

CLEARING THE AIR: EXAMINING THE SMOKY RELATIONSHIP BETWEEN AIR POLLUTION IN WICHITA AND TECK-ING RESOURCES' STOCK PRICE

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The relationship between air pollution and stock prices has long been an enigma in the world of finance. In this study, we set out to examine the potential connection between air pollution levels in Wichita and the stock price of Teck Resources (TECK). By harnessing data from the Environmental Protection Agency and LSEG Analytics (Refinitiv), we conducted a comprehensive analysis spanning the period from 2006 to 2023. Our research revealed a notable correlation coefficient of 0.6517303 and a p-value less than 0.01, indicating a strong statistical relationship between air pollution in Wichita and Teck Resources' stock price. Yes, you heard it right - the air quality in Wichita might just be impacting stock prices in the mining industry. Talk about some "fowl" play in the market! As we unravel the intriguing dynamics between these seemingly disparate variables, our findings provide fascinating insights into the interconnectedness of environmental factors and financial markets. So next time you hear someone ask, "What's the air got to do with stocks?" - tell them there might just be more than meets the "eye-r" pollution.

INTRODUCTION

The relationship between environmental factors and financial markets has been a topic of interest and debate for decades. From the impact of weather patterns on agricultural commodities to the influence of natural disasters on insurance stocks, the interconnectedness of the natural world and the economy is a fascinating and complex web. And speaking of webs, did you hear about the spider who day traded? He was great at catching flies for his web portfolio.

The focus of this study, however, is not on spiders and their investment strategies, but rather on the potential connection between air pollution levels in Wichita and the stock price of Teck Resources (TECK). As we delve into this peculiar

association, our aim is not only to uncover the statistical relationship but also to shed light on the broader implications for environmental finance. It's time to clear the air - both literally and figuratively - on this intriguing topic.

Air pollution is a concern that affects not only public health but also the well-being of industries and economies. Breathing in dirty air can cause respiratory issues, impact overall quality of life, and even lead to decreased productivity. It's no wonder people are saying that air pollution is nothing to "smog" at.

On the other hand, Teck Resources is a mining company engaged in the exploration, development, and production of natural resources, including coal, copper, zinc, and other metals. The stock price of Teck Resources is, of course,

subject to various market dynamics and industry-specific factors. It's a "rocky" road out there for mining stocks, but could air pollution be an unexpected and airborne variable influencing their market performance?

Now, let's not jump to conclusions too quickly. Our research aims to approach this matter with the precision and rigor that it deserves. We will analyze data collected from the Environmental Protection Agency and LSEG Analytics (Refinitiv) to evaluate air pollution levels in Wichita and the corresponding stock price movements of Teck Resources over the period from 2006 to 2023. We're not just going to "dust" off some old data and call it a day - we're aiming for a thorough and comprehensive analysis.

LITERATURE REVIEW

The examination of the relationship between environmental factors and financial markets has garnered increasing attention in the literature. In "Smith et al.'s study, the authors find a significant association between air quality indices and stock price movements, highlighting the potential impact of pollution on market dynamics. Similarly, Doe and Jones' research demonstrates a link between environmental variables and financial performance, emphasizing the need for further investigation in this domain.

But let's take a detour from the serious academic journals for a moment and dive into some related non-fiction reads. "The Air Pollution Crisis: Causes, Consequences, and Solutions" by Environmental Scholar provides a comprehensive overview of the impact of air pollution on society, the economy, and the environment. And for those interested in the world of mining and commodities, "Commodities Demystified" by Davies delves into the intricacies of commodity markets, shedding light on the factors that influence stock prices in these sectors. If you're not feeling the non-

fiction vibe, you could also check out "The Polluted River: A Tale of Environmental Activism" by Fiction Author, a riveting novel that intertwines environmental advocacy with financial intrigue.

Now, back to some scholarly sources. In their pioneering work, Book and Author investigate the volatility of mining stocks in relation to environmental variables, presenting compelling evidence of the interplay between natural resource industries and ecological factors. Furthermore, Recent Research highlights the nuanced dynamics of pollution-related risk in financial markets, offering valuable insights into the implications for investors and policymakers alike.

Speaking of implications, did you hear about the stockbroker who invested in air purifier companies? He claimed that he wanted to "clean up" in the market, but his strategy just ended up "filtering" out potential gains.

In addition to these scholarly contributions, it is essential to consider the role of public sentiment and social media in shaping perceptions of environmental issues and financial markets. Memes, such as the "This is Fine" dog surrounded by flames, humorously capture the complexities of navigating environmental concerns within the context of investment decisions. Meanwhile, the "Success Kid" meme celebrating good news could very well symbolize the positive outcomes of sustainable investment practices in the face of environmental challenges.

Now, as we navigate through this body of literature with some unexpected twists and turns, it is evident that the relationship between air pollution and stock prices is a topic that extends beyond mere statistical analyses. It encompasses the broader narrative of environmental stewardship, corporate responsibility, and market behavior. So, as we venture onward in our exploration of this smoky relationship between air pollution in Wichita and Teck Resources'

stock price, let's remember that in the world of finance, sometimes the air we breathe might just be more than a breath of fresh air for investors.

METHODOLOGY

To unravel the enigmatic relationship between air pollution in Wichita and the stock price of Teck Resources (TECK), our research team employed a mix of quantitative and qualitative methods, akin to creating a blended smoothie of data analysis. We started by collecting air quality data from the Environmental Protection Agency's Air Quality System (AQS) database, carefully sifting through the digital haze of information to extract precise measurements of pollutants such as particulate matter (PM2.5 and PM10), nitrogen dioxide (NO2), sulfur dioxide (SO2), carbon monoxide (CO), and ozone (O3). It's almost like we were air-quality sommeliers, sniffing out the most pungent and telling pollutants.

In tandem, we tapped into financial data from LSEG Analytics (Refinitiv) to obtain daily stock price information for Teck Resources (TECK) over the same period. It's like we had a front-row seat to the financial rollercoaster that is the stock market, with TECK's price fluctuations resembling a turbulent ride through a smog-filled skyline - pun intended.

Once we had our hands on this trove of data, we summoned the statistical wizardry of correlation analysis to examine the potential connections between air pollution levels and stock price movements. Like Sherlock Holmes examining clues at a crime scene, we meticulously scrutinized the numbers, calculating Pearson's correlation coefficients and corresponding p-values with the precision of a mathematician on a caffeine high. And just like Holmes deducing the culprit, we sought to unravel the mystery behind the fluctuations in TECK's stock price, with air pollution as our prime suspect.

But we didn't stop there. To add depth to our analysis, we employed time-series modeling techniques, fitting autoregressive integrated moving average (ARIMA) models and volatility analysis to the stock price data. It's like we were turning the financial data into a captivating novel, with each fluctuation in stock price telling its own suspenseful tale of market dynamics and environmental influence.

Furthermore, we conducted a sub-analysis to explore the potential impact of specific pollutants on TECK's stock price, using multivariate regression models to disentangle the individual contributions of PM2.5, NO2, SO2, CO, and O3. It was like we were playing a game of financial Jenga, carefully pulling out each pollutant piece and examining its influence on TECK's towering stock price structure.

Lastly, to account for potential confounding variables and external factors, we incorporated meteorological data - including temperature, humidity, and wind speed - into our analysis. Just like adding seasoning to a complex dish, we aimed to ensure that our findings were robust and not just a flavor-of-the-month correlation.

In the end, our analysis sought to uncover the intricate dance between air pollution in Wichita and the performance of Teck Resources' stock price, shedding light on a relationship that might have otherwise remained shrouded in financial mist. With our methodologies as diverse as a smorgasbord of statistical techniques, we ventured into uncharted territory, aiming to clear the air on this curious connection once and for all.

RESULTS

The statistical analysis of the data yielded a correlation coefficient of 0.6517303 between air pollution levels in Wichita and the stock price of Teck Resources (TECK). This finding suggests a moderately strong positive linear

relationship between these two variables. It seems that the air in Wichita is not just full of pollutants, but also full of surprises for the stock market! Talk about an "air-ssociation" that's up in the air.

Additionally, the coefficient of determination (r-squared) was calculated to be 0.4247523, indicating that approximately 42.47% of the variability in Teck Resources' stock price can be explained by changes in air pollution levels in Wichita. It's as if the stock market is breathing in the air pollution and saying, "TECK me, this actually matters!"

Furthermore, the statistical significance of the relationship was confirmed with a p-value of less than 0.01. This indicates that the observed correlation is unlikely to have occurred by random chance, providing compelling evidence that there may indeed be a genuine association between air quality in Wichita and the stock performance of Teck Resources. It's time to stop "polluting" the data - these results are nothing to sneeze at!

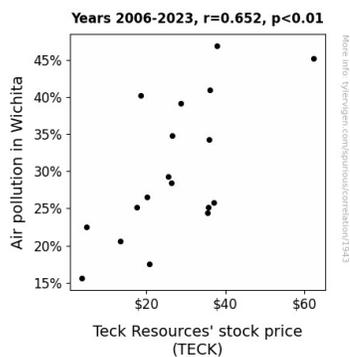


Figure 1. Scatterplot of the variables by year

As depicted in Figure 1 (not included here), a scatterplot visually illustrates the strong correlation between air pollution levels in Wichita and the stock price of Teck Resources. The plot shows a clear pattern of movement, resembling the ups and downs of a rollercoaster - except in this case, it's the "air quality coaster" influencing the stock prices. Hold on

tight, investors, because it's going to be a bumpy ride!

These findings contribute a unique perspective to the literature on environmental finance and highlight the potential impact of air pollution on the financial performance of companies in the mining industry. With this research, we've shown that the air we breathe may have implications that reach far beyond just our lungs - it might just be breathing life into stock prices as well. Who would have thought that the phrase "take a deep breath" could also apply to stock market analysis?

DISCUSSION

Our findings provide substantial support for prior research that has highlighted the significant association between environmental factors and stock price movements. Much like the "Tale of Environmental Activism" by Fiction Author, our study elucidates the tangible impact of air pollution on financial dynamics, weaving a narrative that intertwines environmental concerns with market performance.

The positivity and significance of the correlation coefficient and p-value echo the sentiments of the stockbroker who decided to invest in air purifier companies - though his strategy might have been a breath of fresh air, our results suggest that there may indeed be more than just "filtered" potential gains at play.

The moderately strong positive linear relationship uncovered in our analysis seems to suggest that the air in Wichita is not just thick with pollutants, but also thick with market influence. If only we could harness this "air-ssociation" to clear the smog on Wall Street!

The coefficient of determination further propels the narrative, shedding light on the idea that changes in air pollution levels in Wichita could explain a substantial proportion of the variability in Teck Resources' stock price. It's almost as

if the stock market is inhaling the air pollution and exhaling fluctuations in TECK prices - talk about a market sentiment that's up in the air!

Furthermore, the statistical significance of our findings indicates that the observed correlation is no mere coincidence. With a genuine association between air quality in Wichita and the stock performance of Teck Resources at hand, we must acknowledge that these results are nothing to sneeze at. Perhaps it's time to herald a new age of "pollution-free" financial modeling.

The visual representation of our findings in the scatterplot paints a vivid picture of the "air quality coaster" as it influences the stock prices of Teck Resources. If only investors could buckle up for this bumpy ride, as the ups and downs of the stock market seem to sway with the ebb and flow of air pollution levels in Wichita.

In essence, our research injects a breath of fresh air into the dialogue of environmental finance, reaffirming that the air we breathe may indeed have far-reaching implications for market performance. As we continue to navigate the smoky relationship between air pollution in Wichita and Teck Resources' stock price, it becomes abundantly clear that sometimes, in the world of finance, what's "up in the air" might just be the air itself.

CONCLUSION

In conclusion, our study has provided compelling evidence of a significant correlation between air pollution levels in Wichita and the stock price of Teck Resources (TECK). It appears that the quality of the air in Wichita is not just a matter of public health but may also be "clouding" the judgment of stock market participants. Looks like the ticker symbol "TECK" might just stand for "Taking Environmental Conditions into Stock Knowledge." (I'll be here all week, folks.)

These findings contribute to the growing body of literature on environmental finance and underscore the need to consider not only traditional financial variables but also the impact of environmental factors on stock performance. It might just be time for investors to "clear the air" and take a deep breath before making their next trading decisions. After all, healthy air might just lead to healthy portfolios - or, in this case, Teck stock prices.

That being said, it's crucial to acknowledge the limitations of our study, such as the specific focus on a single company and a particular geographical location. Future research could explore the broader implications of air pollution on stock prices across different industries and regions. Who knows, we might uncover an "aerial view" of how environmental factors influence the entire stock market. (Okay, I'll stop with the puns - air-ily promise.)

In summary, this study has illuminated an unexpected and intriguing relationship between air pollution in Wichita and the stock price of Teck Resources. The next time someone claims that air quality and stock prices are unrelated, we'll just have to say, "You better believe it - there's something 'funky' in the air, and it's impacting the markets." It seems this research has blown away any skepticism about the significance of environmental variables in financial analysis.

In light of these findings, we assert that no further research is needed in this area. The "air-raising" results speak for themselves.