Back to the 1980s or Not? The Drivers of Inflation and Real Risks in Treasury Bonds

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Chicago Harris, NBER, and CEPR

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  - Cost of sovereign debt and optimal sovereign debt issuance (e.g. Barro (2003), Du, Pflueger, and Schreger (2020), Lannoy, Bhandari, Evans, Golosov, and Sargent (2022))
  - State-contingency of corporate debt (e.g. Fisher (1933), Kang and Pflueger (2015))

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Informative about inflation and macroeconomy

Supply Shocks, Monetary Policy, or "Flight-to-safety"?

DE Shaw &Co (2021)

In short, the safe haven status of Treasury securities was put to a major test, and it passed. (...) As argued in that paper, we believe that the stock-bond correlation depends critically on the type of shocks hitting the economic system. The negative correlation between equity and Treasury prices—in other words, the environment that delivers the effective hedging properties of Treasury securities—tends to persist when the most active shocks hitting the economic system are those associated with changes in the strength of economic growth or the risk appetite of investors.

Bloomberg

9/14/2022

With yesterday's inflation shock in the US and its implications for the Federal Reserve again raising stress levels in markets, the hot debate is whether we're headed for soft or hard landings in 2023.

ECONOMIC REPORT OF THE PRESIDENT

TRANSMITTED TO CONGRESS | MARCH 2023

Economic Report of the President (March 2023)

(...) in 2022 inflation led the Federal Reserve to raise the Federal Funds Rate, causing both stock and bond prices to decline. This relationship can be seen (...) starting slightly before the tightening cycle began, possibly due to markets anticipating monetary actions. The sign of this correlation suggests that negative supply shocks were important for U.S. financial markets in 2022.

Back to the 1980s?

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This Paper

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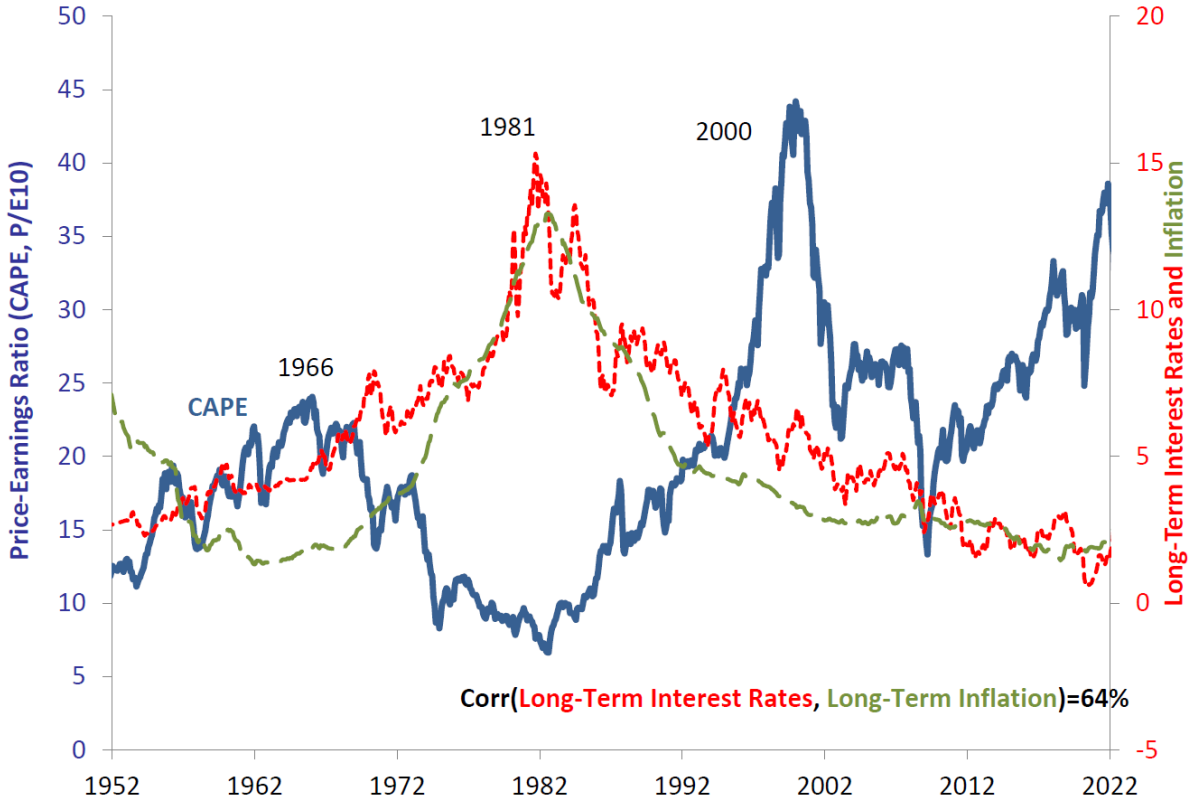
2. Bond betas as real-time tracker: Post-pandemic bond risks look markedly different from 1980s

Financial markets consistent with less aggressive Fed response and "softer landing" after supply shocks.

DATA

Historical Link Between Inflation, Stocks, and Bonds

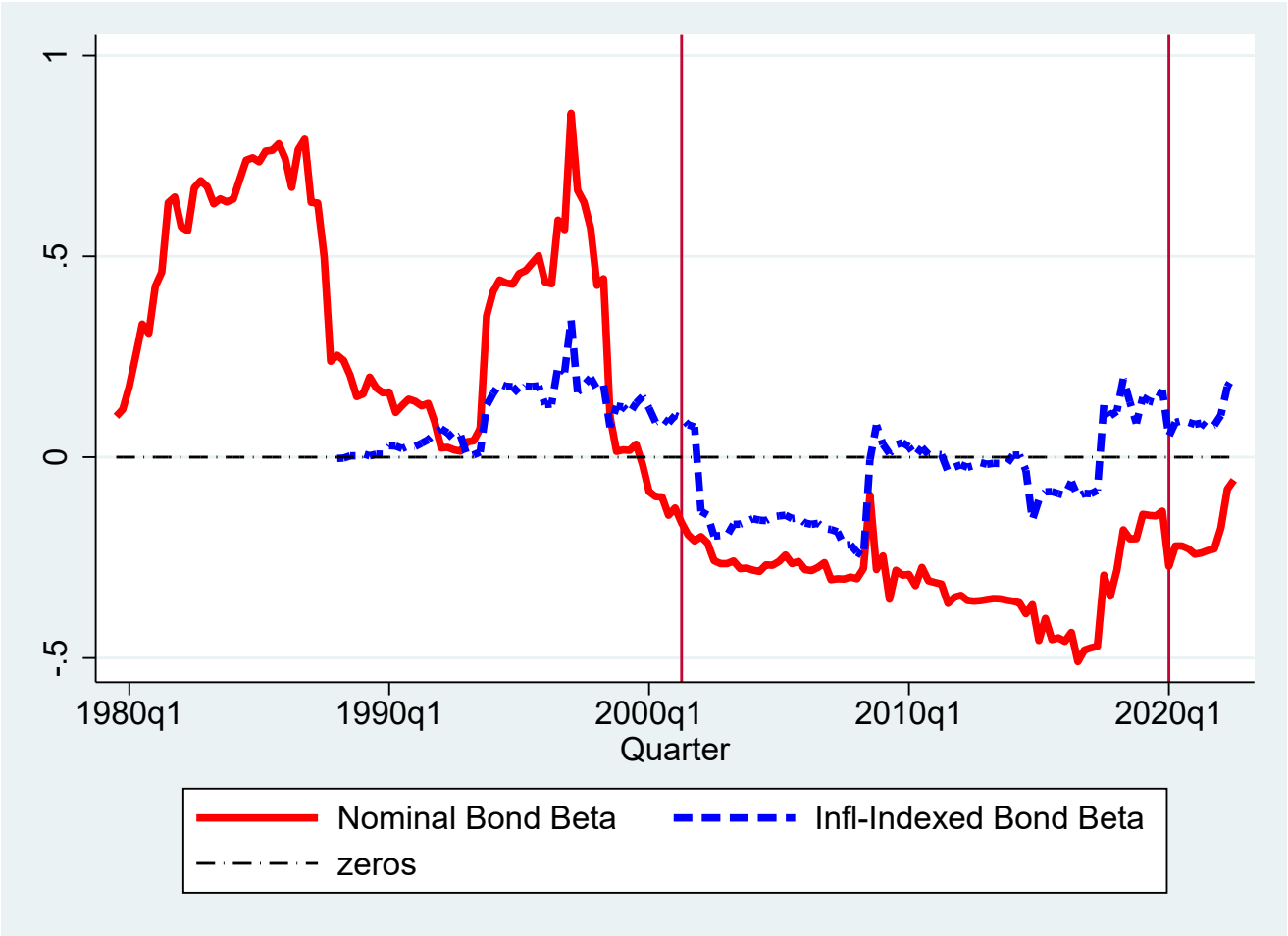


Cieslak and Pflueger (2023), Figure 1, data from Robert Shiller

- **Nominal bond yields clearly linked to long-term inflation**
- **Inflation was bad for stocks in 1980s, but good in 2000s**

Rolling Treasury Bond-Stock Betas

Quarterly 1979.Q4-2022.Q3

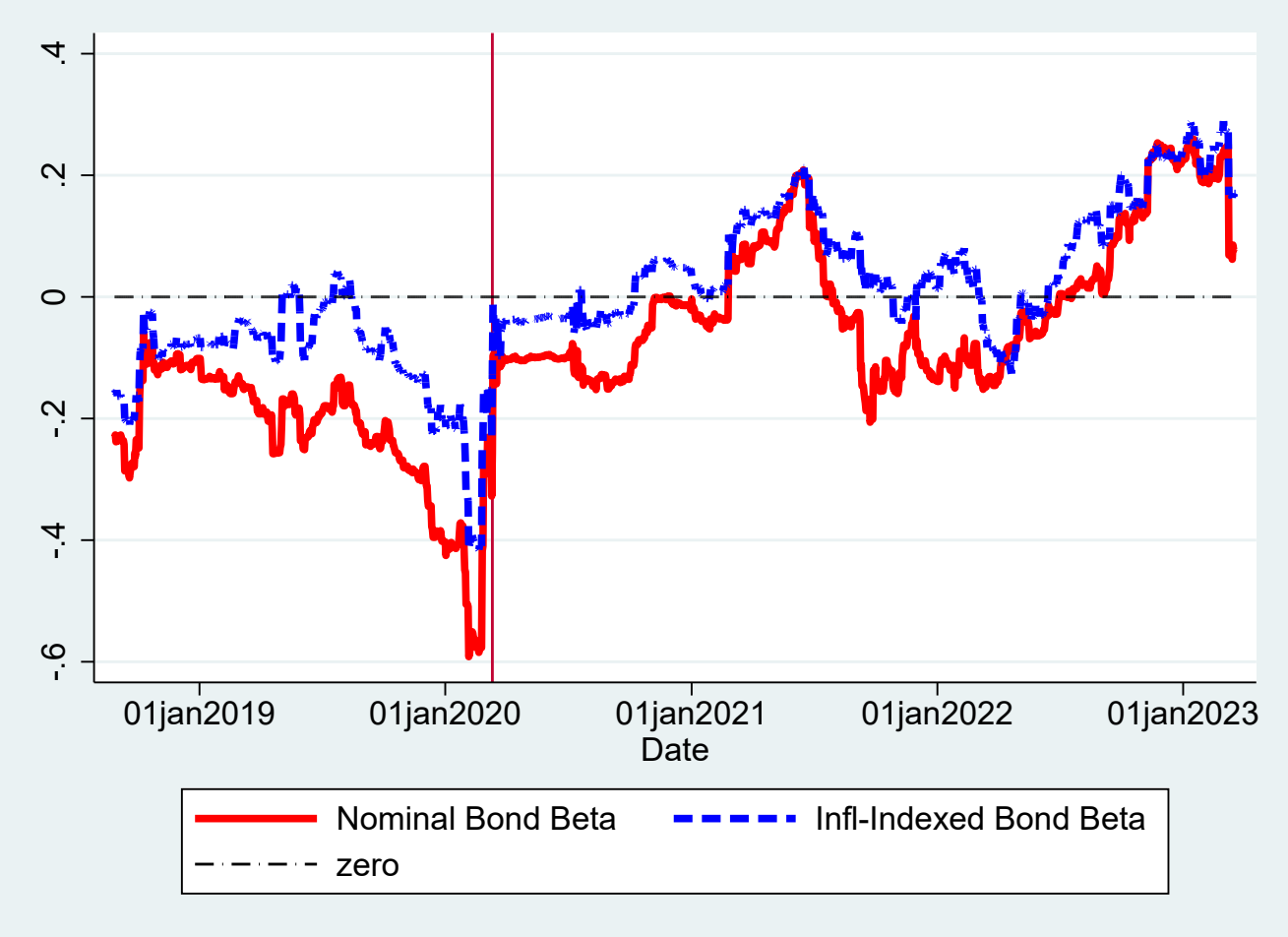


$xr_{n,t+1} = \alpha + \beta xr^{eq}_{t+1} + \varepsilon_{t+1}$, quarterly returns, 5-year rolling windows

Pflueger (2023) Figure 1

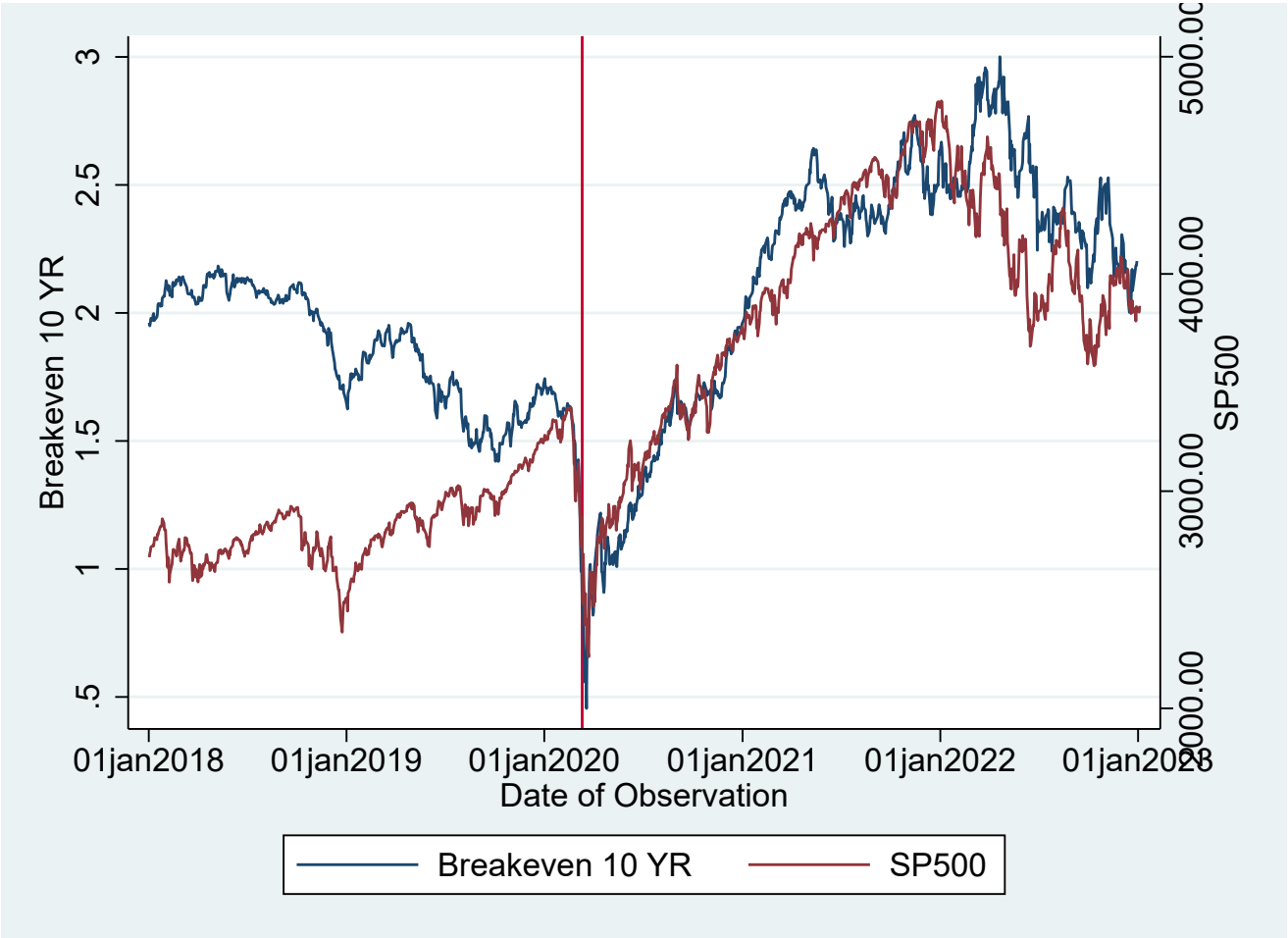
Shorter Window

Daily July 2018-February 2023



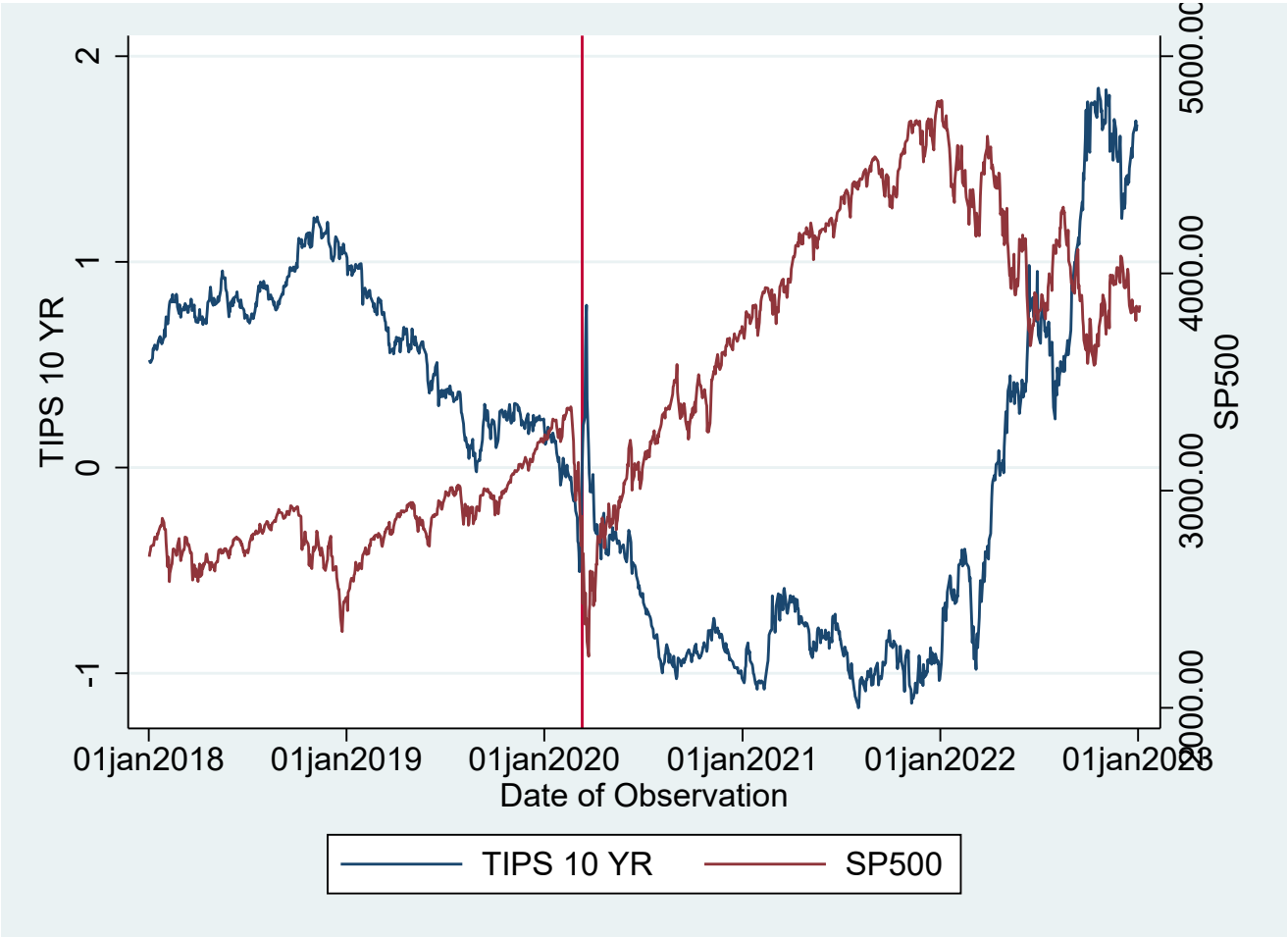
$xr_{n,t+1} = \alpha + \beta xr^{eq}_{t+1} + \varepsilon_{t+1}$, daily returns, 6-month rolling windows
Pflueger (2023), Figure 1

Breakeven Moves with Stock Market



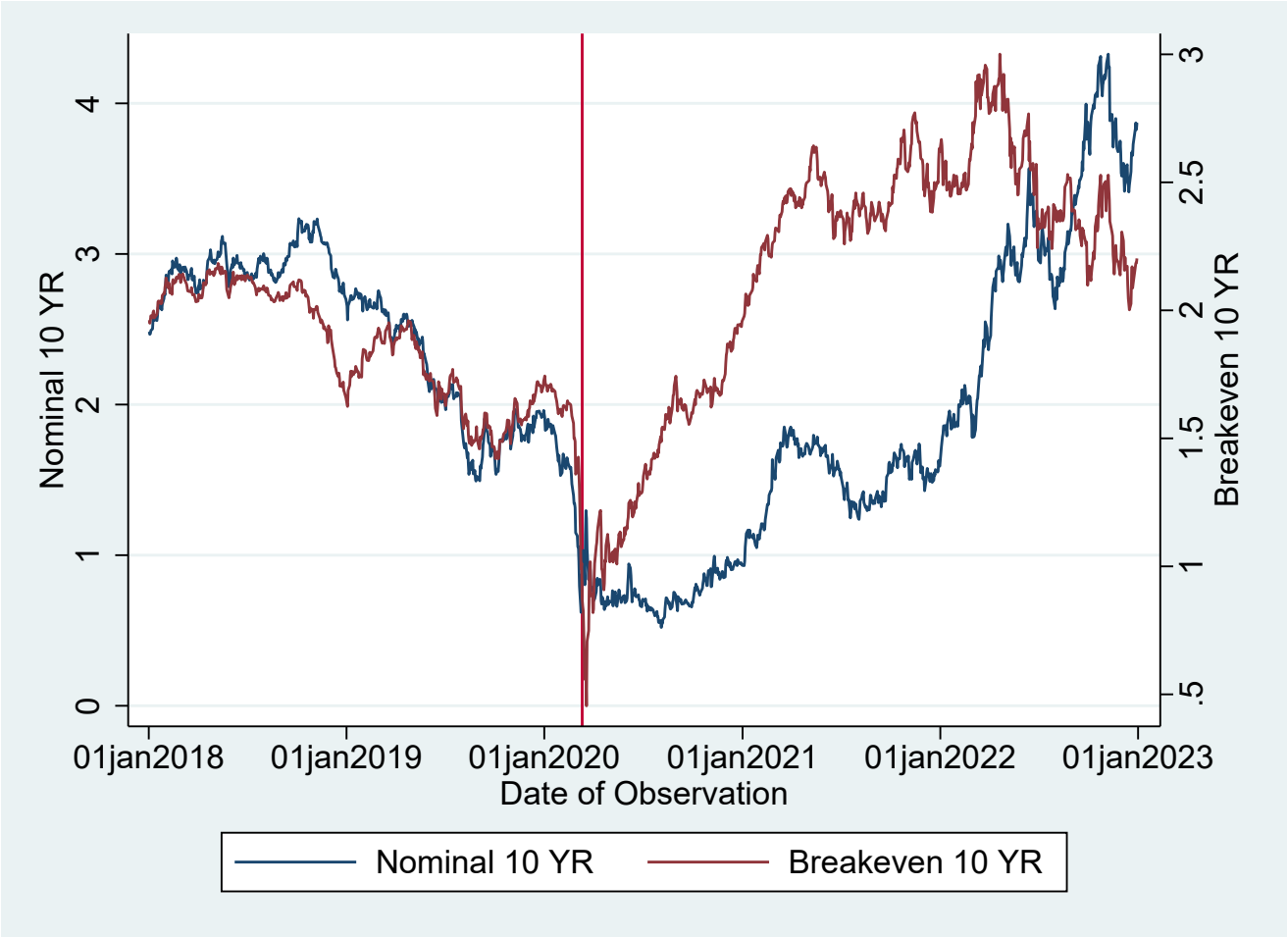
Pushes nominal bond-stock return beta negative

Real Yields Move Against Stock Market



Positive real bond-stock return beta

Decoupling of Nominal and Real Yields



MODEL

Literature

- **Macroeconomics of stagflation:** Cogley and Sargent (2001), Primiceri (2006), Sims and Zha (2006), Justiniano and Primiceri (2008), Clarida, Gali, and Gertler (2000), Bernanke et al. (1997), Drechsler, Savov, and Schnabl (2022)
- **Changing risks of Treasury bonds:** Campbell, Sunderam, and Viceira (2017), Campbell, Pflueger, and Viceira (2020), David and Veronesi (2013), Gourio and Ng (2020, 2023), Li et al. (2022), Hall, Sargent, Payne, Szoke (2022)
- **New Keynesian asset pricing models:** Rudebusch and Swanson (2008, 2012), Uhlig (2007), Kung (2015), Cabellero and Simsek (2022), Kekre and Lenel (2022), Pflueger and Rinaldi (2022)
- **Drivers of post-pandemic inflation:** Guerrieri, Lorenzoni, Straub, and Werning (2021), Rubbo (2022), Di Giovanni, Kalemli-Özcan, Silva, Yildirim (2022), Harding, Linde, Trabandt (2022), Bianchi and Melosi (2022), Blinder (2023), Shapiro (2023) ...

Interaction of supply shocks & policy response $\Rightarrow$ Bond risks

New Keynesian Model with Countercyclical Risk Aversion

Euler equation: $x_t = f^x E_t x_{t+1} + \rho^x x_{t-1} - \psi r_t + \underbrace{v_{x,t}}_{\text{Demand Shock}}$

Phillips curve: $\pi_t^w = f^\pi E_t \pi_{t+1}^w + \rho^\pi \pi_{t-1}^w + \kappa x_t + \underbrace{v_{\pi,t}}_{\text{Supply Shock}}$

Monetary policy rule: $i_t = \rho^i i_{t-1} + \left(1 - \rho^i\right)\left(\gamma^x x_t + \gamma^\pi \pi_t\right) + \underbrace{v_{i,t}}_{\text{MP Shock}}$

x_t = output gap, π_t = inflation, $i_t = r_t + E_t \pi_{t+1}$ nominal rate

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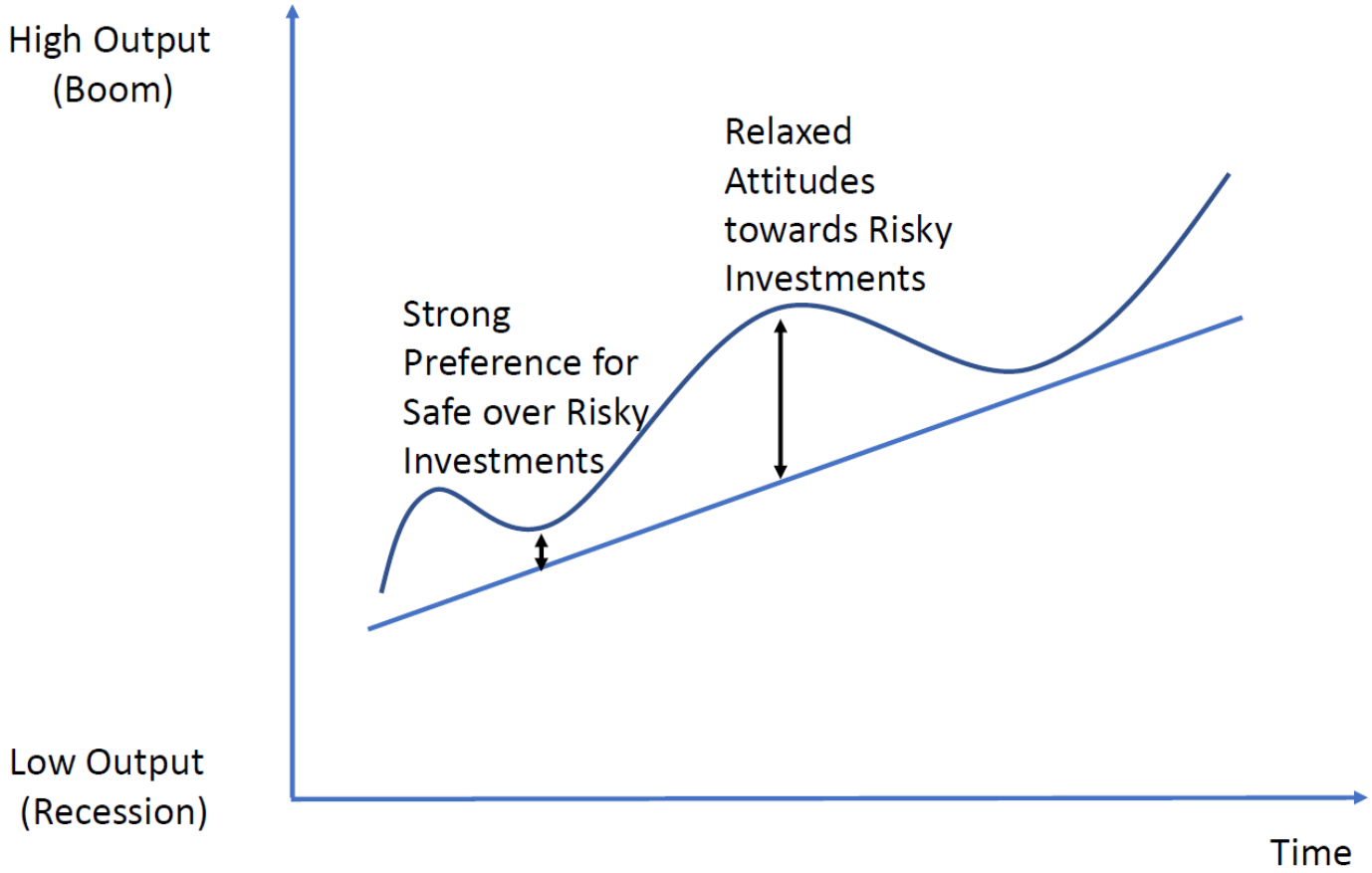
- Habit formation preferences (Campbell, Pflueger, and Viceira (2020, JPE))$\Rightarrow$ exactly log-linear macro Euler equation and non-linear risk premia in bonds and stocks

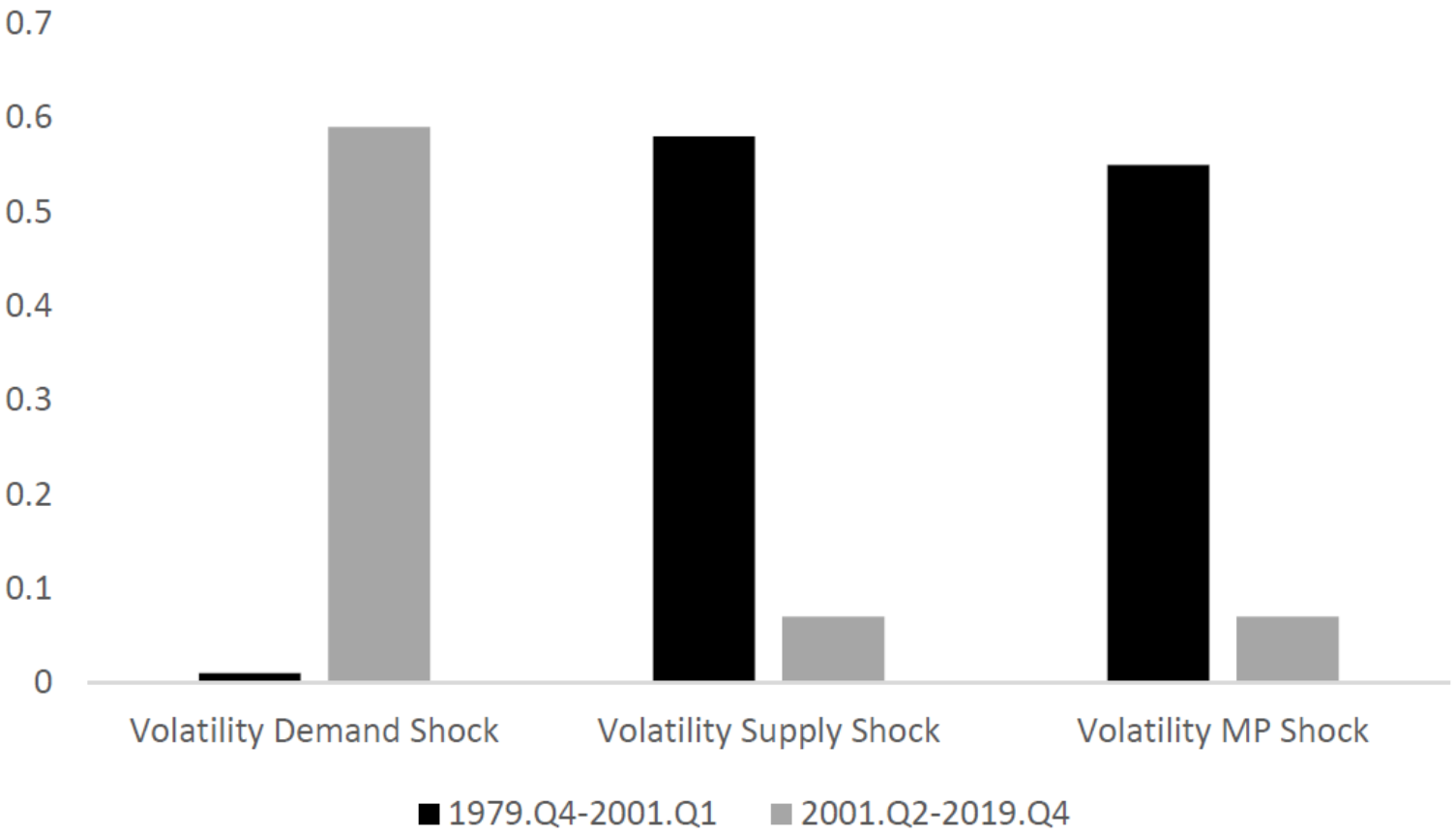
- Different from this prior work, analyze supply and demand shocks

Countercyclical Risk Aversion via Habits



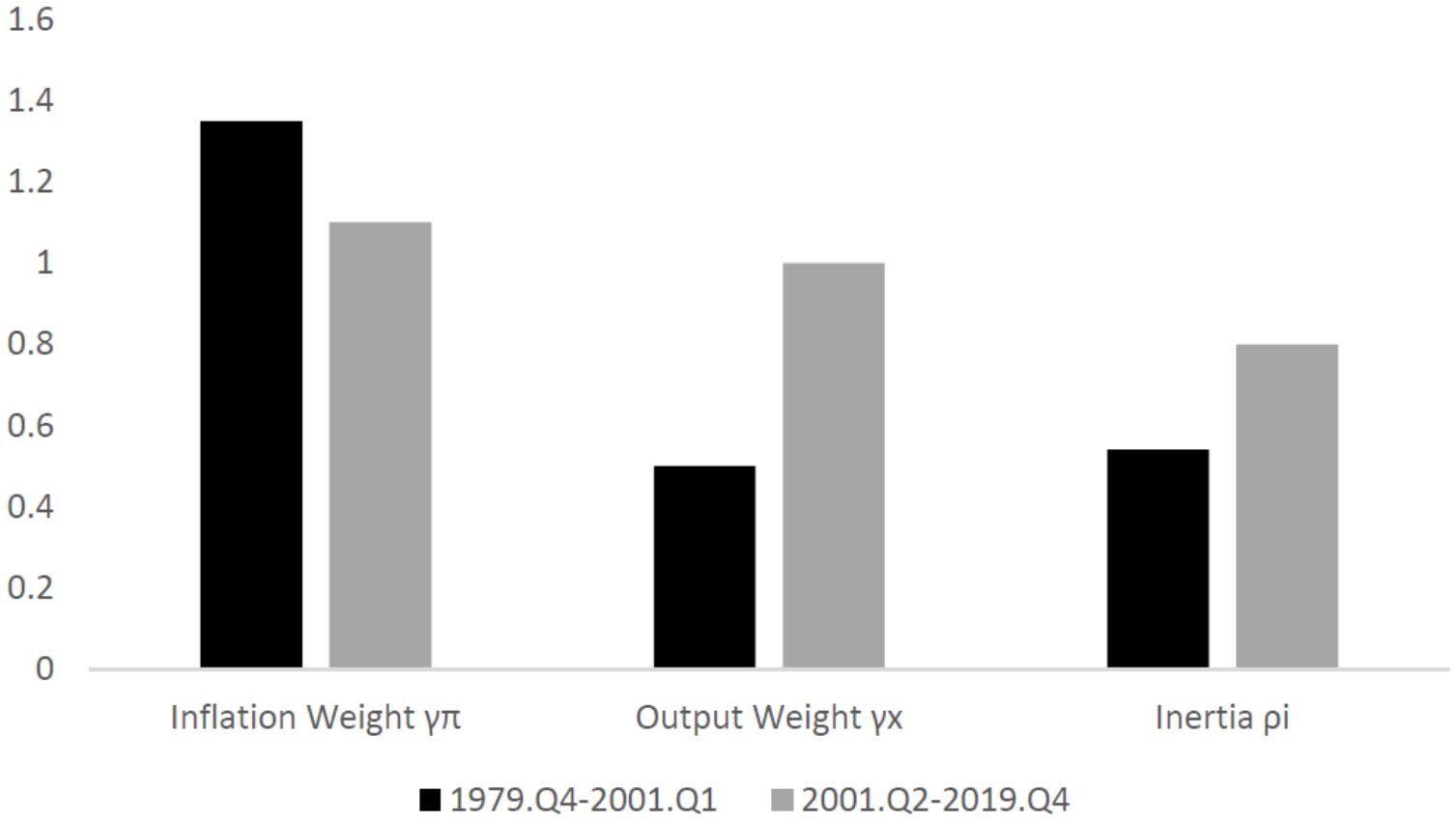
CALIBRATION

Changes in Prevalent Shocks 1980s vs. 2000s



Changes in Monetary Policy Conduct 1980s vs. 2000s

Monetary policy rule: $i_t = \rho^i i_{t-1} + \left(1 - \rho^i\right)\left(\gamma^x x_t + \gamma^\pi \pi_t\right) + v_{i,t}$



Asset Pricing Implications: Stocks

	1979.Q4–2001.Q1		2001.Q2–2019.Q4	
	Model	Data	Model	Data
Equity Premium	7.33	7.96	9.15	7.64
Equity Vol	14.95	16.42	19.29	16.80
Equity SR	0.49	0.48	0.47	0.45
AR(1) pd	0.96	1.00	0.93	0.84
1 YR Excess Returns on pd	-0.38	-0.01	-0.38	-0.50
1 YR Excess Returns on pd (R^2)	0.06	0.00	0.14	0.28

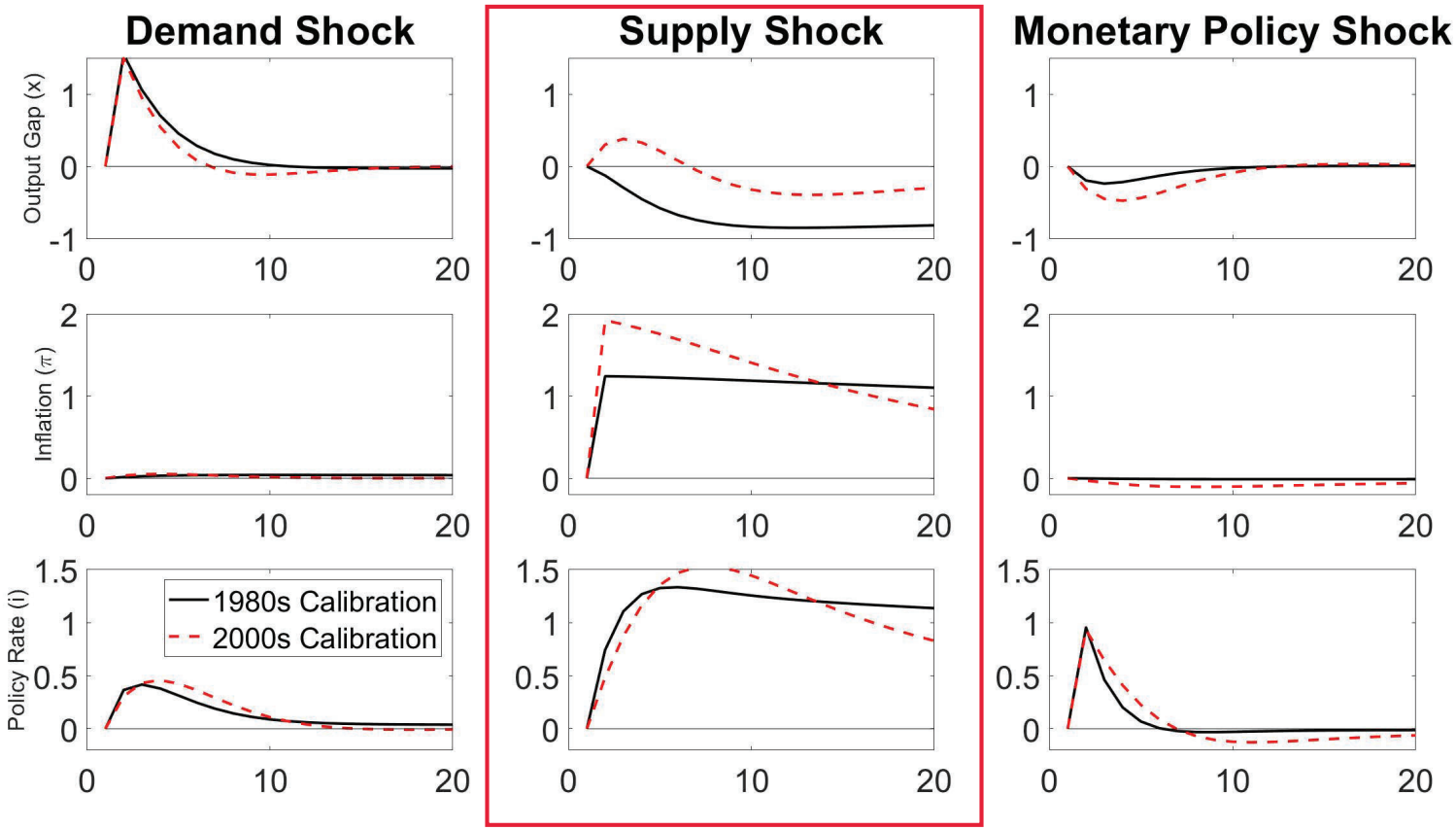
Asset Pricing Implications: Bonds

	1979.Q4–2001.Q1		2001.Q2–2019.Q4	
	Model	Data	Model	Data
Yield Spread	2.28	1.53	-0.58	2.06
Return Vol.	15.82	14.81	2.12	9.28
Nominal Bond-Stock Beta	0.86	0.24	-0.09	-0.31
Real Bond-Stock Beta	0.05	0.08	-0.08	-0.06
1 YR Excess Return on slope*	1.26	2.55	-0.31	0.86
1 YR Excess Return on slope (R^2)	0.01	0.07	0.01	0.02

* = targeted

ECONOMIC MECHANISM

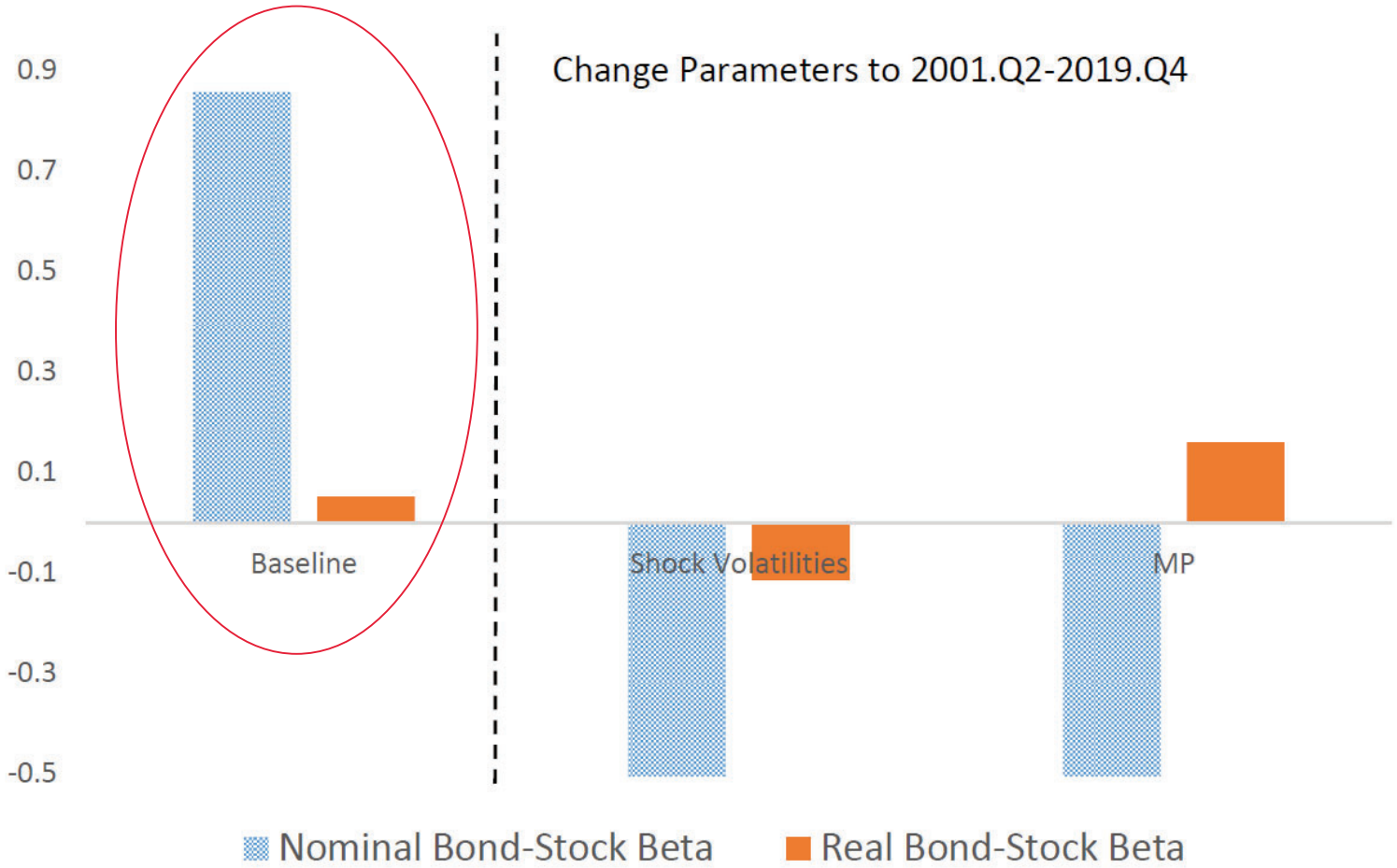
Impulse Responses



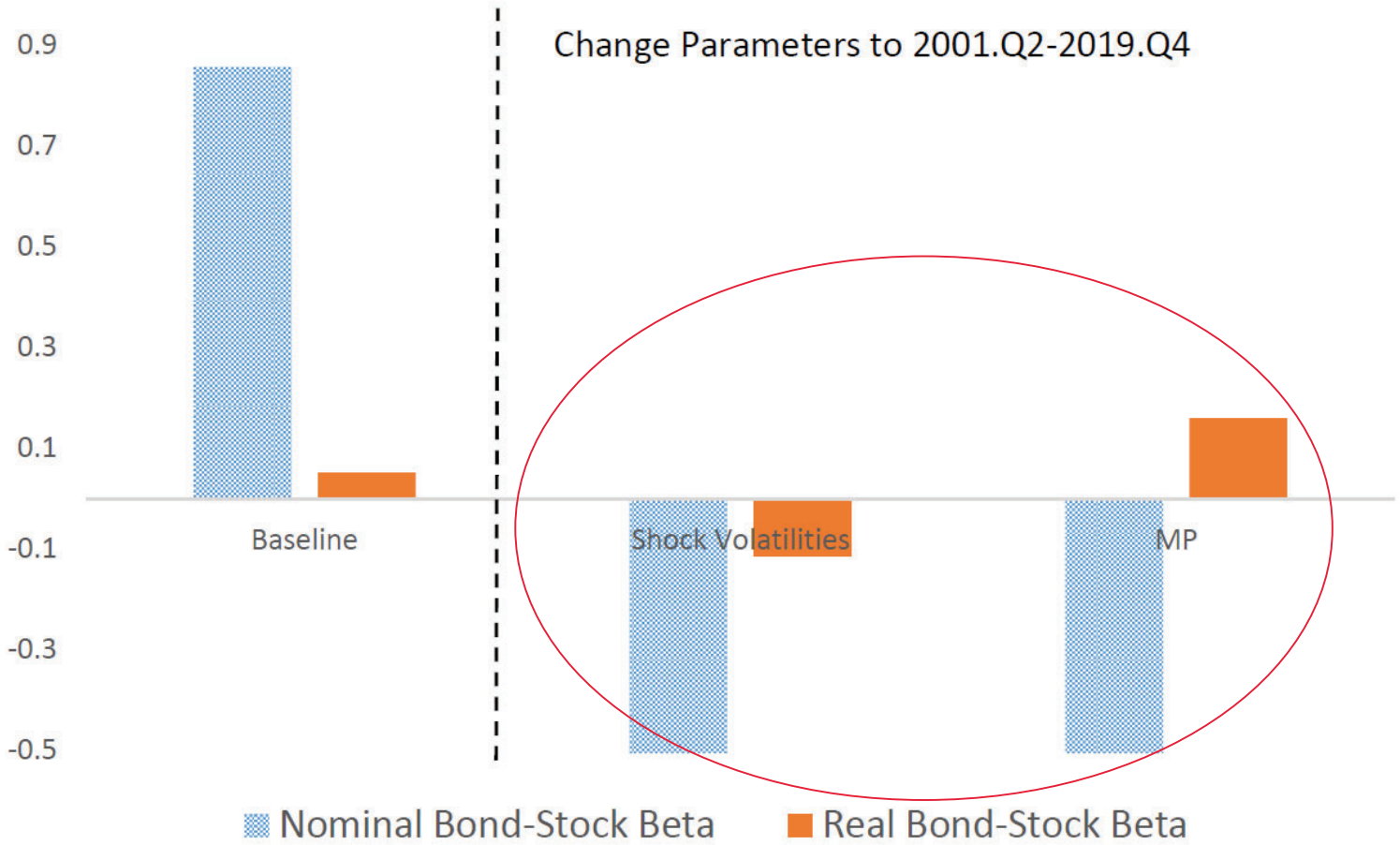
1 percentage point shocks

2000s Calibration: Monetary policy rule leads to "soft landing" after adverse supply shock

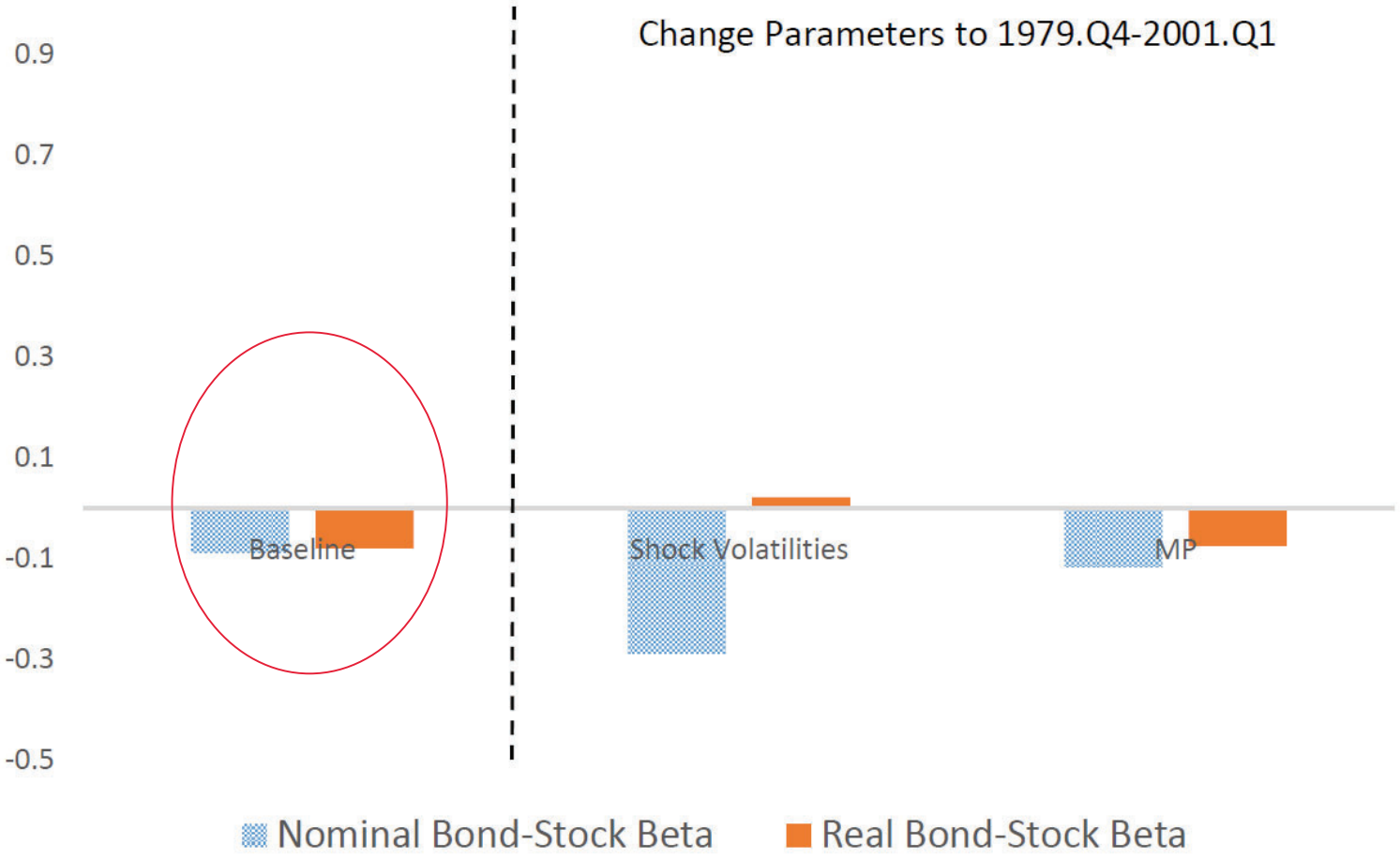
Model Positive Bond-Stock Betas in 1980s...



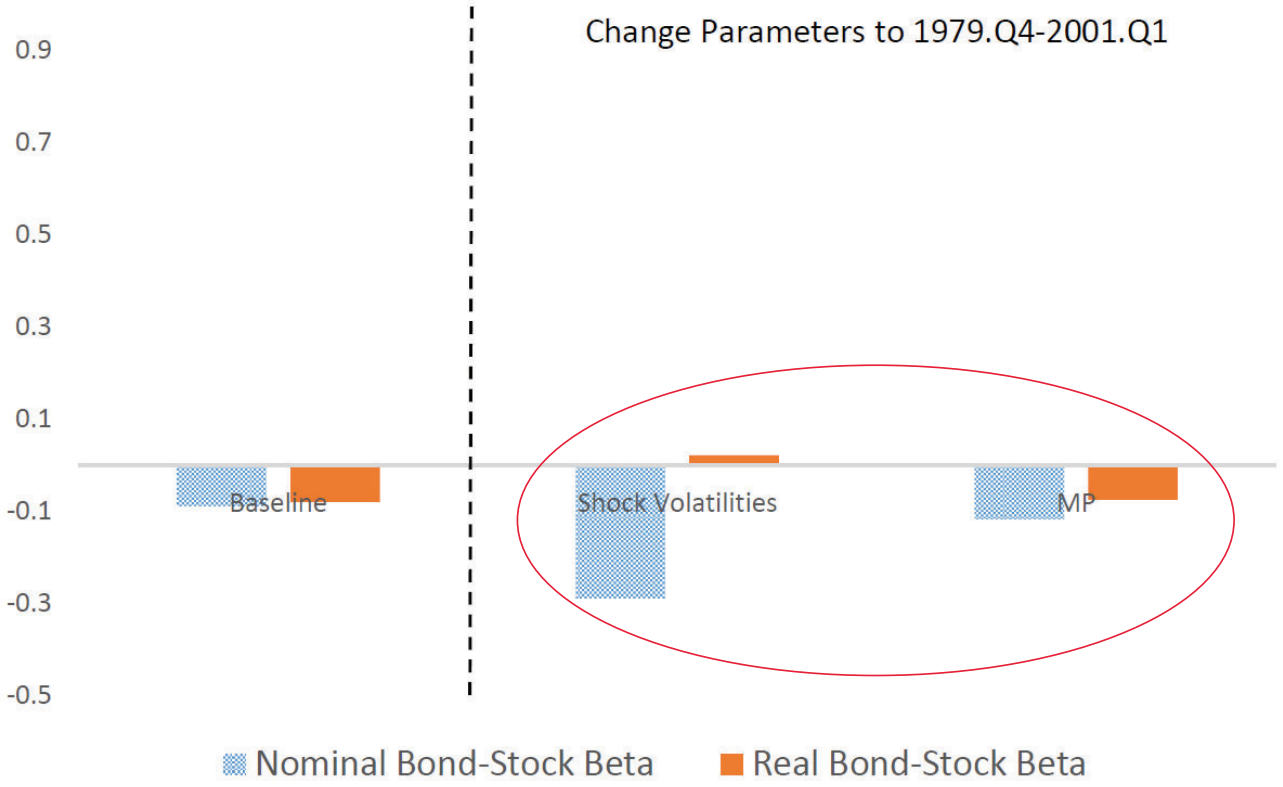
1980s Betas Flip with Prevalent Shocks or Monetary Policy



Model Negative Bond-Stock Betas in 2000s

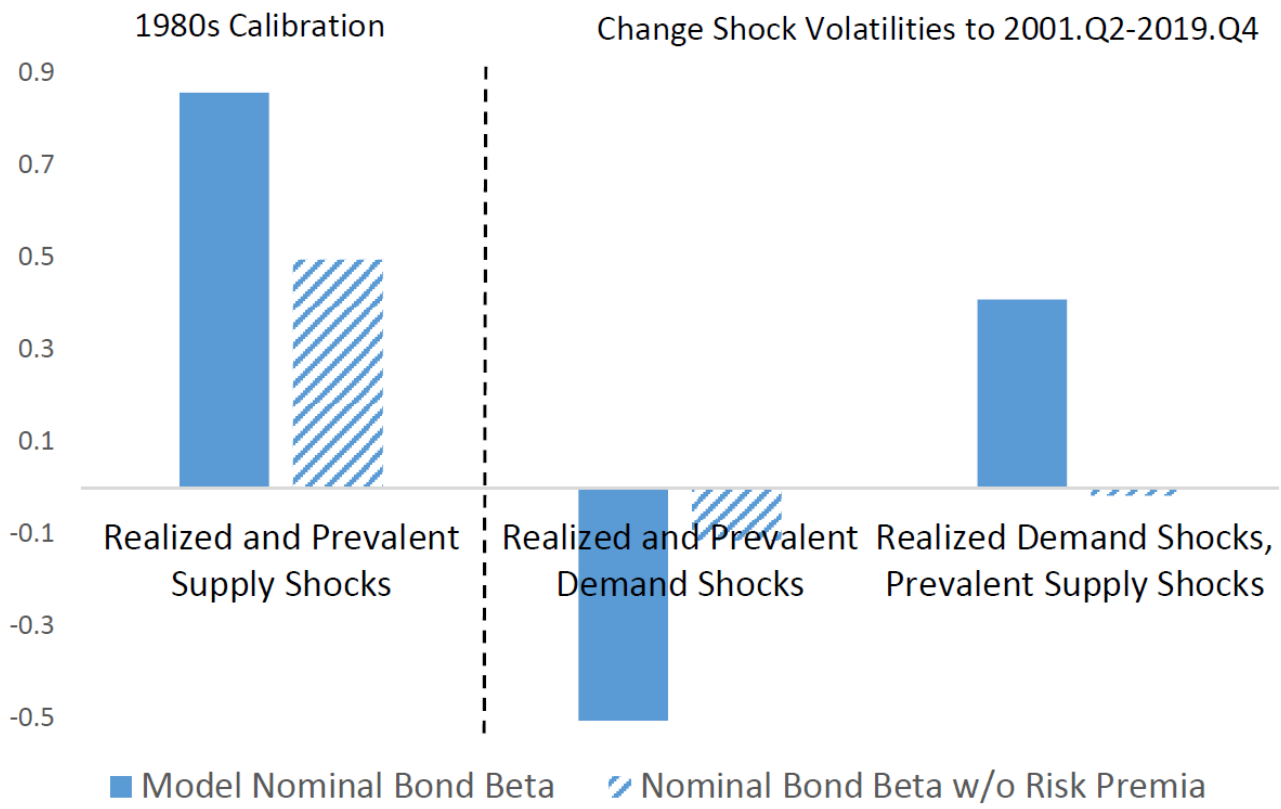


2000s Betas Do Not Flip



- Positive bond-stock betas are harder to generate than one might think
- Only if supply shocks and fast anti-inflationary monetary policy work together

Bond Betas Are All About What's in Investors' Minds



Bonds benefit endogenously from "flight-to-safety" if supply-shock driven stagflation deemed sufficiently unlikely

Conclusion: Not (Yet) Back to Stagflationary 1980s

- Positive nominal bond-stock betas require *both* supply shocks and fast, anti-inflationary monetary policy
    - Explains switch from positive nominal bond-stock betas in 1980s to negative nominal bond betas in 2000s
- Endogenous "flight-to-safety" turn bond-stock betas into forward-looking indicator of investors' perceived equilibrium
- In contrast to 1980s, small nominal bond risks appear to indicate "soft(-ish) landing" after adverse supply shocks
- But of course only the future tell what's next: Bond-stock betas will be important indicator to track