GLOBAL MACRO HEDGE FUND STRATEGY

L/S STRATEGY FOR COUNTRY ETFS

A TOPICS COURSE REPORT FOR
FRE-GY 7841 – Hedge Fund Strategies

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1. Executive Summary:

The course, **"Hedge Fund Strategies"**, touches upon essential aspects of hedge funds from a quantitative perspective. This includes key business operations of successful hedge funds, their role in financial markets and the strategies they pursue.

One such type of strategy is the **Global Macro Strategy,** which focuses on making bets on macroeconomic factors. In this report, we shall explore a **Long Short Strategy** using **Country ETFs**. This shall give us exposure to the equities of a respective country according to the position we take. We shall incorporate technical analysis instead of fundamental analysis that is practiced in global macro. Using a trend following algorithm, we generate buy/sell signals using a **Momentum-Squeeze Indicator**.

The results are then benchmarked to a reference indicator to conduct further analysis and comparisons. Finally, we create plots to provide us with insights that help make better decisions.

2. Introduction:

In the realm of investment management, long-short strategies play a pivotal role in providing investors with avenues to navigate through volatile market conditions while aiming for consistent returns. Unlike traditional long-only strategies, which rely solely on the appreciation of assets, long-short strategies offer the flexibility to profit from both rising and falling markets. By simultaneously holding long positions in assets expected to increase in value and short positions in assets expected to decline in value, investors can potentially generate positive returns regardless of overall market direction.

The selection of country-specific Exchange-Traded Funds (ETFs) as the primary investment instruments for this strategy is justified by their unique characteristics. Country ETFs provide exposure to entire economies or specific sectors within those economies, allowing investors to capitalize on macroeconomic trends and geopolitical developments. Moreover, country ETFs offer diversification benefits, enabling investors to spread their risk across different geographic regions and sectors.

The objectives of this report are twofold: first, to provide a comprehensive analysis of the long-short strategy using country ETFs, including its methodology, performance metrics, and risk management techniques; and second, to offer recommendations for investors interested in implementing this strategy in their portfolios. The report is structured to first lay out the rationale behind long-short strategies and the selection of country ETFs, followed by a detailed methodology section, analysis of findings, discussion of results, and concluding with actionable insights and recommendations for investors. Through this structure, the report aims to offer valuable insights into the implementation and potential benefits of long-short strategies using country ETFs in investment management.

3. Methodology:

A long-short global macro strategy involves taking positions in various financial instruments across global markets to profit from macroeconomic trends while managing risk through both long and short positions. This strategy entails thorough macroeconomic analysis, a top-down approach to identify opportunities, and active management of diversified portfolios. Utilizing both long and short positions allows investors to benefit from asset appreciation and depreciation, respectively, while also employing leverage and derivatives to enhance returns or hedge risk. Dynamic risk management, flexibility, and active trading are essential components, as investors continuously adjust their positions in response to changing market conditions.

The project utilizes historical price data for 50 country-specific Exchange-Traded Funds (ETFs) sourced from Yahoo Finance. The data includes monthly prices of either the largest or the best performing ETF of each country. MSCI ACWI (All Country World Index) is the reference indicator. The time period is March 1994 – March 2024.

Using the EMA (Exponential Moving Average) as a reference we define 5 trend conditions:

i. **Bullish Reversal:** This condition indicates a potential reversal from a bearish trend to a bullish trend. It occurs when the current data point is above the EMA and the previous data point was below or equal to the previous EMA.
ii. **Bearish Reversal:** This condition indicates a potential reversal from a bullish trend to a bearish trend. It occurs when the current data point is below the EMA and the previous data point was above or equal to the previous EMA.
iii. **Bullish Continuation:** This condition indicates that the bullish trend is continuing. It occurs when both the current and previous data points are above the EMA.
iv. **Bearish Continuation:** This condition indicates that the bearish trend is continuing. It occurs when both the current and previous data points are below the EMA.
v. **Choppy Market:** This condition captures when none of the above conditions are met.

Using Bollinger Bands and Keltner Channels, we calculate if a squeeze breakout occurs in any direction.

Bollinger Bands is equal to the Rolling Mean ± Standard Deviation * 2.

Keltner Channels is equal to the EMA ± Average True Length * 2.

The "squeeze" condition is met when the data falls within both the upper and lower bands of both the Bollinger Bands and the Keltner Channels.

Using the rolling mean as a reference, we define 4 momentum conditions:

i. **Positive Rising Momentum**: This condition occurs when the momentum is positive (increasing) and the current momentum is greater than the previous momentum.

ii. **Positive Falling Momentum**: This condition occurs when the momentum is positive (decreasing) and the current momentum is less than the previous momentum.

iii. **Negative Rising Momentum**: This condition occurs when the momentum is negative (increasing) and the current momentum is greater than the previous momentum.

iv. **Negative Falling Momentum**: This condition occurs when the momentum is negative (decreasing) and the current momentum is less than the previous momentum.

Using the trend, squeeze and momentum conditions, we generate our signals. If there is **"no squeeze"** or the market is **"Choppy"**, then we **"Hold".** If the squeeze conditions are met, we define 8 buy/sell conditions:

Trend	**Momentum**	**Signal**
Bullish Continuation	Positive Rising	Strong Buy
Bullish Reversal	Positive Rising	High Buy
Bullish Continuation	Positive Falling	Medium Buy
Bullish Reversal	Positive Falling	Low Buy
Bearish Continuation	Negative Rising	Strong Sell
Bearish Reversal	Negative Rising	High Sell
Bearish Continuation	Negative Falling	Medium Sell
Bearish Reversal	Negative Falling	Low Sell

The portfolio is equally weighted, no preference is given to any security. As all the ETFs started at different times, the weight is adjusted for the number present at any given point. The portfolios are rebalanced on a monthly basis to adapt to changing market conditions and maintain alignment with the identified momentum signals. Monthly rebalancing ensures that the portfolios capture emerging trends and adjust positions accordingly, optimizing returns and managing risk. Using these weights and historical prices, we calculate the NAV (Net Asset Value) for the country ETF. Starting with an investment of 100 shares, we then conduct further analysis and comparisons against the ACWI index (our benchmark).

Signal	Weights
Strong Buy	10
High Buy	7
Medium Buy	4
Low Buy	1
Strong Sell	-10
High Sell	-7
Medium Sell	-4
Low Sell	-1

4. Results and Analysis:

The analysis of the long-short strategy using country-specific Exchange-Traded Funds (ETFs) yielded several key findings regarding its performance, risk-adjusted returns, volatility, and correlation with market indices.

The analysis employs quantitative techniques to assess the performance of the long-short strategy using country ETFs. The primary analytical technique involves backtesting the strategy over a historical time period to evaluate its effectiveness in capturing market trends and generating returns. Performance metrics such as cumulative returns, annualized returns, Sharpe ratio, maximum drawdown, and volatility are calculated to measure the risk-adjusted performance of the strategy.

Backtested results are presented to illustrate the performance of the long-short strategy using historical data. Performance metrics are calculated and analyzed to provide insights into the risk-return profile of the strategy.

Key performance metrics include:

Performance Metric	Country ETF	ACWI
Total Returns	628.67	181.04
Annualized Returns	7.33	6.71
Volatility	5.28	4.99
Sharpe Ratio	0.72	0.64
Max Drawdown	-65.39	-51.7

We can see that our strategy achieved an excess annualized return of 0.62% and excess Sharpe Ratio of 0.08 over the MSCI ACWI index. The max drawdown of our strategy is more than ACWI as the latter was founded on Mar 26, 2008; which is in the middle of the GFC. SPY is the best performing ETF in our strategy while EZA was the worst performing ETF.

The top winners are SPY, EWW, EDEN, THD, EWJ, EWO, EWY, EGPT, PAK, KWEB, ENZL and EWP. The top losers are EZA, TUR, EWZ, EPU, GXG and EWQ. The correlation heatmap shows that Pakistan and Czech Republic have negative correlation with all countries other than Vietnam. China, Egypt, Qatar, Russia, South Africa, Turkey, UAE have very low correlation with all the other countries.

The Volatility Clustering Analysis shows that there was significantly high volatility in 2008 (GFC) followed by 2020 (COVID) and 2000 (Tech Bubble). The Volatility of our strategy is slightly higher than the ACWI index. (5.28% v/s 4.99%). The reason for this can be that the ACWI index is made up of 2344 stocks while our Country ETF consists of a basket of 50 ETFs. The other reasons are that we don't give preference to any country, ACWI is heavily weighted towards the USA. The third and main reason being that we take short positions in this strategy which contributes highly to volatility.

5. Discussion:

The results of the analysis provide valuable insights into the performance of the long-short strategy using country-specific Exchange-Traded Funds (ETFs) in achieving the project objectives. The strategy demonstrated consistent positive returns and favorable risk-adjusted performance, aligning with the objective of generating returns regardless of market direction. Low correlation with market indices indicates the strategy's potential to provide diversification benefits and reduce portfolio risk.

By investing in country ETFs across different geographic regions and sectors, the strategy offers diversification benefits, reducing reliance on individual stocks or market segments. The ability to take both long and short positions allows investors to profit from both upward and downward price movements in the market, providing opportunities for consistent returns. Incorporating risk management techniques such as monthly rebalancing and stop-loss limits helps to mitigate potential losses and preserve capital during market downturns.

The success of the strategy relies on accurately timing market trends and identifying optimal entry and exit points for long and short positions, which can be challenging and subject to market volatility. Transaction costs associated with frequent rebalancing and short-selling can erode returns and impact the overall performance of the strategy. Backtesting results may be influenced by data mining bias or overfitting to historical data, leading to inflated performance metrics that may not be replicable in real-world market conditions.

Performance of the strategy may be influenced by macroeconomic factors such as GDP growth, inflation rates, and interest rates, which impact the underlying fundamentals of the countries represented by the ETFs. Political instability, trade tensions, and geopolitical conflicts can affect investor sentiment and market dynamics, influencing the performance of the strategy. Investor sentiment, market liquidity, and risk appetite can drive short-term price movements, impacting the performance of both long and short positions.

Continuously refining and optimizing the methodology for identifying long and short positions based on robust technical indicators and market signals can enhance the effectiveness of the strategy. Minimizing transaction costs and implementing cost-effective trading strategies can improve the net returns of the strategy. Implementing dynamic risk management techniques and incorporating hedging strategies to mitigate downside risk can improve the risk-return profile of the strategy.

6. Conclusion:

In summary, the analysis of the long-short strategy using country-specific Exchange-Traded Funds (ETFs) has provided valuable insights into its performance, risk characteristics, and potential applications in investment management. Key findings from the analysis include consistent positive returns, favorable risk-adjusted performance, and low correlation with market indices, highlighting the strategy's potential to generate returns regardless of market direction while managing portfolio risk effectively.

The significance of this research lies in its contribution to the understanding of long-short strategies and their application using country ETFs. By demonstrating the effectiveness of the strategy in capturing market trends and providing diversification benefits, the research offers investors valuable tools for optimizing their investment portfolios and achieving their financial goals.

By continuing to explore and refine the application of long-short strategies using country ETFs, investors can unlock new opportunities for achieving consistent returns and managing portfolio risk in dynamic market environments. Ultimately, the research contributes to the advancement of investment management practices and offers valuable insights for investors seeking to optimize their investment strategies.

7. References:

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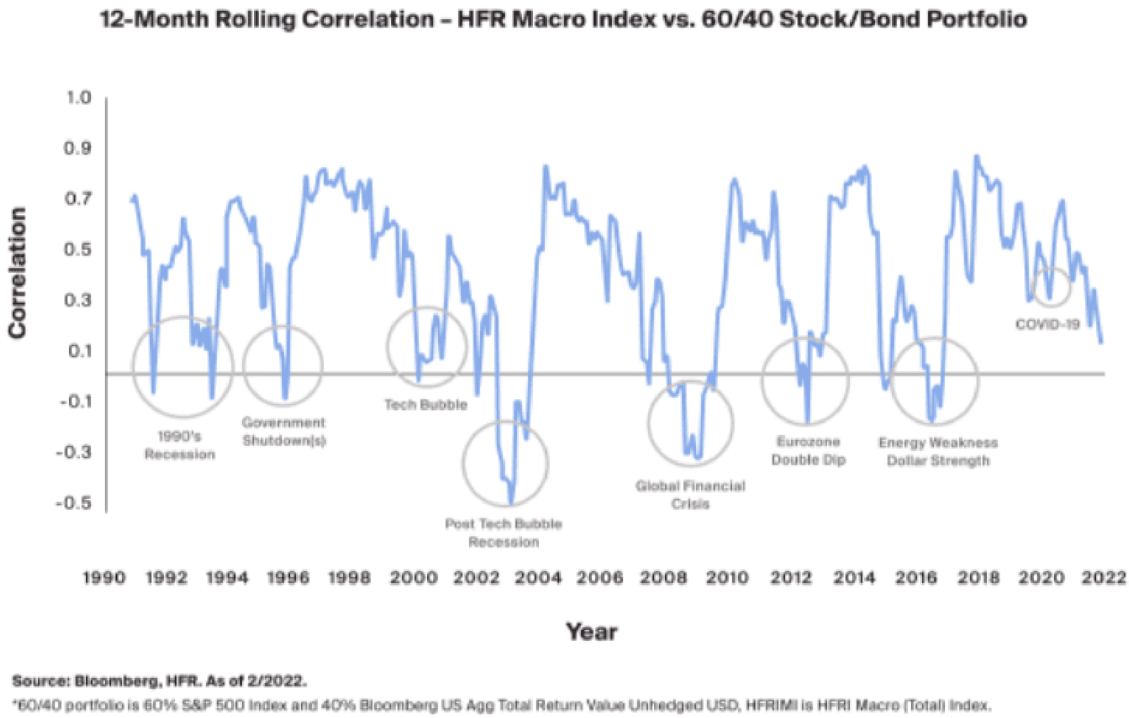
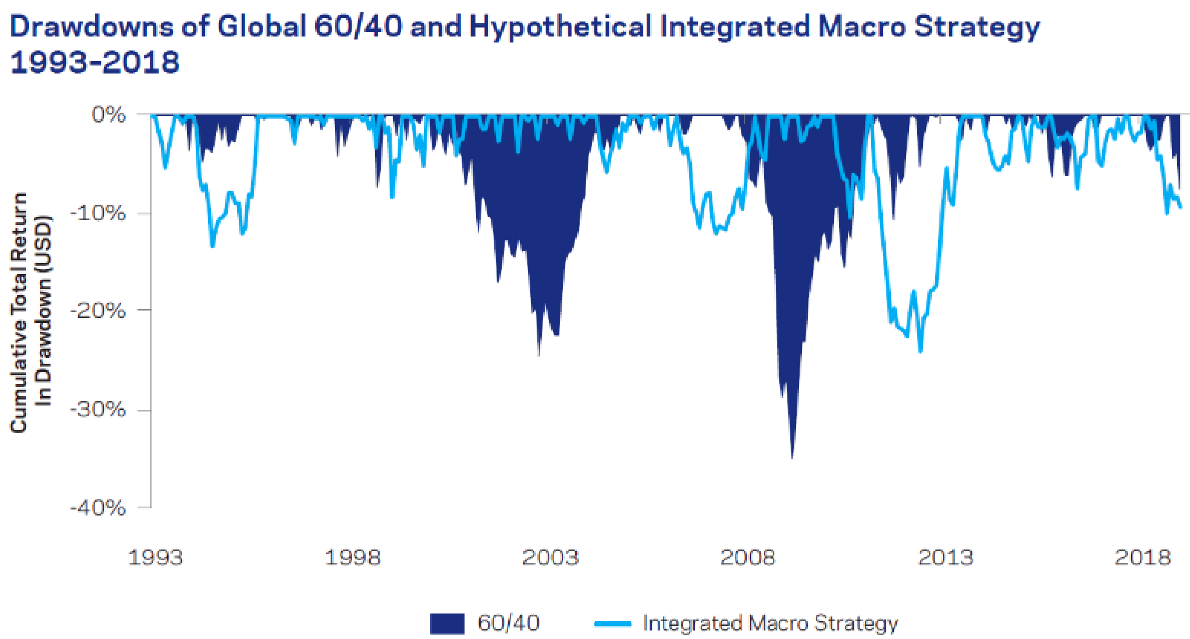
8. Appendix:





These two graphs show the performance of a Global Macro Strategy in comparison to a conventional 60/40. The Global Macro has historically had a lower drawdown and correlation during the times of crisis, making it a very efficient hedge.

Notable Practitioners:

Hedge Fund	Founder(s)	Strategy/Expertise
Bridgewater Associates	Ray Dalio	Systematic global macro investing, utilizing economic indicators and quantitative models.
Soros Fund Management	George Soros	Macroeconomic analysis and currency trading expertise, known for historic trades like shorting the pound.
Tudor Investment Corporation	Paul Tudor Jones II	Global macro strategies across currencies, interest rates, and commodities, managing multiple hedge funds.
Moore Capital Management	Louis Bacon	Discretionary global macro approach, focusing on currencies, interest rates, and commodities.
Caxton Associates	Bruce Kovner	Specializes in global macro trading with a disciplined approach to risk management and research-driven process.
Brevan Howard Asset Management	Alan Howard & others	Macroeconomic analysis and interest rate trading, managing multiple funds with a global macro focus.
Capula Investment Management	Yan Huo & Masao Asai	Fixed income and interest rate trading, with a quantitative and systematic approach to macro investing.
BlueCrest Capital Management	Michael Platt & William Reeves	Macro trading strategies across fixed income, currencies, and commodities, with strong historical performance.
Man Group	James Man	Multi-strategy approach incorporating global macro trading within flagship AHL strategy.
Citadel	Kenneth Griffin	Multi-strategy approach, including global macro trading within flagship Wellington and Kensington funds.

These hedge funds are recognized for their expertise in global macro strategies and have a track record of success in navigating global economic trends and market volatility.

Largest / Best Performing ETF of the respective country:

Country	ETF Ticker
Australia	VAS.AX
Austria	EWO
Belgium	EWK
Brazil	EWZ
Canada	XIU.TO
Chile	ECH
China	KWEB
Colombia	GXG
Czech Republic	CZX
Denmark	EDEN
Egypt	EGPT
Finland	EFNL
France	EWQ
Germany	EWG
Greece	GREK
Hong Kong	EWH
Hungary	HUBE.DE
India	INDA
Indonesia	EIDO
Ireland	EIRL
Israel	EIS
Italy	EWI
Japan	EWJ
Kuwait	KWT
Malaysia	EWM

Mexico	EWW
Netherlands	EWN
New Zealand	ENZL
Norway	NORW
Pakistan	PAK
Peru	EPU
Philippines	EPHE
Poland	EPOL
Portugal	PGAL
Qatar	QAT
Russia	ERUS
Saudi Arabia	KSA
Singapore	EWS
South Africa	EZA
South Korea	EWY
Spain	EWP
Sweden	EWD
Switzerland	EWL
Taiwan	EWT
Thailand	THD
Turkey	TUR
UAE	UAE
United Kingdom	EWU
United States	SPY
Vietnam	VNM

These are the country ETFs that have been selected for our analysis. These countries are top 50 economies and ETFs chosen are their largest / best performing ETF. ACWI has 47 countries in it, I've added 3 more to make it 50. (Pakistan, Russia and Vietnam).

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```
Values in %

SPY         0.927668
VAS.AX      0.728103
EWO         0.668961
EWK         0.600097
EWZ         1.013681
XIU.TO      0.663295
ECH         0.150059
KWEB        0.557992
GXG         0.501921
CZX         0.082003
EDEN        1.270766
EGPT       -0.583100
EFNL        0.628745
EWQ         0.761974
EWG         0.674170
GREK        0.648769
EWH         0.550975
INDA        0.721219
EIDO        0.372645
EIRL        1.036883
EIS         0.476226
EWI         0.673162
EWJ         0.274722
KWT         1.028182
EWM         0.471070
EWW         1.030232
EWN         0.728060
ENZL        0.781241
NORW        0.630075
PAK         1.317781
EPU         0.653659
EPHE        0.311332
EPOL        0.499778
PGAL        0.087163
QAT         0.088749
ERUS       -0.446360
KSA         0.894102
EWS         0.437523
EZA         0.844077
EWY         0.858087
EWP         0.767910
EWD         0.901103
EWL         0.688478
EWT         0.599699
THD         0.559177
TUR         0.620070
UAE         0.027926
EWU         0.516912
VNM         0.002547
HUBE.DE    -0.086681
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This picture shows us the average monthly returns of each country ETF that we have selected. As we can see Egypt, Russia and Hungary are the worst performing countries with a negative monthly average return.

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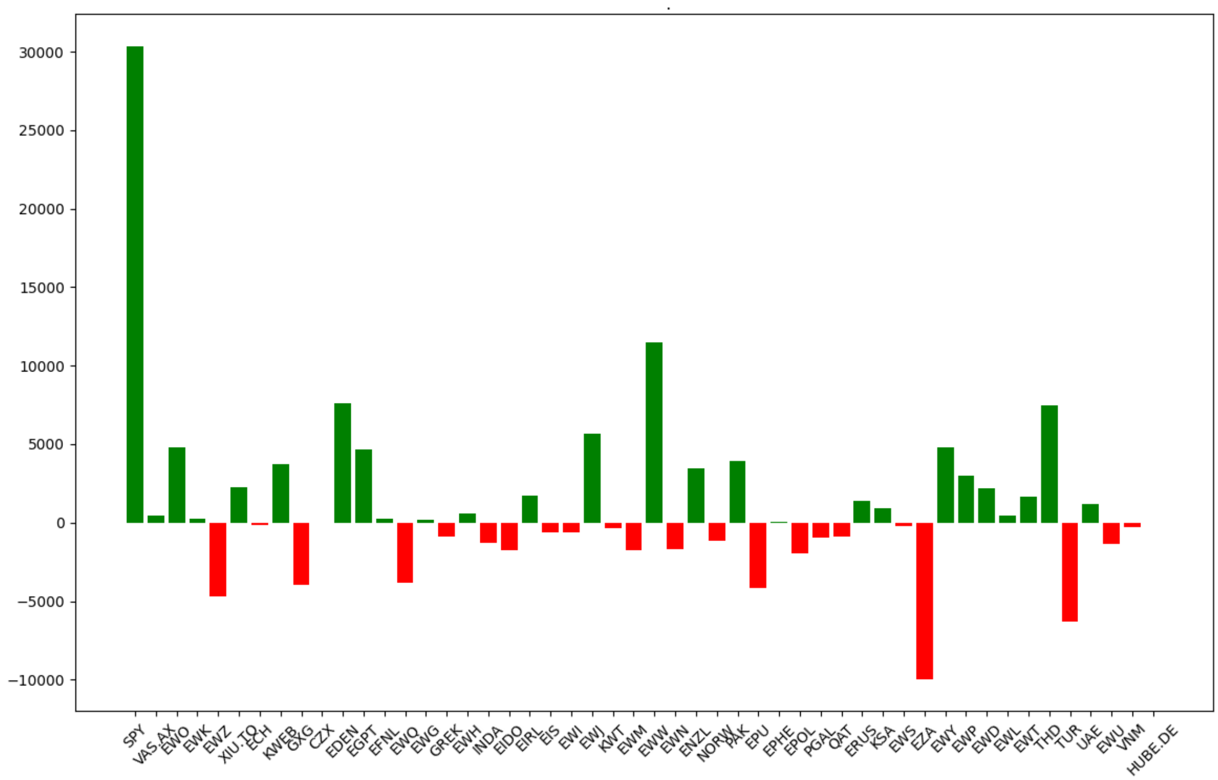

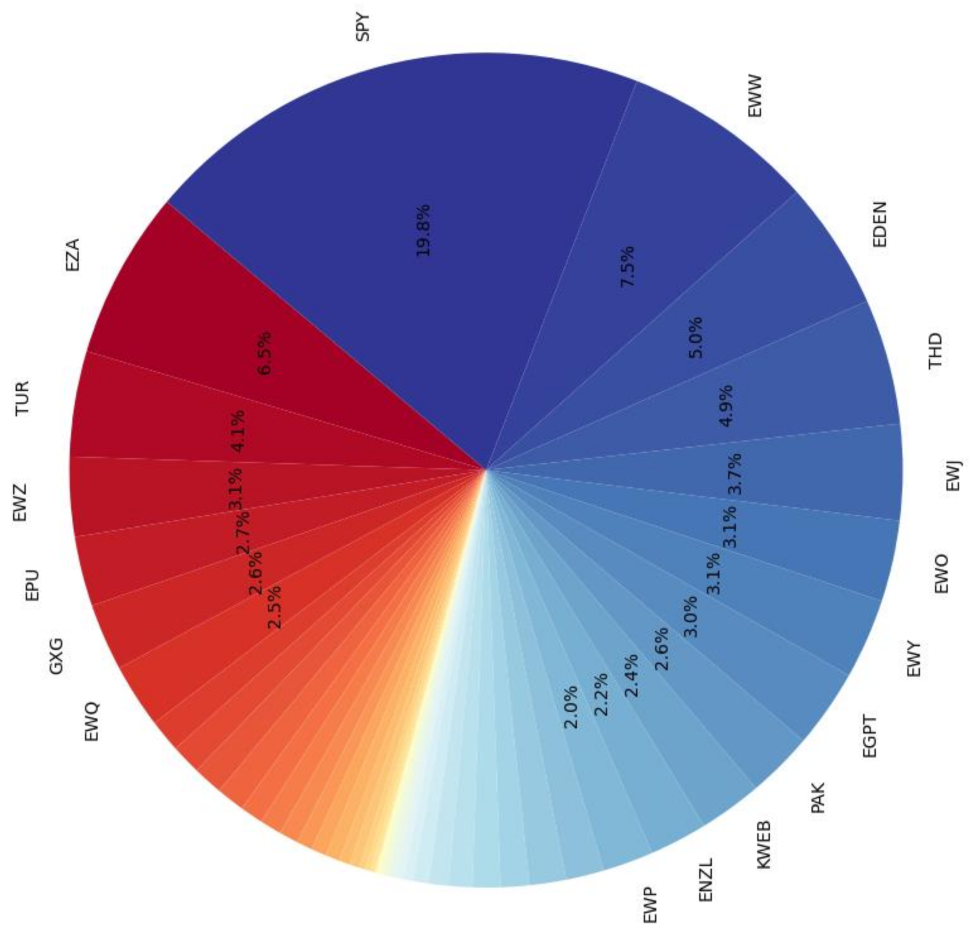

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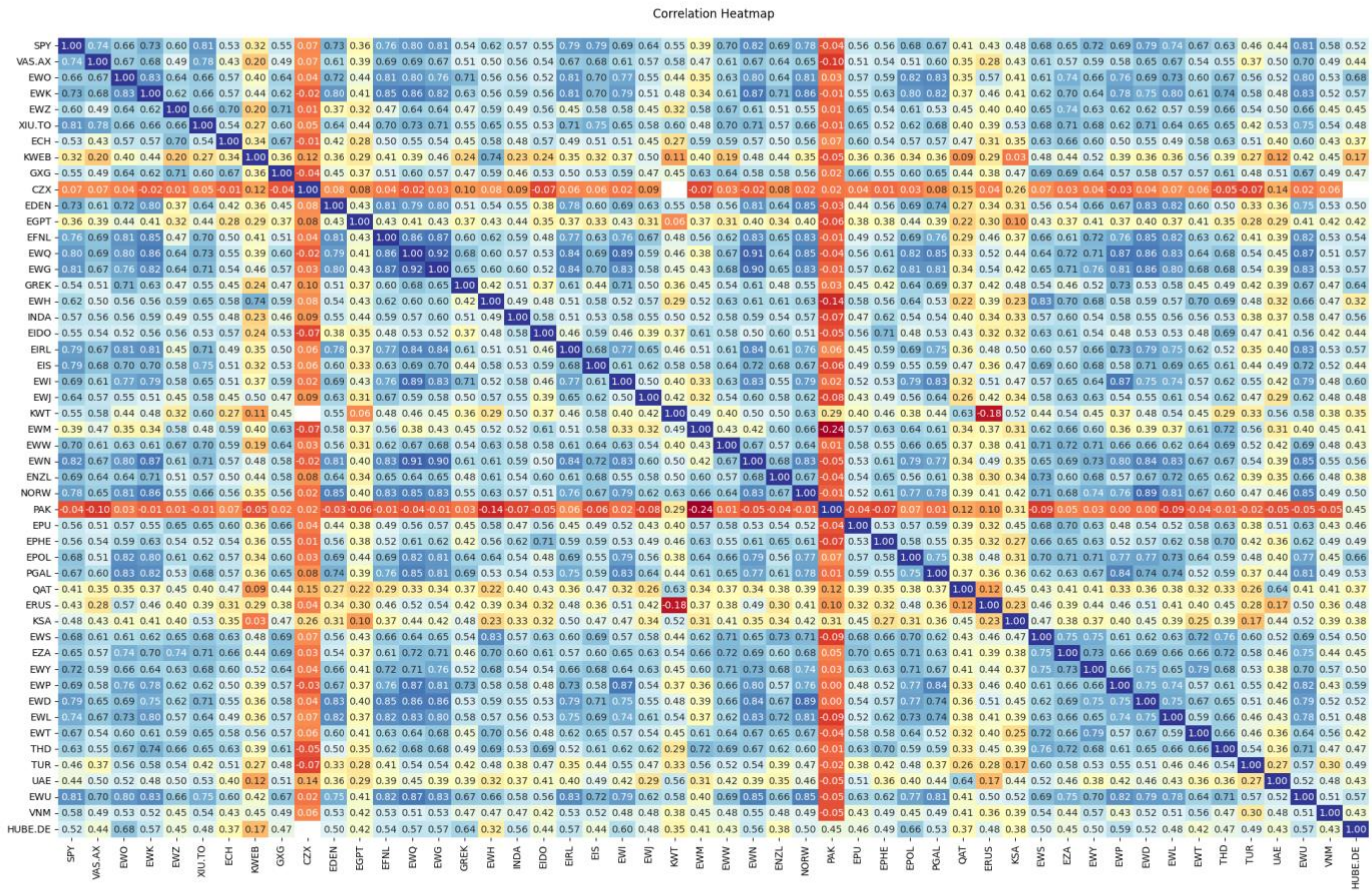

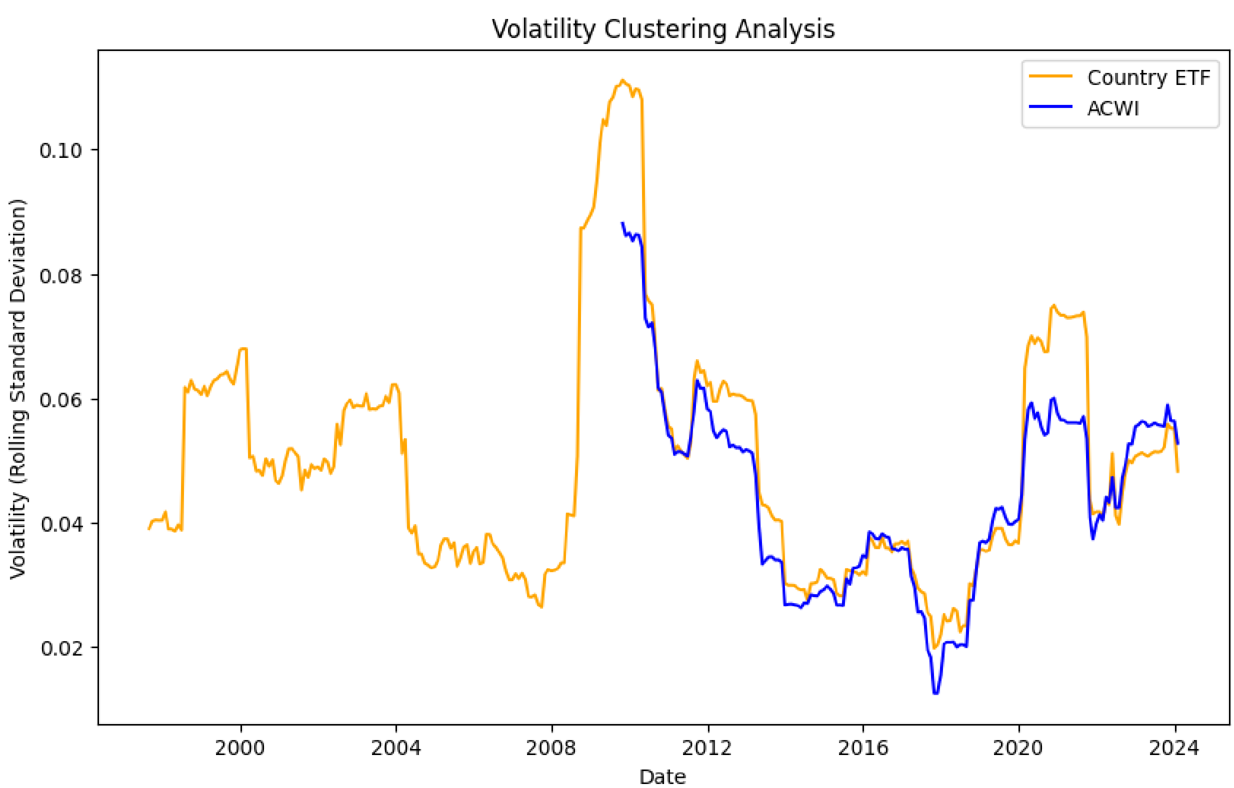

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