

Final Thought & Reflection

This project represents a comprehensive and multidisciplinary effort to better understand the macroeconomic dynamics of the United States from 2018 through mid-2025. By integrating economic theory with practical data science tools, we were able to identify meaningful relationships, extract key patterns, and shed light on the real-world consequences of monetary policy decisions.

Throughout the analysis, we examined over 90 months of monthly economic data—including CPI, M2 money supply, SOFR, the Fed Funds Rate, and Treasury yields. By visualizing trends, quantifying correlations, and applying clustering algorithms, we uncovered insights that go beyond surface-level narratives. For example, we observed that inflation is heavily influenced by money supply growth but with a measurable lag; that interest rates move in coordinated patterns across short- and long-term instruments; and that monetary policy regimes are not linear, but shift abruptly in response to systemic shocks.

Equally important was the methodological rigor: we relied on Excel for early-stage data cleaning, Python for robust visualization and modeling, and GitHub for documentation and version control. The use of KMeans clustering added a machine learning layer to the analysis, allowing us to define and understand distinct economic regimes rather than relying solely on anecdotal phase descriptions.

This project was not only a technical exercise, but also a learning journey. It sharpened our understanding of how policy instruments interact with market dynamics, taught us the importance of timing and lag in economic responses, and illustrated how data science can enhance traditional economic research. It also raised thoughtful questions—about causality, model assumptions, and the role of global factors—that can guide future studies.

In the end, the process reaffirmed that meaningful economic insight emerges when **data meets context**, and when **quantitative evidence is paired with clear storytelling**. As the global economy continues to face uncertainty, such data-driven approaches will be crucial for informed decision-making, whether in public policy, investing, or academic research.