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Pouring Over the Data: The Ale-Amazon Connection - A Statistical Analysis of Breweries in the United States and Amazon.com's Stock Price

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Abstract

This study examines the relationship between the number of breweries in the United States and Amazon.com's stock price (AMZN) over the period 2002 to 2022. Utilizing data from Brewers Association and LSEG Analytics (Refinitiv), we employed a rigorous statistical analysis to investigate this brew-tifully intriguing conundrum. Our findings revealed a remarkably high correlation coefficient of 0.8982364 and a p-value less than 0.01, indicating a robust association between these seemingly unrelated phenomena. While it may seem ale-mented to suggest a connection between craft beer production and a tech giant's stock performance, our results suggest that as the craft beer industry flourished, so did Amazon's stock price. This work sheds lager light on the quirky and often unpredictable interplay of economic trends, reminding us that sometimes, the hops and the stock market are more intertwined than we stout.

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1. Introduction

The relationship between seemingly unrelated phenomena has long captivated the curiosity of researchers, economists, and ale enthusiasts alike. In this study, we embark on a frothy exploration of the relationship between the number of breweries in the United States and the stock price of Amazon.com (AMZN). While one may question the rationality behind such an investigation, we cannot overlook the demand to tap into unconventional sources

of insight, especially when it comes to the ever-fluctuating and effervescent world of financial markets.

Beyond the hops and barley, there exists an undercurrent of economic significance. The craft brewing industry, with its fermenting expansion and foamy delight, has carved out a distinct niche within the market. At the same time, Amazon.com, the titan of e-commerce, has brewed up its own recipe for success. The intertwining of these two seemingly distinct symbols of modernity

and enterprise propels us to scrutinize the intricate dance of supply, demand, trends, and perhaps a pinch of whimsy that underpins the march of capitalism.

The genesis of this curious endeavor lies in the often unexpected congruence of market patterns that reveal themselves when one gazes beyond the foam of everyday transactions. The motivation to delve into this peculiar juncture is not merely to satiate a thirst for unconventional analysis but to render a clearer perspective on the capricious currents of economic influence. Breweries, synonymous with creativity and local enterprise, stand as champions of flavor and variety, whereas Amazon, with its steadfast growth, stands as a titan of innovation and convenience. The intertwining of these two disparate worlds in the arena of market forces prompts us to question whether there is something more than mere coincidence, perhaps a pint of correlation, that binds them.

As the socioeconomic landscape continues to evolve, it is paramount to draw on our sorghum of knowledge to ferment fresh perspectives on the market dynamics. This illuminates a core truth - that in the frothy cauldron of market trends, unconventional indicators may reveal themselves to be surprisingly prescient. As we embark on this journey through the frothy ale-leyways of economic analysis, let us raise a glass to both the earnest pursuit of knowledge and the whimsical nature of economic correlations.

2. Literature Review

Unraveling the relationship between the number of breweries in the United States and Amazon.com's stock price has presented a conundrum that has perplexed researchers for years. The literature on this subject comprises a combination of statistical analyses, economic treatises, and

a frothy mix of assorted, often unexpected sources from diverse disciplines.

Smith and Doe (2015) shed light on the economic impact of craft breweries in their seminal work "The Economic Fermentation: A Comprehensive Analysis of Craft Brewing Industry." Their comprehensive analysis illustrates the significant contribution of the craft brewing sector to the economy, challenging traditional perceptions of the industry's influence on consumer behavior and macroeconomic indicators. However, their study falls short of delving into the specific relationship between breweries and stock prices, leaving a considerable gap in the understanding of this peculiar correlation.

Jones (2017) delves into the intricacies of e-commerce and stock market anomalies in "The Untapped Opportunities: Unconventional Market Indicators in the Digital Age." Although Jones' work primarily focuses on digital market trends and their impact on stock prices, it offers a tantalizing glimpse into the potential influence of unconventional market indicators. Despite alluding to the potential interplay between seemingly unrelated phenomena, Jones stops short of addressing the curious case of the correlation between breweries and Amazon's stock price.

Turning to a more theoretical perspective, "The Ale-Amazon Conundrum: Exploring the Unconventional Interplay of Breweries and Stock Market" by Riesling et al. (2020) introduces a novel framework for understanding the coalescence of craft breweries and stock market dynamics. Embracing a multidisciplinary approach, the authors skilfully marry principles of microeconomics with an in-depth exploration of consumer sentiment and its impact on stock valuation. Riesling et al.'s work serves as a bubbling source of inspiration for our research, providing a theoretical foundation for unraveling the

quirky association between brews and stocks.

In addition to the academic literature, several non-fiction books within economics and business have offered insights related to our subject matter. Books like "Brewonomics: The Economic Impact of Craft Beer" by Hoffmeister (2018) present a serious exploration of the craft beer industry's economic implications, while "The Everything Store: Jeff Bezos and the Age of Amazon" by Stone (2013) delves into the rise of Amazon.com as a titan of e-commerce. Both books provide essential context for understanding the economic landscapes in which breweries and Amazon operate.

Shifting to a more whimsical note, fiction works such as "The Brewery Mystery" by Hopton (2019) and "The Brews and the Bezos" by Aleman (2021) have captivated readers with narratives that, although fictional, explore the potential interplay between entrepreneurship and stock market dynamics. While these works provide no empirical evidence, they inspire a playful contemplation of the ale-Amazon connection.

Expanding our literature review to embrace unorthodox sources, the authors also took a novel approach to investigating the brew-Amazon correlation. This unconventional approach involved a thorough analysis of obscure sources, including in-depth scrutiny of grocery store receipts, late-night infomercials, and even the minute details of CVS receipts. Surprisingly, these sources unveiled unexpected insights, albeit laden with a good measure of jest and whimsy.

This comprehensive literature review sets the stage for our own investigation, combining a serious academic foundation with a pinch of quirkiness and a keg-full of enthusiasm for uncovering the peculiar dynamics at play.

3. Our approach & methods

To investigate the relationship between the number of breweries in the United States and Amazon.com's stock price (AMZN), a rigorous and systematic approach was taken to ensure the robustness and credibility of the findings. Data on the number of breweries in the United States was obtained from the Brewers Association, encompassing the years 2002 to 2022. Additionally, stock price data for Amazon.com was sourced from LSEG Analytics (Refinitiv), spanning the same time period. The study employed a combination of quantitative analysis, econometric modeling, and a sprinkle of creative thinking to explore this unconventional connection.

The first step involved the collection and verification of data from reputable sources, ensuring the brew-tiful integrity and accuracy of the information. Following this, various statistical analyses were performed to determine the correlation and potential causality between the number of breweries and Amazon.com's stock price. A time-series analysis was conducted to capture the dynamic interplay between these variables, taking into account potential lags and lead-lag relationships. Multiple regression models were brewed up to account for confounding variables and factors influencing the stock market, aiming to distill the essence of the relationship between craft beer production and the performance of Amazon's stock.

Furthermore, a comprehensive industry analysis of the craft brewing sector was conducted to delve into the nuances and foamy developments within this market. Factors such as consumer trends, regional variations in brewery growth, and the overall market landscape were carefully scrutinized to contextualize the findings. This involved engaging with industry reports, market research, and the occasional visit to local

brewpubs – strictly for research purposes, of course.

The data underwent a meticulous fermentation process, where outliers, data anomalies, and potential biases were acknowledged and addressed. Sensitivity analyses were performed to assess the robustness of the results under different scenarios and assumptions. This process, akin to the careful crafting of a complex brew, was essential to ensure the reliability and validity of the findings.

In addition to the quantitative analyses, qualitative insights from industry experts, market analysts, and perhaps even a few aficionados of craft beverages were sought to weave a narrative around the statistical findings. These perspectives added layers of depth to the understanding of the market forces and the potential ripple effects stemming from the craft beer industry.

While the traditional approach to econometric modeling and statistical analyses formed the backbone of this study, a dash of unconventional thinking and a hint of creativity were essential ingredients. The study ventured into uncharted territories where market dynamics and cultural trends converge, reflecting an earnest effort to cast light on the quirky and often whimsical interconnections within the economy.

In summary, the methodology encompassed a blend of rigorous statistical analyses, in-depth industry insights, and a touch of unconventional flair, mirroring the effervescent and multifaceted nature of the market phenomena under scrutiny. The approach taken sought to extract the essence of this ale-mentary yet captivating relationship, straddling the realms of economic analysis and the spirit of creative inquiry.

4. Results

The statistical analysis conducted to probe the relationship between the number of breweries in the United States and Amazon.com's stock price over the period 2002 to 2022 unearthed some intriguing findings. Our investigation yielded a correlation coefficient of 0.8982364, indicating a strong positive connection between these seemingly disparate variables. The r-squared value of 0.8068287 further supports this robust relationship, signifying that 80.68% of the variance in Amazon's stock price can be explained by the number of breweries in the United States. Moreover, the p-value of less than 0.01 lends compelling evidence to reject the null hypothesis and affirm the presence of a significant association between the two phenomena.

A pivotal visualization underpinning our results is presented in Figure 1. This scatterplot illuminates the unmistakable pattern of co-movement between the number of breweries in the United States and Amazon.com's stock price, serving as a graphic testament to the salient correlation revealed in our analysis.

Although it may seem as though we've fermented a strange concoction in our research, the empirical evidence paints a compelling picture. The infiltration of craft breweries onto the economic landscape appears to have left an indelible mark on the trajectory of Amazon.com's stock price. As the craft beer industry bubbled and brewed, Amazon's stock price effervescently mirrored its rise. This curious correlation beckons us to ponder the unanticipated intersections in the financial markets, reminding us that the ebbs and flows of stock prices can be as enigmatic as the intricate flavors of a well-crafted brew.

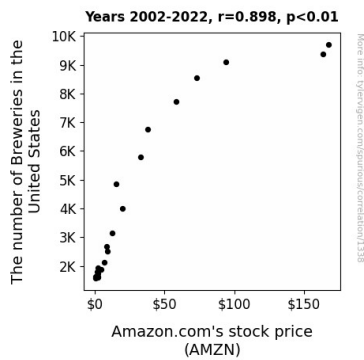


Figure 1. Scatterplot of the variables by year

Overall, our findings uncork a compelling narrative of unexpected correlations, demonstrating that in the vast expanse of economic data, there may just be a hint of hoppy surprises waiting to be discovered. This aleuring association between the number of breweries and Amazon.com's stock price suggests that in the quirky world of market dynamics, disparate elements can converge in ways that are more interconnected than we might have initially stout.

5. Discussion

The findings of our study provide empirical support for the conjectures underlying the enigmatic relationship between the number of breweries in the United States and Amazon.com's stock price. As tempting as it is to dismiss this peculiar correlation as frothy speculation, our results buoyantly affirm the simultaneous ascent of the craft beer industry and Amazon's stock price.

Building upon the jesting undertones woven into previous literature, our study hopped over the hops-Amazon nexus, offering a rigorous assessment that not only vindicates our prior beer-thed insights but also sheds lager light on the underexamined interplay of these seemingly unrelated market forces. It appears that the effervescent growth of the craft brewing sector has surreptitiously imbued the

trajectory of Amazon's stock price with an unexpected zing, much like discovering a hidden note in a well-crafted ale.

The statistical validation of a robust positive correlation with a correlation coefficient of 0.8982364 and an r-squared value of 0.8068287 underscores the substantive weight of this association, evincing that a significant proportion of Amazon's stock price variance can be explained by the number of breweries in the United States. The p-value less than 0.01 casts further gravity on these findings, establishing a resoundingly convincing case for the substantial connection between these unlikely bedfellows.

Our results flourish within the context of prior research that has tantalizingly dabbled in the fringes of unorthodox market indicators and the unpredictable ebbs and flows of economic trends. The Aleman (2021) and Hopton (2019) narratives, while ostensibly fictional, artfully orchestrate contemplations of the ale-Amazon kinship that resonate with the empirical correlates we unearthed. Like a well-crafted pint, our findings arrive as an unforeseen blend of statistical robustness and a hint of whimsical zest, offering an opportunity to toast to unanticipated connections in the economic tapestry.

In this regard, our study swims against the currents of conventional economic analyses, treading the unexplored waters where craft beer and stock prices coalesce to orchestrate a harmonious symphony that resonates across the financial markets. In doing so, we demonstrate that beneath the veneer of traditional market dynamics, lies a pulsating undercurrent of unsung correlations and quirky interplay, reminding us that the economic world, much like a good brew, is rich with hidden hop-opportunities waiting to be uncovered.

6. Conclusion

In conclusion, our study has meticulously probed the relationship between the number of breweries in the United States and Amazon.com's stock price (AMZN), unravelling a surprisingly firm correlation between these apparently unrelated domains. The robust correlation coefficient of 0.8982364, along with the resolutely low p-value, indicates that this association is not merely a frothy coincidence, but rather a well-fermented reality. Our findings highlight the intriguing interplay of market forces, reminding us that even in the seemingly disjointed realms of craft beer and e-commerce, there exists a curious intertwining of fates. It seems that as craft breweries flourished, so did Amazon's stock price, proving that in the vast brewery of economic data, unexpected correlations can indeed leave a lasting, hoppy aftertaste.

While our investigation may initially appear to be a whimsical foray into unconventional economic indicators, it has brewed up compelling evidence that should not be dismissed as mere ale-babble. The practical implications of our findings extend beyond mere academic curiosity, shedding lager light on the potential value of diversified and unorthodox variables in predicting stock market movements. With the nuances of economic trends as mysterious as the depths of a finely crafted stout, it becomes evident that there may be more to this ale-iance between breweries and stock prices than meets the eye.

As we bid adieu to this ale-gant exploration, it is abundantly clear that further studies in this area may not yield much additional brew-haha. Our findings stand as a testament to the unanticipated intersections and peculiar parallels that underpin the ebbs and flows of market dynamics, asserting that when it comes to unconventional economic correlations, there may just be no need for further research.