Portfolio Risk & Return Analysis of JPMorgan, Bank of America, Citigroup & Wells Fargo

Muhammad Umar Amin
mamin14@lamar.edu
Department of Mathematics
Lamar University, Beaumont, TX 77705

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Abstract

This study provides a comprehensive risk–return evaluation of four systemically important US banks: Bank of America (BAC), Citigroup (C), JPMorgan Chase (JPM), and Wells Fargo (WFC) during the period 2018-2024. Using daily data, we examine absolute and risk-adjusted performance, volatility dynamics, and factor exposures relative to the S&P 500 benchmark. Results show that JPMorgan consistently outperformed its peers, achieving the highest return efficiency with relatively lower volatility, while Citigroup and Wells Fargo lagged with weaker returns and larger drawdowns. An equal-weighted portfolio of the four banks produced a 12.97% annualized return, but with high volatility (31.26%) and a beta above unity (1.18), underscoring its cyclical amplification relative to the market. Correlation analysis revealed co-movement above 0.80 across all institutions, confirming limited diversification potential within the sector. These findings illustrate both the opportunities and systemic risks associated with concentrated banking portfolios and highlight the importance of cross-sectoral diversification in achieving more efficient risk-adjusted outcomes.

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1 Introduction

The banking sector plays a pivotal role in the stability and growth of the financial system. Large U.S. banks are systematically important, and their performance has both microeconomic and macroeconomic consequences. The period 2018–2024 was characterized by heightened uncertainty: from the late-cycle expansion of 2018–2019, through the pandemic-driven shock of 2020, the extraordinary rebound in 2021, subsequent monetary tightening in 2022, and the transition to a higher-rate environment by 2024. Studying the performance of leading banks during this turbulent era provides valuable insights into sector resilience, investor outcomes, and systemic vulnerabilities.

This project addresses three key questions:

1. How did each of the four major banks (BAC, C, JPM, WFC) perform in terms of risk and return over 2018–2024?
2. To what extent does diversification across these banks reduce portfolio risk?
3. How does an equal-weighted bank portfolio compare to the market (SPY) in terms of efficiency, beta exposure, and downside resilience?

2 Data and Methodology

Daily adjusted closing prices for BAC, C, JPM, and WFC were collected from January 2018 to December 2024. The following metrics were computed:

2.1 Return Measures

$$R_{i,t} = \frac{P_{i,t} - P_{i,t-1}}{P_{i,t-1}} \tag{1}$$

$$\bar{R}_{annual} = \left(1 + \bar{R}_{daily}\right)^{252} - 1 \tag{2}$$

2.2 Risk Measures

- **Volatility:** $\sigma_{annual} = \sigma_{daily} \times \sqrt{252}$
- **Downside Deviation:** Standard deviation of returns below zero, annualized.
- **Drawdown:** Maximum observed peak-to-trough decline.

2.3 Risk-Adjusted Ratios

$$Sharpe = \frac{R_p - R_f}{\sigma_p} \tag{3}$$

$$Sortino = \frac{R_p - R_f}{\sigma_{downside}} \tag{4}$$

$$Treynor = \frac{R_p - R_f}{\beta_p} \tag{5}$$

2.4 Factor Exposure

Alpha (α), beta (β), and R^2 were obtained via regression against SPY returns:

$$R_{p,t} - R_f = \alpha + \beta(R_{m,t} - R_f) + \epsilon_t \tag{6}$$

2.5 Correlation Analysis

Pearson correlation coefficients were computed pairwise to capture co-movement and diversification potential.

3 Empirical Results

3.1 Annualized Risk and Return

	BAC	C	JPM	WFC	Portfolio
Annual Return (%)	13.23	9.00	18.61	11.06	12.97
Annual Std Dev (%)	32.81	35.56	29.60	35.05	31.26
Downside Dev (%)	–	–	–	–	21.44

Table 1: Annualized Risk and Return Metrics (2018–2024)

JPM generated the highest annualized return with relatively lower volatility, demonstrating superior risk-return efficiency. Citigroup delivered the weakest returns with the highest volatility.

3.2 Yearly Performance

Year	BAC	C	JPM	WFC	Portfolio
2018	-16.08%	-28.44%	-7.50%	-22.37%	–
2019	44.32%	53.49%	44.75%	19.22%	–
2020	-12.67%	-21.03%	-6.67%	-41.59%	–
2021	51.00%	3.48%	28.96%	63.75%	–
2022	-26.61%	-25.44%	-14.45%	-16.70%	–
2023	3.61%	17.55%	29.64%	21.47%	–
2024	32.82%	37.65%	42.40%	46.51%	–

Table 2: Yearly Returns by Bank (2018–2024)

These results highlight cyclicality. The sharp losses in 2020 coincide with COVID-19 turmoil, followed by a historic rebound in 2021. However, 2022 marked a broad correction as inflation pressures and aggressive monetary tightening weighed on valuations.

3.3 Portfolio Statistics

- Cumulative Return: 75.91%
- Alpha (α): 0.9998
- Beta (β): 1.1838
- R^2: 54.32%
- Sharpe Ratio: 0.286
- Sortino Ratio: 0.418
- Treynor Ratio: 7.56%

3.4 Correlation Structure

	BAC	C	JPM	WFC	Portfolio	SPY
BAC	100%	—	—	—	—	—
C	87.03%	100%	—	—	—	—
JPM	89.51%	85.32%	100%	—	—	—
WFC	84.73%	79.95%	81.32%	100%	—	—
Portfolio	95.91%	93.87%	94.20%	92.23%	100%	—
SPY	71.15%	70.76%	71.13%	64.51%	73.70%	100%

Table 3: Correlation Matrix of Daily Returns

Correlations above 0.80 suggest little diversification benefit within the sector. The portfolio's 0.74 correlation with SPY indicates it behaves similarly to the market, albeit with amplified cyclicality.

4 Discussion

The results of this study yield several important insights for both academic finance and practical portfolio management.

4.1 JPMorgan's Dominance

JPMorgan consistently outperformed its peers across both absolute and risk-adjusted measures. Its 18.61% annualized return and relatively low volatility (29.6%) translated into the highest Sharpe and Sortino ratios among the sample. This superior performance likely reflects structural advantages, including diversified revenue streams across retail banking, investment banking, asset management, and credit services. In addition, JPMorgan's strong balance sheet and capital adequacy allowed it to weather shocks more effectively, consistent with post-crisis empirical literature that emphasizes the importance of scale and resilience in systemic institutions.

4.2 Underperformance of Citigroup and Wells Fargo

In contrast, Citigroup and Wells Fargo underperformed significantly. Citigroup delivered only 9.0% annualized returns with volatility above 35%, reflecting persistent challenges in global operations and cost efficiency. Wells Fargo showed highly volatile behavior, with a dramatic swing from –41.6% in 2020 to +63.7% in 2021, underscoring its sensitivity to reputational shocks, litigation costs, and management overhauls. Both cases illustrate the principle that idiosyncratic risks—though theoretically diversifiable—can meaningfully erode investor outcomes when correlations are high and concentration is sector-specific.

4.3 Cyclicality and Macroeconomic Context

The year-by-year analysis confirms the cyclical nature of bank equities. Losses in 2020 correspond to the COVID-19 shock and liquidity crunch, while 2021 marked a sharp rebound amid stimulus and credit recovery. The correction in 2022 coincides with rising interest rates and inflation pressures. Such dynamics align with financial cycle theory, which posits that bank valuations are heavily influenced by monetary policy, credit conditions, and systemic uncertainty. Importantly, the 2022 downturn illustrates that bank equities remain highly vulnerable to tightening cycles despite temporary boosts from net interest margin expansion.

4.4 Portfolio Concentration Risk

The equal-weighted portfolio produced a cumulative return of 75.9% but carried a beta of 1.18, implying amplified exposure to market risk. Volatility exceeded 31%, nearly matching single-stock levels, and maximum drawdowns approached –50%. These outcomes highlight the limits of intra-sector diversification: correlations among the banks exceeded 0.80, leaving little scope for risk reduction. This finding is consistent with empirical evidence from stiroh2004diversification, which argues that within-industry diversification provides minimal risk mitigation when systemic shocks dominate.

4.5 Implications for Investors

For investors, the results underscore the trade-off between upside participation and systemic vulnerability. A banking-only portfolio offers leverage to credit growth and market recoveries, but at the cost of heightened sensitivity to downturns and policy shocks. Risk-adjusted measures such as the Sharpe (0.286) and Sortino (0.418) ratios suggest that, while returns were positive, efficiency lags behind diversified benchmarks. Investors should therefore use financial sector exposure as a tact

5 Theoretical and Practical Implications

From a theoretical standpoint, the results validate the predictions of CAPM: systematic risk drives returns in concentrated portfolios. Practically, investors seeking efficient portfolios cannot rely solely on intra-sector diversification. Incorporating uncorrelated asset classes such as bonds, commodities, or defensive sectors is necessary to improve the efficient frontier.

6 Limitations and Future Research

1. The analysis does not incorporate transaction costs or tax effects.
2. The risk-free rate is treated as static (4.02%); future work should use dynamic Treasury yields.
3. Scenario-based stress testing could extend the robustness of results, especially under crisis simulations.
4. Future research may incorporate GARCH volatility modeling or regime-switching frameworks to capture time-varying dynamics.

7 Conclusion

This study examined the portfolio risk and return characteristics of four major US banks, Bank of America, Citigroup, JPMorgan Chase, and Wells Fargo over the period 2018 to 2024. Using daily price data, we evaluated not only absolute performance but also volatility dynamics, downside risk, factor exposures, and diversification potential. The analysis provides both empirical insights and theoretical validation for concepts from modern portfolio theory and risk management.

The first major conclusion is the consistent outperformance of JPMorgan Chase. With an annualized return of 18.61% and relatively lower volatility (29.6%), JPM delivered superior Sharpe and Sortino ratios compared to its peers. Its strong performance underscores the role of scale, diversified revenue streams, and effective capital management in creating resilience. In contrast, Citigroup and Wells Fargo lagged materially, with weaker return profiles and higher volatility. Their performance highlights the persistent firm-specific risks that can erode investor outcomes, even within the largest financial institutions.

Second, the portfolio analysis revealed that an equal weight allocation across the four banks generated an annualized return of 12.97%, but with volatility of 31.26% and a beta of 1.18. These results indicate that while long-term returns were positive, risk-adjusted efficiency was modest. High intrasector correlations—exceeding 0.80 across all pairs—limited the diversification benefits that investors might expect. In effect, the portfolio behaved as a leveraged proxy for the broader market, amplifying cyclical sensitivity without offering substantial risk mitigation.

Third, the year-by-year breakdown confirmed the cyclical and policy-sensitive nature of bank equities. Sharp losses in 2020 coincided with the COVID-19 shock, while extraordinary gains in 2021 reflected stimulus-driven recovery and improved credit conditions. The correction in 2022 corresponded to inflationary pressures and aggressive monetary tightening, demonstrating how macroeconomic regimes shape sector outcomes. These dynamics emphasize the importance of integrating macroeconomic scenarios into portfolio risk management.

The implications of these findings are twofold. For investors, concentrated exposure to U.S. banks offers upside during credit expansions but entails significant downside risk during stress periods. Tactical allocations may therefore be justified, but strategic diversification across sectors and asset classes is essential to improve risk-adjusted outcomes. For regulators and policymakers, the high correlations and synchronized behavior of large banks reinforce the importance of systemic oversight, capital adequacy frameworks, and

supervisory stress testing. The results support the post-crisis emphasis on resilience, given that market discipline can rapidly transmit distress across institutions.

This study is subject to limitations. Transaction costs, taxes, and liquidity frictions were not incorporated, and the risk-free rate was treated as constant. Furthermore, the analysis assumes static allocations, whereas dynamic rebalancing or hedging strategies could meaningfully alter outcomes. Future research should extend this work by employing time-varying volatility models such as GARCH, conducting regime-switching analysis to capture structural breaks, and simulating stress scenarios under alternative macroeconomic assumptions. Incorporating option-implied measures of risk or credit default swap spreads may also provide forward-looking perspectives on bank sector risk.

In conclusion, the evidence suggests that while major U.S banks remain attractive sources of return, they are highly correlated, cyclical, and vulnerable to systemic shocks. JPMorgan has consistently distinguished itself as a resilient leader, whereas Citigroup and Wells Fargo illustrate the risks of weaker governance and firm-specific challenges. For both practitioners and policymakers, the central lesson is clear: diversification beyond the banking sector is indispensable for achieving stability, efficiency, and resilience in investment portfolios.