Stock Portfolio Investment Report

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Macro Economy and Investment Strategy

During the year of 2023, the US economy has been experiencing many downfalls. Current issues involving the economy include major problems that we need to address and keep in mind as our economy continues to be unwell. The first issue we need to be mindful of is the labor market. Job growth is slowing, but the demand for workers continues to increase. While layoffs are continuing to occur, it is making it very difficult for people to find jobs, as companies begin to cut back on expenses, rethink their sizing decisions and wage growths between current employees. Another issue involves high interest rates. Interest rates have been quickly increasing in 2022, impacting the interest rates in 2023. As interest rates continue to rise, our economy is close to being pushed into a recession. Other key issues happening in our economy consist of elevated prices, tightening credit conditions, home sales plunging 30% over the past year and construction activity following the downfall with a lag, and business investment activity softening.

Our investment strategy involves comparing banks that are unlikely to fail with banks that have a higher chance of failing. We plan to invest 70% of our money in the safe banks and 30% in the riskier ones. We want to see how changes in the federal interest rates affect these banks with different levels of risk. This is because the government has been taking steps to make sure the banking system stays strong. Based on our investment strategy, we expect the government will have a big impact on whether our investments will do well or not.

Below are the stocks we decided to invest in, the stock symbol, number of shares, purchased price per share, the dollar amount and the percent weight of each position in our portfolio:

Stock	**Cash**	**Shares**	**Price**	**% of Portfolio**
JP Morgan (JPM)	30k	230 shares	$130.55	30%
Bank of America (BAC)	30k	1040 shares	$28.59	30%
Citigroup (C)	10k	220 shares	$45.07	10%

First Republic Bank (FRC)	10k	635 shares	$15.77	10%
Wells Fargo (WFC)	10k	260 shares	$38.48	10%

Below is a table of each stock we are investing in and brief Financial Introductions to our Stock Portfolio:

JPMorgan Chase & Co. (JPM): Market capitalization: $467.4 billion Price-to-earnings (P/E) ratio: 12.44 Dividend yield: 2.48% 1-year stock price performance: +30.5% Net income for 2020: $29.1 billion	**Bank of America Corporation (BAC):** Market capitalization: $325.8 billion Price-to-earnings (P/E) ratio: 12.97 Dividend yield: 2.01% 1-year stock price performance: +47.5% Net income for 2020: $17.9 billion
Citigroup Inc. (C): Market capitalization: $142.6 billion Price-to-earnings (P/E) ratio: 9.51 Dividend yield: 2.75% 1-year stock price performance: +31.6% Net income for 2020: $11.4 billion	**First Republic Bank (FRC):** Market capitalization: $33.8 billion Price-to-earnings (P/E) ratio: 27.51 Dividend yield: 0.52% 1-year stock price performance: +50.8% Net income for 2020: $1.4 billion
Wells Fargo & Company (WFC): Market capitalization: $190.5 billion Price-to-earnings (P/E) ratio: 11.95 Dividend yield: 1.64% 1-year stock price performance: +71.1% Net income for 2020: -$22.2 billion (due to significant loan loss provisions related to COVID-19)	**The Goldman Sachs Group, Inc. (GS):** Market capitalization: $135.2 billion Price-to-earnings (P/E) ratio: 7.69 Dividend yield: 1.43% 1-year stock price performance: +52.9% Net income for 2020: $9.5 billion

Stock and Market Performance Analysis

The holding period performance we decided to focus on our stock portfolio was from March 21, 2023 to April 27, 2023.

Below is a chart of our Weekly Risk Return Analysis:

	SPY	**JPM**	**BAC**	**C**	**FRC**	**GS**	**WFC**
Mean	0.0101	0.0084	0.0251	**0.0358**	0.032	0.0037	0.016
STD	0.0168	0.0135	0.0404	0.0565	**0.0834**	0.045	0.0307
COV	165.27	150.14	160.71	157.77	261.10	**1210.26**	192.31
Sharpe	-0.5883	0.2663	0.1266	**0.2797**	0.1433	-0.3614	-0.1314
SF	0.6002	**0.6644**	0.6202	0.6324	0.382	0.0808	0.5173
Beta	1	1.0758	1.5578	2.6467	**3.1426**	1.3155	0.3262

For the Weekly Risk Return Analysis table, we bolded the highest values of each row. Citigroup holds the highest mean, First Republic Bank holds the highest standard deviation, Goldman Sachs holds the highest covariance, Citigroup holds the highest Sharpe ratio, JP Morgan holds the highest safety ratio, and First Republic bank displays the highest beta. Based on the STD values, we are able to compare the statistics of banks which are expected to fail and more stable institutions. Based on the hindsight from this time period, FRC was the highest risk asset as opposed to the safest asset, JPM.

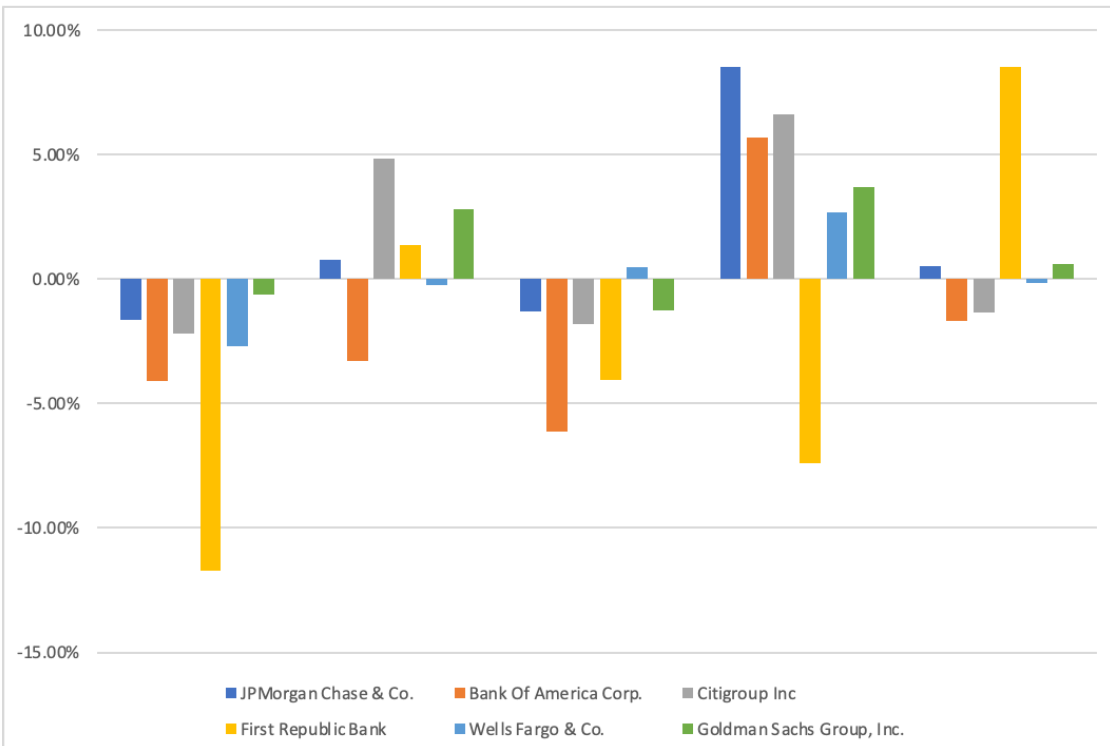
Below is a ranking of the stocks based on our preference:

1. WFC
2. JPM
3. GS
4. BAC

5. C
6. FRC

These recommendations are based on the betas of the stock performance during our holding period. For this ranking, our method consisted of aiming for minimum risk tolerance during our holding period. With this in mind, we would recommend too big to fail banks at this time.

Below is a visual representation of each stock's weekly return:



Portfolio Optimization

1. Global min variance

   W1: 0.128362037

   W2: -0.162872359

   W3: -0.198794181

   W4: 0.140668639

   W5: 1.092635859

   Portfolio STD: 0.009310238

Portfolio Return: 0.002702162

2. Target returns

Target Return	0.001	0.002	0.003	0.004	0.005	0.0075
W1	0.167155252	0	0	0	0	0
W2	0.458722923	0	0	0	0	0
W3	0.30434646	0.071843436	-1E-06	-1E-06	0	-1E-06
W4	0	0.2935496	0	0	0	0
W5	0.069775365	0.634606965	1.000001	1.000001	1	1
Portfolio STD	0.013004922	0.009076925	0.009664019	0.009664019	0.009664021	0.009664019

3. Optimized portfolio (Sharpe ratio)

   W1: -0.780207319

   W2: -0.525909962

   W3: 1.199162048

   W4: 0.571420265

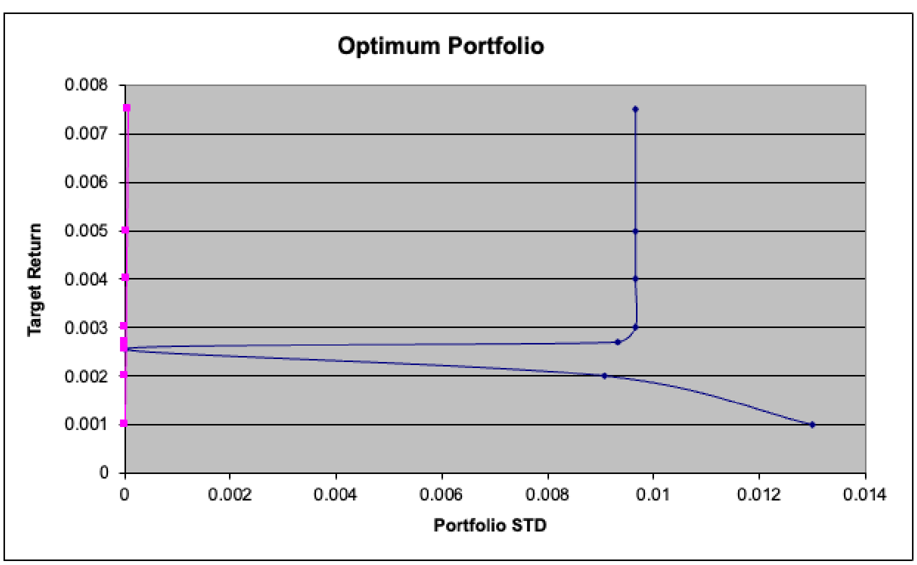
   W5: 0.535534968

   Optimal Sharpe Ratio: 89.46592414

   Tangent Portfolio STD: 2.18189E-05

   Tangent Portfolio Return: 0.002552047

4. Chart: Efficient frontier and tangent portfolio



Reflection

Based on our analysis, we recommend that due to current issues with the economy, investing in banks should not be prioritized. To create an ideal portfolio, we would recommend diversifying the portfolio by investing in different stocks that are in diverse business areas or industries. Looking closely at our stocks, for example, JP Morgan, we expected the bank's recent earnings report would increase the share price, but remained stable throughout our holding period. Compared to Bank of America and Citibank, we did not see much of a significant gain. As Wells Fargo's stock also did not gain a significant growth, it also did not drop as much as well. In terms of thinking about a bank to invest in the long run, we would recommend Wells Fargo as a stable and good option. To conclude, we have learned that investing in banks can be risky, so diversifying invested stocks is the ideal suggestion for creating a great stock portfolio..

References

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List of Appendices

1. Optimization - Excel (attachment)
2. Stock Portfolio Stats - SAS file (attachment)