTRIBUTION NETWORK OPERATOR S.A. and VOLTERRA S.A. saw declines in their net profit margins from 2019 to 2020, suggesting the need for strategic adjustments in cost management and revenue generation. These divergent trends underscored the dynamic nature of the industry, where individual company strategies and market dynamics played crucial roles in determining financial performance.

Transitioning to the years 2021 to 2022, we continue to witness fluctuations in the net profit margins of these electric power companies. ENEL GREEN POWER HELLAS S.A. maintained its strong performance, with a net profit margin of 52.82% in 2022. The company's consistent profitability highlighted its resilience and effective financial management strategies. Similarly, HERON II VIOTIA THERMOELECTRIC POWER PLANT S.A. demonstrated stability, maintaining a net profit margin of around 16%. However, it's worth noting that some companies, such as INDEPENDENT POWER TRANSMISSION OPERATOR S.A., faced challenges as their net profit margins declined in 2021 and 2022 compared to previous years. These variations underline the importance of adaptability and strategic decision-making in a dynamic industry like electric power generation, transmission, and distribution. Comprehensive analysis of the factors contributing to these changes is essential for gaining insights into the financial strategies of these companies and their capacity to navigate evolving economic conditions.

Table 10

Net profit margin (before interest, income tax, depreciation and non-operating income)

Net Profit Margin (Before Interest, Income Tax, Depreciation and Non-Operating Income)				
Company Name	**2019**	**2020**	**2021**	**2022**
Elpedison Power Generation Single Member S.A.	3,36%	6,45%	6,28%	5,78%
Enel Green Power Hellas S.A.	65,37%	67,94%	70,35%	90,20%
Hellenic Electricity Distribution Network Operator S.A.	13,71%	5,62%	7,48%	44,95%
Heron Ii Viotia Thermoelectric Power Plant S.A	-6,93%	31,50%	20,18%	17,79%
Independent Power Transmission Operator S.A.	89,52%	73,53%	66,31%	66,89%
Iron Single Member S.A. Energeiakon Ypiresion	1,54%	0,74%	-2,14%	4,59%
Nrg Supply & Trading Energeiaki Single Member S.A.	-1,44%	-0,78%	-6,14%	1,13%
Public Power Corporation S.A.	13,55%	20,03%	15,10%	2,44%
Terna Energy S.A.	17,52%	-0,58%	11,98%	-16,93%
Volterra S.A.	-1,40%	0,80%	-12,25%	11,69%

The period from 2019 to 2020 showcased a diverse landscape for the net profit margin (before interest, income tax, depreciation, and non-operating income) among Greece's electric power companies. ENEL GREEN POWER HELLAS S.A. emerged as a standout performer, maintaining consistently high net profit margins, ranging from 65.37% in 2019 to 67.94% in 2020. This remarkable profitability reflects the company's adept financial management and its ability to generate substantial revenue relative to its operating costs. In contrast, some companies faced challenges in sustaining their net profit margins during this period. TERNA ENERGY S.A., for instance, reported negative net profit margins in both 2019 and 2020, indicating difficulties in achieving profitability after considering various financial factors.

These disparities underscored the significance of strategic financial planning, revenue diversification, and effective cost management strategies in the electric power sector.

As we transition to the years 2021 to 2022, we continue to witness notable changes in the net profit margins of these companies. ENEL GREEN POWER HELLAS S.A. maintained its impressive performance, boasting a net profit margin of 90.20% in 2022, highlighting its adaptability and financial resilience. Meanwhile, HERON II VIOTIA THERMOELECTRIC POWER PLANT S.A. exhibited stability, consistently maintaining a net profit margin above 17%. Significantly, some companies, such as HELLENIC ELECTRICITY DISTRIBUTION NETWORK OPERATOR S.A. and TERNA ENERGY S.A., experienced substantial improvements in their net profit margins in 2021 and 2022 compared to the preceding years. These favorable trends suggest effective financial strategies and an ability to navigate evolving market dynamics. A comprehensive analysis of the underlying factors influencing these changes is essential for gaining deeper insights into the financial strategies and adaptability of these companies within the dynamic electric power sector.

Table 11
Net Profit Margin (Before Income Tax)

Net Profit Margin (Before Income Tax)				
Company Name	**2019**	**2020**	**2021**	**2022**
Elpedison Power Generation Single Member S.A.	-2,46%	1,11%	4,13%	4,72%
Enel Green Power Hellas S.A.	-30,07%	13,19%	6,61%	18,04%
Hellenic Electricity Distribution Network Operator S.A.	11,05%	2,89%	2,02%	3,02%
Heron Ii Viotia Thermoelectric Power Plant S.A	-19,67%	6,43%	13,68%	15,95%
Independent Power Transmission Operator S.A.	44,40%	37,72%	26,49%	24,98%
Iron Single Member S.A. Energeiakon Ypiresion	0,66%	-0,19%	-2,70%	4,00%
Nrg Supply & Trading Energeiaki Single Member S.A.	-1,66%	-1,38%	-6,83%	0,28%
Public Power Corporation S.A.	-48,32%	2,13%	3,04%	6,79%
Terna Energy S.A.	23,71%	34,23%	20,75%	9,37%
Volterra S.A.	-1,48%	0,65%	-13,14%	10,53%

The net profit margin (before income tax) for the analyzed electric power generation, transmission, and distribution companies in Greece exhibited a range of trends during the period from 2019 to 2020. Notably, HERON II VIOTIA THERMOELECTRIC POWER PLANT S.A. showed significant improvement, with its net profit margin climbing from -19.67% in 2019 to 6.43% in 2020. This turnaround indicated effective financial strategies and cost management practices. Similarly, TERNA ENERGY S.A. demonstrated strong growth,

with its net profit margin increasing from 23.71% to 34.23% during this period. These positive trends reflected the ability of these companies to enhance their profitability. However, some companies, such as ELPEDISON POWER GENERATION SINGLE MEMBER S.A. and ENEL GREEN POWER HELLAS S.A., faced challenges in improving their net profit margins from 2019 to 2020. These variations highlight the need for strategic adjustments in revenue generation and cost control strategies.

Transitioning to the years 2021 to 2022, we observe further changes in the net profit margins for these companies. HERON II VIOTIA THERMOELECTRIC POWER PLANT S.A. continued its positive trajectory, maintaining a net profit margin of 15.95% in 2022. The company's ability to sustain profitability underscores its adaptability and financial strength. Some companies, such as INDEPENDENT POWER TRANSMISSION OPERATOR S.A. and PUBLIC POWER CORPORATION S.A., reported declines in their net profit margins in 2021 and 2022 compared to the previous years. These fluctuations emphasize the importance of implementing effective financial strategies and cost optimization measures to navigate the evolving electric power sector. Overall, the analysis of these net profit margins provides insights into the financial performance and resilience of the electric power companies in Greece, highlighting the need for tailored financial strategies to thrive in a dynamic industry landscape.

CONCLUSION

The electric power generation, transmission, and distribution companies in Greece faced a dynamic and challenging landscape over the years 2019 to 2022, marked by the disruptive impact of the COVID-19 pandemic. Through an in-depth analysis of key financial ratios, this study sought to understand the extent to which these companies navigated these turbulent times, focusing on profitability metrics. In the period spanning 2019 to 2020, the analysis revealed a spectrum of performance among the selected enterprises. While companies like ENEL GREEN POWER HELLAS S.A. maintained remarkable net profit margins, showcasing adaptability and strong financial management, others faced challenges, exemplified by negative margins for TERNA ENERGY S.A. and ELPEDISON POWER GENERATION SINGLE MEMBER S.A. Transitioning to the years 2021 to 2022, a nuanced picture emerged. ENEL GREEN POWER HELLAS S.A. continued its strong performance, indicating resilience in a changing economic landscape. Moreover, HERON II VIOTIA THERMOELECTRIC POWER PLANT S.A. demonstrated stability and sustained profitability. However, some companies, such as INDEPENDENT POWER TRANSMISSION OPERATOR S.A. and PUBLIC POWER CORPORATION S.A., experienced fluctuations in their net profit margins.

Overall, this analysis underscores the need for adaptive financial strategies and efficient cost management within the electric power sector to thrive amidst disruptions like the COVID-19 pandemic. While some companies showcased remarkable resilience, others grappled with challenges, highlighting the importance of tailored financial approaches to weather uncertainties in the energy industry. As the sector continues to evolve, the insights gleaned

from this study provide valuable guidance for stakeholders and decision-makers seeking to strengthen the financial foundations of Greece's power companies in a rapidly changing world.

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