

Correlation of Asset Classes in NYSE – a Literature Review

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The concept of optimal portfolio allocation has been central to Modern Portfolio Theory (MPT). Developed to maximise returns while minimising risk, MPT provides a structured framework for portfolio diversification by examining asset correlations. With advanced statistical platforms and robust analytical techniques, stakeholders delve deeper into the intricate relationships between asset classes to optimise their portfolios in an ever-changing economic landscape.

Advances in Asset Correlation Research

Zahra Hatami introduced a novel perspective using population analysis to investigate asset behaviour during major economic disruptions. Her research focused on the COVID-19 pandemic and the September 11 attacks, employing similarity networks to study sectoral correlations. Hatami's findings revealed distinct patterns in sector behaviour under crisis conditions. For instance, during COVID-19, the finance and energy sectors displayed significantly different behaviours compared to others. These results underscore the importance of sector-specific analysis in understanding asset interdependence during crises.

See: [Hatami, Z. et al. \(2023\) 'A novel population analysis approach for analyzing financial markets under crisis - a focus on excess returns of the US stocks under 9/11 and COVID-19', Applied Economics, 56\(9\), pp. 1063–1076. doi: 10.1080/00036846.2023.2174939.](#)

Dynamic Correlation Models and Predictive Analytics

Yang, Zhao, Wang, and Li approached asset correlation through a dynamic lens, addressing the challenges posed by high volatility and randomness in stock data. They proposed the MDF-DMC model, which integrates multi-view data and dynamic market correlation features. By combining raw stock data with an advanced Multi-layer Perceptron Mixer (MLP-Mixer) and an enhanced Transformer encoder, this model dynamically identifies inter-stock correlations. Their research demonstrates the potential for using innovative machine-learning techniques to predict stock trends and optimise portfolio decisions in real time.

See: [Zhen Yang, Tianlong Zhao, Suwei Wang, Xuemei Li, MDF-DMC: A stock prediction model combining multi-view stock data features with dynamic market correlation information, Expert Systems with Applications, Volume 238, Part E, 2024, 122134, ISSN 0957-4174](#)

Correlation Under Financial Crises

Kayani, Aysan, Khan, and Nawaz focused on the behaviour of financial markets during periods of crisis, such as the Global Financial Crisis (2008–2009) and the European Debt Crisis (2010–2012). Their findings indicate that financial markets exhibit stronger correlations during bearish trends compared to bullish ones, as negative shocks provoke heightened investor reactions. This phenomenon limits the benefits of diversification during times of financial stress, leading to greater interconnectedness across sectors.

See: [Riding the waves: A study of return spillovers and inter-sector linkages in US equity markets during the COVID-19 pandemic. Kayani, Umar et al. Heliyon, Volume 10, Issue 4, e25203](#)

NFTs and Sectoral Connectedness

Ali, Umar, Gubareva, and Vo explored the relationship between Non-Fungible Tokens (NFTs) and traditional equity markets. Their research revealed asymmetry in the connectedness of NFTs to sectoral markets, particularly under extreme market conditions. NFTs acted as net transmitters of shocks in higher quantiles and as net recipients in lower quantiles. This heterogeneity in behaviour underscores the unique nature of NFTs and their potential to influence or be influenced by traditional market dynamics.

See: [Extreme connectedness between NFTs and US equity market: A sectoral analysis, International Review of Economics & Finance, Volume 91, 2024, Pages 299-315, ISSN 1059-0560.](#)

Enhancing Portfolio Optimisation Models

Yao introduced a robust mathematical framework to enhance the traditional Markowitz Model (MM) and Index Model (IM) for portfolio optimization. By integrating additional constraints and analysing 20 years of historical data, Yao demonstrated the efficacy of these models in improving risk-return profiles. His research highlights the importance of refining traditional models to accommodate the complexities of modern financial markets.

See - [Analysis of Portfolio Optimization Performance: Markowitz Model and Index Model in Capital Markets, Vol. 1 No. 9 \(2024\): Issue9](#)

Research shows that correlations between assets are neither static nor uniform, varying significantly with market conditions and economic events. As the financial landscape grows increasingly complex, a deeper understanding of asset correlations can guide investors and policymakers in building resilient portfolios that withstand economic shocks while maximising returns.

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