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FIN355- Investments

8/7/24

"Project Assignment: Portfolio Management"

Portfolio Management Project

Step 1: Policy Statement

I. Statement of Objectives

- **Portfolio Objectives:**
  - Main investment objective of the portfolio is achieving a total return through capital appreciation and reinvesting current income.
  - Maximize returns and diversify where necessary
  - Focus on short-term goals in the market whilst ensuring long-term objectives
  - Invest in growing markets and innovative industries—Be an early entrant, not a late mover.

- **Time Horizon:** The Time Horizon will follow the lifespan of the client (Long-term) until they have reached retirement.

- **Risk Tolerance:** The Portfolio holds a riskier asset mix at first and then reduces risk exposure over time. This is to protect the interests of the client as they approach retirement

- **Performance Expectations:** ARR goal for the portfolio is 20%. As the Portfolio is continually rebalanced, the overall return may slightly diminish but will still ensure a minimum return of 10%. A benchmark will be set to establish the minimum return.

II. Asset Class Guidelines

Asset classes used in the Portfolio must match high return growth for the client. This will be determined by historical returns and volatility. The investing focus is Value and Growth. Regional exposure is mainly domestic markets, 65%, and some in foreign markets, 25%. Equities such as Large-cap, Small-cap, Mid-Cap, & Micro-cap along with Emerging Market will be the focus for potential growth and value. Commodities and REITs will be incorporated to help produce high returns, yet hedge against risk, and further diversify the portfolio.

III. Asset Allocation

1) Equities: 90%
    - Large-Cap Growth: 15%
    - Large-Cap Value: 15%
    - Mid-Cap Growth: 10%
    - Mid-Cap Value: 10%
    - Small-Cap Growth:10%
    - Small-Cap Value: 10%
    - Emerging Markets: 10%
    - Micro-Cap: 10%
2) Commodities: 5%
3) Equity REITs: 5%

IV. Implementation

Portfolio modeling techniques will be used to optimize capital allocation to securities that yield a return matching risk tolerance and portfolio objectives. This will be the point of tangency on the efficiency frontier line (*Step 3*).

These portfolio modeling techniques will be used in conjunction with the following Indices/ETFs/Funds:

1) Equities

- Large-Cap Growth: (VOO) Vanguard S&P 500 ETF
- Large-Cap Value: (VTV) Vanguard Value ETF
- Mid-Cap Growth: (XMMO) Invesco S&P Midcap Momentum ETF
- Mid-Cap Value: (MDYV) S&P Midcap 400 Value ETF
- Small-Cap Growth: (VTWO) Vanguard Russell 2000 ETF
- Small-Cap Value: (ISCV) iShares Morningstar Small Cap Value ETF
- Emerging Markets: (FRDM) Freedom 100 Emerging Markets ETF
- Micro-Cap: (RWJ) Invesco S&P Small Cap 600 Revenue ETF

2) Commodities

- Precious Metal-Related: (DBP) Invesco DB Precious Metals Fund

3) Real Estate

- Equity REIT: (USRT) iShares Core US REIT ETF

These benchmarks are the basis for an efficiently allocated portfolio respecting the specified asset guidelines.

V. Monitoring (Performance Objectives)

To assess the performance of the portfolio and its objectives, the manager will monitor standard deviations, returns, and correlation exhibited in the portfolio. Each asset class's performance will be evaluated next to the benchmarks to ensure returns are matching This helps with rebalancing the portfolio, if need be, without sacrificing intended objectives. Additionally, variables such as Beta, Sharpe Ratio, and alpha will help evaluate the portfolio in terms of return and risk compared to the portfolio's Benchmark

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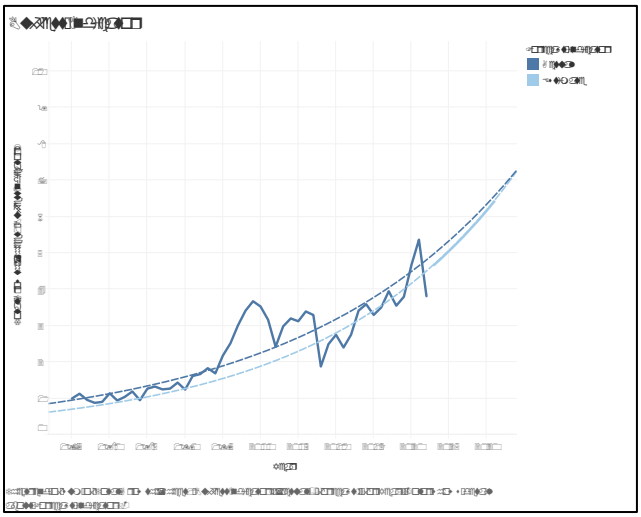
VI. Monitoring (Benchmarks)

Monitoring the Benchmarks for the Portfolio will consist of quarterly reviews cross-examining returns in the asset profile of the portfolio and the corresponding benchmark ETF/Index (See Section IV). This will determine if certain asset classes and profiles are needed/released to help rebalance the portfolio in terms that match or exceed the market it follows.

Step 2: Financial and Economic Trends, Forecasting the environment

The following graphics displays three different measures: (1) Historical Growth Behavior, (2) Trend Line of the Historical Data using exponential smoothing, (3) Forecast Line based on historical data using exponential smoothing. Data was input into an excel file from online resources and processed into Tableau visualization software to share insights. These indicators help portfolio decision-making using economic information

The Buffet Indicator

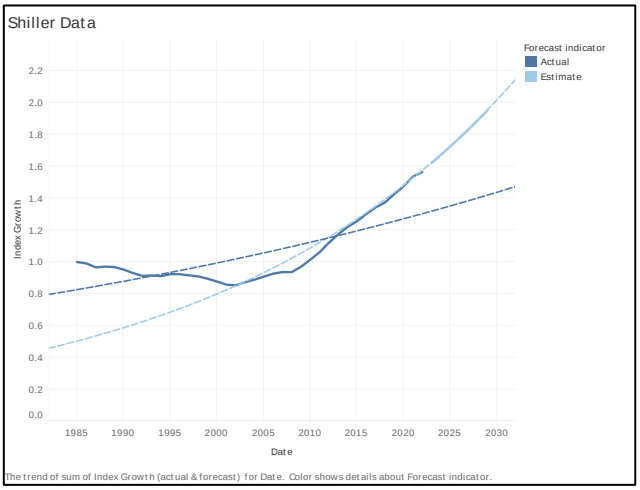


The Buffett Indicator displays the relationship between Total Market Cap of the US Stock Market and Total US GDP. The graphic shows an upward trend, and is forecasted to continue this upward trend, but several key factors must be observed:

- Sharp Decline in recent years, this could be due to the Pandemic's toll on the global economy and business operation
- Market may be correcting itself due to overvaluation of US Equity Market.

With this market correction there is potential for growth, since the historical data is below the trend line but still above the floor of the forecast, we may capitalize on an undervalued market before upward potential

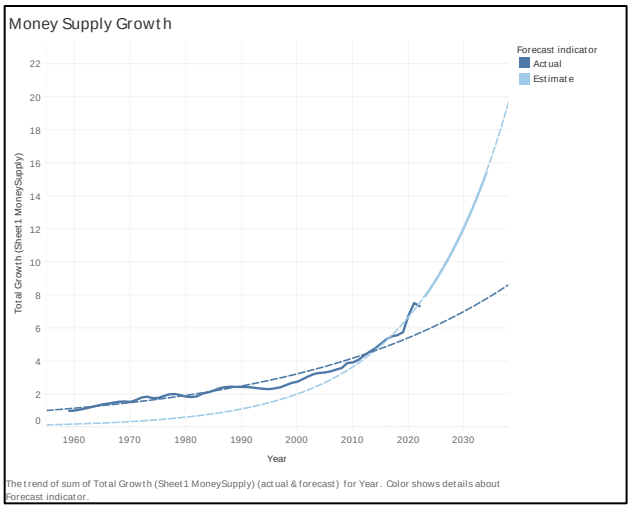
Shiller Index



This Shiller index graph takes the inverse P/E ratio of the S&P 500 and subtracts it by the 10-year Treasury Yield since 1985. A negative slope is observed from 1985 to 2004, to which it then turns into an exponential trend onward. Things to consider during this time were three recessions: Early 90's, Early 00's (Tech Bubble), and the Great Recession. In 2008. However, the stock market shows significant Resilience and growth Post recession. Even with the sudden onset of the COVID-19 pandemic, the stock market stayed robust.

The Shiller index helps assess the market through the S&P 500 to provide an accurate measure of market risk. Since this earnings yield index is high, the market may still be undervalued and have potential growth opportunity to help achieve high returns. Navigating this carefully helps anticipate any sudden changes in economic conditions requiring the portfolio to be adjusted

Money Supply



The chart on the left display's growth since 1960 of Cash and Short-Term Deposits. This helps understand three things:

- The rate at which the Money Supply is growing
- Liquidity of the current economy
- Future interest rates

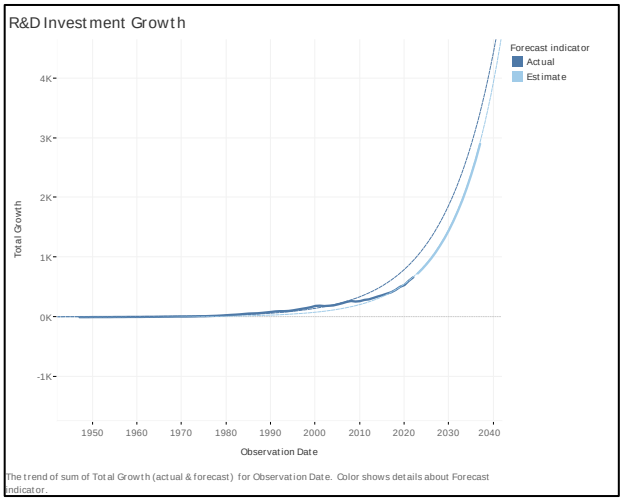
The historical data and forecast show an increasing rate of money supply growth. This indicates that money circulating in the economy is growing, providing greater liquidity, but at the cost of expansionary pressure in the market driving inflation. Considering recent data is surpassing the forecasted trend line, this can be interpreted as higher supply growth than average. Portfolio decision-making must match the behavior of the market to capitalize upon spending & investment pressure characteristic of higher growth. However, if growth goes below the trend then decision-making must be reevaluated.

Hedging against this risk prevents exposure to a sudden contraction in growth, especially when accounting for geopolitical risks and regulatory action.

R&D Investment Growth

This chart displays the exponential growth of research and development spending in relation to GDP. The exponential trend in the graph depicts R&D's significant contributions perpetuating a growing economy.

It is important to stay ahead to maintain a competitive advantage. This helps deliver value and generate a return on investment in the portfolio. In part with this is focusing on emerging and small markets to capture better potential growth opportunities.



Step 3) Constructing the Portfolio

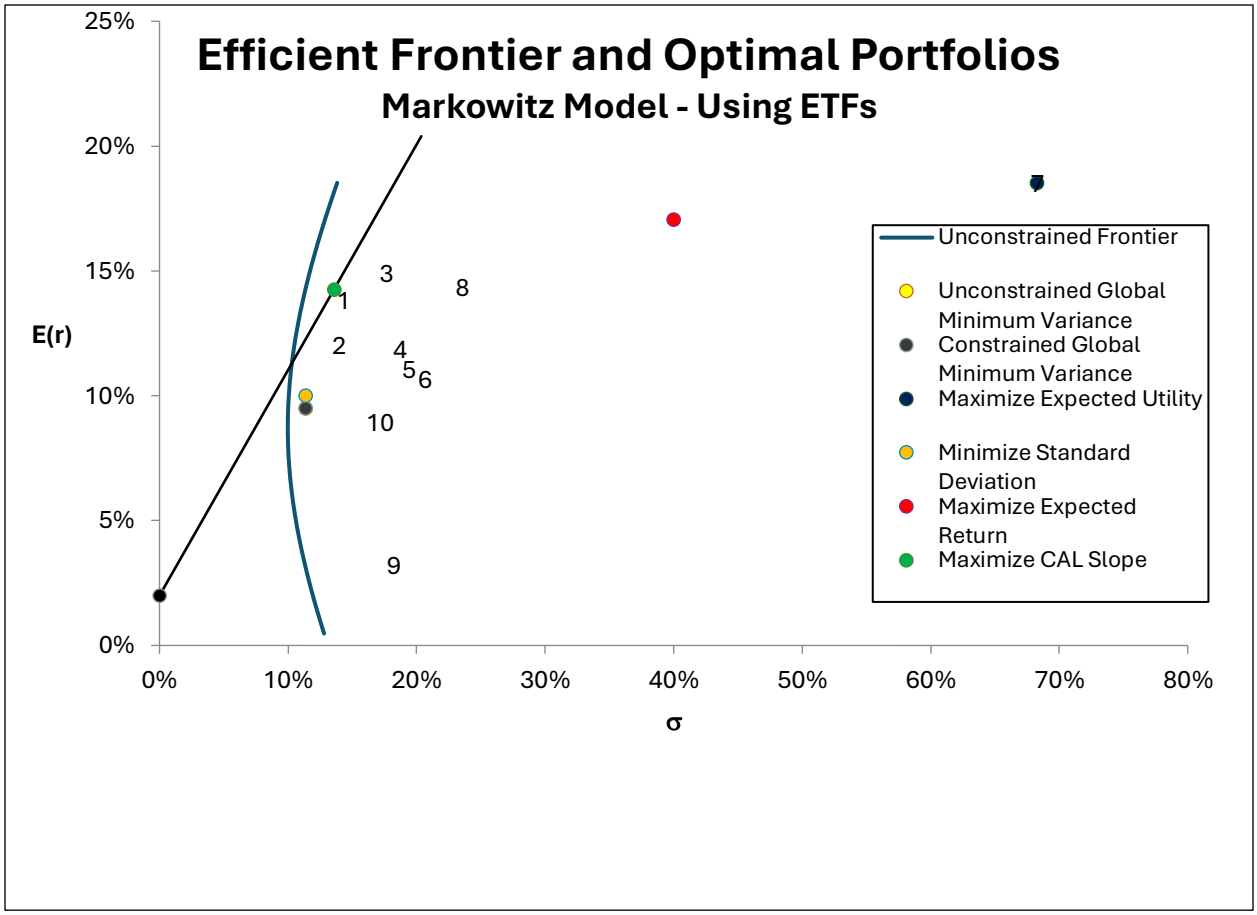
The following graphics are Efficiency Frontiers produced by a Markowitz Optimal Portfolio Selection. This uses asset classes found in the portfolio as inputs for the securities. Expected return and standard deviation is based off a generated portfolio optimization using the selected asset classes/ETFs in the portfolio allocation—see Step 1; Section III/IV.

According to PortfolioVisualizer.com, the optimal allocations for the selected asset classes were:

- US Large Cap Growth (57.64%)
- US Mid Cap Value (32.58%)
- US Microcap (2.96%)
- REIT (6.80%)

Regarding the Optimal Allocations for ETFs, the selected ETFs were:

- (VOO) Vanguard S&P 500 ETF (100%)


Efficient Frontier and Optimal Portfolios
Markowitz Model - Using ETFs
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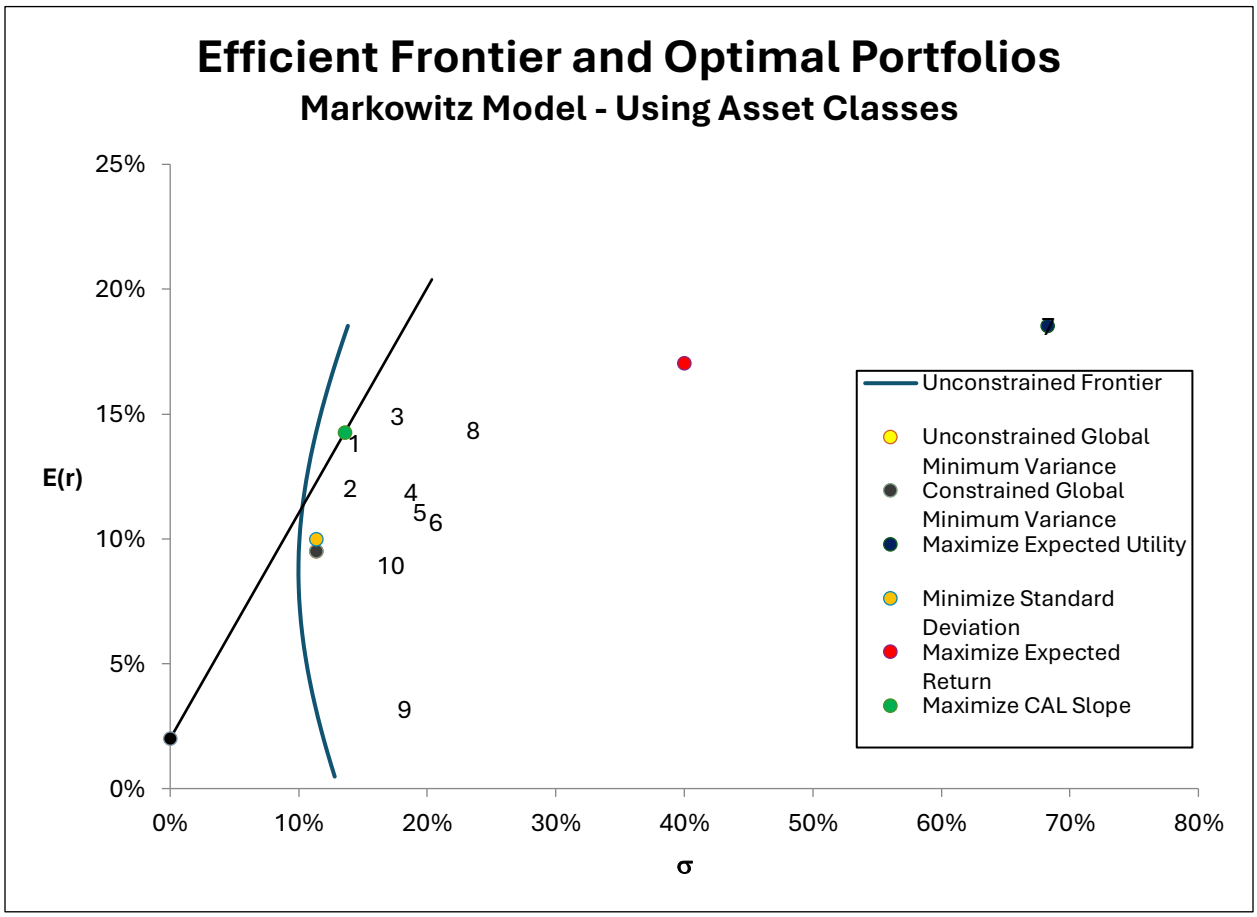
Unconstrained Frontier
Unconstrained Global Minimum Variance
Constrained Global Minimum Variance
Maximize Expected Utility
Minimize Standard Deviation
Maximize Expected Return
Maximize CAL Slope


Efficient Frontier and Optimal Portfolios
Markowitz Model - Using Asset Classes
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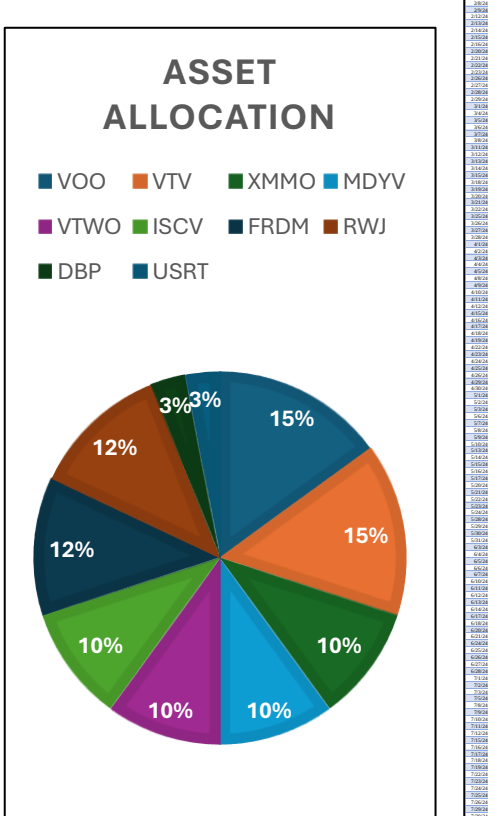
Unconstrained Frontier
Unconstrained Global Minimum Variance
Constrained Global Minimum Variance
Maximize Expected Utility
Minimize Standard Deviation
Maximize Expected Return
Maximize CAL Slope

Step 4: Performance Evaluation

Variables	Measures
Return	129.18%
Standard Deviation	3.22%
Sharpe Ratio	38.98
Beta	1.00
Alpha	128.14%
US Treasury	3.50%

Portfolio	$100,000
VOO	15.00%
VTV	15.00%
XMMO	10.00%
MDYV	10.00%
VTWO	10.00%
ISCV	10.00%
FRDM	12.00%
RWJ	12.00%
DBP	3.00%
USRT	3.00%



Portfolio	Expected Return	Standard Deviation	Sharpe Ratio
Provided Portfolio	11.28%	16.64%	0.54
Max Sharpe Ratio Portfolio	12.18%	15.75%	0.63

Portfolio	Expected Return	Standard Deviation	Sharpe Ratio
ETF Portfolio	22.23%	81.95%	0.27
Max Sharpe Ratio Portfolio	13.86%	14.35%	0.89

END OF PROJECT ASSIGNMENT