Macroeconomic Forecasts, 2Q2025
Domestic Metrics

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Summary

Our previous installment of this report discussed the 6 signals that the economy was headed for a recession and the two signals that the economy was not. For purposes of a review, the six recession-heavy signals were:

- Equities and Bond Markets
- Stubborn Inflation
- Consumer Sentiment
- Consumer Savings and Loan Delinquencies
- Capacity Utilization in the Auto Industry
- Stubborn Federal Reserve

The two signals that the economy was doing fine were:

- The labor market
- Trump is Trump

As of July 4, 2025, the Trump White House and Congress were successful in passing the Big Beautiful Bill, solidifying many of Trump's campaign promises, such as more money for boarder security and no taxes on tips. However, as of July 7, 2025, there is little evidence that the Trump White House has secured 90-deals in 90-days (trade deals), so there is a high likelihood that many of the reciprocal tariffs will go into place.

We will first discuss the trends in the 6 indicators identified above and provide additional commentary regarding the potential movement in the economy given the recent policy and non-policy developments.

We are Heading Towards A Recession

Signal 1: The Equities Market and the Bond Market

Figure 1: SP500 Index, January through early July 2025

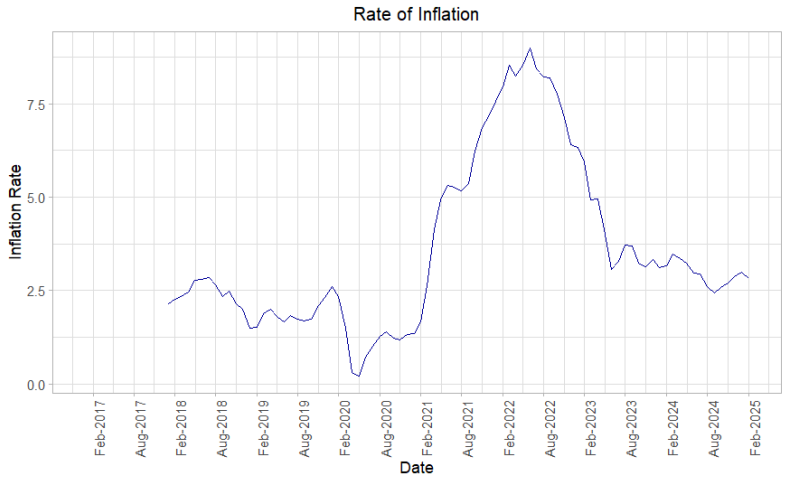
Source: TradingView (https://www.tradingview.com/)

The equities market was down significantly the week of March 31 – April 4, 2025. (See Figure 1.) The S&P 500 was down 7.6% for the week and down 10.6% from its high of 5688 on April 2, 2025. However, since mid-April, the market is up more than 25%. The S&P 500 has hit an all-time high at the time of this report. The market had quite a negative reaction to Trump's reciprocal tariff announcement and had a positive reaction to the pause of these tariffs. As of now, the market seems to have built-in the idea that tariffs are on hold. However, the next week might be a turning point if the Trump White House is not able to secure workable trade deals. The discussion that all talks with Canada (our second largest trading partner) were off the table as a result of the digital tax has been muted – likely a result of so much attention on the Big Beautiful Bill. However, with the passage of the BBB, the attention will shift back to trade talks; the market might turn down once trade becomes the main topic of discussion.

Signal 2: Stubborn Inflation and Looming Price Increases

Prices have been contained (but have been stubborn, per Figure 2). The Fed has been clear that it continues to push towards a 2% annual rate of inflation. Because the Fed has indicated that it is targeting inflation rather than unemployment or GDP growth, it is likely that the Fed will hold interest rates constant rather than lower them and induce more inflationary pressures into the economy. If the economy starts to slip, it is unlikely that the Fed will pull out expansionary monetary policy to save the day. We don't believe that Fed Chair Powell will modify his stance on the Fed's 2% target. It is possible that the economy has settled at an inflationary state of 2.5% inflation rather than 2%, but this might not change the Fed's goal of attaining a 2% steady-state.

Figure 2: US Nationwide Inflation, All Urban Areas, All Goods

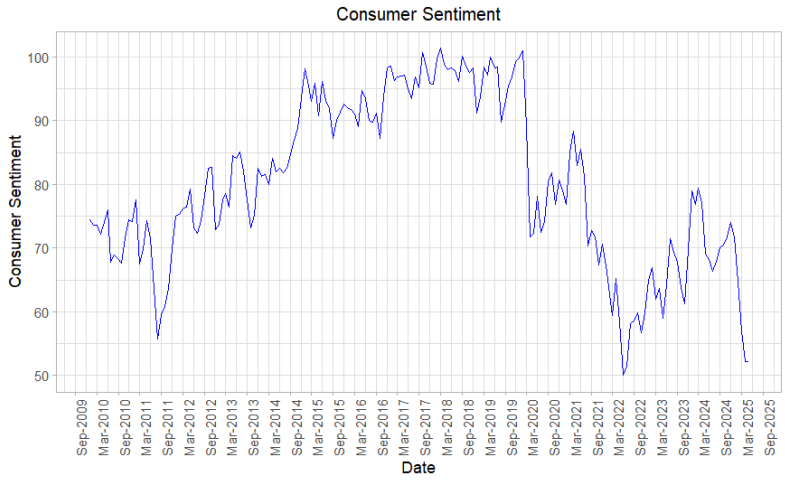


Source: Federal Reserve Economic Database (https://fred.stlouis.org/)

Signal 3: Consumers are Less Content and Becoming Pessimistic Towards the Future

Consumer sentiment is trending down and is reaching record lows. The University of Michigan Consumer sentiment spiked briefly after Trump won the election in November, 2024, but has dropped steadily since his inauguration (Figure 3). 70% of GDP is comprised of consumer spending and a drop in consumer confidence will likely translate to lower consumer spending. If consumers lose confidence in the future economic condition, they could very well reduce spending and, in turn, drive the economy towards the recession. Even though inflation has remained steady and the equities market has rebounded, consumers are still unhappy about the current state of the economy. Pessimism breeds constraint, which can lead to lower GDP and recessionary conditions.

Figure 3: US Consumer Confidence (per the Univ. of Michigan)

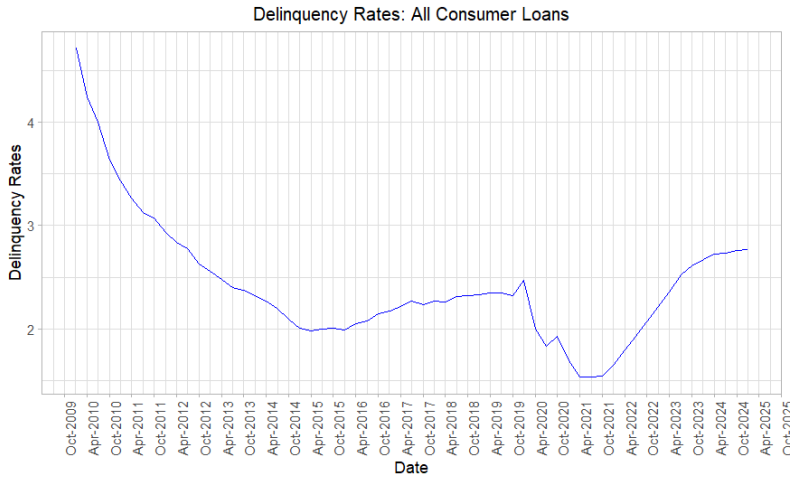


Source: Federal Reserve Economic Database (https://fred.stlouis.org/)

Signal 4: Consumers Have Less Savings, Are Savings Less as a Percentage of their Income and are More Delinquent on Loans

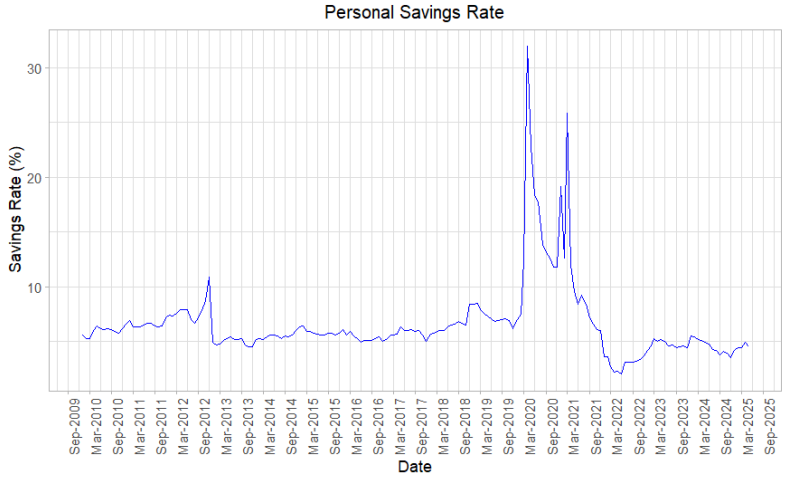
Delinquency rates on all consumer loans are higher than they have been since the great recession. (per Figure 4) This is a troubling trend and one that should concern financial institutions. Consumers accumulated savings at unprecedented rates during the COVID recession and have been steadily dis-saving since. (See Figure 5) And, consumers have been consistently more delinquent on loans since the COVID recession. Although the equities market is shows gains, most individuals have small (marginal) brokerage accounts. The increase in delinquencies and lower savings rates (see next figure) could indicate that consumers are on a razor's edge with respect to staying afloat. One modest economic shock could create a surge in delinquencies.

Figure 4: Delinquency Rates of all Consumer Loans



Source: Federal Reserve Economic Database (https://fred.stlouis.org/)

Figure 5: Personal Savings

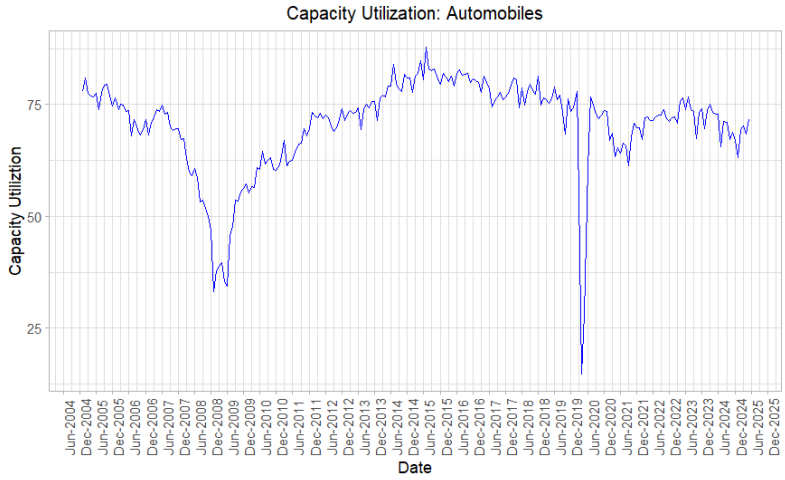


Source: Federal Reserve Economic Database (https://fred.stlouis.org/)

Signal 5: Capacity Utilization in the Automobile Industry is Trending Downward

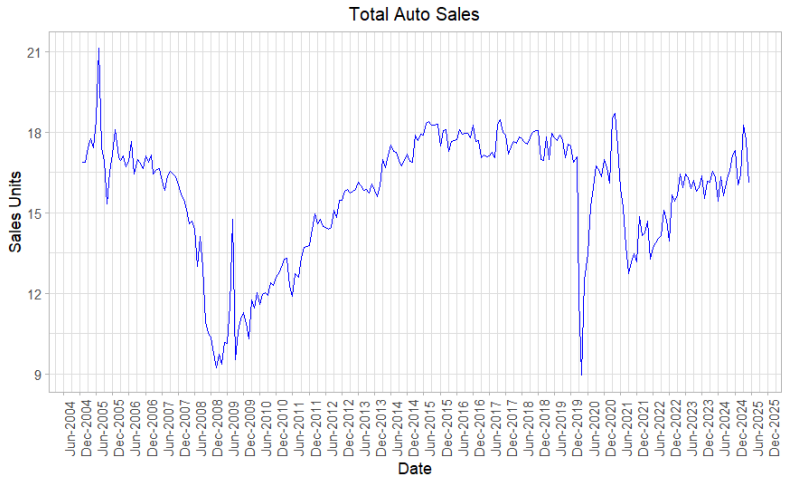
Historically, a downward trend in the capacity utilization in the automobile industry has forecast economic recessions. The dramatic trends downward in 2007 and in 2020 were consistent with economic recessions. The capacity utilization for the automobile factories has rebounded a little since the end of Q1 (per Figure 6). However, there was a dramatic decrease in total auto sales. (See Figure 7.) Although there has been a "pause" in many of the tariffs, there may have been slight upward pressure in the cost of automobiles. And, there might have been some "front loading" of purchases. I think we are seeing a small decline in automobile sales consistent with this front loading. The resumption of the tariffs might have an impact on this market.

Figure 6: Capacity Utilization of the Automotive Industry



Source: Federal Reserve Economic Database (https://fred.stlouis.org/)

Figure 7: Total Automobile Sales

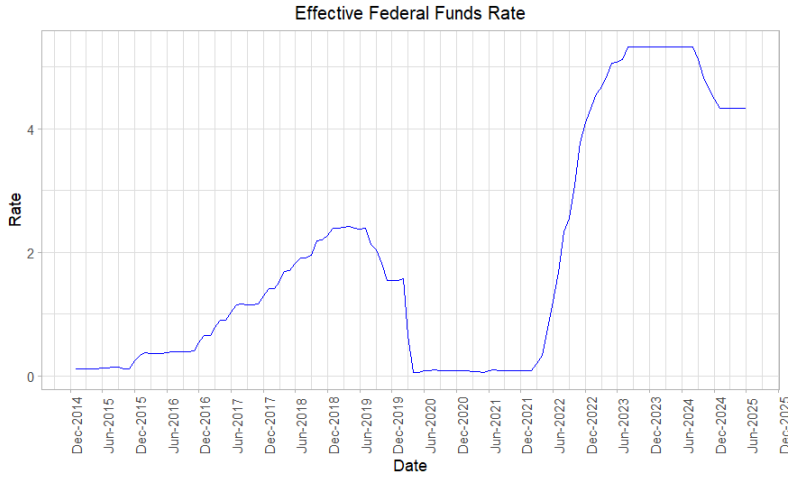


Source: Federal Reserve Economic Database (https://fred.stlouis.org/)

Signal 6: The Federal Reserve Bank is Not Coming to the Rescue

The Federal Reserve bank has pushed back on President Trump's request to decrease interest rates to off-set negative sentiments consistent with the new tariffs. (Figure 8) Because the Federal Reserve is concentrating on containing inflation (and because the new tariff policies are likely to increase upward pressure on prices), the Fed is holding strong to keeping interest rates constant. We believe that this type of "Volker-esque" stance may allow the US to fall into a recession wither fewer obstacles.

Figure 8: Effective Federal Funds Rate

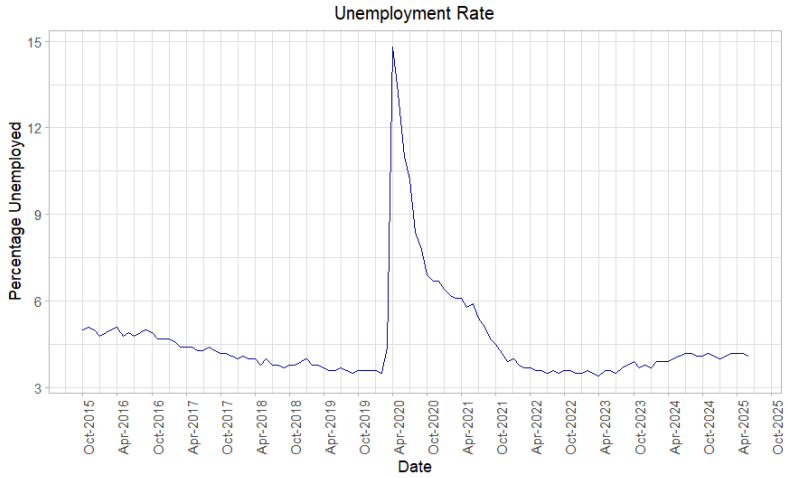


Source: Federal Reserve Economic Database (https://fred.stlouis.org/)

We are Not Heading Towards A Recession

Signal 1: The Current Job Market is Holding Ground

Figure 9: US Nationwide Unemployment Rate



Source: Federal Reserve Economic Database (https://fred.stlouis.org/)

The unemployment rate is bouncing between 4.2% and 4.4%. (See Figure 9.) This trend has been a bright spot for the economy and a signal that our economy is quite resilient. We are incredibly hesitant to suggest the economy is in an economic recession until we see the unemployment rate start to increase dramatically.

Signal 2: President Trump Initiates Policies Only to "Take them Back"

We are just now hitting the 90-deals in 90-days mark. Has the Trump White House made deals? Will the deals eliminate tariff fears within the market? Trump has Alpha-Beta testing a normal part of his Presidency: he announces one set of policies and then, within a short period of time, announces a competing set of policies to see which policy is more popular. We suspect that he will continue this trend and find a combination of trade policies that will avoid equities market sell-offs and give him a 'win' within his community.

Everything is Holding Steady

Until we see how the 90-deals plays out, we are in a "wait and see" stage. The economy, as it stands, is strong. Consumer, however, are anxious about their current condition. The combination of anxious consumers (and a growing contingent of consumers who can't pay their bills) could spell trouble for the economy. A combination of modest trade policies and increased consumer confidence could lead to a continued strong economy. A combination of un-easy trade policies, lower car purchases, and continued falling consumer sentiment could set up an economic recession as early as Q4 of this year.

Disruptive ("Black Swan") Events

The past five years have seen several unusual events that had a substantial impact on the national and/or global events that warrant mentioning. We mention them from the perspective of considering whether any of these types of events could occur again in the near future, and planning for their potential impact on the economy and or business operations would seem prudent.

1. Biological Events: The world has seen a number of new "Influenza-Like Illnesses" (ILI), with the latest now directly affecting virtually every country on the global in a crippling fashion.

   A. SARS (2002 & 2004)
   B. "Swine flu" (H1N1, 2009)
   C. "Avian flu" (H5N1 in 1997; H7N9 in 2013; H5N6 in 2014; H5N8 in 2016)
   D. COVID-19 (2019-2022), with several different strains

   While questions during the handling of the COVID-19 emergency have shone a light on the globe's ability to address a new pathogen under pressure, any answer is still a function of the contagiousness of the pathogen. Depending on how quickly a new pathogen spreads, along with its incubation period and symptoms, could mean the difference between survival and massive devastation. "Avian flu" (strain H5N1) has been recently reported as being found in a human in Louisiana[1].

2. Disinformation Campaigns: A staple of international conflicts (both military and otherwise), organized campaigns based on disinformation or propaganda have been around for hundreds of years. In the recent past, the U.S. has made allegations against foreign governments that there has been interference in federal elections (and caused social unrest) by using freely available social networks[2].

3. Disruptive Malware and Ransomware: Over the past five years, sophisticated attacks on businesses have (literally) become a business for some entities, foreign and domestic. "Ransomware" is the latest version of malware that "… [locks and encrypts] a victim's computer or device data, then demand a ransom to restore access."[3] In software security company Semperis' 2024 Ransomware Risk Report, 83% of 900 survey respondents reported being targeted in the past year[4], with an average cost of about $5M per breach globally[5].

4. Societal Unrest, including Domestic Social Changes and Terrorism: Since 2020, we saw many social protests turn violent on both ends of the political spectrum. Without warning, these movements have caused rapid and unexpected upheavals in social climates, and upended assumptions on which financial decisions were made. As these questions have been explored socially and officially, the discussions have led to questions of how deep the disdain in the

[1] https://www.nbcnews.com/health/health-news/h5n1-bird-flu-mutations-human-transmission-cdc-rcna185554 and https://www.nytimes.com/2025/01/02/us/politics/bird-flu-biden-trump.html
[2] See, e.g., https://www.cnn.com/2024/10/30/europe/russian-disinformation-harris-walz-us-election-intl/index.html and https://www.nytimes.com/2024/07/09/business/russian-bots-artificial-intelligence-propaganda.html
[3] See https://us.norton.com/internetsecurity-malware-ransomware-5-dos-and-donts.html
[4] https://www.forbes.com/sites/heatherwishartsmith/2024/12/09/the-persistent-ransomware-threat-2024-trends-and-high-profile-attacks/
[5] https://assets.sophos.com/X24WTUEQ/at/9brgj5n44hqvgsp5f5bqcps/sophos-state-of-ransomware-2024-wp.pdf

country remains on both sides of the political fence, and what societal and legislative impacts these investigations may carry.[6]

5. Unanticipated Changes in Leadership: Donald Trump is currently 78 years old, and is currently the oldest President-Elect in the history of the United States. Given his age, his polarizing opinions, and the fact that there were two attempted assassinations against him during his campaign during 2024, one should consider the possibility of him not being able to serve out his Presidential term (which begins in January of 2025)[7]. While the rules for succession are clear in the event that he is not able to complete his term, the confusion surrounding any event that calls for succession always inject some ambiguity. Further, despite there being a fully Republican-dominated Congress as of 2025, positions on all issues are never perfectly aligned, allowing for discord if/when a leadership change does occur.

6. Supply Chain Disruptions: Several straits and canals are considered major trade bottlenecks because they are crucial waterways that connect different continents, meaning any disruptions in their operations can significantly impact global trade flows, causing delays and price fluctuations. Some most key bottlenecks are the Panama Canal, the Suez Canal, the Strait of Hormuz, the Strait of Malacca, the Turkish Straits (Bosporus and Dardanelles), and the English Channel. To emphasize this point, heightened hostilities between Israel and Iran in June 2025 have transformed the Strait of Hormuz into an acute chokepoint risk. Roughly 20 million barrels per day of crude and petroleum liquids (about 20% of global consumption), along with one-fifth of worldwide LNG volumes, now transit the corridor under a cloud of potential closure[8]. Further, the threat of war has doubled war-risk insurance premiums for vessels traversing the Gulf[9], spot ocean-freight rates from East Asia to UAE gateways have surged by 76%[10], and container rates into Gulf ports are running 55% above previous levels[11]. Carriers including Maersk and Hapag-Lloyd have suspended or curtailed calls at Israeli ports and placed vessels transiting Hormuz on heightened alert, with reroutes via the Cape of Good Hope adding 10–14 days and effectively removing up to 15% of global box-ship capacity[12].

7. Cryptocurrencies: With the increasing visibility of distributed cryptocurrencies, several countries are currently investigating the benefits of implementing their own cryptocurrencies based on their own hard currencies. Over the past few years, several Caribbean countries have launched successful cryptocurrencies, including the Bahamas, Grenada, and St. Kitt's & Nevis[13]. Ecuador, Senegal, and China have canceled or withdrawn their currencies[14]. Along these lines, on January 10, 2024, the SEC approved the listing and trading of a number of spot bitcoin exchange-traded product (ETP) shares[15].

[6] See https://www.insurancebusinessmag.com/us/risk-management/news/global-civil-unrest-on-the-rise-as-costofliving-crisis-intensifies-449683.aspx
[7] https://www.nytimes.com/2024/10/03/health/trump-health-records.html
[8] https://www.eia.gov/todayinenergy/detail.php?id=65504 and https://www.lngindustry.com/liquid-natural-gas/25062025/eia-about-one-fifth-of-global-lng-trade-flows-through-strait-of-hormuz/
[9] https://english.aawsat.com/business/5155964-insurance-costs-ships-strait-hormuz-rise-over-60 and https://www.ainvest.com/news/hormuz-tensions-double-cargo-insurance-premiums-0-5-2506/
[10] https://www.cnbc.com/2025/06/23/mideast-ocean-freight-rates-soar-on-iran-strait-of-hormuz-risks.html
[11] https://customer-hub.ligentia.com/hc/en-gb/articles/20871625011228-Customer-Update-Pending-Closure-of-Strait-of-Hormuz
[12] https://supplychaindigital.com/news/middle-east-conflict-impact-on-air-sea-freight and https://blogs.tradlinx.com/?p=10053
[13] https://www.atlanticcouncil.org/cbdctracker/
[14] Ibid.
[15] See https://www.reuters.com/technology/spot-bitcoin-etfs-start-trading-big-boost-crypto-industry-2024-01-11/ and https://www.sec.gov/news/statement/gensler-statement-spot-bitcoin-011023

8. Global unrest: As we have now seen, Russia's (now stagnant) invasion of the Ukraine has led to a dramatic impact on the energy and grain sectors globally[16]. The impact of the Israel's current conflict(s) (with Hamas, Lebanon, and Iran) has also been speculated as impacting global economies[17]. Speculation regarding Iran's motives entails that Iran is interested in furthering its nuclear weapons program in order to supply arms to Russia to help with their aforementioned conflict in Ukraine[18]; this agenda has also immediately fueled Iran's conflict with Israel (and, now, the United States). Regardless, Iran's unwillingness to work with the International Atomic Energy Agency (as called for by a United Nations resolution)[19] is causing concerns that could lead to actions that would significantly alter the U.S. consumer's economic balance, directly and indirectly.

9. Natural disaster risks: While there has been a significant amount of propaganda about climate warning and similar risks, this comment is intended to focus on events such as strong hurricanes and the recent California wildfires. While we are not passing judgment on the surrounding issues and whether the activities of people are contributing to some disasters, we are more concerned about the financial impact of these events. FEMA's national flood insurance program is at risk of being scuttled, resulting in the elimination of over 4.7M flood insurance policies and over $1.3T in coverage, despite the program being over $22B in arrears since its introduction.[20] State Farm is the primary insurer in California aside from the state's FAIR Plan, and is currently estimating payouts at $7.6B as of this writing.[21] Other disasters are similarly testing financial infrastructures around the country.

[16] https://www.brookings.edu/articles/how-would-trump-and-harris-handle-the-russia-ukraine-war/
[17] https://www.washingtonpost.com/world/2024/09/30/israel-lebanon-hezbollah-hamas-war-news-gaza/ and https://www.nytimes.com/live/2024/10/01/world/israel-lebanon-hezbollah
[18] https://www.heritage.org/middle-east/report/iran-inching-toward-nuclear-weapons-breakout-what-does-mean-the-united-states
[19] Per https://www.iaea.org/sites/default/files/24/06/gov2024-39.pdf and https://www.iaea.org/sites/default/files/unsc_resolution2231-2015.pdf
[20] https://www.bloomberg.com/news/newsletters/2025-03-31/what-fema-s-demise-could-mean-for-flood-insurance
[21] https://www.coverager.com/state-farm-pays-out-over-2-5-billion-for-ca-wildfire-claims/

Data Analysis

As part of the Dodd-Frank Act, larger banking institutions in the United States are required to use government specified variables, and approved proprietary processes, to determine if they are adequately prepared for unexpected "systemic failures". Some banking institutions are also incorporating portions or components of their forecasting processes to estimate future profitability; in order to do so, however, realistic forecasts (as opposed to extremes) are required.
While arguments could be made about the variables included in this study, as stated in Jiang, et al., "… a conclusion that can be made for … U.S. data is that there is little to no improvement in forecast accuracy when the number of predictors is expanded beyond 20-40 variables."

Capitalytics provides the results of a rigorous analysis of every variable that is included in our quarterly macroeconomic study. These variables include the following[22]:

1. Real GDP growth
2. Nominal GDP growth
3. Real disposable income growth
4. Nominal disposable income growth
5. Unemployment rate
6. CPI inflation rate
7. 1-month Treasury yield
8. 3-month Treasury yield
9. 6-month Treasury yield
10. 1-year Treasury yield
11. 3-year Treasury yield
12. 5-year Treasury yield
13. 7-year Treasury yield
14. 10-year Treasury yield
15. 20-year Treasury yield
16. 30-year Treasury yield
17. BBB corporate yield
18. Mortgage rate
19. Prime rate
20. US Average Retail Gasoline Price ($/gal; all grades, all formulations)
21. S&P 500 Stock Price Index
22. Cost of Federal Funds (Primary Credit Rate)
23. Moody's AAA Rate
24. Moody's BAA Rate
25. Dow Jones Total Stock Market Index
26. House Price Index
27. Commercial Real Estate Price Index
28. Market Volatility Index (VIX)

[22] This study is motivated by the Federal Reserve Board's Dodd-Frank Act, which includes requirements to consider various international factors; however, those factors will not be discussed extensively in this particular report based on the target use and audience of this report.

Our procedure is as follows:

1. Data is collected per the information in Appendix A, "Data sources".
2. Correlations between variables are identified to determine which variables are may be considered as "dependent" (upon other variables, i.e., highly correlated with other variables as part of their nature).
3. Multiple forecast analyses are performed per the procedure in Section I of Appendix B for all variables, with the results of corresponding forecasts aggregated.
4. Regressions are performed per the procedure in Section III of Appendix B for all variables.
5. The rationale for these analyses, modifications, and the conclusions thereto are documented in the following section of this report, "Data Series Conclusions".

Correlations

Part of Capitalytics' analysis of macro-economic variables entails computing the correlation between variables, to establish the existence and level of interdependence of variables. In Appendix C of this document, we document the 134 pairs of variables that showed absolute correlation values greater than or equal to 0.6. As part of this portion of the study, Capitalytics identified the following sets of strong dependencies (correlations with magnitudes greater than 0.95) between variables that were subsequently validated as significant, long-term, recurring correlations as part of the nature of the variables; these pairings of variables are viewed as extremely significant based on the respective definitions of the variables and will be leveraged as discussed in Section I of Appendix B.

Table 14: Variable Dependencies

Regression (Dependent) Variable		**Independent Variable**[23]
1-month, 3-month, 6-month, 3-year Treasury yield		1-year Treasury yield
5-year Treasury yield		3-year Treasury yield*
7-year Treasury yield		5-year Treasury yield*
10-year Treasury yield	**… depends on …**	7-year Treasury yield*
20-year and 30-year Treasury yield, and		10-year Treasury yield*
30-year Mortgage rate		7-year Treasury yield*
Moody's AAA yield		30-year Mortgage rate*
Prime Rate and Fed Funds Rate		1-year Treasury yield

[23] It should be immediately apparent that some of the variables that are listed as "independent" are, in fact, dependent on other variables; these "independent" variables that actually have dependencies are noted by a trailing "*".

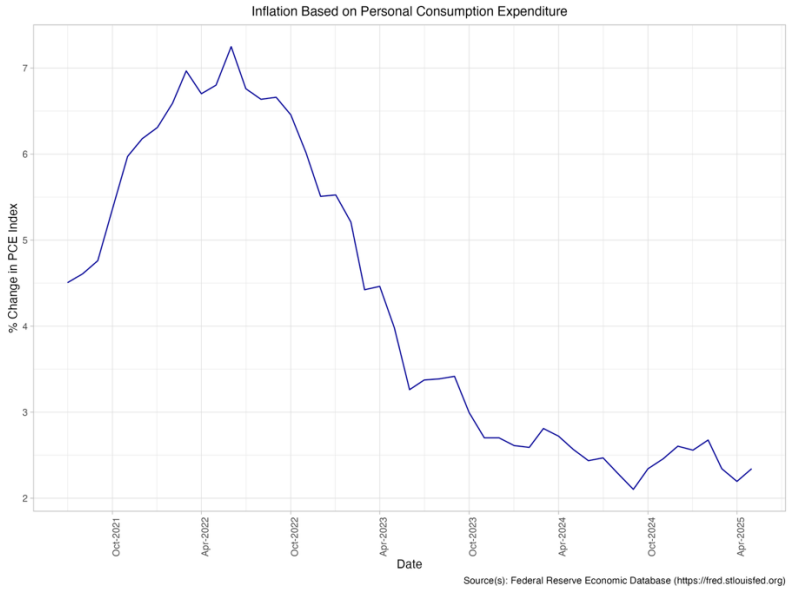
Real & Nominal GDP Growth, Real & Nominal Disposable Income Growth, and CPI Inflation Rate

Analysis

The U.S. economy experienced a significant contraction in 1Q2025, with real gross domestic product declining at 0.5% (annualized) according to the Bureau of Economic Analysis' third estimate. This marked the first quarterly decline since the pandemic recovery period, and represented a sharp reversal from the 2.4% growth recorded in 4Q2024[24]. On a year-over-year basis, real GDP growth remained positive at 2.0% compared to 1Q2024[25].

Nominal GDP performance was stronger, with current-dollar GDP increasing at 3.2% (annualized) during 1Q2025[26]. This divergence between real and nominal growth primarily reflected the persistent inflationary pressures affecting the economy. Year-over-year nominal GDP growth reached 4.7%[27].

Figure 10: US Nationwide Inflation Based on Personal Consumption Expenditure (PCE)



The economic contraction in 1Q2025 was primarily driven by a substantial increase in imports, which contributed -4.61% to GDP growth, and a decrease in government spending, which is responsible for a drop of 0.10% per the BEA. These negative forces were partially offset by positive contributions from gross private domestic investment (3.90%) and personal consumption expenditures (0.31%)[28]. Commercial activity is interpreted as stockpiling goods ahead of expected tariff deployments by the White House, resulting in a surge in imports[29].

[24] https://www.bea.gov/news/2025/gross-domestic-product-1st-quarter-2025-third-estimate-gdp-industry-and-corporate-profits
[25] See https://fred.stlouisfed.org/series/GDP and https://fred.stlouisfed.org/series/GDPC1
[26] https://www.bea.gov/news/2025/gross-domestic-product-1st-quarter-2025-third-estimate-gdp-industry-and-corporate-profits
[27] https://fred.stlouisfed.org/series/NGDPSAXDCUSQ
[28] https://www.bea.gov/news/2025/gross-domestic-product-1st-quarter-2025-third-estimate-gdp-industry-and-corporate-profits
[29] See https://www.reuters.com/world/us/us-goods-trade-deficit-widens-may-exports-fall-2025-06-26/

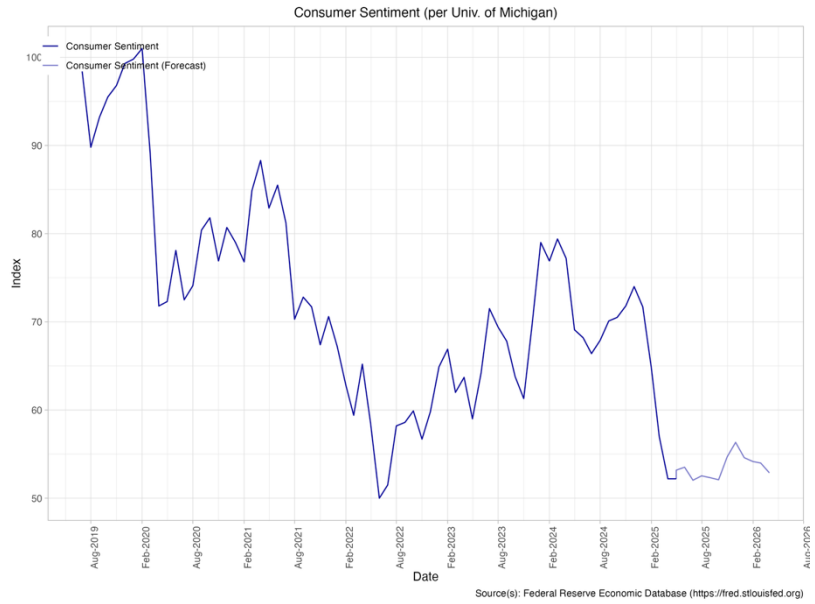
Personal consumption expenditures, which comprise approximately 70% of economic activity, showed notable weakness with real PCE rising only 0.5% (ann.) during 1Q2025[30]. This represented a significant decline from the 4.0% growth during 4Q2024. Spending on durable goods fell by 3.7% in 1Q2025 after increasing by more than 12% in 4Q2024[31]. Services spending grew by only 0.6% (ann.).

The Consumer Price Index has been up by 2.4% Y/Y (see Figure 10)[32]. Core CPI, which excludes volatile food and energy components, reached 2.8% annually through May[33]. The Personal Consumption Expenditures price index is up by 2.3% Y/Y as of May as well, an increase from 2.2% in April[34].

Real disposable personal income per capita increased by 2.0% (ann.) in 1Q2025[35], while nominal disposable personal income was more volatile, with May 2025 showing a slight monthly decline from $22.6T to $22.45T (ann.)[36].

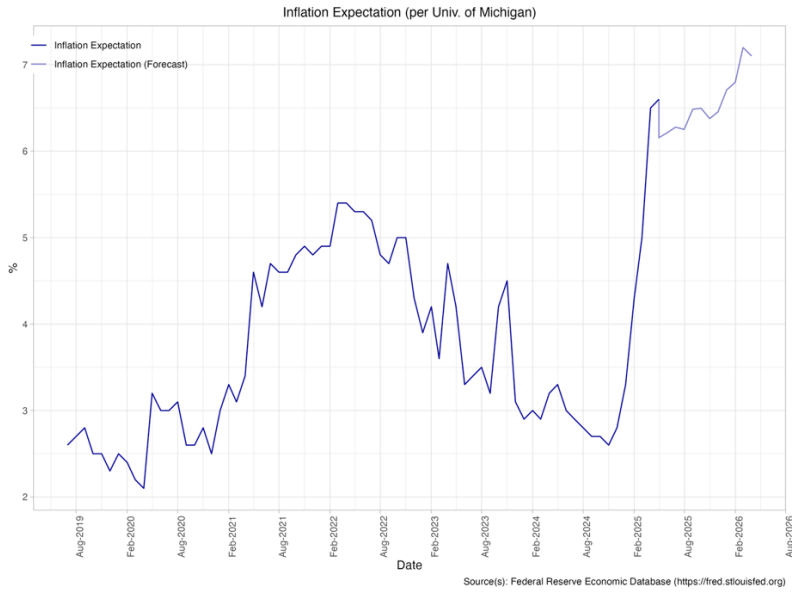
Consumer sentiment deteriorated notably during 2025, reflecting growing economic anxiety. The University of Michigan Consumer Sentiment Index experienced significant volatility (indicating end-consumer perception of changing WH policies), falling approximately 18% between December 2024 and May 2025[37]. Year-ahead inflation expectations also rose substantially, climbing from 3.3% at YE2024 to 6.6% in May 2025. (See Figure 11 and Figure 12.)

Figure 11: US Consumer Sentiment (per the Univ. of Michigan)



[30] https://www.bea.gov/news/2025/gross-domestic-product-1st-quarter-2025-third-estimate-gdp-industry-and-corporate-profits
[31] https://www.deloitte.com/us/en/insights/topics/economy/us-economic-forecast/united-states-outlook-analysis.html
[32] https://fred.stlouisfed.org/series/CPIAUCSL https://fred.stlouisfed.org/series/CPIAUCSL
[33] https://www.morningstar.com/economy/may-pce-report-pce-inflation-index-up-23-line-with-expectations
[34] https://www.bea.gov/data/personal-consumption-expenditures-price-index
[35] https://fred.stlouisfed.org/series/A229RX0Q048SBEA
[36] See https://fred.stlouisfed.org/series/DSPI and https://www.bea.gov/data/income-saving/personal-income
[37] https://www.deloitte.com/us/en/insights/topics/economy/us-economic-forecast/united-states-outlook-analysis.html

Figure 12: US Consumer Inflation Expectations (per Univ. of Michigan)



The tariff policies implemented by the Trump administration created substantial uncertainty throughout the economy. According to Yale University's Budget Lab analysis, the tariffs implemented through June 2025 increased the average effective tariff rate to 15.8%, the highest since 1936. These policies were estimated to reduce U.S. real GDP growth by 0.6% in 2025 and create persistent long-run economic effects[38].

Government spending faced unprecedented reductions as the Department of Government Efficiency (DOGE) pursued aggressive cost-cutting measures. Federal employment declined by significant numbers, with agencies implementing workforce reductions as part of the administration's goal to reduce federal spending by up to $2T annually[39]. The Department of Education proposed eliminating nearly half its workforce, while the Department of Veterans Affairs targeted an 80,000-employee reduction[40].

Trade dynamics were heavily influenced by the evolving tariff environment. The U.S. (nominal) deficit widened by 44.3% to $450.2B in 1Q2025, representing 6.0% of nominal GDP. Goods imports increased $158.2B to $1.0T, led by precious metals and consumer goods, particularly medicinal and pharmaceutical products[41]. This surge reflected the aforementioned front-loading of imports ahead of tariff implementations.

For the remainder of 2025, economists project continued economic weakness. The Atlanta Federal Reserve's GDPNow model has shown significant volatility, at one point indicating a 1.5% contraction for 1Q2025[42]. Most forecasters are now focusing their projections for 2025 real GDP growth in the range of 1.4%-1.7% (ann.), reflecting (i) a significant downward revision from earlier estimates, and (ii) the

[38] https://budgetlab.yale.edu/research/state-us-tariffs-june-17-2025
[39] https://www.govexec.com/transition/2025/04/project-2025-wanted-hobble-federal-workforce-doge-has-hastily-done-and-more/404390/
[40] https://www.npr.org/2025/03/15/nx-s1-5328721/reduction-in-force-rif-federal-workers-job-cuts-musk-doge-layoffs
[41] https://www.bea.gov/news/2025/us-international-transactions-1st-quarter-2025-and-annual-update
[42] https://www.npr.org/2025/03/15/nx-s1-5328721/reduction-in-force-rif-federal-workers-job-cuts-musk-doge-layoffs

cumulative impact of policy uncertainty, elevated borrowing costs, and weakened consumer confidence on economic activity[43].

During 2025, ***we continue to expect for real GDP to be between 1.5% and 2.0% per annum***.

Other Commentary

- "The Commerce Department report showed that consumer spending fell 0.1% last month after rising 0.2% in April. When taking inflation into account, spending declined by 0.3% for the month. … A nearly 50% drop-off in motor vehicle sales was a significant driver of the May spending retreat as consumers rushed to dealerships to buy cars in March and April, fearing that President Donald Trump's tariffs would send those costs soaring. … However, Friday's report also showed that consumers pulled back on spending at restaurants and hotels." (https://www.cnn.com/2025/06/27/economy/us-pce-consumer-spending-inflation-may; June 27, 2025)
- "The Trump administration will seek to eliminate more than 107,000 jobs [during FY2026] across government, but the net impact is mitigated by targeted hiring at certain agencies and offices. The Transportation Department is the only agency to project an overall staffing increase, driven by hiring at the Federal Aviation Administration and for IT. The Homeland Security Department will seek to significantly staff up at Customs and Border Protection and Immigration and Customs Enforcement as the administration ramps up its border crackdown and deportation operations, though DHS will see an overall cut due to planned reductions at the Federal Emergency Management Agency—which is set to shed 13% of its workforce—and the Transportation Security Administration—which will cut around 6%. … Many offices will be cut nearly entirely, such as the research and state forestry offices within USDA's Forest Service. The department's Natural Resources Conservation Service would shed nearly 4,000 employees, including two-thirds of employees providing technical assistance on conservation planning and forecasting on snowpack and water supply." (https://www.govexec.com/workforce/2025/06/trump-planning-slash-107000-federal-jobs-next-year-see-where/405758/; June 3, 2025)

Employment

Analysis

The U.S. labor market demonstrated resilience in 1Q2025 despite broader economic headwinds. As mentioned earlier, the unemployment rate averaged 4.2% for the quarter, representing a 0.2% increase Q/Q and marking the highest level since 4Q2021[44]. This stability in overall unemployment (see Figure 13 and Figure 14) hides noteworthy sectoral shifts and emerging pressures.

[43] https://www.deloitte.com/us/en/insights/topics/economy/us-economic-forecast/united-states-outlook-analysis.html
[44] https://tradingeconomics.com/united-states/unemployment-rate

Figure 13: US Nationwide monthly unemployment rate

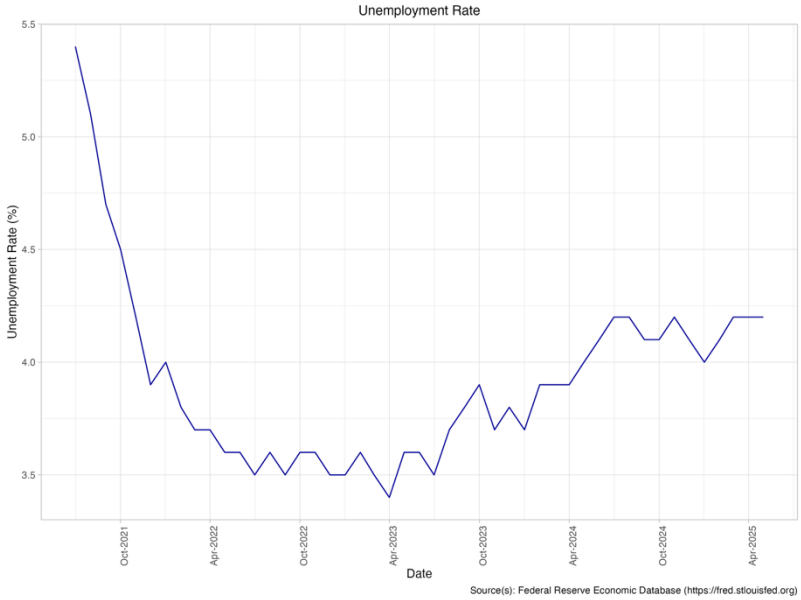
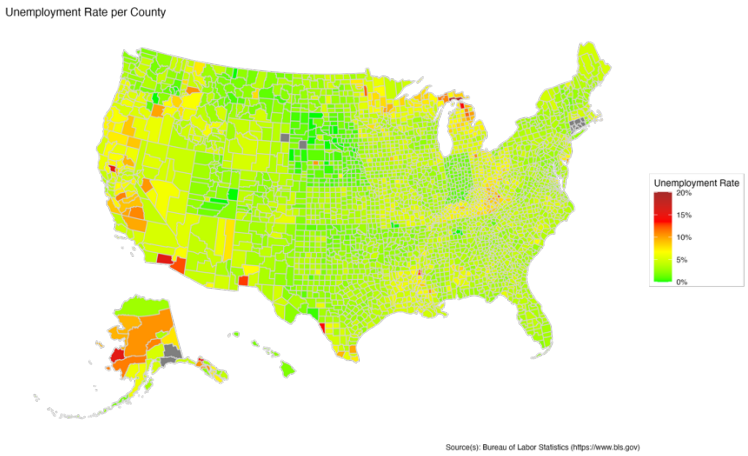


Figure 14: Nationwide unemployment per county



<u>Quarterly Labor Dynamics</u>

• Job creation: The economy added 456,000 jobs during 1Q2025, a notable deceleration from the 1.5 million jobs added during 4Q2024. This slowdown indicates increased business hesitancy amid policy uncertainty[45]. (see Figure 15)

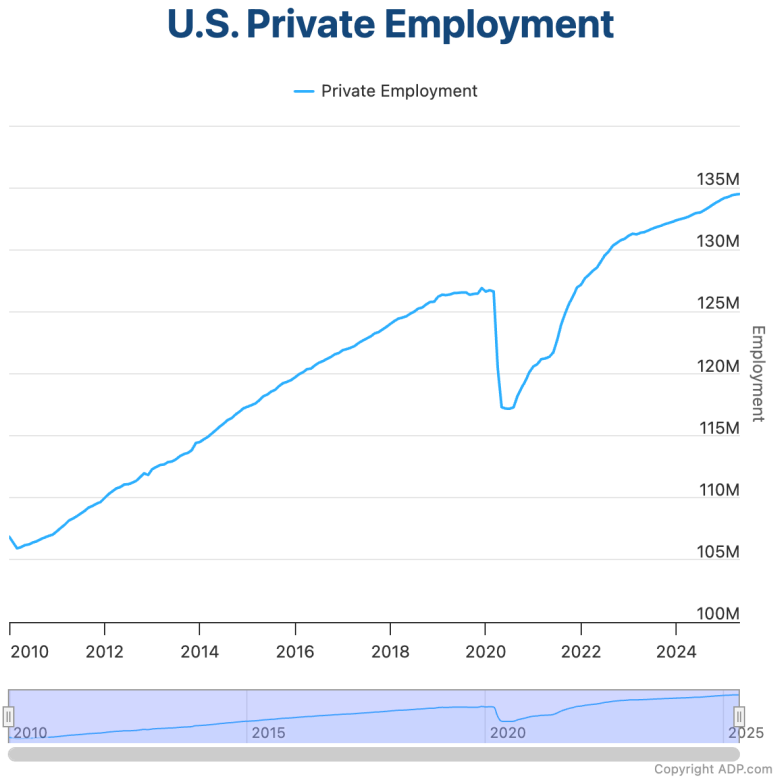
[45] https://go.geographicsolutions.com/economist-corner-2025-first-quarter-report

• Federal workforce reductions: The Department of Government Efficiency's cost-cutting initiatives resulted in a net loss of 12,000 federal positions during the quarter, with an additional 22,000 jobs eliminated in May 2025 alone. These cuts are projected to continue throughout 2025.[46]

• Natural disaster impacts: Wildfires, hurricanes, and flooding contributed to approximately 100,000 job losses in 1Q2025, particularly impacting the construction and hospitality sectors.[47]

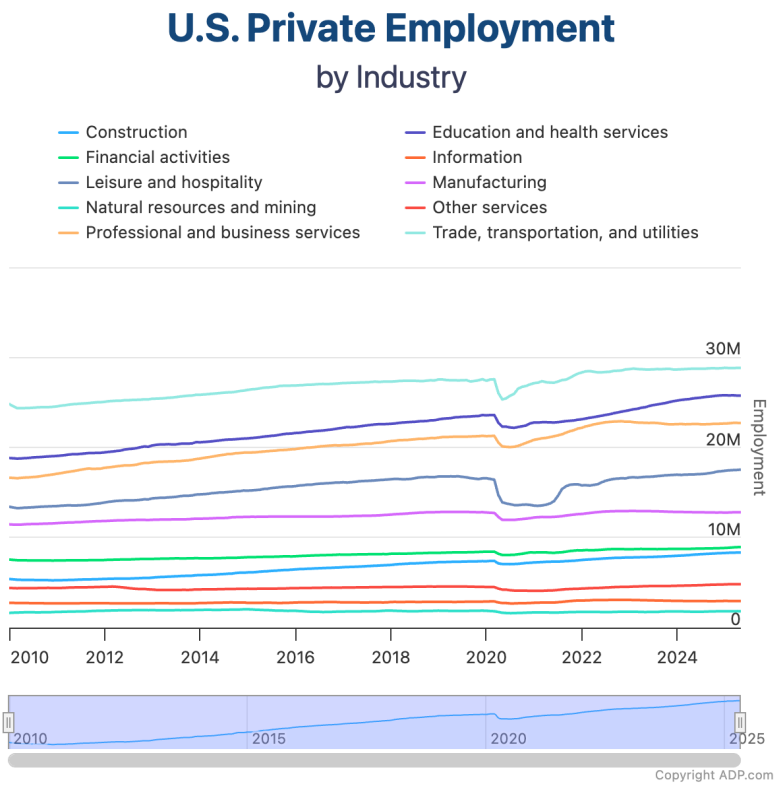
• Labor force participation: The participation rate declined to 62.4% in May 2025 (from 62.6% in April), continuing a downward trend that began in late 2024. The employment-population ratio fell to 59.9%, its lowest level since the pandemic recovery period[48].

Figure 15: US Private Employment Estimate (per ADP.com)



[46] https://www.actalentservices.com/en/insights/market-intelligence/actalents-us-labor-market-and-economy-report-may-2025
[47] See https://www.ohio.edu/news/2025/02/economics-disaster-how-la-wildfires-may-impact-economy
[48] https://fred.stlouisfed.org/release/tables?rid=50

Figure 16: US Private Employment Estimate, per Industry (per ADP.com)



Sectoral Performance

Per Figure 16, job growth became increasingly concentrated in specific sectors during 1Q2025[49]:

- Healthcare and social assistance: Added 78,300 positions, representing 54% of net job growth.
- Leisure and hospitality: Contributed 48,000 new jobs, primarily in food services and accommodations.
- Manufacturing: Contracted by 8,000 positions, reversing the 20,000-job gain from 4Q2024.
- Retail trade: Experienced a 12.5% decline in job openings, directly attributed to tariff-related price pressures.

Structural Concerns

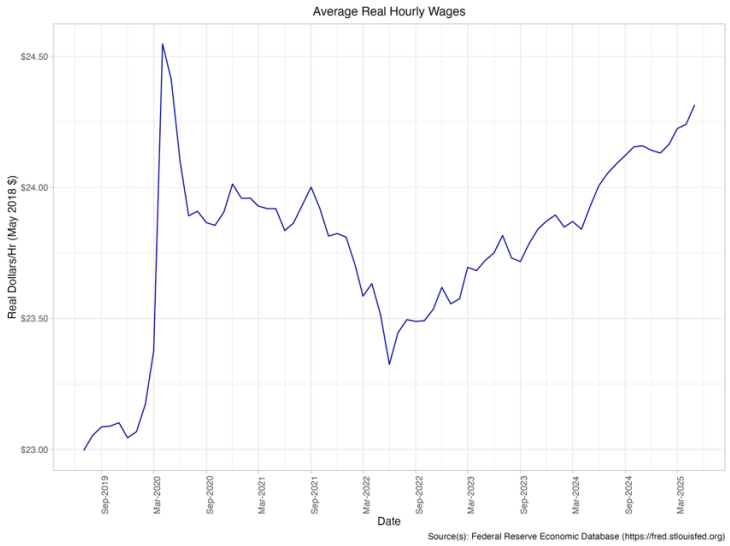
- Underemployment: The U-6 rate (including marginally attached workers and part-time workers) remained elevated at 7.3% in April 2025, indicating persistent labor underutilization.[50]

[49] https://go.geographicsolutions.com/economist-corner-2025-first-quarter-report
[50] https://ycharts.com/indicators/us_u_6_unemployment_rate_unadjusted

• Demographic disparities: Unemployment among teenagers (16-19 years) rose to 13.4% in May 2025, while the rate for workers aged 20-24 reached 8.2% - both significantly above the national average.[51]

• Wage dynamics: Average hourly earnings grew at 3.9% year-over-year through May 2025. When adjusted for inflation, real wage growth maintained a modest positive trajectory at 1.4% annually. (See Figure 17.)

Figure 17: US Real Average Hourly Wages



Forward Outlook

Professional forecasters have revised employment projections downward for the remainder of 2025:

• The unemployment rate is expected to rise to at least 4.3% (maybe as high as 4.8%) by year-end, with further increases projected for Q1 2026.[52]

• Monthly job gains are forecast to average approximately 141,000 through Q3 2025, representing a 3.3% reduction from previous estimates.[53]

The labor market's resilience is being tested by converging pressures: federal workforce reductions, tariff-induced sectoral realignments, and declining labor force participation. While the unemployment rate remains near historical lows, these structural shifts suggest increasing concerns heading into 2H2025.

Other Commentary

- " 'While the U.S. job market continued to add a decent number of jobs in May, it's notably cooler than it was even a few months ago, and continues to soften — to the point where there's not much room for further slowdown before unemployment meaningfully starts to rise,' said

[51] https://fred.stlouisfed.org/release/tables?rid=50
[52] Estimates vary widely, ranging from below 4.3% (https://www.deloitte.com/us/en/insights/topics/economy/us-economic-forecast/united-states-outlook-analysis.html) to 4.8% (https://www.ey.com/en_us/insights/strategy/macroeconomics/us-economic-outlook)
[53] See https://www.shrm.org/topics-tools/news/talent-acquisition/us-labor-market-rebound-2025

Cory Stahle, economist at the Indeed Hiring Lab." (https://www.foxbusiness.com/economy/us-jobs-report-may-2025; June 6, 2025)

- " 'The industries that will likely see the most immediate job cuts are "retail trade, wholesale trade and manufacturing," ' says Ernie Tedeschi, director of economics at the Budget Lab at Yale University. Agriculture jobs may be similarly affected, says Harry Holzer, senior fellow at the Brookings Institute and professor of public policy at Georgetown University. … Companies whose products are entirely made in the U.S. could benefit: 'At least in the short term, employment would likely rise there, because those folks will see more demand,' says Holzer. That could mean cumulative hikes of tens of thousands or even a few hundred thousand jobs added in the next three or four months, he says." (https://www.cnbc.com/2025/04/08/trump-tariffs-job-market-impact-will-mostly-be-negative-economists-say.html; Apr 8, 2025)

Federal Funds (Primary Credit) Rate

Analysis

When a depository institution has a shortfall and need for liquidity, it may borrow funds on a short-term basis from the Federal Reserve. The "discount rate" is the interest rate charged to commercial banks and other depository institutions on loans they receive from their regional Federal Reserve Bank's "discount window". The Federal Reserve Banks offer three discount window programs to depository institutions: Primary Credit, Secondary Credit, and Seasonal Credit, each with its own interest rate. Under the Primary Credit program, loans are extended for a very short term (usually overnight) to depository institutions in generally sound financial condition. (Secondary Credit & Seasonal Credit may be available to institutions that do not meet the "sound financial condition" criteria.) The discount rate charged for primary credit (the primary credit rate) is set above the usual level of short-term market interest rates.

Inter-bank loan rates will also track with the primary credit rate for overnight lending. The rate for inter-bank loans is generally driven by the target federal funds rate; the target federal funds rate is the target interest rate set by the Federal Open Market Committee (FOMC), and is intended as a guide for the rate at which commercial banks borrow and lend their excess reserves to each other on an overnight basis. The FOMC sets the target federal funds rate periodically based on key economic indicators that may show signs of inflation, recession, or other issues that can affect sustainable economic growth. The actual interest rate that a lending bank will charge is determined through negotiations between the two banks. The weighted average of interest rates across all transactions of this type is known as the effective federal funds rate.

As we mentioned earlier, the Federal Reserve has maintained a cautious stance throughout 2025, keeping the target federal funds rate in the range of 4.25 to 4.5 percent since December 2024[54]. This represents a pause in the monetary policy adjustment cycle after the Fed implemented three rate cuts totaling one percentage point between September and December 2024.

Federal Reserve Chair Jerome Powell has emphasized the heightened uncertainty surrounding the new administration's policy implementation, particularly regarding trade, immigration, fiscal policy, and regulation. In his March 2025 press conference[55], Powell noted that while policy changes have been

[54] See https://www.cnbc.com/2025/06/18/fed-rate-decision-june-2025-.html
[55] https://www.facebook.com/watch/?v=956577383340195

announced in several areas, "uncertainty around the changes and their effects on the economic outlook is high."

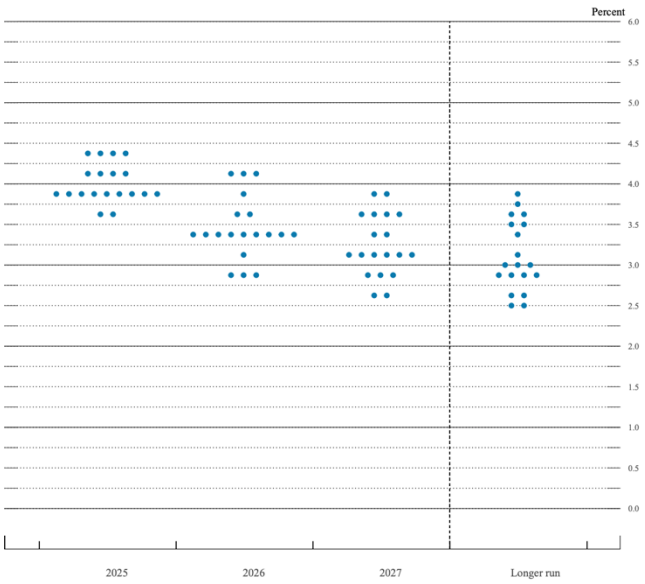
The central bank's "dot plot" projections from the June 2025 meeting maintained expectations for two rate cuts during 2025, though the dispersion of individual forecasts has widened significantly. (See Figure 19, with Figure 18 provided for reference.) Seven of the nineteen FOMC participants indicated they expect no rate cuts this year, up from four in March, reflecting the divergent views among policymakers about the appropriate policy response to current economic conditions.

Inflation concerns have remained central to the Fed's deliberations. The central bank has raised its core inflation projections for 2025 to 2.8% from 2.5%, while simultaneously lowering its GDP growth forecast to 1.7% from 2.1%[56]. These revisions reflect the Fed's assessment that tariff policies and other supply-side disruptions may create persistent upward pressure on prices.

The Fed has also announced modifications to its quantitative tightening program, reducing the cap on Treasury redemptions from $25 billion per month to $5 billion per month[57]. This adjustment reflects the central bank's desire to provide additional monetary accommodation while maintaining its primary policy rate unchanged.

Current market pricing suggests that investors anticipate the Fed will implement the projected two rate cuts by year-end 2025, which would lower the target range to between 3.75% and 4.0%. However, the timing and magnitude of any rate adjustments will likely depend heavily on incoming inflation data and the evolution of the administration's economic policies. We believe that the FOMC's caution is wise, and still believe that ***rates will end 2025 around 4.5%.***

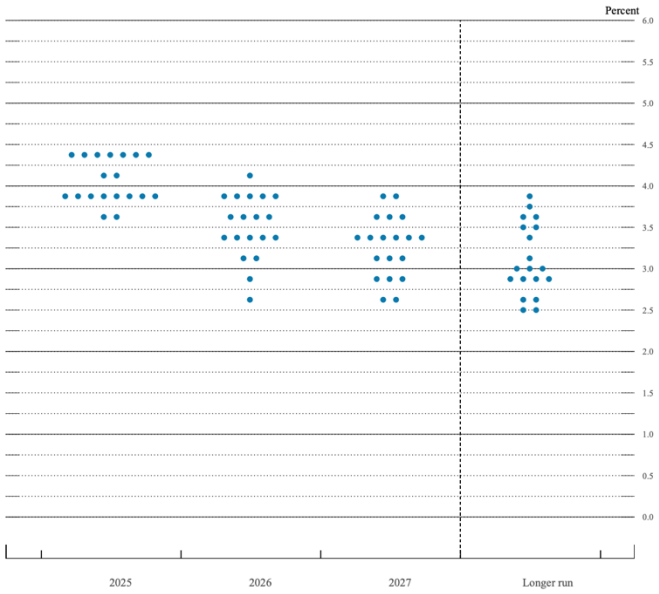
Figure 18: FOMC "Dot Plot" from March 2025 Board of Governors' Meeting



Source: https://www.federalreserve.gov/monetarypolicy/files/fomcprojtabl20250319.pdf

[56] https://www.cnbc.com/2025/06/18/fed-rate-decision-june-2025-.html
[57] https://www.reuters.com/markets/us/feds-says-will-slow-balance-sheet-runoff-process-2025-03-19/

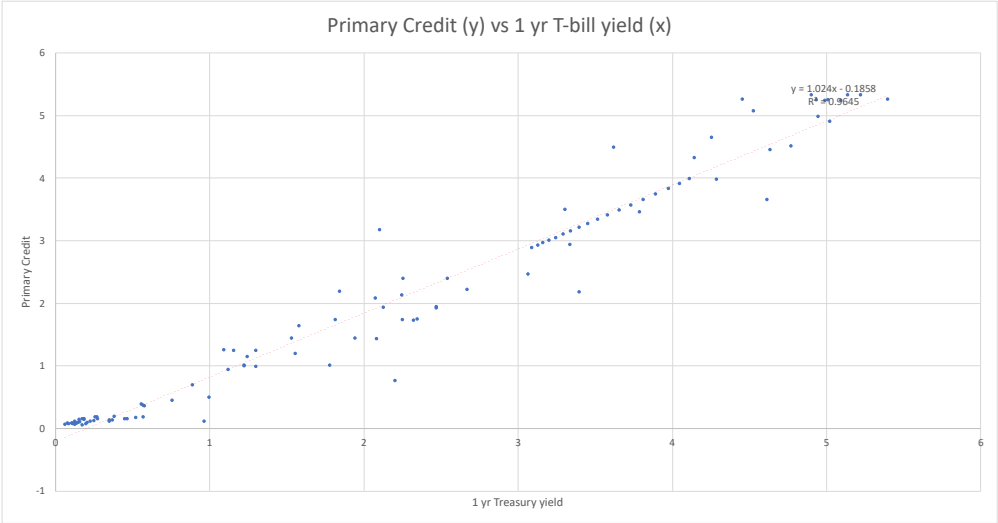
Figure 19: FOMC "Dot Plot" from June 2025 Board of Governors' Meeting



Source: https://www.federalreserve.gov/monetarypolicy/files/fomcprojtabl20250618.pdf

In Figure 20, we see the historical and projected relationship between the effective overnight lending rate and the 1-year T-bill yield.

Figure 20: Primary Credit, as a function of 1-year Treasury yield



Source: Authors' calculation

Other Commentary

- "Along with the rate decision, the committee indicated, through its closely watched "dot plot," that two cuts by the end of 2025 are still on the table. However, it lopped off one reduction for both 2026 and 2027, putting the expected future rate cuts at four, or a full percentage point. … The plot indicated continued uncertainty from Fed officials about the future of rates. Each dot represents one official's expectations for rates. There was a wide dispersion on the matrix, with

an outlook pointing to a fed funds rate around 3.4% in 2027.."
(https://www.cnbc.com/2025/06/18/fed-rate-decision-june-2025-.html; June 18, 2025)

Treasury Yields (1, 3, & 6-month; 1, 3, 5, 7, 10, 20, & 30-year series)

Analysis

The U.S. government raises money to operate the federal government through the sale of U.S. Treasury Securities; these are debt instruments that are offered at fixed interest rates. Rates are expected to generally rise as maturity durations increase. The interest rates vary from day-to-day, and, when collected across all maturities, may be documented as a line chart (rate versus maturity) called a "yield curve". There are several different types of "Treasuries" (a generic name for "Treasury bonds", "Treasury notes", and "Treasury bills"), and most may be re-sold on the open secondary market.

Initial interest rates offered for Treasury Securities ("yields") are set when the security is initially sold, and may be affected by several factors, including (for example)

- The published target federal funds rate;
- Investor sentiment (i.e., supply and demand);
- Currently outstanding debt levels; and
- Anticipated future events (e.g., investors' beliefs regarding economic growth, inflation, and other geopolitical trends).

We have discussed the Treasury yield curve several times in our recent analyses, as it has undergone significant changes during 2025. These changes reflect shifting market expectations about monetary policy, inflation, and economic growth prospects. As of this writing, the 10-year Treasury note yields 4.29%, while the 2-year note yields 3.74%, resulting in a positive yield spread of 55 basis points[58].

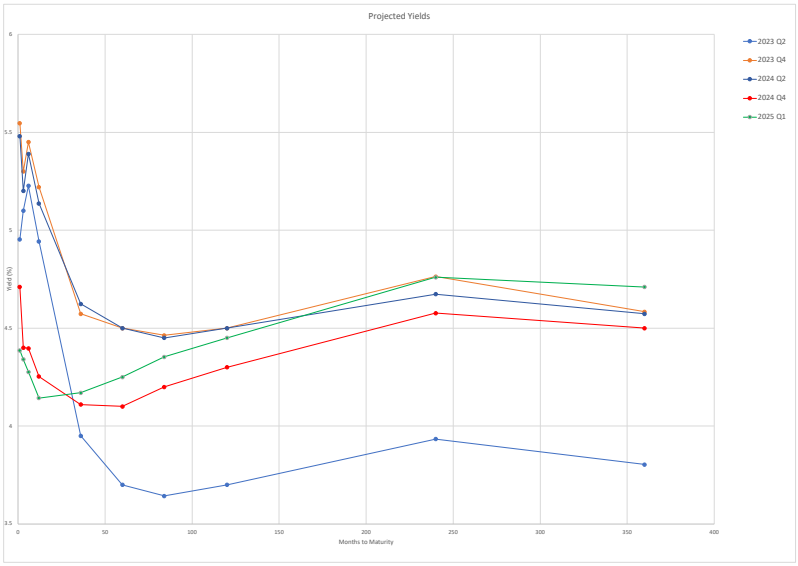
This represents a notable steepening from the inverted yield curve conditions that persisted through much of 2024 (see Figure 21), when longer-term rates traded below shorter-term rates. The normalization of the yield curve slope suggests that market participants have become more optimistic about longer-term economic prospects, despite near-term growth concerns.

Short-term Treasury yields have remained elevated, with the 3-month bill yielding 4.38% and the 6-month bill at 4.26% as of this writing. These levels reflect the Federal Reserve's continued restrictive monetary policy stance and market expectations for only gradual rate reductions through the remainder of 2025.

The longer end of the curve has shown more pronounced movements. The 20-year and 30-year Treasury bonds both yielded 4.83% as of this writing, indicating a flat long-end structure[59]. This pattern suggests that while investors expect some monetary policy easing in the near term, they anticipate that longer-term interest rates will remain elevated due to persistent inflation concerns and fiscal policy uncertainties.

[58] See https://fred.stlouisfed.org/series/DGS10 and https://fred.stlouisfed.org/series/DGS2
[59] See https://fred.stlouisfed.org/series/DGS20 and https://fred.stlouisfed.org/series/DGS30

Figure 21: Recent Yield Curves from Selected Quarters

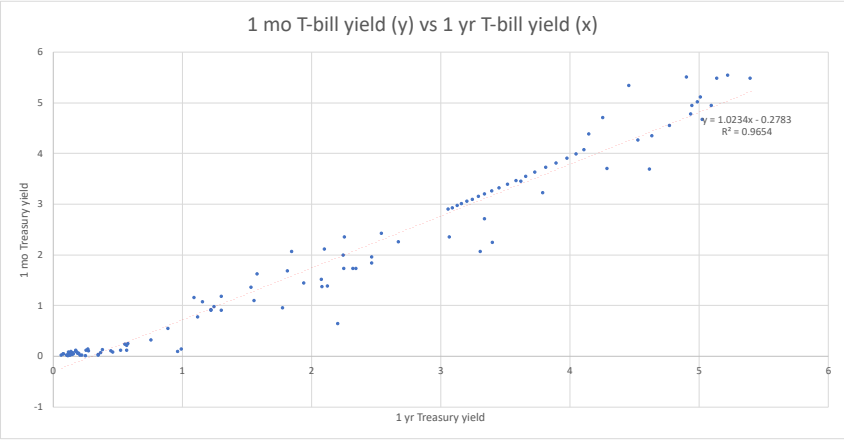


Treasury market volatility has been influenced by ongoing policy uncertainty, particularly regarding the administration's trade policies and their potential inflationary impacts. Bond market strategists at several major financial institutions have recently revised their year-end forecasts for 10-year yields, with most now expecting yields to remain in the 4.25 to 4.5 percent range through the end of 2025.

The yield curve's shape and level continue to reflect the market's assessment of competing forces: economic growth concerns that support lower yields versus inflation risks and fiscal policy uncertainties that argue for higher yields. The resolution of these tensions will likely depend on the evolution of tariff policies, the pace of federal spending cuts, and the Fed's response to changing economic conditions.

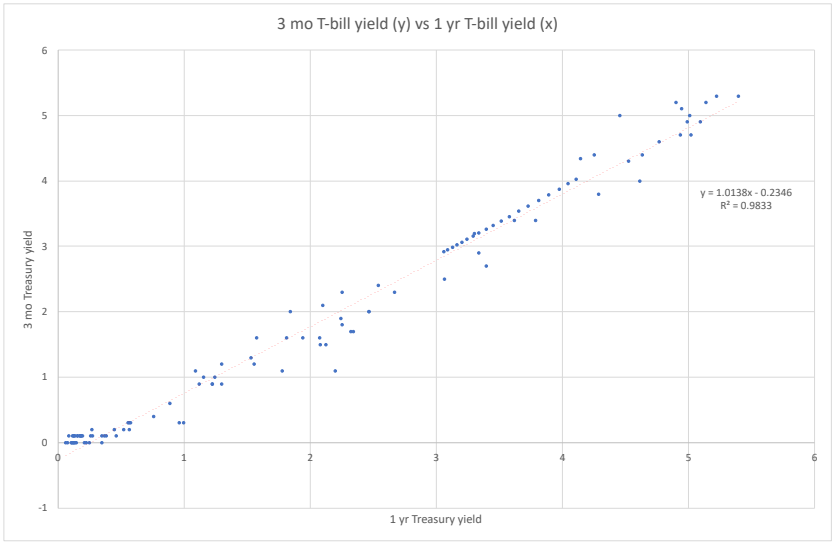
Figure 22 through Figure 30 illustrate the most significant correlations between Treasury yield rates.

Figure 22: 1-month Treasury yield rates, as a function of 1-year Treasury yield rates



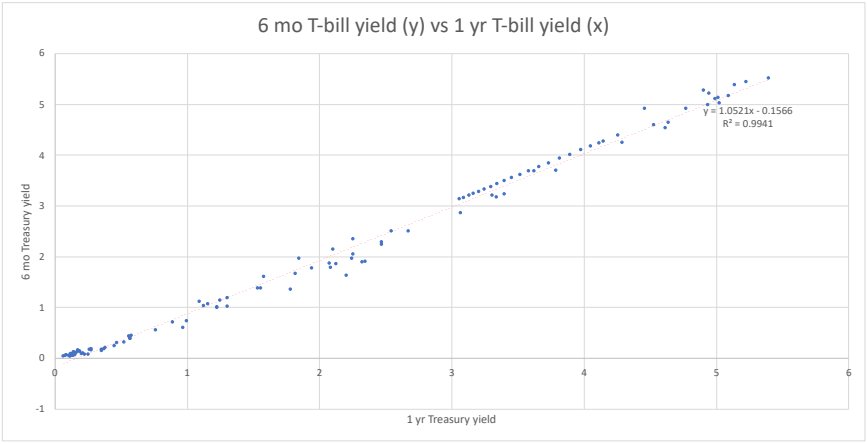
Source: Authors' calculation

Figure 23: 3-month Treasury yields, as a function of 1-year Treasury yields



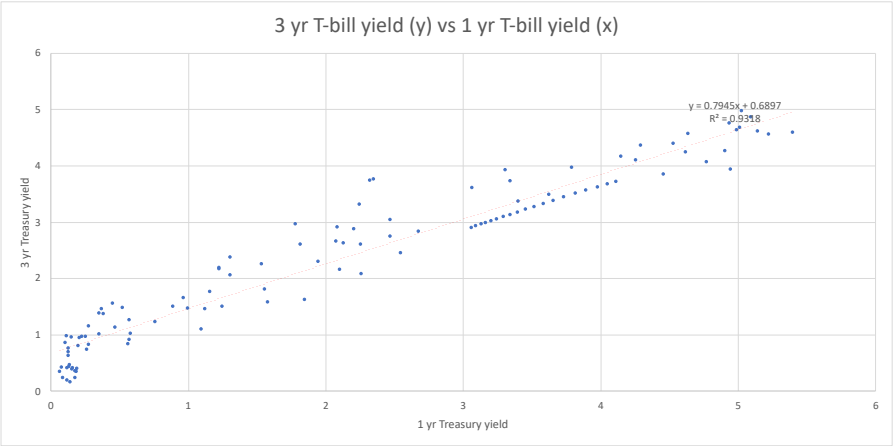
Source: Authors' calculation

Figure 24: 6-month Treasury yields, as a function of 1-year Treasury yields



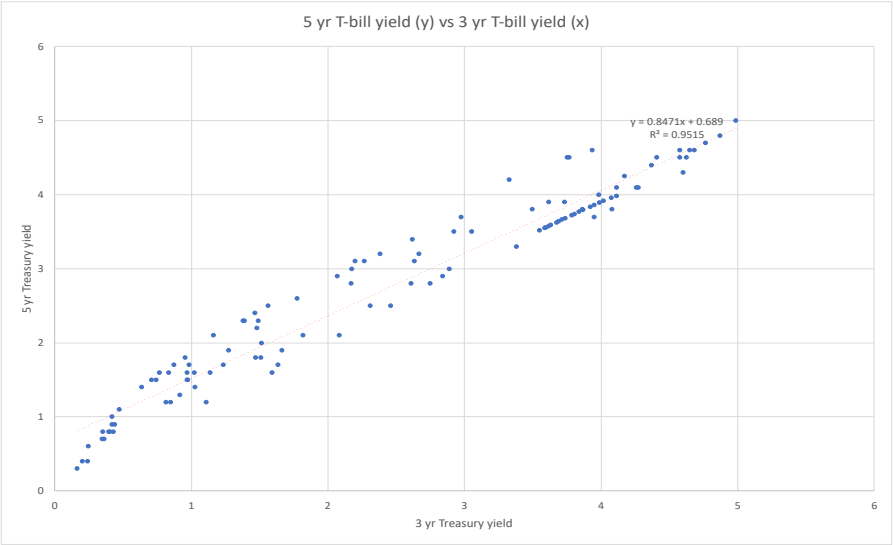
Source: Authors' calculation

Figure 25: 3-year Treasury yields, as a function of 1-year Treasury yields



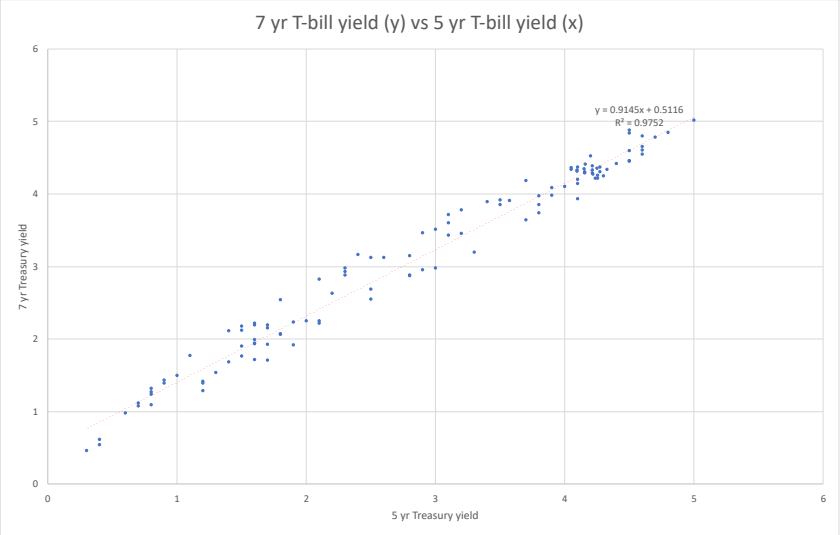
Source: Authors' calculation

Figure 26: 5-year Treasury yields, as a function of 3-year Treasury yields



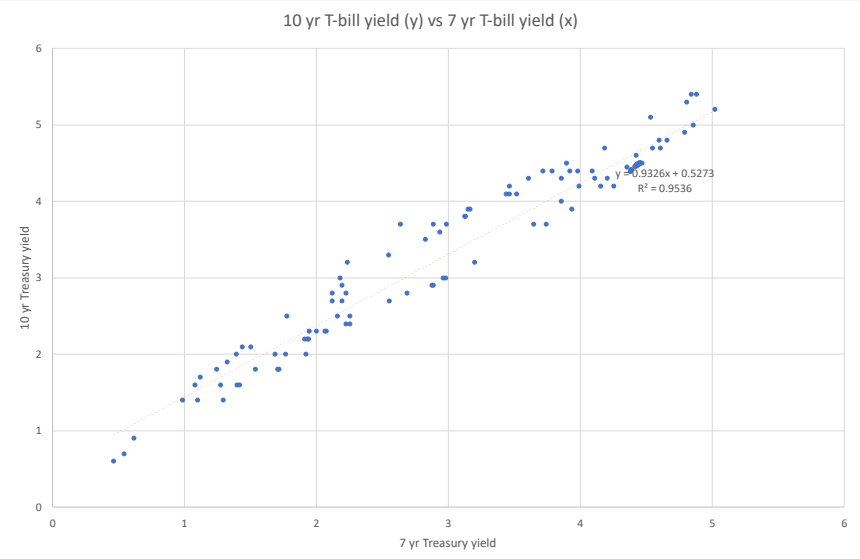
Source: Authors' calculation

Figure 27: 7-year Treasury yields, as a function of 5-year Treasury yields



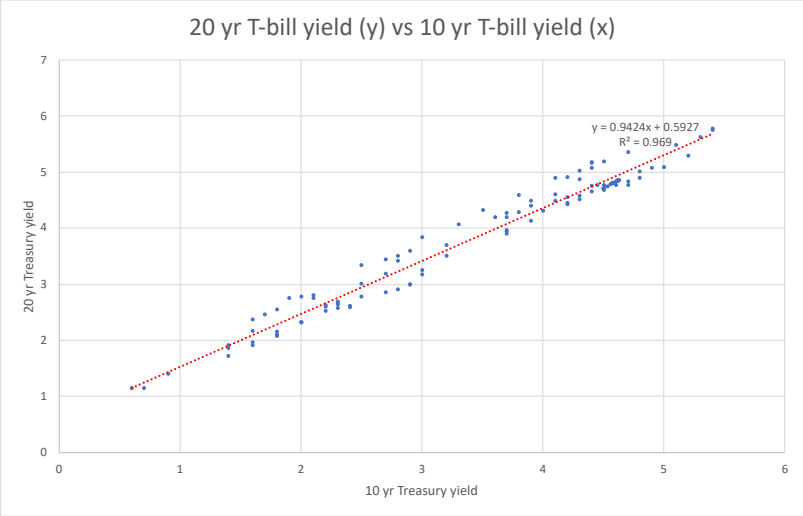
Source: Authors' calculation

Figure 28: 10-year Treasury yields, as a function of 7-year Treasury yields



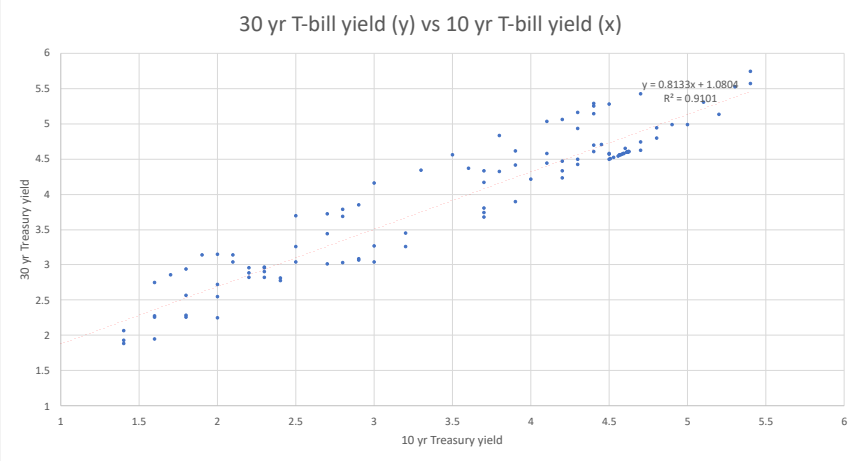
Source: Authors' calculation

Figure 29: 20-year Treasury yields, as a function of 10-year Treasury yields



Source: Authors' calculation

Figure 30: 30-year Treasury yields, as a function of 10-year Treasury yields



Source: Authors' calculation

Other Commentary

- "Markets have moved away from excessive expectations of US Federal Reserve System (Fed) cuts for the year. In our estimation, growth should slow from the first quarter's robust readings even with tariff de-escalation, making the front-end a good core holding with return upside as well as beta-hedging characteristics. Meanwhile, the global rate-cutting cycle is likely to continue — and could even be accelerated — due to deflationary pressures from the rerouting of global trade in goods. In contrast to the U.S., lending opportunities in Europe and parts of Asia offer compelling ways to gain longer duration exposure. In a market environment marked by heightened uncertainty and unreliable correlations, the case for a larger allocation to stable,

income-generating investments has never been stronger."
(https://www.blackrock.com/us/financial-professionals/literature/market-commentary/fixed-income-market-outlook.pdf; March 23, 2025)

30-year Mortgage Rate & Residential Home Price Index

Analysis

Mortgage rates have been traditionally tightly correlated with mid-duration Treasury yields given the typical sources of funding and duration of held mortgages. Day-to-day, offered mortgage rates are driven by traditional supply-and-demand forces between mortgage providers, and they are also influenced by the releases of various metrics (and the reactions of investors).

Mortgage rates have been volatile during 2025, reflecting the broader uncertainty in financial markets. The average 30-year fixed mortgage rate has fluctuated between 6.8% and 7.0% throughout the first half of the year, settling at approximately 6.82% by late June (see Figure 31); these rates are a modest improvement from the peak levels above 7% reached momentarily in 1Q2025, but still well above the sub-3% levels that prevailed during the pandemic period.

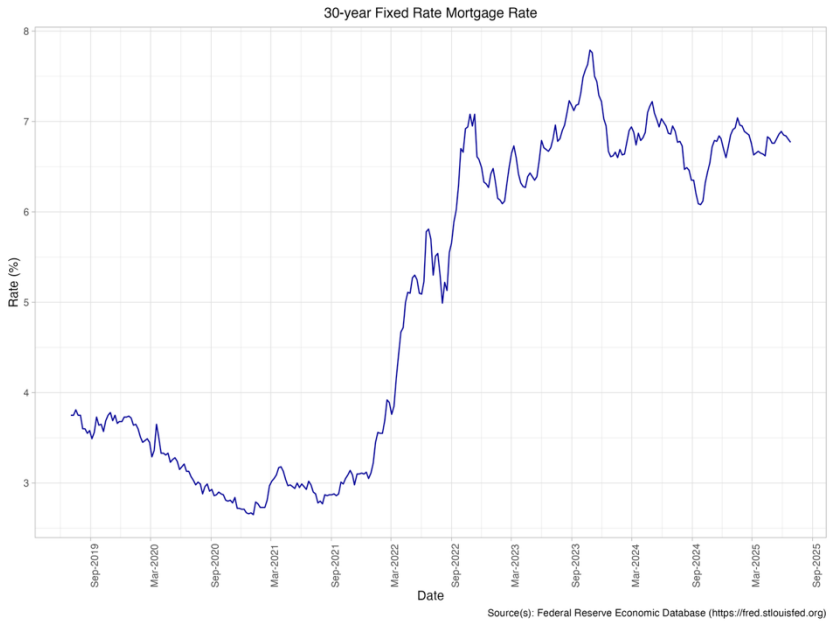
The mortgage market outlook for the remainder of 2025 remains closely tied to Federal Reserve policy expectations. Most industry forecasters anticipate that mortgage rates will remain above 6.5% through year-end, with J.P. Morgan projecting rates to stay elevated throughout 2025[60]. Fannie Mae has revised its forecast upward, expecting the 30-year fixed rate to average 6.8% in 2025 and 6.5% in 2026[61]. ***We expect that mortgage rates will remain at essentially their current level through YE2025, and may increase slightly to as high as 7.0% by 1H2026.***

The housing market has responded to these elevated borrowing costs with continued sluggishness. Home sales activity remains constrained, with existing home sales staying near historically low levels as potential buyers face affordability challenges. The "rate lock-in effect" continues to suppress housing inventory turnover, as more than 80 percent of borrowers have mortgage rates at least 100 basis points below current market levels, creating strong incentives to resist selling.[62]

Home price dynamics have shown regional variation during 2025. Nationally, the median price for a new single-family home was $416,900 during 1Q2025, while existing homes sold for a median price of $402,300. New home prices have declined Y/Y for eight consecutive quarters through 1Q2025, with a 2.32% decrease from 1Q2024 to 1Q2025. Conversely, existing home prices have risen for seven straight quarters, increasing 3.38% from 1Q2024 to 1Q2025.[63]

[60] https://www.forbes.com/advisor/mortgages/mortgage-interest-rates-forecast/
[61] Ibid.
[62] https://www.jpmorgan.com/insights/global-research/real-estate/us-housing-market-outlook
[63] https://www.nahb.org/blog/2025/05/prices-for-new-homes-drop-as-existing-rises

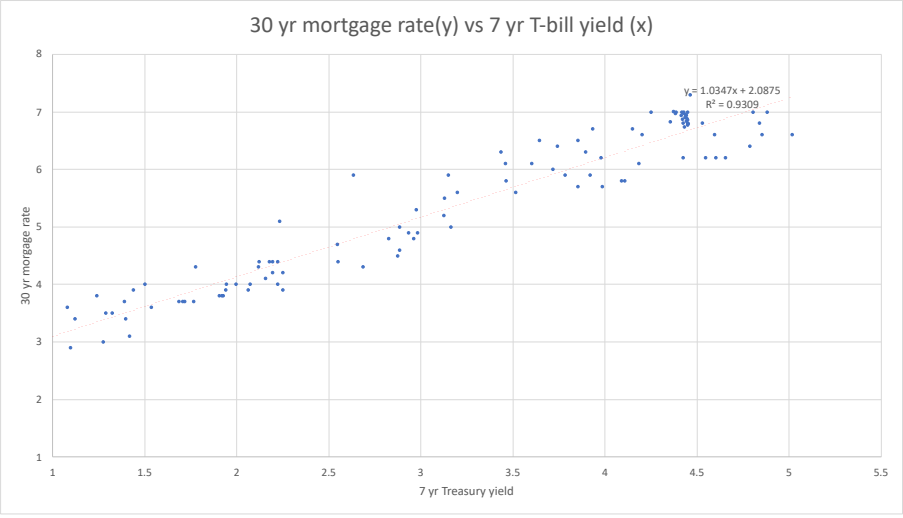
Figure 31: US Nationwide Average 30-Year Fixed Rate Mortgage Rate



Housing inventory has shown signs of gradual improvement, with national active listings increasing by 30.6% between April 2024 and April 2025[64]. However, inventory levels remain well below pre-pandemic norms, contributing to continued upward pressure on home prices despite weakened demand.

See Figure 32 regarding the correlation between the US 30-year fixed-rate mortgage rates and 7-year Treasury yields.

Figure 32: US 30-year (fixed rate) mortgage rate, as a function of a 7-year Treasury yield



Source: Authors' calculation

[64] https://www.resiclubanalytics.com/p/housing-market-state-inventory-update-may-2025

Other Commentary

- "The Fed … released its latest economic projections, forecasting an uptick in inflation and unemployment through 2027 compared to March projections. However, 2025's interest rate path remained consistent, suggesting two cuts are still on the horizon, resulting in a 3.75% to 4% rate range by the end of the year. … In recent testimony before the House Financial Services Committee, Fed Chair Jerome Powell defended the central bank's cautious stance, stating the need to learn more about the impact of tariffs on consumers before making any rate adjustments." (https://www.forbes.com/advisor/mortgages/mortgage-interest-rates-forecast/; June 27, 2025)
- "Mortgage rates won't be changing much for now. 30-year fixed-rate mortgages are still around 6.8%, while 15-year loans are at 5.9% for borrowers with good credit. If the economy weakens, then rates should ease a bit. Mortgage rates are still higher than normal relative to Treasuries, but whenever the Fed cuts short-term rates again, it will boost banks' lending margins, which should eventually lower mortgage rates a bit, too." (https://www.kiplinger.com/economic-forecasts/interest-rates; June 18, 2025)

Prime Rate

Analysis

The Prime Rate is a benchmark rate that many banks use for setting consumer credit rates for creditworthy customers. It is generally based on the federal funds rate, and a spread (typically 3%) is dictated by banks as a matter of policy to specify lending rates for mortgages, small business loans, and personal loans[65]. The Prime Rate is currently (as of this writing) 7.5%[66].

As mentioned above, the Federal Reserve has signaled a cautious approach to rate adjustments, prioritizing inflation containment, even as economic growth has slowed and unemployment has edged higher. Sticky inflation and ongoing policy uncertainty—particularly surrounding tariffs and fiscal policy—have led the FOMC to postpone anticipated rate cuts, despite earlier market expectations for more aggressive easing in 2025.

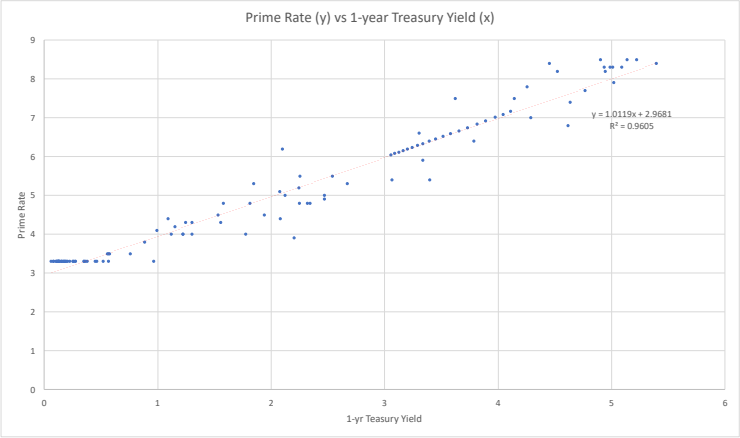
The Prime Rate's persistence at 7.50% has direct implications for borrowing costs across the economy. Households and businesses continue to face elevated rates on variable-rate loans, credit cards, and new business lending, driving a cooling in consumer spending and business investment, and reinforcing broader economic headwinds.

Looking forward, most forecasts suggest the Prime Rate will remain at 7.50% through at least the third quarter of 2025, barring a significant shift in the inflation trajectory or a pronounced deterioration in labor market conditions. Should the Federal Reserve proceed with the two rate cuts currently projected for late 2025, the Prime Rate could decline to 7.00% by YE2025, though this remains contingent on both inflation data and broader economic developments.

See Figure 33 for the relationship between the Prime Rate and 1-year Treasury yield.

[65] https://www.investopedia.com/terms/p/primerate.asp
[66] https://fred.stlouisfed.org/series/DPRIME

Figure 33: Prime Rate as a function of 1-year Treasury yields



Source: Authors' calculations

Other Commentary

- "The Fed also released its new economic projections, showing that, by a 12-to-7 majority vote, the Federal Open Market Committee (FOMC) thought rates would be lower by the end of the year. About half of the committee expects two quarter-point cuts. It's worth noting, though, that seven committee members felt rates will be unchanged at the end of the year. Committee members raised their inflation projections a bit, indicating that any cut in rates would likely have to come with evidence of a slowing economy. The Fed's next meeting is July 30." https://www.kiplinger.com/economic-forecasts/interest-rates; June 18, 2025)

Moody's AAA & BAA Rates; and the BofA BBB Corporate Yield

Analysis

Moody's AAA Corporate Bond is an investment bond that acts as an index of the performance of all bonds given an AAA rating by Moody's Investors Service. This corporate bond is also often used as an alternative to the U.S. 10-year Treasury Bill as benchmark indicator rate; as a result, AAA bond rates tend to track with mid-duration Treasury yields. Bonds with lower grades, e.g., Moody's BAA Corporate Bond (which tracks bonds given a BAA rating), tending have higher yields (due to their risk ratings). The ICE BofA BBB US Corporate Index is a trading index compiled by ICE Data Indices, LLC that includes all securities given an investment grade rating BBB by Bank of America.

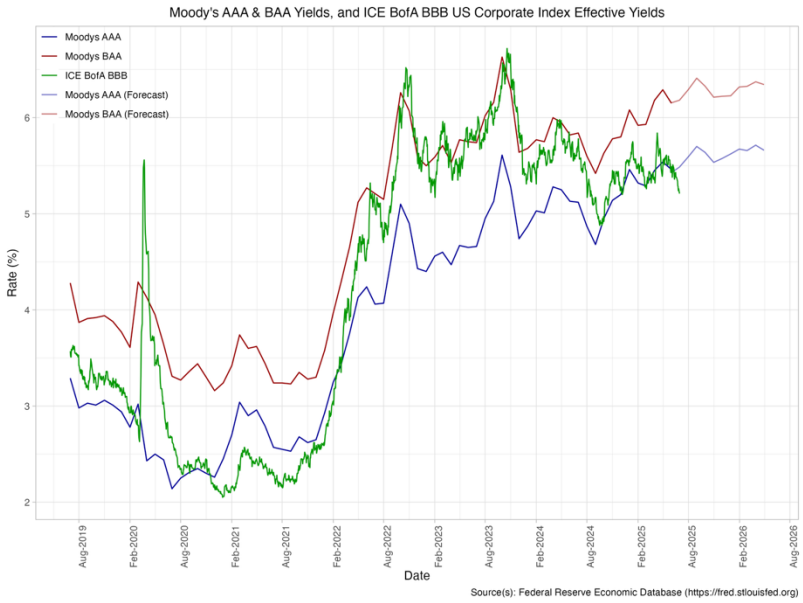
Corporate bond yields have tracked broader interest rate movements, with Moody's AAA corporate bonds yielded 5.46%[67], while BAA-rated bonds are yielded 6.15%[68], as of the end of 2Q2025. BBB-rated corporate bonds yielded 5.21%[69]. These spreads reflect continued corporate credit strength despite broader economic uncertainties.

[67] https://fred.stlouisfed.org/series/aaa
[68] https://fred.stlouisfed.org/series/baa
[69] https://fred.stlouisfed.org/series/BAMLC0A4CBBBEY

We have observed that President Trump appears to be sensitive to risk spreads (i.e., the difference between corporate debt yields and risk-free yields of comparable duration): when spreads exceed roughly 25–40 bps in the investment-grade market (or about 70–100 bps in the high-yield market), he has repeatedly softened, paused, or reversed disruptive policies (especially tariffs) in order to calm credit conditions.

To wit, treasury dealers and large corporate debt issuers scaled back issuance after the market shock on "Liberation Day"; investment-grade spreads rose to 146 bps[70], followed by the quickly announced 90-day tariff reprieve[71]. Another example was later in April, when President Trump also threatened to fire Chairman Powell[72], resulting in high-yield spreads widening to over 50 bps[73], after which Trump qualified his comments[74], assuaging markets. We have also seen this pattern unfold as Trump's 2026 budget has been navigating Congress.

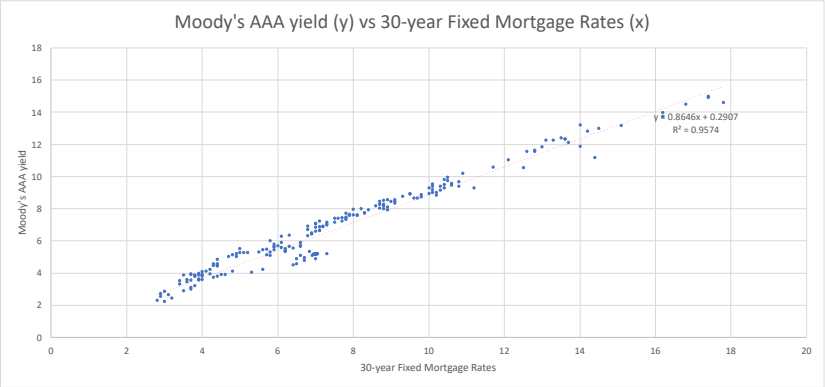
Figure 34: Moody's AAA, BAA, and ICE BBB Average Bond yields



See Figure 35 and Figure 36 for how Moody's AAA & BAA Corporate Bond yields have historically correlated with other macroeconomic metrics.

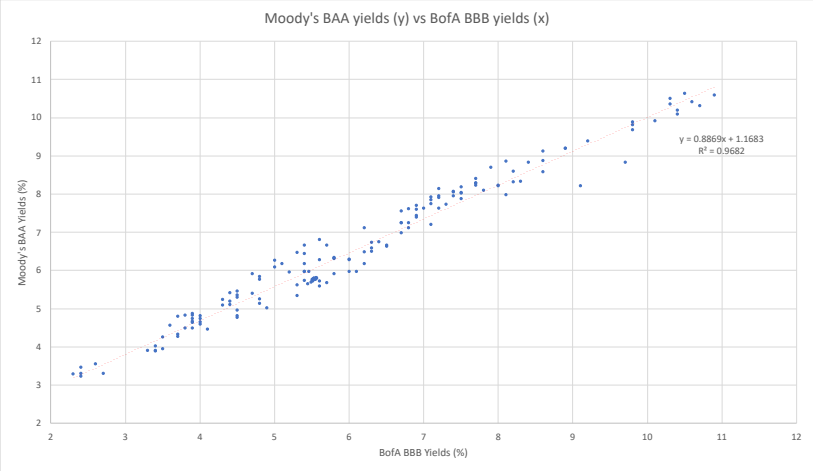
[70] https://www.ainvest.com/news/trump-put-limit-corporate-bond-spread-widening-bofa-2505-65/
[71] https://www.cnbc.com/2025/04/10/trump-dodged-a-disaster-from-the-bond-market-but-the-damage-isnt-over-yet.html
[72] https://apnews.com/article/trump-powell-federal-reserve-fed-termination-b6148c8048dda538a6ca3b5a270fd09e
[73] https://www.bloomberg.com/news/articles/2025-04-22/hatzius-says-trump-s-fed-attacks-have-significant-market-impact
[74] https://www.cbsnews.com/news/trump-says-no-intention-of-firing-fed-chief-jerome-powell/

Figure 35: Moody's AAA-grade investment yields, as a function of 30-year Fixed Interest Mortgage Rates



Source: Authors' calculation

Figure 36: Moody's BAA-grade investment yields, as a function of BofA BBB yields



Source: Authors' calculation

Other Commentary

- "'Those two major macro-related risks [inflation and economic growth] push [spreads] into a new range, and on a forward-looking basis, until we gain more clarity on Trump's policy agenda, the risk will remain in the financial system, which warrants wider spreads,' [Neil Sun, portfolio manager within the BlueBay Investment Grade team at RBC Global Asset Management] said. 'It is also worth noting that institutional investors who we have talked to came to this year on a very defensive stance. They already have a very elevated cash balance that they are looking to spend, and this wider level in spreads provides everyone with a decent buying opportunity into the investment-grade market.'" (https://www.spglobal.com/market-intelligence/en/news-insights/articles/2025/5/investors-price-in-higher-risk-for-investmentgrade-credit-amid-market-turmoil-88674633; May 1, 2025)
- "Two weeks ago, President Donald Trump confidently announced his long-awaited reciprocal tariffs in a widely viewed Rose Garden address. Essentially unchecked by members of his own party and appearing more confident than ever, the president imposed steep tariffs on allies and adversaries alike. Even a sinking stock market couldn't convince President Trump to pause his tariffs. Then the bond market forced him to fold. … Last week brought a frenzied trading session

> in the bond markets as investors dumped bonds overnight—sending the 30-year Treasury yield briefly above 5 percent. To put this in context, the annual change in market yield is often less than the two-day change of 65 bps the market experienced last week. … The next morning, President Trump unilaterally paused for 90 days the implementation of some of the historic tariffs imposed on our trading partners." (https://www.newsweek.com/how-bond-markets-tamed-trump-opinion-2061454; April 18, 2025)

US Average Retail Gasoline Price

Analysis

The U.S. average retail price for regular unleaded gasoline is approximately $3.16 per gallon for regular unleaded as of this writing[75], down approximately 7%-10% Y/Y. Since YE2024, crude oil prices have been generally down, as seen in Figure 37. On the whole, Y/Y change in prices have been down from 2024 to 2025 -- currently just above $65/bbl -- which has been seen as a positive for end consumers.

The EIA's April 2025 Short-Term Energy Outlook pegs 2025 motor-gasoline demand at 8.90M b/d, up slightly from 2024 as economic activity and summer driving increase[76]. Longer-term gas consumption obstacles, including fuel-efficiency gains and growing EV market share, continue to cap demand growth, preventing the sharp summer run-ups typical a decade ago.[77]

Escalating conflict between Israel and Iran has lifted Brent and WTI futures 3-4% since mid-June[78]. Analysts warn that an Iranian attempt to close or seriously disrupt the Strait of Hormuz (~20% of global crude flows) could spike Brent to $110–120 per barrel, and drive U.S. gasoline prices well above $5 per gallon in a prolonged shutdown scenario[79]. While Iran's parliament did vote to close the Strait of Hormuz in June[80], a subsequent ceasefire agreement between Israel and Iran led to oil prices tumbling by 5% as markets stabilized[81]. Brent crude had spiked to $81.40 per barrel during peak tensions before falling below $67 per barrel following the ceasefire announcement[82].

The Russia-Ukraine conflict continues to influence global energy markets, though its direct impact on US gasoline prices has been moderated by reduced Russian oil flows to Western markets. Russian oil export revenues have declined substantially due to sanctions and lower global prices, with Urals crude trading well below Russia's budgeted $69.7 per barrel.[83]

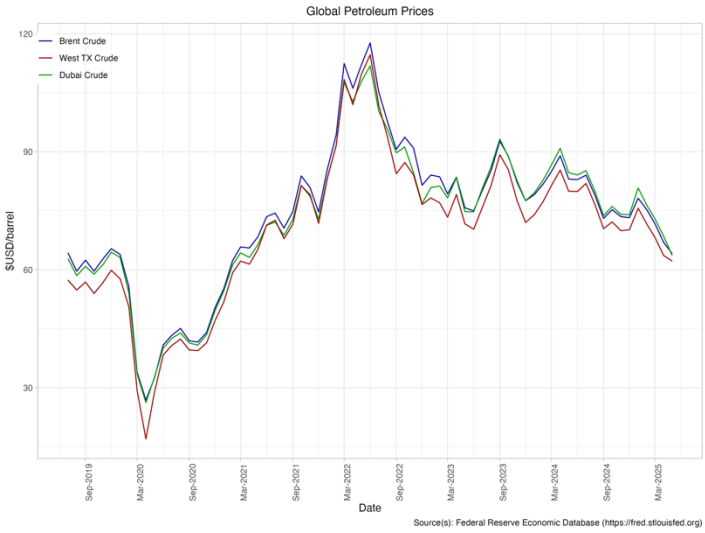
Like every hurricane season, the 2025 Atlantic hurricane season presents significant upside risks to gasoline prices. NOAA is currently forecasting an above-average season with 13-19 named storms, 6-10 hurricanes, and 3-5 major hurricanes[84]. Colorado State University has maintained its prediction of 17 named storms and 9 hurricanes for the season[85]. The enhanced activity is attributed to warmer-than-

[75] https://gasprices.aaa.com/
[76] https://www.rigzone.com/news/eia_expects_usa_gasoline_price_to_drop_in_2025_and_2026-14-may-2025-180526-article/
[77] Ibid.
[78] https://www.cnbc.com/2025/06/19/oil-prices-israel-iran-trump-ayatollah-khamenei.html
[79] https://abcnews.go.com/Business/israel-iran-conflict-expected-hike-us-gas-prices/story?id=122828270
[80] https://nypost.com/2025/06/22/world-news/iran-orders-closure-of-strait-of-hormuz-putting-one-fifth-of-worlds-oil-supply-at-risk/
[81] https://www.bbc.com/news/articles/crk6elpx4gpo
[82] Ibid.
[83] See https://www.reuters.com/business/energy/oil-plunges-kremlin-sees-global-economic-storm-2025-04-07/ and https://www.bofbulletin.fi/en/blogs/2025/falling-oil-prices-reduce-russia-s-budget-revenues/
[84] https://wmo.int/media/news/noaa-forecasts-above-average-hurricane-season
[85] https://tropical.colostate.edu/Forecast/2025-06.pdf

average ocean temperatures, ENSO (El niño Southern Oscillation[86])-neutral conditions, and weak wind shear—all factors that favor tropical storm development[87].

We expect oil prices to remain in the $65/bbl to $75/bbl range under nominal circumstances.

Figure 37: Global Crude Oil Prices



Other Commentary

- "Eight OPEC+ countries are likely to make another oil output increase for August at a meeting on Saturday in their push to boost market share. … 'If the group decides to increase its output by another 411,000 barrels per day (bpd) in August, as expected, for the fourth successive month, oil balance estimates for the second half of the year will be reassessed and will suggest accelerated swelling in global oil reserves,' said PVM analyst Tamas Varga." (https://www.reuters.com/business/energy/oil-prices-steady-solid-job-market-tariff-uncertainty-2025-07-04/; July 4, 2025)
- "Brent prices could fall to $60 a barrel by the end of next year, said David Oxley, chief climate and commodities economist at Capital Economics—so long as Israel and Iran refrain from attacking export-related energy infrastructure and Iran doesn't disrupt shipping flows through the Strait of Hormuz." (https://www.wsj.com/livecoverage/stock-market-today-dow-sp-500-nasdaq-06-24-2025/card/oil-prices-extend-slide-despite-cease-fire-looking-fragile-Yc9xSEoRZQUQyezlGIOp; June 24, 2025)

Commercial Real Estate Price Index

The US Commercial Real Estate Price Index was down 1.11% in 1Q2025 from 4Q2024 and down 1.74% from 1Q2024[88]. This decline represents the continuation of a multi-year adjustment in commercial property valuations that began in mid-2022 as rising interest rates and shifting occupancy patterns

[86] https://www.weather.gov/mhx/ensowhat
[87] https://www.noaa.gov/news-release/noaa-predicts-above-normal-2025-atlantic-hurricane-season
[88] https://ycharts.com/indicators/us_commercial_real_estate_price_index_interest_rates_and_price_indexes

reshaped the market landscape. Commercial real estate lending saw a significant increase in 1Q2025, with the CBRE Lending Momentum Index showing a 13% increase from 4Q2024 and a 90% increase Y/Y, according to CBRE.[89]

Progress in CRE recovering from its multi-year malaise has been mixed recently, though generally improving. Multifamily and industrial sectors showed strength, while office and retail continued to face ongoing challenges.[90] Retail properties improved with a 1.77% Q/Q return and an impressive 6.2% Y/Y gain[91]. The hotel sector also showed strong performance with a 6.0% annual return despite quarterly volatility[92]. Industrial properties maintained their relative strength with a 1.31% quarterly return and 3.8% annual performance[93]; the sector benefited from continued demand for logistics and distribution facilities, though vacancy rates have increased to 6.7%[94]. Office properties remained the weakest performer of the CRE sub-sectors with a 0.86% quarterly return but still posted a -3.0% annual decline[95]. The sector faces ongoing challenges from elevated vacancy rates, which reached 19.4% nationally in May 2025[96], though some markets showed signs of stabilization as return-to-office mandates gained traction.

The commercial real estate market benefited from improving lending conditions during 1H2025. The Federal Reserve's April 2025 Senior Loan Officer Opinion Survey revealed that only 9.0% of banks reported tightening commercial real estate loan underwriting standards, down dramatically from 67.4% in April 2023[97].

The commercial real estate market appears to be transitioning from a period of significant adjustment to one of potential recovery. While values remain below peak levels, the combination of improving lending standards, recovering transaction volumes, and stabilizing property fundamentals suggests the sector may have reached an inflection point. However, challenges remain, including elevated interest rates, ongoing refinancing pressures with almost $1T in commercial real estate loans maturing in 2025[98], and continued uncertainty around trade policies and their impact on construction costs. The market's ability to sustain its recovery momentum will depend on the evolution of these macroeconomic factors and the successful navigation of the significant refinancing wave ahead.

Figure 38 highlights the relationship between residential and commercial prices.

[89] https://www.cbre.com/press-releases/commercial-real-estate-lending-activity-increases-in-q1-2025
[90] https://www.bakertilly.com/insights/recap-commercial-real-estate-market-report-q1-2025
[91] https://transwestern.com/source/files/Documents/RecoveryRallyOnTheHorizon.pdf
[92] https://ncreif.org/__static/jdj5jdewjhp1ajlnbuvkrthnnhewowft/Expanded-NPI-Snapshot-Flash-20251(2).pdf
[93] Ibid.
[94] https://www.ccim.com/real-estate-insights/blog/commercial-real-estate-2025-hurdles-and-horizons
[95] https://ncreif.org/__static/jdj5jdewjhp1ajlnbuvkrthnnhewowft/Expanded-NPI-Snapshot-Flash-20251(2).pdf
[96] https://www.commercialcafe.com/blog/national-office-report/
[97] https://www.credaily.com/briefs/cre-values-outlook-2025-shows-resilience-amid-volatility/
[98] https://agorareal.com/learn/commercial-real-estate-challenges/

Figure 38: Residential Home Price Index as a function of the Commercial Real Estate Index

Source: Authors' calculation

Other Commentary

- "The national office vacancy rate was 19.4% in May, up 160 basis points year-over-year, with occupancy unlikely to rise in near future … The average U.S. office listing rate was $33.15 per square foot in May, increasing 4.8% year-over-year … Office construction pipeline continued to shrink, with 41.5 million square feet of office space currently under construction" (https://www.commercialcafe.com/blog/national-office-report/; June 23, 2025)
- "The number of property demolitions and the pace of office conversions into residential buildings are accelerating. Developers, meanwhile, have greatly slowed new office construction because of questions about future tenant demand. … As a result, the amount of office supply in the U.S. is on pace this year to contract for the first time in a quarter of a century, according to real-estate-services firm CBRE Group. … If this trend holds, it would reverse a decadeslong office-construction spree that flooded the U.S. with too much unwanted workspace." (https://www.wsj.com/real-estate/commercial/developers-are-finally-dealing-with-the-office-oversupply-problem-4ea28afb; June 17, 2025)

Dow Jones Total Stock Market Index; S&P 500; and the Market Volatility Index (VIX)

Analysis

The U.S. equity markets experienced a dramatic reversal of fortunes during the first half of 2025, with major indices staging a remarkable recovery from steep first-quarter losses to achieve new record highs by the end of the second quarter. This turnaround was largely driven by the Trump administration's decision to pause the implementation of comprehensive tariffs, which had initially triggered one of the most severe market selloffs in recent history.

The Dow Jones U.S. Total Market Index (DWCF) is a market-capitalization-weighted index that represents the top 95% of the U.S. stock market based on market capitalization. Its level reflected the

broader market's challenges during 1Q2025, with the index value declining from $58.4T to $55.37T during the quarter. It closed at 58,399.25 at YE2024; 55,374.92 at the end of 1Q2025 (a decline of 5.2%); and 61,309.50 at the end of 2Q2025 (a gain of 10.7%)[99]. The decline during 1Q2025 represents the comprehensive nature of the market selloff based on a lack of understanding & confidence in WH policy, which extended beyond large-cap stocks to encompass mid-cap and small-cap securities across the entire U.S. equity universe. As the markets have become more comfortable with President Trump's policies and tactics during his second administration, there appears to be rising confidence during Q2.

The Standard & Poor's 500 Index ("SP500") is an index of 500 very large, publicly traded companies in the U.S. The S&P 500 Index finished 1Q2025 at 5,611.85, representing a decline of 4.6% for the quarter[100]. 1Q2025's change marked the index's worst quarterly performance since 3Q2022, as concerns about the economic impact of the "Liberation Day" tariffs announced on April 2nd sent shockwaves through financial markets[101]. However, the second quarter witnessed a stunning recovery, with the S&P 500 surging 10.6% to close at 6,204.95[102]. This represented a new all-time high for the index and capped what many analysts described as one of the best quarterly performances in years[103].

The CBOE Volatility Index (VIX) served as a particularly telling barometer of market stress during this period. The fear gauge spiked to 21.65 at the end of 1Q2025, reflecting heightened investor anxiety about policy uncertainty and economic prospects[104]. More dramatically, the VIX reached extreme levels during the April tariff crisis, briefly exceeding 50 during the peak of market panic[105]. This represented one of the highest volatility readings since the COVID-19 pandemic and ranked among the most severe market stress events in recent history. By the end of the second quarter, however, the VIX had moderated significantly to 16.73, representing a 22.7% decline from Q1 levels and indicating a substantial reduction in market anxiety as trade tensions eased[106].

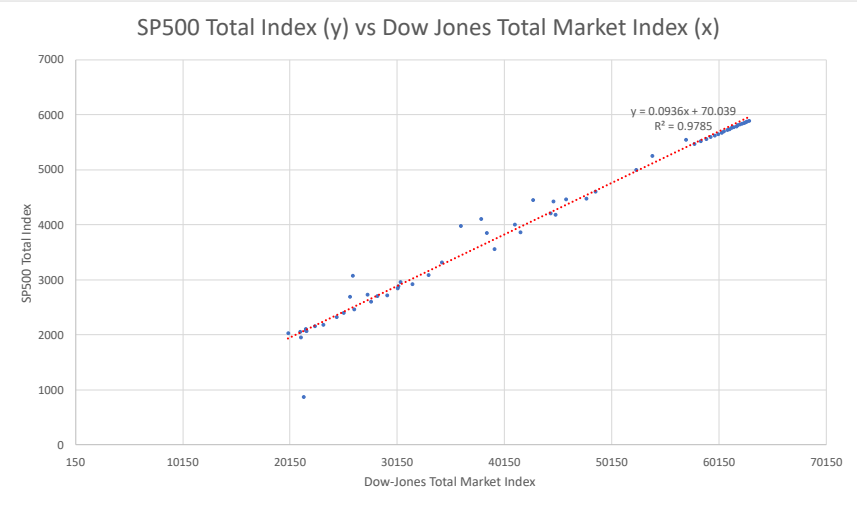
The market's recovery was aided by several key factors. The Trump administration's decision to pause reciprocal tariffs for 90 days provided immediate relief to investor sentiment[107]. This was followed by preliminary trade agreements, including framework deals with China and the United Kingdom, which further reduced uncertainty about the ultimate scope and impact of trade policy changes[108]. Additionally, robust corporate earnings and strong performance from technology stocks, particularly artificial intelligence-related companies, helped fuel the recovery.

Looking ahead, the market faces several key challenges and opportunities. The July 9, 2025 expiration of the tariff pause represents a significant event risk, with investors closely monitoring trade negotiations and the potential for either extended delays or renewed tariff implementation[109]. As we have previously discussed, Federal Reserve policy remains another critical factor, with markets pricing in (hoping for?) two 25-basis-point rate cuts by year-end 2025, contingent on inflation trends and economic data.

[99] https://www.marketwatch.com/investing/index/dwcf
[100] https://www.marketwatch.com/investing/index/spx
[101] See, e.g., https://www.spglobal.com/spdji/en/documents/commentary/market-attributes-us-equities-202503.pdf
[102] https://www.marketwatch.com/investing/index/spx
[103] https://www.nasdaq.com/articles/june-second-quarter-2025-review-and-outlook
[104] https://www.kiplinger.com/retirement/retirement-planning/second-quarter-2025-post-mortem-rebound-risks-and-generational-shifts
[105] https://fred.stlouisfed.org/series/VIXCLS
[106] Ibid.
[107] https://www.economist.com/finance-and-economics/2025/04/09/trumps-tariff-pause-brings-investors-relief-but-worries-remain
[108] https://time.com/7300389/trump-trade-deals-tariff-letters-deadline/
[109] https://www.ubs.com/us/en/wealth-management/insights/investment-research/potus-47/articles/reciprocal-tariff-pause-end.html

The remarkable turnaround in U.S. equity markets during 1H2025 demonstrates both the fragility and resilience of financial markets in an environment of heightened policy uncertainty. While the recovery has been impressive, ongoing geopolitical tensions, trade policy uncertainty, and elevated valuations suggest that volatility may continue to characterize market performance through the remainder of 2025.

Figure 39: SP500 as a function of the Dow-Jones Total Market Index



Source: Authors' calculation

Regression Analyses

The following section document the linear regression coefficients found for each of the aforementioned variables, as a function of other variables (which are not significantly correlated with the control variable). With this report, we have also included the natural log and the square of all variables as experimental (dependent) variables; these variables are denoted by a "LN_" prefix and a "_2" suffix below (respectively).

To compare the effectiveness of these regressions, we calculate the percentage error between the forecasted value (based on the given regression, using the values from the immediately preceding quarter) and the actual value for the period between 2Q2016 and 1Q2025, inclusive.

Table 4: Regression Aggregate Errors for 2Q2016 through 1Q2025

Variable	Min Abs. Error	Average Error	Max Abs. Error
Real GDP Growth	227.82%	***	***
Nominal GDP Growth	607.16%	***	***
Real Disposable Income Growth	790.64%	**	***
Nominal Disposable Income Growth	444.81%	**	***
Inflation	0.00%	***	***
Unemployment Rate	38.76%	-940.19%	***
1-month Treasury Yield	207.83%	**	***
3-month Treasury Yield	0.00%	-33.18%	521.28%
6-month Treasury Yield	1.33%	-6.23%	330.45%
1-year Treasury Yield	296.93%	**	***
3-year Treasury Yield	18.90%	127.05%	***
5-year Treasury Yield	760.48%	***	***
7-year Treasury Yield	1.41%	-11.15%	114.06%
10-year Treasury Yield	1.15%	-0.94%	81.89%
20-year Treasury Yield	0.03%	-8.28%	68.26%
30-year Treasury Yield	9.65%	-53.38%	97.24%
30-year Mortgage Rate	0.09%	1.77%	35.02%
Moody's AAA Curve	0.35%	2.93%	34.28%
Moody's BAA Curve	0.54%	-1.00%	27.04%
BBB Corporate Yield	102.52%	-241.05%	312.24%
Prime Rate	0.03%	-1.33%	17.69%
US Average Retail Gasoline Price	266.23%	**	***
Cost of Federal Funds	1.16%	151.85%	***
Dow Jones Total Stock Market Index	0.83%	48.25%	147.46%
S&P 500 Stock Price Index	82.74%	***	***
Commercial Real Estate Price Index	22.90%	139.46%	297.99%
Residential Home Price Index	15.35%	218.13%	313.47%
Market Volatility Index	0.11%	206.87%	***

** The indicated value has a percentage error less than -1000%.
*** The indicated value has a percentage error greater than 1000%.

Real & Nominal GDP Growth, Real & Nominal Disposable Income Growth, and CPI Inflation Rate

REGRESSION FOR REAL GDP GROWTH

	Dependent variable (+/- SE):
	Real GDP growth
Constant	-39.090 (+/- 9.960)
	p = 0.0005***
Unemployment Rate	-8.329 (+/- 0.447)
	p = 0.000***
10-year Treasury Yield	163.966 (+/- 16.850)
	p = 0.000***
LN_10-year Treasury Yield	-298.221 (+/- 24.824)
	p = 0.000***
7-year Treasury Yield	-56.490 (+/- 8.840)
	p = 0.00000***
LN_7-year Treasury Yield	175.715 (+/- 23.294)
	p = 0.00000***
LN_6-month Treasury Yield	-7.535 (+/- 2.592)
	p = 0.007***
LN_3-year Treasury Yield	-42.733 (+/- 6.770)
	p = 0.00000***
LN_1-year Treasury Yield	14.950 (+/- 4.532)
	p = 0.003***
10-year Treasury Yield_2	-8.470 (+/- 1.140)
	p = 0.00000***
Market Volatility Index_2	-0.002 (+/- 0.0003)
	p = 0.00000***
Observations	40
R^2	0.945
Adjusted R^2	0.925
Residual Std. Error	2.036 (df = 29)
F Statistic	49.405*** (df = 10; 29)
Note:	*p<0.1; **p< 0.5; ***p<0.01

REGRESSION FOR NOMINAL GDP GROWTH

	Dependent variable (+/- SE):
	Nominal GDP growth
Constant	-73.397 (+/- 11.882)
	p = 0.00000***
Unemployment Rate	-9.401 (+/- 0.507)
	p = 0.000***
Market Volatility Index	-0.513 (+/- 0.108)
	p = 0.00005***
LN_Market Volatility Index	12.084 (+/- 3.494)
	p = 0.002***
10-year Treasury Yield	173.051 (+/- 18.125)
	p = 0.000***
LN_10-year Treasury Yield	-317.595 (+/- 27.728)
	p = 0.000***
7-year Treasury Yield	-46.886 (+/- 10.131)
	p = 0.0001***
LN_7-year Treasury Yield	171.247 (+/- 22.067)
	p = 0.000***
LN_3-year Treasury Yield	-33.789 (+/- 3.414)
	p = 0.000***
10-year Treasury Yield_2	-10.257 (+/- 1.197)
	p = 0.000***
Observations	40
R^2	0.942
Adjusted R^2	0.925
Residual Std. Error	2.322 (df = 30)
F Statistic	54.276*** (df = 9; 30)
Note:	*p<0.1; **p< 0.5; ***p<0.01

REGRESSION FOR REAL DISPOSABLE INCOME GROWTH

	Dependent variable (+/- SE):
	Real disposable income growth
Constant	188.103 (+/- 22.302)
	p = 0.0002***
SP500 Stock Price Index	0.217 (+/- 0.009)
	p = 0.00000***
US Fed Reserve O-N Loan Rate	47.162 (+/- 6.850)
	p = 0.0005***
Moody's AAA Curve	-31.540 (+/- 7.457)
	p = 0.006***
Moody's BAA Curve	116.091 (+/- 4.357)
	p = 0.00000***
Nominal GDP growth	0.494 (+/- 0.129)
	p = 0.009***
Unemployment Rate	17.370 (+/- 1.413)
	p = 0.00002***
CPI Inflation Rate	-2.350 (+/- 0.409)
	p = 0.002***
BBB corporate yield	-37.272 (+/- 6.798)
	p = 0.002***
30-year Mortgate Rate	71.737 (+/- 4.045)
	p = 0.00001***
Dow Total Stock Market Index	-0.015 (+/- 0.001)
	p = 0.00000***
Home Price Index	-2.245 (+/- 0.166)
	p = 0.00002***
Commercial Real Estate Price Index	1.237 (+/- 0.068)
	p = 0.00001***
Market Volatility Index	-4.207 (+/- 0.197)
	p = 0.00000***
LN_Market Volatility Index	77.502 (+/- 4.606)
	p = 0.00001***
US Avg Retail Gasoline Price ($-gal; all grades, all formulations)	-52.769 (+/- 2.782)
	p = 0.00001***
LN_30-year Treasury Yield	-1,201.607 (+/- 39.686)
	p = 0.00000***
10-year Treasury Yield	-254.731 (+/- 28.960)

	p = 0.0002***
LN_10-year Treasury Yield	915.253 (+/- 61.865)
	p = 0.00001***
LN_7-year Treasury Yield	338.462 (+/- 34.385)
	p = 0.0001***
3-month Treasury Yield	263.274 (+/- 12.124)
	p = 0.00000***
5-year Treasury Yield	-145.280 (+/- 14.216)
	p = 0.0001***
LN_5-year Treasury Yield	-177.224 (+/- 33.013)
	p = 0.002***
6-month Treasury Yield	-959.892 (+/- 32.775)
	p = 0.00000***
LN_6-month Treasury Yield	39.836 (+/- 2.404)
	p = 0.00001***
LN_3-year Treasury Yield	-142.744 (+/- 12.765)
	p = 0.00004***
1-year Treasury Yield	769.234 (+/- 25.506)
	p = 0.00000***
1-year Treasury Yield_2	-119.076 (+/- 3.871)
	p = 0.00000***
3-year Treasury Yield_2	-43.067 (+/- 2.948)
	p = 0.00001***
6-month Treasury Yield_2	183.705 (+/- 6.090)
	p = 0.00000***
5-year Treasury Yield_2	33.228 (+/- 2.688)
	p = 0.00002***
3-month Treasury Yield_2	-78.981 (+/- 2.846)
	p = 0.00000***
7-year Treasury Yield_2	22.003 (+/- 4.052)
	p = 0.002***
20-year Treasury Yield_2	24.070 (+/- 2.882)
	p = 0.0002***
Observations	40
R^2	0.999
Adjusted R^2	0.995
Residual Std. Error	0.939 (df = 6)
F Statistic	227.358*** (df = 33; 6)

Note: *p<0.1; **p< 0.5; ***p<0.01

REGRESSION FOR NOMINAL DISPOSABLE INCOME GROWTH

	Dependent variable (+/- SE):
	Nominal disposable income growth
Constant	228.631 (+/- 37.162)
	p = 0.0002***
SP500 Stock Price Index	0.214 (+/- 0.010)
	p = 0.000***
Moody's BAA Curve	136.359 (+/- 7.245)
	p = 0.00000***
Real GDP growth	-6.293 (+/- 1.288)
	p = 0.001***
Nominal GDP growth	6.637 (+/- 1.178)
	p = 0.0004***
Unemployment Rate	16.591 (+/- 1.462)
	p = 0.00001***
CPI Inflation Rate	-3.597 (+/- 0.631)
	p = 0.0003***
BBB corporate yield	-71.216 (+/- 7.375)
	p = 0.00001***
30-year Mortgate Rate	90.824 (+/- 6.261)
	p = 0.00000***
Dow Total Stock Market Index	-0.015 (+/- 0.001)
	p = 0.000***
Home Price Index	-2.155 (+/- 0.215)
	p = 0.00001***
Commercial Real Estate Price Index	0.879 (+/- 0.113)
	p = 0.00003***
Market Volatility Index	-4.230 (+/- 0.243)
	p = 0.00000***
LN_Market Volatility Index	75.124 (+/- 5.705)
	p = 0.00000***
US Avg Retail Gasoline Price ($-gal; all grades, all formulations)	-61.472 (+/- 3.846)
	p = 0.00000***
LN_30-year Treasury Yield	-1,342.042 (+/- 58.806)
	p = 0.000***
10-year Treasury Yield	-293.041 (+/- 21.138)
	p = 0.00000***
LN_10-year Treasury Yield	1,080.492 (+/- 40.088)

	p = 0.000***
7-year Treasury Yield	266.926 (+/- 23.304)
	p = 0.00001***
3-month Treasury Yield	260.396 (+/- 18.779)
	p = 0.00000***
5-year Treasury Yield	-346.194 (+/- 25.866)
	p = 0.00000***
6-month Treasury Yield	-806.976 (+/- 41.447)
	p = 0.000***
LN_6-month Treasury Yield	35.188 (+/- 2.334)
	p = 0.00000***
LN_3-year Treasury Yield	-132.212 (+/- 8.182)
	p = 0.00000***
1-year Treasury Yield	673.938 (+/- 34.112)
	p = 0.000***
1-year Treasury Yield_2	-99.537 (+/- 5.192)
	p = 0.000***
3-year Treasury Yield_2	-50.314 (+/- 4.378)
	p = 0.00001***
6-month Treasury Yield_2	155.225 (+/- 6.745)
	p = 0.000***
5-year Treasury Yield_2	58.316 (+/- 5.074)
	p = 0.00001***
3-month Treasury Yield_2	-66.439 (+/- 3.196)
	p = 0.000***
20-year Treasury Yield_2	20.185 (+/- 3.025)
	p = 0.0001***
Observations	40
R^2	0.996
Adjusted R^2	0.984
Residual Std. Error	1.626 (df = 9)
F Statistic	82.200*** (df = 30; 9)
Note:	*p<0.1; **p< 0.5; ***p<0.01

REGRESSION FOR CPI INFLATION RATE

	Dependent variable (+/- SE):
	CPI Inflation Rate
Constant	79.389 (+/- 6.590)
	p = 0.00001***
SP500 Stock Price Index	0.005 (+/- 0.001)
	p = 0.00001***
US Fed Reserve O-N Loan Rate	23.753 (+/- 2.062)
	p = 0.00001***
Moody's AAA Curve	-19.848 (+/- 1.342)
	p = 0.00000***
Real GDP growth	0.709 (+/- 0.085)
	p = 0.00004***
Nominal GDP growth	-0.825 (+/- 0.090)
	p = 0.00002***
Real disposable income growth	-2.043 (+/- 0.082)
	p = 0.000***
Nominal disposable income growth	1.902 (+/- 0.077)
	p = 0.000***
BBB corporate yield	8.253 (+/- 0.591)
	p = 0.00000***
30-year Mortgate Rate	3.352 (+/- 0.368)
	p = 0.00002***
Prime Rate	-16.428 (+/- 1.531)
	p = 0.00001***
Dow Total Stock Market Index	-0.0004 (+/- 0.00004)
	p = 0.00001***
Commercial Real Estate Price Index	-0.043 (+/- 0.005)
	p = 0.00004***
Market Volatility Index	-0.192 (+/- 0.014)
	p = 0.00000***
LN_Market Volatility Index	3.183 (+/- 0.298)
	p = 0.00001***
30-year Treasury Yield	41.759 (+/- 3.759)
	p = 0.00001***
LN_30-year Treasury Yield	-129.318 (+/- 11.361)
	p = 0.00001***
20-year Treasury Yield	-14.085 (+/- 2.670)

	p = 0.001***
LN_20-year Treasury Yield	58.737 (+/- 7.279)
	p = 0.00005***
10-year Treasury Yield	18.710 (+/- 1.737)
	p = 0.00001***
LN_10-year Treasury Yield	-23.519 (+/- 2.955)
	p = 0.00005***
LN_1-month Treasury Yield	0.799 (+/- 0.116)
	p = 0.0002***
7-year Treasury Yield	-29.068 (+/- 2.380)
	p = 0.00001***
LN_7-year Treasury Yield	67.941 (+/- 4.717)
	p = 0.00000***
3-month Treasury Yield	-17.630 (+/- 1.648)
	p = 0.00001***
5-year Treasury Yield	-2.592 (+/- 0.655)
	p = 0.005***
6-month Treasury Yield	14.398 (+/- 1.567)
	p = 0.00002***
LN_6-month Treasury Yield	-9.910 (+/- 0.840)
	p = 0.00001***
3-year Treasury Yield	4.044 (+/- 1.104)
	p = 0.007***
LN_3-year Treasury Yield	-28.749 (+/- 2.190)
	p = 0.00001***
1-year Treasury Yield	-6.857 (+/- 1.093)
	p = 0.0003***
LN_1-year Treasury Yield	19.069 (+/- 1.455)
	p = 0.00001***
Observations	40
R^2	1.000
Adjusted R^2	0.999
Residual Std. Error	0.088 (df = 8)
F Statistic	1,203.716*** (df = 31; 8)
Note:	*p<0.1; **p< 0.5; ***p<0.01

Unemployment Rate

REGRESSION FOR UNEMPLOYMENT RATE

	Dependent variable (+/- SE):
	Unemployment Rate
Constant	-198.374 (+/- 10.877)
	p = 0.0004***
SP500 Stock Price Index	-0.020 (+/- 0.001)
	p = 0.001***
US Fed Reserve O-N Loan Rate	-51.359 (+/- 2.914)
	p = 0.0004***
Moody's AAA Curve	43.141 (+/- 2.273)
	p = 0.0004***
Real GDP growth	-1.366 (+/- 0.048)
	p = 0.0001***
Nominal GDP growth	1.540 (+/- 0.059)
	p = 0.0002***
Real disposable income growth	4.011 (+/- 0.177)
	p = 0.0002***
Nominal disposable income growth	-3.667 (+/- 0.160)
	p = 0.0002***
CPI Inflation Rate	1.842 (+/- 0.090)
	p = 0.0003***
BBB corporate yield	-18.999 (+/- 1.026)
	p = 0.0004***
30-year Mortgate Rate	-17.399 (+/- 1.005)
	p = 0.0005***
Prime Rate	42.192 (+/- 2.414)
	p = 0.0005***
Dow Total Stock Market Index	0.002 (+/- 0.0001)
	p = 0.001***
Commercial Real Estate Price Index	0.111 (+/- 0.008)
	p = 0.001***
Market Volatility Index	0.522 (+/- 0.034)
	p = 0.001***
LN_Market Volatility Index	-7.387 (+/- 0.499)
	p = 0.001***
US Avg Retail Gasoline Price ($-gal; all grades, all formulations)	2.952 (+/- 0.246)
	p = 0.002***

30-year Treasury Yield	-153.805 (+/- 9.374)
	p = 0.0005***
LN_30-year Treasury Yield	462.812 (+/- 28.616)
	p = 0.001***
20-year Treasury Yield	100.108 (+/- 5.396)
	p = 0.0004***
LN_20-year Treasury Yield	-267.748 (+/- 13.699)
	p = 0.0003***
10-year Treasury Yield	-39.728 (+/- 4.181)
	p = 0.003***
1-month Treasury Yield	-3.748 (+/- 0.446)
	p = 0.004***
LN_1-month Treasury Yield	-2.099 (+/- 0.083)
	p = 0.0002***
LN_7-year Treasury Yield	-49.904 (+/- 3.273)
	p = 0.001***
3-month Treasury Yield	48.289 (+/- 2.346)
	p = 0.0003***
5-year Treasury Yield	111.914 (+/- 6.950)
	p = 0.001***
LN_5-year Treasury Yield	-109.566 (+/- 6.526)
	p = 0.0005***
6-month Treasury Yield	-52.881 (+/- 2.924)
	p = 0.0004***
LN_6-month Treasury Yield	29.871 (+/- 1.515)
	p = 0.0003***
3-year Treasury Yield	-39.957 (+/- 2.330)
	p = 0.0005***
LN_3-year Treasury Yield	104.857 (+/- 5.837)
	p = 0.0004***
1-year Treasury Yield	18.429 (+/- 1.054)
	p = 0.0005***
LN_1-year Treasury Yield	-55.098 (+/- 2.934)
	p = 0.0004***
3-year Treasury Yield_2	6.907 (+/- 0.411)
	p = 0.0005***
5-year Treasury Yield_2	-11.197 (+/- 0.775)
	p = 0.001***
10-year Treasury Yield_2	3.837 (+/- 0.559)

	p = 0.007***
Observations	40
R^2	1.000
Adjusted R^2	1.000
Residual Std. Error	0.036 (df = 3)
F Statistic	2,411.268*** (df = 36; 3)
Note:	*p<0.1; **p< 0.5; ***p<0.01

Treasury Yields (1, 3, & 6-month; 1, 3, 5, 7, 10, 20, & 30-year series)

REGRESSION FOR 1-MONTH TREASURY YIELD

	Dependent variable (+/- SE):
	1-month Treasury Yield
Constant	-10.562 (+/- 3.335)
	p = 0.004***
Moody's AAA Curve	-2.615 (+/- 0.681)
	p = 0.001***
Nominal GDP growth	-0.070 (+/- 0.017)
	p = 0.0004***
Unemployment Rate	-0.887 (+/- 0.149)
	p = 0.00001***
CPI Inflation Rate	-0.185 (+/- 0.044)
	p = 0.0003***
Dow Total Stock Market Index	0.0001 (+/- 0.00002)
	p = 0.0004***
LN_30-year Treasury Yield	12.443 (+/- 3.439)
	p = 0.002***
10-year Treasury Yield	49.387 (+/- 11.758)
	p = 0.0003***
LN_10-year Treasury Yield	-56.510 (+/- 11.304)
	p = 0.00004***
7-year Treasury Yield	-31.186 (+/- 8.196)
	p = 0.001***
LN_7-year Treasury Yield	27.557 (+/- 6.569)
	p = 0.0003***
7-year Treasury Yield_2	3.992 (+/- 0.986)
	p = 0.0004***
10-year Treasury Yield_2	-5.301 (+/- 1.287)
	p = 0.0004***
Observations	40
R^2	0.975
Adjusted R^2	0.964
Residual Std. Error	0.372 (df = 27)
F Statistic	88.127*** (df = 12; 27)
Note:	*p<0.1; **p< 0.5; ***p<0.01

REGRESSION FOR 3-MONTH TREASURY YIELD

	Dependent variable (+/- SE):
	3-month Treasury Yield
Constant	-1.206 (+/- 1.174)
	p = 0.313
SP500 Stock Price Index	-0.001 (+/- 0.0002)
	p = 0.002***
Moody's AAA Curve	-2.973 (+/- 0.599)
	p = 0.00003***
Real GDP growth	0.309 (+/- 0.059)
	p = 0.00002***
Nominal GDP growth	-0.284 (+/- 0.055)
	p = 0.00002***
Home Price Index	0.036 (+/- 0.006)
	p = 0.00001***
LN_30-year Treasury Yield	11.201 (+/- 3.677)
	p = 0.005***
20-year Treasury Yield	3.806 (+/- 0.796)
	p = 0.00005***
LN_20-year Treasury Yield	-16.425 (+/- 3.970)
	p = 0.0003***
LN_7-year Treasury Yield	3.841 (+/- 0.733)
	p = 0.00002***
Observations	40
R^2	0.972
Adjusted R^2	0.964
Residual Std. Error	0.360 (df = 30)
F Statistic	115.868*** (df = 9; 30)
Note:	*p<0.1; **p< 0.5; ***p<0.01

REGRESSION FOR 6-MONTH TREASURY YIELD

	Dependent variable (+/- SE):
	6-month Treasury Yield
Constant	-6.941 (+/- 2.685)
	p = 0.016**
Moody's AAA Curve	-1.794 (+/- 0.494)
	p = 0.002***
Nominal GDP growth	-0.089 (+/- 0.014)
	p = 0.00000***
Unemployment Rate	-0.913 (+/- 0.110)
	p = 0.000***
CPI Inflation Rate	-0.137 (+/- 0.032)
	p = 0.0002***
Dow Total Stock Market Index	0.0001 (+/- 0.00001)
	p = 0.00001***
30-year Treasury Yield	-16.510 (+/- 3.669)
	p = 0.0002***
LN_30-year Treasury Yield	50.146 (+/- 9.468)
	p = 0.00002***
10-year Treasury Yield	52.433 (+/- 8.637)
	p = 0.00001***
LN_10-year Treasury Yield	-68.943 (+/- 9.314)
	p = 0.00000***
7-year Treasury Yield	-32.196 (+/- 6.029)
	p = 0.00002***
LN_7-year Treasury Yield	30.078 (+/- 5.055)
	p = 0.00001***
7-year Treasury Yield_2	3.488 (+/- 0.720)
	p = 0.0001***
10-year Treasury Yield_2	-4.019 (+/- 0.980)
	p = 0.0004***
Observations	40
R^2	0.987
Adjusted R^2	0.980
Residual Std. Error	0.269 (df = 26)
F Statistic	150.633*** (df = 13; 26)
Note:	*p<0.1; **p< 0.5; ***p<0.01

REGRESSION FOR 1-YEAR TREASURY YIELD

	Dependent variable (+/- SE):
	1-year Treasury Yield
Constant	0.033 (+/- 0.515)
	p = 0.950
Moody's AAA Curve	-2.582 (+/- 0.377)
	p = 0.00000***
Real GDP growth	0.089 (+/- 0.026)
	p = 0.002***
Nominal GDP growth	-0.083 (+/- 0.024)
	p = 0.002***
30-year Mortgate Rate	1.982 (+/- 0.234)
	p = 0.000***
LN_30-year Treasury Yield	4.140 (+/- 1.393)
	p = 0.006***
20-year Treasury Yield	-1.905 (+/- 0.553)
	p = 0.002***
10-year Treasury Yield	1.623 (+/- 0.540)
	p = 0.006***
Observations	40
R^2	0.984
Adjusted R^2	0.980
Residual Std. Error	0.252 (df = 32)
F Statistic	278.309*** (df = 7; 32)
Note:	*p<0.1; **p< 0.5; ***p<0.01

REGRESSION FOR 3-YEAR TREASURY YIELD

	Dependent variable (+/- SE):
	3-year Treasury Yield
Constant	4.812 (+/- 1.955)
	p = 0.021**
Moody's AAA Curve	-1.616 (+/- 0.303)
	p = 0.00001***
Moody's BAA Curve	-0.870 (+/- 0.200)
	p = 0.0002***
Unemployment Rate	-0.191 (+/- 0.025)
	p = 0.00000***
BBB corporate yield	1.563 (+/- 0.143)
	p = 0.000***
30-year Treasury Yield	-32.442 (+/- 8.198)
	p = 0.0005***
LN_30-year Treasury Yield	45.787 (+/- 11.324)
	p = 0.0004***
20-year Treasury Yield	28.384 (+/- 5.578)
	p = 0.00002***
LN_20-year Treasury Yield	-37.112 (+/- 7.331)
	p = 0.00003***
20-year Treasury Yield_2	-2.554 (+/- 0.514)
	p = 0.00003***
30-year Treasury Yield_2	3.066 (+/- 0.729)
	p = 0.0003***
Observations	40
R^2	0.995
Adjusted R^2	0.994
Residual Std. Error	0.115 (df = 29)
F Statistic	599.067*** (df = 10; 29)
Note:	*p<0.1; **p< 0.5; ***p<0.01

REGRESSION FOR 5-YEAR TREASURY YIELD

	Dependent variable (+/- SE):
	5-year Treasury Yield
Constant	-11.393 (+/- 1.757)
	p = 0.00000***
Real GDP growth	-0.020 (+/- 0.005)
	p = 0.0003***
Unemployment Rate	-0.277 (+/- 0.044)
	p = 0.00000***
US Avg Retail Gasoline Price ($-gal; all grades, all formulations)	0.269 (+/- 0.070)
	p = 0.001***
30-year Treasury Yield	17.951 (+/- 2.657)
	p = 0.00000***
LN_30-year Treasury Yield	-25.285 (+/- 3.778)
	p = 0.00000***
30-year Treasury Yield_2	-1.326 (+/- 0.224)
	p = 0.00001***
Observations	40
R^2	0.978
Adjusted R^2	0.974
Residual Std. Error	0.200 (df = 33)
F Statistic	246.281*** (df = 6; 33)
Note:	*p<0.1; **p< 0.5; ***p<0.01

REGRESSION FOR 7-YEAR TREASURY YIELD

	Dependent variable (+/- SE):
	7-year Treasury Yield
Constant	1.067 (+/- 0.346)
	p = 0.005***
SP500 Stock Price Index	0.001 (+/- 0.0001)
	p = 0.000***
Real GDP growth	-0.129 (+/- 0.021)
	p = 0.00000***
Nominal GDP growth	0.125 (+/- 0.019)
	p = 0.00000***
BBB corporate yield	0.784 (+/- 0.056)
	p = 0.000***
Home Price Index	-0.019 (+/- 0.003)
	p = 0.00000***
LN_Market Volatility Index	-0.253 (+/- 0.072)
	p = 0.002***
6-month Treasury Yield	0.277 (+/- 0.045)
	p = 0.00000***
Observations	40
R^2	0.986
Adjusted R^2	0.983
Residual Std. Error	0.147 (df = 32)
F Statistic	330.055*** (df = 7; 32)
Note:	*p<0.1; **p< 0.5; ***p<0.01

REGRESSION FOR 10-YEAR TREASURY YIELD

	Dependent variable (+/- SE):
	10-year Treasury Yield
Constant	5.229 (+/- 0.395)
	p = 0.000***
SP500 Stock Price Index	0.0004 (+/- 0.0001)
	p = 0.00001***
Unemployment Rate	-0.124 (+/- 0.024)
	p = 0.00001***
Commercial Real Estate Price Index	-0.017 (+/- 0.002)
	p = 0.000***
1-month Treasury Yield	-0.604 (+/- 0.097)
	p = 0.00000***
LN_6-month Treasury Yield	-0.256 (+/- 0.058)
	p = 0.0001***
1-year Treasury Yield	1.361 (+/- 0.122)
	p = 0.000***
Observations	40
R^2	0.970
Adjusted R^2	0.964
Residual Std. Error	0.201 (df = 33)
F Statistic	175.244*** (df = 6; 33)
Note:	*p<0.1; **p< 0.5; ***p<0.01

REGRESSION FOR 20-YEAR TREASURY YIELD

	Dependent variable (+/- SE):
	20-year Treasury Yield
Constant	0.396 (+/- 0.147)
	p = 0.012**
US Fed Reserve O-N Loan Rate	2.039 (+/- 0.475)
	p = 0.0002***
1-month Treasury Yield	-1.617 (+/- 0.468)
	p = 0.002***
3-year Treasury Yield	1.719 (+/- 0.137)
	p = 0.000***
1-year Treasury Yield	-0.973 (+/- 0.167)
	p = 0.00001***
LN_1-year Treasury Yield	-0.354 (+/- 0.057)
	p = 0.00000***
Observations	40
R^2	0.975
Adjusted R^2	0.971
Residual Std. Error	0.168 (df = 34)
F Statistic	262.724*** (df = 5; 34)
Note:	*p<0.1; **p< 0.5; ***p<0.01

REGRESSION FOR 30-YEAR TREASURY YIELD

	Dependent variable (+/- SE):
	30-year Treasury Yield
Constant	0.436 (+/- 0.190)
	p = 0.029**
US Fed Reserve O-N Loan Rate	0.260 (+/- 0.037)
	p = 0.00000***
BBB corporate yield	0.275 (+/- 0.051)
	p = 0.00001***
LN_5-year Treasury Yield	2.028 (+/- 0.233)
	p = 0.000***
LN_3-year Treasury Yield	-1.402 (+/- 0.165)
	p = 0.000***
3-year Treasury Yield_2	-0.228 (+/- 0.039)
	p = 0.00001***
5-year Treasury Yield_2	0.251 (+/- 0.044)
	p = 0.00001***
Observations	40
R^2	0.984
Adjusted R^2	0.982
Residual Std. Error	0.117 (df = 33)
F Statistic	346.014*** (df = 6; 33)
Note:	*p<0.1; **p< 0.5; ***p<0.01

30-year Mortgage Rate

REGRESSION FOR 30-YEAR MORTGATE RATE

	Dependent variable (+/- SE):
	30-year Mortgate Rate
Constant	4.115 (+/- 0.279)
	p = 0.000***
Dow Total Stock Market Index	-0.00005 (+/- 0.00001)
	p = 0.00001***
Home Price Index	0.023 (+/- 0.003)
	p = 0.000***
Commercial Real Estate Price Index	-0.016 (+/- 0.002)
	p = 0.000***
LN_6-month Treasury Yield	-0.724 (+/- 0.126)
	p = 0.00001***
1-year Treasury Yield	0.651 (+/- 0.054)
	p = 0.000***
LN_1-year Treasury Yield	0.731 (+/- 0.148)
	p = 0.00003***
Observations	40
R^2	0.988
Adjusted R^2	0.986
Residual Std. Error	0.162 (df = 33)
F Statistic	459.062*** (df = 6; 33)
Note:	*p<0.1; **p< 0.5; ***p<0.01

Moody's AAA & BAA Rates

REGRESSION FOR MOODY'S AAA CURVE

	Dependent variable (+/- SE):
	Moody's AAA Curve
Constant	2.127 (+/- 0.201)
	p = 0.000***
US Fed Reserve O-N Loan Rate	2.335 (+/- 0.510)
	p = 0.0001***
Real GDP growth	0.270 (+/- 0.047)
	p = 0.00001***
Nominal GDP growth	-0.269 (+/- 0.048)
	p = 0.00001***
Real disposable income growth	-0.170 (+/- 0.050)
	p = 0.003***
Nominal disposable income growth	0.165 (+/- 0.048)
	p = 0.002***
1-month Treasury Yield	-2.880 (+/- 0.484)
	p = 0.00001***
3-year Treasury Yield	1.288 (+/- 0.102)
	p = 0.000***
LN_1-year Treasury Yield	-0.309 (+/- 0.083)
	p = 0.001***
3-month Treasury Yield_2	-0.152 (+/- 0.035)
	p = 0.0002***
1-month Treasury Yield_2	0.184 (+/- 0.029)
	p = 0.00000***
Observations	40
R^2	0.972
Adjusted R^2	0.962
Residual Std. Error	0.160 (df = 29)
F Statistic	99.599*** (df = 10; 29)
Note:	*p<0.1; **p< 0.5; ***p<0.01

REGRESSION FOR MOODY'S BAA CURVE

	Dependent variable (+/- SE):
	Moody's BAA Curve
Constant	0.274 (+/- 0.577)
	p = 0.639
SP500 Stock Price Index	-0.001 (+/- 0.0001)
	p = 0.00000***
Real GDP growth	0.126 (+/- 0.025)
	p = 0.00003***
Nominal GDP growth	-0.119 (+/- 0.023)
	p = 0.00002***
Home Price Index	0.018 (+/- 0.004)
	p = 0.00002***
LN_Market Volatility Index	0.309 (+/- 0.111)
	p = 0.010***
7-year Treasury Yield	1.626 (+/- 0.201)
	p = 0.000***
3-year Treasury Yield	-0.862 (+/- 0.180)
	p = 0.00004***
Observations	40
R^2	0.946
Adjusted R^2	0.934
Residual Std. Error	0.218 (df = 32)
F Statistic	80.052*** (df = 7; 32)
Note:	*p<0.1; **p< 0.5; ***p<0.01

BBB Corporate Yield

REGRESSION FOR BBB CORPORATE YIELD

	Dependent variable (+/- SE):
	BBB corporate yield
Constant	0.633 (+/- 0.519)
	p = 0.233
US Fed Reserve O-N Loan Rate	-0.360 (+/- 0.061)
	p = 0.00001***
Real GDP growth	0.085 (+/- 0.019)
	p = 0.0002***
Nominal GDP growth	-0.072 (+/- 0.019)
	p = 0.001***
Unemployment Rate	0.220 (+/- 0.046)
	p = 0.00004***
LN_30-year Treasury Yield	2.821 (+/- 0.448)
	p = 0.00000***
LN_3-year Treasury Yield	0.707 (+/- 0.111)
	p = 0.00000***
3-year Treasury Yield_2	0.316 (+/- 0.041)
	p = 0.000***
7-year Treasury Yield_2	-0.282 (+/- 0.057)
	p = 0.00003***
Market Volatility Index_2	0.0001 (+/- 0.00003)
	p = 0.002***
Observations	40
R^2	0.980
Adjusted R^2	0.974
Residual Std. Error	0.178 (df = 30)
F Statistic	163.834*** (df = 9; 30)
Note:	*p<0.1; **p< 0.5; ***p<0.01

Prime Rate

REGRESSION FOR PRIME RATE

	Dependent variable (+/- SE):
	Prime Rate
Constant	-1.683 (+/- 0.397)
	p = 0.0002***
Real GDP growth	0.477 (+/- 0.049)
	p = 0.000***
Nominal GDP growth	-0.437 (+/- 0.044)
	p = 0.000***
Home Price Index	0.029 (+/- 0.002)
	p = 0.000***
LN_7-year Treasury Yield	1.325 (+/- 0.168)
	p = 0.000***
Observations	40
R^2	0.937
Adjusted R^2	0.930
Residual Std. Error	0.497 (df = 35)
F Statistic	130.855*** (df = 4; 35)
Note:	*p<0.1; **p< 0.5; ***p<0.01

US Average Retail Gasoline Price

REGRESSION FOR US AVG RETAIL GASOLINE PRICE (-GAL; ALL GRADES, ALL FORMULATIONS)

	Dependent variable (+/- SE):
	US Avg Retail Gasoline Price ($-gal; all grades, all formulations)
Constant	-40.421 (+/- 3.011)
	p = 0.00002***
US Fed Reserve O-N Loan Rate	-11.436 (+/- 0.889)
	p = 0.00002***
Moody's AAA Curve	8.536 (+/- 0.553)
	p = 0.00001***
Real GDP growth	-0.231 (+/- 0.043)
	p = 0.002***
Nominal GDP growth	0.317 (+/- 0.040)
	p = 0.0003***
Real disposable income growth	0.877 (+/- 0.061)
	p = 0.00001***
Nominal disposable income growth	-0.826 (+/- 0.058)
	p = 0.00001***
Unemployment Rate	0.472 (+/- 0.091)
	p = 0.003***
CPI Inflation Rate	0.514 (+/- 0.038)
	p = 0.00002***
BBB corporate yield	-3.202 (+/- 0.206)
	p = 0.00001***
Prime Rate	8.349 (+/- 0.744)
	p = 0.00003***
Home Price Index	-0.018 (+/- 0.003)
	p = 0.002***
Commercial Real Estate Price Index	0.036 (+/- 0.004)
	p = 0.0002***
Market Volatility Index	0.049 (+/- 0.006)
	p = 0.0002***
LN_Market Volatility Index	-0.912 (+/- 0.147)
	p = 0.001***
LN_30-year Treasury Yield	10.871 (+/- 2.007)
	p = 0.002***
LN_20-year Treasury Yield	-13.544 (+/- 1.514)
	p = 0.0002***

10-year Treasury Yield	-19.069 (+/- 2.274)
	p = 0.0002***
LN_10-year Treasury Yield	37.002 (+/- 4.224)
	p = 0.0002***
LN_1-month Treasury Yield	-0.483 (+/- 0.083)
	p = 0.002***
7-year Treasury Yield	16.353 (+/- 1.655)
	p = 0.0001***
LN_7-year Treasury Yield	-30.643 (+/- 2.909)
	p = 0.00005***
3-month Treasury Yield	7.150 (+/- 0.679)
	p = 0.00005***
LN_5-year Treasury Yield	-5.954 (+/- 0.838)
	p = 0.0004***
6-month Treasury Yield	-7.867 (+/- 0.705)
	p = 0.00004***
LN_6-month Treasury Yield	4.129 (+/- 0.342)
	p = 0.00002***
3-year Treasury Yield	-4.379 (+/- 0.734)
	p = 0.001***
LN_3-year Treasury Yield	12.858 (+/- 1.014)
	p = 0.00002***
1-year Treasury Yield	6.540 (+/- 0.715)
	p = 0.0001***
LN_1-year Treasury Yield	-7.288 (+/- 0.522)
	p = 0.00001***
1-year Treasury Yield_2	-1.020 (+/- 0.117)
	p = 0.0002***
6-month Treasury Yield_2	0.712 (+/- 0.094)
	p = 0.0003***
5-year Treasury Yield_2	0.915 (+/- 0.083)
	p = 0.00004***
30-year Treasury Yield_2	-0.738 (+/- 0.121)
	p = 0.001***
Observations	40
R^2	0.999
Adjusted R^2	0.995
Residual Std. Error	0.045 (df = 6)
F Statistic	226.369*** (df = 33; 6)

Note: *p<0.1; **p< 0.5; ***p<0.01

US Federal Reserve Overnight Lending Rate

REGRESSION FOR US FED RESERVE O-N LOAN RATE

	Dependent variable (+/- SE):
	US Fed Reserve O-N Loan Rate
Constant	-6.797 (+/- 2.138)
	p = 0.004***
Moody's AAA Curve	-2.907 (+/- 0.551)
	p = 0.00001***
CPI Inflation Rate	-0.139 (+/- 0.039)
	p = 0.002***
Commercial Real Estate Price Index	0.026 (+/- 0.005)
	p = 0.00003***
LN_30-year Treasury Yield	21.236 (+/- 3.829)
	p = 0.00001***
20-year Treasury Yield	5.276 (+/- 0.628)
	p = 0.000***
LN_20-year Treasury Yield	-28.077 (+/- 4.027)
	p = 0.00000***
LN_7-year Treasury Yield	3.989 (+/- 0.763)
	p = 0.00002***
Observations	40
R^2	0.962
Adjusted R^2	0.954
Residual Std. Error	0.405 (df = 32)
F Statistic	116.006*** (df = 7; 32)
Note:	*p<0.1; **p< 0.5; ***p<0.01

Dow Jones Total Stock Market Index (end-of-quarter) and S&P 500 (quarterly average)

REGRESSION FOR DOW TOTAL STOCK MARKET INDEX

	Dependent variable (+/- SE):
	Dow Total Stock Market Index
Constant	97,879.910 (+/- 9,703.190)
	p = 0.000***
Moody's AAA Curve	-19,296.130 (+/- 2,814.191)
	p = 0.00000***
Real disposable income growth	-1,474.545 (+/- 289.367)
	p = 0.00003***
Nominal disposable income growth	1,387.392 (+/- 282.943)
	p = 0.00004***
Unemployment Rate	2,218.750 (+/- 652.386)
	p = 0.003***
7-year Treasury Yield	-38,062.510 (+/- 8,262.006)
	p = 0.0001***
LN_7-year Treasury Yield	41,164.780 (+/- 8,941.571)
	p = 0.0001***
1-year Treasury Yield_2	-7,084.111 (+/- 1,208.329)
	p = 0.00001***
3-year Treasury Yield_2	6,613.823 (+/- 1,382.591)
	p = 0.0001***
3-month Treasury Yield_2	6,877.108 (+/- 1,433.580)
	p = 0.00005***
1-month Treasury Yield_2	-2,540.540 (+/- 822.365)
	p = 0.005***
20-year Treasury Yield_2	4,028.921 (+/- 723.061)
	p = 0.00001***
Observations	40
R^2	0.964
Adjusted R^2	0.950
Residual Std. Error	2,462.602 (df = 28)
F Statistic	69.076*** (df = 11; 28)
Note:	*p<0.1; **p< 0.5; ***p<0.01

REGRESSION FOR SP500 STOCK PRICE INDEX

	Dependent variable (+/- SE):
	SP500 Stock Price Index
Constant	10,584.590 (+/- 1,073.143)
	p = 0.00000***
Moody's BAA Curve	3,372.823 (+/- 539.745)
	p = 0.00001***
Real GDP growth	-442.736 (+/- 70.474)
	p = 0.00001***
Nominal GDP growth	472.813 (+/- 71.730)
	p = 0.00001***
Nominal disposable income growth	-13.727 (+/- 3.129)
	p = 0.0005***
Unemployment Rate	388.014 (+/- 89.512)
	p = 0.0005***
CPI Inflation Rate	-259.781 (+/- 54.396)
	p = 0.0002***
BBB corporate yield	-3,322.849 (+/- 511.068)
	p = 0.00001***
LN_30-year Treasury Yield	-9,341.784 (+/- 2,126.854)
	p = 0.0004***
LN_20-year Treasury Yield	-22,234.160 (+/- 4,123.234)
	p = 0.00005***
10-year Treasury Yield	-6,340.699 (+/- 1,104.255)
	p = 0.00003***
LN_10-year Treasury Yield	21,637.920 (+/- 3,092.964)
	p = 0.00001***
3-month Treasury Yield	3,764.953 (+/- 822.205)
	p = 0.0003***
6-month Treasury Yield	-8,558.827 (+/- 1,679.650)
	p = 0.0001***
LN_6-month Treasury Yield	2,058.179 (+/- 308.363)
	p = 0.00001***
3-year Treasury Yield	5,295.320 (+/- 845.403)
	p = 0.00001***
1-year Treasury Yield	4,152.362 (+/- 1,348.406)
	p = 0.007***
LN_1-year Treasury Yield	-3,063.130 (+/- 417.239)

	p = 0.00001***
1-year Treasury Yield_2	-794.313 (+/- 154.913)
	p = 0.0001***
6-month Treasury Yield_2	1,170.073 (+/- 189.006)
	p = 0.00001***
5-year Treasury Yield_2	-881.369 (+/- 158.692)
	p = 0.00004***
1-month Treasury Yield_2	-419.515 (+/- 68.824)
	p = 0.00002***
20-year Treasury Yield_2	1,640.190 (+/- 187.202)
	p = 0.00000***
Observations	40
R^2	0.993
Adjusted R^2	0.983
Residual Std. Error	141.586 (df = 17)
F Statistic	104.659*** (df = 22; 17)
Note:	*p<0.1; **p< 0.5; ***p<0.01

House and Commercial Real Estate Price Indexes

REGRESSION FOR HOME PRICE INDEX

	Dependent variable (+/- SE):
	Home Price Index
Constant	5.004 (+/- 50.076)
	p = 0.923
US Fed Reserve O-N Loan Rate	-256.823 (+/- 23.912)
	p = 0.00001***
Moody's AAA Curve	227.296 (+/- 14.755)
	p = 0.00000***
Moody's BAA Curve	177.462 (+/- 10.721)
	p = 0.00000***
Real GDP growth	-23.420 (+/- 1.652)
	p = 0.00000***
Nominal GDP growth	23.187 (+/- 1.620)
	p = 0.00000***
Real disposable income growth	13.641 (+/- 1.373)
	p = 0.00001***
Nominal disposable income growth	-13.764 (+/- 1.345)
	p = 0.00001***
Unemployment Rate	15.268 (+/- 1.333)
	p = 0.00001***
BBB corporate yield	-257.841 (+/- 14.742)
	p = 0.00000***
30-year Mortgate Rate	48.340 (+/- 6.790)
	p = 0.0002***
Prime Rate	207.194 (+/- 14.088)
	p = 0.00000***
LN_Market Volatility Index	8.748 (+/- 1.235)
	p = 0.0002***
US Avg Retail Gasoline Price ($-gal; all grades, all formulations)	-31.111 (+/- 2.320)
	p = 0.00000***
LN_30-year Treasury Yield	-853.692 (+/- 44.768)
	p = 0.00000***
20-year Treasury Yield	-1,616.356 (+/- 88.943)
	p = 0.00000***
LN_20-year Treasury Yield	1,596.889 (+/- 116.121)
	p = 0.00000***

10-year Treasury Yield	792.157 (+/- 47.086)
	p = 0.00000***
1-month Treasury Yield	-173.570 (+/- 8.992)
	p = 0.00000***
LN_1-month Treasury Yield	21.823 (+/- 1.831)
	p = 0.00001***
LN_7-year Treasury Yield	-379.435 (+/- 42.441)
	p = 0.00002***
3-month Treasury Yield	234.615 (+/- 19.896)
	p = 0.00001***
5-year Treasury Yield	-193.901 (+/- 17.946)
	p = 0.00001***
LN_5-year Treasury Yield	299.328 (+/- 31.004)
	p = 0.00002***
LN_6-month Treasury Yield	29.107 (+/- 4.780)
	p = 0.0003***
3-year Treasury Yield	189.805 (+/- 10.331)
	p = 0.00000***
LN_1-year Treasury Yield	-111.182 (+/- 6.348)
	p = 0.00000***
3-year Treasury Yield_2	-17.730 (+/- 1.643)
	p = 0.00001***
3-month Treasury Yield_2	5.734 (+/- 0.380)
	p = 0.00000***
7-year Treasury Yield_2	48.780 (+/- 6.149)
	p = 0.00005***
10-year Treasury Yield_2	-140.230 (+/- 8.321)
	p = 0.00000***
20-year Treasury Yield_2	169.612 (+/- 7.597)
	p = 0.00000***
Observations	40
R^2	1.000
Adjusted R^2	0.999
Residual Std. Error	1.262 (df = 8)
F Statistic	2,174.686*** (df = 31; 8)
Note:	*p<0.1; **p< 0.5; ***p<0.01

REGRESSION FOR COMMERCIAL REAL ESTATE PRICE INDEX

	Dependent variable (+/- SE):
	Commercial Real Estate Price Index
Constant	250.603 (+/- 38.803)
	p = 0.00001***
US Fed Reserve O-N Loan Rate	57.899 (+/- 15.755)
	p = 0.002***
Real GDP growth	-2.927 (+/- 0.911)
	p = 0.005***
Nominal GDP growth	2.933 (+/- 0.825)
	p = 0.002***
Market Volatility Index	-1.184 (+/- 0.230)
	p = 0.00005***
LN_Market Volatility Index	36.476 (+/- 7.313)
	p = 0.0001***
US Avg Retail Gasoline Price ($-gal; all grades, all formulations)	14.226 (+/- 4.853)
	p = 0.009***
30-year Treasury Yield	268.056 (+/- 74.170)
	p = 0.002***
LN_30-year Treasury Yield	-1,010.505 (+/- 163.784)
	p = 0.00001***
10-year Treasury Yield	-178.461 (+/- 47.512)
	p = 0.002***
LN_10-year Treasury Yield	442.594 (+/- 75.340)
	p = 0.00001***
1-month Treasury Yield	-59.164 (+/- 15.528)
	p = 0.002***
5-year Treasury Yield	151.268 (+/- 32.799)
	p = 0.0002***
LN_5-year Treasury Yield	-96.381 (+/- 26.586)
	p = 0.002***
LN_6-month Treasury Yield	28.206 (+/- 6.490)
	p = 0.0004***
LN_1-year Treasury Yield	-33.503 (+/- 9.476)
	p = 0.003***
1-year Treasury Yield_2	14.615 (+/- 1.335)
	p = 0.000***
5-year Treasury Yield_2	-33.621 (+/- 3.629)

	p = 0.000***
3-month Treasury Yield_2	-7.494 (+/- 1.103)
	p = 0.00001***
20-year Treasury Yield_2	15.736 (+/- 3.560)
	p = 0.0003***
Observations	40
R^2	0.993
Adjusted R^2	0.986
Residual Std. Error	4.125 (df = 20)
F Statistic	146.443*** (df = 19; 20)
Note:	*p<0.1; **p< 0.5; ***p<0.01

Market Volatility Index

REGRESSION FOR MARKET VOLATILITY INDEX

	Dependent variable (+/- SE):
	Market Volatility Index
Constant	1,128.019 (+/- 111.119)
	p = 0.00000***
US Fed Reserve O-N Loan Rate	210.654 (+/- 30.979)
	p = 0.00003***
Moody's AAA Curve	-152.996 (+/- 16.677)
	p = 0.00001***
Nominal GDP growth	-0.493 (+/- 0.092)
	p = 0.0003***
Real disposable income growth	-13.049 (+/- 2.284)
	p = 0.0002***
Nominal disposable income growth	11.990 (+/- 2.157)
	p = 0.0002***
CPI Inflation Rate	-13.312 (+/- 1.655)
	p = 0.00001***
BBB corporate yield	50.886 (+/- 6.286)
	p = 0.00001***
30-year Mortgate Rate	31.282 (+/- 8.484)
	p = 0.004***
Prime Rate	-295.470 (+/- 28.072)
	p = 0.00000***
Dow Total Stock Market Index	-0.004 (+/- 0.0004)
	p = 0.00000***
Home Price Index	2.443 (+/- 0.185)
	p = 0.00000***
Commercial Real Estate Price Index	-1.262 (+/- 0.133)
	p = 0.00001***
US Avg Retail Gasoline Price ($-gal; all grades, all formulations)	29.520 (+/- 3.832)
	p = 0.00001***
30-year Treasury Yield	580.881 (+/- 64.854)
	p = 0.00001***
LN_30-year Treasury Yield	-1,295.930 (+/- 136.247)
	p = 0.00001***
20-year Treasury Yield	-382.999 (+/- 59.398)
	p = 0.00005***

LN_20-year Treasury Yield	591.828 (+/- 113.970)
	p = 0.0003***
1-month Treasury Yield	227.632 (+/- 24.976)
	p = 0.00001***
LN_7-year Treasury Yield	452.801 (+/- 39.779)
	p = 0.00000***
3-month Treasury Yield	-130.871 (+/- 23.752)
	p = 0.0002***
5-year Treasury Yield	-105.399 (+/- 11.869)
	p = 0.00001***
LN_6-month Treasury Yield	-90.918 (+/- 5.893)
	p = 0.000***
LN_3-year Treasury Yield	-227.069 (+/- 17.270)
	p = 0.00000***
LN_1-year Treasury Yield	174.618 (+/- 10.698)
	p = 0.000***
3-month Treasury Yield_2	19.235 (+/- 3.381)
	p = 0.0002***
7-year Treasury Yield_2	-17.731 (+/- 3.009)
	p = 0.0002***
1-month Treasury Yield_2	-23.230 (+/- 3.000)
	p = 0.00001***
10-year Treasury Yield_2	23.514 (+/- 3.359)
	p = 0.00003***
Observations	40
R^2	0.992
Adjusted R^2	0.973
Residual Std. Error	2.114 (df = 11)
F Statistic	50.812*** (df = 28; 11)
Note:	*p<0.1; **p< 0.5; ***p<0.01

Appendix A: Data Sources

The following table lists the attributes provided by Capitalytics as part of its macro-economic forecast service. The sources for data that are defined by the document "2025 Stress Test Scenarios" (found at https://www.federalreserve.gov/publications/files/2025-stress-test-scenarios-20250205.pdf) are listed. Please note that shaded attributes are not discussed within this report.

Table 16: Data Values and Referenced Sources

Attribute	Referenced Source[110]
Real GDP growth	Bureau of Economic Analysis (NIPA table 1.1.6, line 1)
Nominal GDP growth	Bureau of Economic Analysis (NIPA table 1.1.5, line 1)
Real disposable income growth	Bureau of Economic Analysis (NIPA table 2.1, line 27, and NIPA table 1.1.4, line 2)
Nominal disposable income growth	Bureau of Economic Analysis (NIPA table 2.1, line 27)
Unemployment rate	Bureau of Labor Statistics (series LNS14000000)
CPI inflation rate	Bureau of Labor Statistics (series CUSR0000SA0)
3-month Treasury yield	Quarterly average of 3-month Treasury bill secondary market rate on a discount basis, H.15 Release, Selected Interest Rates, Federal Reserve Board (series RIFSGFSM03_N.B)
5-year Treasury yield	Quarterly average of the yield on 5-year U.S. Treasury bonds, constructed for the FRB/U.S. model by Federal Reserve staff based on the Svensson smoothed term structure model; see Lars E. O. Svensson (1995), "Estimating Forward Interest Rates with the Extended Nelson-Siegel Method," Quarterly Review, no. 3, Sveriges Riksbank, pp. 13–26
10-year Treasury yield	Quarterly average of the yield on 10-year U.S. Treasury bonds, constructed for the FRB/U.S. model by Federal Reserve staff based on the Svensson smoothed term structure model; see Lars E. O. Svensson (1995), "Estimating Forward Interest Rates with the Extended Nelson-Siegel Method," Quarterly Review, no. 3, Sveriges Riksbank, pp. 13–26
BBB corporate yield	Ice Data Indices, LLC, ICE BofA BBB US Corporate Index Effective Yield [BAMLC0A4CBBBEY], retrieved from FRED, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/series/BAMLC0A4CBBBEY[111]

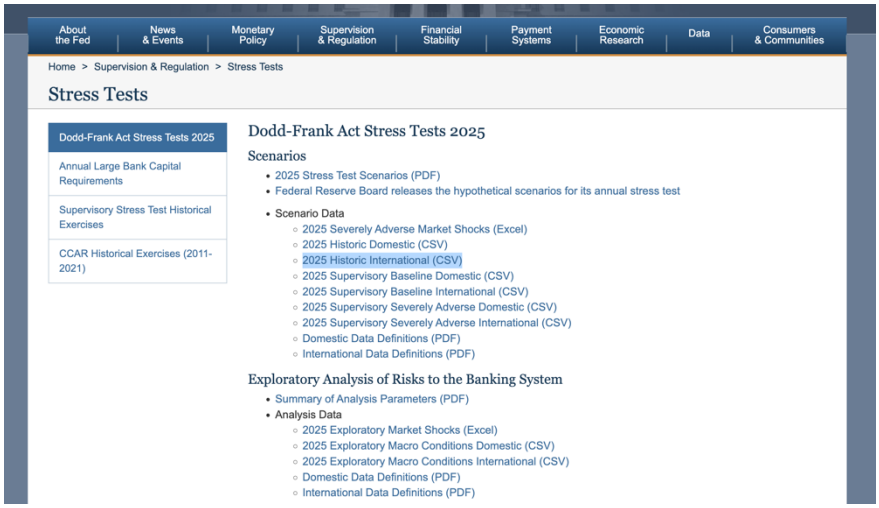
[110] Per https://www.federalreserve.gov/newsevents/pressreleases/files/bcreg20190213a1.pdf

[111] Capitalytics does not have license to use the data referenced in https://www.federalreserve.gov/newsevents/pressreleases/files/bcreg20210212a1.pdf, specifically "Quarterly average of ICE BofAML U.S. Corporate 7-10 Year Yield-to-Maturity Index, ICE Data Indices, LLC, used with permission. (C4A4 series.)", but we use the referenced series as a proxy.

Mortgage rate	Quarterly average of weekly series for the interest rate of a conventional, conforming, 30-year fixed-rate mortgage, obtained from the Primary Mortgage Market Survey of the Federal Home Loan Mortgage Corporation.
Prime rate	Quarterly average of monthly series, H.15 Release, Selected Interest Rates, Federal Reserve Board (series RIFSPBLP_N.M).
Dow Jones Total Stock Market Index (end-of-qtr value)	Dow-Jones
House Price Index	Price Index for Owner-Occupied Real Estate, CoreLogic National, Z.1 Release (Financial Accounts of the United States), Federal Reserve Board (series FL075035243.Q divided by 1000).
Commercial Real Estate Price Index	Commercial Real Estate Price Index, Z.1 Release (Financial Accounts of the United States), Federal Reserve Board (series FL075035503.Q divided by 1000).
Market Volatility Index (VIX)	VIX converted to quarterly frequency using the maximum close-of-day value in any quarter, Chicago Board Options Exchange.
Euro Area Real GDP Growth	Percent change in real gross domestic product at an annualized rate, staff calculations based on Statistical Office of the European Communities via Haver, extended back using ECB Area Wide Model dataset (ECB Working Paper series no. 42).
Euro Area Inflation	Percent change in the quarterly average of the harmonized index of consumer prices 16 Federal Reserve Supervisory Scenarios at an annualized rate, staff calculations based on Statistical Office of the European Communities via Haver.
Euro Area Bilateral Dollar Exchange Rate (USD/Euro)	End-of-quarter rates from the H.10 Release, Foreign Exchange Rates, Federal Reserve Board.
Developing Asia Real GDP Growth	Percent change in real gross domestic product at an annualized rate, staff calculations based on Bank of Korea via Haver; Chinese National Bureau of Statistics via CEIC; Indian Central Statistical Organization via CEIC; Census and Statistics Department of Hong Kong via CEIC; and Taiwan Directorate-General of Budget, Accounting, and Statistics via CEIC.
Developing Asia Inflation	Percent change in the quarterly average of the consumer price index, or local equivalent, at an annualized rate, staff calculations based on Chinese National Bureau of Statistics via CEIC; Indian Ministry of Statistics and Programme Implementation via Haver; Labour Bureau of India via CEIC; National Statistical Office of Korea via CEIC; Census and Statistic Department of Hong Kong via CEIC; and Taiwan Directorate General of Budget, Accounting, and Statistics via CEIC.

Developing Asia bilateral dollar exchange rate (F/USD, index)	End-of-quarter rates from the H.10 Release, Foreign Exchange Rates, Federal Reserve Board.
Japan Real GDP Growth	Percent change in gross domestic product at an annualized rate, Cabinet Office via Haver.
Japan Inflation	Percent change in the quarterly average of the consumer price index at an annualized rate, staff calculations based on Ministry of Internal Affairs and Communications via Haver.
Japan Bilateral Dollar Exchange Rate (Yen/USD)	End-of-quarter rates from the H.10 Release, Foreign Exchange Rates, Federal Reserve Board.
UK Real GDP Growth	Percent change in gross domestic product at an annualized rate, Office for National Statistics via Haver.
UK Inflation	Percent change in the quarterly average of the consumer price index at an annualized rate, staff calculations based on Office for National Statistics via Haver.
UK Bilateral Dollar Exchange Rate (USD/Pound)	End-of-quarter rates from the H.10 Release, Foreign Exchange Rates, Federal Reserve Board.

The above dataset from the Federal Reserve can be downloaded manually or automatically. Manual downloads are available at https://www.federalreserve.gov/supervisionreg/files/2025-Table_1A_Historic_Domestic.csv and https://www.federalreserve.gov/supervisionreg/files/2025-Table_1B_Historic_International.csv (shown below, as of March 2025) by clicking the links marked "2025 Historical Domestic (CSV)" and "2025 Historical International (CSV)"[112].



Since the CCAR dataset is only released annually (through 4Q2024 as of this writing), and Capitalytics provides quarterly updates to its forecasts, the CCAR dataset is supplemented by the data sources shown below on a quarterly basis.

[112] Again, due to the requirements of this client, international data elements are not being discussed in this document.

Table 17: Supplementary Data Sources for Data Attributes

Attribute	Supplementary Data Source
Real GDP growth	Bureau of Economic Analysis (NIPA table 1.1.6, line 1)
Nominal GDP growth	Bureau of Economic Analysis (NIPA table 1.1.5, line 1)
Real disposable income growth	Bureau of Economic Analysis (NIPA table 2.1, line 27, and NIPA table 1.1.4, line 2)
Nominal disposable income growth	Bureau of Economic Analysis (NIPA table 2.1, line 27)
Unemployment rate	Bureau of Labor Statistics (series LNS14000000)
CPI inflation rate	Bureau of Labor Statistics (series CUSR0000SA0)
3-month Treasury yield	Quarterly average of 3-month Treasury bill secondary market rate on a discount basis, H.15 Release
5-year Treasury yield	Federal Reserve Economic Research website (https://fred.stlouisfed.org/series/GS5), with "Quarterly" frequency and "Average" aggregation method
10-year Treasury yield	Federal Reserve Economic Research website (https://fred.stlouisfed.org/series/GS10), with "Quarterly" frequency and "Average" aggregation method
BBB corporate yield	Federal Reserve Economic Research website (https://fred.stlouisfed.org/series/BAMLC0A4CBBBEY), with "Quarterly" frequency and "Average" aggregation method
Mortgage rate	Federal Reserve Economic Research website (https://fred.stlouisfed.org/series/MORTGAGE30US), with "Quarterly" frequency and "Average" aggregation method
Prime rate	Federal Reserve Economic Research website (https://fred.stlouisfed.org/series/MPRIME), with "Quarterly" frequency and "Average" aggregation method
Dow Jones Total Stock Market Index (end-of-qtr value)	Dow-Jones as provided by the Wall Street Journal (https://quotes.wsj.com/index/DWCF/advanced-chart)
House Price Index	https://data.nasdaq.com/data/FED/FL075035243_Q-interest-rates-and-price-indexes-owneroccupied-real-estate-corelogic-national-sa-quarterly-levels-nsa
Commercial Real Estate Price Index	https://data.nasdaq.com/data/FED/FL075035503_Q-interest-rates-and-price-indexes-commercial-real-estate-price-index-quarterly-levels-nsa
Market Volatility Index (VIX)	Federal Reserve Economic Research website (https://fred.stlouisfed.org/series/VIXCLS), with "Quarterly" frequency and "Average" aggregation method
Euro Area Real GDP Growth	Quarterly series for "European Union GDP Annual Growth Rate" per tradingeconomics.com
Euro Area Inflation	Quarterly average of monthly series for "European Union Inflation Rate" per tradingeconomics.com

Euro Area Bilateral Dollar Exchange Rate (USD/Euro)	End-of-quarter rates from the H.10 Release, Foreign Exchange Rates, Federal Reserve Board.
Developing Asia Real GDP Growth	The nominal GDP-weighted aggregate of the Real GDP growth for China, India, South Korea, Hong Kong Special Administrative Region, and Taiwan per OECD
Developing Asia Inflation	The nominal GDP-weighted aggregate of the inflation rate for China, India, South Korea, Hong Kong Special Administrative Region, and Taiwan per OECD
Developing Asia bilateral dollar exchange rate (F/USD, index)	End-of-quarter rates from the H.10 Release, Foreign Exchange Rates, Federal Reserve Board.
Japan Real GDP Growth	Quarterly average of monthly series for "Japan GDP Growth Rate" per tradingeconomics.com
Japan Inflation	Quarterly average of monthly series for "Japan Inflation Rate" per tradingeconomics.com
Japan Bilateral Dollar Exchange Rate (Yen/USD)	End-of-quarter rates from the H.10 Release, Foreign Exchange Rates, Federal Reserve Board.
UK Real GDP Growth	Quarterly average of monthly series for "United Kingdom GDP Growth Rate" per tradingeconomics.com
UK Inflation	Quarterly average of monthly series for "United Kingdom Inflation Rate" per tradingeconomics.com
UK Bilateral Dollar Exchange Rate (USD/Pound)	End-of-quarter rates from the H.10 Release, Foreign Exchange Rates, Federal Reserve Board.

While all data that is required for the Annual Stress Tests is available from at https://www.federalreserve.gov/supervisionreg/files/2024-Table_2A_Historic_Domestic.csv and https://www.federalreserve.gov/supervisionreg/files/2024-Table_2B_Historic_International.csv, Capitalytics provides 13 additional metrics per the information in the following table. These values are available from the point at which they are collected (which varies from metric to metric) through (and including) 3Q2024.

Table 17: Supplementary Data Attributes and Sources

Attribute	Capitalytics' Source
1-month Treasury yield	https://fred.stlouisfed.org/series/dgs1mo
6-month Treasury yield	https://fred.stlouisfed.org/series/dgs6mo
1-year Treasury yield	https://fred.stlouisfed.org/series/dgs1
3-year Treasury yield	https://fred.stlouisfed.org/series/dgs3
7-year Treasury yield	https://fred.stlouisfed.org/series/dgs7
20-year Treasury yield	https://fred.stlouisfed.org/series/dgs20
30-year Treasury yield	https://fred.stlouisfed.org/series/dgs30
US Average Retail Gasoline Price ($/gal; all grades, all formulations)	https://fred.stlouisfed.org/series/gasallm
S&P 500 Stock Price Index	https://fred.stlouisfed.org/series/sp500

Primary Credit	https://fred.stlouisfed.org/series/FEDFUNDS
Moody's AAA Rate	https://fred.stlouisfed.org/series/aaa
Moody's BAA Rate	https://fred.stlouisfed.org/series/baa
Dow Jones Total Industrial Average	https://fred.stlouisfed.org/series/djia

Appendix B: Methodologies

Capitalytics uses non-structured macroeconomic forecasting techniques in order to prepare its clients for what trends and relationships drive certain metrics, and what values those metrics may take on in the coming months.

Section I: General Forecasting Methodology

Generally, the most effective overall forecasting techniques have been found to be a hybridization of multiple other techniques. Capitalytics uses several forecasting schemes, and aggregates the results, as part of its analysis methodology. This section describes the process that is executed for generating these results.

For each metric, four distinct forecasts are produced.

1. The first forecast uses the full quarterly history of the metric as an input to an additive exponential smoothing representation. The process that is executed is that provided by R's[113] "forecast" package[114]; specifically, the "ets" function (see p.39 of https://cran.r-project.org/web/packages/forecast/forecast.pdf)[115] is designed to automatically determine the best fitting representation out of the "Generic 'ETS' Methodology" (discussed later in this section), including optimal parameters thereto, given a sequence of values. In our work, we have restricted our study to only "additive" forms (i.e., we set "`additive.only=TRUE`" in our calls), and our optimization criteria is set to the mean of absolute residuals (i.e., "`opt.crit=mae`"). Therefore, calls to generate our estimates through this procedure look something like the following command, where "s" is an appropriately populated array, vector, time series, or similar object.

```
> m<-ets(s, model='ZZZ', opt.crit=c('mae'), additive.only=TRUE)
```

   The results of this call are shown above each dataset, including the representation type returned (as described later this section), the initial values that are used by the software, the optimal smoothing parameters estimated, and the *n+1*st forecasted value given the first *n* values of the metric's sequence (the "fitted" values)[116], and the determined parameters. While fitting forecasts to previous values,
   - "forecast error" is defined as being actual values less forecasted values,
   - "% error" is defined as forecast error divided by actual value, and

[113] As of this writing, v.4.1.2 of the "R" language is available at https://cran.r-project.org/.

[114] As of this writing, v.8.16 of the forecast package is available at https://CRAN.R-project.org/package=forecast.

[115] It should be noted that Microsoft's Excel software includes a FORECAST.ETS function which is documented as potentially producing comparable results; however, we have not been able to re-create its output independently, and, given the documentation, flexibility, and source availability of the R packages, Capitalytics has decided that it is a preferable option at this time.

[116] While this procedure does generate fitted values for intermediate samples within a sequence -- and allow for generating a forecasted set of samples to extend a sequence – according to the identified parameter set, it does not directly provide for determining the optimal parameter set of a sub-sequence. Capitalytics is currently codifying the process herein so that we may prescribe a "most likely" long term representation for each forecast, and determine the likely effects of errors in the forecasts by estimating the "recent term" values of dy/dx_i (where y is the metric being estimated and x_i is each of the parameters within the representation) and then compensating for recent quantified errors. We can also consider how "finite" a window to account for in building a set of parameters; these representations are theoretically using all history in building a forecast, but the values for alpha, beta, etc. implicitly give an indication of how much history of a metric is truly impacting a specific value.

- "score" is defined as mean absolute forecast error over an appropriate range (generally the duration of the collected past values, less the first two to four years of collected values)[117].

2. The second forecast uses the differences between successive quarterly values in order to forecast the future quarterly differences. It should be noted that these sequences are (obviously) one data-point shorter than those in the preceding procedure. These values are forecasted using the same procedure as described in the first section, with forecasted values for the actual metric being built using the last known value for the metric and forecasts of incremental changes to the metric provided.

   An edited example for loading the SP500 end-of quarter values, and the differences between successive quarterly values, is shown below.

```
> sp<-c(130.659129, 1250.520109, 998.4076848, 812.047, 799.5264066, 927.5045326,
1041.372826, … )
> sp_ts<-ts(sp,freq=4,end=c(2017,4))
> sp_ts
   Qtr1      Qtr2      Qtr3      Qtr4
2008           130.6591 1250.5201  998.4077
2009  812.0470  799.5264  927.5045 1041.3728
…

> m<-ets(sp_ts,model='ZZZ',opt.crit=c('mae'),additive.only=TRUE)
> dsp_ts<-diff(sp_ts)
> dsp_ts
    Qtr1        Qtr2        Qtr3        Qtr4
2008                    1119.860980 -252.112424
2009 -186.360685  -12.520593  127.978126  113.868293
…

> m<-ets(dsp_ts,model='ZZZ',opt.crit=c('mae'),additive.only=TRUE
```

3. The third forecast uses the sequence of numbers from the second forecast, but partitions the dataset based on the quarter in which they are incurred. Assuming that the differences between quarters are associated with the ending points of each quarter (i.e., the difference between third and fourth quarter values are associated with a date of December 31st), four sequences of numbers are now created, with annual forecasts now being produced for each sequence using the same procedures as previously outlined. The final sequence appropriately interleaves the forecasted data-points.

4. The fourth forecast builds three sequences of values based the history of the metric to an observed point:

   - the slope of the "best fitting" line (based on minimizing the total absolute error) using the immediately preceding 2 years of values[118];
   - the same slope using the immediately preceding 4 years of values; and,
   - the same slope using the immediately preceding 8 years of values.

   While two years of data would provide for a relatively responsive change in aggregate values to be reflected given a change in the economic conditions, eight years of data (a not unreasonable

[117] It bears noting that a lower value for the "score" indicates better accuracy of an algorithm.
[118] The value for this slope is calculated using Microsoft Excel's SLOPE function, with the first argument being the appropriate number of preceding values for the metric, and the second argument being the same number of corresponding "end-of-quarter" dates.

estimate for an "economic cycle") would allow for a much more slowly moving change in average window for a counterbalance.
Using these datasets independently, we are able to use our previous procedure to generate forecasts for each slope, and then average the results on a quarterly basis. Multiplying the average slope by the duration of the following quarter (in days) provides an estimate for the change in the metric's value during that following quarter, just as in our second forecast. Obviously, this technique requires at least eight years of data to pass before being able to produce any data. However, in order to err on the side of conservatism, we generally allow a sequence to "mature" for two to four years before believing that its initial transience has become less significant and its results are trustworthy. If a dataset does not have enough data to complete one of these analyses, the analysis is dropped. In other words, if the metric does not have +/-11 years of data available, the 8-year slopes cannot be reliably calculated, and the average slope is only based on the 2- & 4-year slopes[119].

5. In some cases, we may find variables with extremely tight cross-connections that can be justified as part of their nature (treasury bill yield rates, for example, with a magnitude or correlation greater than ~0.95). In these cases, we are able to additionally enhance our forecast by building a forecast that expresses one variable (the "dependent" variable, *y(t)*) in terms of another (the "independent" variable, *x(t)*) with a coefficient of determination (R^2), such that

$$y(t) = m(t) * x(t) + b(t) .$$

Notice that the "slope" and "intercept" terms in this expression are time varying expressions that are re-evaluated with each data-point, not simply constants.

By averaging the results of these distinct forecasts in order to provide an aggregate forecast, the error for which can be characterized and measured, Capitalytics aims to provide a robust dataset that can be used for future business decisions.
It was stated earlier that Capitalytics uses each metric's complete history in order to generate a matching representation and forecast. It should be recognized that we also perform the same analyses for periods starting no more than 100, 80, 60, and 40 quarters prior to the forecasted period. However, we have found the results of all of these analyses are more reactionary and less coherent than that already presented within this report.

Section II: Exponentially Smoothed State Space Representations & Generic "ETS" Methodology

Exponential smoothing was proposed in the late 1950s (Brown 1959, Holt 1957 and Winters 1960 are key pioneering works) and has motivated some of the most successful forecasting methods. Forecasts produced using exponential smoothing methods are weighted averages of past observations, with the weights decaying exponentially as the observations get older. In other words, the more recent the observation the higher the associated weight. (See the following equation for one example of this type of equation which requires $0 \le \alpha \le 1$, and estimates future values of $\hat{y}$ given a history of values denoted as y_t. The ε_{T+1} term denotes an error term, the *residual*, which determines the value of the forecasting function.) This framework generates reliable forecasts quickly and for a wide spectrum of time series.

$$\hat{y}_{T+1|T} = \alpha y_T + \alpha(1-\alpha)y_{T-1} + \alpha(1-\alpha)^2 y_{T-2} + \cdots + \varepsilon_{T+1}$$

[119] See the SP500 metric's analysis.

In this study, the relevance of quarterly samples more than 3 years old is eliminated by setting the number of terms in this type of expression to no more than 13.
The challenge with these forecasting techniques is to estimate the value of α such that some criteria is optimized, e.g., minimizing the sum of squared errors (SSE), across all values of a set of historical values. There are other forms of exponential smoothing methods that may account for any combination of forecasting *levels* (as in the Theta method), *trends* (for which a metric may, for instance, be growing or lessening according to a linear or higher order function), and *seasonality* (for which a metric may have engrained "cycles" on, e.g., a monthly, quarterly, or annual basis).

By considering variations in the combination of the trend and seasonal components, fifteen exponential smoothing methods are possible. Each method is labelled by a pair of letters (T,S) defining the type of 'Trend' and 'Seasonal' components. For example, (A,M) is the method with an additive trend and multiplicative seasonality; (M,N) is the method with multiplicative trend and no seasonality; and so on. Per Section 7.6 of Hyndman & Athanasopoulos, some of these methods are well known per the following table.

Table 18: Mathematical Methods Associated with Trend & Seasonal Components

Trend & Seasonal Components	Method
(N,N)	simple exponential smoothing
(A,N)	Holts linear method
(M,N)	Exponential trend method
(A_d,N)	additive damped trend method
(M_d,N)	multiplicative damped trend method
(A,A)	additive Holt-Winters method
(A,M)	multiplicative Holt-Winters method
(A_d,M)	Holt-Winters damped method

Additionally, the following table (again from Section 7.6 of Hyndman & Athanasopoulos) gives the recursive formulae for applying all possible fifteen exponential smoothing methods. Each cell includes the forecast equation for generating h-step-ahead forecasts and the smoothing equations for applying the method. By recursively applying the appropriate expressions to generate consecutive forecasts, this framework can be an extremely powerful tool.

Section III: Regression Construction

Capitalytics also generates a regression to estimate future values of the variables that we track in terms of current-day values. By using R's "lm" function, we estimate the next quarter's values for each variable in terms of the preceding set of variables' values. These regressions are built using the immediately preceding 57 sets of variables' values.

Each output variable is considered in turn as the response variable, with all other variables as possibilities for the control (independent) variables *excluding* any variables that have an 80% correlation with the response variable. Successive linear regressions are built; if any of the control variables' p-

values exceed 5%, or if the model's p-value exceeds 5% and the number of considered control variables is greater than one, the most offensive control variable is dropped, and the regression is re-run.

Trend	Seasonal		
	N	**A**	**M**
N	$\hat{y}_{t+h\|t} = \ell_t$ $\ell_t = \alpha y_t + (1-\alpha)\ell_{t-1}$	$\hat{y}_{t+h\|t} = \ell_t + s_{t-m+h_m^+}$ $\ell_t = \alpha(y_t - s_{t-m}) + (1-\alpha)\ell_{t-1}$ $s_t = \gamma(y_t - \ell_{t-1}) + (1-\gamma)s_{t-m}$	$\hat{y}_{t+h\|t} = \ell_t s_{t-m+h_m^+}$ $\ell_t = \alpha(y_t / s_{t-m}) + (1-\alpha)\ell_{t-1}$ $s_t = \gamma(y_t / \ell_{t-1}) + (1-\gamma)s_{t-m}$
A	$\hat{y}_{t+h\|t} = \ell_t + hb_t$ $\ell_t = \alpha y_t + (1-\alpha)(\ell_{t-1} + b_{t-1})$ $b_t = \beta^*(\ell_t - \ell_{t-1}) + (1-\beta^*)b_{t-1}$	$\hat{y}_{t+h\|t} = \ell_t + hb_t + s_{t-m+h_m^+}$ $\ell_t = \alpha(y_t - s_{t-m}) + (1-\alpha)(\ell_{t-1} + b_{t-1})$ $b_t = \beta^*(\ell_t - \ell_{t-1}) + (1-\beta^*)b_{t-1}$ $s_t = \gamma(y_t - \ell_{t-1} - b_{t-1}) + (1-\gamma)s_{t-m}$	$\hat{y}_{t+h\|t} = (\ell_t + hb_t)s_{t-m+h_m^+}$ $\ell_t = \alpha(y_t / s_{t-m}) + (1-\alpha)(\ell_{t-1} + b_{t-1})$ $b_t = \beta^*(\ell_t - \ell_{t-1}) + (1-\beta^*)b_{t-1}$ $s_t = \gamma(y_t / (\ell_{t-1} + b_{t-1})) + (1-\gamma)s_{t-m}$
A_d	$\hat{y}_{t+h\|t} = \ell_t + \phi_h b_t$ $\ell_t = \alpha y_t + (1-\alpha)(\ell_{t-1} + \phi b_{t-1})$ $b_t = \beta^*(\ell_t - \ell_{t-1}) + (1-\beta^*)\phi b_{t-1}$	$\hat{y}_{t+h\|t} = \ell_t + \phi_h b_t + s_{t-m+h_m^+}$ $\ell_t = \alpha(y_t - s_{t-m}) + (1-\alpha)(\ell_{t-1} + \phi b_{t-1})$ $b_t = \beta^*(\ell_t - \ell_{t-1}) + (1-\beta^*)\phi b_{t-1}$ $s_t = \gamma(y_t - \ell_{t-1} - \phi b_{t-1}) + (1-\gamma)s_{t-m}$	$\hat{y}_{t+h\|t} = (\ell_t + \phi_h b_t)s_{t-m+h_m^+}$ $\ell_t = \alpha(y_t / s_{t-m}) + (1-\alpha)(\ell_{t-1} + \phi b_{t-1})$ $b_t = \beta^*(\ell_t - \ell_{t-1}) + (1-\beta^*)\phi b_{t-1}$ $s_t = \gamma(y_t / (\ell_{t-1} + \phi b_{t-1})) + (1-\gamma)s_{t-m}$
M	$\hat{y}_{t+h\|t} = \ell_t b_t^h$ $\ell_t = \alpha y_t + (1-\alpha)\ell_{t-1}b_{t-1}$ $b_t = \beta^*(\ell_t / \ell_{t-1}) + (1-\beta^*)b_{t-1}$	$\hat{y}_{t+h\|t} = \ell_t b_t^h + s_{t-m+h_m^+}$ $\ell_t = \alpha(y_t - s_{t-m}) + (1-\alpha)\ell_{t-1}b_{t-1}$ $b_t = \beta^*(\ell_t / \ell_{t-1}) + (1-\beta^*)b_{t-1}$ $s_t = \gamma(y_t - \ell_{t-1}b_{t-1}) + (1-\gamma)s_{t-m}$	$\hat{y}_{t+h\|t} = \ell_t b_t^h s_{t-m+h_m^+}$ $\ell_t = \alpha(y_t / s_{t-m}) + (1-\alpha)\ell_{t-1}b_{t-1}$ $b_t = \beta^*(\ell_t / \ell_{t-1}) + (1-\beta^*)b_{t-1}$ $s_t = \gamma(y_t / (\ell_{t-1}b_{t-1})) + (1-\gamma)s_{t-m}$
M_d	$\hat{y}_{t+h\|t} = \ell_t b_t^{\phi_h}$ $\ell_t = \alpha y_t + (1-\alpha)\ell_{t-1}b_{t-1}^{\phi}$ $b_t = \beta^*(\ell_t / \ell_{t-1}) + (1-\beta^*)b_{t-1}^{\phi}$	$\hat{y}_{t+h\|t} = \ell_t b_t^{\phi_h} + s_{t-m+h_m^+}$ $\ell_t = \alpha(y_t - s_{t-m}) + (1-\alpha)\ell_{t-1}b_{t-1}^{\phi}$ $b_t = \beta^*(\ell_t / \ell_{t-1}) + (1-\beta^*)b_{t-1}^{\phi}$ $s_t = \gamma(y_t - \ell_{t-1}b_{t-1}^{\phi}) + (1-\gamma)s_{t-m}$	$\hat{y}_{t+h\|t} = \ell_t b_t^{\phi_h} s_{t-m+h_m^+}$ $\ell_t = \alpha(y_t / s_{t-m}) + (1-\alpha)\ell_{t-1}b_{t-1}^{\phi}$ $b_t = \beta^*(\ell_t / \ell_{t-1}) + (1-\beta^*)b_{t-1}^{\phi}$ $s_t = \gamma(y_t / (\ell_{t-1}b_{t-1}^{\phi})) + (1-\gamma)s_{t-m}$

Appendix C: Variable Correlations

The following table shows the correlation factors between all of the listed variables for which the absolute value of the correlation is greater than 0.6, indicating a noteworthy degree of correlation. As is discussed in Appendix B of this report, (absolute) correlations greater than 0.95 warrant further investigation as the relationship between variables may be useful for our research.

Table 1: Correlation Factors found as of 1Q2025

Variable 1	Variable 2	Correlation
S&P500 Stock Price Index	Cost of Federal Funds	0.625939
S&P500 Stock Price Index	Prime Rate	0.637594
S&P500 Stock Price Index	**Dow-Jones Total Stock Market Index**	**0.957066**
S&P500 Stock Price Index	US Nat'l Residential Home Price Index	0.930565
S&P500 Stock Price Index	US Nat'l Commercial Real Estate Index	0.760001
S&P500 Stock Price Index	Average Retail Gasoline Price (all grades)	0.654898
S&P500 Stock Price Index	1-month Treasury Yield	0.636122
S&P500 Stock Price Index	3-month Treasury Yield	0.632298
S&P500 Stock Price Index	6-month Treasury Yield	0.618088
S&P500 Stock Price Index	1-year Treasury Yield	0.601863
Cost of Federal Funds	Moody's AAA Yield	0.758404
Cost of Federal Funds	Moody's BAA Yield	0.699098
Cost of Federal Funds	BofA BBB Corporate Yield	0.732995
Cost of Federal Funds	US 30-year Fixed Interest Mortgage Rate	0.869053
Cost of Federal Funds	**Prime Rate**	**0.996338**
Cost of Federal Funds	10-year Treasury Yield	0.825806
Cost of Federal Funds	**1-month Treasury Yield**	**0.991135**
Cost of Federal Funds	7-year Treasury Yield	0.77643
Cost of Federal Funds	**3-month Treasury Yield**	**0.995699**
Cost of Federal Funds	5-year Treasury Yield	0.903824
Cost of Federal Funds	**6-month Treasury Yield**	**0.988884**
Cost of Federal Funds	3-year Treasury Yield	0.923151
Cost of Federal Funds	**1-year Treasury Yield**	**0.979753**
Moody's AAA Yield	**Moody's BAA Yield**	**0.979055**
Moody's AAA Yield	BofA BBB Corporate Yield	0.947927
Moody's AAA Yield	**US 30-year Fixed Interest Mortgage Rate**	**0.959605**
Moody's AAA Yield	Prime Rate	0.733446
Moody's AAA Yield	Dow-Jones Total Stock Market Index	-0.671446
Moody's AAA Yield	US Nat'l Residential Home Price Index	-0.722205
Moody's AAA Yield	US Nat'l Commercial Real Estate Index	-0.819144
Moody's AAA Yield	Average Retail Gasoline Price (all grades)	-0.69855
Moody's AAA Yield	**30-year Treasury Yield**	**0.968173**
Moody's AAA Yield	**20-year Treasury Yield**	**0.967518**
Moody's AAA Yield	**10-year Treasury Yield**	**0.982792**
Moody's AAA Yield	7-year Treasury Yield	0.857084
Moody's AAA Yield	3-month Treasury Yield	0.753121
Moody's AAA Yield	5-year Treasury Yield	0.93603
Moody's AAA Yield	3-year Treasury Yield	0.62737
Moody's BAA Yield	**BofA BBB Corporate Yield**	**0.983357**
Moody's BAA Yield	US 30-year Fixed Interest Mortgage Rate	0.930787
Moody's BAA Yield	Prime Rate	0.673337
Moody's BAA Yield	Dow-Jones Total Stock Market Index	-0.697066
Moody's BAA Yield	US Nat'l Residential Home Price Index	-0.719656
Moody's BAA Yield	US Nat'l Commercial Real Estate Index	-0.800509
Moody's BAA Yield	Average Retail Gasoline Price (all grades)	-0.666938
Moody's BAA Yield	30-year Treasury Yield	0.865826
Moody's BAA Yield	20-year Treasury Yield	0.872966
Moody's BAA Yield	10-year Treasury Yield	0.945212
Moody's BAA Yield	7-year Treasury Yield	0.733572
Moody's BAA Yield	3-month Treasury Yield	0.691722

Moody's BAA Yield	5-year Treasury Yield	0.884058
Real GDP Growth Rate	**Nominal GDP Growth Rate**	0.958539
Real Disposable Income Growth Rate	**Nominal Disposable Income Growth Rate**	0.973056
US 30-year Fixed Interest Mortgage Rate	6-month Treasury Yield	-0.606845
US 30-year Fixed Interest Mortgage Rate	1-year Treasury Yield	-0.616442
BofA BBB Corporate Yield	US 30-year Fixed Interest Mortgage Rate	0.930596
BofA BBB Corporate Yield	Prime Rate	0.709802
BofA BBB Corporate Yield	Dow-Jones Total Stock Market Index	-0.615886
BofA BBB Corporate Yield	US Nat'l Residential Home Price Index	-0.630781
BofA BBB Corporate Yield	US Nat'l Commercial Real Estate Index	-0.70225
BofA BBB Corporate Yield	30-year Treasury Yield	0.773173
BofA BBB Corporate Yield	20-year Treasury Yield	0.808988
BofA BBB Corporate Yield	10-year Treasury Yield	0.924834
BofA BBB Corporate Yield	7-year Treasury Yield	0.732506
BofA BBB Corporate Yield	3-month Treasury Yield	0.727369
BofA BBB Corporate Yield	5-year Treasury Yield	0.88291
US 30-year Fixed Interest Mortgage Rate	Prime Rate	0.850533
US 30-year Fixed Interest Mortgage Rate	US Nat'l Commercial Real Estate Index	-0.654404
US 30-year Fixed Interest Mortgage Rate	30-year Treasury Yield	0.874082
US 30-year Fixed Interest Mortgage Rate	20-year Treasury Yield	0.919817
US 30-year Fixed Interest Mortgage Rate	**10-year Treasury Yield**	**0.981905**
US 30-year Fixed Interest Mortgage Rate	M3tbill1-month Treasury Yield	0.750442
US 30-year Fixed Interest Mortgage Rate	**7-year Treasury Yield**	**0.957243**
US 30-year Fixed Interest Mortgage Rate	3-month Treasury Yield	0.873396
US 30-year Fixed Interest Mortgage Rate	**5-year Treasury Yield**	**0.978205**
US 30-year Fixed Interest Mortgage Rate	6-month Treasury Yield	0.772525
US 30-year Fixed Interest Mortgage Rate	3-year Treasury Yield	0.883636
US 30-year Fixed Interest Mortgage Rate	1-year Treasury Yield	0.795739
Prime Rate	10-year Treasury Yield	0.802742
Prime Rate	**1-month Treasury Yield**	**0.991037**
Prime Rate	7-year Treasury Yield	0.761955
Prime Rate	**3-month Treasury Yield**	**0.992535**
Prime Rate	5-year Treasury Yield	0.88561
Prime Rate	**6-month Treasury Yield**	**0.987786**
Prime Rate	3-year Treasury Yield	0.913867
Prime Rate	**1-year Treasury Yield**	**0.976855**
Dow-Jones Total Stock Market Index	US Nat'l Residential Home Price Index	0.937147
Dow-Jones Total Stock Market Index	US Nat'l Commercial Real Estate Index	0.892275
Dow-Jones Total Stock Market Index	Average Retail Gasoline Price (all grades)	0.603965
US Nat'l Residential Home Price Index	**US Nat'l Commercial Real Estate Index**	**0.95456**
US Nat'l Residential Home Price Index	Average Retail Gasoline Price (all grades)	0.711274
US Nat'l Residential Home Price Index	10-year Treasury Yield	-0.63661
US Nat'l Commercial Real Estate Index	Average Retail Gasoline Price (all grades)	0.751522
US Nat'l Commercial Real Estate Index	10-year Treasury Yield	-0.749454
US Nat'l Commercial Real Estate Index	5-year Treasury Yield	-0.643936
Average Retail Gasoline Price (all grades)	10-year Treasury Yield	-0.668526
Average Retail Gasoline Price (all grades)	5-year Treasury Yield	-0.634717
30-year Treasury Yield	**20-year Treasury Yield**	**0.99037**
30-year Treasury Yield	**10-year Treasury Yield**	**0.95678**
30-year Treasury Yield	7-year Treasury Yield	0.886797
30-year Treasury Yield	5-year Treasury Yield	0.799931
30-year Treasury Yield	3-year Treasury Yield	0.663512
20-year Treasury Yield	**10-year Treasury Yield**	**0.983099**
20-year Treasury Yield	7-year Treasury Yield	0.927886
20-year Treasury Yield	5-year Treasury Yield	0.855836
20-year Treasury Yield	3-year Treasury Yield	0.733093
10-year Treasury Yield	1-month Treasury Yield	0.637075
10-year Treasury Yield	**7-year Treasury Yield**	**0.97604**
10-year Treasury Yield	3-month Treasury Yield	0.827432
10-year Treasury Yield	**5-year Treasury Yield**	**0.978653**
10-year Treasury Yield	6-month Treasury Yield	0.661312
10-year Treasury Yield	3-year Treasury Yield	0.830477
10-year Treasury Yield	1-year Treasury Yield	0.692706

1-month Treasury Yield	7-year Treasury Yield	0.758503
1-month Treasury Yield	**3-month Treasury Yield**	**0.995638**
1-month Treasury Yield	5-year Treasury Yield	0.83337
1-month Treasury Yield	**6-month Treasury Yield**	**0.990349**
1-month Treasury Yield	3-year Treasury Yield	0.916814
1-month Treasury Yield	**1-year Treasury Yield**	**0.979671**
7-year Treasury Yield	3-month Treasury Yield	0.772877
7-year Treasury Yield	**5-year Treasury Yield**	**0.985223**
7-year Treasury Yield	6-month Treasury Yield	0.784432
7-year Treasury Yield	3-year Treasury Yield	0.925755
7-year Treasury Yield	1-year Treasury Yield	0.813769
3-month Treasury Yield	5-year Treasury Yield	0.909882
3-month Treasury Yield	**6-month Treasury Yield**	**0.997555**
3-month Treasury Yield	3-year Treasury Yield	0.932629
3-month Treasury Yield	**1-year Treasury Yield**	**0.990305**
5-year Treasury Yield	6-month Treasury Yield	0.862989
5-year Treasury Yield	**3-year Treasury Yield**	**0.974807**
5-year Treasury Yield	1-year Treasury Yield	0.89019
6-month Treasury Yield	3-year Treasury Yield	0.944977
6-month Treasury Yield	**1-year Treasury Yield**	**0.99676**

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