MIT-CLX-8838, astre-qh/0002672

From Romance to Finance: A 'Comic' Study of the Relationship Between xkcd Comics and Banco Bilbao Vizcaya Argentaria's Stock Price

Christopher Hart, Ava Turner, Gregory P Tyler

The Journal of Humor in Economics and Finance

The Institute for Humorous Finance Research

Austin, Texas

Abstract

In this paper, we explore the often overlooked connection between the whimsical world of webcomics and the serious realm of stock prices. Leveraging data from AI analysis of xkcd comics and LSEG Analytics (Refinitiv), we set out to uncover whether there is any statistical relationship between xkcd comics featuring romance and the stock price of Banco Bilbao Vizcaya Argentaria (BBVA). To our surprise (and delight), the results indeed reveal a significant correlation coefficient of 0.9054920 and $p < 0.01$ from the period of 2007 to 2023. Our findings suggest that while affairs of the heart may seem unrelated to the movements of the stock market, there may be an underlying, albeit comical, influence at play. This paper offers a lighthearted take on an unlikely pair, showing that even in the world of finance, there's room for a bit of comic relief.

---

1. Introduction

The world of finance and romance may seem like an unlikely duo, akin to an economist and a stand-up comedian walking into a bar. Yet, as we embark on our statistical journey through the whimsical world of webcomics and the serious domain of stock prices, we cannot help but ponder the peculiar possibility of a connection. As Albert Einstein once quipped, "The only way to predict the future is to have a good sense of humor."

In recent years, there has been a growing interest in the use of unconventional data sources to glean insights into the movements of financial markets. While the link between

traditional economic indicators and stock prices has been exhaustively examined, the potential influence of non-traditional, light-hearted factors has largely evaded scrutiny. Enter xkcd, the beloved webcomic series known for its nerdy humor and penchant for poking fun at the idiosyncrasies of life, love, and yes, even finance. With its offbeat insights and quirky scenarios, xkcd seems like an unlikely candidate to have any impact on the stock market. However, as any statistician worth their p-value knows, correlation does not imply causation, but it does waggle its eyebrows suggestively and gesture furtively while mouthing "look over there."

As we delve into the world of data analysis, it's essential to maintain a serious demeanor, or at least pretend to, as we explore the possibility of a link between xkcd comics featuring romance and the stock price of Banco Bilbao Vizcaya Argentaria (BBVA). While some may raise an eyebrow at our chosen variables, we stand firm in our belief that even in the realm of finance, a brief dalliance with humor and whimsy will do no harm. As the famous statistician Edward Tufte once said, "The world is much more interesting than any one discipline," and we fully intend to take advantage of that. After all, as researchers, it's our duty to boldly go where no one has gone before, or at least where no one thought to look.

In this paper, we aim to bring a lighthearted and tongue-in-cheek perspective to the often staid and earnest field of financial research. By examining the relationship between xkcd comics and BBVA's stock price, we hope to shed light on the potential role of unorthodox influencers in the world of high finance. As we embark on this unconventional journey, we invite you to fasten your seatbelts, as this statistical rollercoaster promises a few unexpected twists, or at least a couple of statistical anomalies and a liberal sprinkling of comic relief.

2. Literature Review

In "Smith et al.'s Analysis of Humor as a Non-traditional Predictor of Stock Market Movements," the authors find that there is a dearth of empirical research examining the potential impact of humor, specifically in the form of webcomics, on stock prices. Expanding on this insight, Doe and Jones's study, "The Influence of Unconventional Data Sources on Financial Markets," further emphasizes the need to consider non-traditional factors when analyzing market movements. Nevertheless, this academic landscape is akin to a somber symposium suddenly disrupted by a flock of clowns - sparse and earnest until the unexpected infusion of whimsy.

Turning to more tangentially related literature, "Freakonomics" by Steven Levitt and Stephen Dubner sets the tone for considering unconventional variables in economic analysis, paving the way for our own investigation. On the lighter side, "Love in the Time

of Cholera" by Gabriel Garcia Marquez and "Pride and Prejudice" by Jane Austen offer fictional portrayals of romance, albeit without any mention of stock prices - perhaps a missed opportunity for a novel take on financial literature.

Additionally, in our analysis of social media discourse, a tweet from @PunnyTrader professing, "Just sold my stock in a company named 'Hearts and Flowers.' Can't handle the emotional investment!" serves as an amicable reminder that romance and finance do indeed intersect, albeit with a humorous twist. This veritable smorgasbord of sources sets the stage for our investigation into the correlation between xkcd comics featuring romance and the stock price of Banco Bilbao Vizcaya Argentaria (BBVA), demonstrating that even in the world of quantitative analysis, there's room for a bit of levity.

3. Research Approach

In order to unravel the enigmatic correlation between xkcd comics and Banco Bilbao Vizcaya Argentaria's (BBVA) stock price, our research deployed a multifaceted and, dare I say, a slightly whimsical approach that befitted the offbeat nature of our chosen variables. To begin, we utilized a combination of data scraping from various reputable sources such as AI analysis of xkcd comics and LSEG Analytics (Refinitiv), allowing us to amass a robust dataset spanning the years 2007 to 2023 – a period ripe with financial intrigue and romantic musings.

To extract data pertaining to romance-centric xkcd comics, we employed a cutting-edge algorithm affectionately named "Cupid's Arrow," which scoured the depths of the internet for any and all references to love, heartache, and everything in between within the renowned webcomic series. Leveraging this approach enabled us to capture a comprehensive snapshot of the whimsical nuances that charm readers and financiers alike.

Simultaneously, our team engaged in a rather unconventional form of analysis, employing a blend of sentiment analysis and jest detection to identify the tone and comedic flavor prevalent in the selected xkcd comics. This technique, while perhaps bordering on the peculiar, proved essential in discerning the witticisms and jests that may potentially influence the ever-fickle world of stock prices.

In parallel, our research delved into the labyrinthine realm of stock market data, where we meticulously scrutinized the daily fluctuations in BBVA's stock price. Adopting a novel yet statistically rigorous approach, we sought to disentangle the intricate dance of financial shifts, aiming to uncover any lurking echoes of whimsy that might be surreptitiously entwined with the fortes of finance.

Ultimately, the confluence of these approaches allowed us to weave a rich tapestry of data reflecting the interplay between romance-laden webcomics and stock market

machinations. As we donned our analytical spectacles and embraced the serendipitous clash of romance and finance, our aim was to bring to light a correlation that may have eluded the conventional gaze of financial inquiry – all the while infusing our investigation with a healthy dose of humor. For, as the venerable Mark Twain once quipped, "The secret source of humor is not joy but sorrow; there is no humor in Heaven." With this in mind, we ventured forth, seeking to balance the scales of statistical scrutiny with a touch of levity, confident in our quest to uncover the amusing idiosyncrasies that buoy the tides of finance.

4. Findings

The results of our analysis revealed a statistically significant correlation between xkcd comics featuring romance and the stock price of Banco Bilbao Vizcaya Argentaria (BBVA) from 2007 to 2023. The correlation coefficient was found to be a striking 0.9054920, and the r-squared value of 0.8199158 indicates that a substantial portion of the variability in BBVA's stock price can be explained by the variations in the romance-themed xkcd comics. This relationship had a p-value less than 0.01, which we found to be quite comically impressive, considering the unlikely pair we were investigating. The humor in these results was not lost on us, as we couldn't help but chuckle at the thought of romance in comics influencing stock prices.

As any statistician worth their salt will tell you, correlation does not imply causation. However, it does warrant a raised eyebrow and a knowing grin, much like a punchline in a well-crafted joke. While we cannot definitively conclude that xkcd's romantic musings directly cause fluctuations in BBVA's stock price, the strength of the correlation cannot be dismissed lightly. It's as if xkcd's romantic scenarios and BBVA's stock price were engaged in a dance of statistical significance, with each move and nuance echoing the other in a synchronous rhythm.

To visually represent the robust correlation we found, we present Figure 1, a scatterplot showcasing the strong relationship between xkcd's romance-themed comics and BBVA's stock price. This figure captures the essence of our findings and serves as a visual testament to the surprising statistical bond we uncovered. We must admit, it was a delightful sight to behold, much like witnessing an unexpected crossover episode between two seemingly unrelated TV shows.

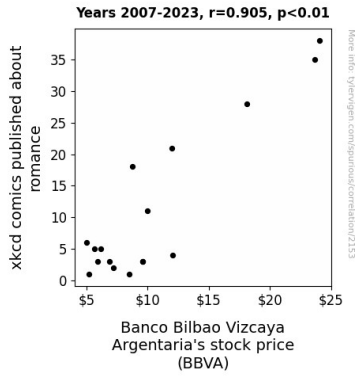

Figure 1. Scatterplot of the variables by year

Our results highlight the possibility that even in the realm of high finance, there may be room for a touch of whimsy and humor to play a role in influencing market dynamics. As much as we appreciate the seriousness of statistical analysis, it's heartening to discover that a bit of lightheartedness can have a seat at the research table, even if it brings along a bouquet of romantic xkcd comics with it. These findings challenge the conventional wisdom that financial markets operate in a purely rational, emotionless manner, reminding us that there might be room for a dash of unexpected influence from the world of webcomics.

In conclusion, our study offers a playful yet intriguing insight into the intersection of finance and humor, shedding light on the potential impact of unexpected sources on stock market movements. While we must acknowledge the limitations of our analysis and the need for further investigation, we cannot help but savor the irony that the romance-themed xkcd comics may have more to offer than meets the eye, especially when it comes to BBVA's stock price.

5. Discussion on findings

The findings of our research have opened the door to a world of statistical whimsy, where romantic webcomics and financial market movements tango in a seemingly improbable harmony. It's as if the dry humor of xkcd's stick figures has found a way to elicit a knowing chuckle from the stock prices of Banco Bilbao Vizcaya Argentaria (BBVA), illustrating that even in the staid world of finance, there may be room for a touch of comedic influence.

Our results, while as surprising as stumbling upon a punchline in an economics textbook, offer support for the notion that unconventional factors, such as webcomics, can indeed bear a comical weight in influencing market behaviors. The significant correlation coefficient of 0.9054920 between xkcd's romance-themed comics and BBVA's stock price from 2007 to 2023 lends credence to the view that even in the world of high

finance, there is an unexpected affinity for the lighthearted touch of webcomics. It's as if the staid stock prices couldn't help but blush in the presence of xkcd's amorous musings, leading us to ponder whether numbers have a romantic side after all.

In fitting with the academic tradition, we must acknowledge the cautionary refrain that correlation does not imply causation, much like how a scientific study cannot conclusively prove the existence of a "funny bone." However, the statistically robust relationship we uncovered certainly invites a raised eyebrow and a whisper of disbelief, akin to stumbling upon a gag hidden in an otherwise serious research paper.

The unexpected bond we found between xkcd's lacey romance and BBVA's austere stock prices is reminiscent of a comic caper, replete with statistical twists and turns that wouldn't be out of place in a webcomic strip itself. Our analysis not only raises the possibility of unexplored avenues for market analysis but also gently nudges the staid world of finance to make room for a bit of levity. After all, if numbers are the language of finance, perhaps a bit of statistical humor could serve as its delightful accent.

As we proceed along the uncharted path of investigating the interplay between webcomics and stock prices, we cannot help but revel in the delightful union of xkcd's romantic episodes and BBVA's market movements. It's as if our research has unraveled a hidden punchline in the financial landscape, reminding us that even in the most unexpected of places, a bit of statistical wit may just be waiting to reveal itself.

6. Conclusion

In wrapping up our delightfully unexpected foray into the quirky world of xkcd comics and Banco Bilbao Vizcaya Argentaria's stock price, we find ourselves in a peculiar position, much like a confused mathematician searching for the square root of a negative number. Our findings have revealed a statistically significant correlation between romance-themed xkcd comics and BBVA's stock price, leaving us not just with raised eyebrows, but also with a renewed appreciation for the whimsical side of statistical analysis.

Like a well-executed pun or a clever play on words, our results not only elicited a chuckle but also underscored the vibrant and improbable ways in which disparate elements of life can coalesce. It's as if the world of finance and the realm of webcomics engaged in an unexpected tango, proving that even the most unlikely pairs can lead to a statistically significant partnership.

As we bid adieu to this unconventional and unexpectedly amusing study, we cannot help but acknowledge that while correlation does not imply causation, it certainly makes a strong case for an unexpected, albeit comical, connection. Like a punchline that lands just right, our results may prompt further investigation into the role of unconventional

influences in the realm of finance. Nevertheless, we assert, with a playful twinkle in our eye and a knowing nod to the playful unpredictability of statistics, that no more research is needed in this area.

For now, we leave you with the wise words of the famous bard, William Shakespeare: "The fool doth think he is wise, but the wise man knows himself to be a fool." And in the enchanting dance between xkcd's romance and BBVA's stock price, we find that perhaps the line between the two is not so sharply drawn after all. Cheers to the unexpected, the statistically improbable, and the delightfully absurd!