Monetary Policy, the Federal Reserve and Financial Technologies

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Disclaimer

The views expressed here are my own and do not necessarily represent the views of the Federal Reserve System or the Federal Reserve Bank of Boston.

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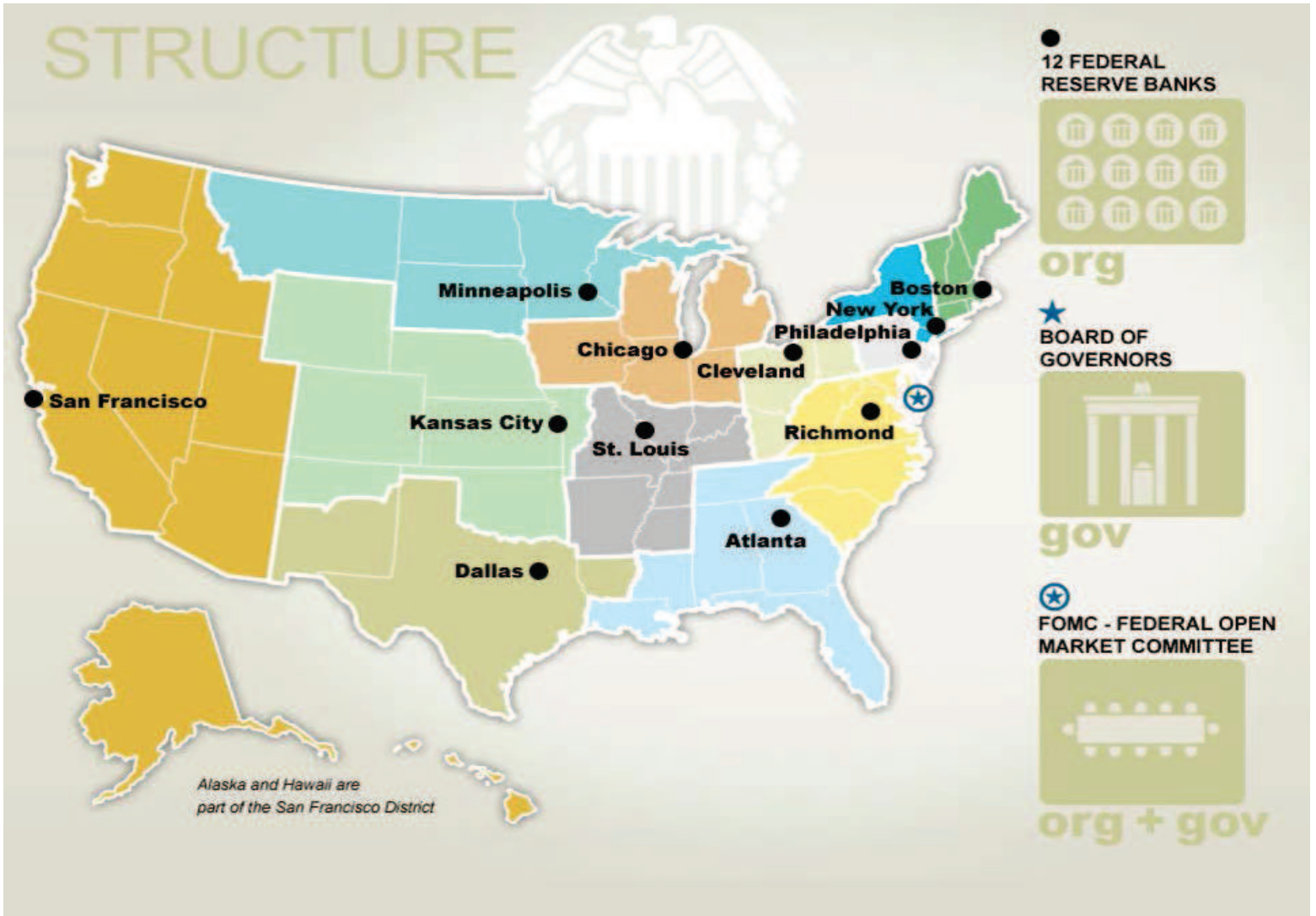
What is the Federal Reserve System?

Since 1913, the Federal Reserve has been the U.S. Central Bank.



What does the Federal Reserve do?

The Federal Reserve System has several key responsibilities:

- **Monetary policy** (set by the FOMC).
- Lender of last resort (supplying liquidity).
- Banking regulation (oversee holding companies, conduct stress tests . . .).
- Payments system.

The Federal Open Market Committee (FOMC)

- FOMC is the monetary policy decision-making body.
- FOMC consists of members of the Board of Governors, and Reserve Bank presidents.
- Chair of the Board of Governors is also the FOMC chair.
- 12 voting members: Governors and five regional presidents with one-year terms on a rotating basis (except NY).
- The FOMC meets 8 times each year to:
  - Review economic and financial conditions.
  - Assess the risks to its long-run goals.
  - Determine the appropriate stance of monetary policy.

Legal Structure of the Federal Reserve System

- Fed has both public and private characteristics.
  - Board is an agency of the federal government, but independent in setting policy rate and/or alternative instruments.
  - Reserve Banks are private in the sense that commercial banks in the district hold the equity stock. However,
    - Reserve Banks are **not** operated for profit. Equity holders have **no** vote in setting monetary policy.
    - Ownership of a certain amount of stock is, by law, a condition of membership in the System. Stock cannot be traded.
    - Reserve Banks' net profits (e.g., net of statutory dividend payments to equity holders) are transferred to Treasury.

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What is Monetary Policy?

- "Actions undertaken by a central bank, such as the Federal Reserve, to influence the availability and cost of money and credit to help **promote national economic goals**."

  (Source: http://www.federalreserve.gov/monetarypolicy/fomc.htm)

- One of the primary "actions" taken by the FOMC is to set the target for the federal funds rate (FFR).
  - This is the interest rate that banks pay to borrow reserves from other banks overnight, i.e., the price of short-term funding.

What are "National Economic Goals"?

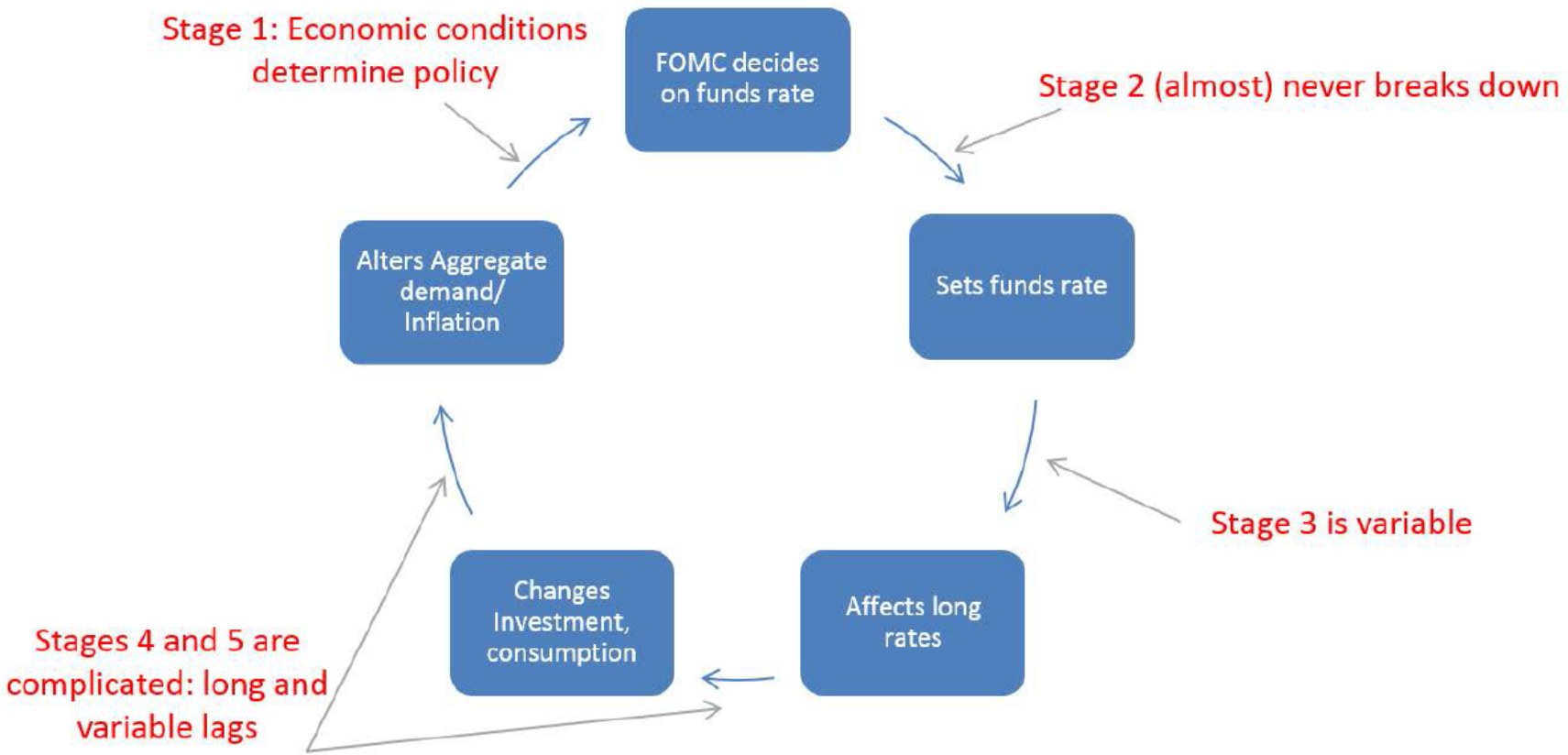
- Required by Congress: "maximum employment, stable prices, and moderate long-term interest rates" (Federal Reserve Act, as amended in 1977).
- The first two goals are known as the **dual mandate.**
  - *Employment goal*: Not fixed, instead policymakers operate with their best estimate of a long-term goal based largely on factors relating to the structure of the labor market; this best estimate is re-assessed continually.

    (For example, the unemployment rate is measured relative to an equilibrium full-employment rate called the NAIRU.)
  - *Inflation goal*: on average 2 percent per year.

    "Flexible average inflation target" policy framework adopted in 2020: to achieve an average rate of 2% over time (allowing for temporary periods of inflation above 2% to offset times below 2%)
- Possible other objectives?
  - Output growth, financial stability.

How can Monetary Policy Achieve these Goals?

Monetary Policy Transmission



The Broader Transmission of Monetary Policy

- Funds rate (i.e. FFR) closely linked to other short-term interest rates directly relevant for banks and other institutions that rely on short-term borrowing.
- Lowering the short-term interbank rate (i.e. FFR) also reduce other interest rates in the economy, including longer-term rates.
  - **Expectation Hypothesis**:
    Long rates = avg. expected future short rates + risk premium.
- Stimulative effect of lower (longer-term) rates works primarily through increased spending on housing, consumer durables, and business investment.
- Conversely, when the Fed raises the FFR, this feeds through to other rates and reduces consumer spending and business investment.

Monetary Policy: Choosing the FFR

The Fed's policy actions, in recent history, are well characterized by the following "reaction function":

- If inflation exceeds target, the FOMC raises the funds rate (FFR) (tightens policy).
- If unemployment rate exceeds the long-run goal, the FOMC lowers the FFR (eases policy).

Think of the Fed's reaction function as a monetary policy rule:

$$i_t^{ff} = i_t^{\mathrm{N}} + \alpha\left(\pi_t - \pi_t^{\text{target}}\right) - \beta\left(U_t - U_t^{\text{Full Employment}}\right)$$

$$\text{where : } i_t^{\mathrm{N}} = \text{(nominal) natural rate of interest}$$

$$i_t^{ff} = \text{federal funds rate}$$

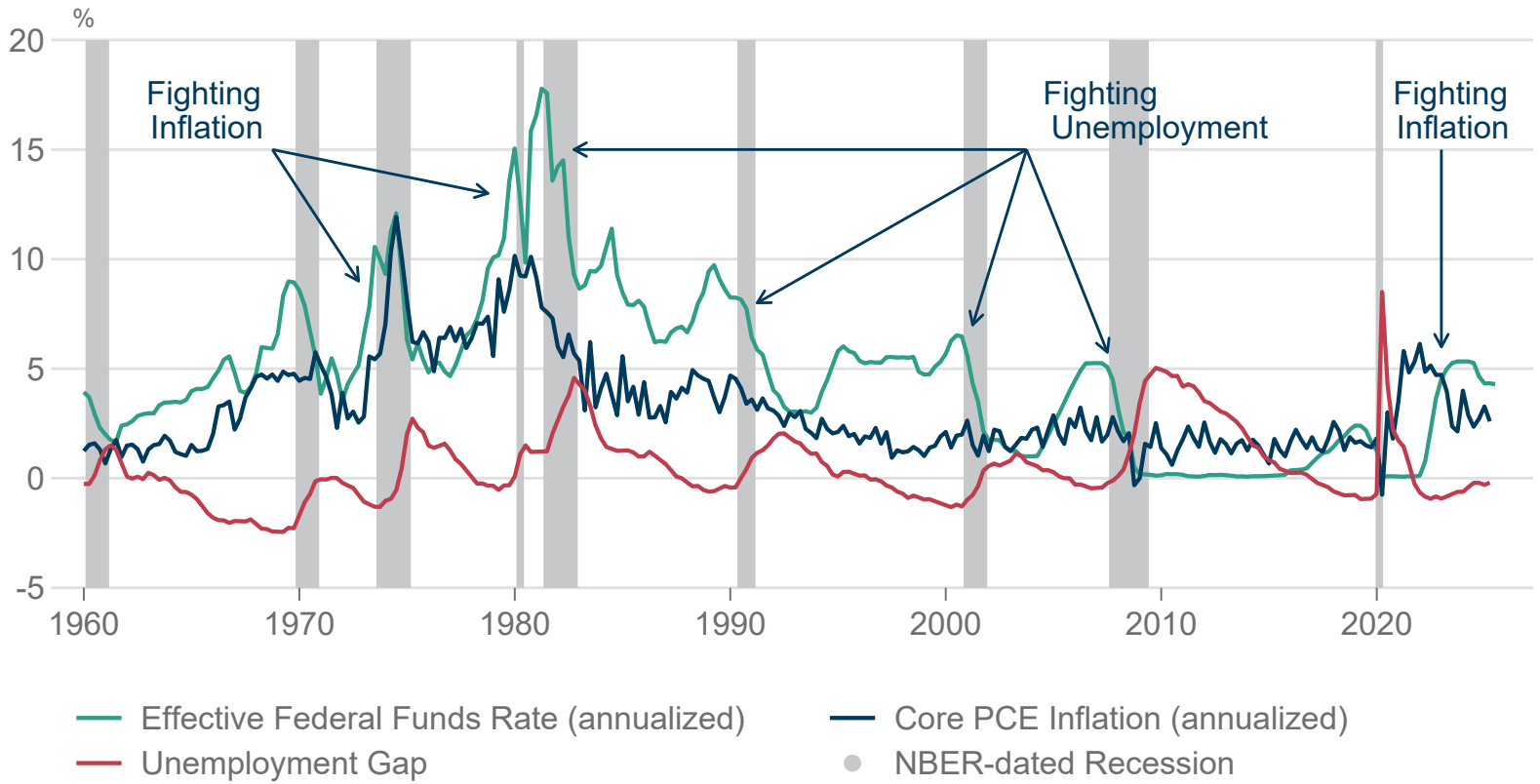
$$\pi_t = \text{inflation rate}$$

$$U_t = \text{unemployment rate}$$

Monetary Policy in Different Periods

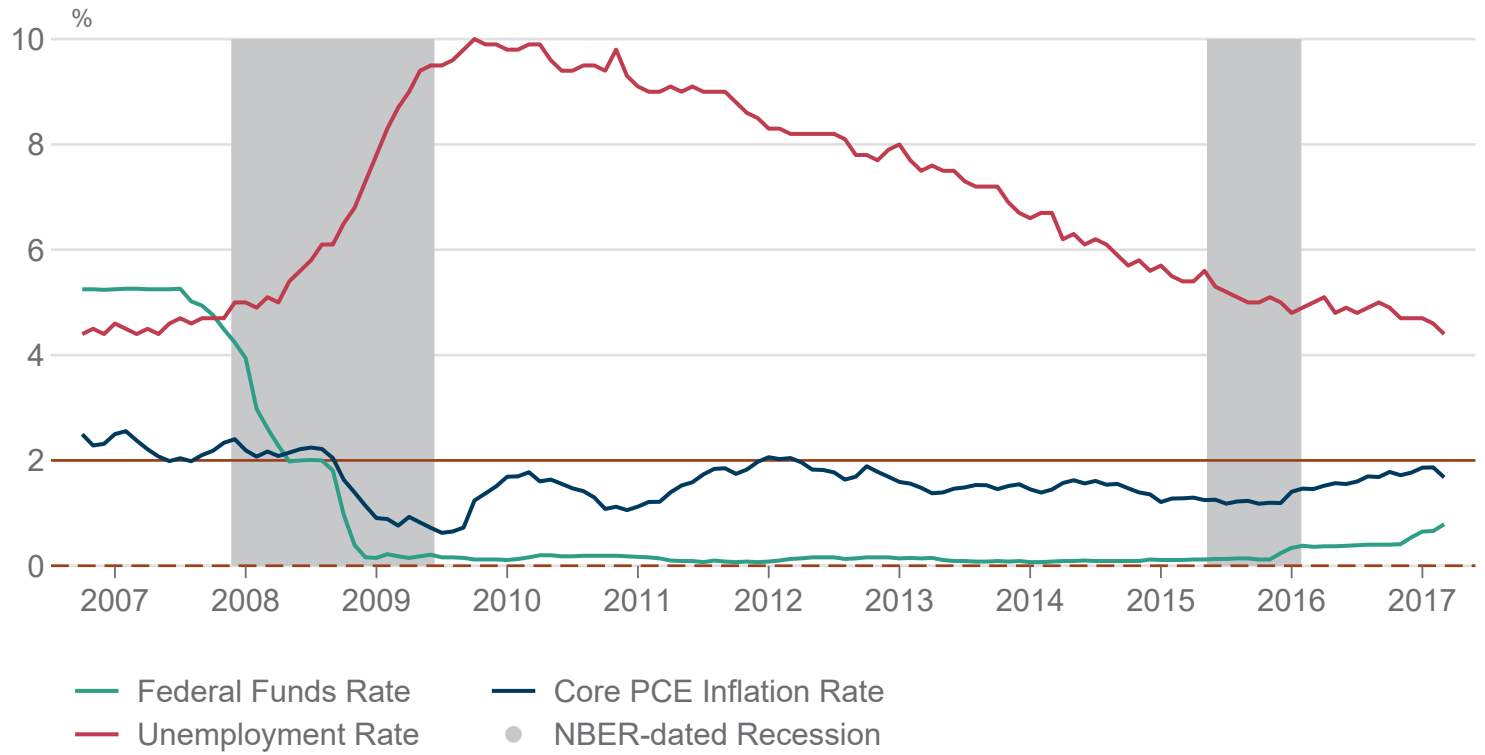
Dual Mandate: Objectives typically complementary.

If not, a balanced approach in promoting them is followed.



Source: *Federal Reserve Board / US Congressional Budget Office / Bureau of Labor Statistics / Haver Analytics*

Monetary Policy: Great Recession and Zero Lower Bound (ZLB)



Source: *Federal Reserve Board / Bureau of Economic Analysis / Bureau of Labor Statistics / Haver Analytics*

No conflicting objectives, but the **FFR hit zero**!

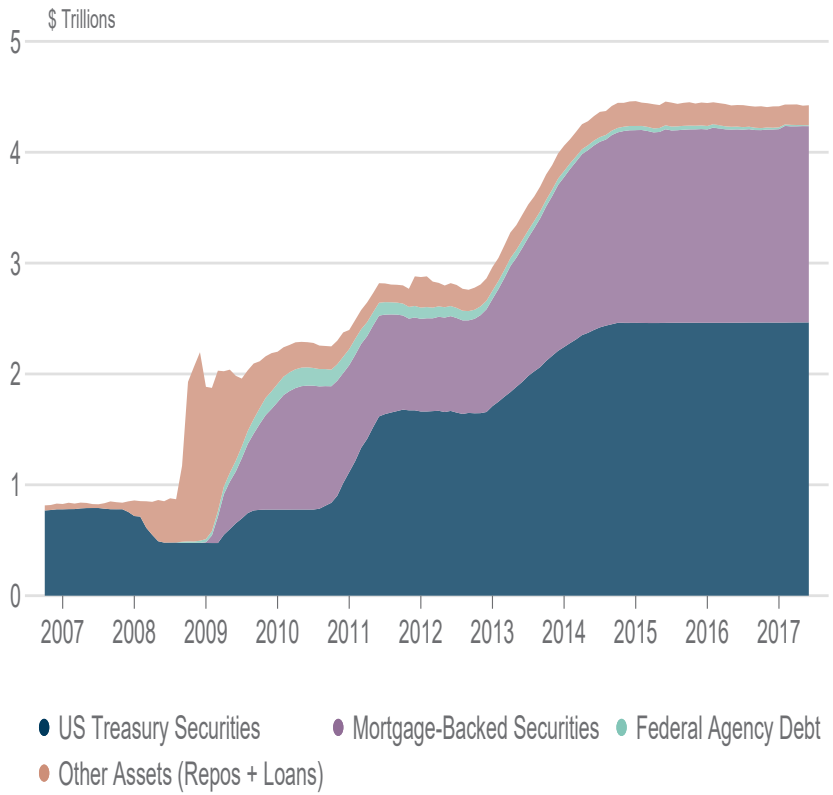
Other (Novel/Unconventional) Tools of Monetary Policy

During & following the Great Recession, with the FFR at the ZLB, the FOMC relied on alternative (unconventional) tools for implementing monetary policy.

1. Large-scale Asset Purchases (LSAP) or Quantitative Easing (QE) to:
   - Lower long-term interest rates and support asset prices.
   - Improve liquidity for banks by increasing reserve supply.
2. Alter the composition of Fed balance sheet (Operation Twist):
   - Buy long-term and sell short-term Treasury securities.
   - Push down long-term interest rates without expanding balance sheet.
3. Communication/Forward Guidance:
   - Policymaker statements about future policy actions affect expectations about future short-term interest rates;
     $\Rightarrow$ Lower expected future short rates translate into lower long-term rates today.
4. (Some countries experimented with negative policy rates.)

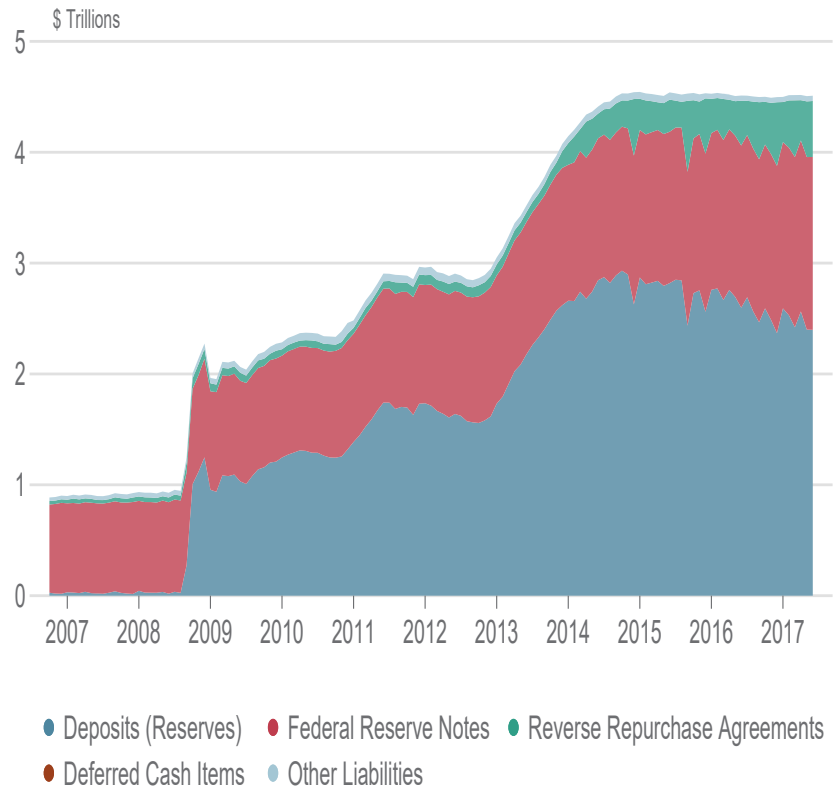
Post-GFC Unconventional Monetary Policy & Fed's Bal. Sheet

Assets



Source: *Federal Reserve Board / Haver Analytics*

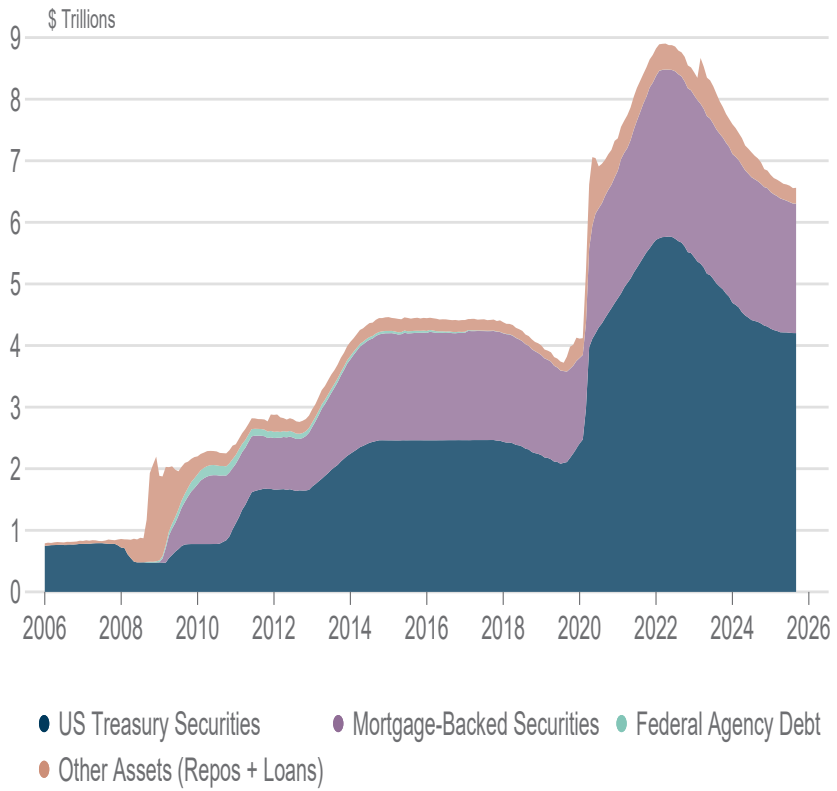
Liabilities



Source: *Federal Reserve Board / Haver Analytics*

Unconventional Monetary Policy & Fed's Bal. Sheet: Pandemic & Beyond

Assets



Source: *Federal Reserve Board / Haver Analytics*

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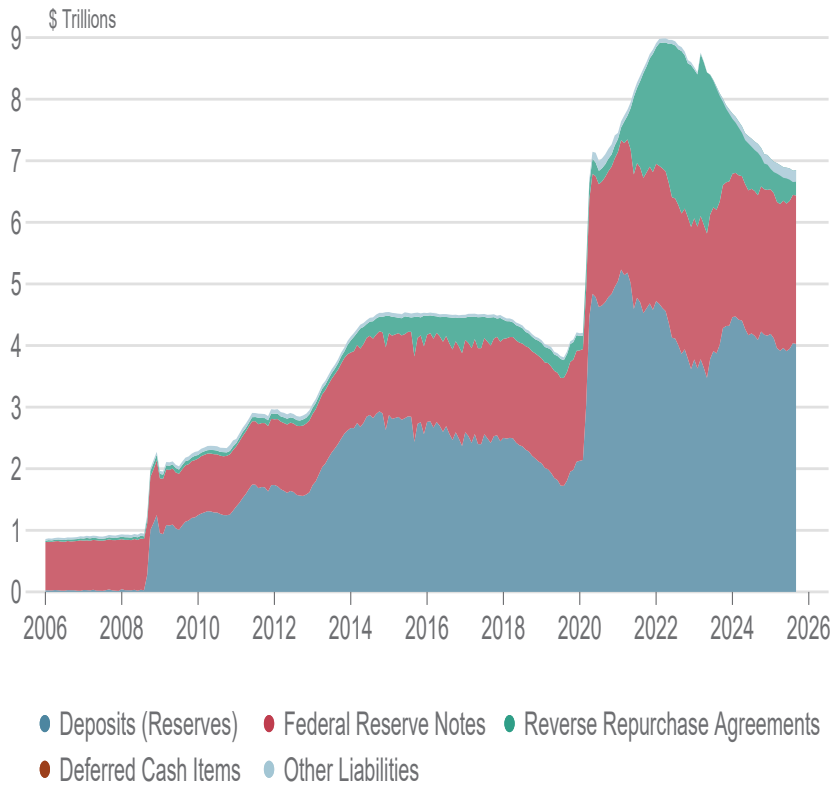
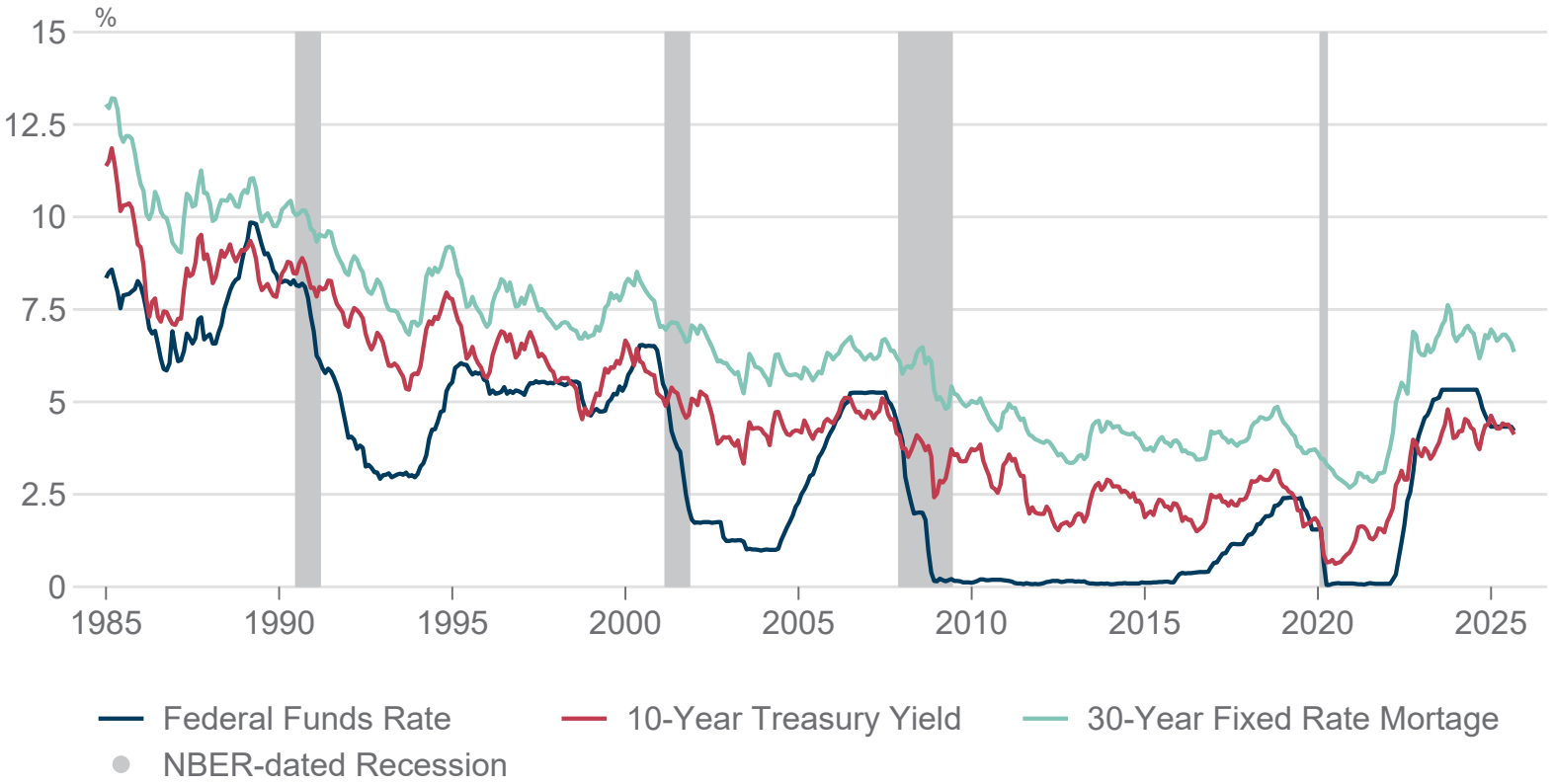


Source: *Federal Reserve Board / Haver Analytics*

Success? Transmission of Monetary Policy to Long Rates



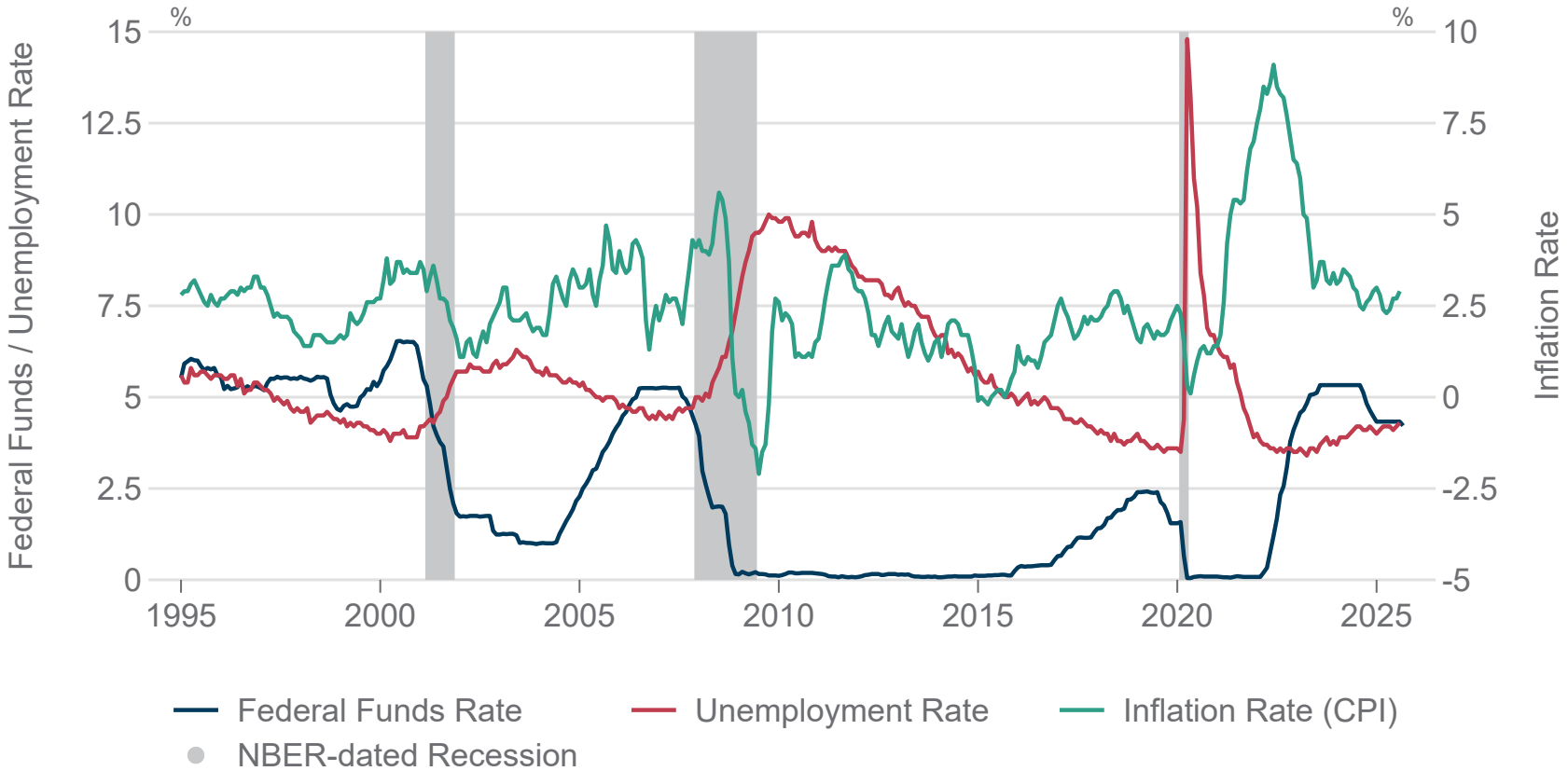
Source: *Federal Reserve Board / Haver Analytics*

Monetary Policy during COVID-19 Pandemic

During 2020 COVID outbreak, FFR hit zero lower bound again ...

- Fed revived large-scale asset purchases and broadened scope to include corporate bonds
- Together with US Treasury, Fed established several other credit and liquidity facilities, including for small and mid-sized enterprises
  - Main Street Lending Program
  - Funding to support Paycheck Protection Program
- In addition, massive fiscal support (CARES act)
  - Transfer payments to households: stimulus checks, extended/expanded unemployment benefits
  - Paycheck Protection Program: Essentially free credit to small businesses

Post-COVID Surge in Inflation and Fed's Response



Source: *Federal Reserve Board / Bureau of Labor Statistics / Haver Analytics*

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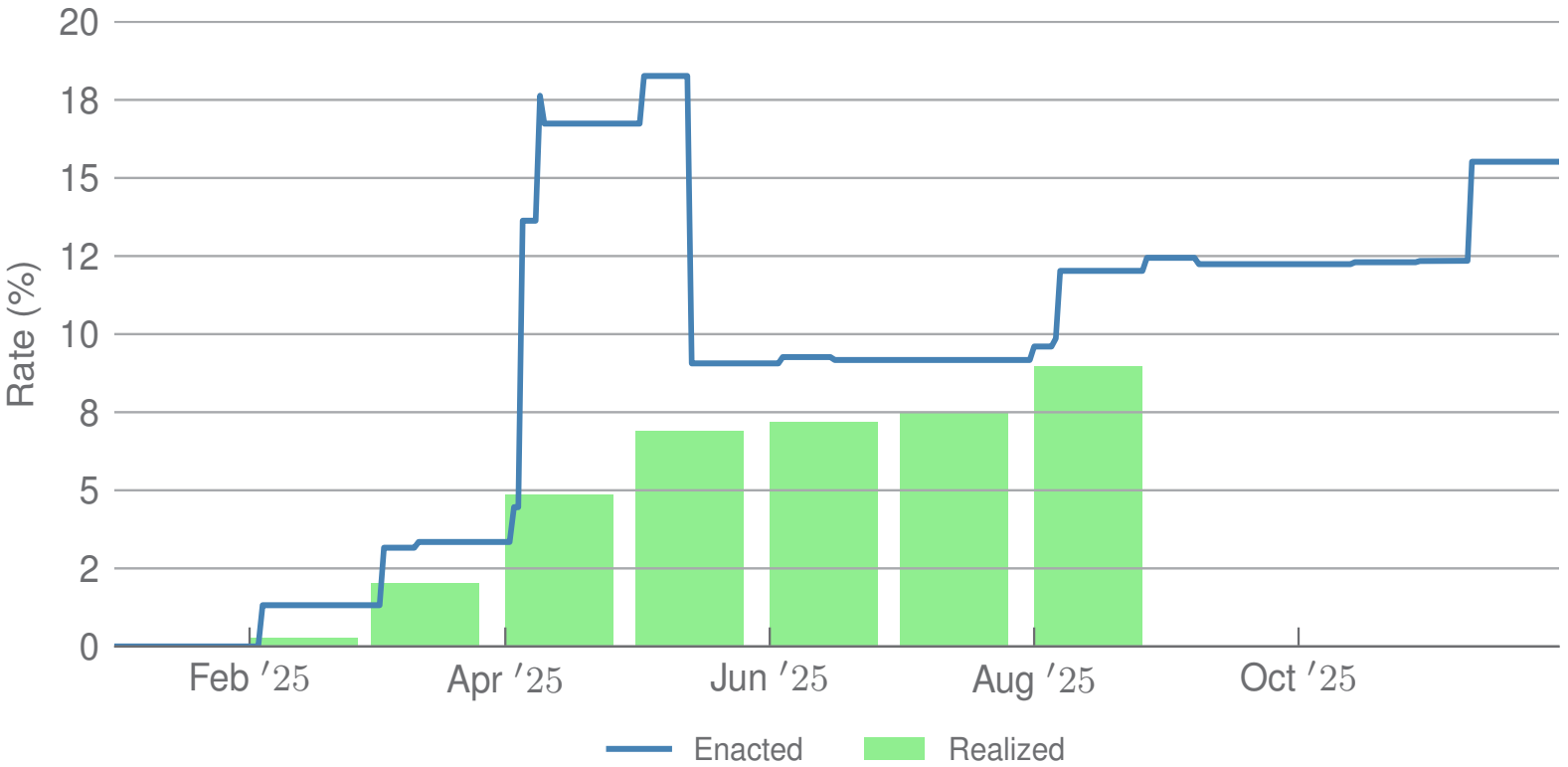
Tariff Shock(s): 2025 Edition



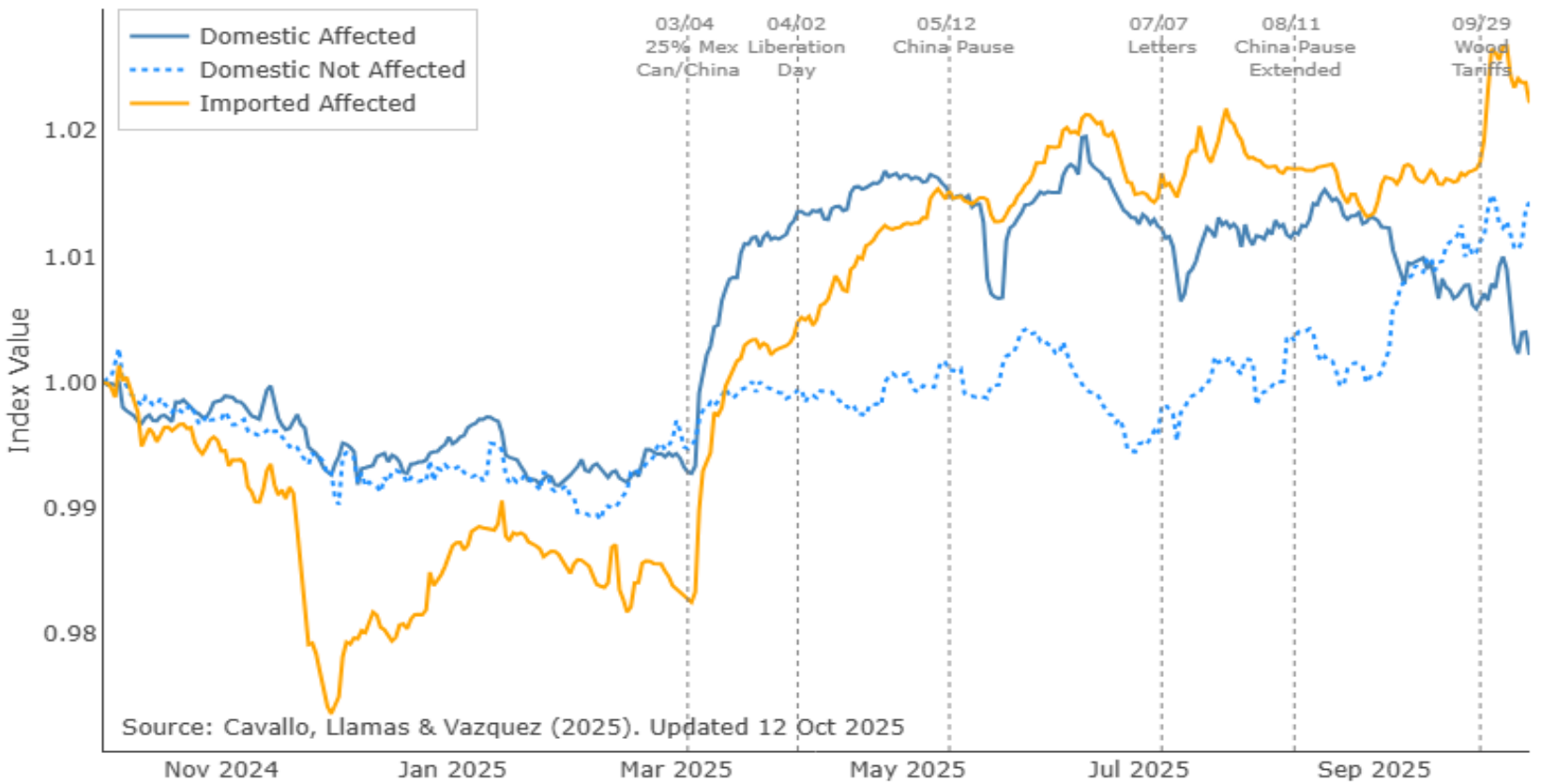
Sources: Census Bureau, Federal Register, US Treasury, and Federal Reserve Bank of Boston Research.
Note: The enacted tariff rate is calculated using 2024 import shares and adjusting for observed USMCA exemption rates.

Source: Barbiero et al. (2025).

▸ 2018 Tariff

Tariff Pass-Through into Retail Prices: By Category

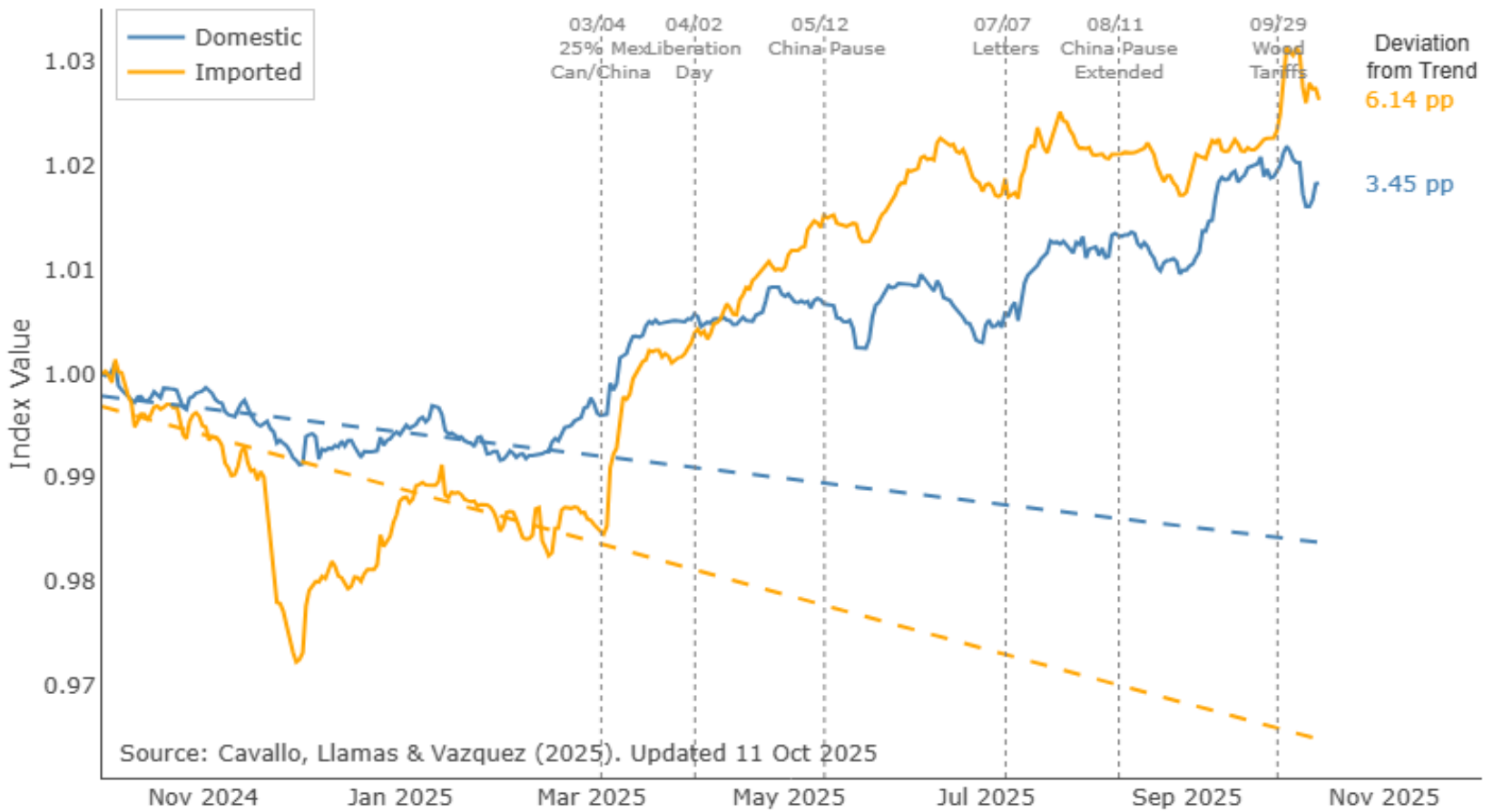
Price Indices by Exposure to Tariff



▸ By Origin Country

Tariff Pass-Through: Relative to Pre-Shock Trend

Price Indices Relative to Oct. 2024 – Feb. 2025 Trend



Policy Tradeoffs When Faced with Supply Shocks

- When the two goals in the Fed's dual mandate come into conflict due to supply shocks, such as tariff (tax) hikes, balancing act is needed;
  - Higher taxes weaken aggregate demand, slow output & employment growth, calling for easier monetary policy to stimulate the economy;
  - But higher taxes also raise prices, leading to higher inflation, at least temporarily. This may require tighter policy, to keep inflation expectations anchored, and prevent inflation from become entrenched.

$$i_t^{ff} = i_t^{\mathrm{N}} + \alpha\left(\pi_t - \pi_t^{\text{target}}\right) - \beta\left(U_t - U_t^{\text{Full Employment}}\right)$$

Policy Considerations When Faced with Elevated Uncertainty

- When uncertainty is high, then policy moves may need to be more cautious;
  - Sources of uncertainty, some examples:
    1. Large variances of shocks (e.g., not knowing what tariff rates will eventually prevail),
    2. Impact of shocks is (particularly) uncertain (e.g., how fast and by how much will firms pass on tariff?)
  - Uncertainty regarding impact of tariff (magnitude, trajectory) is exacerbated by lack of data.
- Unless the bad outcome is expected to be really costly (such as a deep recession), then decisive policy actions would be called for to minimize that risk (robust control).

Summary: Monetary Policy is Hard!

- The main transmission mechanism for monetary policy works through long-term interest rates. In normal times, Fed affects it mostly by actively managing a very short-term (overnight) rate (FFR).
- When short-term rates are effectively zero, Fed has to innovate on its tool kit to stimulate the economy (and fight major crises).
- Monetary policy is not an exact science. It has long and variable lags. It is hard, but that's also why it keeps us motivated!
- We need to always be open because the economy, or our understanding of it as policymakers, can change profoundly.

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What's Fintech? Shouldn't All Finance Be Fintech?

"Fintech, or financial technology, is the **use of technology to provide financial services and solutions**, often with the goal of improving, automating, or streamlining them. It includes **a wide range of digital tools and services** . . . , is used by both consumers and businesses to manage money more easily."

– Google AI summary

Boston Fed 2024 Conference Explored Fintech

Some Important Topics about Fintech

Boston Fed 2024 Conference explored important fintech topics:

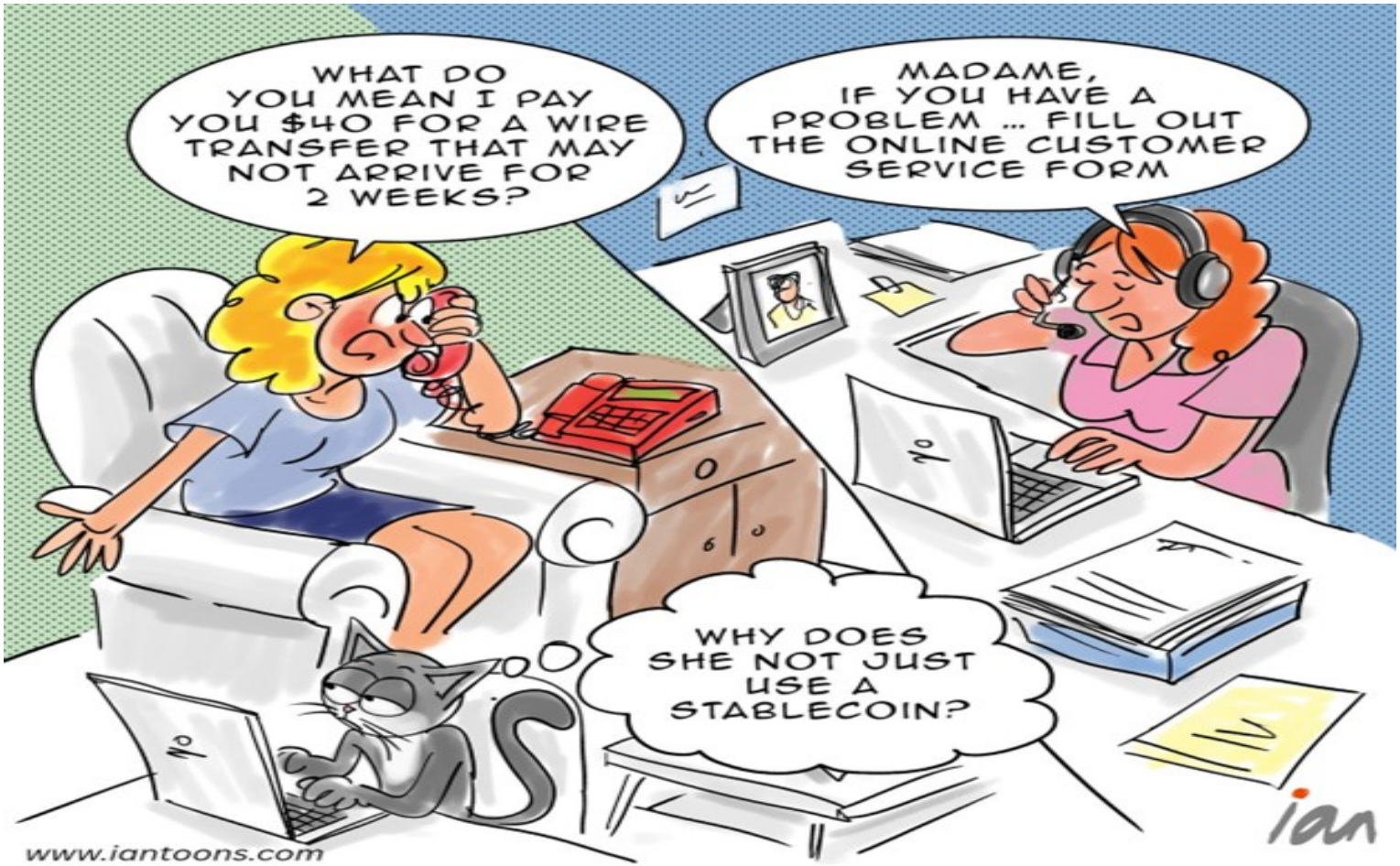
- How has fintech benefited **consumers**: faster, easier, cheaper and broader access to financial services?
- How has fintech affected availability of credit to **small businesses**?
- **New payment technologies**: Implications for monetary policy and financial stability;
- Decentralized Finance (**DeFi**), Blockchain/Distributed Ledger Technology (**DLT**) and smart contracts: Hope or hype?
- How can financial technology improve efficiency and efficacy of regulation & supervision?
- Financial system of the future: opportunities and challenges for central banks

Fintech's Promises for Consumers: Easier, Faster, Cheaper ...

- Payments: consumers care about convenience, speed, cost, reliability, security, choice. May esp. benefit un/underbanked.
  - Cross-border payments likely enjoy largest improvement;
  - Mobile apps (e.g., Venmo) still run on bank payment rails;
  - Faster payment options from TradFi: e.g., FedNOW.
- Credit: easier, faster, cheaper to access
  - Nonbank lenders (e.g., United Wholesale, Rocket Mortgage) now dominate home mortgage lending (Buchak et al. 2018)
  - Buy Now Pay Later (BNPL): Expanding credit access to consumers facing constraints. May it lead to over-borrowing? (e.g., Stavins 2024)
  - Student loan refinancing: cream-skimming? (Di Maggio and Yao 2018)
- Wealth management: robo-advisors (e.g., Betterment, Wealthfront) offer (semi-)tailored investment portfolios and rebalance as needed.
- Insurance (insurtech), etc.

Cross-Border Payments: Stablecoin's Primary Utility for Consumers?

Making cross-border fund transfers faster and much cheaper.



Stablecoins: The Making of New Private Money

- Guiding and Establishing National Innovation for U.S. Stablecoins Act (GENIUS Act, July 2025): federal regulatory framework for payment stablecoins. Key provisions:
  - Regulatory approval & oversight to ensure stability, consumer protection;
  - Reserve requirement and transparency: backed by safe assets, esp. government securities; monthly reserve disclosures;
  - Prohibition of interest or yield on stablecoins.
- Déjà vu of national bank notes (circulated as private money, 1863–1935)? (Luck, 2025)
  - National banks must satisfy min. capital requirement; their notes must be backed by government bonds, thus created additional demand.
  - Bank notes eventually replaced by deposits (& fiat money).

Stablecoins: Great Expectations?

- Most promising use case for stablecoins: smart contracts?
  - Smart contracts: self-executing programs on blockchains, with the terms of the agreement directly written into codes.
  - Stablecoins can serve as tokens on such blockchains, to enable and facilitate execution of contracts.
  - But so can other **tokenized assets** with stable values, such as:
    - Bank deposits;
    - Money market fund shares.

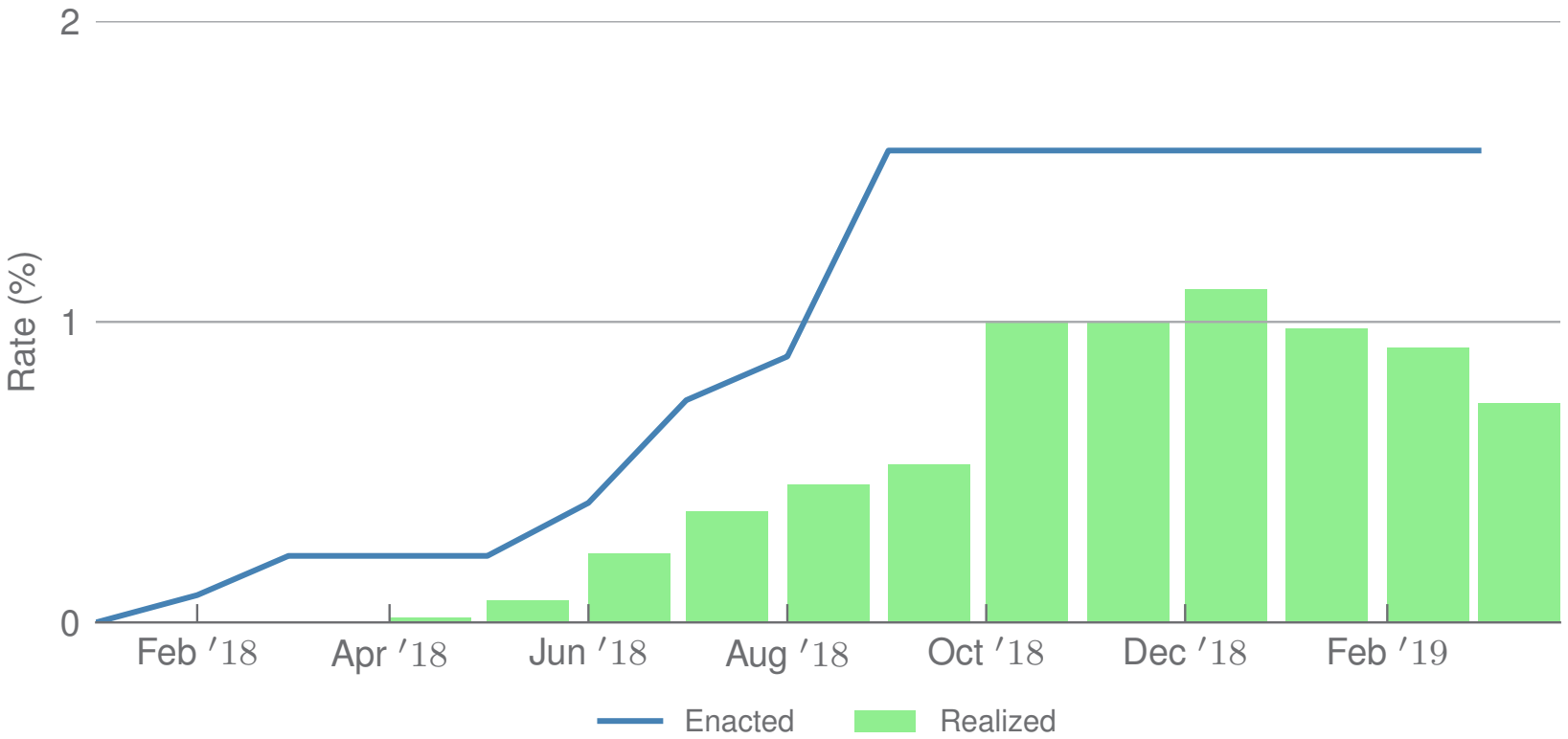
If you want to learn more

- http://www.federalreserve.gov/
- http://www.bostonfed.org
- http://www.bostonfed.org/economic/research.htm
- https://www.bostonfed.org/people/bank/j-christina-wang.aspx

- Questions welcome!

APPENDIX

Tariff Shock(s): 2018 Edition



Sources: Census Bureau and Fagjelbaum et al. (2020).
Note: The enacted tariff rate is calculated using 2017 import shares.

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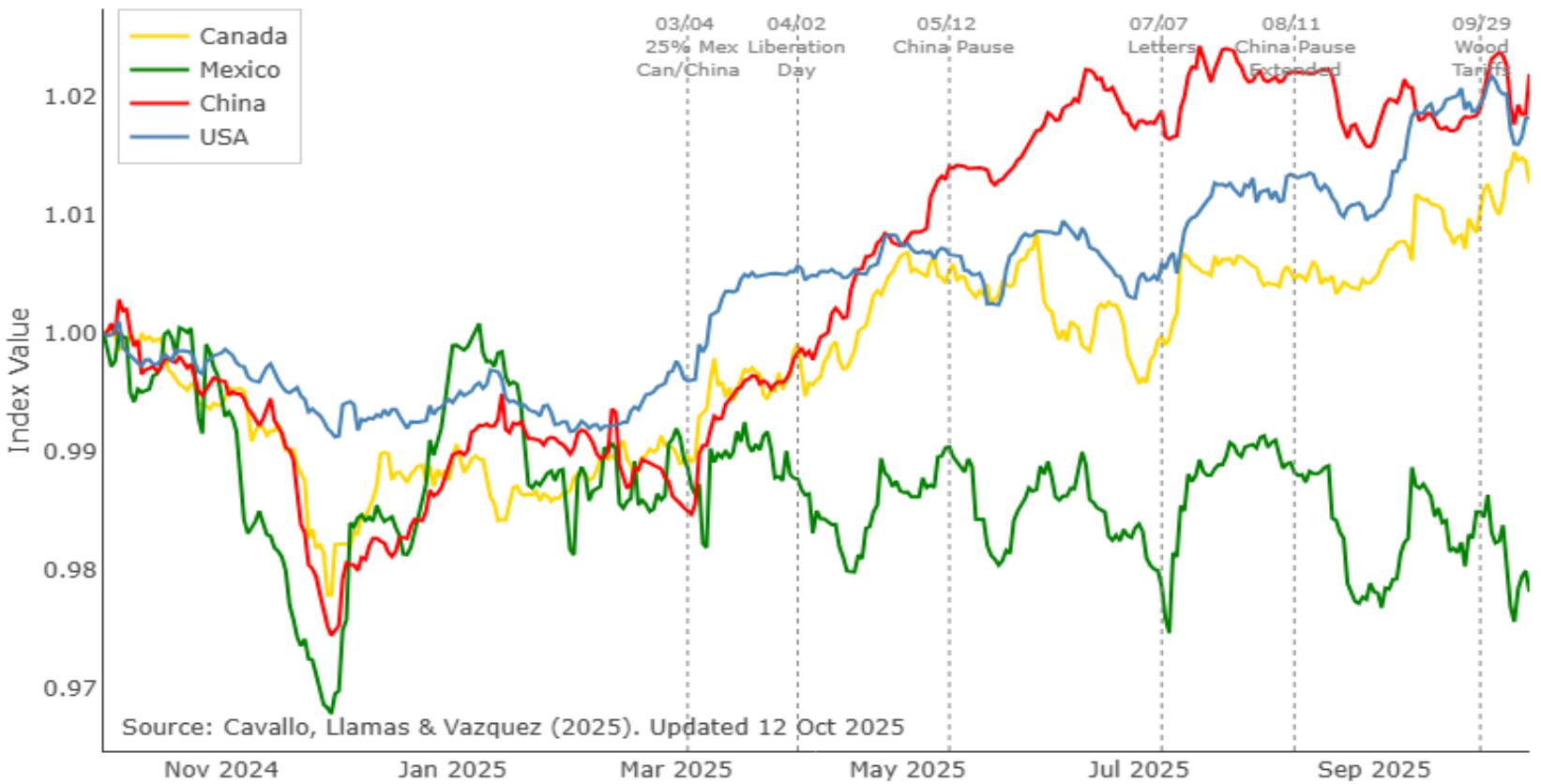
Tariff Pass-Through into Retail Prices: By Country Origin

Price Indices by Country of Origin



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