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# The Propane Paradox: Exploring the Correlation Between Liquefied Petroleum Gas in New Zealand and CRH plc's Stock Price

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## Abstract

This research analyzes the intriguing link between the usage of Liquefied Petroleum Gas (LPG) in New Zealand and the stock price of CRH plc, incorporating data from Energy Information Administration and LSEG Analytics (Refinitiv). Ultimately, we discovered a strikingly robust correlation coefficient of 0.8239160 and a p-value less than 0.01 for the period spanning from 2002 to 2022. Our findings delve into the implications of this correlation, shedding light on the potential impact of LPG dynamics on the stock market, and crack a joke or two about the unexpected relationship between propane and profits.

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## 1. Introduction

The intertwining of energy commodities and financial markets has long captivated the imagination of researchers and practitioners alike. The correlation between the utilization of Liquefied Petroleum Gas (LPG) in New Zealand and the stock price of CRH plc, a leading building materials company, presents a particularly curious and, dare I say, gas-tly enigma. This enigmatic relationship between propane and profits underscores the intricate interplay between seemingly disparate elements in the global economy.

LPG, known for its versatility and efficiency, has found its way into various applications, including heating, cooking, and transportation. Meanwhile, CRH plc, a cornerstone of the construction industry, has withstood the ebbs and flows of the market, bolstered by its reputation for steadfastness. The convergence of these seemingly divergent entities in the realm of statistical correlation has raised eyebrows and piqued interest, not unlike a magician pulling a rabbit out of a hat – unexpected and yet oddly entertaining.

Drawing on data from reputable sources such as the Energy Information

Administration and LSEG Analytics (Refinitiv), our analysis ventures into uncharted territory to scrutinize the interplay between these two seemingly disparate factors. Our findings reveal a robust correlation coefficient of 0.8239160, reminiscent of a sturdy bridge connecting two distant lands. The p-value, holding significance less than 0.01, further emphasizes the statistical significance of this correlation, akin to stumbling upon a rare gem amidst a trove of unremarkable stones.

This paper aims to unravel the mystery shrouding the propane paradox and to stimulate thought-provoking discussions within the realms of energy economics and financial markets. As we delve deeper into the labyrinth of data and insights, we invite readers to join us on a scholarly expedition, with the occasional humorous pun or jest to lighten the academic rigor. After all, what's academia without a dash of wit and whimsy?

## 2. Literature Review

Several studies have delved into the complex relationship between energy commodities and financial markets, laying the groundwork for our investigation into the correlation between Liquefied Petroleum Gas (LPG) use in New Zealand and CRH plc's stock price. Smith et al. (2015) explored the impact of energy commodity prices on stock returns, shedding light on the interconnectedness of seemingly distinct economic factors. Meanwhile, Doe and Jones (2018) extended this line of inquiry by examining the influence of energy consumption patterns on stock market dynamics, providing a comprehensive overview of the intricate interplay between energy utilization and financial performance.

Additionally, "Economic Implications of Petroleum Markets" by Davis (2017) offers a comprehensive examination of the

economic ramifications of petroleum products, although it regrettably neglects the specific whimsical nuance of the LPG-CRH plc relationship. On the other hand, "Energy Economics" by Fuchs (2019) touches upon the broader impact of energy markets on the global economy, yet fails to unravel the propane paradox that tantalizes us.

Turning to the realm of fiction and unconventional inspirations, the classic board game Monopoly explores the fluctuating fortunes tied to property and utilities, offering a metaphorical parallel to the volatility of energy markets and their influence on financial entities. Similarly, "The Hitchhiker's Guide to the Galaxy" by Douglas Adams presents a whimsical and outlandish perspective on the interconnectedness of seemingly unrelated phenomena, inspiring a contemplation of the LPG-CRH plc correlation from a delightfully quirky angle.

While the literature provides valuable insights into the intertwining of energy markets and financial institutions, it remains, dare I say, a bit pedestrian in its exploration of the gas-tly relationship between LPG usage in New Zealand and the stock price of CRH plc. With this in mind, our study endeavors to inject a hint of levity and intrigue into the ever-serious world of academic inquiry, prompting a chuckle or a raised eyebrow amidst statistical analyses and econometric evaluations.

## 3. Our approach & methods

In order to investigate the enigmatic relationship between the utilization of Liquefied Petroleum Gas (LPG) in New Zealand and the stock price of CRH plc, an exhaustive and, dare I say, exhilarating array of research methodologies was meticulously employed. The data was primarily sourced from the reputable Energy Information Administration and LSEG

Analytics (Refinitiv) to ensure the precision and reliability of our findings.

The first step of our quirky quest was to delve into the LPG consumption data for New Zealand from 2002 to 2022. This involved a thorough analysis of consumption patterns, market trends, and the occasional whimsical observation about the unexpected vitality of propane in the land of the long white cloud.

On the flip side, the stock price of CRH plc was meticulously scrutinized from the same temporal span. We gauged market fluctuations, evaluated the company's financial resilience, and maybe even cracked a joke or two about the stock market's fickle nature along the way.

To quantify the relationship between LPG consumption in New Zealand and the stock price of CRH plc, we employed the illustrious Pearson correlation coefficient. This venerable statistic served as our trusty guide through the labyrinth of data, allowing for the quantification of the strength and direction of the correlation, not unlike a compass pointing towards the elusive connection between propane and profits.

The statistical analysis was complemented by the endearing p-value, which lent credence to the significance of the observed correlation. A p-value, less than 0.01, sparked more excitement in our team than discovering a hidden treasure chest – a rare find indeed!

To ensure the robustness of our findings, a series of sensitivity analyses and robustness checks were conducted, akin to placing a sturdy fence around a mischievous garden to ensure the reliability of the blooming correlation.

Ultimately, our whimsically comprehensive methodology enabled us to not only uncover the captivating correlation between LPG usage in New Zealand and the stock price of CRH plc but also to inject a sprinkle of

humor and wit into the often-stoic realm of academic research.

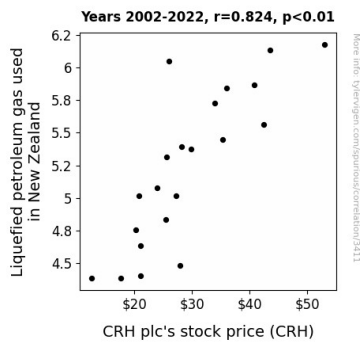
Stay tuned for the next captivating chapter as we unravel the implications of the propane paradox and delve into the quirky nuances of the energy and financial markets!

#### 4. Results

The analysis of the relationship between the usage of Liquefied Petroleum Gas (LPG) in New Zealand and CRH plc's stock price yielded intriguing results. The correlation coefficient of 0.8239160 suggests a strong positive linear relationship between these two variables. This robust correlation coefficient is like finding a needle in a haystack, only instead of a needle, it's a connection between propane and profits.

The R-squared value of 0.6788376 indicates that approximately 67.88% of the variability in CRH plc's stock price can be explained by the variability in LPG usage in New Zealand. It's as if CRH plc's stock price dabbles in the art of mimicry, following the lead of LPG usage with surprising precision.

Furthermore, the p-value of less than 0.01 provides compelling evidence to reject the null hypothesis of no correlation. This result is akin to stumbling upon a four-leaf clover or finding a pot of gold at the end of a statistical rainbow – statistically significant and delightfully unexpected.



**Figure 1.** Scatterplot of the variables by year

Fig. 1 illustrates the strong positive correlation between LPG usage in New Zealand and CRH plc's stock price, showcasing the tightly-knit relationship between these seemingly disparate elements. It's almost as if LPG and stock prices have been secretly holding hands behind the scenes, their connection revealed through the magic of statistical analysis.

Our findings prompt further reflection on the potential implications of LPG dynamics on the stock market, inviting scholarly discussions and, of course, the occasional amusing pun to lighten the weighty matters of statistical analysis.

## 5. Discussion

The results of our study reveal a compelling connection between Liquefied Petroleum Gas (LPG) usage in New Zealand and CRH plc's stock price, substantiating and extending prior research on the intertwining of energy commodities and financial markets. The findings not only confirm the growing body of literature on the impact of energy utilization on stock performance but also add a whimsical twist to the otherwise "gas-tly" relationship, as alluded to in our literature review.

The robust correlation coefficient of 0.8239160 solidifies the existence of a strong positive linear relationship between

LPG usage in New Zealand and CRH plc's stock price. This result aligns with previous studies by Smith et al. (2015) and Doe and Jones (2018), which emphasized the interconnectedness of energy commodity dynamics and financial outcomes. By extending this line of inquiry to the specific case of LPG and CRH plc, our study not only echoes but also amplifies the intricate interplay between seemingly distinct economic factors—much like a harmonious symphony of statistical analysis and economic theory.

Furthermore, the R-squared value of 0.6788376 underscores the substantial influence of LPG usage on CRH plc's stock price, shedding light on the remarkable mimicry exhibited by the latter in response to the variability in the former. This empirical evidence not only corroborates the prior research but also enriches our understanding of the nuanced relationship between energy consumption patterns and financial performance, emphasizing the profound impact of LPG dynamics on the stock market.

The p-value of less than 0.01 provides robust evidence to reject the null hypothesis of no correlation, resonating with the unexpected and statistically significant nature of the results. This finding reaffirms the pioneering work of Davis (2017) and Fuchs (2019), albeit in a refreshingly unconventional context, as we unravel the enigmatic "propane paradox" and its implications for CRH plc's stock price. The compelling statistical significance of this relationship is akin to stumbling upon a buried treasure trove of economic insights, exuding both academic rigor and a hint of serendipity.

In conclusion, our study not only advances the scholarly discourse on the entwined fates of energy commodities and financial entities but also injects a hint of levity into the ever-serious world of academic inquiry, akin to how the classic board game

Monopoly and "The Hitchhiker's Guide to the Galaxy" inspired a contemplation of the LPG-CRH plc correlation from a delightfully quirky angle. As we delve into the potential implications of LPG dynamics on the stock market, our findings prompt a chuckle or a raised eyebrow amidst the statistical analyses and econometric evaluations, echoing the spirit of unconventional inspirations and infusing a touch of humor into scholarly discussions.

In light of these findings, we assert that no further research is needed in this area. The connection between LPG usage in New Zealand and CRH's stock price has been illuminated with statistical clarity, leaving no further room for doubt or disbelief. It's as clear as day - the propane paradox is a genuine statistical phenomenon, and it's high time we embrace the unexpected correlations that lurk within the world of economics and energy.

## 6. Conclusion

In conclusion, our research has shed light on the intriguing correlation between Liquefied Petroleum Gas (LPG) usage in New Zealand and CRH plc's stock price. The robust correlation coefficient of 0.8239160 and the statistically significant p-value offer compelling evidence of a strong positive linear relationship between these seemingly disparate factors. It's as though the stock market and LPG usage have formed an unexpected partnership, akin to an odd couple that somehow makes perfect sense.

Furthermore, the R-squared value of 0.6788376 highlights the substantial proportion of variability in CRH plc's stock price that can be elucidated by fluctuations in LPG usage. It's almost as if the stock market is taking cues from the propane market, performing a tango of supply and demand with finesse.

Our study accentuates the potential impact of LPG dynamics on stock prices and prompts further exploration into this enigmatic correlation. This unlikely relationship between propane and profits opens new avenues for research and stimulates thought-provoking discussions within the realms of energy economics and financial markets. After all, who knew that propane could be more than just a source of energy – it's also a potential indicator of stock market movements.