



FEDERAL RESERVE BANK  
OF SAN FRANCISCO

# Global Trade in Uncertain Times

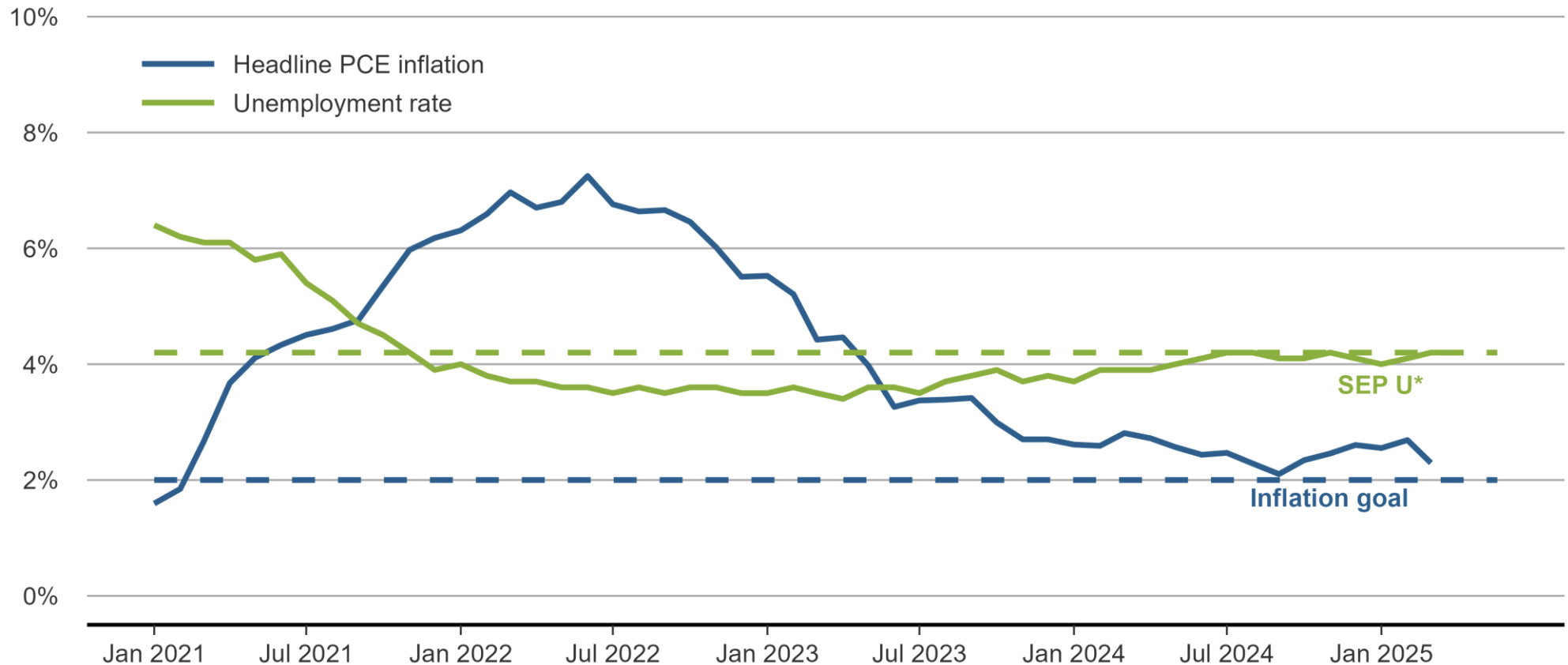
Paul Storer Memorial Lecture  
May 20, 2025

Sylvain Leduc  
Executive Vice President & Director of Research

Views expressed are those of the presenter and not necessarily those of the Federal Reserve Bank of San Francisco or the Federal Reserve System.

# Soft landing facing strong headwinds

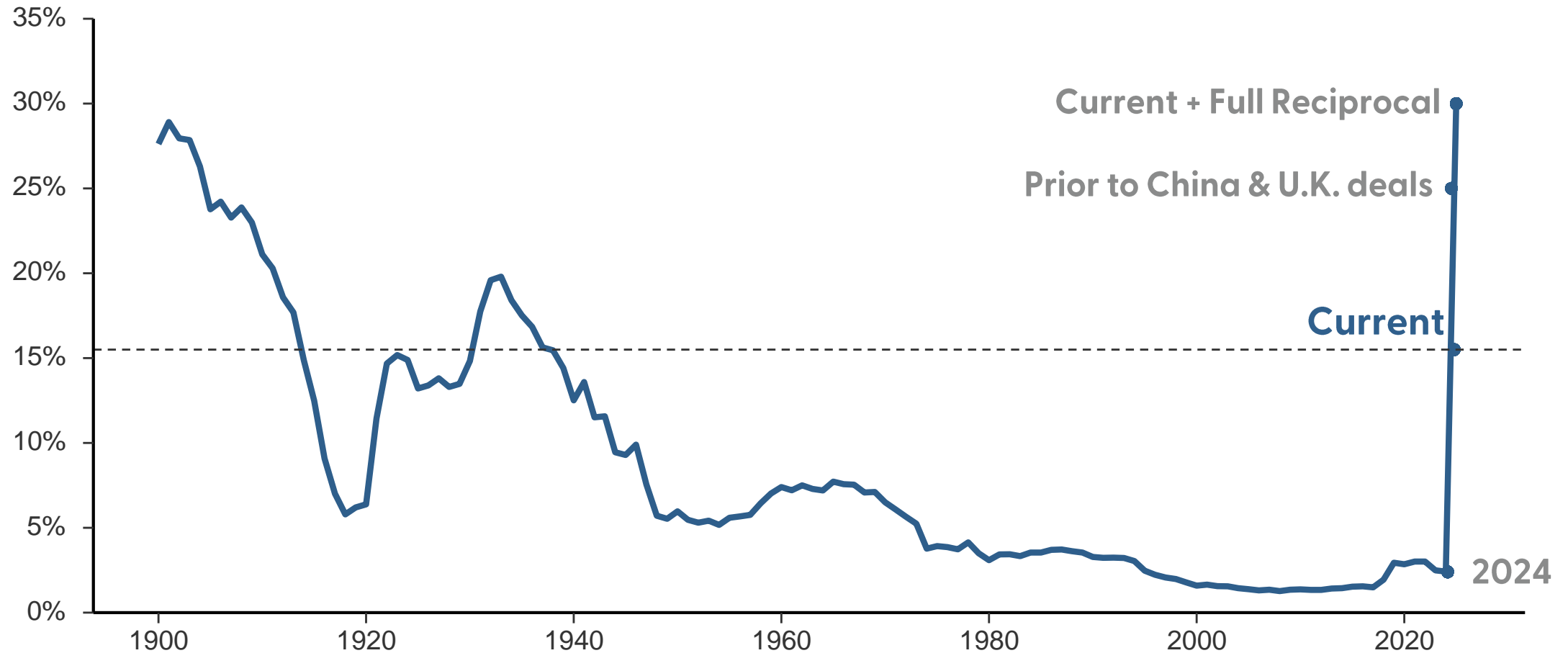
## Unemployment and inflation



Notes: Green dashed line indicates FOMC Summary of Economic Projections (SEP), and blue dashed line indicates Fed's inflation goal.  
Source: Bureau of Economic Analysis

# New average tariff rate fluctuating widely

## Overall U.S. average effective tariff rate

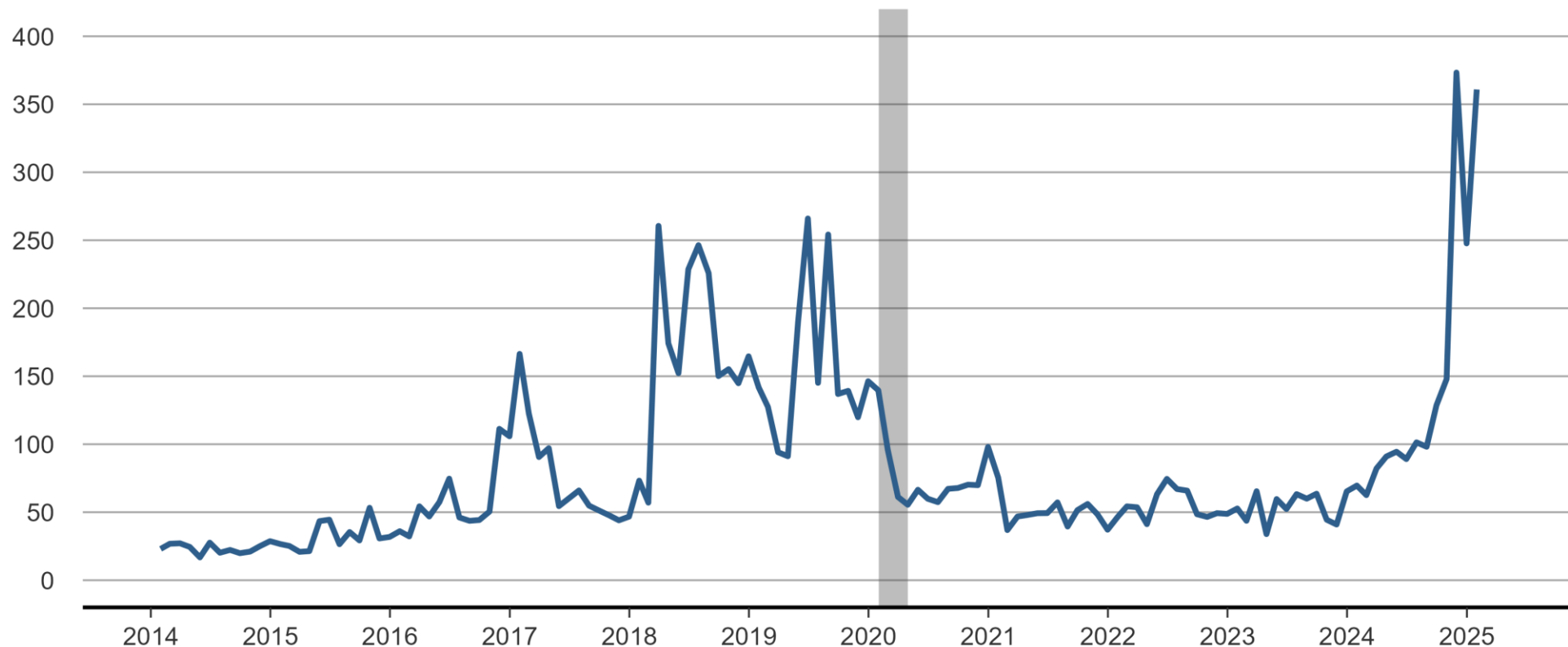


Note: Data show U.S. customs duties on goods imports as a share of total goods imports.

Source: Department of the Treasury, Bureau of Economic Analysis, Yale University's The Budget Lab, and FRBSF calculations.

# Trade policy uncertainty remains high

## Trade Policy Uncertainty index



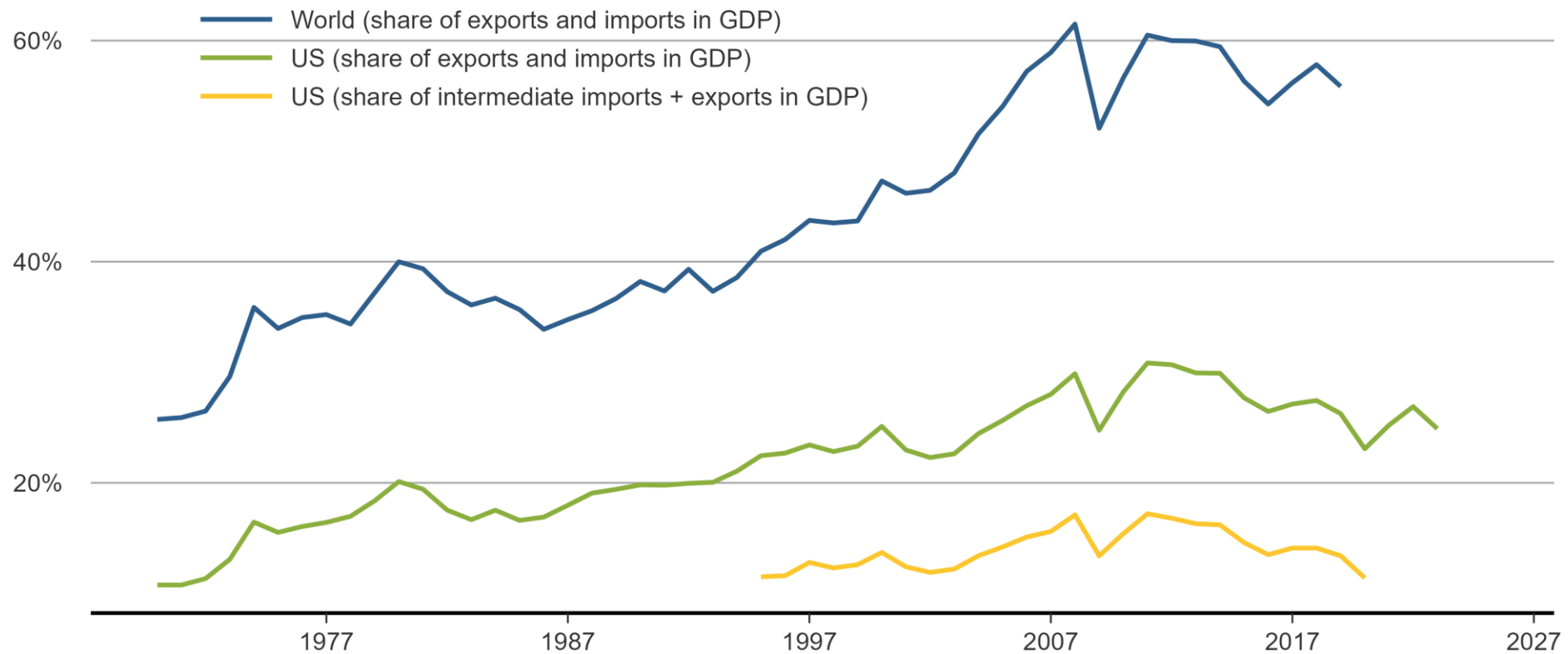
Note: 100 = 1% share of articles

Source: Data downloaded from <https://www.matteoiacoviello.com/tpu.htm> on May 14, 2025.

Caldara, Dario, Matteo Iacoviello, Patrick Molligo, Andrea Prestipino, and Andrea Raffo. 2020.

"The Economic Effects of Trade Policy Uncertainty." *Journal of Monetary Economics* 109, pp. 38-59.

# Despite stalling, it is still a globalized world



Source: OECD Trade in Value Added and World Bank



# **How should we think about tariffs?**

# Tariff impacts partly depend on ability to adjust

- **Sources of imports**

- Global versus country-specific tariffs

- **Profit margins**

- Industry-wide versus firm-specific cost increases

- **Mix of inputs**

- Degree of input substitutability

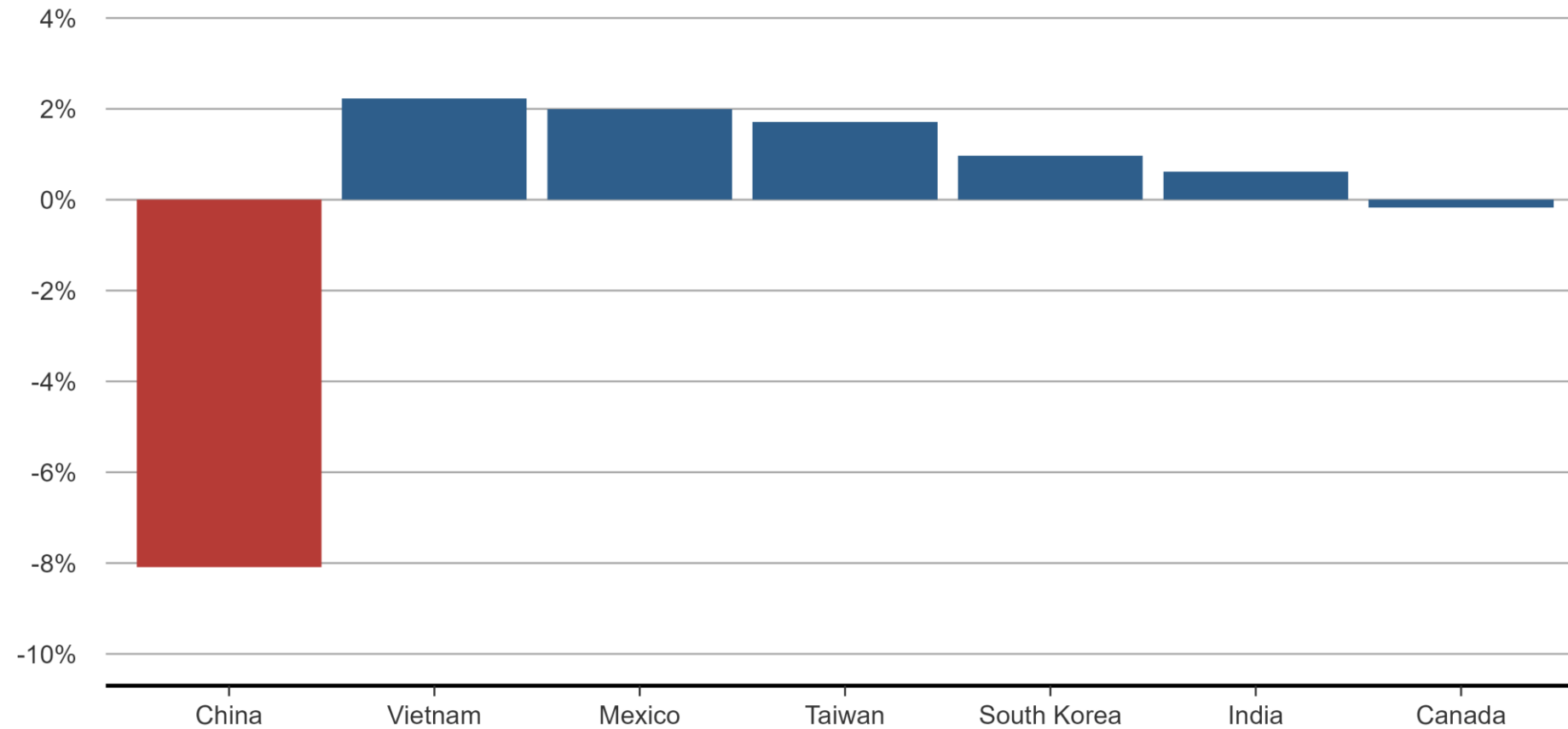


# Sources of imports



# Tariffs on Chinese goods led to import diversion

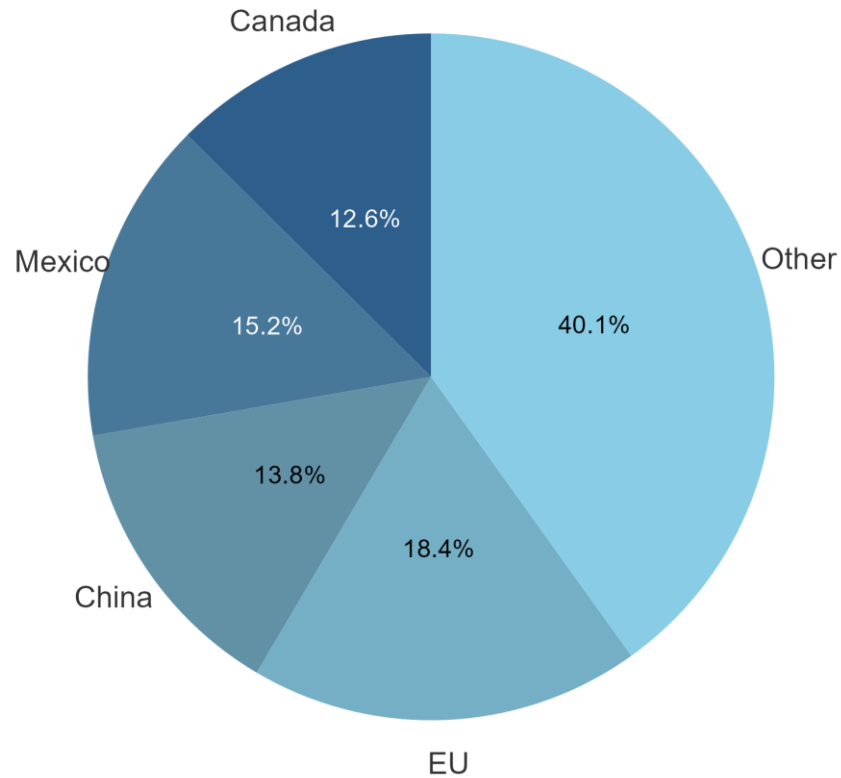
## Changes in U.S. import shares by country, 2017-2024



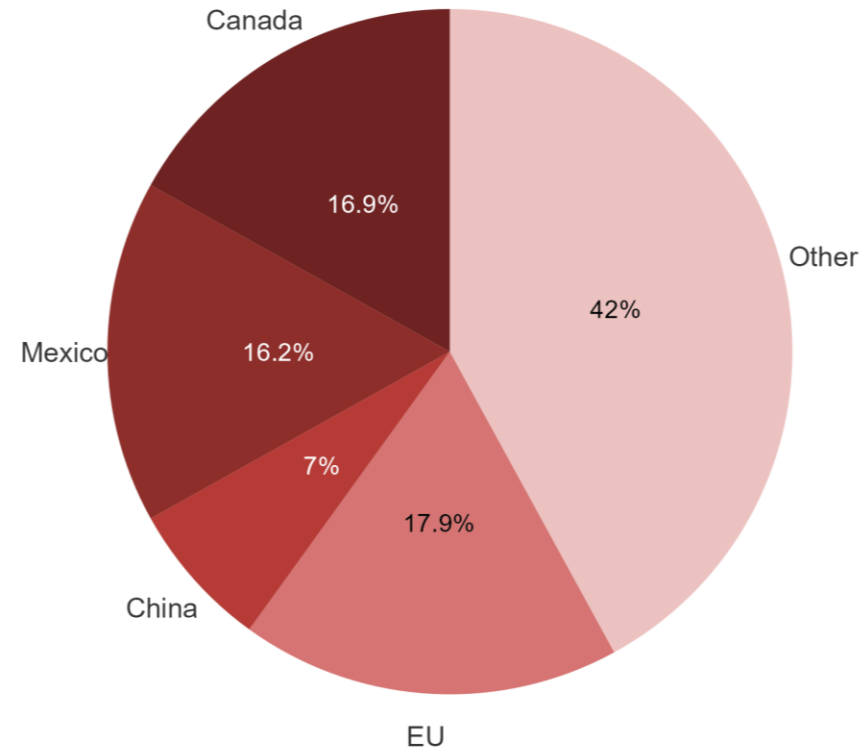
Source: Census Bureau/Haver Analytics

# Less scope to diversify trade this time around

Share of Imports in 2024



Share of Exports in 2024





# **Tariffs pass through to prices**

# Tariffs impact import prices via a few channels

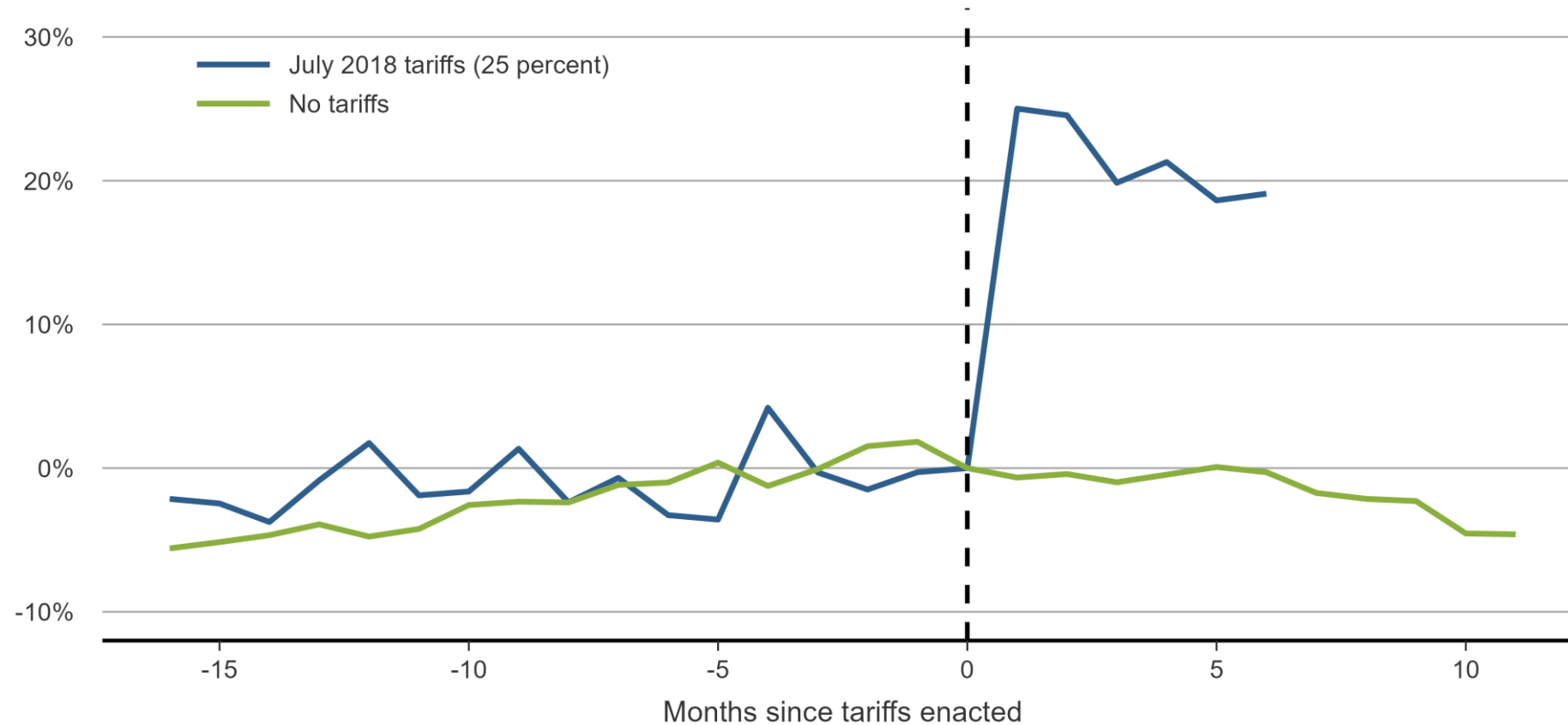
- **Assuming export prices are set in foreign currency**

$$p_m = e(1 + \tau)p_x$$

- **Impact on import prices depends on**
  - Whether exporters lower export prices, e.g., by lowering margins
  - Whether exchange rate appreciates (↓) or depreciates (↑)

# Tariffs fully passed through to import prices

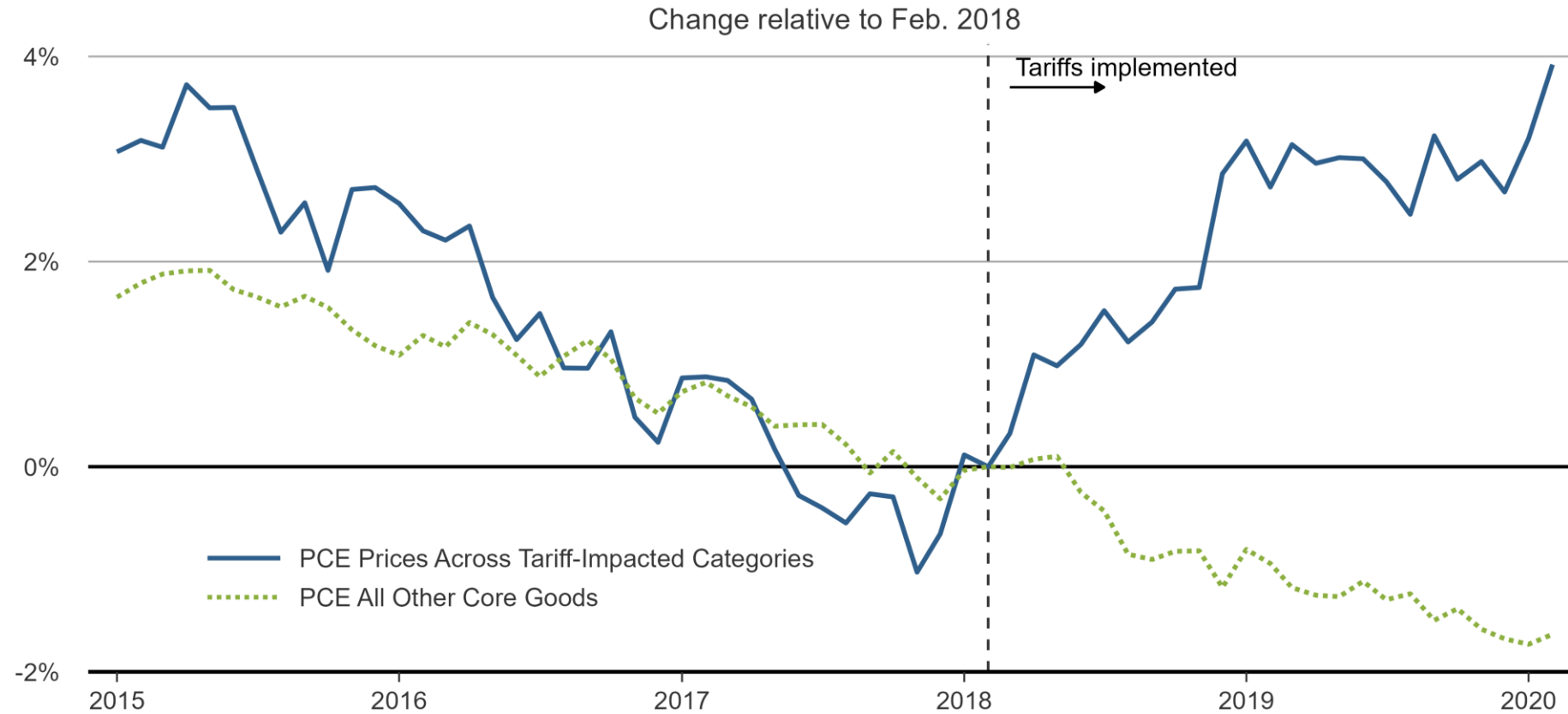
## Effect of 2018 tariffs on tariff-inclusive import prices



Note: 12-month percent change  
Source: Amiti, Redding, and Weinstein (2019)

# Tariffs passed through to consumer prices

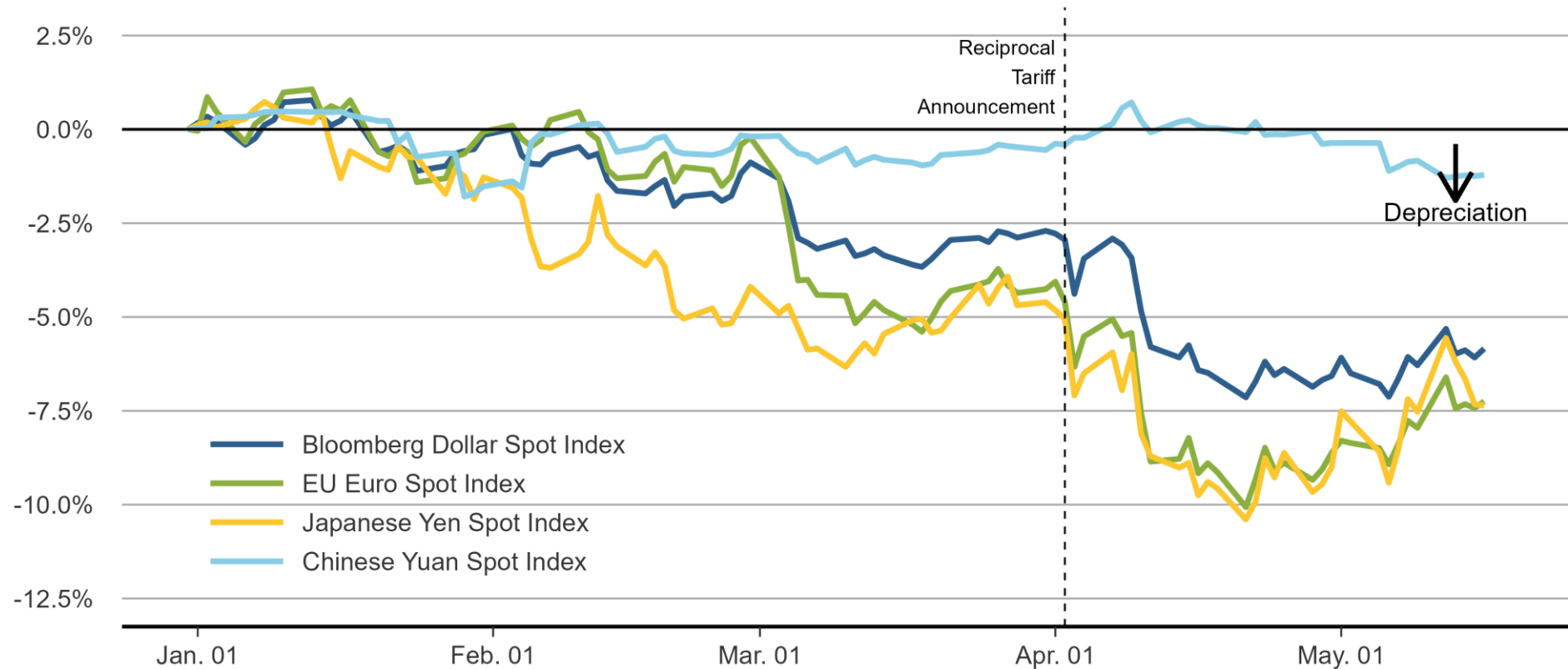
## Effect of 2018-2019 tariffs on core goods prices



Note: Tariffed industries include auto parts, motorcycles, recreational vehicles, furniture, linens, carpets, sewing items, as well as household appliances (including laundry equipment) and cleaning products.

# No US dollar protection against tariffs

## Year-to-date percent change



Note: Year-to-date change. Upward movement indicates appreciation of the U.S. dollar. Downward movement indicates depreciation. Bloomberg Dollar Spot Index is weighted by trade and liquidity. It includes the EU, UK, China, Japan, Canada, Mexico, among others. Source: Bloomberg, Wall Street Journal via Haver Analytics.



# **Input mix**



# Higher tariffs may incentivize automation

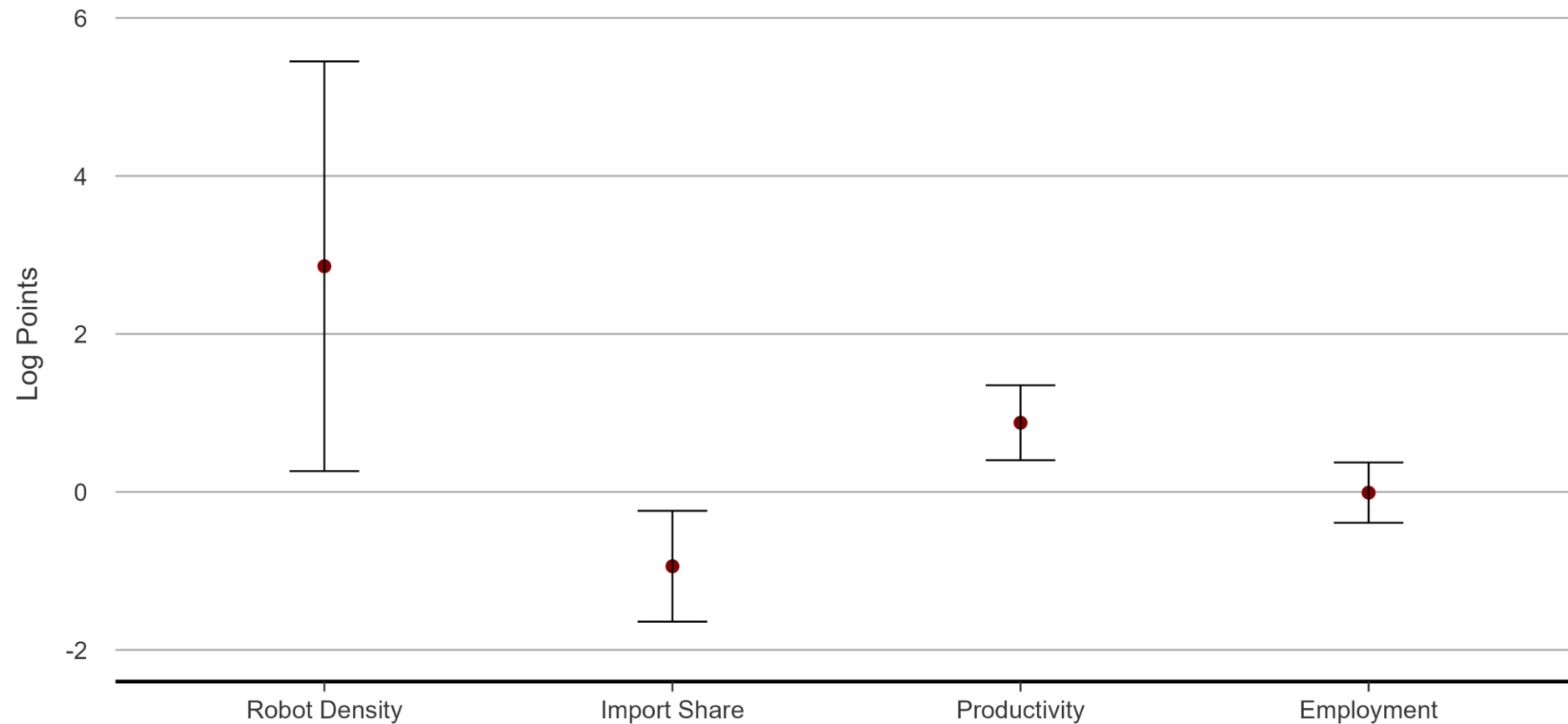
Firooz, Leduc, Liu, *Journal of International Economics*, 2025

Industries that rely more on imports  
automate more when trade policy uncertainty rises

	Imports	Robots	Employment	Productivity
Industries importing more	↓	↑	n.c.	↑

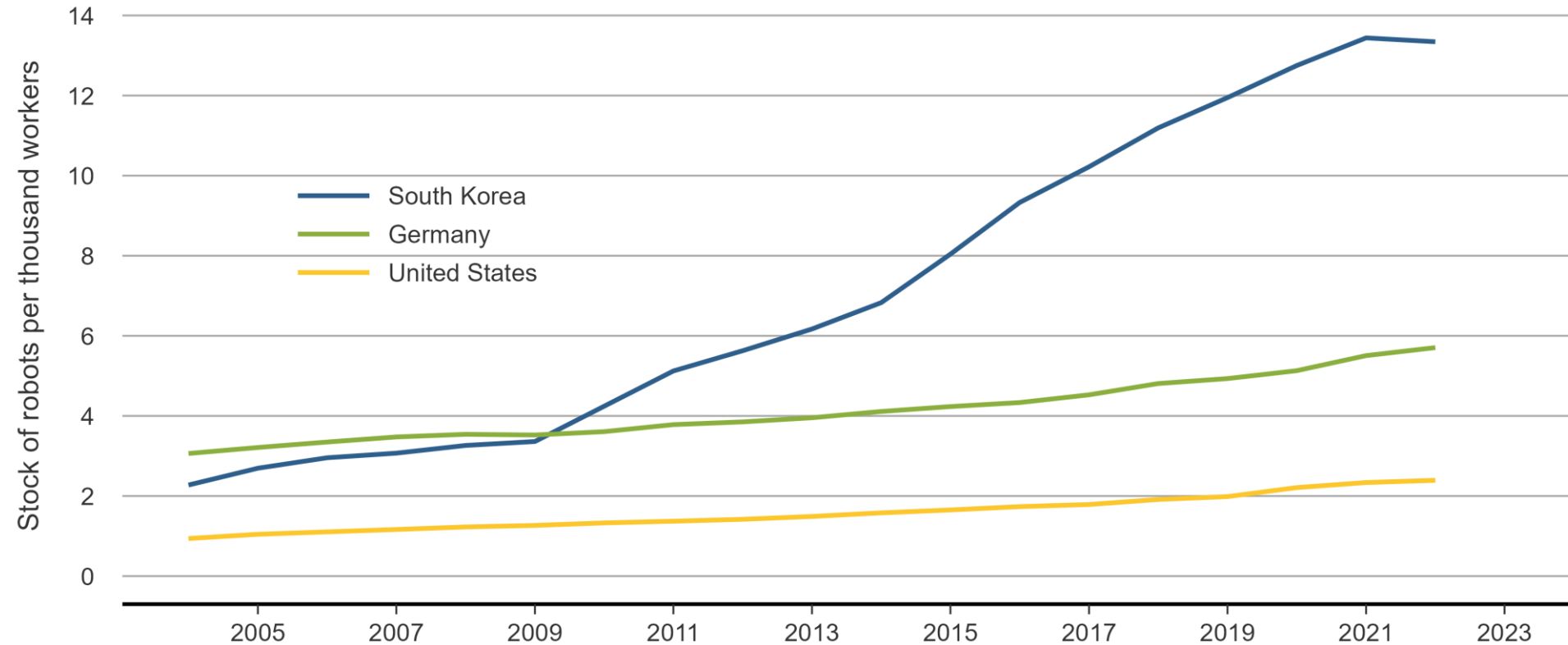
# Higher tariffs may incentivize automation

Firooz, Leduc, Liu, *Journal of International Economics*, 2025



# Trade surplus countries are also automating

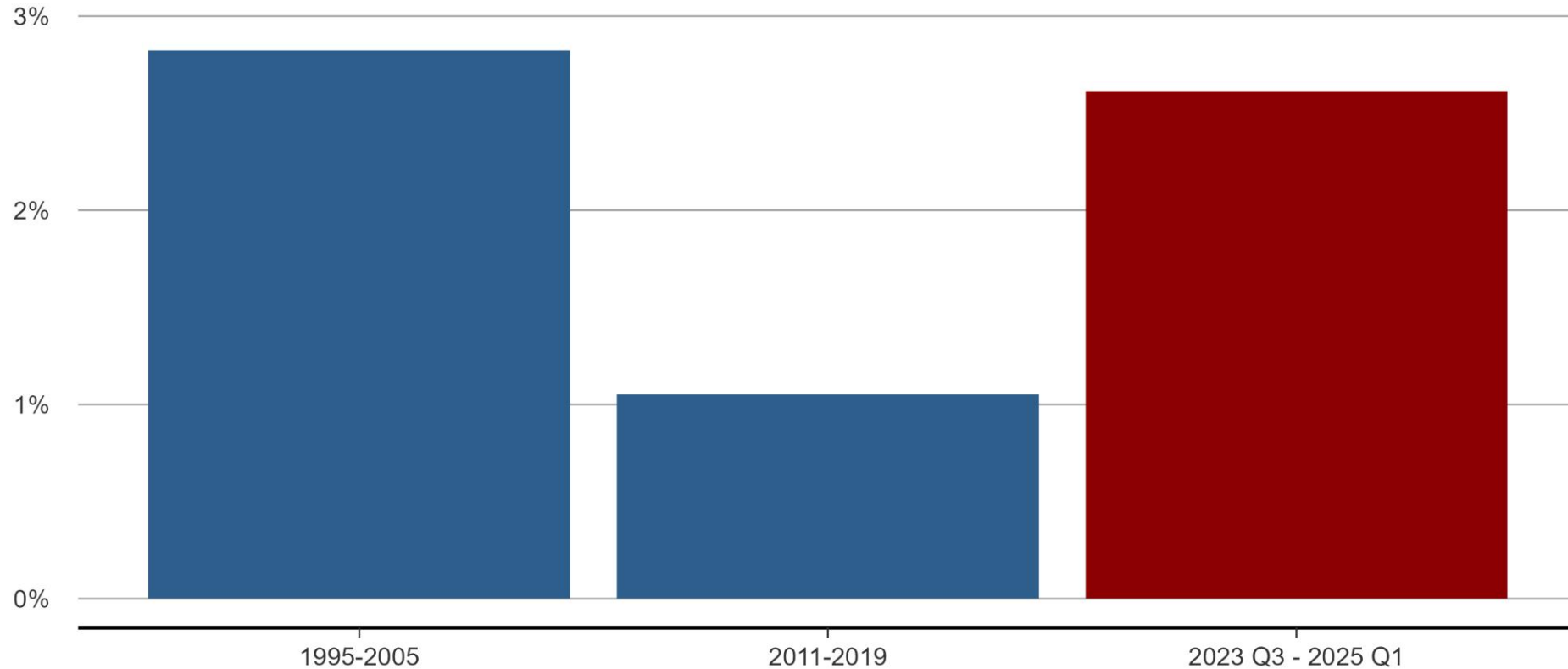
## Robot density by country



Source: International Federation of Robotics, Bureau of Labor Statistics & OECD via Haver Analytics

# Labor productivity growth has been strong

Average 4-quarter percent change in productivity



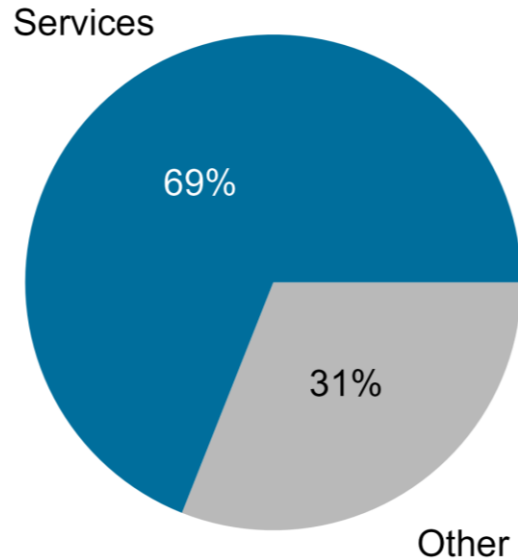
Note: Average 4-quarter percent change, seasonally adjusted.  
Source: Bureau of Labor Statistics via Haver Analytics



# Spillovers

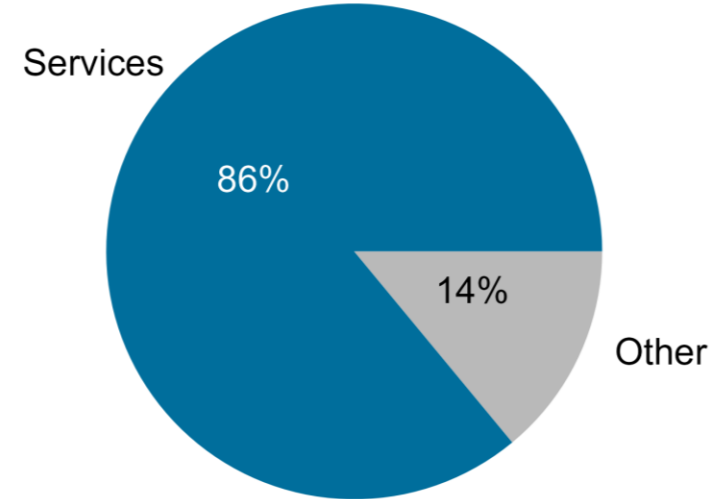
# How could tariffs impact the whole economy?

Share of Services in Consumption



Personal Consumption Expenditures 2019

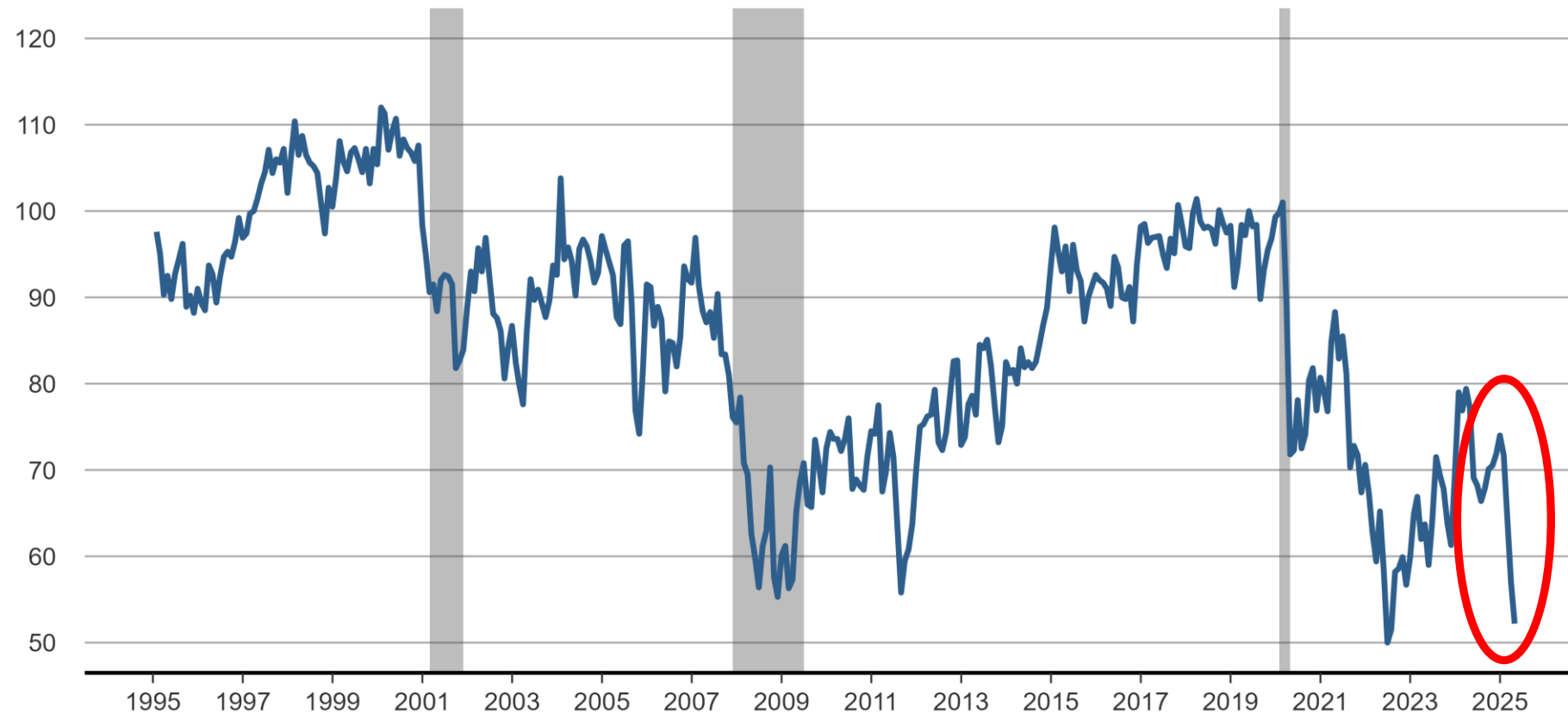
Share of Services in Employment



Establishment survey, 2019

# Spillovers may arise through lower confidence

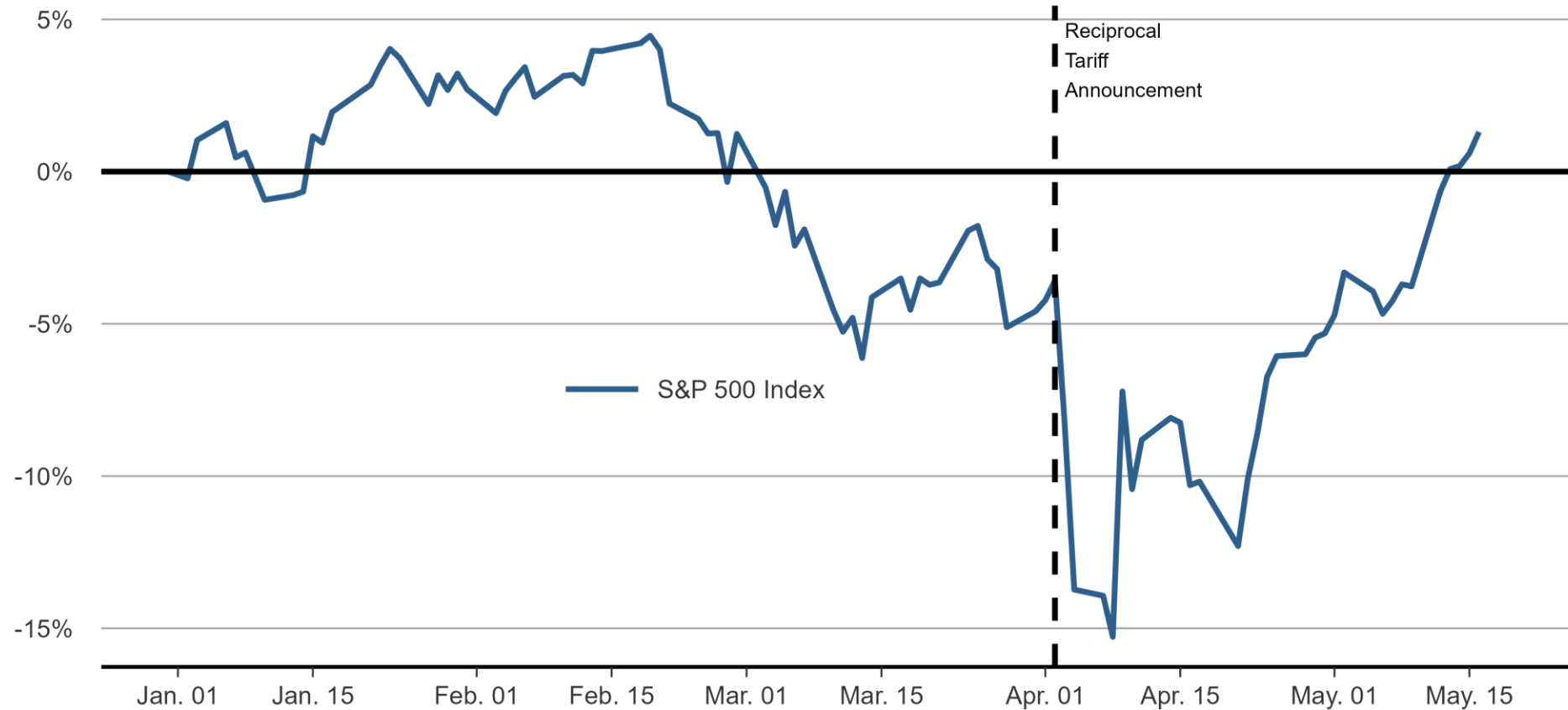
## Consumer sentiment



Note: Levels indexed to Quarter 1, 1966  
Source: University of Michigan's Survey of Consumers

# Volatile equity prices may impact spending

## Year-to-date percent change



Note: Year-to-date percent change.  
Source: Standard and Poor's via Haver Analytics.



# Spillovers may arise via higher wage growth

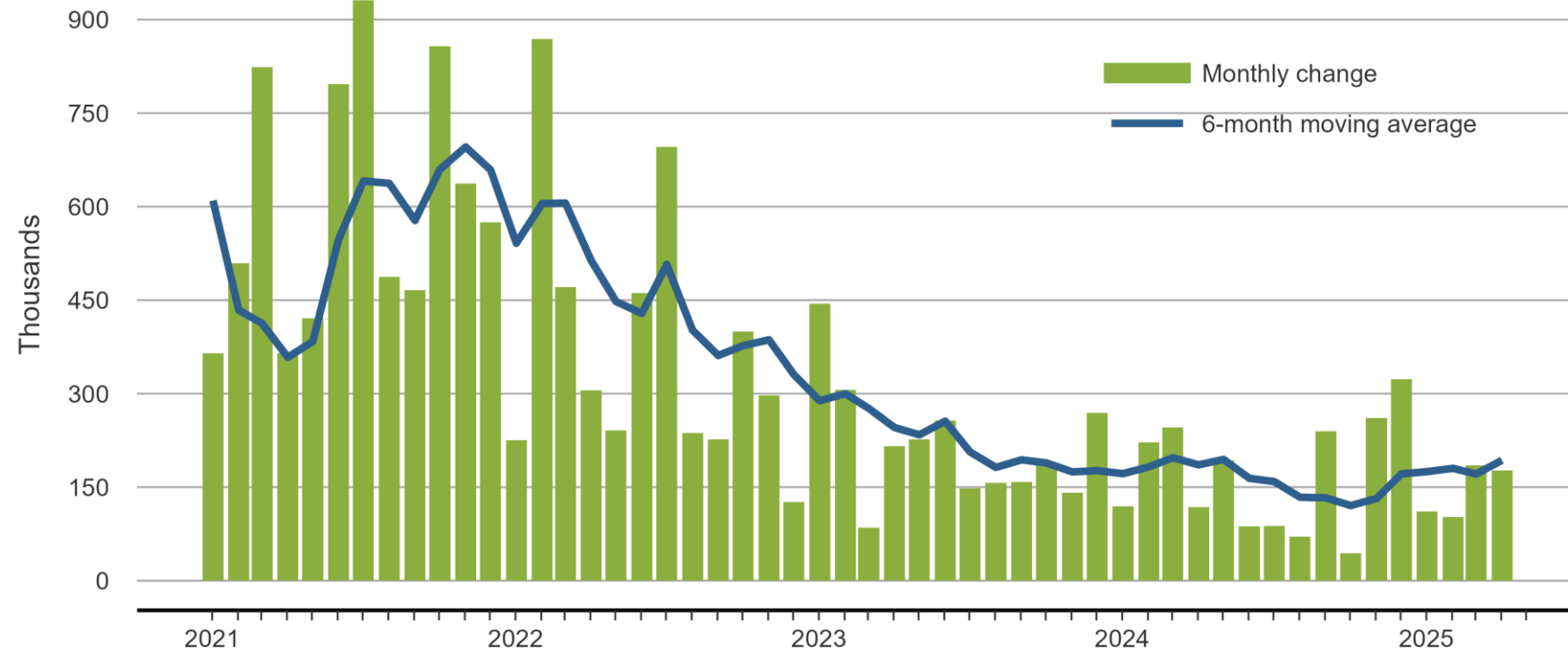
## 12-month percent change in average hourly earnings



Source: Bureau of Labor Statistics

# Labor market more balanced than in 2021-22

## Payroll employment



Source: BLS



# **Monetary policy expectations & the outlook**

# Monetary policy response to tariffs is complex

## ○ **Tariffs transmit as a negative supply shock**

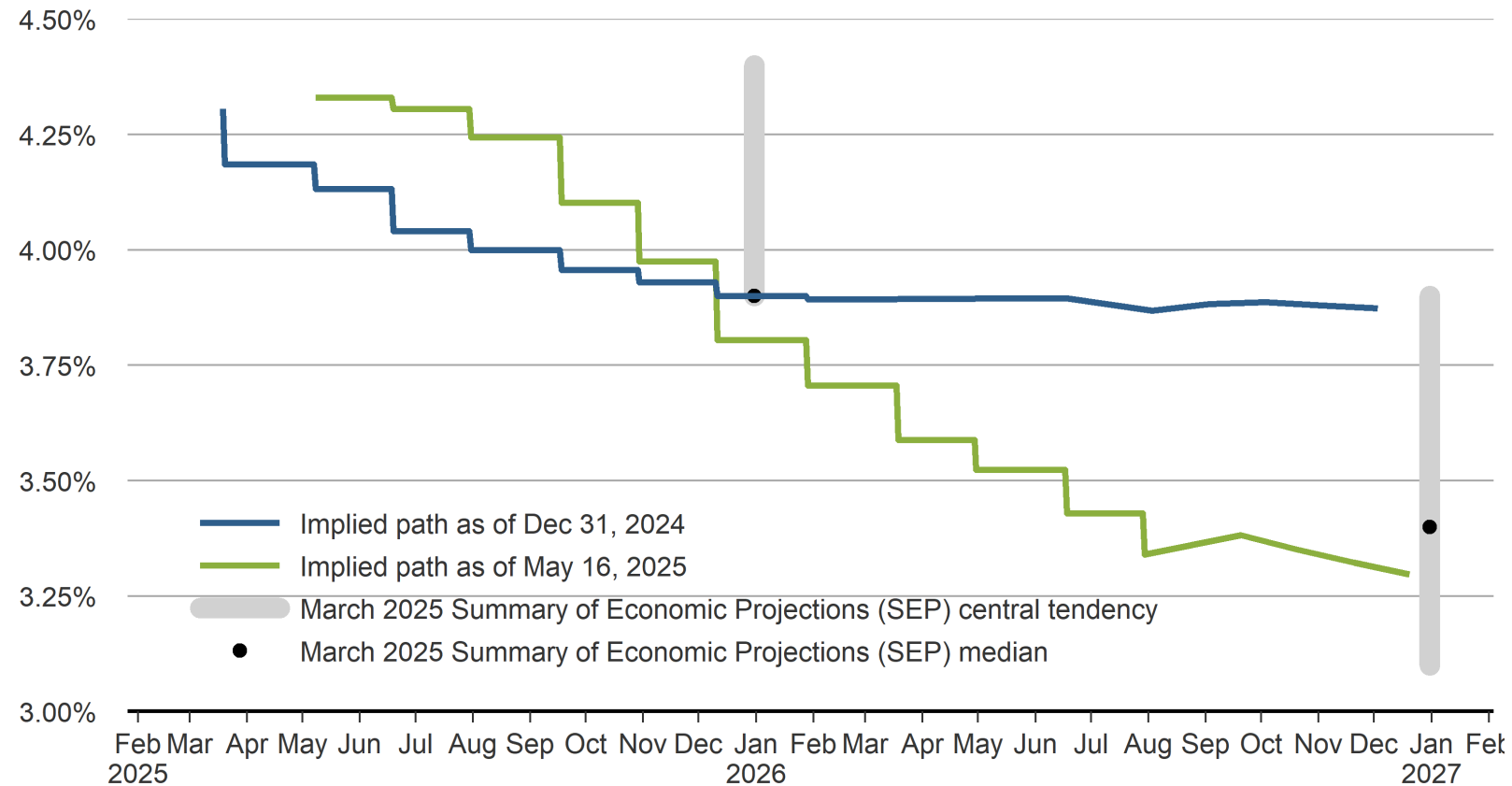
- Inflation rises
- Unemployment increases
- Policy trade-offs that partly depends on expected inflation persistence

## ○ **Tariffs transmit as a negative demand shock**

- Inflation falls
- Unemployment increases
- Complementary policy goals

# Financial markets pricing in lower interest rates

## Expected federal funds rate path



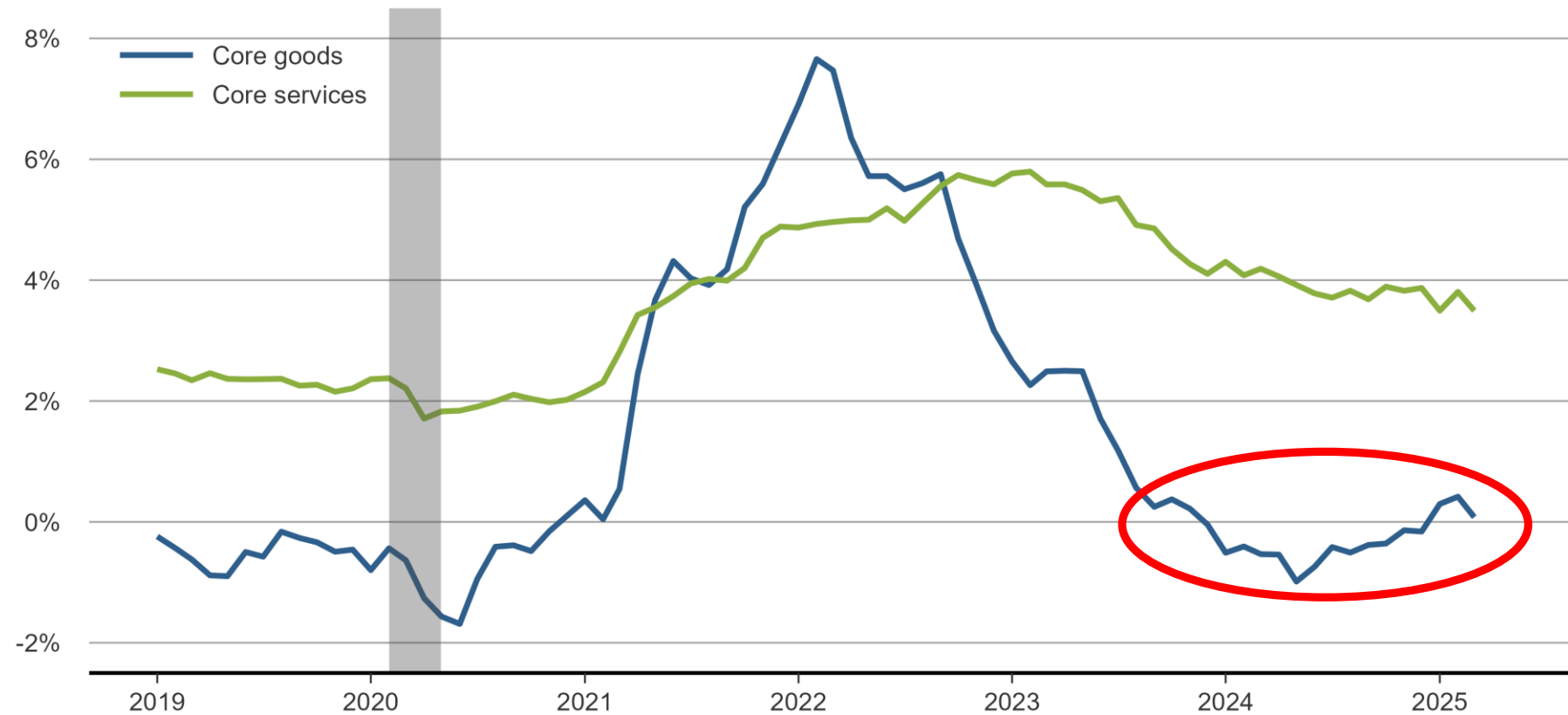
Notes: Effective federal funds rate path as implied from futures contracts covering announced FOMC meeting dates through January 2027. Black dots represent March 2025 Summary of Economic Projections (SEP) median estimate. Central tendency shading shown in gray.



# **Inflation risks**

# Goods price inflation likely to go higher

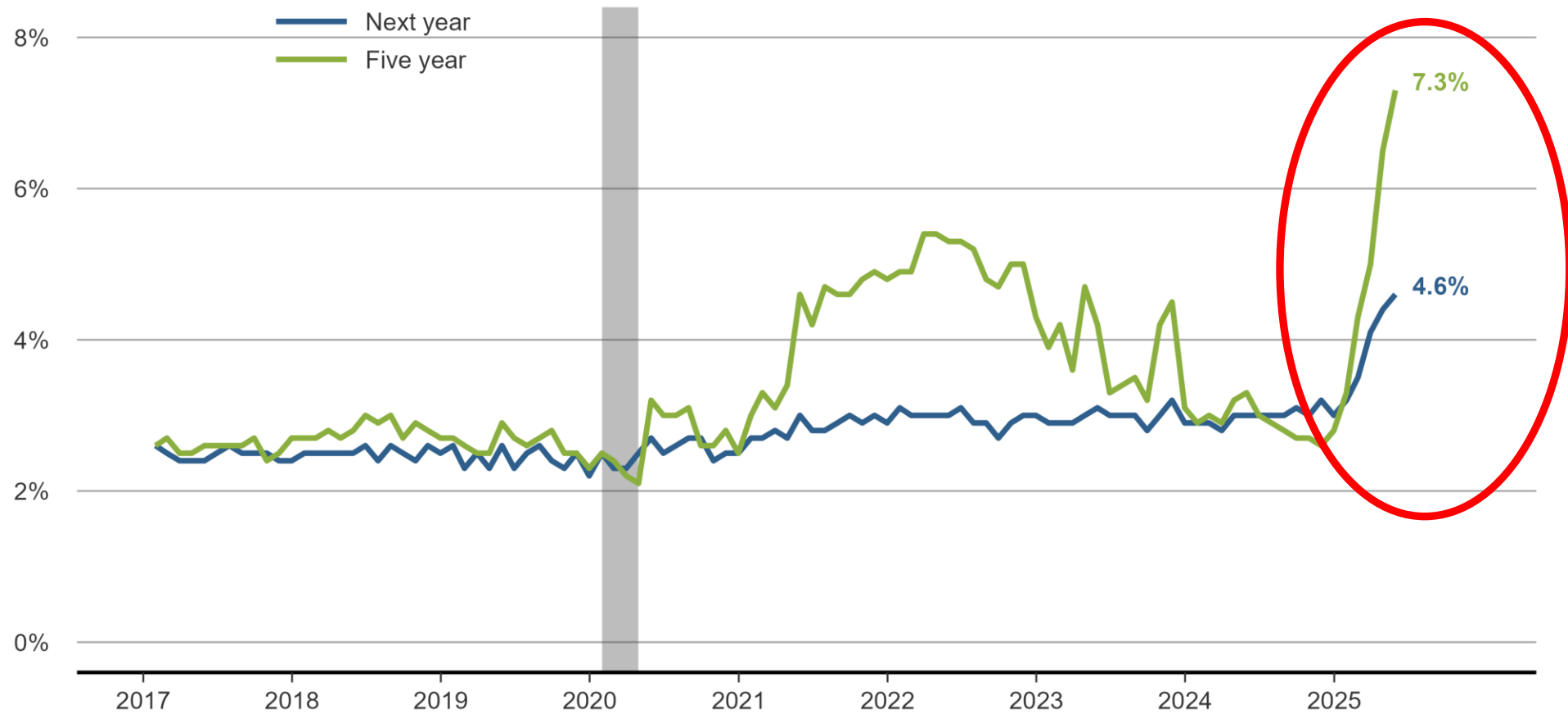
## PCE inflation indices



Source: Haver Analytics

# Household inflation expectations are way up

## Inflation expectations, Michigan Survey

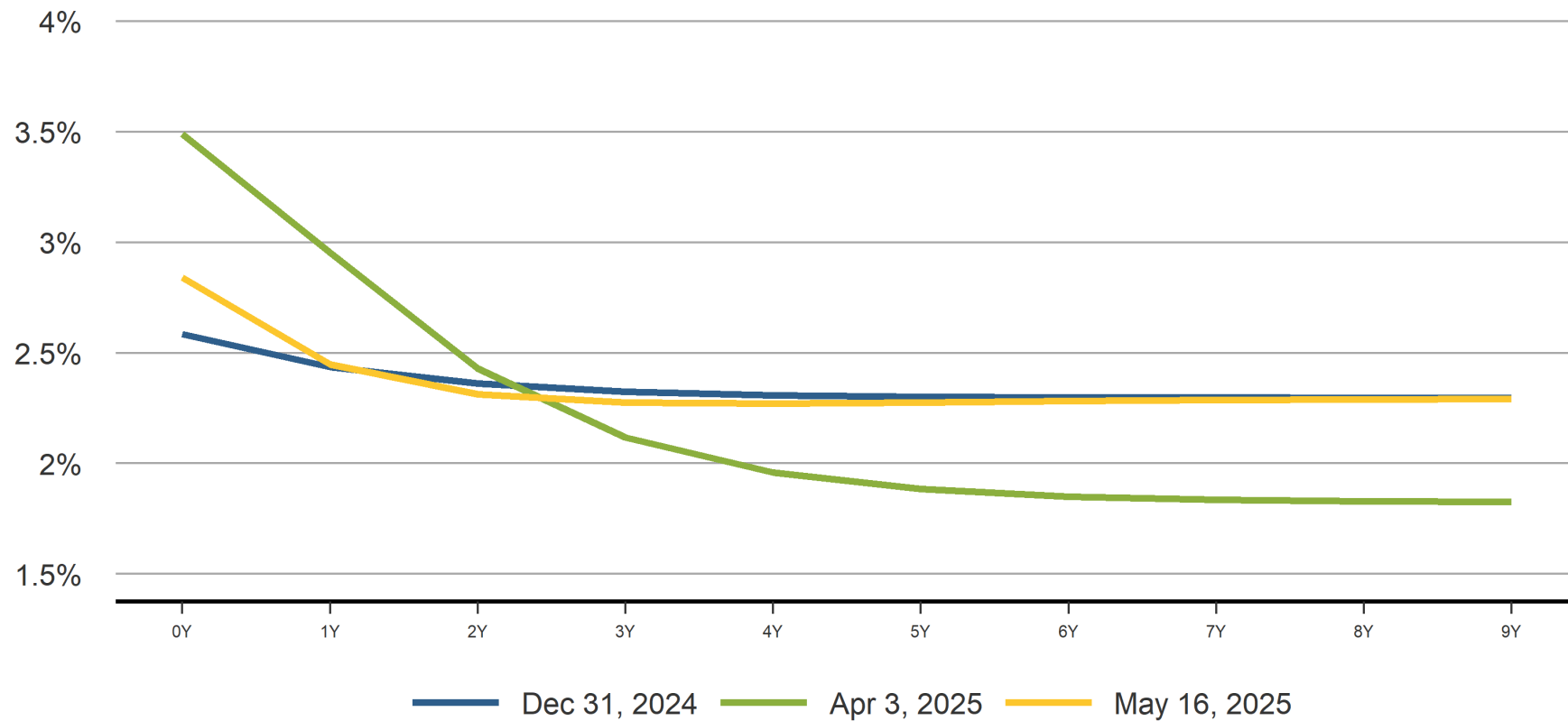


Source: University of Michigan/Haver Analytics



# Markets expecting transitory bump in inflation

## US forward breakeven inflation rates

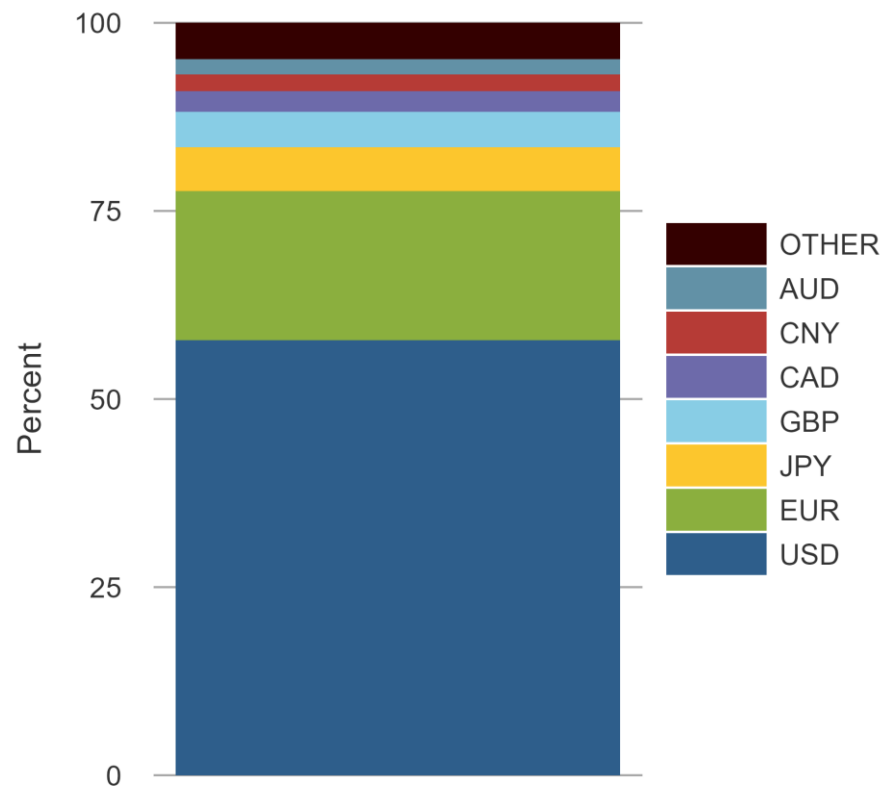




# **Reserve currencies**

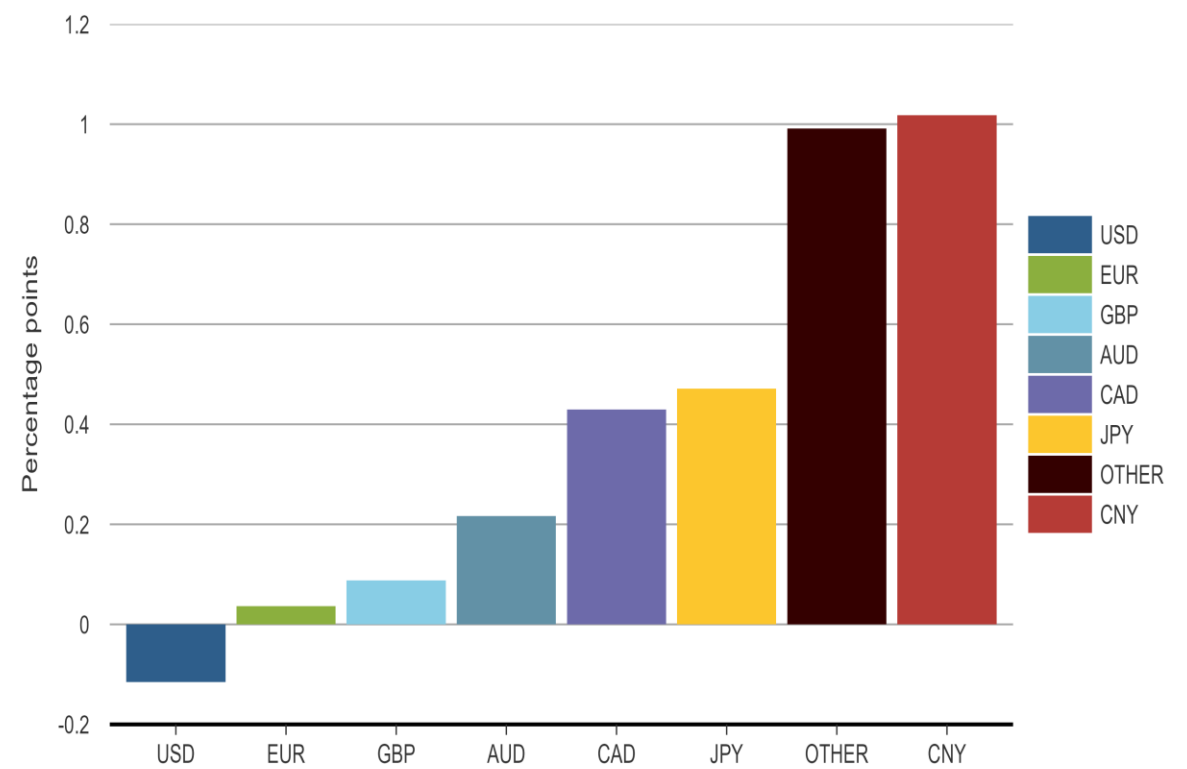
# US dollar remains main global reserve currency

## 2024 shares of global reserves



Source: IMF COFER

## Change in shares since 2016



Note: Change in share from 2016 to 2024. Source: IMF COFER

The background features a large, faint, circular seal of the Federal Reserve Bank of San Francisco. The seal includes an eagle with spread wings at the top, a shield with stars and stripes in the center, and the text "FEDERAL RESERVE BANK OF SAN FRANCISCO" around the perimeter. The date "MAY 20, 1914" is also visible at the bottom of the seal.

# Thank you

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