

Tariffs, Inflation, and Growth: Current Trends and the Outlook of the U.S. Economy

Felix Tintelnot

Duke University and NBER

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- ▶ Associate Professor of Economics at Duke University (since last July)
- ▶ Prior employment at University of Chicago (10 years), Stanford University (1 year), Princeton University (1 year)
- ▶ Primary research specialty: International Economics;
Secondary: Industrial Organization, Supply Chains
- ▶ Research publications in leading scientific journals (e.g., American Economic Review, Quarterly Journal of Economics)
- ▶ Industry focus of research projects: Appliances, Automotive, Energy, Consumer goods
- ▶ Press coverage: WSJ, The Economist, NYT, WP, ...

Outline

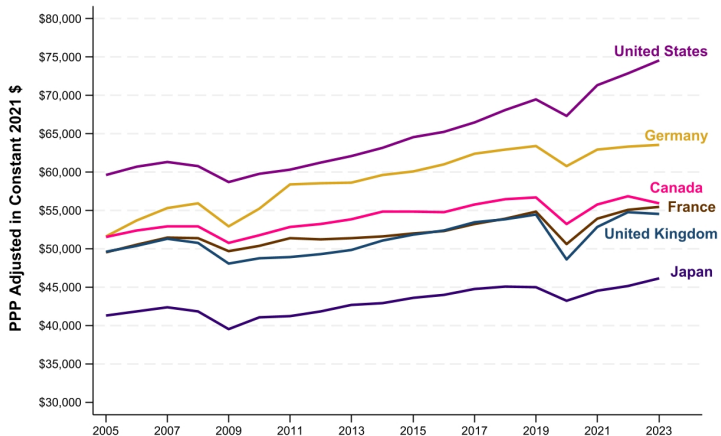
1. Current trends (GDP, Fiscal Deficits, Interest Rates, Consumer Confidence, Inflation)
2. Tariffs (what have we learned from 2018-2019, what's different now)
3. Outlook

1. Current Trends

U.S. economy came out of the pandemic stronger than other countries

Cross-country GDP per capita (2005 - 2023)

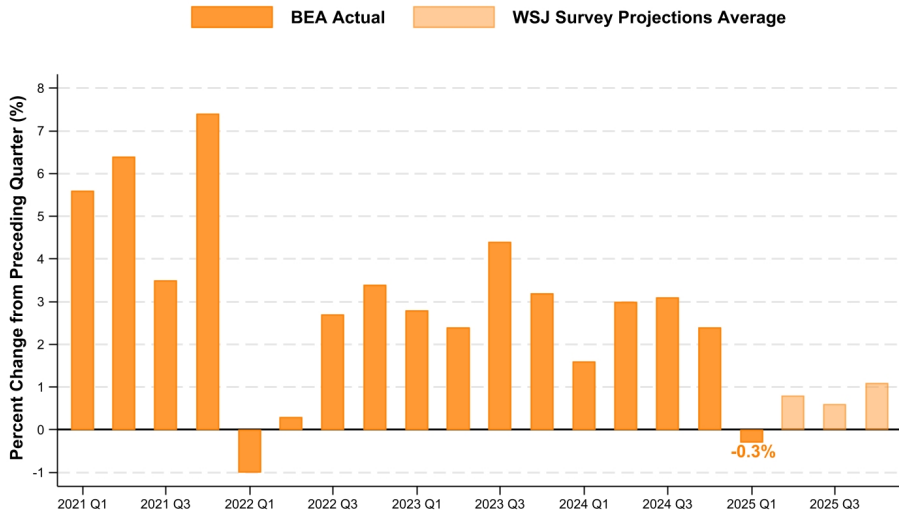
World Bank (released on Jan 24, 2025)



But, U.S. GDP contracted in first quarter of 2025

Real GDP (2021Q1 - 2025Q4)

U.S. Bureau of Economic Analysis, seasonally adjusted (Apr 30, 2025); WSJ (Apr 12, 2025)



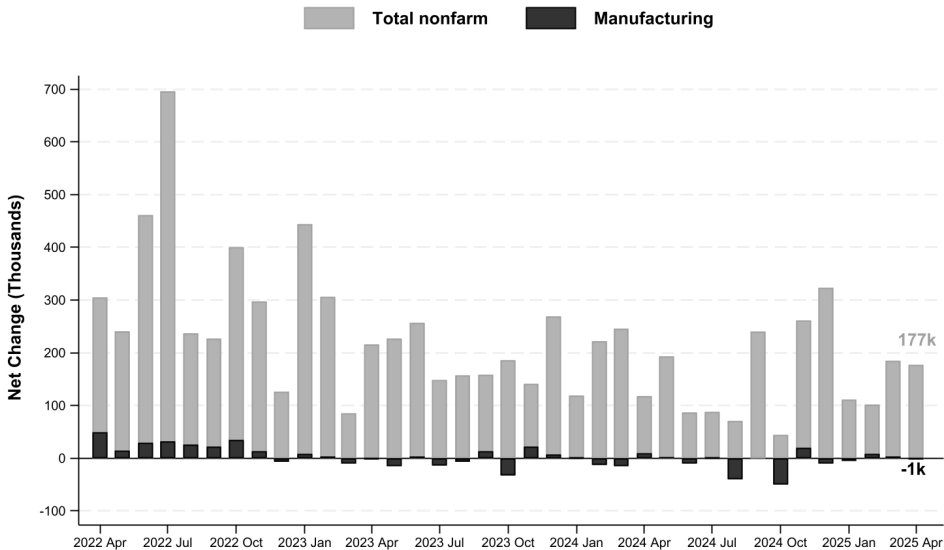
We are currently not in a recession ...

- ▶ The National Bureau of Economic Research (NBER) is generally credited with determining recession start and end dates in the United States.
- ▶ NBER's recession definition: "significant decline in economic activity that is spread across the economy and that lasts more than a few months."
- ▶ Currently, we do not observe an economy-wide contraction
- ▶ First quarter GDP reduction might be a statistical artifact / influenced by measurement problems
- ▶ Current forecasts see the odds of a US recession in 2025 at around 30 percent

U.S. economy is still adding jobs ...

Monthly Change in Employment (Apr 2022 – Apr 2025)

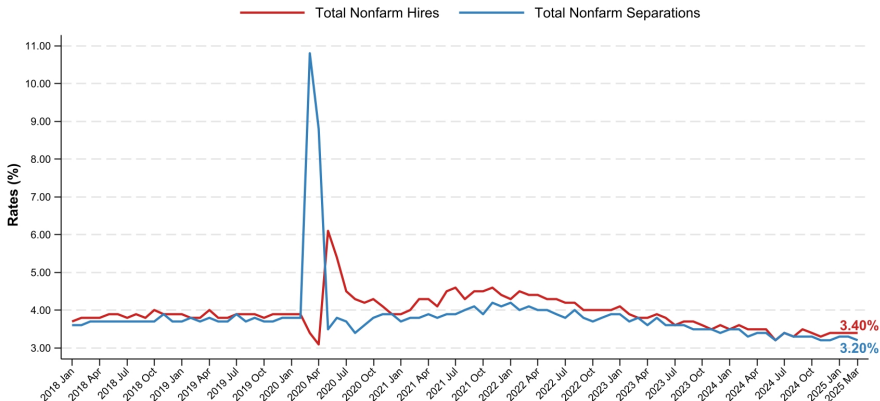
U.S. Bureau of Labor Statistics, seasonally adjusted (released on May 2, 2025)



Both job separation and hiring rates are declining

Monthly Total Nonfarm Job Hire and Separation Rates, Seasonally Adjusted (2018 - 2025)

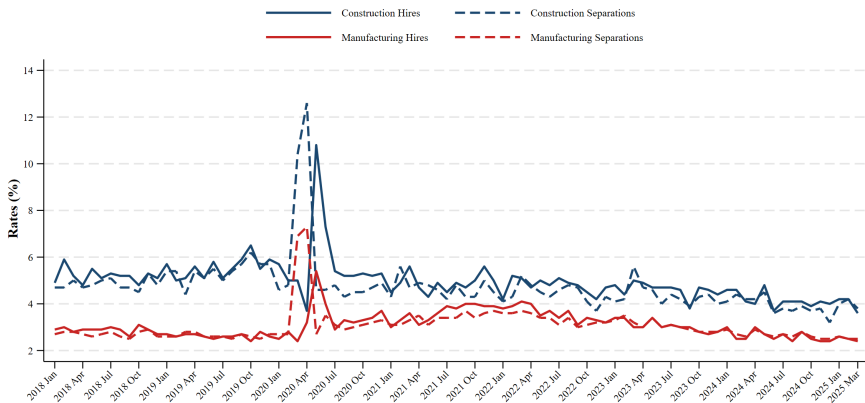
U.S. Bureau of Labor Statistics (released on April 29, 2025)



Similar Trends in Manufacturing and Construction

Monthly Job Hire and Separation Rates in Construction and Manufacturing, Seasonally Adjusted (2018 - 2025)

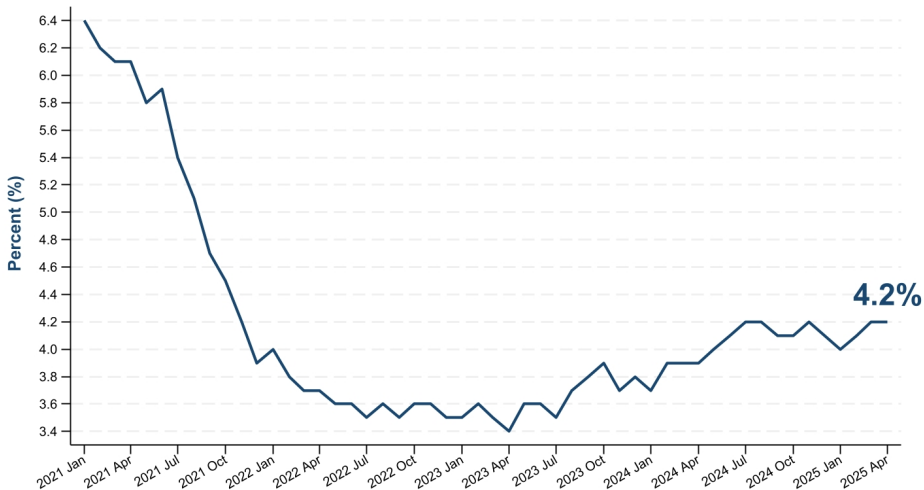
U.S. Bureau of Labor Statistics (released on April 29, 2025)



Unemployment rate remains low...

Unemployment (Jan 2021 - Apr 2025)

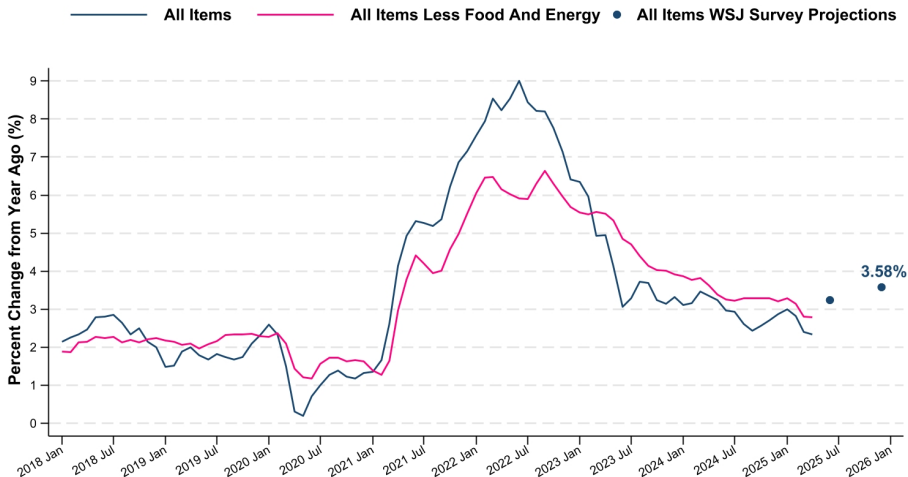
U.S. Bureau of Labor Statistics, seasonally adjusted (released on May 2, 2025)



Inflation is approaching 2%, but significant risks remain

CPI for All Urban Consumers (Jan 2018 - Dec 2025)

U.S. Bureau of Labor Statistics, seasonally adjusted (May 13, 2025); WSJ (Apr 12, 2025)

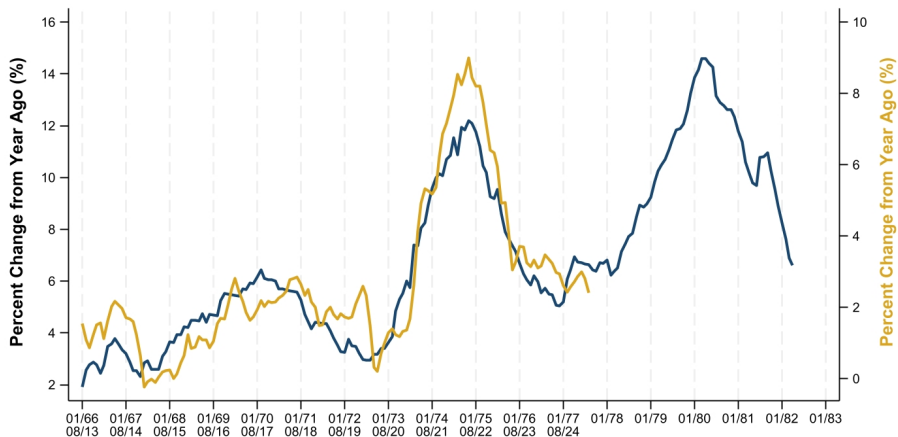


Inflation in the late 1970s vs today

Comparison of CPI Inflation: 01/1966 - 04/1982 vs 08/2013 - 03/2025

U.S. Bureau of Labor Statistics, seasonally adjusted (released on Apr 10, 2025)

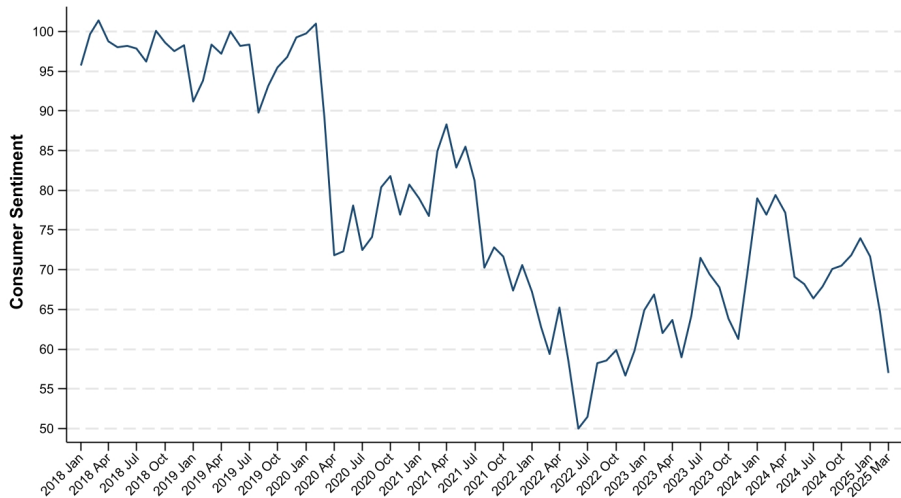
— 1966 - 1982 — 2013 - 2025



Consumer confidence has declined rapidly in recent months

Michigan Survey Consumer Confidence Index (Jan 2018 - Mar 2025)

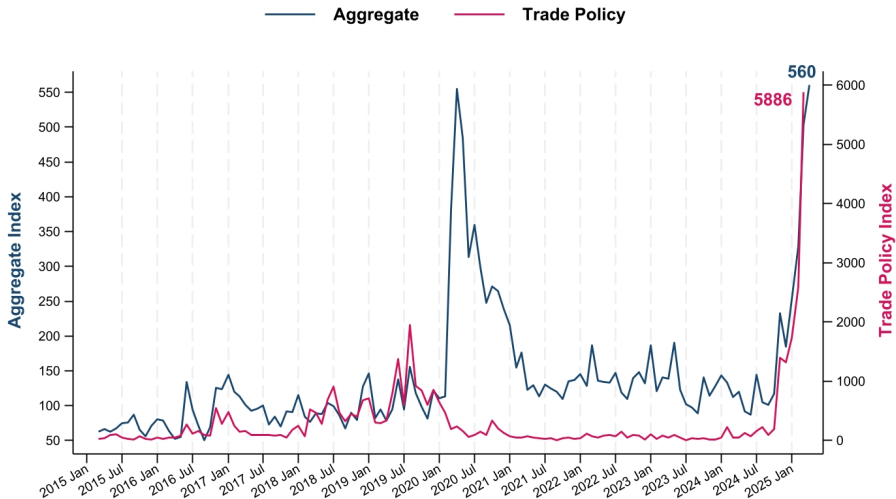
University of Michigan (released on Apr 25, 2025)



Economic policy uncertainty is extreme

U.S. Economic Policy Uncertainty (Mar 2015 - Apr 2025)

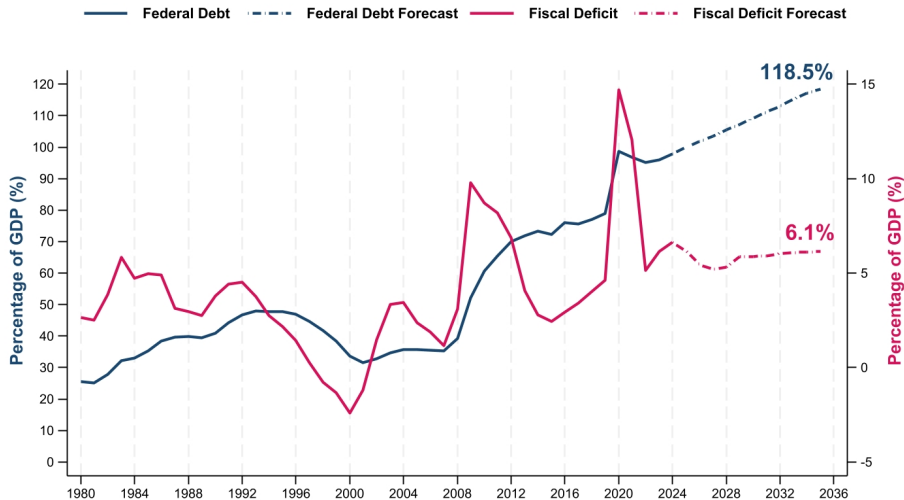
Baker, Scott R., Bloom, Nick and Davis, Stephen J. via FRED (released on May 6, 2025)



U.S. is not on a sustainable fiscal path

Federal Debt & Fiscal Deficit (1980 - 2035)

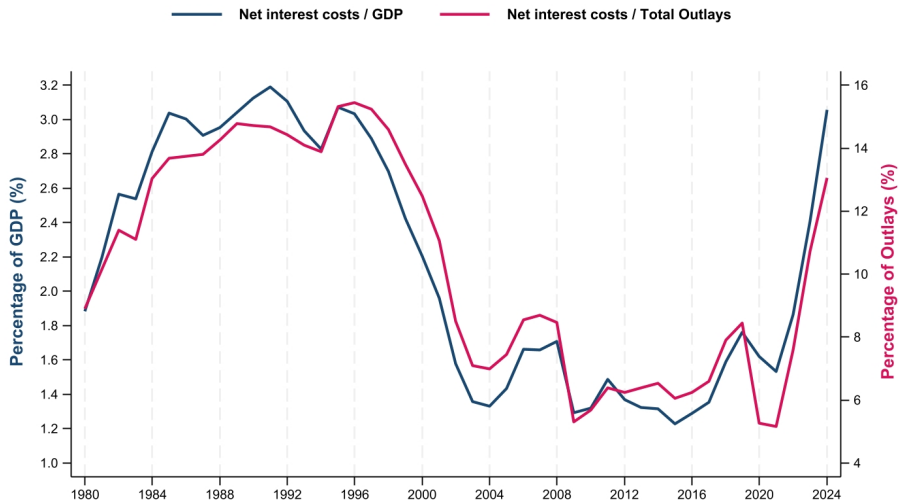
Congressional Budget Office (released on Jan 17, 2025)



Government interest burden increased after the pandemic

Interest Costs as a Share of GDP and Government Budget (1980 - 2024)

Congressional Budget Office (released on Jan 17, 2025)

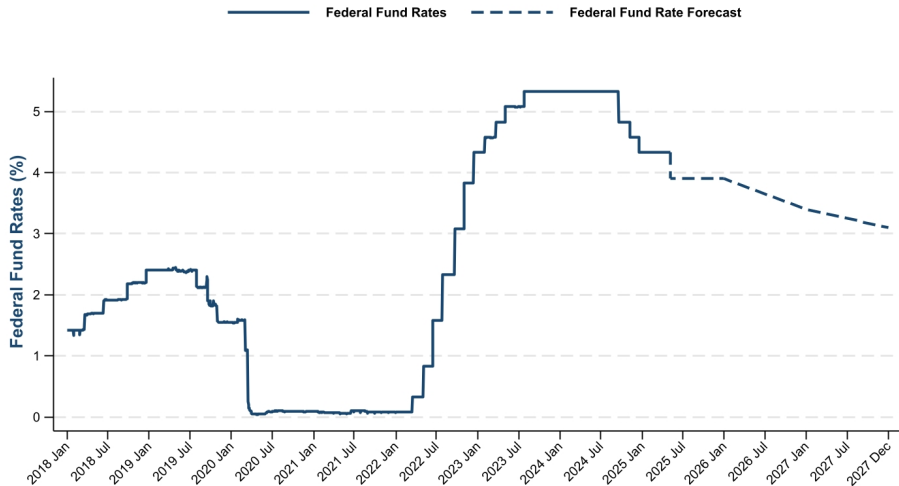


Borrowing costs remain high

Daily Effective Federal Funds Rates & Projections for the Fed Funds Rate

U.S. Federal Open Market Committee (released on May 7, 2025)

Historical (Jan 2018-May 2025) and Forecasted (May 2025 - Dec 2027)



Gradual Rise in Long-Term Treasury Rates

Daily 10-Year and 30-Year Treasury Rates in the US (Jan 2018 - May 2025)

Board of Governors of the Federal Reserve System (US) (released on May 19, 2025)

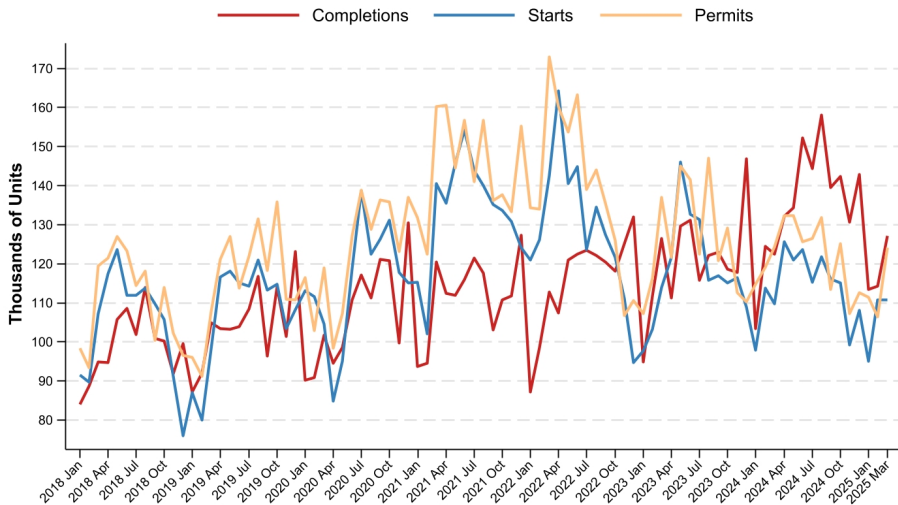
— 10-year Treasury Rate — 30-year Treasury Rate



Slow-down in housing construction

New Residential Construction (Jan 2018 - Mar 2025)

U.S. Census Bureau (released on April 23, 2025)



Mortgage rates remain elevated

Weekly 30-Year and 15-Year Fixed Rate Mortgage Average in the US (Jan 2016 - May 2025)

Freddie Mac (via FRED) (released on May 16, 2025)

— 30-year mortgage rate — 15-year mortgage rate

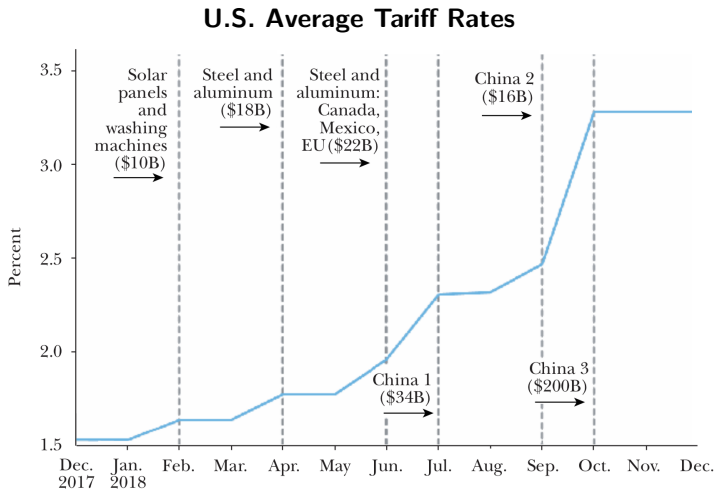


2. Tariffs

1. Lessons from 2018-2019 tariffs
2. Trade policies over the last four months and going forward

In 2018 (and 2019) the U.S. increased several tariffs

- ▶ U.S. tariff changes in 2018 were implemented in six main waves

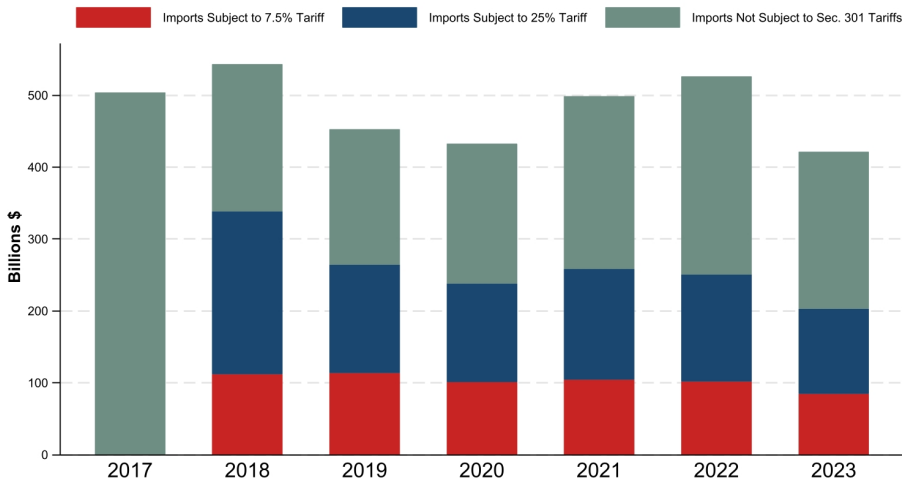


Source: Amiti, Redding, and Weinstein (2019)

Imports from China declined for goods facing larger tariffs

US Imports from China by Tariff List (2017 - 2023)

USITC DataWeb (released in April 2025)



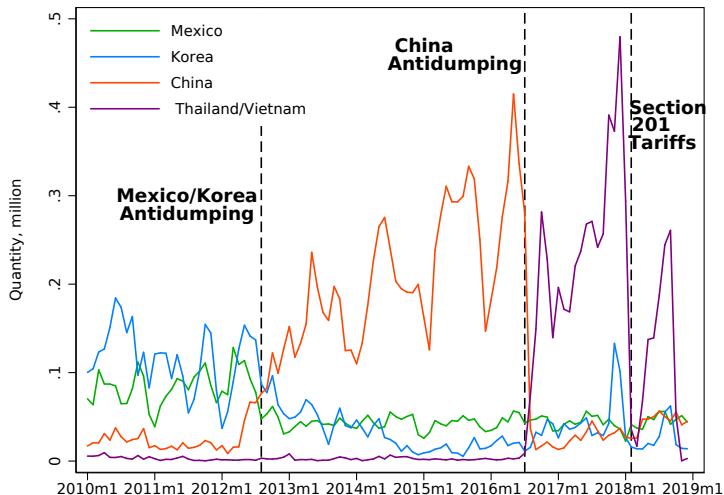
Effects from 2018-2019 Tariffs on China

- ▶ Published research suggests that there were no sizable price concessions by Chinese exporters — U.S. importers paid for the tariffs
- ▶ Many consumer goods (e.g., smartphones) were spared from the tariffs, and there was no widespread, significant increase in consumer prices.
- ▶ Significant relocation to bystander countries: Especially to Vietnam, other countries in Asia, some relocation to Mexico
- ▶ Average U.S. import tariffs remained low, increasing from around 2 to 4 percent.
- ▶ It appears that the continuing importers from China reduced their margins to absorb some of the tariffs
- ▶ Other means of tariff avoidance: De minimis imports, Tariff engineering, Exclusion requests

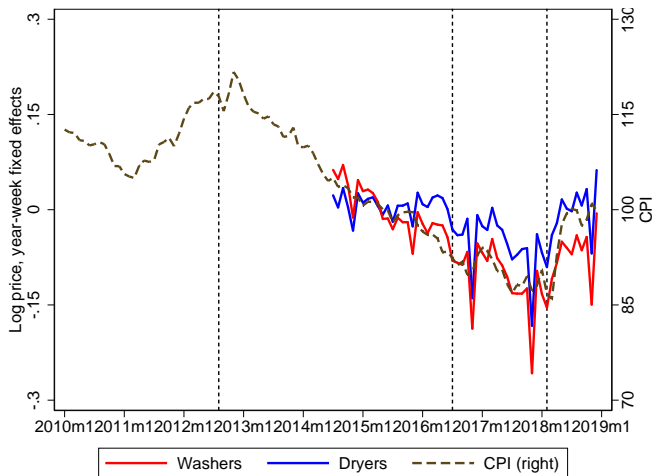
Case Study: Washing Machines

- ▶ Why washing machines?
- ▶ Series of import restrictions:
 - ▶ Antidumping duties against Korea and Mexico in 2012
 - ▶ Antidumping duties against China in 2016
 - ▶ Safeguard tariffs against all exporting countries in 2018
- ▶ Availability of data:
 - ▶ Domestic prices at the model level by week
 - ▶ Other appliances by the same brands as control group
 - ▶ Trade flows of final goods and intermediate inputs

U.S. imports of washing machines by country



CPI for laundry equipment



► 5 products

- ▶ Production relocation affects magnitude and possibly also the sign of tariff elasticity of prices
 - ▶ 2012: production relocated from Korea to China
 - ▶ Large decline in the laundry equipment CPI
 - ▶ 2016: production relocated from China to Vietnam/Thailand
 - ▶ Small impact on prices
 - ▶ 2018: production begins shift to the U.S.
 - ▶ Large price effects (prices of washers and dryers each increased by around 10 percent)
- ▶ Findings also highlight the importance of:
 - ▶ price changes of complementary goods (dryers)
 - ▶ price changes of domestic producers with stable market shares (Whirlpool, Maytag, and GE also raised prices)
- ▶ Estimate consumer cost to be $\approx 820,000$ USD per job created from 2018 Safeguard tariffs (after netting out tariff revenues)

Current tariffs — Timeline



February 1, 2025

Trump issues executive orders announcing tariffs on Canada, Mexico, and China coming February 4. The orders would also end duty-free de minimis treatment of low-value packages from these countries.

February 3, 2025

The 25% tariffs on Canada and Mexico are on hold for one month.

February 4, 2025

The US imposes 10% tariffs on imports from China announced February 1 and ends de minimis treatment.

February 5, 2025

The US amends the February 1 executive order to temporarily restore duty-free treatment of low-value shipments from China.

February 10, 2025

Trump announces 25% import tariffs on steel and aluminum as of March 12.

Current tariffs — Timeline

March 4, 2025

The White House announced that US tariffs go into effect on Canada and Mexico. The tariffs on China also raises from 10% to 20%.

March 6, 2025

The US exempts imports from Mexico and Canada satisfying USMCA rules of origin requirements.

March 12, 2025

The US tariffs of 25% on imports of steel, aluminum, and derivative products announced on February 10 go into effect.

March 26, 2025

The White House issues a proclamation to impose 25% tariffs on automobiles and certain automobile parts on April 3. Also announced are special tariff exemptions for USMCA-compliant auto parts as well as for the value of US content embedded in autos imported under USMCA.

Current tariffs — Timeline

April 2, 2025 Liberation Day

The US imposes a baseline 10% tariff starting April 5, 2025 on virtually all countries, and then additional “reciprocal” tariffs starting April 9, 2025 on countries that contribute to large, persistent US trade deficits. However, the USMCA compliant goods will not be affected. The US ends duty-free treatment of low-value shipments from China as of May 2, 2025. CBP applies an on-the-water clause for any goods that are loaded on a vessel to the U.S. prior to April 5.

April 3, 2025

The 25% tariffs on automobiles announced on March 26 go into effect.

April 8, 2025

The US imposes additional 50% tariff on imports from China to counter-retaliate China's 34% tariff retaliation. The total US tariff increase on imports from China associated with the original April 2 announcement to 84% in addition to the 20% of February 4 and March 4.

Current tariffs — Timeline

April 9, 2025

The differential tariffs announced on April 2, ranging from 1% to 74%, on imports from countries that have a trade surplus with the US, go into effect. In the afternoon, Trump announces a 90 days pause of these tariffs. Due to retaliation, China will now face a higher total tariff of 145%.

May 8, 2025

The United States and Britain announce a deal that would reduce tariffs on some imports. Under the agreement, Britain would drop its tariffs on some U.S. products and the United States would pare back tariffs on cars and steel, while keeping a 10% levy in place for all British exports.

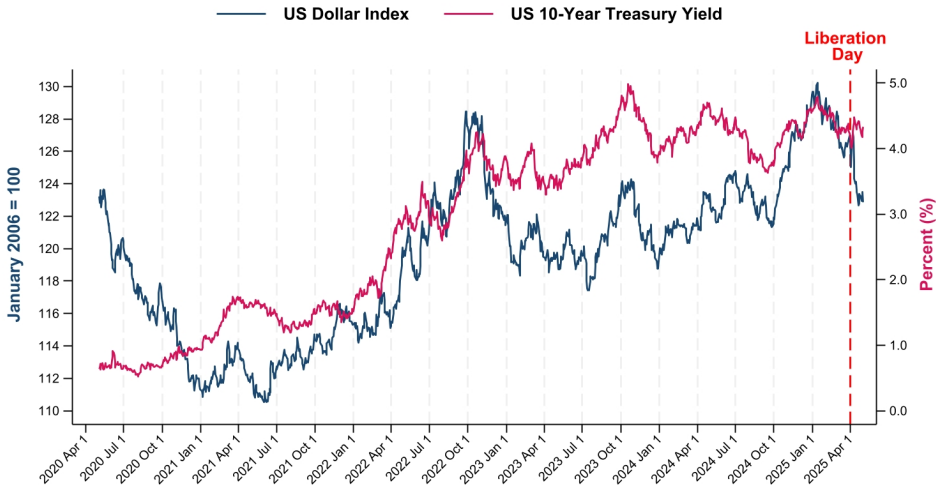
May 12, 2025

The U.S. and China agree to lower tariffs for 90 days. The U.S. tariff rate on Chinese goods will be cut from 145% to 30%, while the Chinese tariff rate on U.S. goods will be cut from 125% to 10%.

Treasury Yield and Dollar Index diverge

U.S. Dollar Index vs 10-Year Treasury Yield (May 4, 2020 - May 2, 2025)

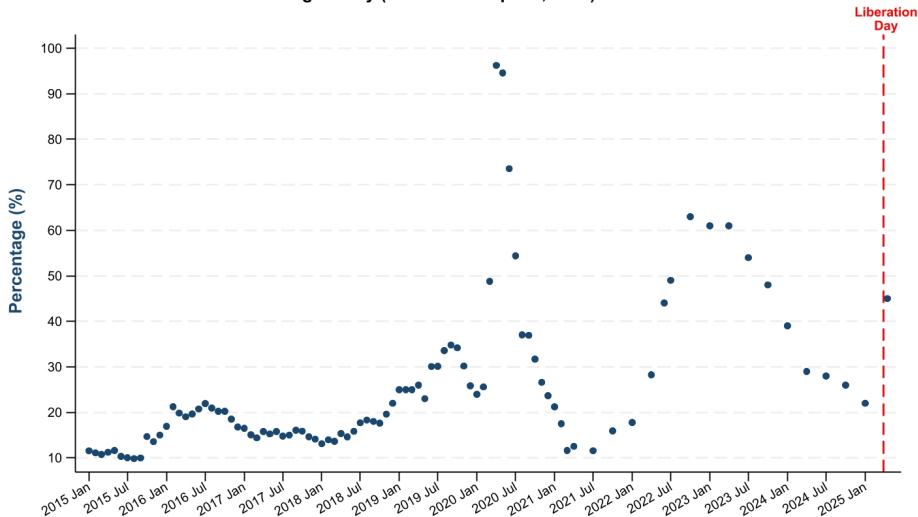
Board of Governors of the Federal Reserve System (released on May 5, 2025)



Jump in recession odds post tariff announcement

Recession Probability for the Incoming 12 Months (Jan 2015 - Apr 2025)

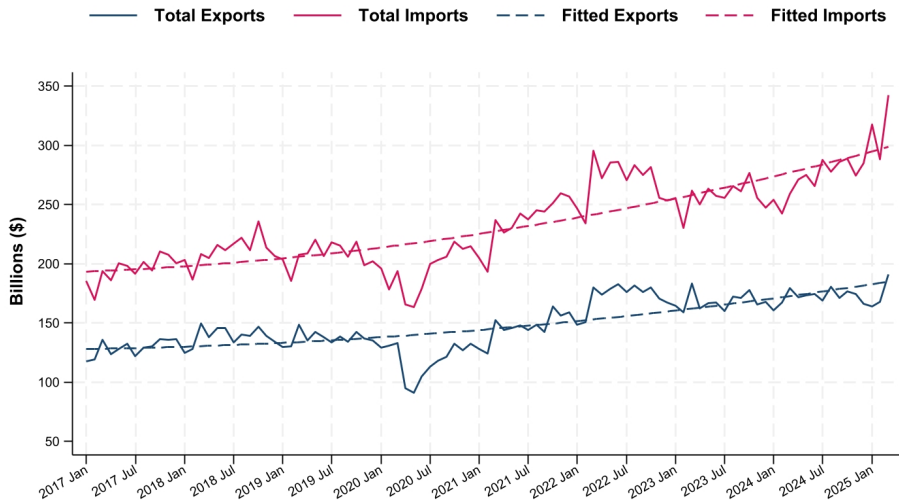
WSJ Economic Forecasting Survey (released on Apr 12, 2025)



Increase in imports to preempt tariffs

U.S. International Trade Flows (Jan 2017 - Mar 2025)

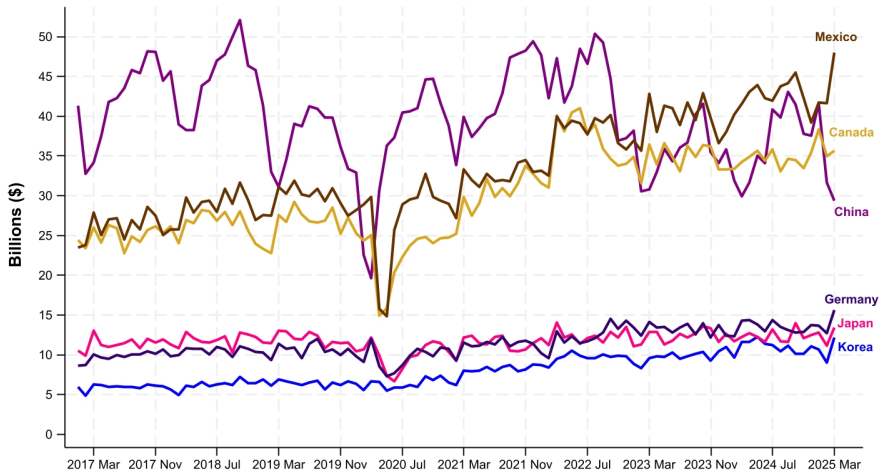
U.S. Department of Commerce, Census Bureau (released on May 6, 2025)



Imports from China dropped already after tariff increases in February and March 2025

Imports by Top 6 Trading Partners (Jan 2017 - Mar 2025)

U.S. Department of Commerce, Census Bureau (released on May 6, 2025)



Measure U.S. Industries' dependence on foreign countries

$$Direct\ Dependence_{K,j} = \frac{Imports_{K,j}}{Output_{US,j} + Imports_{Agg,j}} \quad (1)$$

$$Upstream\ Dependence_{K,j} = \sum_i \omega_{i,j} * \underbrace{\frac{Imports_{K,i}}{Output_{US,i} + Imports_{Agg,i}}}_{Direct\ Dependence_{K,i}} \quad (2)$$

- ▶ $Dependence_{K,j}$: Direct or upstream dependence of U.S. industry j on country K
- ▶ $\omega_{i,j}$: Inputs by industry i required in order to deliver one dollar of industry j output to final users
- ▶ $Imports_{K,i}$: Imports from country K in industry i
- ▶ $Output_{US,i}$: U.S. domestic production in industry i
- ▶ $Imports_{Agg,i}$: Aggregate imports (from all countries) in industry i

Industries most dependent on China, Mexico, and Canada in 2023

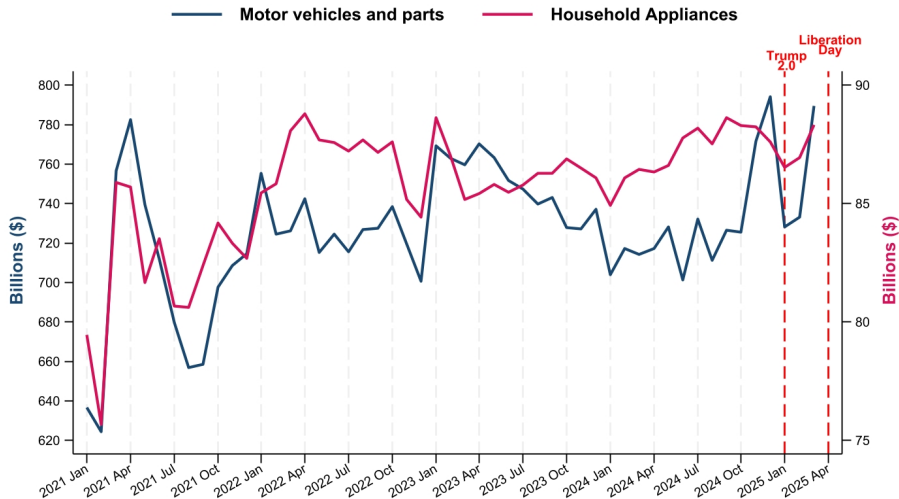
#	China			Canada			Mexico		
	Industry	Dir	Up	Industry	Dir	Up	Industry	Dir	Up
1	Apparel	.194	.223	Petroleum	.202	.338	Motor Veh	.136	.216
2	Computer	.176	.203	Prim Metals	.086	.136	Elec Equip	.134	.166
3	Elec Equip	.160	.194	Motor Veh	.051	.102	Computer	.103	.121
4	Textiles	.145	.187	Wood	.060	.091	Petroleum	.040	.078
5	Misc Mfg	.166	.185	Paper	.041	.068	Machinery	.045	.076
6	Furniture	.099	.126	Machinery	.033	.065	Misc Mfg	.053	.066
7	Machinery	.046	.076	Furniture	.028	.057	Furniture	.039	.057
8	Plastics	.051	.073	Fabri Metals	.016	.056	Farms	.033	.053

Notes: Sources include the Domestic Supply of Commodities by Industries, Industry-by-Industry Total Requirements (BEA), and General Imports from China (USITC).

Expenditure on selected categories

Consumer Spending on Cars and Home Appliances (Jan 2021 - Mar 2025)

U.S. Bureau of Economic Analysis, seasonally adjusted (released on Apr 30, 2025)



Limited price impact so far ...

CPI Metric	March 2025 OpenBrand CPI% Month-Over-Month	April 2025 OpenBrand CPI% Month-Over-Month
CPI-Durables and Personal Goods	+0.12%	+0.35%
CPI-Appliances	+0.47%	−0.06%
CPI-Communication	+0.05%	+0.97%
CPI-Home Improvement	+0.01%	+0.54%
CPI-Personal Care	−0.12%	−0.43%
CPI-Recreation	+0.20%	+0.74%

Current Tariffs — Summary (1)

- ▶ Much larger (if deal with Britain is taken as a guide, it appears that U.S. imposes a minimum tariff of 10 percent going forward (except against Canada and Mexico))
- ▶ Enormous amount of trade policy uncertainty - no deal or rate seem set in stone.
- ▶ Trade with China has temporarily collapsed - could lead to future shipping disruptions
- ▶ On-the-water clauses for liberation day tariffs, front-running of imports, and inventories have mitigated the short-run price impact
- ▶ Under the current tariff schedule, Mexico could emerge as a beneficiary
 - ▶ Single low-labor cost country exempt from tariffs
 - ▶ Exemption requires USMCS compliance — input production needs to move to Mexico, Canada, US as well
 - ▶ Main risk: trade policy uncertainty

Current Tariffs — Summary (2)

- ▶ Evidence from 2018-2019 showed that if one places tariffs on all countries, consumer price effects can be sizable
- ▶ U.S. wholesalers and other importers typically add substantial mark-ups when selling imported goods domestically
 - ▶ Potential to mitigate price impact for consumers, especially when the importer passes on the dollar cost of the tariff, not the percent increase in costs
 - ▶ Reduces importers' profitability (lowers corporate tax base), so not every tariff revenue dollar is additional
- ▶ Whereas liberation day tariff announcements were extreme, the U.S. economy should be capable of handling a (near) global tariff of 10 percent. Still, the U.S. tariff level is now an outlier among developed countries.
- ▶ Foreign retaliation raises the economic costs of these tariffs
- ▶ Coupled with more stringent immigration rules and enforcement, this creates a double whammy for the low-skilled labor supply.

3. Outlook

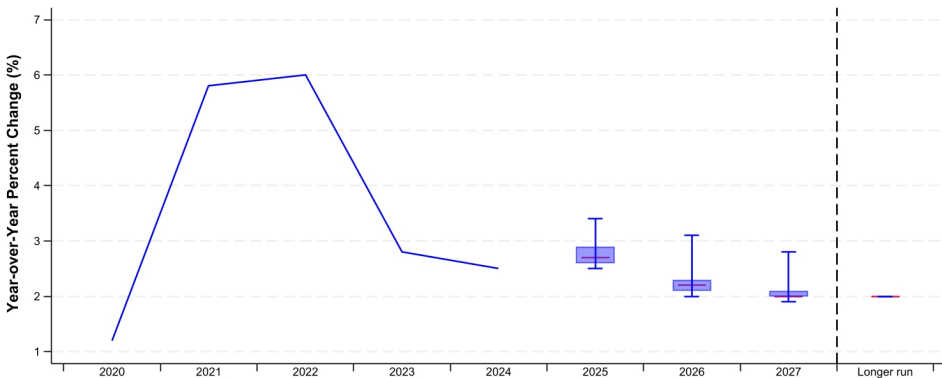
- ▶ Federal Open Market Committee (FOMC)'s members latest forecasts (March 2025)
- ▶ Cautionary note on past forecast accuracy
- ▶ Distribution of 75 professionals' forecasts (part of the WSJ Economic Survey) for 10 year treasuries, CPI, Real GDP growth, Recession Odds

Fed projects inflation to decline to 2% in the long run ...

Economic Projections for PCE Inflation

Federal Open Market Committee (March 19, 2025)

— Actual — Median of projections ■ Central tendency of projections | Range of projections

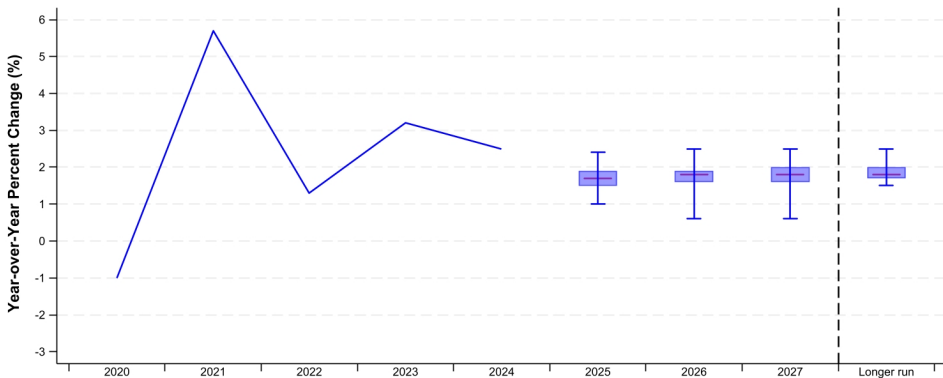


Before Liberation Day, FOMC members projected U.S. to grow by 2%

Economic Projections for Real GDP

Federal Open Market Committee (March 19, 2025)

Actual Median of projections Central tendency of projections Range of projections

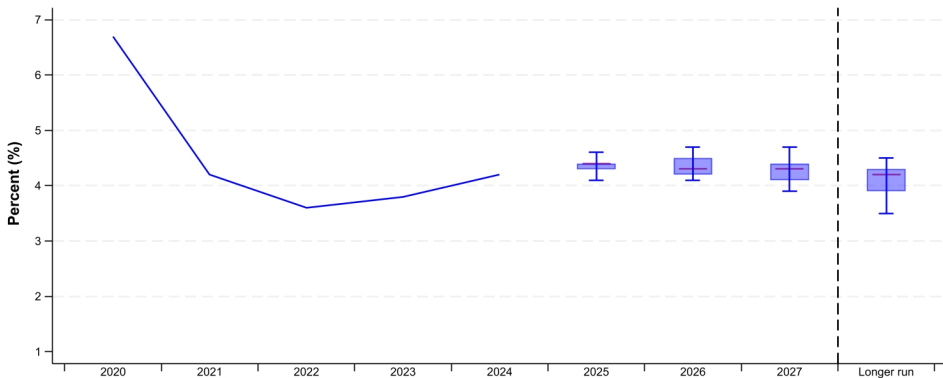


Unemployment is projected to stabilize around 4% over the long run ...

Economic Projections for Unemployment

Federal Open Market Committee (March 19, 2025)

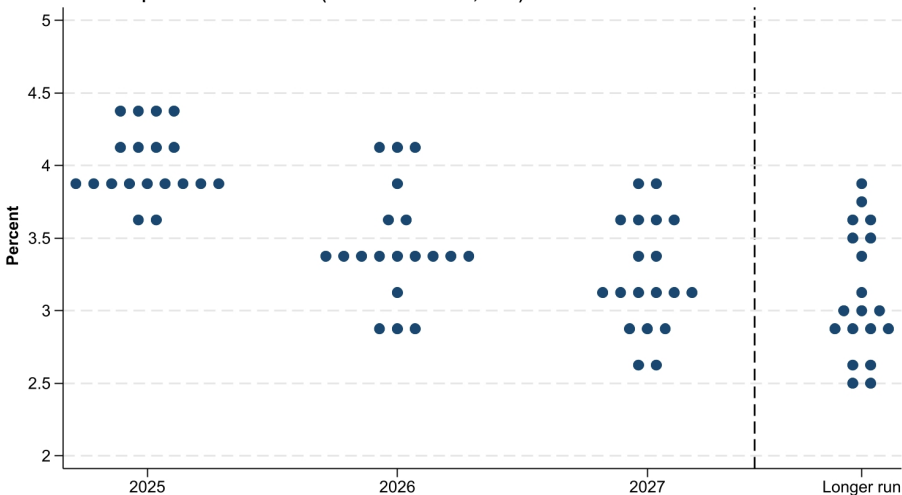
Actual Median of projections Central tendency of projections Range of projections



Moderate declines in the federal funds rate are projected

Midpoint of Target Range or Target Level for the Federal Funds Rate (2025 – 2027)

Federal Open Market Committee (released on Mar 19, 2025)



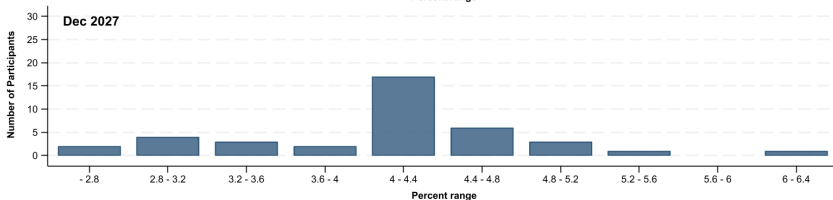
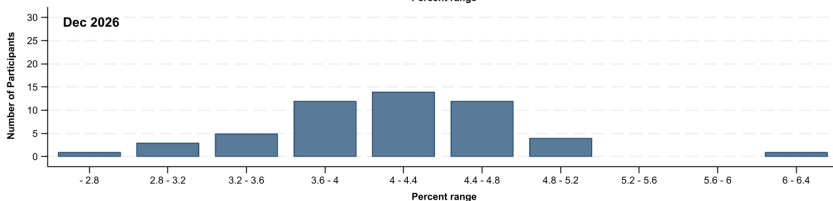
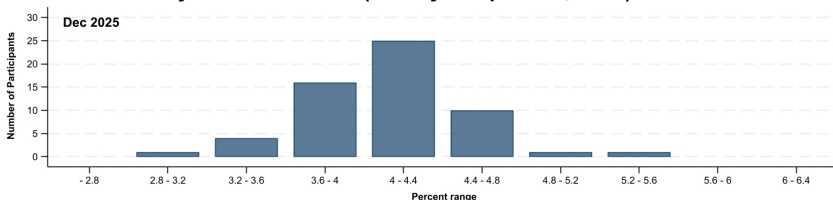
The Range of Projection Errors

Variable	2025	2026	2027
Change in Real GDP	±1.5	±2.0	±2.2
Unemployment Rate	±0.8	±1.4	±1.9
Total Consumer Prices	±1.4	±1.8	±1.8
Short-term Interest rates	±0.9	±2.0	±2.5

Notes: Source: The Federal Open Market Committee report on March 19, 2025. Error ranges shown are measured as plus or minus the root mean squared error of projections for 2005 through 2024 that were released in the spring by various private and government forecasters. The projections are at the 70 percent confidence level. Under certain assumptions, there is about a 70 percent probability that actual outcomes for real GDP, unemployment, consumer prices, and the federal funds rate will be in ranges implied by the average size of projection errors made in the past.

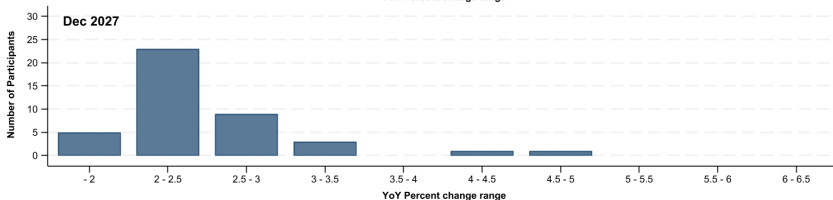
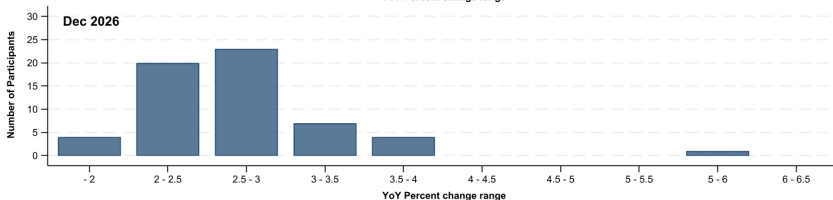
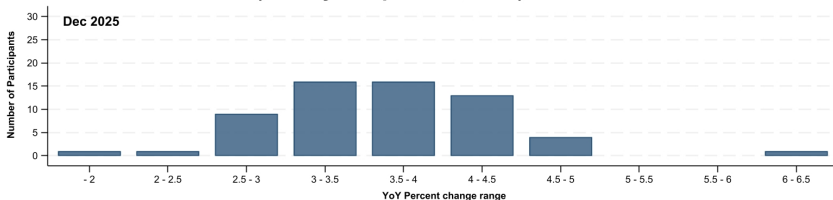
Another Source: WSJ Economic Forecasting Survey

10-Year Treasury Yield Forecasts (Surveyed Apr 4 – 8, 2025)



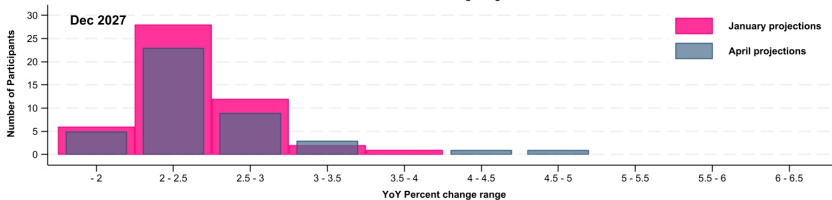
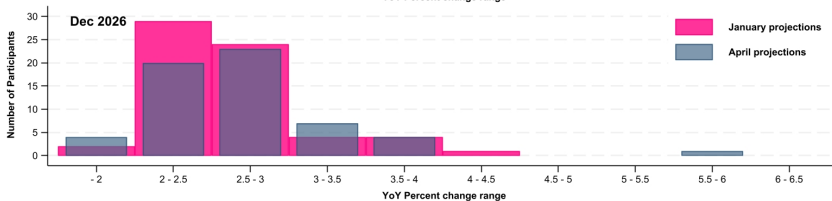
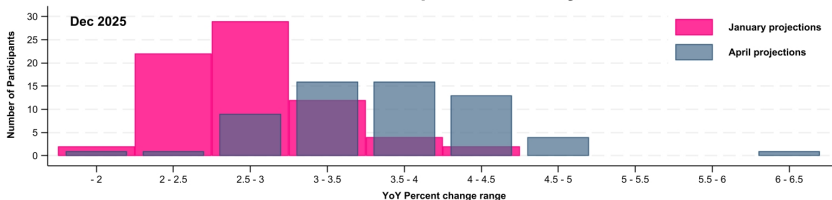
Majority forecast expects stable long-run inflation

CPI Inflation Forecasts (Surveyed Apr 4 – 8, 2025)



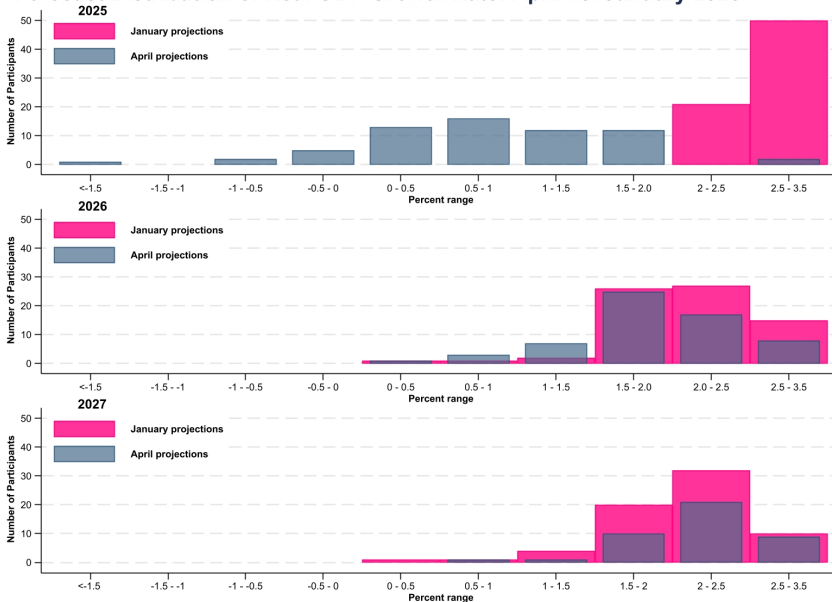
Liberation Day leads to higher inflation forecast for 2025

Forecast Distribution of CPI Inflation: April vs. January 2025



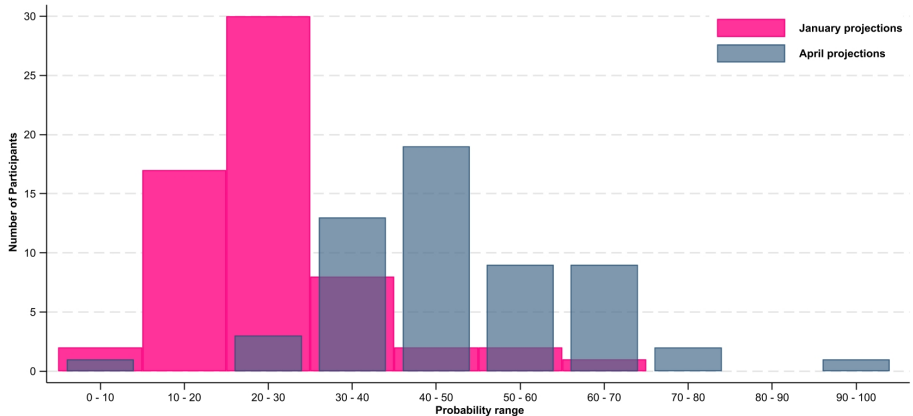
Liberation Day leads to lower growth forecast for 2025

Forecast Distribution of Real GDP Growth Rate: April vs. January 2025



Noticable increase in recession odds post liberation day

Forecast Distribution of Recession Probability for the Incoming 12 Months: January vs April 2025



Conclusions

- ▶ The U.S. economy has been performing strongly and even avoided a recession in 2023, which many had expected due to higher interest rates. Overall, I remain optimistic about the U.S. economy.
- ▶ Two main concerns for the U.S. economy:
 - ▶ A large fiscal deficit, even during strong economic periods. There is a need to avoid a spiral of high interest rates and non-sustainable levels of the federal deficit.
 - ▶ Tariff policy uncertainty, which is harmful to the economy.
- ▶ Challenging times for companies to operate:
 - ▶ Policy uncertainty incentivizes the delay of investment.
- ▶ Under current policies, Mexico is well positioned to benefit from substantially higher trade barriers on China (and a near-global minimum tariff of 10 percent).