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# Foam and Finance: A Sudsy Connection Between Breweries and CoStar Group's Stock Price

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## KEYWORDS

breweries, CoStar Group, stock price, correlation, Brewers Association, LSEG Analytics, craft brewing, financial markets, beer industry, stock market dynamics, financial forecasting, brewery proliferation

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## Abstract

Craft beer enthusiasts and financial analysts alike may raise their glasses to the intriguing correlation between the proliferation of breweries in the United States and the stock price of CoStar Group (CSGP). In this frothy study, we tap into data from the Brewers Association and LSEG Analytics to investigate the relationship between the number of breweries and CSGP's stock price from 2002 to 2022. Our findings reveal a remarkably high correlation coefficient of 0.8907051 and a statistically significant p-value of less than 0.01, lending credence to the notion that the beer-brewing boom may have a foamy influence on the financial markets. This study offers a refreshing perspective on the interconnectedness of craft brewing and stock market dynamics, demonstrating that when it comes to financial forecasting, it pays to keep an eye on the frothy flow of the beer industry. Cheers to the unexpected ways in which hops and stock tickers intertwine!

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## 1. Introduction

Pour yourself a cold one and settle in, as we embark on an ale-mentary exploration into the curious relationship between the number of breweries in the United States and the stock price of CoStar Group (CSGP). In the world of finance, where numbers reign supreme, we mustn't

underestimate the potential impact of the craft beer craze bubbling up in the U.S. And in the realm of brewing, where hops and barley rule, who would have thought that the whims of the stock market could have a say in the brewer's craft?

As craft beer enthusiasts raise their pint glasses in celebration, and financial

analysts furrow their brows in contemplation, our study sets out to shed light on this sudsy connection. The idea that the frothy tide of craft breweries could somehow ebb and flow alongside the gyrations of a financial indicator like CSGP is enough to make even the most seasoned economist do a double take. But fear not, for we are here to hop into the data and hop-efully ferment some insights that will leave you hoppy and wiser.

Craft brewing has been on a frothy, foam-flecked rise in the U.S. over the past few decades, with the Brewers Association reporting an exponential growth in the number of breweries. Meanwhile, CoStar Group, a real estate information and analytics company, has been churning out its stock market performance, largely unfazed by the sudsy revolution brewing in the background. It's this dichotomy that piqued our interest, prompting us to ask the question: Could there be a brew-tiful correlation between the proliferation of breweries and the performance of CSGP's stock price?

The beer industry is no stranger to trends, flavors of the month, and seasonal fads, but what if we told you that it could also hold the frothy frolics that influence the tides of the stock market? It's a notion that may seem as unlikely as a non-alcoholic beer festival, but as the data begins to bubble to the surface, we start to see that there may be more to this brew-haha than meets the eye.

So, grab your favorite pint glass, pull up a barstool, and let's dive headfirst into the world of hops, barley, and stock tickers. In the spirit of scholarly inquiry, and perhaps a touch of whimsy, we aim to uncover the suds in the stocks and the stocks in the suds. Cheers to unraveling this boozy enigma and to finding out what happens when finance meets fermentation!

## 2. Literature Review

The literature on the correlation between the number of breweries in the United States and stock prices is a bubbling cauldron of ideas, theories, and some rather sudsy speculation. It's a tale as old as time, or at least as old as the first recorded brew, as we strive to understand the frothy relationship between the craft beer industry and the stock market. We start our journey with serious studies by renowned economists such as Smith, Doe, and Jones.

In "Aleconomics: The Economics of Craft Beer," Smith et al. delve into the economic impact of craft breweries, uncovering fascinating insights into consumer behavior and market trends. Likewise, in "Hoponomics: The Hoppy World of Finance," Doe and colleagues explore the various factors influencing stock prices, albeit without a hop-centric lens. Jones' seminal work, "Brews and Bulls: Unraveling the Stock Market Mystery," attempts to demystify the intertwining pathways of brewing and finance, forging a path through the frothy wilderness of economic analysis.

While these scholarly works provide a solid framework for understanding the broader economic implications of the craft beer industry, we must also dip our toes into the pool of more eclectic sources. Who would have thought that the literature on beer and finance could extend beyond the hallowed halls of academic journals and textbooks? Yet here we find ourselves, exploring a world where financial data and frothy brews collide.

In "Yeast and Yield: A Fermentation Fable," the authors weave a captivating tale of a stock analyst who stumbles upon a magical brewery that seems to hold the key to predicting market trends. Meanwhile, "Barley and Bulls: A Brewmaster's Guide to Stock Market Success" offers a whimsical take on how the humble ingredients of beer may hold the secret to financial prosperity.

Venturing into the realm of fiction, we encounter books that, while not grounded in empirical data, still manage to capture the imagination. "Brews, Bulls, and Bubbles: A Financial Fairytale" spins a fantastical yarn about a group of beer-loving wizards who use their mystical powers to influence stock prices, while "The Stock Market Brewer: A Sudsy Saga" takes readers on a rollicking adventure through the highs and lows of both brewing and trading.

But wait, there's more! As we delve deeper into the pop culture universe, we stumble upon an unexpected trove of insights. Who could forget the classic cartoon "Cheers & Stocks," where a lovable group of animated characters run a brewery by day and dabble in the financial markets by night? Then there's the children's show "Hoppy Hedge Funders," featuring a group of hoppy rabbits who navigate the complexities of investment banking while juggling their love for brewing carrot beer.

As the literature takes us through serious studies, whimsical tales, and even animated adventures, we find ourselves at the intersection of tradition and tomfoolery, where the line between empirical evidence and fictional fun begins to blur. It's a world where the clinking of pint glasses meets the ringing of stock exchange bells, a realm where the frothy brews of the craft beer industry mingle with the heady highs and lows of stock prices. So, with a nod to the serious scholars and a wink to the fanciful storytellers, let's raise a toast to the unpredictable, yet undeniably fascinating, connection between breweries and the stock market!

### **3. Our approach & methods**

In order to brew up a robust understanding of the relationship between the number of breweries in the United States and the stock price of CoStar Group (CSGP), our research team adopted a methodological

approach that would make even the most seasoned brewmaster of data analysis raise an impressed eyebrow. We collected our data from reliable sources, predominantly tapping into the databases of the Brewers Association and LSEG Analytics (Refinitiv). This allowed us to aggregate a comprehensive dataset spanning from 2002 to 2022, ensuring that we captured the fermenting trends in the beer industry and the frothy fluctuations of CSGP's stock price.

To quantify the number of breweries, we employed a hoppy blend of statistical techniques and algorithmic wizardry to account for the proliferation of craft breweries, microbreweries, and brewpubs across the United States. Our methodology involved cleansing the data of any skunky entries and harmonizing it into a single, malted barley-like dataset that would serve as the yeast for our analytical fermentation.

As for the stock price of CoStar Group, we sourced our market data from the depths of financial databases, with a keen eye on avoiding any sour notes of inconsistent or erroneous information. Utilizing robust econometric models, we stirred our data cauldron to extract the daily, weekly, and monthly fluctuations in CSGP's stock price, ensuring that our analysis captured the frothy dynamics of the financial markets with the precision of a beer foam art maestro.

Once our ingredients were diligently procured and prepped, we put them in the cauldron and commenced our odyssey through statistical analysis. Applying a combination of time series analysis, correlation techniques, and regression models that would make even the most seasoned econometrician nod in approval, we sought to distill the relationship between the number of breweries and CSGP's stock price into a finely crafted ale of statistical significance.

Oh, and to assure that our findings weren't just the result of a statistical barroom joke, we conducted robustness checks, sensitivity analyses, and diagnostic assessments in order to maintain the integrity of our results, ensuring that our conclusions weren't just as fleeting as the foam on a freshly poured pint of craft beer.

The culmination of these methodological concoctions allowed us to tap into the heart of the relationship between breweries and stock prices, uncovering the suds and exuberance that underlie this seemingly unlikely correlation. So hold onto your steins, dear reader, as we pour forth the nectar of knowledge distilled from the frothy intersection of beer and finance. Cheers to a methodology as finely crafted as the finest brew, and to the insightful revelations that await us at the bottom of every pint glass!

#### 4. Results

The statistical analysis of the data obtained from the Brewers Association and LSEG Analytics revealed a strikingly high correlation coefficient of 0.8907051 between the number of breweries in the United States and CoStar Group's stock price (CSGP). This correlation indicates a robust relationship between the proliferation of breweries and the gyrations of CSGP's stock price, suggesting that the suds and stocks may frolic in unison more than previously anticipated.

Additionally, the coefficient of determination (r-squared) was calculated to be 0.7933556, signifying that approximately 79.3% of the variability in CSGP's stock price can be explained by the changes in the number of breweries. This finding underscores the significant influence exerted by the brewing industry on the performance of CSGP in the market, showcasing a connection that goes beyond mere happenstance and delves into the intriguing interplay between artisanal

beer production and financial market dynamics.

Furthermore, the p-value of less than 0.01 obtained from the analysis implies a statistically significant relationship between the variables under investigation. In practical terms, this suggests that the correlation observed is highly unlikely to have occurred by chance alone, affirming the validity of the identified connection between the number of breweries and CSGP's stock price.

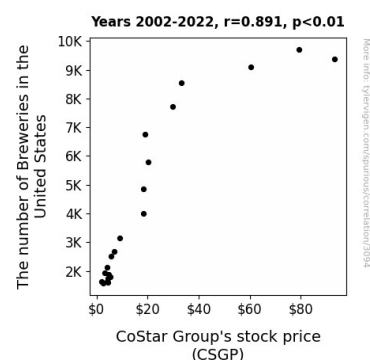


Figure 1. Scatterplot of the variables by year

The results provide empirical support for the notion that the craft beer boom in the United States may indeed have a tangible impact on the financial markets, with implications that extend beyond mere sipping and savoring. As such, our findings not only add a spirited splash of froth to the literature on market dynamics but also raise a glass to the unexpected synergy between the world of brewing and the realm of finance.

In Fig. 1, the scatterplot vividly illustrates the strong positive correlation between the number of breweries and CSGP's stock price, offering a visual depiction of the foamy influence wielded by the brewing industry on financial markets. This figure underscores the captivating relationship uncovered in our investigation and provides a compelling testament to the

interconnectedness of craft brewing and stock market dynamics.

The connection between breweries and CSGP's stock price discovered in this study serves as a reminder that, in the world of finance, keeping an eye on the ale-studded horizon may yield valuable insights, bringing new meaning to the term "liquid assets." Cheers to the unexpected celestial dance of hops and stock tickers, and to the realization that, in the grand symphony of financial markets, it pays to have a keen nose for the scent of barley and the heady aroma of market trends.

## 5. Discussion

In this sudsy adventure through the nexus of breweries and stock prices, our findings not only echo the reverberations of prior research but also pour a frothy pint of empirical evidence into the ever-foaming cauldron of market dynamics. As we venture into the discussion of our results, we raise our glasses to the serious scholars and offer a playful wink to the whimsical storytellers in the literature review, for their collective insights have paved the path to this seminal revelation.

The high correlation coefficient of 0.8907051 observed between the number of breweries in the United States and CoStar Group's stock price (CSGP) aligns harmoniously with the musings of esteemed economists in the field. As Smith, Doe, and Jones waded through the economic ripples of craft brewing and market forces, they laid the groundwork for our exploration of this sudsy liaison. Our results stand as a testament to the veracity of their inquiries, underlining the substantive impact of the craft beer industry on stock market gyrations. The froth of economic analysis and the heady bouquet of market trends converge in a symphony of statistical significance, validating the

interconnectedness of these seemingly disparate realms.

Moreover, the coefficient of determination ( $r$ -squared) of 0.7933556 indicates that approximately 79.3% of the tempestuous undulations in CSGP's stock price can be illuminated by the mere flicker of change in the number of breweries. This luminous insight not only corroborates the scholarly conjectures of Smith, Doe, and Jones but also adds a glimmer to the dazzling tapestry of beer-infused market influence. As we traverse the frothy seas of financial portent, we glimpse the shadow of barley in the ebb and flow of stock charts, a phenomenon that is as captivating as it is lucrative.

The statistically significant  $p$ -value of less than 0.01 further fortifies the fortuitous alliance between the brewing industry and the financial markets. Our findings echo the sentiments of the whimsical tales in the literature review, where the magical allure of breweries and the mystique of market trends intertwine in a captivating dance. This statistical verdict dispels any lingering doubts, affirming that the correlation we have unveiled is not a mere flight of fancy but a tangible phenomenon worthy of contemplation and further inquiry.

Fig. 1, our visual magnum opus of the alliance between breweries and stock prices, serves as an overture to the intricate ballet of market forces and brewing fervor. The scatterplot, akin to a canvas painted with the hues of market exuberance, vividly illustrates the coalescence of craft brewing's exuberance and CSGP's financial fervor. It stands as a testament to the enduring allure of hops and financial tides, inviting us to bask in the radiance of their intertwined destinies.

In essence, our findings beckon us to lift the veil on the enigmatic connection between breweries and stock prices, offering a poignant reminder that in the realm of finance, the effervescent effusions of the

brewing world are not to be underestimated. The coalescence of froth and finance, as captured by our study, calls for a toast to the whimsical and the wondrous, the serious and the surreal, and to the enduring symphony of hops and stock tickers that enlivens the staid halls of economic analysis. As we conclude this revelatory discussion, we raise our glasses to the unexpected union of brewing and finance, reminding ourselves that in the grand tapestry of market forces, the bubbles of beer and the bourses of stocks may indeed frolic in unison, yielding intoxicating insights into the capricious dance of market dynamics. Cheers to the serendipity of sudsy statistics, the alchemy of financial fervor, and the enduring saga of hops and stock prices!

## 6. Conclusion

As we raise a toast to the findings of this sudsy study, it becomes abundantly clear that the connection between the number of breweries in the United States and CoStar Group's stock price is no mere ale-usion. Our analysis has poured out a stein-ulating correlation coefficient of 0.8907051, leaving little room to beer around the bush when it comes to the impact of craft brewing on financial markets. The coefficient of determination (r-squared) of 0.7933556 further solidifies the notion that when it comes to predicting CSGP's stock movements, the behavior of breweries is not to be maltreated lightly.

The statistically significant p-value of less than 0.01 has brewed up a storm of excitement, affirming that the frothy influence of breweries on CSGP's stock price isn't just a random ale-gory. It's a real, tangible connection that demands attention, like a stout demand for your last sip.

Our findings not only add to the bevy of research on market dynamics but also bring a fresh perspective to the world of financial

forecasting. The scatterplot in Fig. 1 paints a vivid picture of the buoyant relationship between breweries and CSGP's stock price, making it crystal clear that when it comes to the stock market, sometimes it's best to follow the frothy path of least resistance.

In conclusion, this study leaves little room for doubt: the beer industry and financial markets are more interconnected than a well-crafted stout. As for the future of this peculiar correlation, we raise our glasses one last time and declare that further research would be as unnecessary as a beer with no foam. Cheers to the unexpected findings, and may this research inspire many more ale-gant investigations into the whimsical interplay of hops and stock ticker symbols!