

# The Rise of Carry

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Presentation to CQF Institute, August 2020

# Agenda

- Characteristics of Carry and the Carry Regime.
- Why the March 2020 crash would have happened anyway.
- Possible paths from here.

# Characteristics of Carry Trades

1. Leveraged
2. Liquidity Providing
3. Short Volatility
4. 'Saw Tooth' Return Pattern

# Features of Carry Regime

1. Promote unsustainable rates of debt & economic growth.
2. Deflation occurs via shocks.
3. Financial assets seem like attractive cash substitutes.
4. S&P 500 is a carry trade.
5. Central bank capture.

## Examples of EM Carry Trades

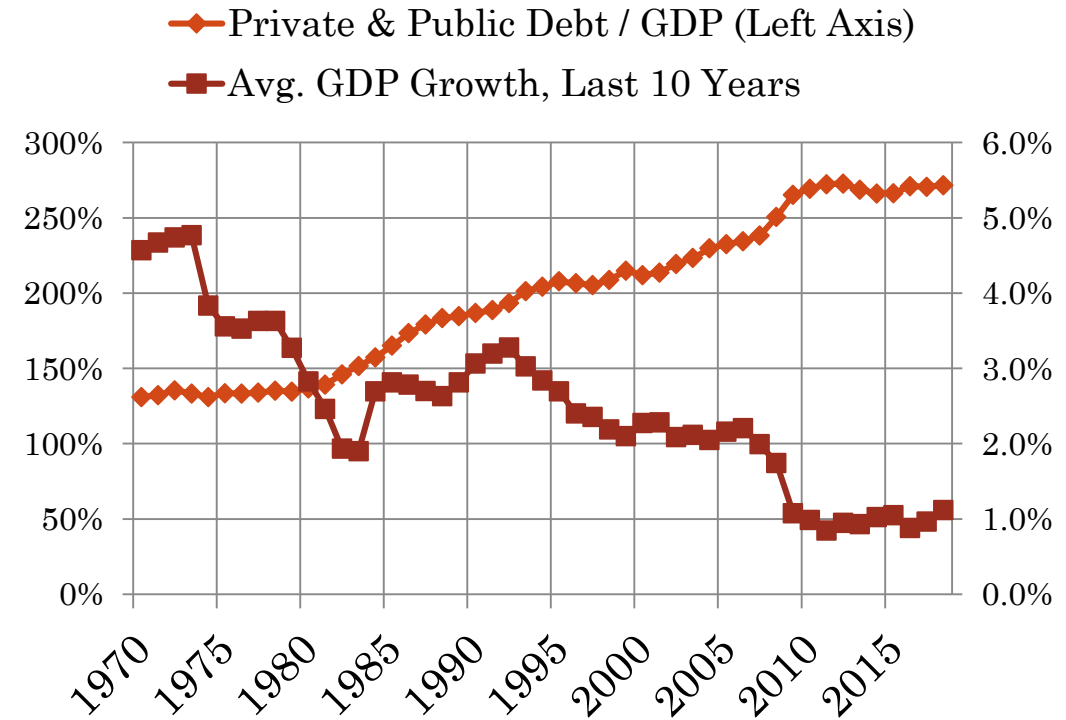
1. Classic currency forward trade to exploit short-term rate differential.
2. Short-term US\$ borrowing to invest in higher-yielding EM local currency corporate bond.
3. EM corporate issues US\$ debt to fund local currency real investment or to on-lend proceeds to other companies.

**Willingness to accept or ignore currency risk allows more debt/credit growth than otherwise would happen.**

# Moneyyness & Deflation

- The carry regime is fundamentally **deflationary**.
- Why?
- It exists in an environment of burdensome debt, limited growth and low RoI.

## G7 Debt & Real Growth



Source: IMF Global Debt Database, Our Calculations

Moneyiness & Deflation:

## Carry Regime Deflation Occurs as a Shock

### Carry Crash:

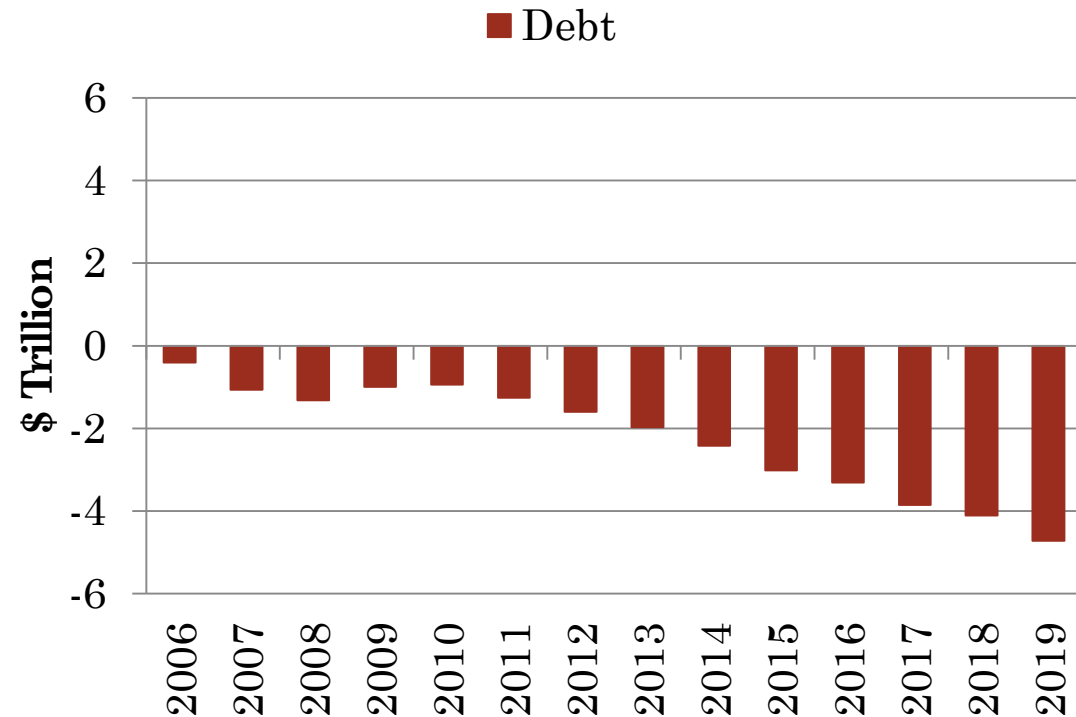
- Volatility spikes
  - “Money-like” assets suddenly appear risky.
- Demand for true cash rises sharply
  - Correlations go to 1 across markets.
  - Example: March 10<sup>th</sup> – 18<sup>th</sup> 2020
- Money supply suddenly appears deficient, inflation rate can quickly become negative.

# Moneyness & Deflation

## Stylized Example & Evidence

- US corporates sell debt perceived as good substitute for money.

Cumulative Net Purchases/Sales:  
US Nonfinancial Corporates



Source: Federal Reserve Board, Our Calculations

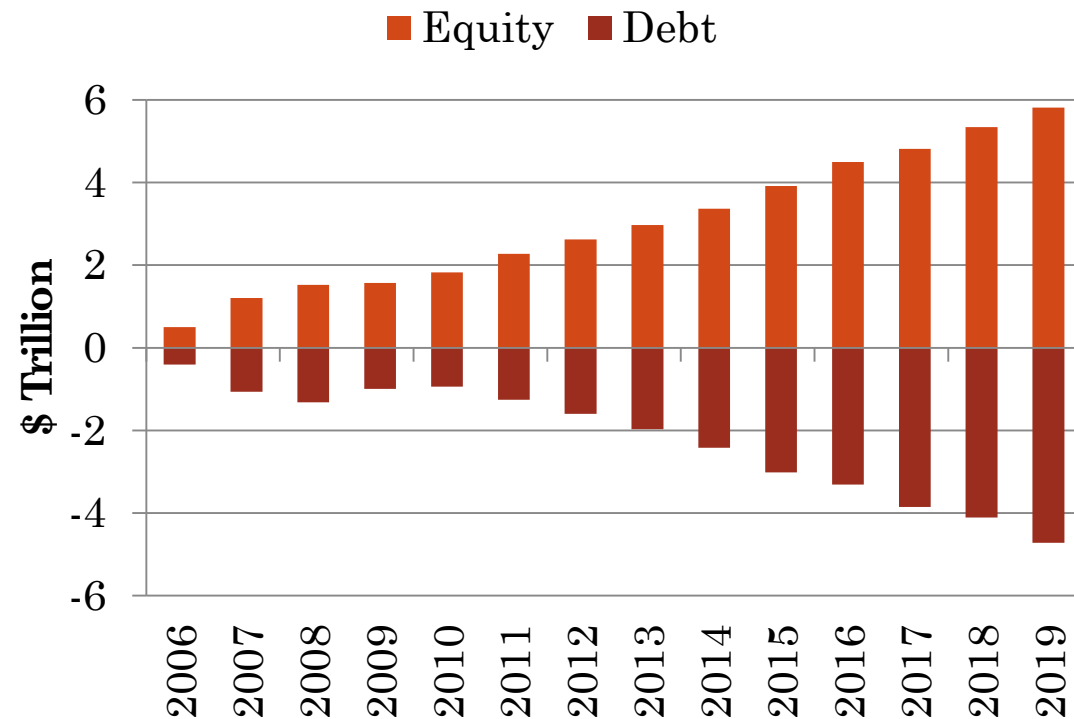


# Moneyness & Deflation

## Stylized Example & Evidence

- Increased debt helps finance stock buybacks.

Cumulative Net Purchases/Sales:  
US Nonfinancial Corporates



Source: Federal Reserve Board, Our Calculations

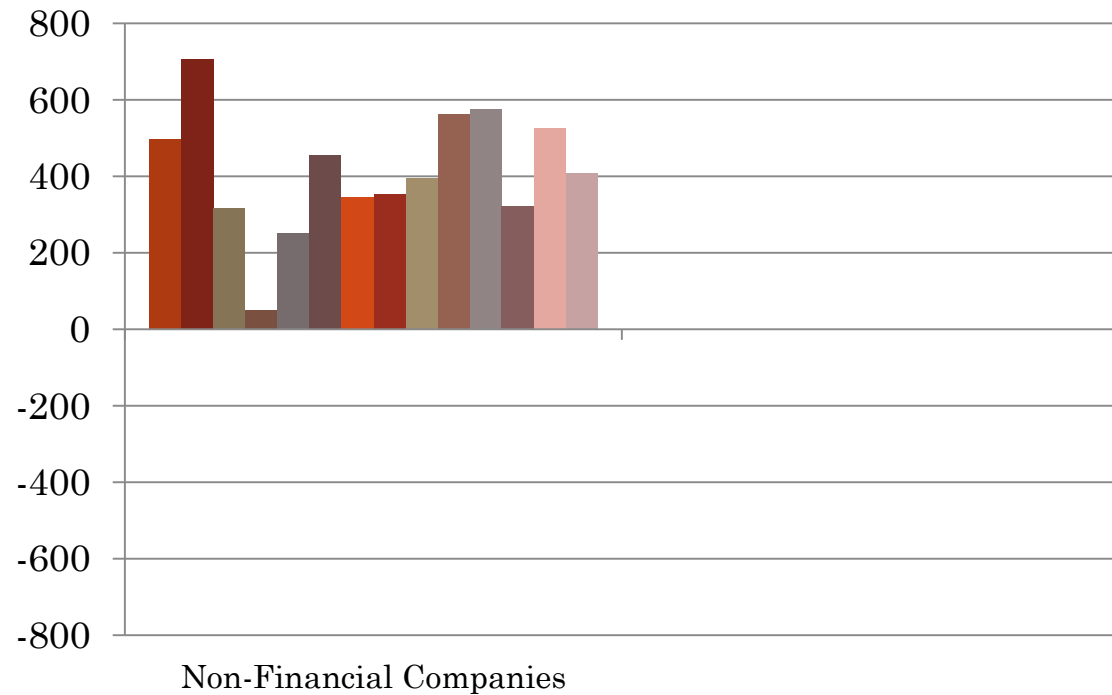
# Moneyness & Deflation

## Stylized Example & Evidence

- Public swaps equity for debt, which is perceived as money-like.

Source: Federal Reserve Board, Our Calculations

### Net Purchases of US Equities (2006-2019, \$ Billion)



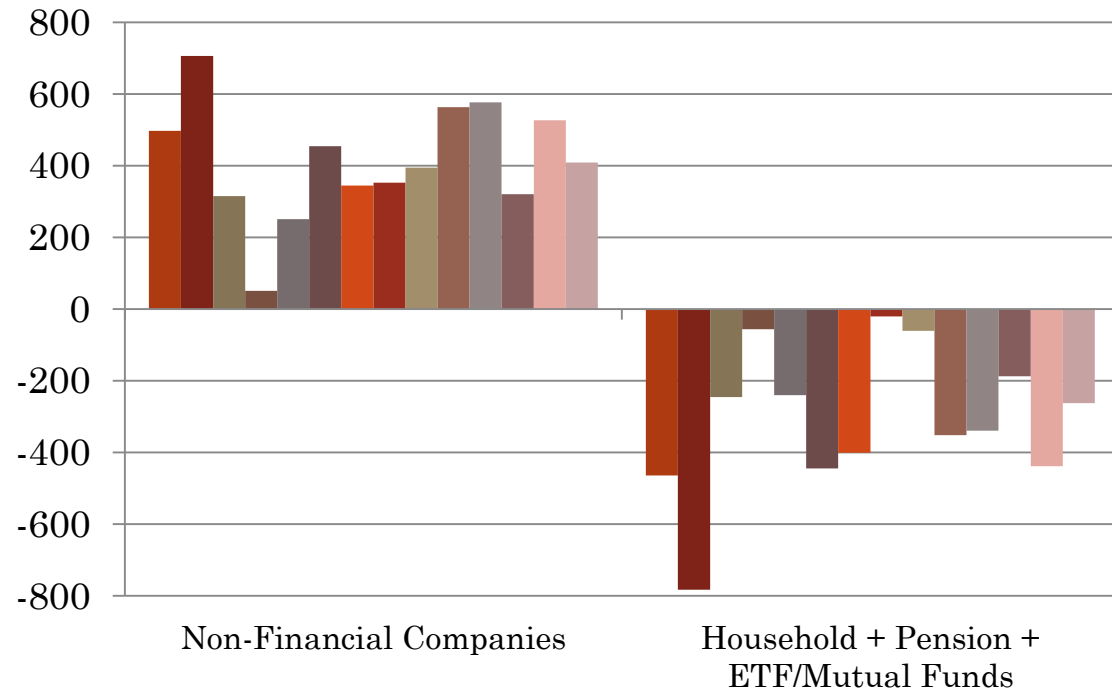
Source: Federal Reserve Board, Our Calculations

# Moneyiness & Deflation

## Stylized Example & Evidence

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**Net Purchases of US Equities  
(2006-2019, \$ Billion)**



Source: Federal Reserve Board, Our Calculations

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# Moneyness & Deflation

## Implications

- Satisfies demand to hold “money” and earn yield.
- But escalates the potential severity of a carry crash, when only true money suffices.
- Companies become like banks, levered entities with monetary liabilities.

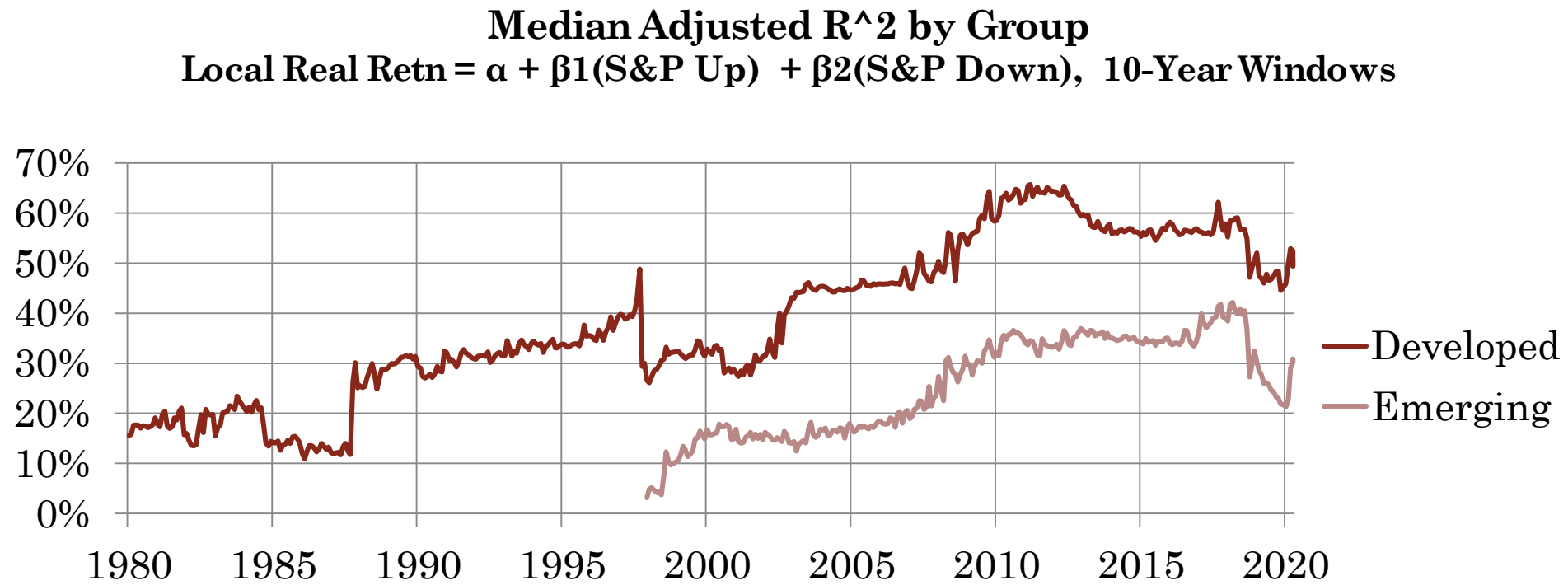
## Central Role of S&P 500

# **S&P500 Vol Represents Generic Liquidity Risk**

- Global risk assets increasingly integrated with S&P 500.
- S&P500 derivatives & ETFs are the most liquid venues for equity risk in the world.
- S&P500 can thus be used to hedge risk in a wide variety of less liquid instruments.
- S&P500 absorbs both the liquidity demands and liquidity premium from these markets.

# Carry Regime: Central Role of S&P 500

- Correlation of global markets with S&P 500 increased steadily (until the GFC)

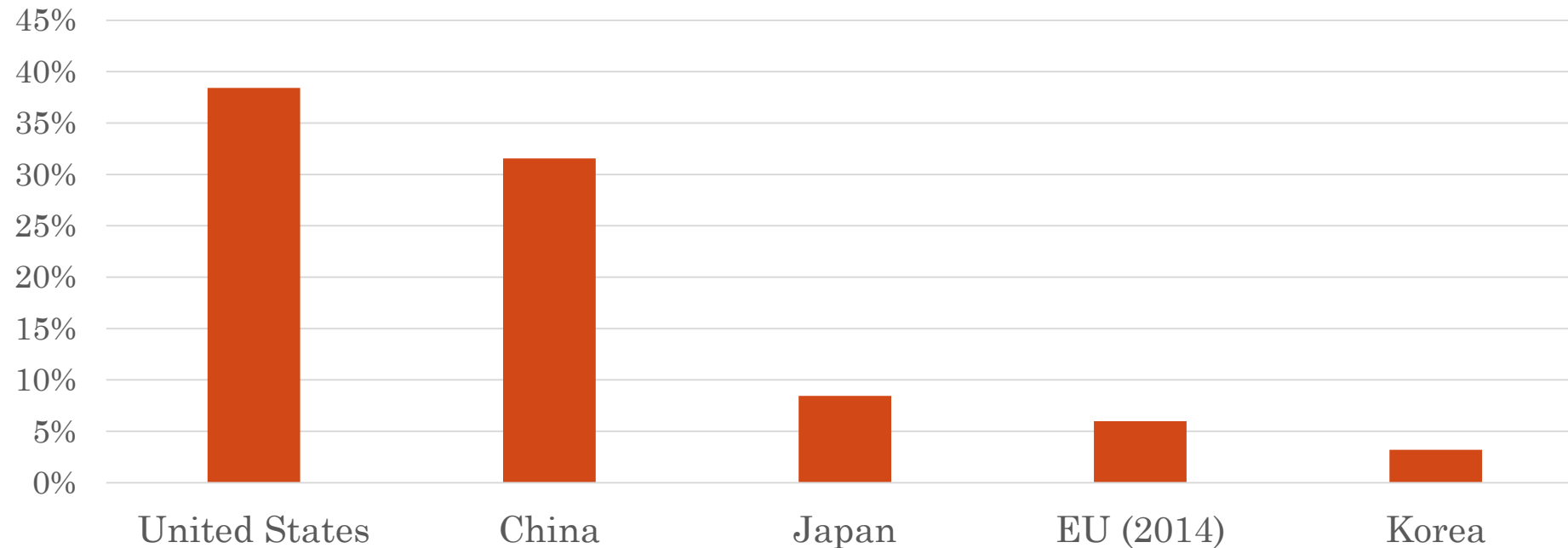


Source: MSCI, Global Financial Data, our calculations

# Carry Regime: Central Role of S&P 500

- US has largest and most liquid equity markets – China is second, but not fully integrated with global financial markets

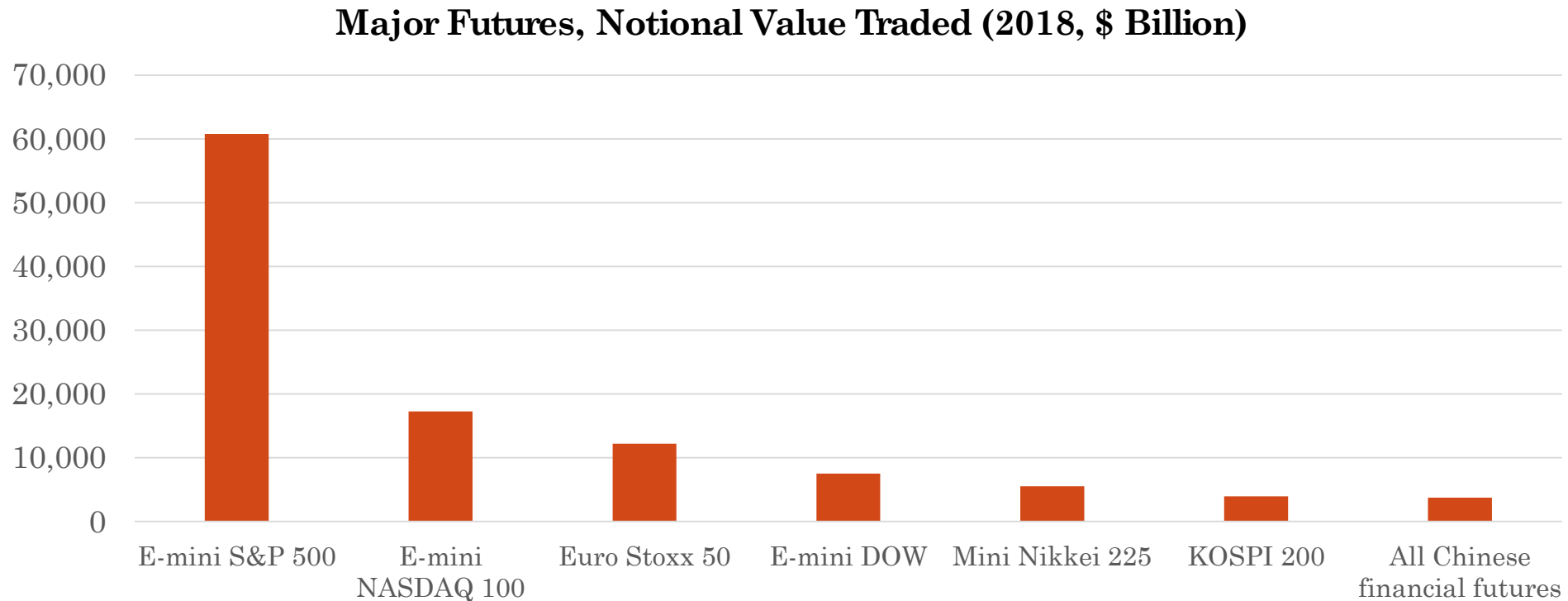
**Value of Shares Traded as % of World Shares Traded (2019)**



Source: World Bank, our calculations

# Carry Regime: Central Role of S&P 500

- US has largest and most liquid equity futures markets by far



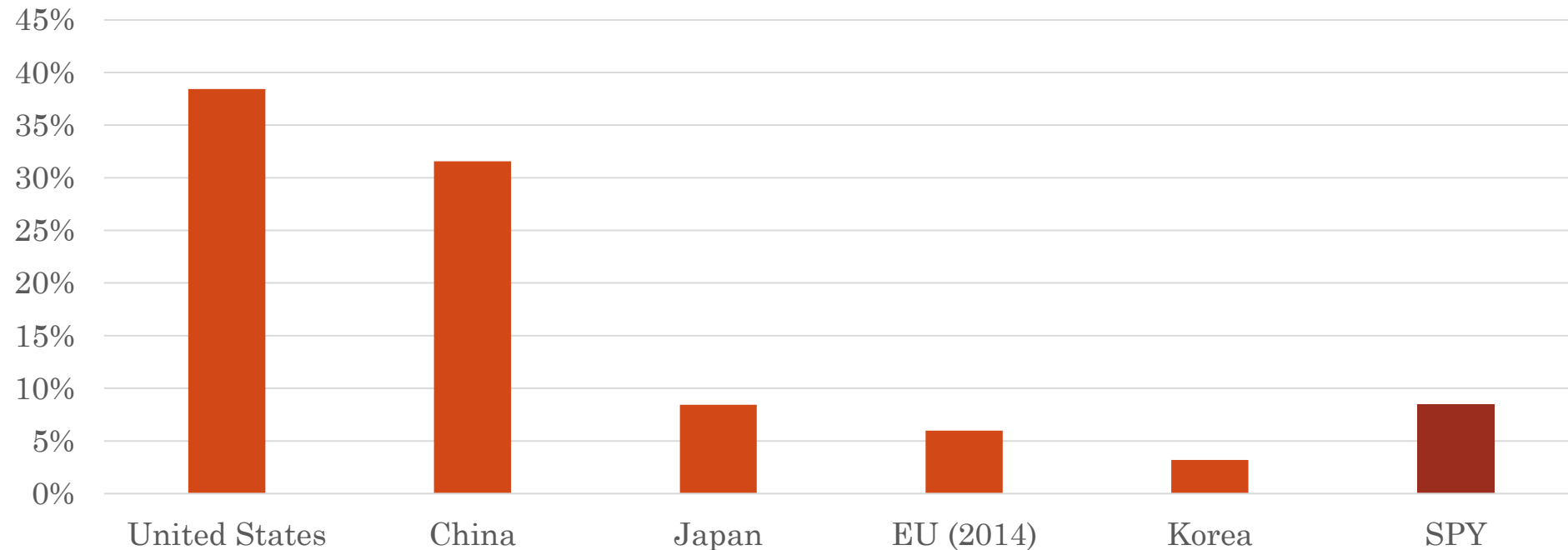
Source: World Federation of Exchanges, China Futures Association, CME



# Carry Regime: Central Role of S&P 500

- Even in the deepest and most liquid market, S&P500 instruments stand out

**Value Traded as % of World Shares Traded (2019)**

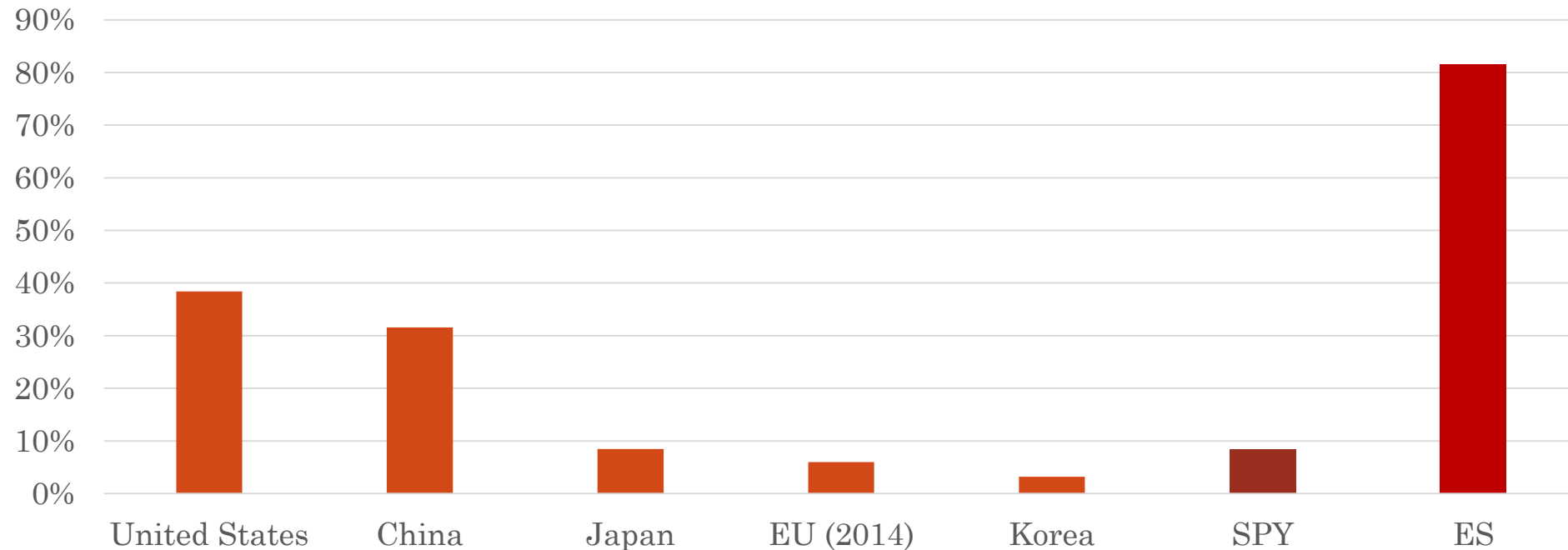


Source: World Bank, Yahoo! Finance, our calculations

# Carry Regime: Central Role of S&P 500

- S&P500 instruments are the center, the focus, the fulcrum of global risk markets

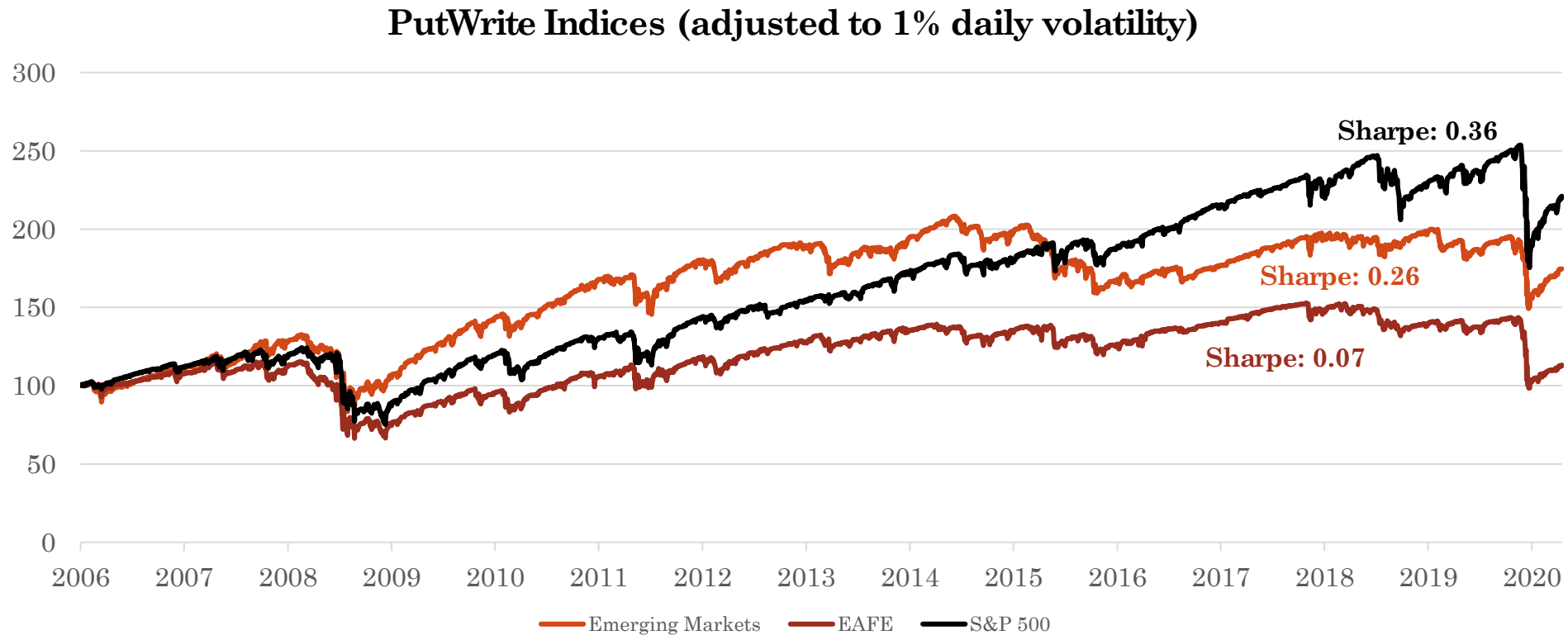
Value Traded as % of World Shares Traded (2019)



Source: World Bank, Yahoo! Finance, CME, our calculations

# Carry Regime: Central Role of S&P 500

- As a result: volatility selling is most profitable on the S&P 500



Source: CBOE

## Central Role of S&P 500

# S&P500 as the Central Carry Trade

- The price of liquidity – *the value of money* – is set in the S&P500 markets.
- Absorption of the generic liquidity risk premium converts the S&P500 into an extreme carry trade.

### Implications:

1. It should command a high premium but have substantial skew. The probability of sudden crashes like 1987, 2008, & 2020 is meaningful.
2. Causality flows from the markets to the real economy, not the other way as we have been taught.

Carry Regime:

## The Fed's Bind & Capture

- Fed was created to provide liquidity to markets in times of panic.
- If it acts after a market disruption to provide liquidity, markets stabilize and volatility subsides.
- This truncates losses for carry trades and encourages their growth.

# The Fed's Role: Reinterpreting QE

Conventional view of QE's impact equities:

1. **Lowered bond yields.** Expensive absolute equity valuation (CAPE, etc.) seems reasonable on a relative basis.
2. **Portfolio rebalancing.** Institutions that sold long-term bonds and MBS to Fed reinvested those holdings in corporate bonds and equities.

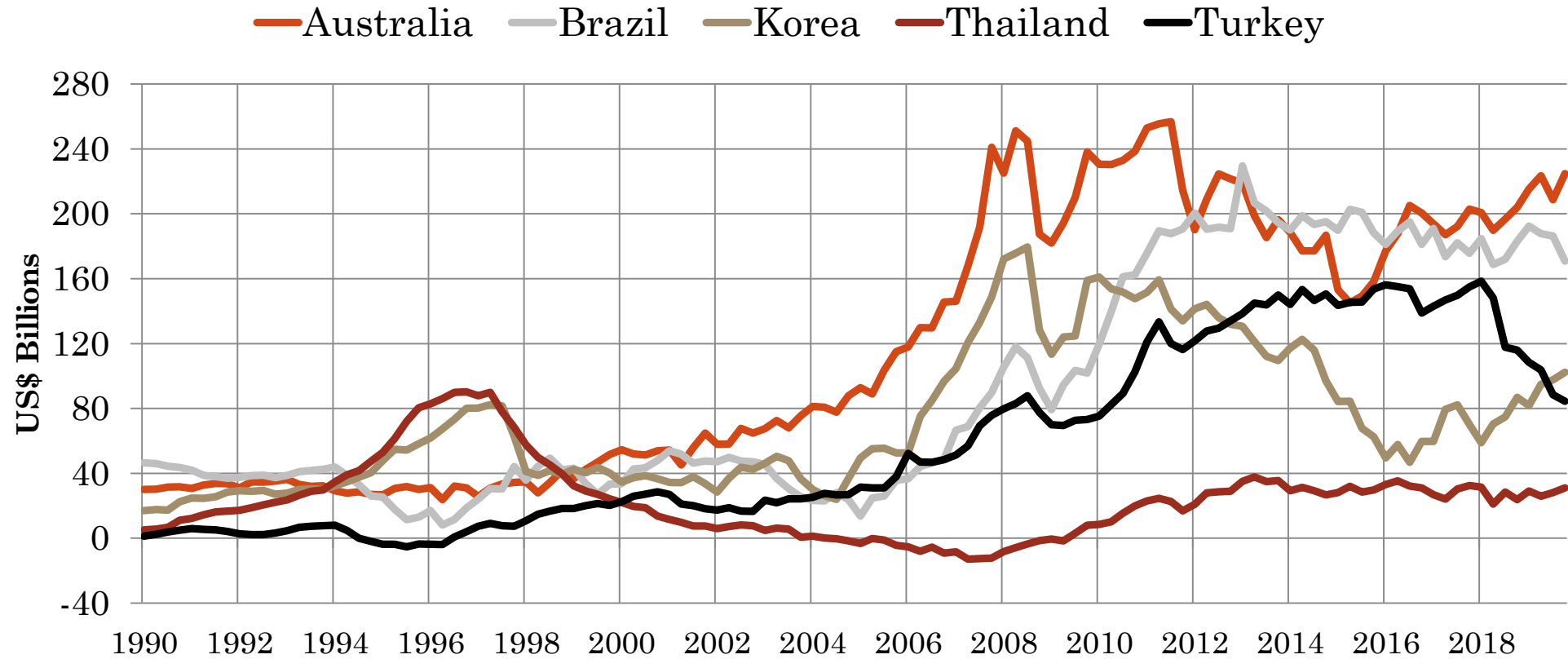
# The Fed's Role: Reinterpreting QE

## QE through the lens of Carry:

- The Fed has unlimited ability to provide leverage and liquidity.
- In doing so it suppresses volatility.
- With QE the Fed was selling volatility in massive quantities.
- It acted as a carry trader, reinforcing the most important carry trade: S&P 500.

Carry Recipients & Crashes:

# Banks' Cross-Border Net Claims

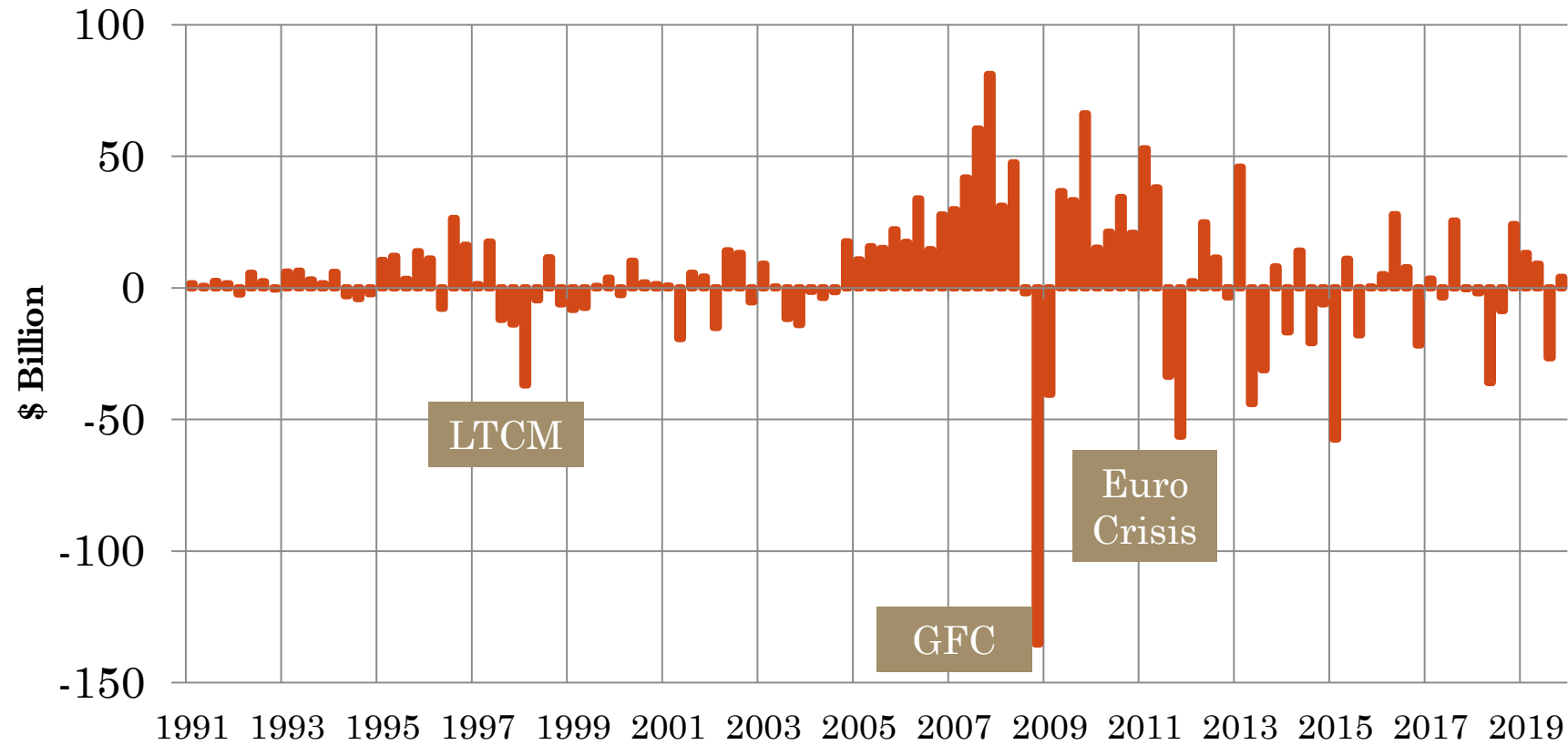


Source: BIS



Carry Recipients & Crashes:

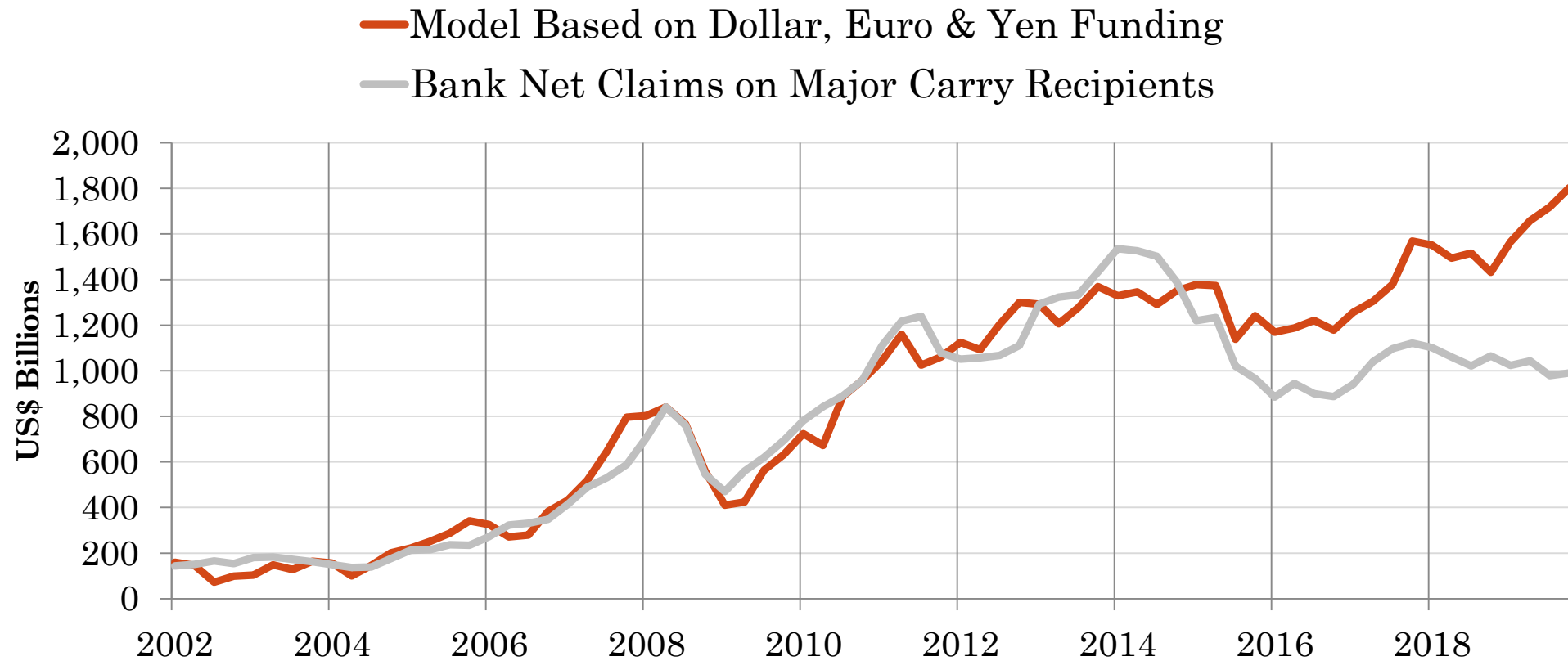
# Quarterly Changes Highlight Carry Crashes



Source: BIS

Carry Recipients & Crashes:

## Using Banks in Funding Currencies to Track Currency Carry

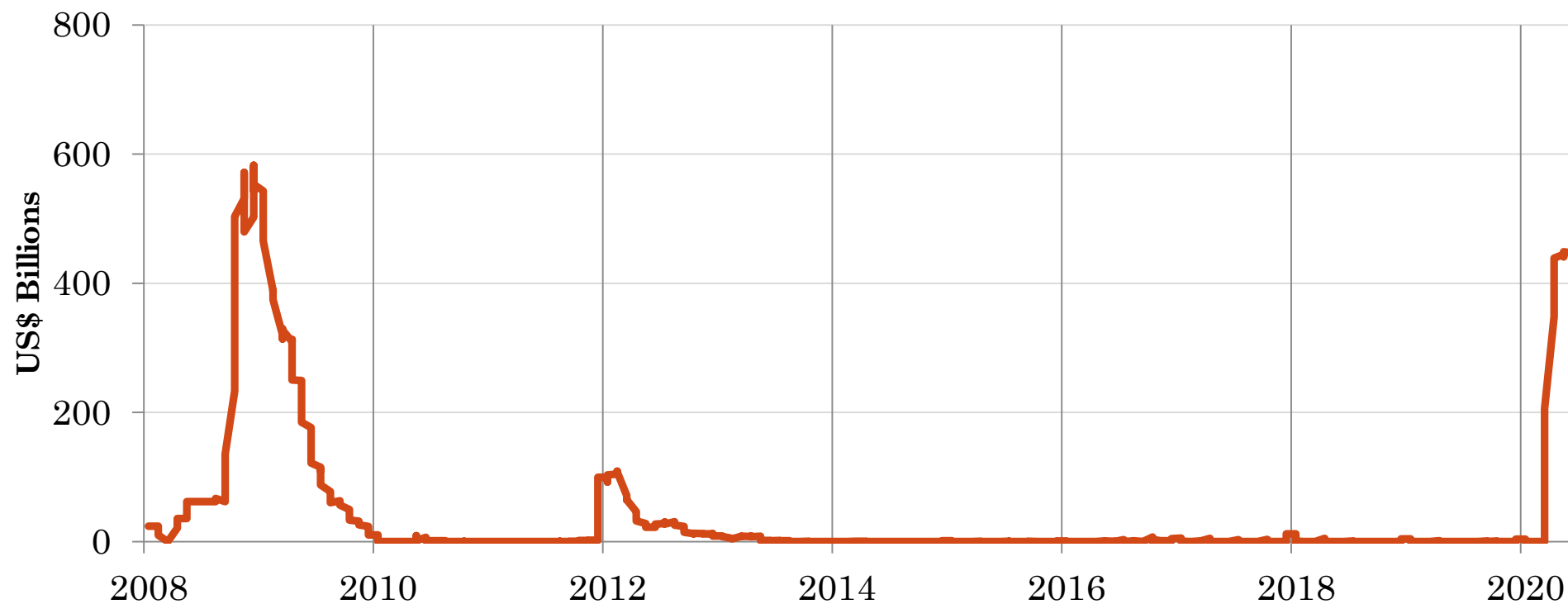


Source: BIS, IMF, our calculations

Carry Recipients & Crashes:

## Fed Replaces Private Dollar-Funded Carry Trade

### Fed Liquidity Swaps

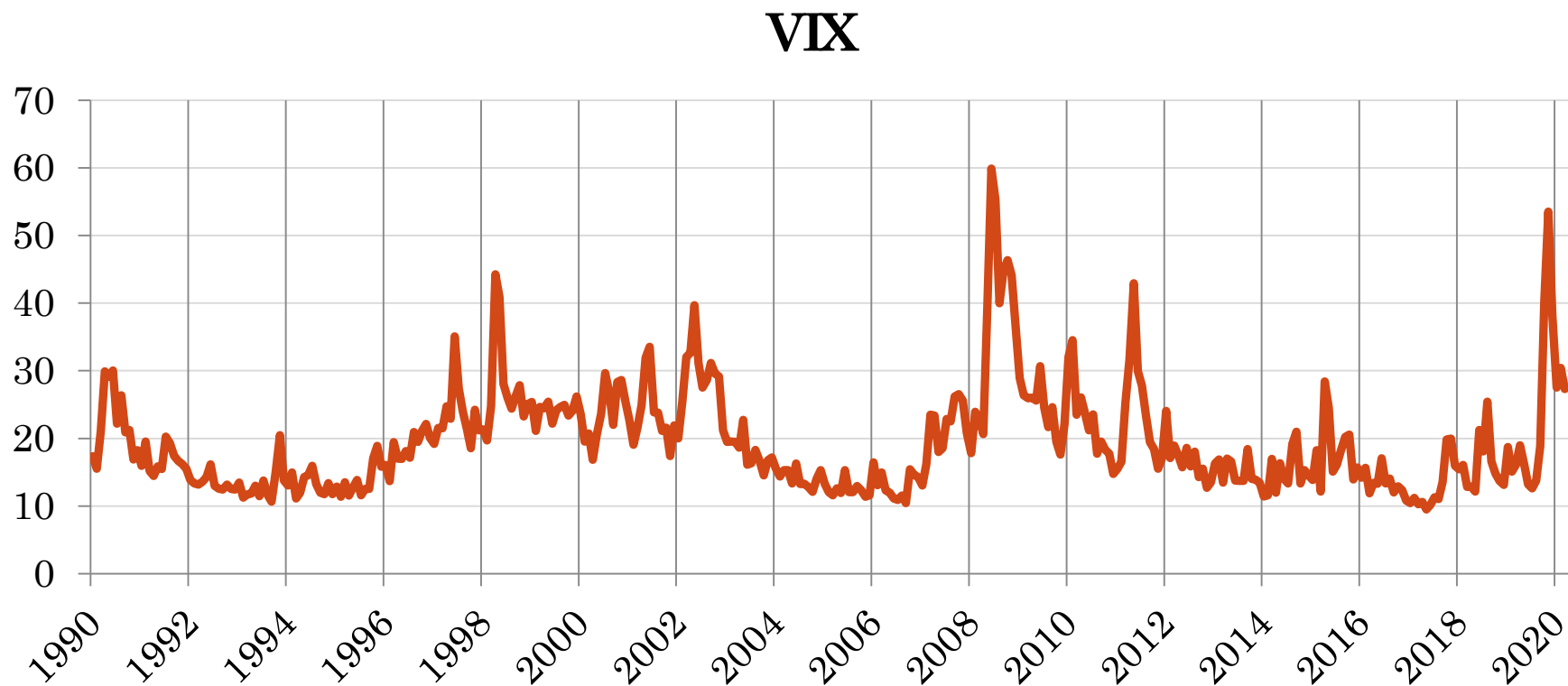


Source: US Federal Reserve

Carry Recipients & Crashes:

## Currency Carry and Volatility

- Currency crashes were each part of a larger volatility-selling crash.

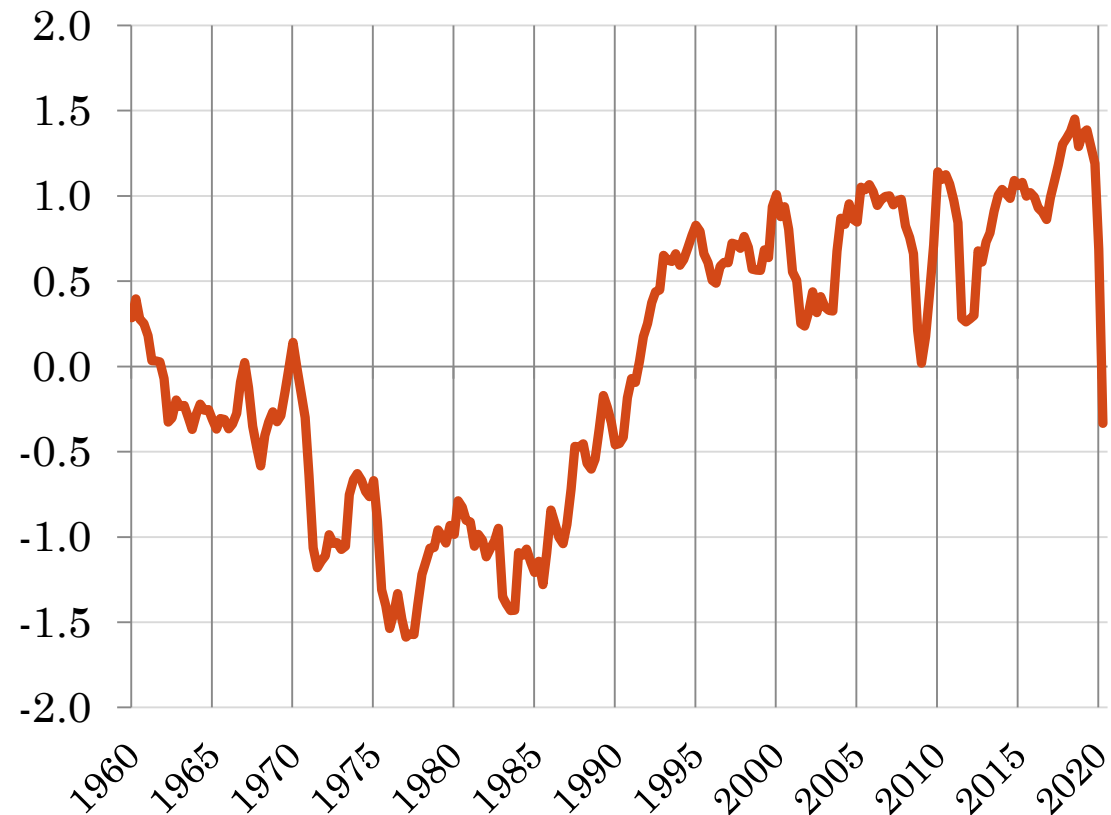


Carry Crashes & Deflation:

# Carry Crashes are Deflation Shocks

- Deflation shock indicator attempts to gauge risk of a “dash for cash”
- Components:
  1. Personal sector financial assets.
  2. Bank deposits relative to total financial assets.
  3. Money supply.

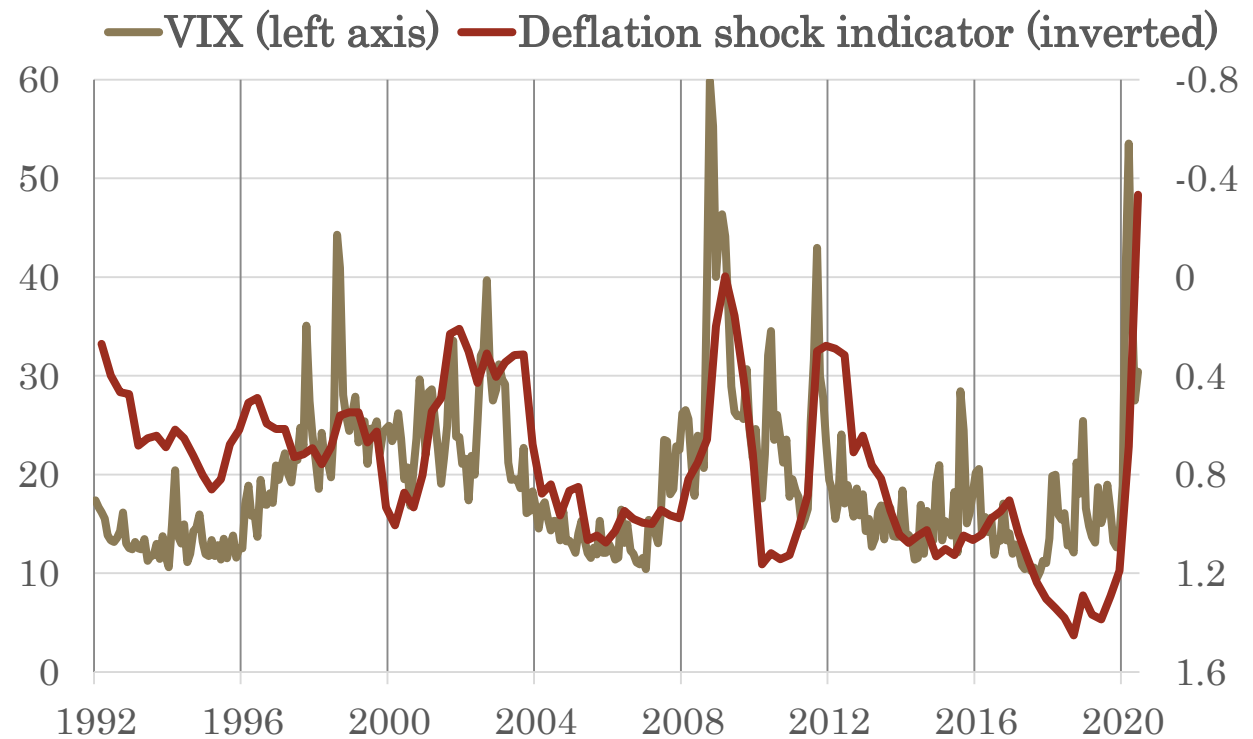
US Deflation Shock Indicator



Carry Crashes & Deflation:

## VIX & Deflation Shocks

- Deflation indicator is inverted – rising line denotes ongoing deflation shock.
- VIX spikes – a jump in the price of money – is a deflation shock.

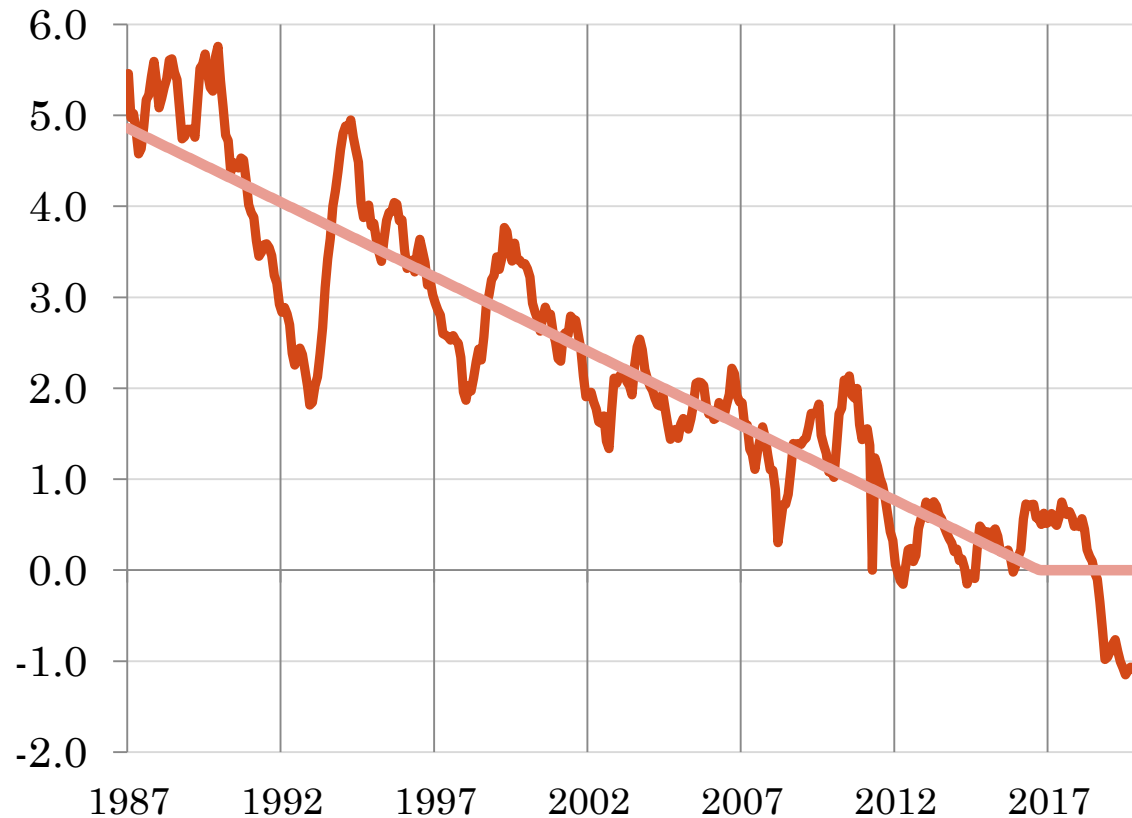


Deflation:

## Carry Crash Was Inevitable

- Carry crash would have happened even without coronavirus.
- Fall in global real rates indicates declining global growth and demand for credit.

Global Real Interest Rate & Trend



Deflation:

# Similar Pattern in 2007 and 2011

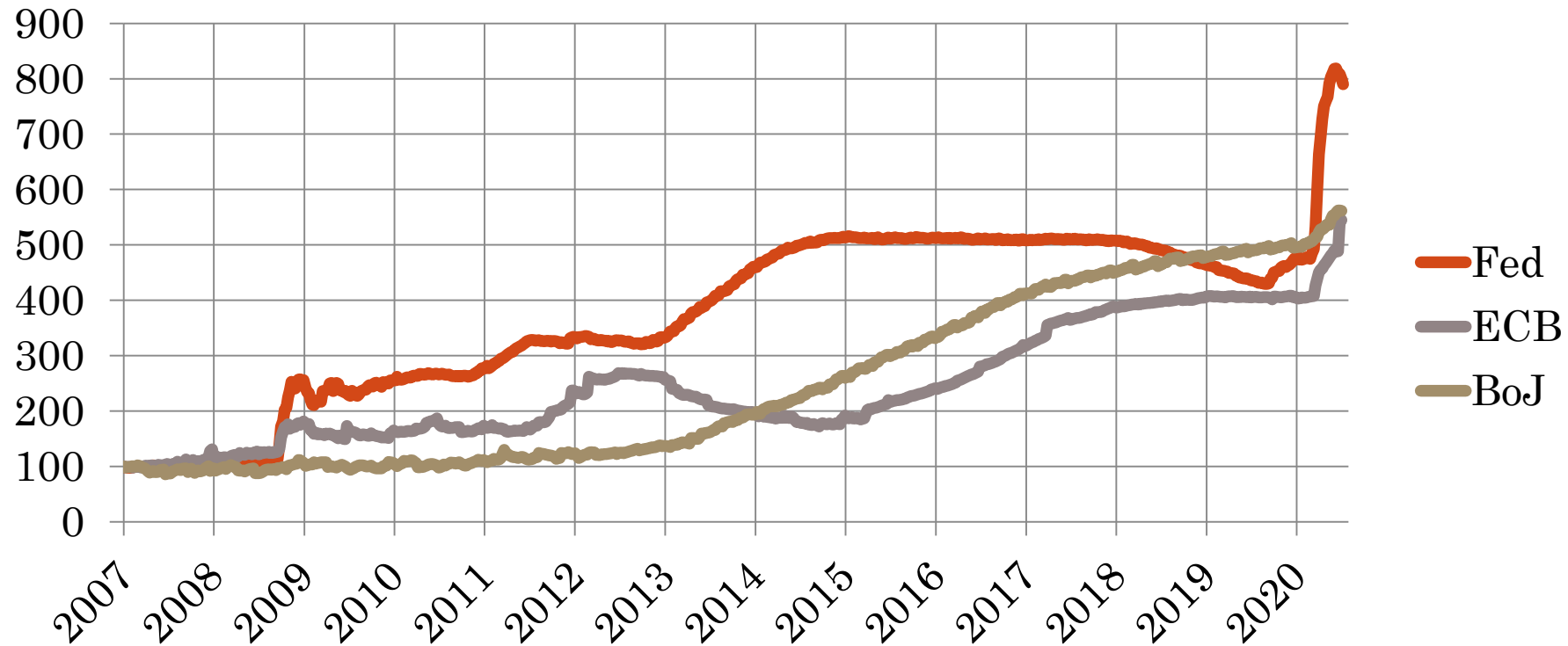




Central Bank Response

# Central Banks Expand Their Own Carry Trades

Central Bank Balance Sheets  
(Indexed to 100 in Jan. 2007)

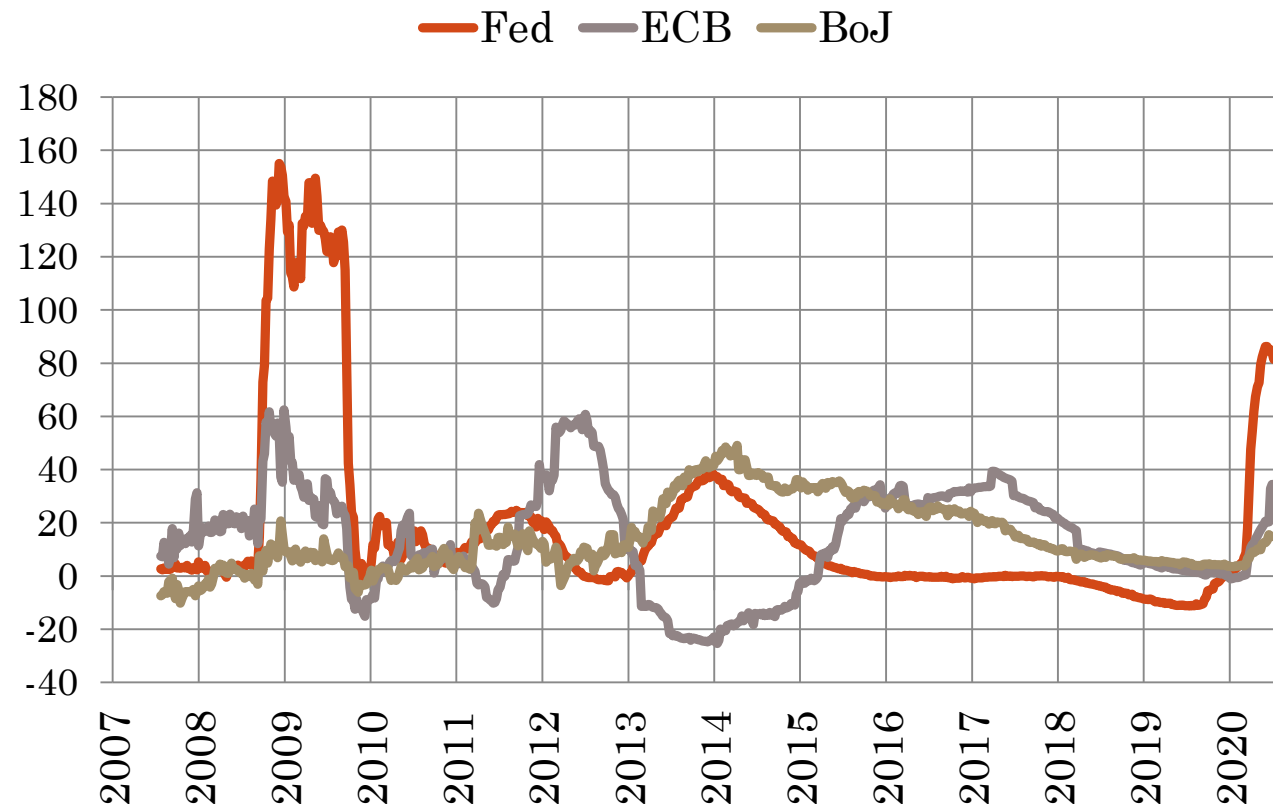


## Central Bank Response

# Central Banks Expand Their Own Carry Trades

- Response will likely have to surpass GFC if new carry bubble is to be created.

Annual Growth Rate of Balance Sheets



# Possible Paths From Here

1. Deflation.
2. Renewed Carry Regime.
3. Carry Regime Ends with Inflation.

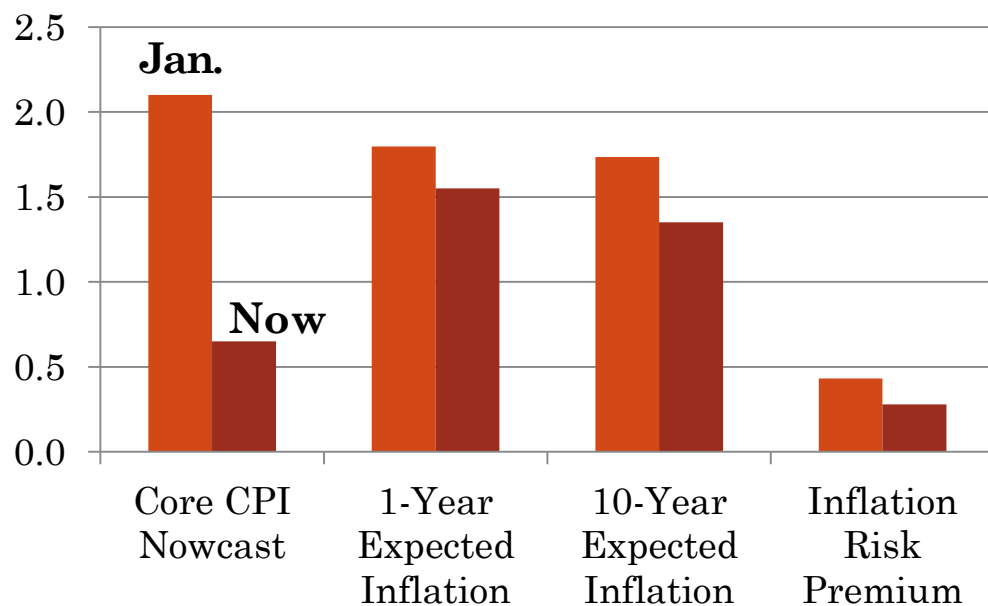
# Indicators to Watch

- 1. Deflation.** Long-term US yields deeply negative.
- 2. Renewed Carry Regime.**
  - VIX falls back to low levels, forward vol curve returns to contango and interest rates edge up a little bit initially.
- 3. Carry Regime Ends.**
  - Upward pressure on market interest rates.
  - VIX remains elevated, forward vol in backwardation.
  - Extreme volatility in emerging market currencies and inversion of the “vol-of-vol” curve.

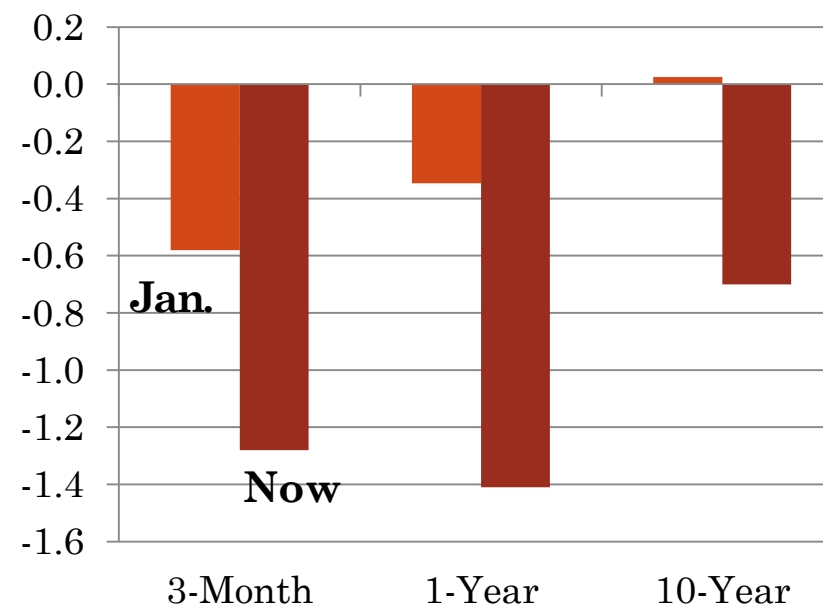
# Market Expecting Deflation...For Now

- Inflation expectations have moved lower at all horizons.
- Inflation premium in long-term Treasuries also lower.
- Yields on both nominal 10-year bonds & 10-year TIPS near all-time lows.

**Inflation Expectations**



**Real Yields**



# Website: Going Live in mid-August

[www.riseofcarry.com](http://www.riseofcarry.com)

- Carry-related research.
- Data and charts from *The Rise of Carry*.
- Links to author podcast interviews, book reviews and articles.
  
- Contact Us:
- [tim@riseofcarry.com](mailto:tim@riseofcarry.com), [jamie@riseofcarry.com](mailto:jamie@riseofcarry.com), [kevin@riseofcarry.com](mailto:kevin@riseofcarry.com)

## Appendix:

# Mechanics of the Liquidity Trade

## Volatility Selling

# Mechanics of the Liquidity Trade

- The volatility premium is not confined to derivatives markets.
- It expresses itself through trades in – and the price behavior of – the underlying.
- Examples:
  1. Levered ETFs.
  2. Volatility managed strategies like risk parity.
  3. Short strategies.



## Volatility Selling

# Mechanics of the Liquidity Trade

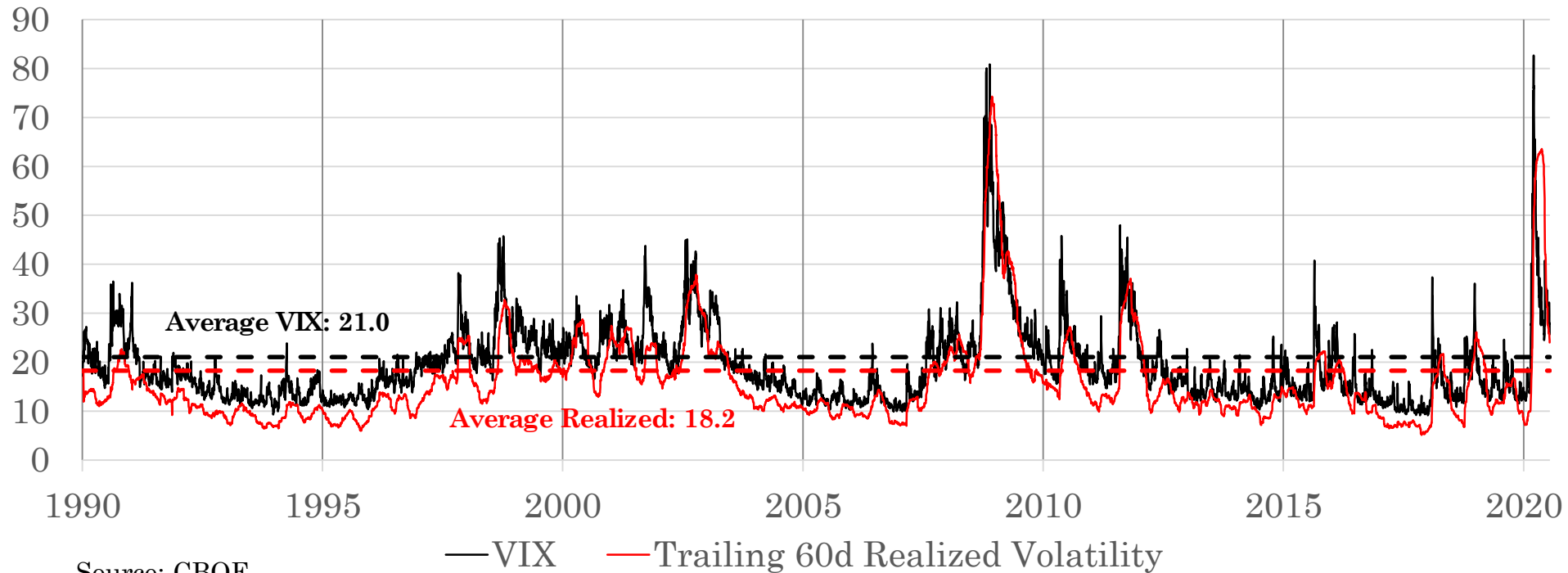
- The volatility premium can be decomposed into three parts:
  1. Implied-Realized Gap
  2. Forward Volatility Rolldown
  3. Short-Term Mean Reversion

# Volatility Selling

## Implied-Realized Gap

- Option-implied volatility has been systematically above realized volatility. This is a risk premium.

VIX and S&P 500 Realized Volatility

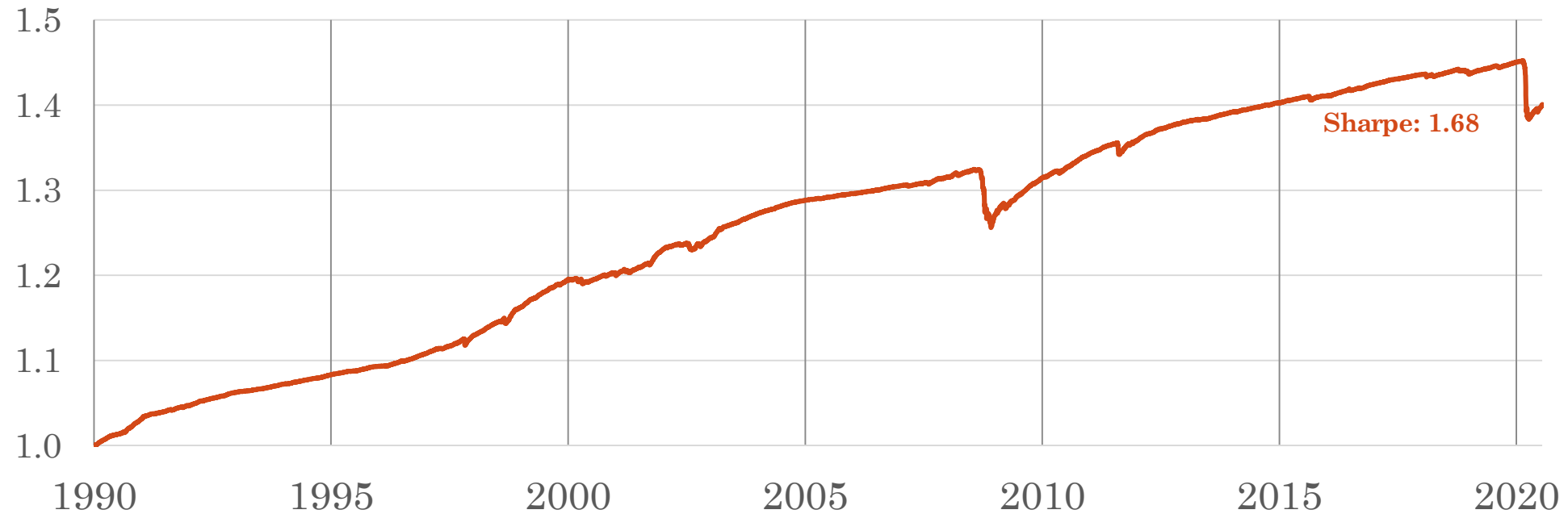


# Volatility Selling

## Implied-Realized Gap

- Historically this has been a very high-Sharpe trade, in spite of drawdowns in 2008 and 2020 that each wiped out several years of returns.

**S&P 500 Variance Swap Total Return**



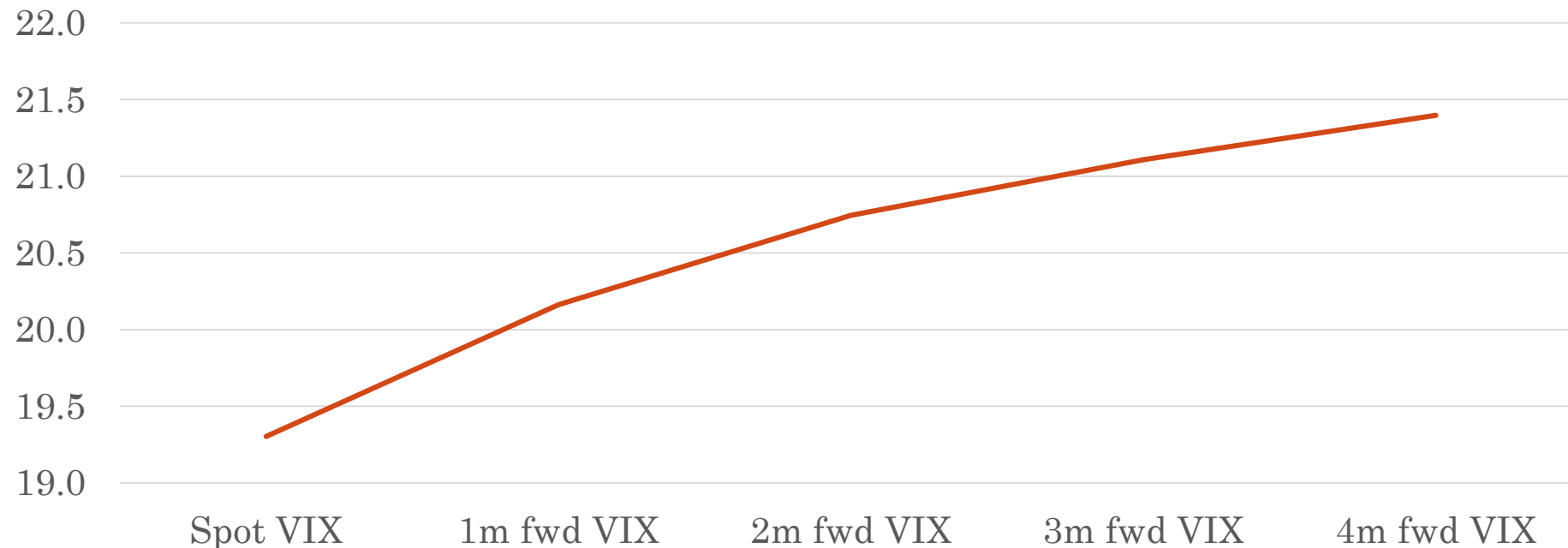
Source: Yahoo! Finance, our calculations

# Volatility Selling

## VIX Rolldown

- Forward implied volatility has been systematically above spot implied volatility. This is a risk premium.

**VIX Futures Curve (average 2006-2020)**



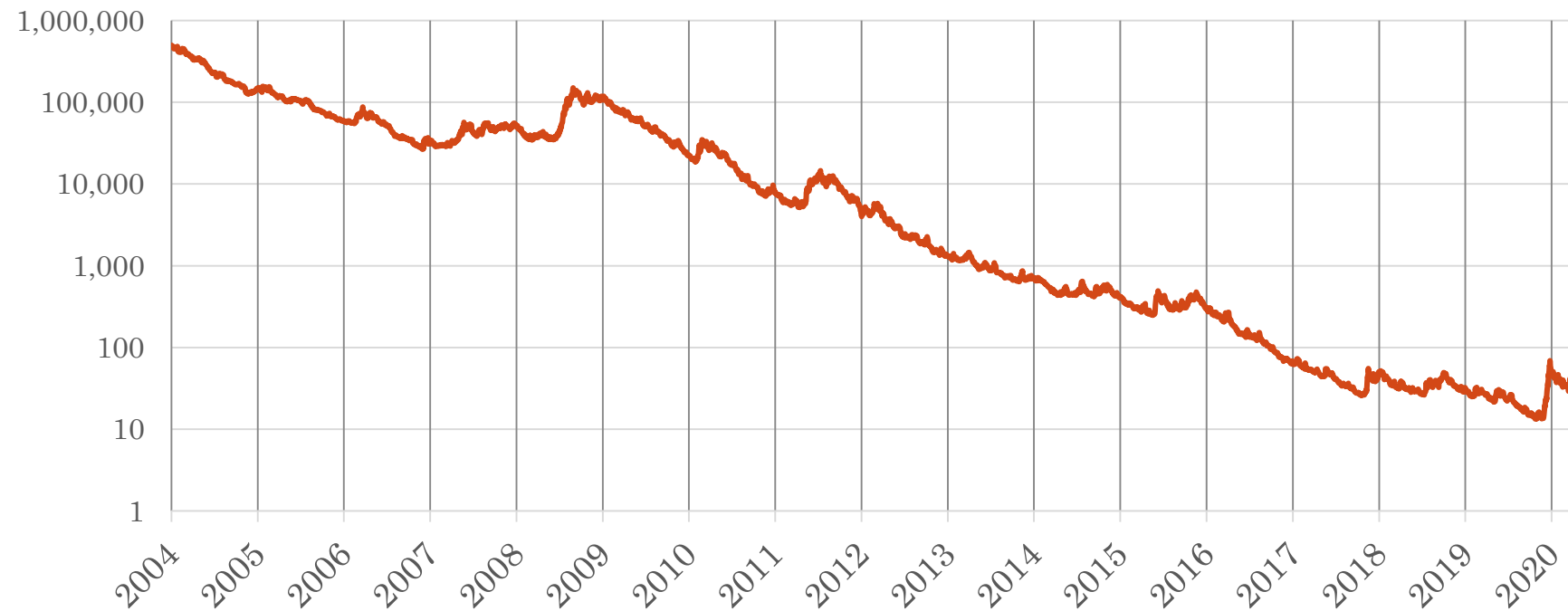
Source: CBOE, our calculations.

# Volatility Selling

## VIX Rolldown

- Accordingly, VIX futures have seen significantly negative returns over time.

**Constant Maturity 1m VIX Futures Total Return**



Source: Kuchita, Yahoo! Finance

# Volatility Selling

## Short-Term Mean Reversion

- Volatility measured over horizons of several days to a month has been systematically below volatility measured daily. This is a risk premium.

**Ratio of Daily to Monthly Volatility of S&P 500**



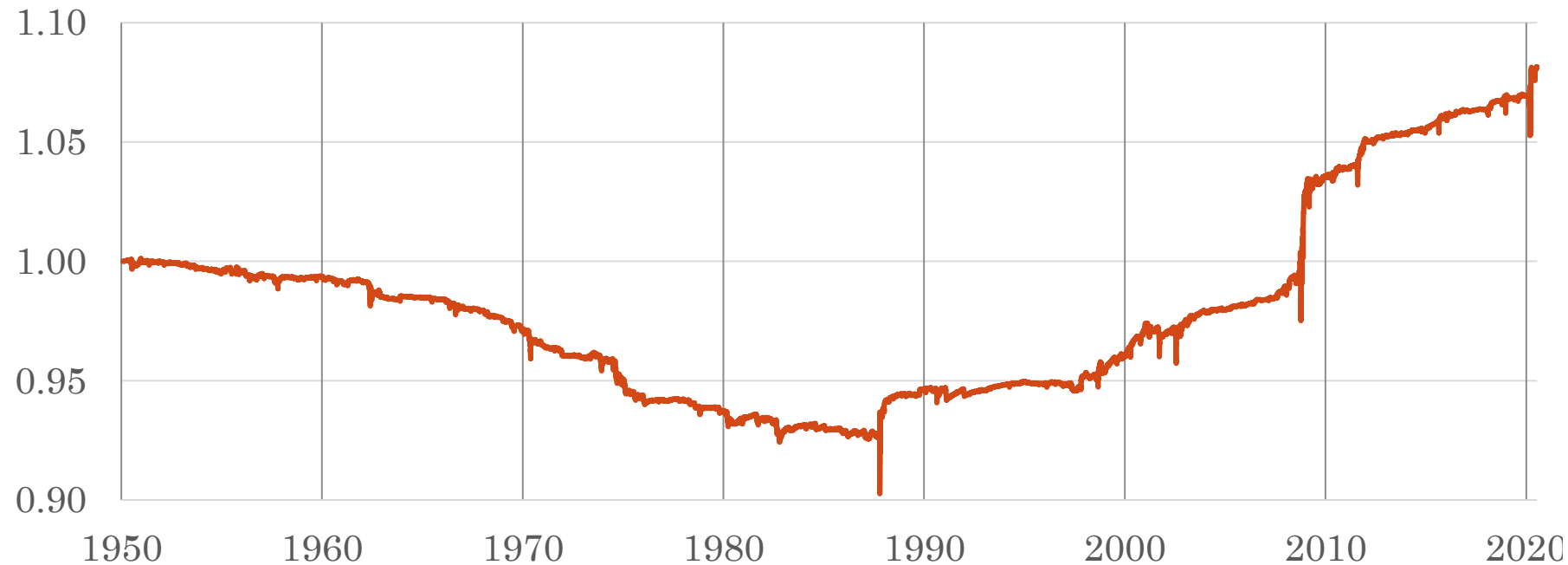
Source: Yahoo! Finance, our calculations.

# Volatility Selling

## Short-Term Mean Reversion

- Trading strategies synthesizing the difference between daily and longer-horizon variance would have seen positive total returns (before costs) since October 1987.

**S&P 500 Daily-Monthly Variance Swap Total Return**



Source: Yahoo! Finance, our calculations.

# Volatility Selling

## Mechanics of the Liquidity Trade

