# Project Checkpoint B: Research Report

# Stable Growth Consumer Staples ETF

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## Introduction

The second stage of this project aims to analyze the equities that make up the Stable Growth Consumer Staples ETF (SGCS). This is performed through exploratory data analysis, null models, and Monte Carlo simulations.

## Literature Review

In order to perform Monte Carlo simulations on the portfolio, I referenced the previous assignment, “Programming Assignment 2”. This background enabled me to build a simulation specifically tailored to the SGCS portfolio.

## Methods

For the first stage of analysis, I imported the past 25 years’ worth of financial data for the equities that make up the SGCS portfolio from Yahoo! Finance [1]. I inspected the schema of the tables, viewed the first few rows, and looked through the table statistics to identify if the equity produces dividends or has had any stock splits. One particular finding separate from the equities themselves is that the ‘yfinance’ Python module automatically handles stock splits and dividends in the price of the equity through the default parameter ‘auto_adjust’ [2].

After exploring the ingested data, I built a null model (buy-and-hold) to investigate how the fund would have performed over the past 25 years compared to three other Consumer Staples ETFs: $IYK, $VDC, and $XLP [3-5]. One hinderance for this particular comparison is that the latest inception date for these three funds is 2004, so the analysis actually only goes back 21 years.

## Results

Figure 1 [6] and Figure 2 [7] display the performance of each equity within the SGCS portfolio, the SGCS portfolio itself comprised of the equities holding equal weight, and each of the benchmark ETFs. $COST clearly stands out from the rest of the equities and ETFs as the returns for Costco over the past 21 years have eclipsed all other assets in this analysis. Aside from this, the three baseline ETFs still underperformed each individual equity for nearly the entire 21-year period, and $XLP actually had a significant period from 2009 through today where it was completely outpaced by all other assets. Figure 3 [8] and Figure 4 [9] show a clearer picture of the SGCS ETF compared to the benchmarks. There were a few periods throughout the time period during which the ETF was outperformed, but at no extended period was it the least performant. This buy-and-hold strategy for the equities that make up the SGCS ETF indicates that at a bare minimum these equities are stable and performant enough to include in the portfolio, and that a combination of these equities is able to match other consumer staples ETFs.

After conducting this simple null model analysis, I also built a Monte Carlo simulation to access possible future returns for this portfolio. Since this is still part of the analysis stage, the simulation does not consider any particular buy or sell strategy and instead is generated using random buys and sells as well as random equity weights. Additionally, this simulation is applied on a daily, weekly, and monthly basis to compare how frequently trading impacts performance for these equities. Figure 5 [10] and Figure 6 [11] show the performance of a $1,000,000 initial investment after 5 years through 500 random portfolio weights and 200 simulations (100,000 combinations). This analysis indicates that incorporating short positions into this portfolio both decreases the average returns over a 5-year period and provides no meaningful improvement in downside protection.

## Conclusions

The exploratory data analysis, null model, and Monte Carlo simulations reinforced my initial assumptions about the portfolio and now point me in a particular direction for trading. I plan to investigate a variety of active trading strategies for daily, weekly, and/or monthly trading, taking only long positions.

## References


[1] “Yahoo Finance - Stock Market Live, Quotes, Business & Finance News.” Yahoo! Finance. Accessed October 12, 2025. https://finance.yahoo.com/.

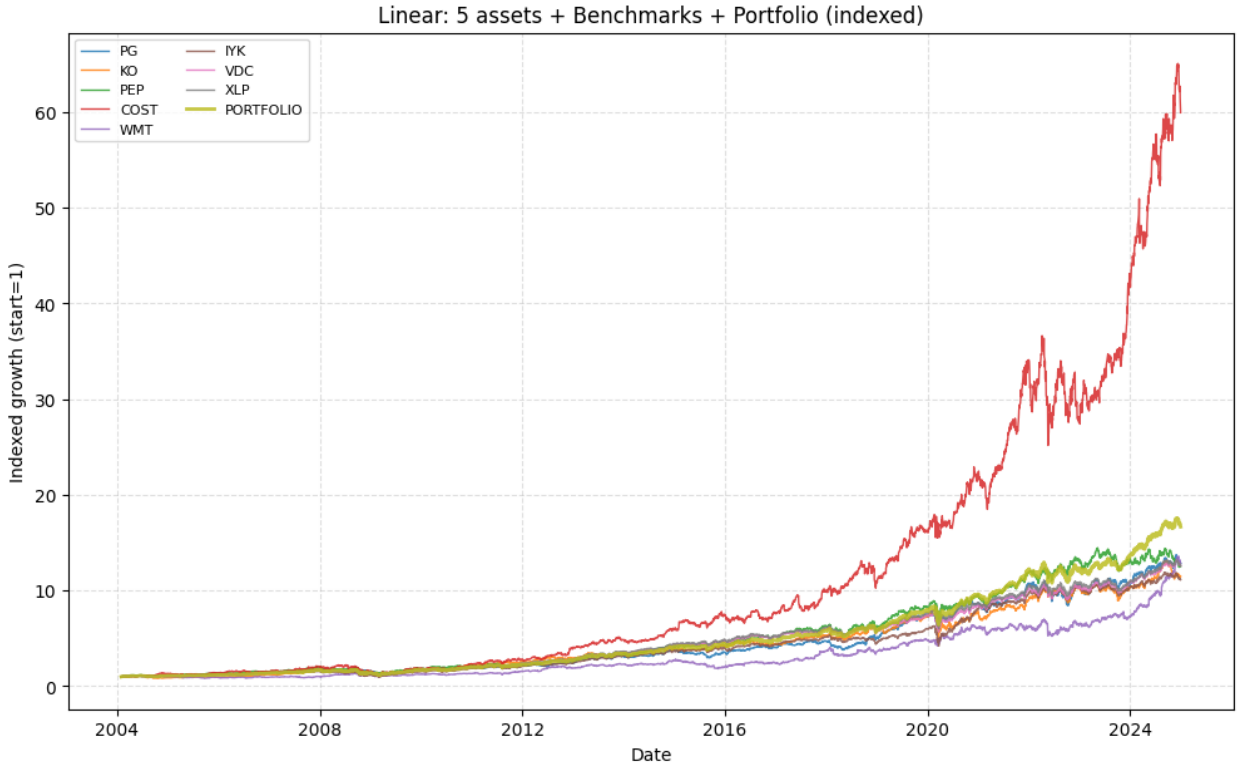
[2] Aroussi, Ran. “Yfinance Changelog.” GitHub. Accessed October 25, 2025. https://github.com/ranaroussi/yfinance/blob/main/CHANGELOG.rst.

[3] “XLP: The Consumer Staples Select Sector SPDR® Fund.” State Street Investment Management. Accessed October 12, 2025. https://www.ssga.com/us/en/intermediary/etfs/the-consumer-staples-select-sector-spdr-fund-xlp.

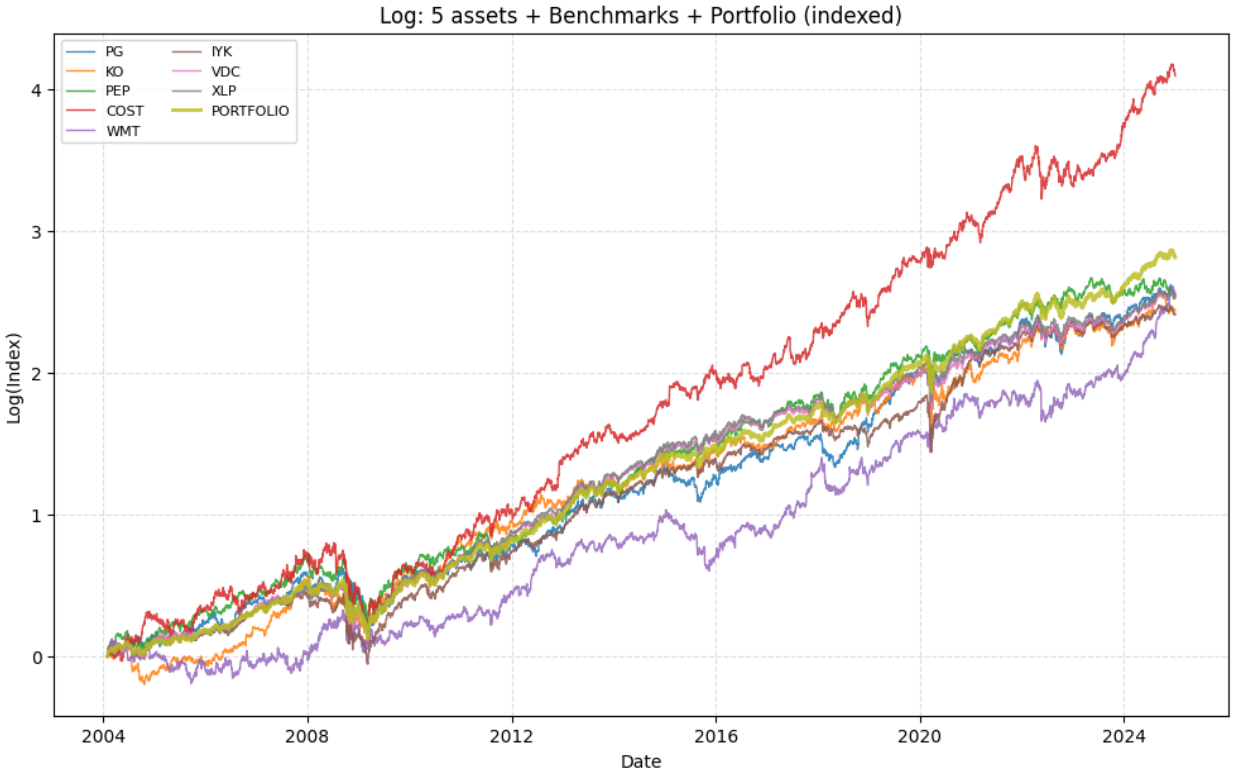
[4] “VDC-Vanguard Consumer Staples ETF.” Vanguard. Accessed October 12, 2025. https://investor.vanguard.com/investment-products/etfs/profile/vdc.

[5] “Ishares U.S. Consumer Staples ETF: IYK.” BlackRock. Accessed October 12, 2025. https://www.ishares.com/us/products/239505/ishares-us-consumer-staples-etf.

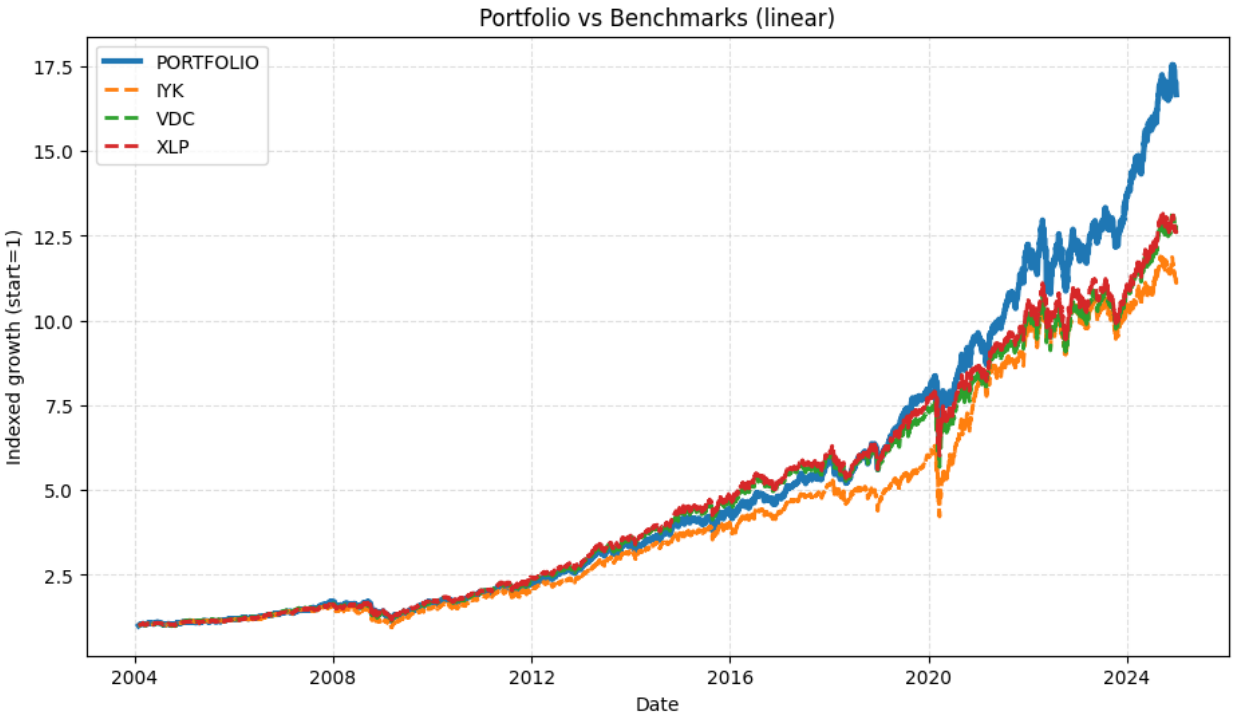
[6] Figure 1



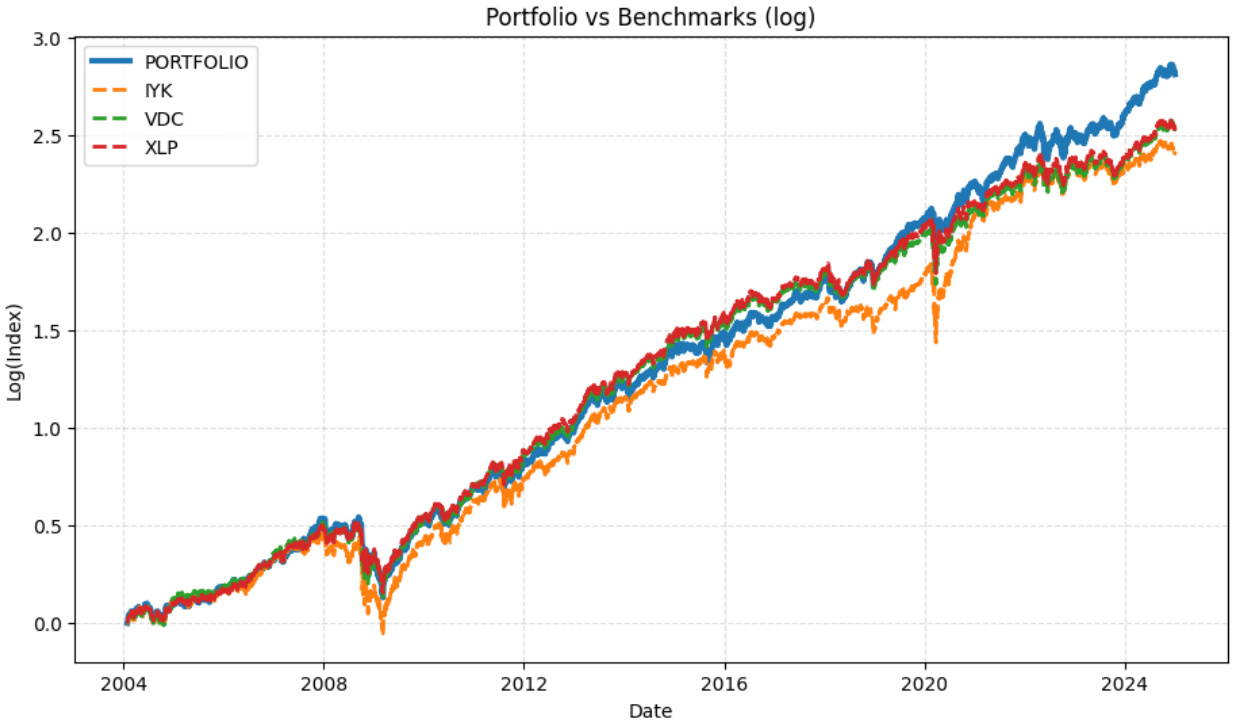

[7] Figure 2




[8] Figure 3




[9] Figure 4




[10] Figure 5

| | Mean | Median | VaR_5% | CVaR_5% | N |
|---|---|---|---|---|---|
| Long-Only (Daily) | $1,735,094 | $1,605,731 | $864,234 | $745,513 | 100000.000000 |
| Long+Short (Daily) | $1,600,773 | $1,487,654 | $845,849 | $737,825 | 100000.000000 |
| Long-Only (Weekly) | $1,741,917 | $1,619,871 | $862,333 | $741,675 | 100000.000000 |
| Long+Short (Weekly) | $1,607,379 | $1,495,401 | $842,987 | $733,809 | 100000.000000 |
| Long-Only (Monthly) | $1,736,980 | $1,614,513 | $860,271 | $742,307 | 100000.000000 |
| Long+Short (Monthly) | $1,592,293 | $1,484,827 | $842,155 | $730,854 | 100000.000000 |

[11] Figure 6