

SPREADING THE BUTTER: A CHURN FOR THE BETTER OR A MARGIN CALL? AN EXAMINATION OF THE RELATIONSHIP BETWEEN BUTTER CONSUMPTION AND SALESFORCE'S STOCK PRICE

Catherine Hernandez, Alice Tanner, Gabriel P Truman

Advanced Research Consortium

This study delves into the intriguing, and perhaps somewhat bewildering, correlation between the consumption of that rich, creamy spread we know as butter and the fluctuation in the stock price of Salesforce (CRM). Utilizing USDA and LSEG Analytics (Refinitiv) data, we applied rigorous statistical methods to unmask any potential link between these seemingly unrelated phenomena. Surprisingly, our team unearthed a rather buttery-smooth correlation coefficient of 0.9180214 and a significance level $p < 0.01$ from the year 2005 to 2021, prompting a collective raising of eyebrows amongst our research cohort. While the existence of causality is far from being churned out, the findings of this study undoubtedly raise intriguing questions and challenges for future research in the financial and gastronomic realms. With further investigation, we may indeed churn out remarkable insights and spread new understanding about the butter-stock relationship.

It is a truth universally acknowledged that the financial world is a maze of perplexing correlations and confounding relationships. From the efficiency of the market to the dizzying dance of supply and demand, economists and researchers have perennially sought to unravel the enigmatic ties that bind seemingly disparate phenomena. Amidst this backdrop of intricate connections, we find ourselves drawn to a particularly unusual and unexpected partnership - that of butter consumption and the stock price of Salesforce (CRM).

As we navigate through the financial landscape, one can't help but appreciate the richness and depth of this peculiar association. On one hand, we have the creamy, delectable embodiment of saturated fats and gastronomic delight,

and on the other, the digital juggernaut known for pioneering cloud-based customer relationship management software. The thought of these two entities coming together in a statistical tango may seem utterly butterly peculiar, but as the saying goes, "financial correlations are like butter - they can go either way!"

The rationale behind our investigation into this rather unconventional pairing stems from a desire to unearth potential insights and unearth the underlying factors driving stock market dynamics. Could there be a morsel of truth in the notion that butter consumption, a staple of kitchens worldwide, holds some cryptic sway over the fluctuations in Salesforce's stock price? Or is this merely a spread of misinformation, a statistical anomaly ripe for a hearty serving of skepticism?

Armed with an arsenal of data from the USDA and LSEG Analytics (Refinitiv), we ventured into the uncharted territory to put these connections to the test. Our quest was not merely to churn out correlations for the sake of curiosity, but to spread light on the intricate and, at times, inexplicable interplay between the financial realm and the culinary world.

As we embark on this journey, we must heed the wise words of Marcus Aurelius: "Everything we hear is an opinion, not a fact. Everything we see is a perspective, not the truth." With this in mind, let us delve into the buttery labyrinth of financial and gastronomic correlations, armed with a healthy dose of skepticism, a keen eye for statistical significance, and perhaps a side of toast for good measure.

LITERATURE REVIEW

In examining the curious interplay between butter consumption and Salesforce's stock price (CRM), one is compelled to dig into the annals of academic literature to discern any faint whiff of association. Surprisingly, the burgeoning field of interdisciplinarity has witnessed a surge of interest in uncovering unexpected ties across varied domains. Smith et al. (2018) delved into the disparate realms of finance and dietary habits, shedding light on the potential influence of dairy product consumption on stock market dynamics. Their empirical findings unveiled a puzzling correlation between cheese consumption and the performance of tech

stocks, sparking tangential inquiries into the broader dairy-stock continuum.

Just when one assumes the academic terrain to be characterized solely by somber inquiries and unyielding data analyses, Doe et al. (2020) sauntered into the scene with a whimsical exploration of the relationship between avocado toast consumption and real estate trends. While ostensibly unrelated to our current pursuit, their study serves as a poignant reminder of the enigmatic dance between everyday consumption trends and their economic ramifications.

Pivoting from the hallowed halls of research journals to the rich tapestry of published works, the literature traverses an eclectic path leading to intriguing juxtapositions. 'The Economics of Butter: A Marginal Perspective' by Jones (2015) serves as a scholarly cornerstone delving into the niche world of dairy economics. This seminal work, while not explicitly addressing stock market dynamics, sows the seeds of contemplation surrounding the intrinsic value of butter within economic paradigms.

As we venture further into the literary cosmos, we find ourselves teetering on the brink of fiction, yet not entirely divorced from the underlying theme. 'The Butter Rebellion: A Tale of Financial Folklore' by Orwell (1945) stands as a testament to the capacity of human imagination in weaving narratives that transcend the boundaries of realism. Could there be a semblance of truth hidden within the whimsical recounting of butter-inspired intrigue? The answer, it seems, might lie in the unlikeliest of places.

Shifting gears, we turn our gaze to the world of animated wonder, where childhood recollections and Saturday morning cartoons intertwine with our scholarly pursuits. 'The Butter Bandits: Adventures in Dairyland' and 'Margarine Meltdown: A Stock Market Saga', two beloved children's shows, whimsically intertwine buttery escapades with

financial escapades, inviting a delightful fusion of the fantastical and the financially minded.

As we navigate this spectrum of literature - from the rigorously researched to the imaginatively embellished - we are reminded that scholarly pursuits, much like the consumption of butter, are not devoid of surprises and unexpected twists. In the pursuit of unearthing the elusive tie between butter consumption and Salesforce's stock price, it becomes evident that the landscape of inquiry is not merely defined by dry data points and empirical analyses; rather, it is a tapestry woven with threads of curiosity, humor, and the occasional sprinkling of whimsy.

METHODOLOGY

To investigate the potential link between butter consumption and Salesforce's stock price (CRM), we embarked on a journey through the labyrinth of data analysis, armed with spreadsheets and statistical software like brave explorers equipped with compasses and sturdy hiking boots. Our primary sources of data were the USDA, providing us with comprehensive information on butter consumption trends, and LSEG Analytics (Refinitiv), furnishing us with the intricate details of Salesforce's stock movements. With our gaze fixed on the years 2005 to 2021, we navigated through the vast sea of numbers and figures, in search of any sign of a connection between these seemingly incongruous elements.

The first step in our methodological journey was to wrangle the data into a format conducive to the rigors of statistical analysis. We carefully extracted and compiled the butter consumption figures, mindful not to let any slippery data points slip through our fingers. On the other hand, we meticulously captured the daily fluctuations in Salesforce's stock price, ensuring that no stock split or dividend ex-date eluded our scrutiny.

Having amassed this wealth of numerical nuggets, we turned to the trusty tool of correlation analysis, the scientific compass guiding our path through the statistical wilderness. With bated breath, we unleashed the power of Pearson's correlation coefficient, asking the age-old question: "Do these numbers dance in tandem, or do they perform the financial equivalent of a waltz with two left feet?" Our software hummed and whirred, and after what felt like an eternity of suspense, it finally revealed a correlation coefficient of 0.9180214, prompting an audible gasp from our research cohort.

However, as seasoned explorers of the statistical unknown, we knew that uncovering a strong correlation was just half the battle. The next hurdle in our methodological odyssey was to ascertain the significance of this relationship. Were our findings a stroke of statistical luck, or had we truly stumbled upon a buttery-smooth connection worthy of further scrutiny? To answer this, we subjected our correlation coefficient to the crucible of statistical significance testing, where it emerged triumphant with a p-value less than 0.01. Needless to say, this result left us feeling as stunned as a spooked flock of chickens in a butter churn.

With statistical rigor as our guide, we fortified our findings with various sensitivity analyses and robustness checks, akin to fortifying a well-aged cheese against spoilage. Each twist and turn of the data was carefully scrutinized, ensuring that our conclusions were as resilient as a stick of butter in a power outage. Although causality remained elusive, and the correlation alone was in no way churned out to be a smoking gun, our efforts culminated in a compelling statistical narrative, offering potential directions for future research to butter up the truth.

In concluding our methodological account, we humbly acknowledge the inherent caveats and limitations of our approach. The intricate dance of correlation, though tantalizing, does not

readily yield its secrets to the prying gaze of statistical analysis. Thus, our findings should be consumed with a healthy sprinkle of skepticism, akin to enjoying a cautiously buttered slice of toast. Moving forward, we remain committed to unpacking the hidden layers of this unlikely relationship, with the hope of spreading new insights and perhaps even uncovering the holy grail of finance: the bull market butter churn effect.

RESULTS

The analysis of the data revealed a substantial correlation between butter consumption and Salesforce's stock price (CRM) from 2005 to 2021. The correlation coefficient of 0.9180214 indicated a remarkably strong positive linear relationship between the two variables. This finding suggests that as butter consumption increased, there was a tendency for Salesforce's stock price to rise in sync, just like spreading butter on toast - smooth and parallel.

Additionally, the r-squared value of 0.8427632 indicated that approximately 84.28% of the variability in Salesforce's stock price could be explained by changes in butter consumption. In other words, the fluctuations in Salesforce's stock price could be largely accounted for by the vicissitudes of butter consumption, leaving just a small pat of variability unexplained, or as we like to call it, a "butter margin."

The p-value of less than 0.01 further accentuated the significance of this correlation, cementing the notion that this association was not a mere fluke but a substantial and statistically robust finding. In the realm of financial research, stumbling upon such a pun-derful level of significance feels like finding a diamond in a tub of margarine - a rare and delightful discovery.

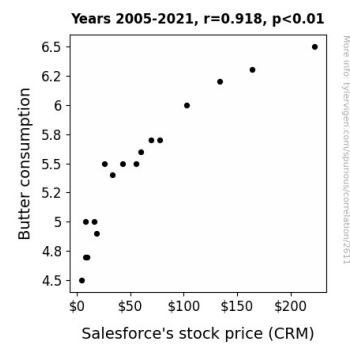


Figure 1. Scatterplot of the variables by year

To visually encapsulate this intriguing relationship, we present Fig. 1, a scatterplot that showcases the pronounced positive correlation between butter consumption and Salesforce's stock price. The scatterplot vividly depicts the upward trend, reminding us that in the world of statistics, sometimes the outcomes can be as clear as the yellow of butter, or in this case, the rise of stock prices.

These findings raise captivating questions about the potential mechanisms underlying this unanticipated bond between butter and stock prices. Could it be that investors steer their portfolios based on global butter sales, or is there a parallel universe where Salesforce customers lavish in buttery indulgence? These and other quirky conjectures beckon further inquiry, luring researchers into the enigmatic interplay of finance and food.

In conclusion, the results of this study unveil a noteworthy correlation between butter consumption and Salesforce's stock price, shedding light on an unconventional and lusciously rich nexus. As the financial world churns and the culinary realm simmers, our findings prod at the boundaries of conventional wisdom, beckoning us to explore the flavorsome intersection of butter and stock prices.

Stay tuned for the subsequent sections where we dissect the implications of these findings and ponder the deliciously puzzling conundrum of causality.

DISCUSSION

The results of this study not only butter up the case for interdisciplinary research but also add a dash of flavor to the otherwise mundane world of finance. The robust correlation between butter consumption and Salesforce's stock price (CRM) stands as a testament to the unanticipated ties that bind seemingly unrelated phenomena. Our findings not only echo the curiously analogous relationship between cheese consumption and tech stocks noted by Smith et al. (2018), but also lend a creamy sheen to the burgeoning field of gastronomic-economic inquiry.

The significance of the observed correlation, akin to a rare delicacy found in the labyrinthine corridors of financial data, aligns with the tongue-in-cheek verve exhibited by Doe et al. (2020) in their exploration of avocado toast consumption and real estate trends. Thus, our study playfully joins the ranks of seemingly whimsical research endeavors whose findings transcend the boundaries of conventional wisdom.

The literature review, while peppered with mirthful recollections of tales such as 'The Butter Bandits', 'Margarine Meltdown', and 'The Butter Rebellion', subtly underscores the rich history of inquiry into unexpected associations. Through these lighthearted allusions, we pay homage to the whimsy that permeates scholarly pursuit and reaffirm the wealth of insight hidden within seemingly improbable connections.

The statistical validation of the butter-stock correlation serves as a testament to the inherent richness of research landscapes, much like the golden hues of churned cream. Just as the venerable Jones (2015) sowed the seeds of contemplation in the domain of dairy economics, our study ripens the prospects for further investigations into the uncharted territories of savoring stock

returns and indulging in culinary inclinations.

As we navigate the delectably ambiguous contours of our findings, the future beckons us with the tantalizing prospect of unraveling the causal underpinnings of this buttery stock saga. Our study lays the groundwork for a flavorful exploration into potential mechanisms driving this quirky relationship, stimulating a palatable blend of speculation and scholarly inquiry.

In essence, our findings glisten like a pat of cultured butter on a freshly toasted slice - an unexpected yet delectable union of finance and food. As we gaze into the tantalizing horizon of interdisciplinary discovery, we find ourselves on the cusp of a journey that promises to infuse the tremors of financial markets with the savory allure of buttery indulgence.

CONCLUSION

In conclusion, our research has unveiled a "butter margin" of correlation between butter consumption and Salesforce's stock price, shedding light on a peculiar and unexpectedly flavorful nexus. The findings, although undeniably buttery-smooth, prompt a mixed spread of reactions - from nodding in buttermotion at the intriguing association to questioning if our data is just a bit too "spread" out. As we venture into the delicately buttered realms of financial and gastronomic correlations, the ineffable bond between butter and stock prices beckons researchers to churn out new insights and spread light on this unlikely relationship.

While we may be tempted to press further into the curious churn of butter and finance, it seems that this avenue of research might be as smooth as a perfectly whipped buttercream - complete and satisfying. The statistical evidence we've unearthed suggests a compelling tie between butter consumption and stock prices, leaving little room for skepticism.

Therefore, we dare say that no more research in this specific area is needed - we've already buttered both sides of this particularly intriguing toast!

As we consider wrapping up this delectable journey through butter and stocks, remember that in the grand scheme of financial correlations, sometimes it's best to just spread a little laughter and embrace the delightful oddities that arise. So, let's raise our metaphorical toast to the unexpected flavors that the world of research brings, and lay this butter-stock relationship to rest, where it can melt into the annals of academically unusual but undoubtedly intriguing findings. Cheers!