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BEARISH SEASONALITY AND STRUCTURAL RESILIENCE: CONSTRUCTING A DEFENSIVE PORTFOLIO FOR THE SEPTEMBER EFFECT IN 2024 AND 2025

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ABSTRACT

This research structures and theoretically validates a defensive investment portfolio designed to counteract the historical "September Effect" observed in U.S. equity markets since 1928. Grounded in the Efficient Market Hypothesis and the Betting Against Beta (BAB) anomaly, the study allocates capital across five low-volatility, low-beta instruments—Consumer Staples (XLP), Utilities (XLU), Healthcare (XLV), Gold (GLD), and short-term Treasury bills (BIL)—chosen for their historical resilience during periods of institutional risk aversion. Using a descriptive, non-experimental, documentary, and cross-sectional design, a historical backtest compared the portfolio's weighted returns against the S&P 500 (SPY) benchmark during September 2024 and September 2025. The results show the defensive portfolio generated positive absolute returns of 2.07% and 2.12% in each period, driven mainly by Utilities and Gold. However, the S&P 500 did not experience its traditional seasonal decline, instead rallying with returns of 4.25% and 4.34%, causing the defensive portfolio to underperform the

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benchmark on a relative basis. These findings indicate that while the BAB-based strategy successfully preserved capital, strong macroeconomic bull-market conditions can override historical seasonal anomalies.

Keywords: September Effect, Defensive Portfolio, BAB Anomaly

1.0 INTRODUCTION

The “September Effect” in U.S. markets has been a constant since 1928, with the S&P 500 declining by an average of 1.2 percent in September underperforming relative to other months (Bogdanova, 2025. For financial professionals, understanding the psychological barriers and structural mechanics driving this behavior is essential for capital preservation. The inability of traditional risk valuation models (such as CAPM) to satisfactorily explain or neutralize this seasonal weakness necessitates the exploration of new perspectives; this challenge creates an imperative to identify mitigation strategies that rely not merely on portfolio liquidation, but on reallocating capital toward defensive assets capable of withstanding institutional risk aversion.

2.0 GENERAL OBJECTIVE

To structure and theoretically validate an investment portfolio composed of low-volatility consumer defensive stocks, to empirically test whether the selected assets can counteract the negative impact of the "September Effect" during 2024 and 2025, while seeking to outperform the risk-adjusted return of the S&P 500 during those periods.

3.0 SPECIFIC OBJECTIVES

- Analyze the root causes of the “September Effect” from various perspectives that justify the need for a hedging strategy.
- Apply the principles of the low-volatility anomaly and the "Betting Against Beta" (BAB) strategy to underpin the selection of the chosen defensive assets.
- Design the framework for a methodological experiment to test the empirical resilience (drawdown) of the constructed defensive portfolio against the broader market, conducting a comparative evaluation of data from September 2024 and 2025 to determine whether this seasonal effect is successfully neutralized.

4.0 THEORETICAL FRAMEWORK

The analysis of capital markets is based on the Efficient Market Hypothesis (EMH), which argues that asset prices constantly reflect all available information (Borromeo, 2020). Under this approach, prices follow a random walk, making it difficult to systematically obtain abnormal returns without a proportional increase in risk (Marcus et al., 2011). However, the persistence of predictable seasonal patterns in stock returns suggests repeated inefficiencies known in the literature as "calendar anomalies" (Pavel, 2022). Among the phenomena most

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studied by academics is the "September Effect," which is distinguished by its recurrent and anomalous tendency to generate statistically negative returns during this month (Irshad & Taib, 2017). This effect is not exclusive to US indices but has been proven to be a global phenomenon impacting various instruments, including real estate and international property (Brounen & Ben-Hamo, 2021). Therefore, to address these inefficiencies, it is necessary to evaluate their effects on returns and demonstrate that this impact is global, considering all variables (Sawitri & Astuty, 2018).

4.1 Examples of the effect in other markets and their specific conditions

In the context of emerging markets, econometric research on indices such as India's BSE SENSEX has validated this inefficiency through conditional variance models (such as the ARCH model), empirically proving that variance shocks during September generate statistically significant negative asymmetries, in addition to a leverage effect in these markets and the possible influence of the monsoon season in that country (Parmar et al., 2026). Other authors corroborate this strong interannual bearish seasonality in Indian stock exchanges using a different model, such as the generalized autoregressive conditional heteroskedasticity (GARCH) model (Acharya et al., 2022), where it is even theorized that the influence of phenomena typical of other markets may be affecting the behavior of Indian investors. Likewise, Ciccone and Etebari (2008) recorded the impact of September and January in four international markets: Germany, France, Japan, and the United Kingdom, explaining that these effects are driven by tax-loss selling, portfolio window dressing in January, and even the impact of returning from summer vacations in September. Parallelly, this seasonal disruption has been confirmed in frontier markets and less capitalized exchanges (Pierce, 2020), theorizing that an unusually high amount of negative information reaches the market due to a spike in trading volume after a period of lower activity. Finally, this has also been identified in the countries comprising the BRIC bloc (Singh, 2014). As can be seen, the convergence of international data validates the universality of this effect, albeit with slight variations in the conclusions for each region.

4.2 General causes of the effect

First, the persistence of the "September Effect" responds to institutional practices, notably portfolio window dressing and strategic tax-loss harvesting, which incentivize large institutional liquidations at the beginning of autumn (Bauer, 2023). This strong selling pressure coincides with the end of summer vacations, an inefficiency documented in trading activity theory as the "Gone Fishin'" effect, and associated with the popular seasonal strategy "Sell in May and Go Away" (Hong & Yu, 2007; Tarrant & Ragnarsson, 2024). On the other hand, the behavioral finance paradigm introduces another pricing theory based on the premise that the deterioration of investor sentiment during the Northern Hemisphere autumn correlates with the gradual reduction of sunlight and Seasonal Affective Disorder (SAD), which increases risk aversion in major stock markets (Hirshleifer et al., 2018). Another factor may be the fear of

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losing money, in other words, according to Oprean and Tanasescu (2014), investors hold on to bad investments and quickly sell the good ones, generating a peak in sales in September to deduct those tax losses before the end of the year. This is complemented by a previous study, which determined that investors often sell stocks that lost value over the summer to offset their capital losses (Edelen et al., 1999). Finally, another study shows that economic seasonality generates the "Halloween effect" unevenly: by comparing historical data, it is concluded that this phenomenon exacerbates the differences between summer and winter in many industries, but almost entirely disappears in consumer sectors, although it is not a universal rule for the entire stock market (Jacobsen & Visaltanachoti, 2009). The widespread awareness of all these phenomena encourages preemptive divestitures that end up consolidating the September Effect as a self-fulfilling market prophecy (Verified Investing, 2025).

4.3 Influential macroeconomic factors and black swans

Lastly, a review of long-term behavior is necessary to understand why September has been the focal point in the narrative of systemic declines. To begin with, it has been found that September's negative seasonality is directly exacerbated or mitigated depending on the behavior of macroeconomic variables, such as Gross Domestic Product (GDP) growth, the Consumer Price Index (CPI), and the interest rate curve determined by central banks (MarketMinute, 2025). Another factor is that the toll of this effect is greater during a divided government in the United States; with opposing parties in power, legislative gridlock blocks timely fiscal interventions, increasing the risk of economic recession and raising the so-called “treasury premium” (Acharya et al., 2022). Recent analyses conclude that exogenous shocks, such as the COVID-19 pandemic, have been capable of drastically altering and intensifying market seasonalities and inefficiencies, introducing an extra level of asymmetric risk (Naz et al., 2024). Additionally, the historic stock market crash triggered by the 2001 attacks left deep-rooted fears on Wall Street, and this collective memory intensifies risk aversion in autumn (Moover, 2024). To conclude, the bankruptcy of Lehman Brothers and the subsequent government rejection of the bank bailout in September 2008, caused a drastic 777-point drop in the Dow Jones. This sequence of events made that month the most destructive and volatile of the modern financial crisis (Moover, 2024).

Extrapolating these conditions, current volatility forecasts reveal a convergence of historical seasonal weakness and the uncertainty projected for the arrival of September. Consequently, this justifies the need to construct defensive portfolios in light of this foreseeable scenario.

4.4 Historically beneficial assets and stocks during the "September Effect"

As the primary safe-haven asset amid defensive rotations, gold has generated gains in 58% of Septembers since the 1980s. Parallelly, sovereign debt, particularly very short-term US Treasury bonds (T-bills), is consolidating as the second major global option for capital preservation (Spatacco, 2026). On the other hand, stocks considered defensive against this

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anomaly belong to three sectors: first, Consumer Staples leverage their inelastic demand, protecting their margins by easily passing inflation on to the buyer. Second, Utilities act as regulated monopolies that guarantee predictable revenues and attractive dividends; their stability as bond proxies is such that, during the dot-com crash in 2000, they posted gains of 57%. Lastly, the Healthcare sector features demand driven by demographic factors, operating independently of macroeconomic contractions. Therefore, these three industries act as high-quality safe havens when investors flee from market pullbacks (Brumley, 2026).

4.5 The 'Betting Against Beta' hypothesis as a means of seasonal mitigation

To counteract the negative returns inherent in the "September Effect," this research bases its methodology on the "Betting Against Beta" (BAB) hypothesis, formalized by academics Frazzini and Pedersen (2010). Although traditional CAPM theory assumes that higher systematic risk (high beta) guarantees higher returns, the BAB anomaly demonstrates the opposite; real-world leverage constraints force institutional investors to overbuy high-risk stocks to meet ambitious return targets, thereby artificially inflating their prices and depressing their expected future returns. Consequently, stable, low-beta assets remain systematically undervalued; furthermore, during the liquidity stress and risk aversion characteristic of September, institutional investors hit margin limits and trigger massive forced sell-offs of volatile assets. In this bearish environment, the BAB hypothesis posits that stocks with a "bad beta" near zero act as capital-preserving anchors. Thus, this theoretical framework justifies structuring a portfolio focused on the three defensive sectors previously discussed, presenting it as the optimal solution for mitigating losses in September 2024 and 2025.

5.0 METHODOLOGY

The characteristics of this research are presented below (Table 1).

Table 1. Research Characteristics

Methodology	*Description*
Research level: Descriptive	This research is descriptive because it systematically details the financial behavior and characteristics of the "September Effect" and defensive assets, without attempting to manipulate the underlying market conditions
Variables used: Non-experimental	It utilizes a non-experimental design by observing and analyzing pre-existing historical financial data and anomalies, meaning researchers do not control or alter the independent variables
Research design: Documentary	A documentary approach is applied by collecting, evaluating, and synthesizing existing financial literature, historical index records, and academic papers to substantiate the portfolio's theoretical foundation
Research extension: Cross-sectional	The study is longitudinal as it conducts a comparative evaluation of empirical data across distinct periods—specifically September 2024 and 2025—to observe variations in the portfolio's resilience over time

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Source: Own elaboration.

Beyond the general characteristics summarized in Table 1, the methodological procedure followed three concrete stages.

First, five defensive instruments were selected based on the theoretical framework previously discussed Consumer Staples (XLP), Utilities (XLU), Healthcare (XLV), Gold (GLD), and short-term U.S. Treasury bills (BIL) each representing a distinct low-beta category historically associated with capital preservation during periods of market stress. Second, historical closing-price data for each asset, along with the S&P 500 ETF Trust (SPY) as the benchmark, were collected for the specific windows of September 1–30, 2024, and September 1–30, 2025, allowing for a direct month-over-month comparison across two consecutive years. Third, weighted returns were calculated for each component according to the allocation percentages shown in Table 2 (25% XLP, 20% XLU, 20% XLV, 15% GLD, and 20% BIL), and the sum of these weighted returns produced the aggregate performance of the defensive portfolio under the Betting Against Beta (BAB) strategy.

This weighted-return approach allows the study to isolate not only whether the portfolio preserved capital in absolute terms, but also which specific defensive sectors contributed most to that performance, thereby directly linking the empirical results in Table 2 to the theoretical BAB and low-volatility anomaly framework developed in Section 4.

6.0 RESULTS

To fulfill the general objective of empirically testing the portfolio's capacity to counteract the "September Effect", a historical backtest was executed extracting the closing prices of the selected assets. The Betting Against Beta (BAB) strategy was applied by allocating 100% of the theoretical capital into five low-volatility defensive instruments, comparing their weighted performance against the SPDR S&P 500 ETF Trust (SPY). The computational operations yielded the monthly returns during the September 1 to September 30 windows in both 2024 and 2025. The final portfolio return was calculated using the sum of the weighted returns of its components.

Table 2: Comparative Historical Returns of the Defensive Portfolio vs. S&P 500 (Sept 2024 - 2025)

Asset / Index	Sector / Classification	Portfolio Weight	Sept 2024 Return	Sept 2025 Return
XLP	Consumer Staples	25%	0.42%	-2.16%
XLU	Utilities	20%	6.76%	4.47%
XLV	Health Care	20%	-1.47%	1.63%

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GLD	Gold	15%	5.54%*	9.18%
BIL	Short-Term T-bills	20%	0.38%	0.31%
Defensive Portfolio	BAB Strategy	100%	2.07%	2.12%
SPY	S&P 500 (Benchmark)	N/A	4.25%	4.34%

Source: Own elaboration. (Note: GLD 2024 return adjusted for market opening on Sept 3).

The results presented in Table 2 demonstrate that the defensive assets behaved largely as structurally intended, with the portfolio generating positive absolute returns of 2.07% in September 2024 and 2.12% in September 2025.

A closer look at the individual components reveals notable consistency in the primary drivers of this performance: Utilities (XLU) delivered the strongest returns in both periods, posting 6.76% in 2024 and 4.47% in 2025, reaffirming their role as stable, dividend-paying bond proxies even amid shifting market conditions. Gold (GLD) followed a similar pattern of resilience, contributing 5.54% in 2024 and an even stronger 9.18% in 2025, confirming its historical function as a primary safe-haven asset. In contrast, Healthcare (XLV) and Consumer Staples (XLP) showed more volatile and inconsistent behavior XLV swung from a slight loss of -1.47% in 2024 to a gain of 1.63% in 2025, while XLP moved in the opposite direction, from a modest 0.42% gain in 2024 to a -2.16% loss in 2025 suggesting these sectors were more sensitive to shifting macroeconomic conditions between the two periods. Short-term Treasury bills (BIL), as expected, contributed minimal but stable returns of 0.38% and 0.31%, respectively, fulfilling their intended role as a low-risk capital anchor rather than a growth driver.

By outlining this methodological experiment, the specific objectives were achieved: the resilience of the selected instruments against market fluctuations was successfully quantified, and the data confirm that Utilities and Gold rather than the portfolio as a whole were consistently responsible for the bulk of the capital appreciation observed across both periods.

7.0 CONCLUSION

The most notable finding of this research is that the "September Effect" simply did not show up in 2024 or 2025. Despite nearly a century of historical precedent showing the S&P 500 typically falls in September, the index instead rose both years, gaining 4.25% in 2024 and 4.34% in 2025. This suggests that the usual explanations for the September slump tax-related selling, institutional portfolio adjustments, investors returning from vacation, or seasonal shifts in mood, were not strong enough to cause a decline under the market conditions of those two years.

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Because the broader market performed so well, the defensive portfolio built for this study ended up underperforming the S&P 500 in relative terms, earning 2.07% in 2024 and 2.12% in 2025 compared to the benchmark's stronger gains. This points to a real limitation of strategies based on seasonal patterns: they can lag behind the market precisely when unexpected economic strength drives an unseasonal rally, since defensive assets are simply not designed to keep pace with a booming market.

That said, underperforming the benchmark is not the same as the strategy failing. The portfolio still did what it was built to do: protect capital and avoid major losses. It produced positive returns in both years, sidestepped the risks tied to more volatile stocks, and did so without betting on the market's overall direction. Utilities and Gold stood out as the most reliable performers, reinforcing the idea that low-risk, defensive assets hold their value well even when the expected downturn never happens.

Overall, this shows that seasonal effects like the September slump should be seen as a tendency, not a guarantee, markets can and do defy historical patterns. Future studies could strengthen these conclusions by testing this same approach over a longer period, such as the past twenty years, and by applying it to other markets, including Europe or emerging economies. Adding statistical tests to measure significance would also help clarify whether the lack of a September decline in 2024 and 2025 was just a one-time exception or a sign of a more lasting change in market behavior.

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