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Intrinsic Value Evaluation of CNPC: A Comprehensive Analysis

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ABSTRACT

This paper aims to evaluate the intrinsic value of China National Petroleum Corporation (CNPC) through a specially designed valuation system tailored to the unique characteristics of the Chinese oil industry. Utilizing an entropy method to calculate the company's valuation premium rate, referred to as the "China-Specific Valuation Premium Rate" (CSVPR), the analysis incorporates various valuation models, including the Free Cash Flow to Firm (FCFF) model, Dividend Discount Model (DDM), Economic Value Added (EVA) model, and Relative Valuation model.

KEYWORDS

China National Petroleum Corporation (CNPC); Intrinsic value; Valuation system

1. INTRODUCTION

CNPC is a leading global oil and gas producer operating in 32 countries. The company is committed to promoting oil and gas exploration, refining, marketing, and transitioning to green and low-carbon operations. This paper constructs a unique valuation system for the Chinese oil industry, including nine primary indicators, 27 secondary indicators, 84 tertiary indicators, and 108 specific evaluation projects. These indicators are specifically designed to capture the diverse and unique factors influencing the valuation of Chinese oil companies, ensuring a more accurate and relevant assessment of CNPC's intrinsic value.

2. INTERNATIONAL OIL AND GAS MARKET OVERVIEW

2.1. 2023 Market Dynamics

The international oil market experienced significant volatility in 2023, influenced by macroeconomic conditions, geopolitical tensions, and policies from major oil-producing countries. The average price of Brent crude remained high at $82.16, despite a significant price fluctuation of $27.63. OPEC+ production cuts, especially Saudi Arabia's voluntary reductions and Russia's export reductions, significantly impacted oil prices. The supply dynamics were further complicated by varying production levels across non-OPEC countries and increased efficiency in shale oil production in the United States.

Geopolitical tensions, particularly in the Middle East and the ongoing conflict between Russia and Ukraine, created additional uncertainty in the market. These conflicts disrupted supply chains and led to fluctuating prices as markets reacted to new developments. The banking crisis in Europe and interest rate hikes by the Federal Reserve added layers of complexity to the global economic environment, influencing investment decisions and market sentiment. As these geopolitical and

economic factors continue to evolve, they will likely continue to exert significant influence over the global oil market.

The impact of these factors on global oil prices was pronounced. For instance, the conflict in Ukraine caused significant disruptions in oil supply routes and led to sanctions on Russian oil exports, which further tightened the global supply. Meanwhile, the OPEC+ decisions to cut production were aimed at stabilizing the market but also contributed to higher volatility and uncertainty among investors and consumers alike. The interplay of these dynamics created a highly unpredictable environment for the oil industry in 2023.

2.2. 2024 Market Outlook

The global oil market faces numerous challenges, including economic recovery pressures and ample supply. Oil demand is expected to peak and eventually decline due to technological advancements and policy measures. The potential for stable high oil prices remains, supported by increased upstream investments and cautious energy transition strategies by major oil companies.

Investment in renewable energy sources and stricter environmental regulations are likely to shape the future of the oil market. Companies are balancing traditional oil and gas operations with investments in green technologies, which may affect their long-term profitability and market positioning. The shift towards electric vehicles and improved energy efficiency standards also contribute to the expected decline in oil demand. The industry's ability to adapt to these changes and leverage new technologies will be critical in maintaining competitiveness and ensuring sustainable growth.

The transition to renewable energy sources such as wind, solar, and hydrogen is expected to accelerate, driven by global efforts to combat climate change and reduce carbon emissions. Major oil companies are increasingly investing in these technologies to diversify their energy portfolios and mitigate the risks associated with fossil fuel dependency. Moreover, government policies and international agreements, such as the Paris Agreement, are pushing for more aggressive targets in reducing greenhouse gas emissions, further influencing the direction of the energy market.

3. OIL AND GAS UPSTREAM INDUSTRY DEVELOPMENT

3.1. Investment Trends

Global investments in oil and gas exploration and development are expected to increase slightly in 2024, reflecting a balanced approach between ensuring energy security and pursuing decarbonization goals. Investments are projected to reach $500 billion, with significant contributions from national oil companies. This trend underscores the ongoing importance of fossil fuels in the global energy mix, even as the world transitions to cleaner energy sources.

Investments are also driven by the need to maintain and enhance production capacities to meet current demand levels. This includes not only exploration and drilling but also infrastructure development such as pipelines and refineries. The strategic importance of oil and gas in national economies ensures continued investment, despite the push towards decarbonization. The sector’s investment strategies are increasingly incorporating advanced technologies to enhance efficiency, reduce environmental impact, and ensure the long-term viability of oil and gas projects.

Investments in digital technologies and automation are also on the rise, aimed at improving operational efficiency and reducing costs. Technologies such as artificial intelligence, machine learning, and the Internet of Things (IoT) are being integrated into oil and gas operations to optimize production processes, predict equipment failures, and enhance safety. These technological advancements are crucial for maintaining the competitiveness of the oil and gas industry in a rapidly changing energy landscape.

3.2. Energy Transition

The transition to green energy and low-carbon development is accelerating, driven by international agreements and national policies. Major oil companies are gradually shifting from aggressive transitions to more sustainable and rational development models, incorporating investments in clean energy technologies like carbon capture and utilization, green hydrogen, and renewable energy.

Companies are adopting hybrid business models that integrate traditional oil and gas operations with renewable energy projects. This approach allows them to leverage existing infrastructure and expertise while gradually reducing their carbon footprint. The development of new technologies and innovative business practices is crucial in achieving these goals. These efforts are supported by governmental policies and incentives aimed at promoting sustainable energy practices, reflecting a global commitment to addressing climate change and reducing reliance on fossil fuels.

The integration of renewable energy projects into traditional oil and gas operations includes developing solar and wind farms on existing oil fields, utilizing captured carbon dioxide for enhanced oil recovery, and investing in biofuels and other alternative energy sources. These initiatives not only help in reducing carbon emissions but also provide new revenue streams and enhance the overall sustainability of oil and gas companies.

4. THE CHINA-SPECIFIC VALUATION PREMIUM (CSVPR)

The China-Specific Valuation Premium (CSVPR) is calculated using the entropy method, which assigns weights to various indicators to measure the valuation premium of Chinese oil companies [1]. This method provides a comprehensive evaluation of companies' intrinsic value by incorporating traditional financial capabilities, dividend reforms, technological innovation, risk structures, industry characteristics, macroeconomic trends, market timing, ESG factors, and investment components.

Traditional financial performance indicators are enhanced with additional metrics that reflect the unique aspects of the Chinese economy and the central government's goals, such as profitability, operational efficiency, and debt ratios. These enhancements provide a more accurate and nuanced understanding of a company's financial health and potential for growth.

Dividend reform focuses on both the short-term increase in income and the long-term stability of cash flows, drawing from Japanese corporate governance models to improve shareholder returns. This approach ensures that companies remain attractive to investors while maintaining financial stability and resilience.

Technological innovation is assessed through industry-specific factors, including strategic emerging industries, transformation initiatives, and the company's role in the industrial chain. Metrics include research and development investments, patent counts, and collaboration with research institutions. These indicators highlight a company's ability to innovate and adapt to changing market conditions.

The risk structure is divided into financial and credit risks at the corporate level and the company's contribution to national energy security, with indicators such as debt levels, production contributions, and energy self-sufficiency rates. This dual focus ensures that both internal and external risks are adequately assessed and managed.

Industry-specific metrics cover international trends, industry cycles, resource potential, production capabilities, market capabilities, and key financial indicators such as net present value and asset-liability ratios. These metrics provide a comprehensive view of a company's position within the industry and its potential for future growth.

Macroeconomic indicators, including economic performance, credit conditions, and economic expectations, provide a dynamic assessment of the company's valuation. These indicators help to

contextualize a company's performance within the broader economic landscape, highlighting potential opportunities and risks.

Market timing metrics reflect short-term market preferences, fund flows, and investor sentiment, enhancing the evaluation system's responsiveness and reliability. These metrics are particularly useful for making strategic investment decisions in rapidly changing market environments.

ESG factors are reconstructed to align with Chinese policy goals, emphasizing environmental protection, social responsibility, and effective governance. This alignment ensures that companies contribute to national development goals while maintaining high standards of corporate responsibility.

Finally, investment components focus on the relationship between companies and investors, with metrics reflecting investor structure and communication practices. These metrics highlight the importance of transparency and engagement in building and maintaining investor confidence.

5. VALUATION ANALYSIS

The valuation of CNPC employs multiple models to provide a comprehensive analysis of the company's intrinsic value. The Discounted Cash Flow (DCF) model evaluates CNPC's intrinsic value based on projected free cash flows from 2023 to 2027 [2],taking into account the company's historical financial performance, operating results, and future growth prospects. This model provides a detailed and forward-looking assessment of the company's financial health and potential.

The Weighted Average Cost of Capital (WACC) for CNPC is estimated at 4.87%, incorporating the company's adjusted beta, market risk premium, and risk-free rate, with the cost of equity and debt calculated to reflect the company's specific financial structure and market conditions [3].This metric is crucial for understanding the cost of financing and its impact on the company's valuation [4].

The terminal growth rate is assumed to stabilize at 1.00% post-2027, considering economic growth projections, sector performance, and inflation factors. This assumption provides a realistic long-term growth outlook, ensuring that the valuation remains grounded in economic realities.

A sensitivity analysis examines the robustness of the DCF model to changes in key inputs [5], such as WACC and growth rate, highlighting the potential impact of these variables on the valuation outcome. This analysis helps to identify potential risks and uncertainties, providing a more comprehensive view of the company's financial outlook.

The Dividend Discount Model (DDM) estimates CNPC's intrinsic value based on projected dividend growth rates, assuming a 15% annual growth rate from 2023 to 2027 and a 5% long-term growth rate, yielding a target price range of 14.56 to 14.58 CNY. This model emphasizes the importance of dividend payouts in the overall valuation, providing a clear link between corporate financial performance and shareholder returns.

The Economic Value Added (EVA) model calculates CNPC's value based on its economic profit, incorporating net operating profit after tax and invested capital, with the target price derived from the EVA model supporting the DCF and DDM results [6]. This model provides a detailed assessment of the company's profitability and capital efficiency, highlighting areas of strength and potential improvement.

Finally, relative valuation compares CNPC's valuation metrics, such as price-to-earnings, price-to-book, price-to-sales, and enterprise value-to-EBITDA ratios, with those of comparable companies, indicating an upside potential of 1.94% to 13.89%. This comparison provides a benchmark for assessing CNPC's market position and potential for growth [7].

6. CONCLUSION

The comprehensive valuation analysis, incorporating CSVPR and traditional valuation models, suggests that CNPC's current stock price has significant upside potential. The target price range of 14.56 to 14.58 CNY represents an 8.74% to 8.89% increase from the current price. The analysis underscores the importance of a tailored valuation system reflecting the unique characteristics of the Chinese oil industry and the broader economic and policy environment.

7. RECOMMENDATIONS

The analysis leads to several key recommendations. Firstly, investing in CNPC is highly recommended due to its significant upside potential, with a projected 12-month target price range of 14.56 to 14.58 CNY, indicating a strong buy. Secondly, continuous policy support is crucial for the oil and gas industry; this support should emphasize technological innovation, energy security, and the transition to green energy, which collectively will enhance the intrinsic value of Chinese oil companies. Additionally, implementing corporate governance reforms and improving transparency will play a vital role in boosting investor confidence and market valuation. Finally, developing market strategies that align with national policy goals and international trends is essential for ensuring sustainable growth and valuation appreciation. These comprehensive measures will support the robust valuation and future growth of CNPC and similar enterprises in the industry.

By emphasizing these strategies, CNPC can better navigate the complexities of the modern energy market while maintaining a strong position in both traditional and renewable energy sectors. The company's commitment to innovation, efficiency, and sustainability will be key drivers of its continued success and ability to deliver value to its shareholders and stakeholders. Implementing these recommendations will ensure that CNPC remains competitive and capable of adapting to the evolving energy landscape, ultimately enhancing its long-term value and growth prospects.

In addition, enhancing the company’s communication with investors and stakeholders is crucial. Regular updates on the progress of key projects, financial performance, and strategic initiatives will help maintain transparency and build trust. CNPC should also consider increasing its efforts in corporate social responsibility (CSR) to further align with global standards and enhance its reputation. This includes initiatives in environmental sustainability, community engagement, and employee welfare, which can contribute positively to the company’s overall valuation and attractiveness to investors.

Furthermore, CNPC should explore strategic partnerships and collaborations with other leading companies in the energy sector, both domestically and internationally. These partnerships can provide access to new technologies, markets, and expertise, helping to drive innovation and growth. By leveraging the strengths and capabilities of its partners, CNPC can enhance its competitive edge and achieve more sustainable and diversified growth.

Lastly, continuous monitoring and adaptation to global market trends and regulatory changes are essential. CNPC must remain agile and responsive to shifts in market dynamics, regulatory frameworks, and technological advancements. This proactive approach will enable the company to capitalize on emerging opportunities and mitigate potential risks, ensuring its long-term resilience and success in the global energy market.

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