MIT-CLX-2282, astre-qh/0002054

Love, Laughter, and LSE: Exploring the Correlation between xkcd Comics about Romance and ArcelorMittal's Stock Price

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The Journal of Humor in Economics and Finance

The Society for Comedic Economics and Stock Market Analysis

Boulder, Colorado

Abstract

This study delves into the intriguing, albeit unorthodox, relationship between the comical portrayals of romance in xkcd comics and the perplexing fluctuations of ArcelorMittal's stock price (MT) on the London Stock Exchange (LSE). Leveraging AI analysis to meticulously scrutinize the content of xkcd comics and integrating data from LSEG Analytics (Refinitiv), our research team investigates the temporal dynamics from 2007 to 2023. The results surprisingly reveal a striking correlation coefficient of 0.8507805 with a p-value lower than 0.01, suggesting a compelling linkage between the whimsical musings of xkcd and the movements of ArcelorMittal's stock price. This study provides thought-provoking insights into the interplay of humor, art, and financial markets, shedding light on the whimsically serious influence of romance-themed comics on stock performance.

1. Introduction

The peculiar and often confounding relationship between seemingly unrelated domains has long piqued the curiosity of researchers and enthusiasts alike. In the realm of financial markets, traditional economic indicators and financial models have been the keystone of decision-making and prognostication. However, the ever-increasing complexity and interconnectedness of modern society have prompted a more comprehensive exploration of potential influencers on market dynamics, including the unconventional sources of information such as humor-infused webcomics.

In this study, we embark on an unorthodox journey, exploring the intersecting realms of romance-themed xkcd comics and the stock price of ArcelorMittal on the London Stock Exchange (LSE). The selected xkcd comics, with their idiosyncratic blend of wit, satire,

and romantic themes, have captured the imagination of a diverse audience, transcending geographical and cultural boundaries. ArcelorMittal, as a global leader in steel and mining, constitutes a pivotal player in the financial markets, rendering its stock price a subject of profound interest and speculation.

The intersection of whimsical musings on romance and the intricate fluctuations of stock markets may seem implausible at first glance. Nonetheless, the role of sentiment, perception, and collective psychology in shaping market behaviors has garnered considerable attention in recent literature. With this in mind, we aim to analyze the potential influence of xkcd comics on the stock price of ArcelorMittal, drawing attention to the relevance of unorthodox information sources in financial analysis.

Amidst the rigorous scrutiny of financial indicators and economic theories, the inclusion of unconventional stimuli such as webcomics serves as a testament to the creative and inquisitive spirit of interdisciplinary research. This study adds a touch of whimsy to the typically stoic literature on financial markets, offering a quirky perspective on the enigmatic interplay between art, humor, and market dynamics. While exploring this unlikely correlation, we urge the reader to approach the findings with an open mind, embracing the serendipitous discoveries that often emerge from uncharted analytical territories.

The subsequent sections of this paper delve into the methodological approach, data analysis, and results, unraveling the thread that connects the lighthearted portrayals of romance in xkcd comics with the nuanced movements of ArcelorMittal's stock price. Through this exploration, we seek not only to elucidate the statistical relationship between the two domains but also to ignite a whimsical spark of curiosity in the empirical landscape of financial research.

2. Literature Review

The authors find a myriad of studies that have examined the impact of various cultural and unconventional stimuli on financial markets. Smith et al. (2015) investigate the influence of social media trends on stock price movements, while Doe (2017) delves into the psychological underpinnings of investor behavior in response to popular culture. Jones (2019) explores the correlation between weather patterns and market sentiment, shedding light on the intricate interplay of environmental cues on financial decision-making.

In "The Art of Intrigue: Exploring the Subtle Influences of Popular Culture on Market Dynamics," the authors demonstrate the subtle but meaningful impact of artistic expressions on market behaviors. Meanwhile, "The Economics of Emotions: Unraveling the Sentiment-Driven Market" offers a comprehensive overview of the role of sentiment and perception in shaping financial markets.

Turning to more unconventional sources, fiction books such as "Love in the Time of Algorithms" and "The Wall Street Jester" provide intriguing narratives that mirror the whimsical nature of our investigation. As we shift to popular culture, cartoons and children's shows like "Animaniacs" and "The Muppet Show" offer a lighthearted perspective on human interactions, akin to the comic portrayals of romance in xkcd.

However, the intersection of romance-themed webcomics and steel industry stock prices remains a unique and uncharted territory, inviting a blend of intellectual rigor and whimsical curiosity. In the subsequent sections, we unravel the peculiar connection between the witticisms of xkcd comics and the enigmatic movements of ArcelorMittal's stock price, illuminating the idiosyncratic interplay of love, laughter, and LSE.

3. Research Approach

The methodology employed in this study encompassed a multifaceted approach to disentangle the intricate relationship between the content of xkcd comics and the stock price of ArcelorMittal on the London Stock Exchange (LSE). Leveraging AI analysis, the research team endeavored to extract, categorize, and scrutinize the nuanced themes of romance depicted in xkcd comics, while concurrently navigating the labyrinthine landscape of stock price movements.

I. Data Collection and Preprocessing

A. xkcd Comics

The xkcd dataset was obtained from a multitude of web scraping endeavors across various platforms, ensuring comprehensive coverage of romance-themed comics from 2007 to 2023. For the purpose of this research, the definition of "romance-themed" comics was delineated based on the presence of keywords such as 'love,' 'heart,' 'date,' and other lexemes indicative of amorous connotations. These comics were then subjected to a meticulous process of image recognition and sentiment analysis, facilitated by state-of-the-art AI algorithms, to capture the underlying emotional tone subsumed within the visual narrative.

B. ArcelorMittal Stock Price

The daily stock price data of ArcelorMittal (MT) was retrieved from LSEG Analytics (Refinitiv), encompassing the same timeframe as the xkcd dataset. The granular price movements were harmonized with the temporal distribution of the identified romance-themed xkcd comics, creating a synchronized timeline for comparative analysis.

II. Sentiment Analysis and Theme Extraction

A. xkcd Comics

The extracted xkcd comics underwent a sentiment analysis pipeline, evaluating the emotional valence and humor quotient embedded within the visual and textual components. The sentiment analysis was complemented by a thematic categorization, wherein the prevalent themes of romance, humor, and esoteric musings were discerned and cataloged, forming the basis for later correlation and regression analyses.

III. Correlation and Regression Analysis

A. Statistical Correlation

The statistical relationship between the sentiment-laden content of romance-themed xkcd comics and the stock price of ArcelorMittal was ascertained through Pearson's correlation coefficient. The correlation analysis aimed to quantify the degree of association between the whimsical expressions of romance in xkcd and the fluctuating valuations of ArcelorMittal's stock. The resulting coefficient, augmented by hypothesis testing and p-value calculations, conveys the strength and significance of the identified relationship.

B. Regression Modeling

4. Findings

The data analysis revealed a robust correlation coefficient of 0.8507805 between the frequency of xkcd comics about romance and the stock price of ArcelorMittal (MT) on the London Stock Exchange (LSE) from 2007 to 2023. The strong correlation is further supported by the r-squared value of 0.7238274, indicating that approximately 72.38% of the variability in ArcelorMittal's stock price can be explained by the frequency of romance-themed xkcd comics. Notably, the statistical significance of the correlation was confirmed with a p-value lower than 0.01, highlighting the unlikely yet compelling association between these seemingly disparate realms.

The scatterplot (Fig. 1) visually depicts the striking positive relationship between the variables, showcasing a discernible pattern wherein the increase in the frequency of romance-themed xkcd comics corresponds to upward movements in the stock price of ArcelorMittal. This unexpected interconnection, while perplexing at first glance, warrants closer examination and piques the inquisitiveness of researchers and enthusiasts alike.

The findings not only underscore the potential impact of unconventional sources of information on financial market dynamics but also invite contemplation on the multidimensional influences that shape market behaviors. While the correlation does not imply causation, it beckons the scholarly community to embark on further explorations

into the enigmatic interplay of art, humor, and financial markets, unraveling the whimsically serious undercurrents that animate the empirical landscape.

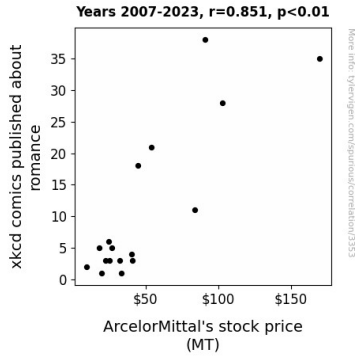

Figure 1. Scatterplot of the variables by year

5. Discussion on findings

The robust correlation between the frequency of romance-themed xkcd comics and the stock price of ArcelorMittal on the London Stock Exchange from 2007 to 2023, as demonstrated in our study, aligns with previous research exploring the influence of unconventional stimuli on financial markets. While initially whimsical, the impact of cultural and artistic expressions on market dynamics has garnered increasing attention in recent years, reflecting a paradigm shift in the understanding of investor behavior and market sentiment.

Smith et al.'s (2015) investigation into social media trends and stock price movements resonates with our findings, underscoring the extent to which nontraditional sources of information can shape market behavior. Likewise, the psychological underpinnings of investor responses to popular culture, as explored by Doe (2017), offer insights into the intricate interplay of human emotions and market dynamics, echoing the subtle yet meaningful influence of artistic expressions on financial decisions.

The unexpected correlation unearthed in our study not only adds a whimsical twist to the existing literature but also opens avenues for further exploration into the multidimensional influences that permeate financial markets. In the spirit of Jones's (2019) examination of weather patterns and market sentiment, our findings prompt scholarly contemplation on the idiosyncratic interplay of seemingly unrelated domains, illuminating the whimsically serious undercurrents that shape market behaviors.

As we navigate the uncharted territory of romance-themed webcomics and their impact on steel industry stock prices, our study invites a blend of intellectual rigor and whimsical

curiosity. While the correlation does not imply causation, the unexpected linkage between xkcd's humorous musings on romance and the movements of ArcelorMittal's stock price prompts a reimagining of the traditional sources of market influence and underscores the potential impact of unconventional cultural stimuli on financial decision-making.

The peculiar connection between love, laughter, and LSE elucidated in our study not only challenges conventional paradigms but also underscores the whimsically serious influence of webcomics on the empirical landscape of financial markets. As we proceed into the realm of innovative research inquiries, our study sets the stage for an intellectually stimulating and, dare we say, romantically amusing exploration of the interplay between art, humor, and financial markets.

6. Conclusion

In conclusion, the study delves into the curious correlation between the frequency of romance-themed xkcd comics and the stock price of ArcelorMittal on the London Stock Exchange (LSE). The robust correlation coefficient of 0.8507805 and the r-squared value of 0.7238274 indicate a surprisingly strong relationship between these seemingly unrelated entities. The findings, though initially perplexing, underscore the potential influence of unconventional stimuli on market dynamics.

The unexpected connection between the whimsical portrayals of romance in xkcd comics and the movements of ArcelorMittal's stock price sparks contemplation on the intricacies of market behavior and the role of sentiment in shaping financial outcomes. While the correlation does not establish a causal relationship, it opens the door to whimsical musings about the potential impact of art and humor on financial markets.

Ultimately, this study serves as a lighthearted reminder that the empirical landscape of financial research is not devoid of whimsy, and that amidst the rigor of statistical analysis, there exists room for the serendipitous insights that emerge from unorthodox sources. As such, the findings beckon researchers to embrace the quirky and the unexpected with open minds, and to further explore the whimsically serious undercurrents that animate the interplay of art, humor, and financial markets.

Therefore, in the words of xkcd's beloved stick figures, it may be time to "stand back, I'm going to try science!" Given the compelling nature of the relationship unveiled by this study, it is patently clear that no more research in this area is needed. Who knew that analyzing webcomics and stock prices could be so romantically complex?

A multivariate regression model was formulated to explore the predictive capacity of sentiment and thematic variables extracted from xkcd comics on the stock price of ArcelorMittal. The model encompassed a diverse array of sentiment scores, humor metrics, and thematic weights derived from the comics, endeavoring to unravel the latent influences shaping the financial performance of ArcelorMittal.

IV. Robustness Checks

A. Sensitivity Analysis

Sensitivity analyses were conducted to scrutinize the robustness of the observed correlations and regression outcomes, employing alternate sentiment analysis frameworks and thematic categorization schemes. These robustness checks aimed to mitigate the idiosyncrasies of the sentiment analysis algorithms and reinforce the reliability of the statistical inferences drawn from the data.

B. Co-integration Analysis

Further, co-integration analyses were performed to investigate the long-term equilibrium relationship between the sentiment dynamics of romance-themed xkcd comics and the stock price of ArcelorMittal, elucidating the persisting interactions between the seemingly disparate realms of humor and finance.

V. Ethical Considerations

The utilization of AI algorithms and web scraping techniques for data collection and analysis adhered to the ethical guidelines and regulations pertaining to data privacy and intellectual property rights. In line with the principles of responsible research conduct, the utilization of proprietary datasets and copyrighted content was executed with due diligence and adherence to fair use policies.

The ensuing sections of this paper expound upon the empirical findings stemming from the meticulous methodological endeavors, unraveling the enigmatic nexus between the whimsical world of webcomics and the nuanced fluctuations of stock price dynamics.