Monetary Policy and Reaching for Income

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Motivation

- Two ways to earn returns from assets
  - Current income: dividends, interest, rent
  - Capital gain: price appreciation
- Miller and Modigliani (1961):
  - The split between current income vs. capital gain is irrelevant
- Financial advisors:
  - *"Live off income, do not dip into your capital"*
  - *"The only dependable way to retire and stay retired is to* **boost your payouts** *so that you* **never have to touch your capital**.*"*
    — Forbes: How To Make $500,000 Last Forever (Owens 2016)

Motivation

- *"One way you can avoid the temptation to dip into your seed corn is to use what I call a central collection and disbursement account. Doing so results in the dividends, interest, profits, rents, licensing income, or other gains you see being deposited into* **a bank account dedicated to disbursements**, *not the* **brokerage accounts** *or retirement trusts that hold your investments...*

- *It erects a barrier between you and your principal... Never forget this rule: Don't sacrifice* **what you want (in the long term)** *for* **what you want right now**. "

  —Don't Eat Your Seed Corn: Never Spend Your Principal If You Want To Be Rich (Kennon 2016)

This paper

- Do investors follow the rule of "living off income"?
- What are the implications for portfolio choices, asset prices, and monetary policy?

"Reaching-for-income" hypothesis

- As the Fed lowers interest rates, income from deposits and bonds falls
- Investors who live off their portfolio income may not be able to sustain their consumption
- Investors may move into higher income assets such as high-dividend stocks
- The resulting demand pressure may drive up the prices of these assets
- Monetary policy affects investors' portfolio choices and asset prices

Literature

- **Theories of dividends**

  Miller and Modigliani 1961; Black 1976; Shefrin and Statman 1984; Baker and Wurgler 2004a,b; Harris, Hartzmark, and Solomon 2015; Jiang and Sun 2015; Hartzmark and Solomon 2013, 2017 (free-dividend fallacy vs. living off income)

- **Life-cycle theory of consumption and savings**

  Statman 2017; Graham and Kumar 2006; Baker, Nagel, and Wurgler 2007; Kaustia and Rantapuska 2012; McCarthy 2011; Carlson, Kim, Lusardi, and Camerer 2015

- **Behavioral asset pricing: time-inconsistent preference**

  Laibson 1997; O'Donoghue and Rabin 1999; Luttmer and Mariotti 2003

- **"Reaching for yield" hypothesis**

  Rajan 2006; Hanson and Stein 2015; Bekaert, Hoerova, and Duca 2013; Becker and Ivashina 2015; Gertler and Karadi 2015; Hau and Lai 2016; Choi and Kronlund 2017; Di Maggio and Kacperczyk 2017 (reaching for yield vs. reaching for income)

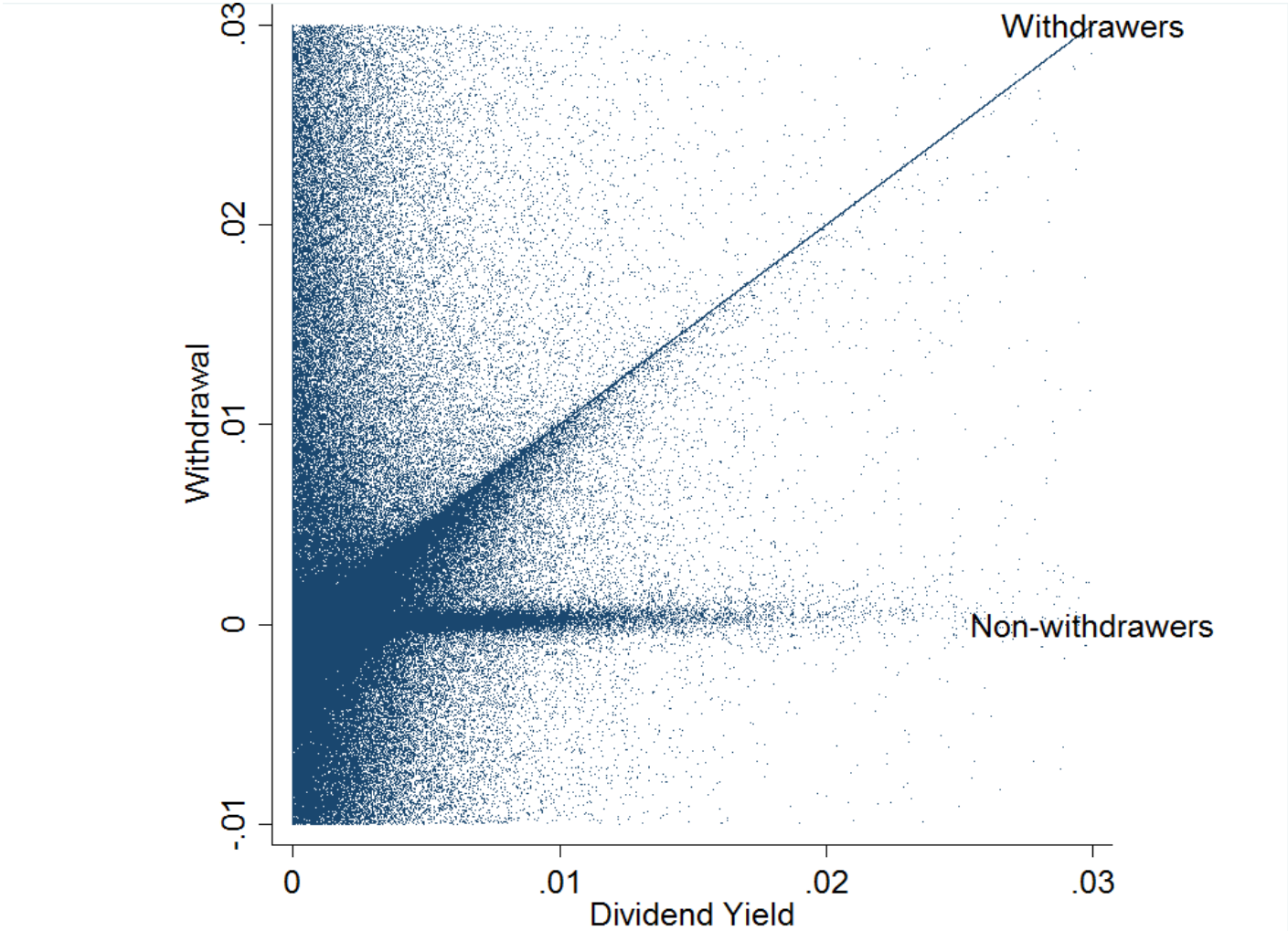
Outline

- Empirical Evidence
  - Individual stock holding
  - Mutual fund flows
  - Asset prices
- Theoretical Model
  - Why do investors live off income?
  - How does low-interest rate monetary policy increase the demand for income?
- Conclusion

Do investors live off income?

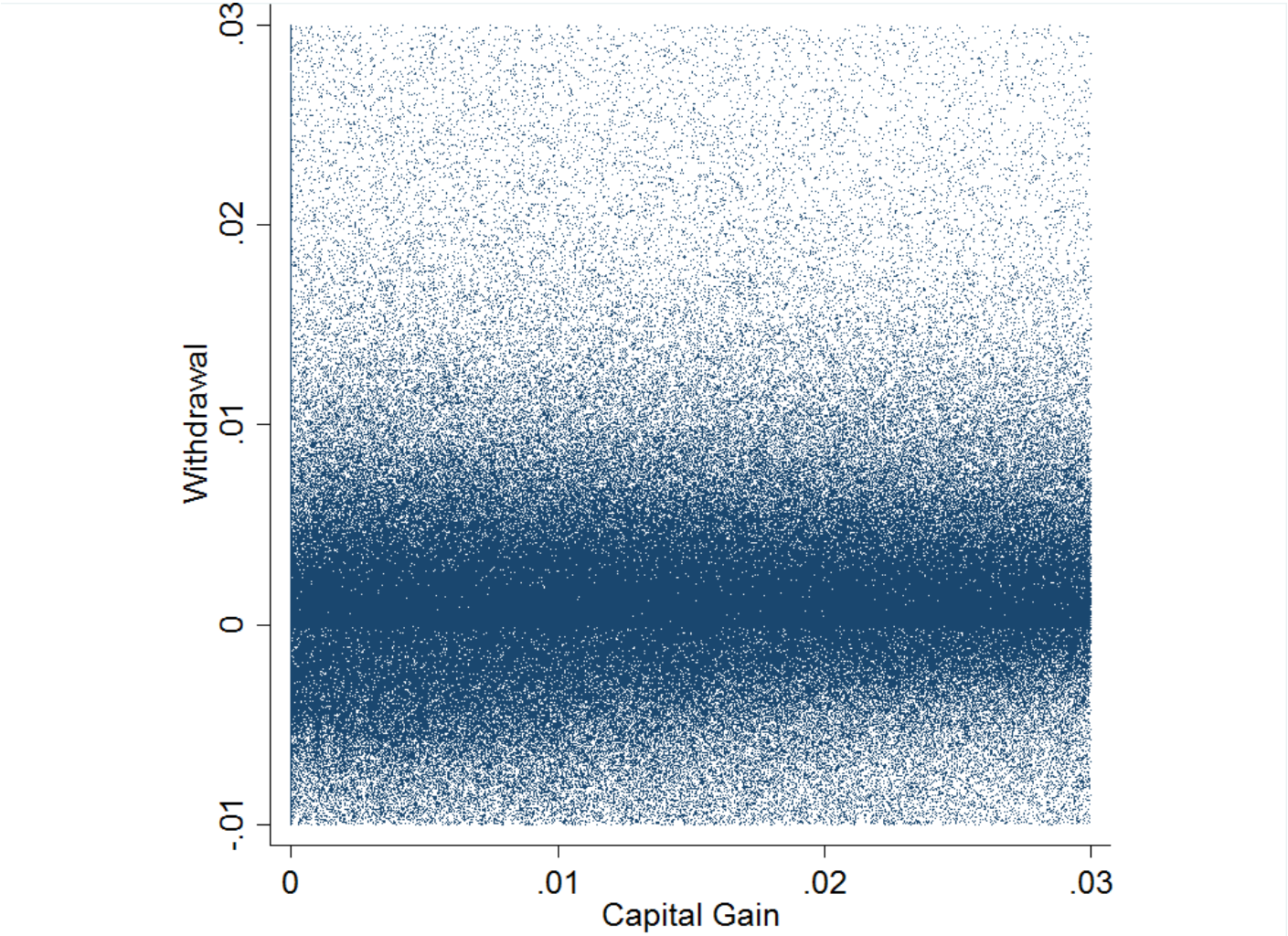
- Data sample: monthly stock holdings of 78,000 U.S. households between 1991 and 1996 (Barber and Odean 2000)

Dividend Withdrawers vs. Non-withdrawers



- A group of investors withdraw one-for-one their dividend income (Baker, Nagel, and Wurgler 2007).

Living off Dividends, Not Capital Gains



- No investors regularly withdraw their capital gains.

Who are the Withdrawers?

	(1) All	(2) All	(3) Male	(4) Female
Retiree	0.258***	0.258***	0.251***	0.271***
	[0.040]	[0.040]	[0.048]	[0.075]
Labor Income	-0.018**	-0.018**	-0.024**	0.025
	[0.008]	[0.008]	[0.011]	[0.018]
Home Owner	0.061	0.061	0.089	0.018
	[0.055]	[0.055]	[0.069]	[0.107]
Married	0.013	0.013	0.045	0.030
	[0.041]	[0.041]	[0.045]	[0.113]
Bank Card	0.005	0.005	-0.019	0.017
	[0.043]	[0.043]	[0.082]	[0.052]
Vehicles	0.026	0.026	0.042**	-0.075
	[0.020]	[0.020]	[0.021]	[0.070]
Occupation F.E.	No	Yes	Yes	Yes
Observations	19,394	19,394	11,442	7,952
Pseudo R-squared	0.002	0.002	0.003	0.002

"Reaching-for-income" Hypothesis

- How does monetary policy affect investors who live off income?
- Low-interest rate monetary policy $\rightarrow$ reduces income from bonds and deposits $\rightarrow$ increases demand for high-dividend stocks
- Data sample: individual stock holdings
- Does a decrease in the Fed Funds rates increase holding of high-dividend stocks?

$$\begin{aligned}\Delta Holding_{i,j,t} =& \beta_1 \Delta FFR_t + \beta_2 HighDividend_{i,j,t} \\ &+ \beta_3 \Delta FFR_t \times HighDividend_{i,j,t} + \gamma' Controls + \epsilon_{i,j,t}\end{aligned}$$

Monetary Policy and Demand for Dividends

	(1) All	(2) Retirees	(3) Non-retirees
Δ FFR	-0.303***	-0.151	-0.356***
	[0.105]	[0.109]	[0.109]
High Dividend	9.491***	9.069***	9.792***
	[1.143]	[1.262]	[1.203]
Δ FFR*High Dividend	-0.946***	-1.568***	-0.669**
	[0.338]	[0.377]	[0.339]
High Repurchase	0.292	0.742	0.158
	[0.490]	[0.733]	[0.541]
Δ FFR*High Repurchase	0.433***	0.334*	0.463***
	[0.126]	[0.196]	[0.139]
Stock Characteristics	Yes	Yes	Yes
Demographics	Yes	Yes	Yes
Observations	1,759,502	418,255	1,341,247
Adj. R-squared	0.015	0.021	0.014

Local Deposit Rates and Demand for Dividends

- Data sample: individual stock holdings + Call Report + Summary of Deposits
- **Cross-region** variations in **local deposit rates**
- The channel of monetary policy is through interest income
- One monetary policy for the whole country, different transmission to local deposit rates (Drechsler, Savov, and Schnabl 2017)
- Deposit rates in regions with more competitive banking sector are more sensitive to monetary policy

$$\begin{aligned}\Delta Holding_{i,j,t} =& \beta_1 \Delta DepositRates_{i,j,t} + \beta_2 HighDividend_{i,j,t} \\ &+ \beta_3 \Delta DepositRates_{i,j,t} \times HighDividend_{i,j,t} \\ &+ TimeF.E. + RegionF.E. + \gamma' Controls_{i,j,t} + \epsilon_{i,j,t}\end{aligned}$$

Local Deposit Rates and Demand for Dividends

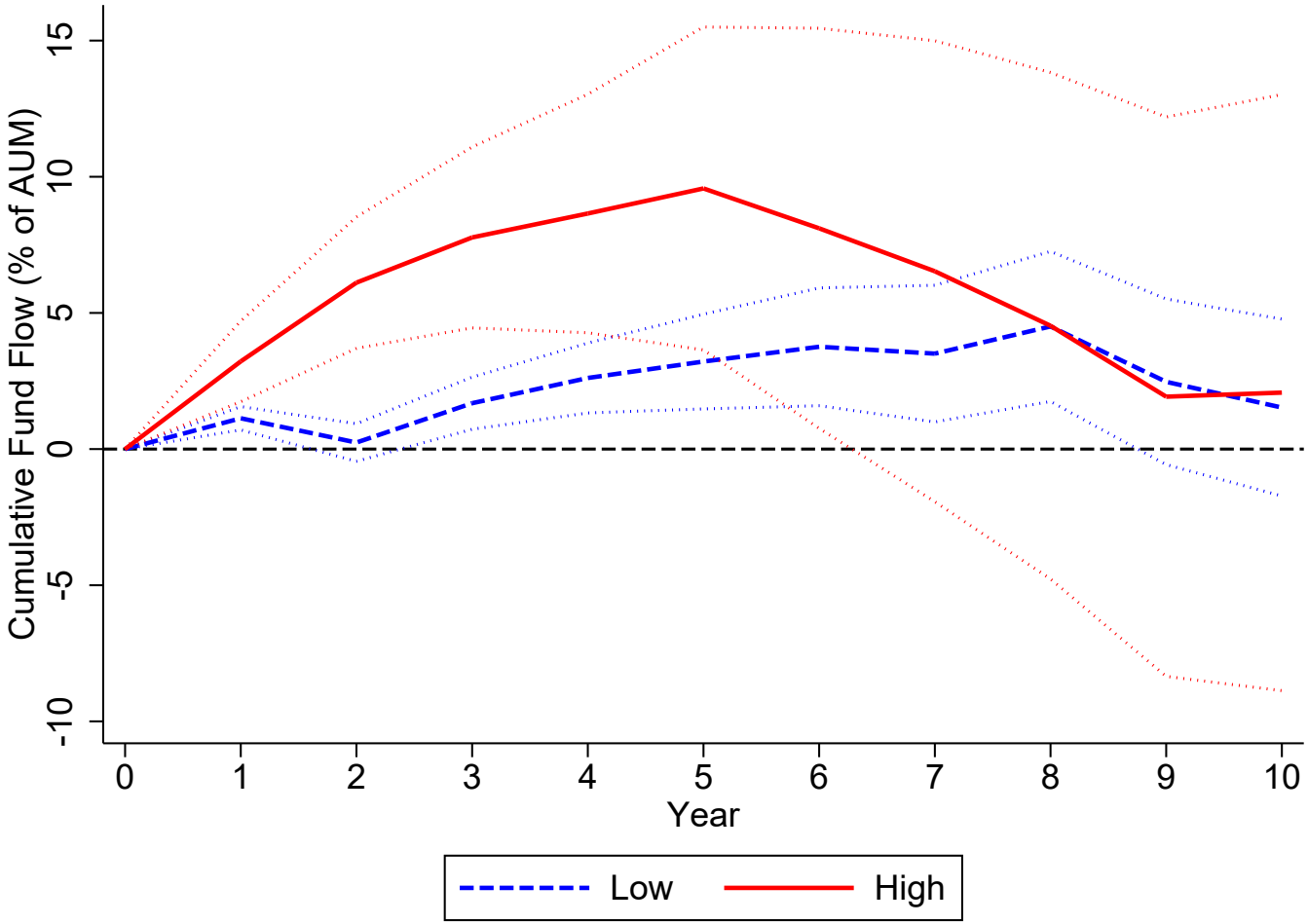
	(1) All	(2) Withdrawers	(3) Non-Withdr.
Δ Deposit Rates	-0.883***	-0.858***	-1.153***
	[0.209]	[0.228]	[0.393]
High Dividend	7.638***	7.533***	9.233***
	[1.090]	[1.127]	[2.305]
Δ FFR*High Dividend	-0.426	-0.401	-0.768
	[0.364]	[0.365]	[0.867]
Δ Deposit Rates*High Dividend	-2.159**	-2.509**	0.694
	[0.934]	[0.950]	[1.928]
High Repurchase	0.304	0.0225	1.387
	[0.530]	[0.517]	[1.360]
Δ Deposit Rates*High Repurchase	1.119***	0.961***	1.694**
	[0.291]	[0.294]	[0.768]
Stock Characteristics	Yes	Yes	Yes
Demographics	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes
MSA Fixed Effects	Yes	Yes	Yes
Observations	1,296,462	1,064,446	232,013
Adj. R-squared	0.020	0.026	0.012

Impulse Response of Mutual Fund Flows to Monetary Policy

- Data sample: U.S. domestic mutual fund monthly flows from 1991 to 2016.
- High-income funds: funds in the top decile of income yield distribution
- Does a decrease in the Fed Funds rates lead to more inflows to high-income funds?

$$Flows_{i,t} = \beta_1 \Delta FFR_{t,t-1} + \beta_2 \Delta FFR_{t-1,t-2} + \ldots + \beta_{10} \Delta FFR_{t-9,t-10} + \gamma' X_{i,t} + \varepsilon_{i,t}. \quad (1)$$

Impulse Response of Equity Fund Flows to a 1% Reduction in FFR



- Inflows to high-income equity funds.

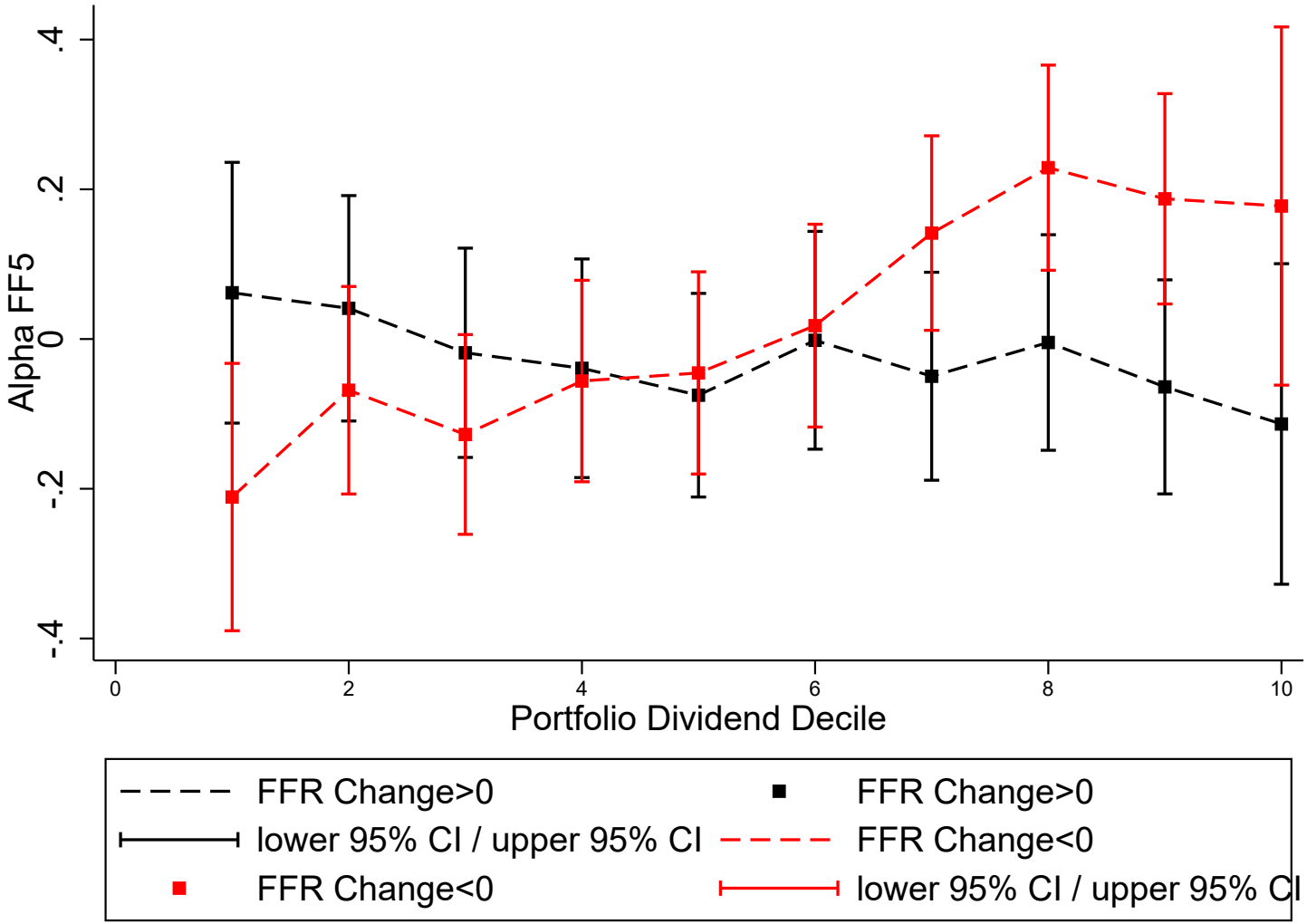
Subsamples and Robustness

- Similar patterns for bond funds and balanced funds
- Mainly driven by retail investors, rather than institutional investors
- Robust to controlling fund risks, taxes on dividends/capital gain, and term spreads

Use Fund Names to Classify High-Income Funds

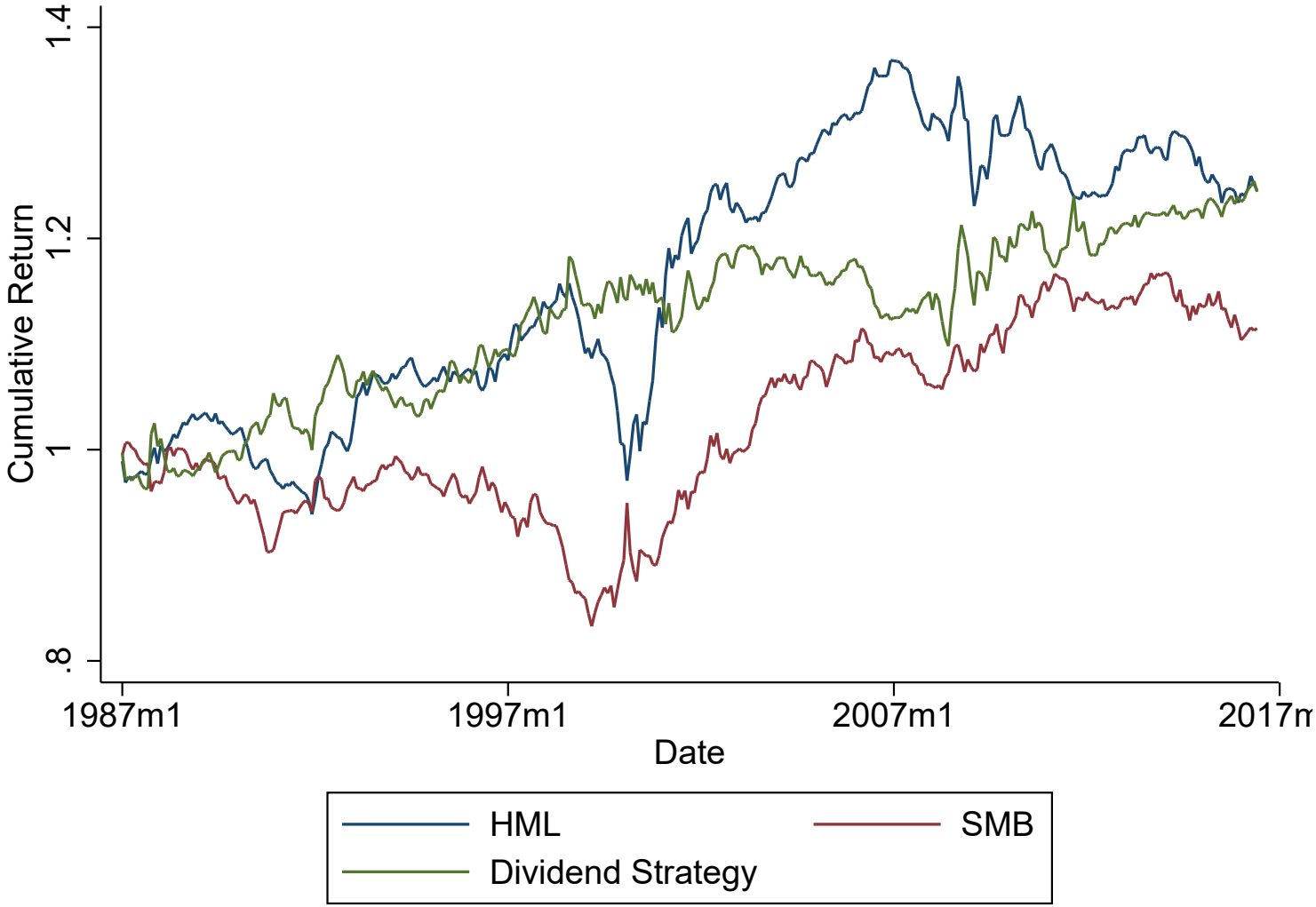
- Some funds seek to generate high income to cater to the income-seeking investors.
- For instance, the prospectus of **Federated Strategic Value Dividend Fund**: this fund "seeks a higher dividend yield than that of the broad equity market".
- Classify a fund as high income if the name contains "dividends", "income", or "yield".
- Under this classification, we find that a reduction in the Fed Funds rates is associated with significantly larger flows into funds whose name allude to a high-income focus.

Excess Returns of Dividend Decile Portfolios



- high-dividend stocks outperform when rates are declining, underperform when rates are rising.

Cumulative Return of the Dividend Strategy



- Dividend strategy return comparable to high-minus-low and small-minus-big

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A Microfoundation of Living off Income

- Hyperbolic discounting (Laibson 1997)

$$\max_{\{C_\tau,\theta_\tau\}_{\tau=t}^{\infty}} u(C_t) + \mathbb{E}_t \sum_{\tau=t}^{\infty} \beta\, \delta^{\tau+1-t}\, u(C_{\tau+1}) \tag{2}$$

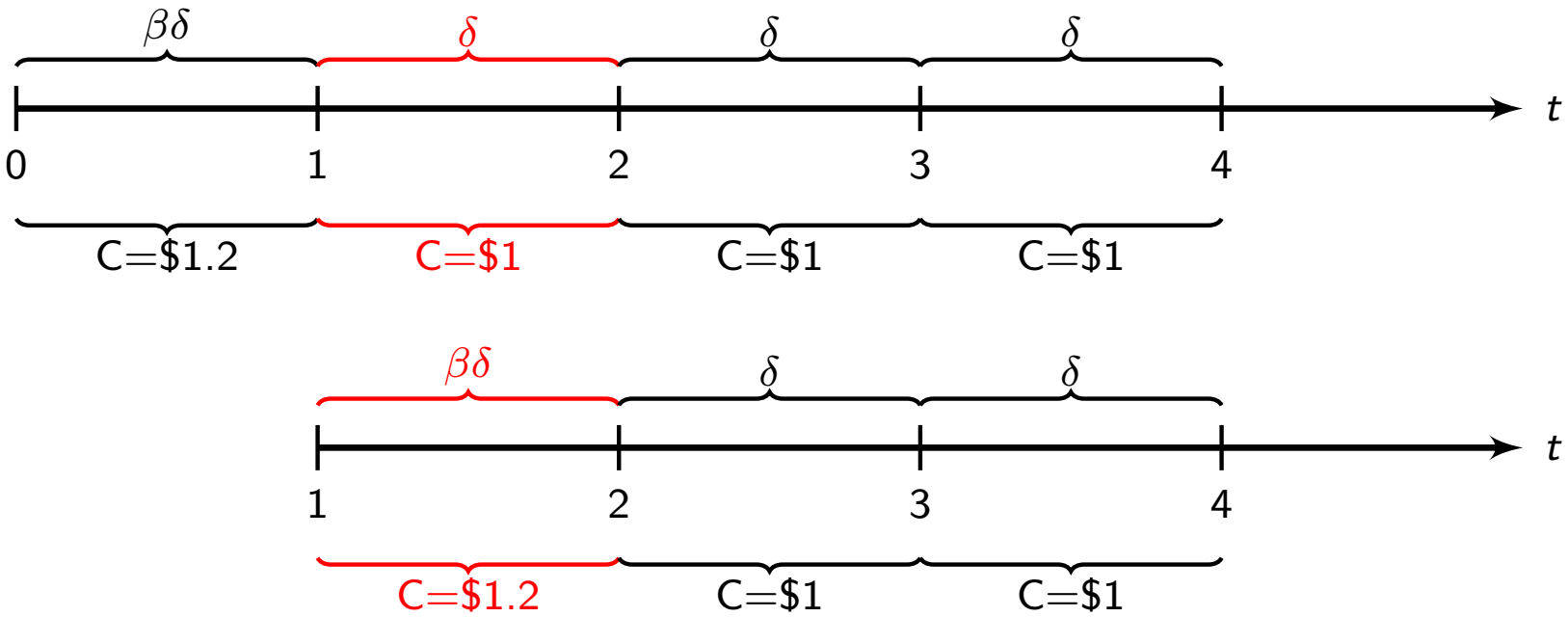
  subject to the dynamic budget constraint

$$W_{t+1} = (W_t - C_t)\tilde{R}_{p,t+1}(\theta), \quad \theta^\top \mathbf{1} = 1 \tag{3}$$

- $\beta < 1$: present bias, the tendency to over-value immediate rewards at the expense of long-term intentions
- The present bias leads to a over-consumption problem

Model Setting

$$\max_{\{C_\tau,\theta_\tau\}_{\tau=t}^{\infty}} u(C_t) + \sum_{\tau=t}^{\infty} \beta\, \delta^{\tau+1-t}\, u(C_{\tau+1}) \tag{4}$$



- The agent plans to save more in the future, but when future arrives, the agent becomes impatient and consumes more than the original plan
- The agent can improve its utility at time 0 by committing not to dip into capital

Self-control Constraint

- In presence of the over-consumption problem, commitment may become valuable
- Put the principal in an illiquid brokerage account, direct dividends and interests to a liquid bank account: live off income, never dip into principal

$$0 \leq C_t \leq I_t(\theta_{t-1}).$$

- Not obvious whether such rule is optimal
  - benefit: curb ex post over-consumption
  - cost: limit flexibility, cannot consume enough when they really want to
- When will the agent commit?
  - time-inconsistency is severe (low β), commitment is utility-improving
  - portfolio returns are volatile (high σ), commitment is utility-decreasing

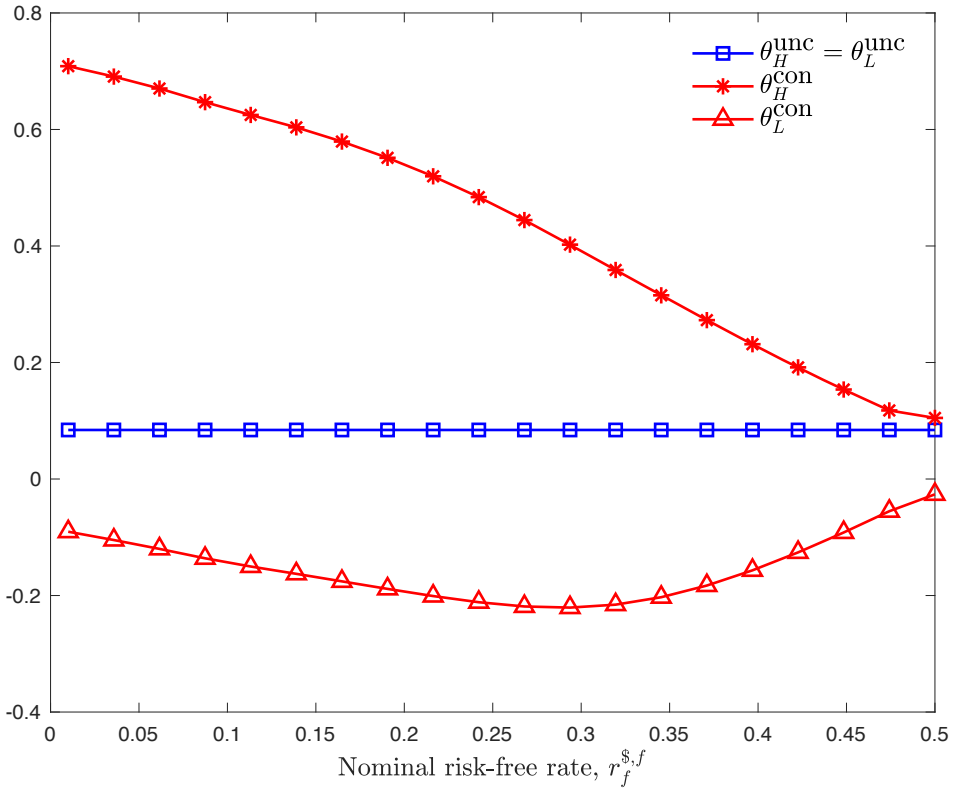
General Equilibrium

- Three assets: two stocks (High div., Low div.) and one short-term bond
- Monetary policy determines the *nominal* risk-free rates $r_t^{\$,f} = r_t^f + \pi_t$
- There is no nominal rigidity such as sticky prices
- Two agents, A and B. A suffers from present bias: $\beta < 1$
- Agent A can commit to the income constraint on consumption

$$\frac{C_{A,t}}{W_{A,t-1} - C_{A,t-1}} \leq \theta_{A,t-1}^f r_t^{\$,f} + \theta_{A,t-1}^l dp_t^L + \theta_{A,t-1}^H dp_t^H,$$

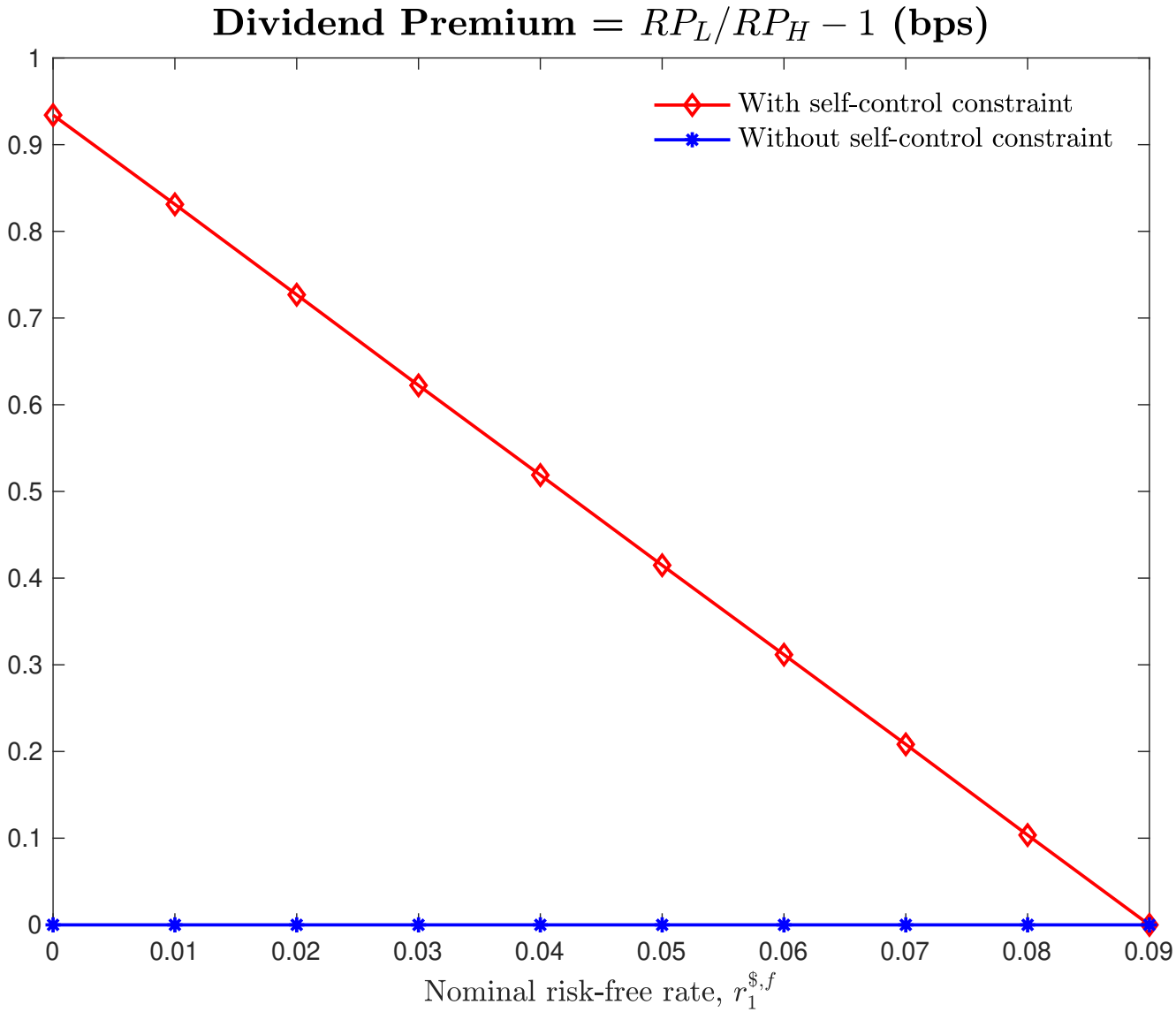
  - $\theta_{h,t}^j$, $j \in \{H, L, f\}$ is the portfolio holding in asset j
  - $dp_t^j = \frac{D_t^j}{P_{t-1}^j}$ is the dividend yield of asset $j = H, L$
  - $r_t^{\$}$ is the nominal risk-free rate at time t.
- Agent B is not subject to income constraint

Portfolio Holdings and Risk-free Rates



- No self-control: constant weights for both high and low dividend stocks, $\theta_{H,unc}$ and $\theta_{L,unc}$
- Self-control: the weight of high dividend stocks, $\theta_{H,con}$, increases; the weight of low dividend stocks, $\theta_{L,con}$, non-monotone

Dividend Premium

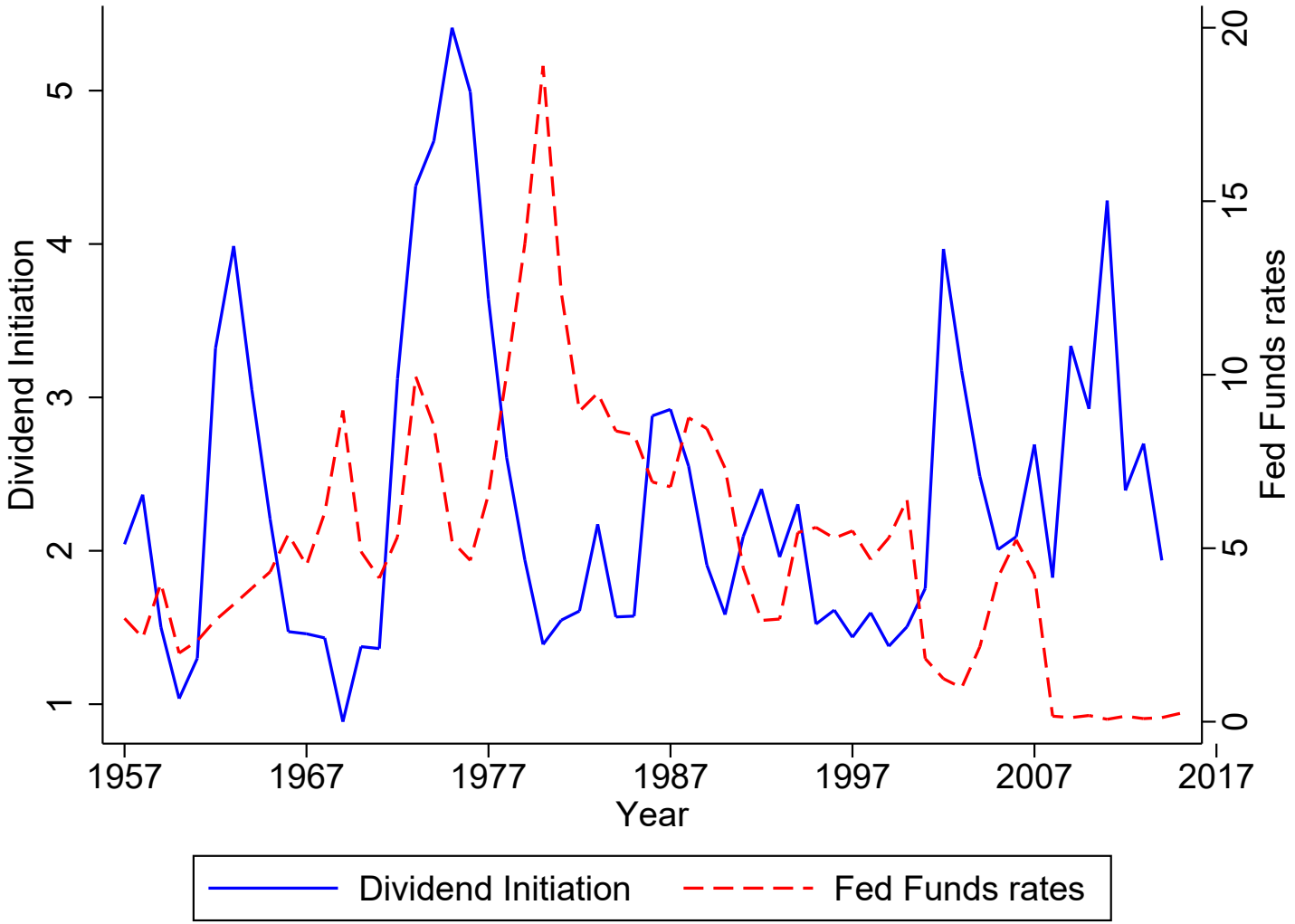


- Risk premium of the high dividend stock is low when nominal interest rates are low

Implications of Reaching for Income

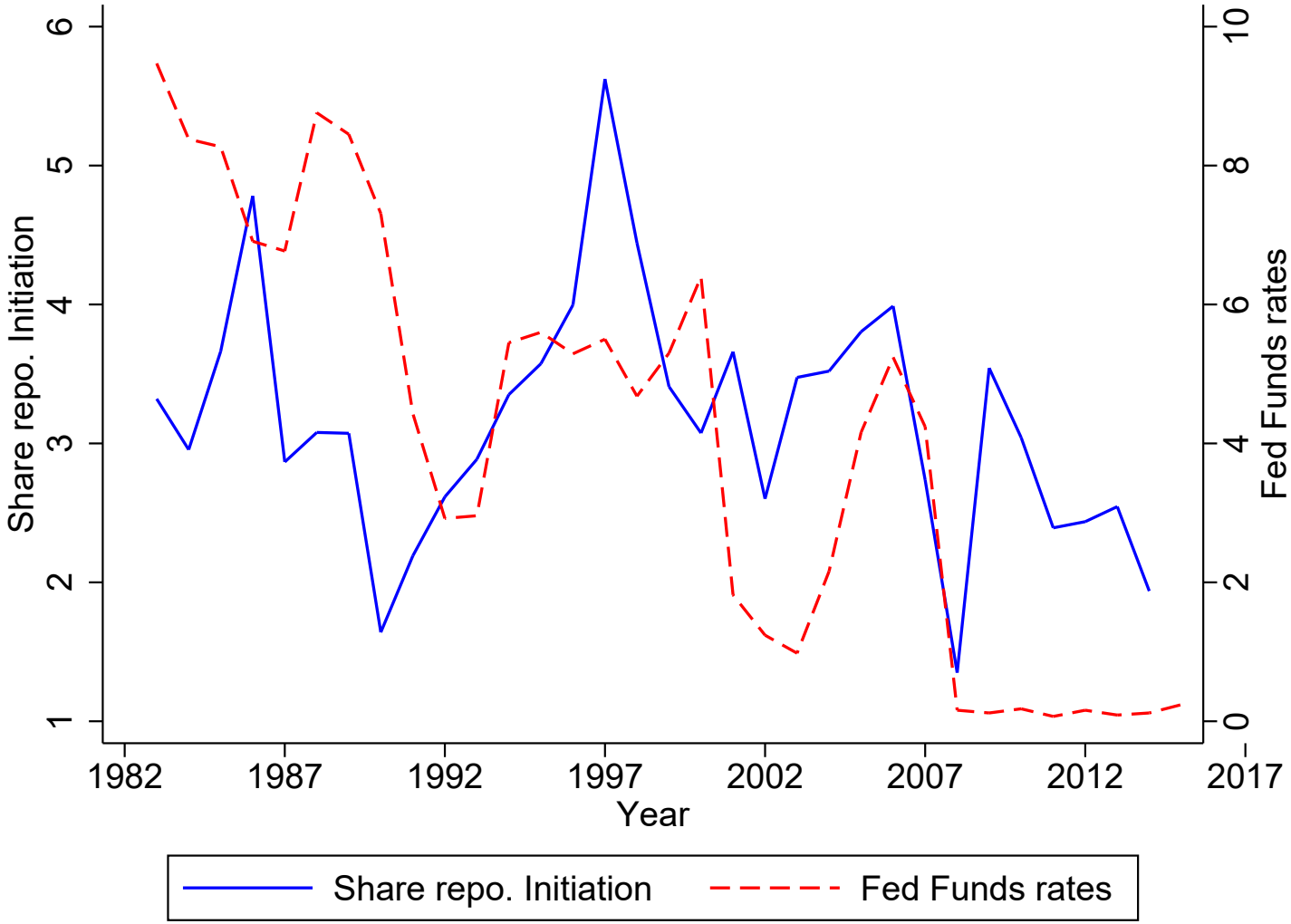
- By changing the demand for income generating assets, monetary policy may lead to capital reallocation across firms with different dividend payout policy
- Some firms may cater to income-seeking investors by initiating dividends when interest rates are low

Implications of Reaching for Income: Firms Catering



- Firms are more likely to initiate cash dividends when FFR are low.

Implications of Reaching for Income: Firms Catering



- However, the likelihood of initiating share repurchases are uncorrelated with FFR.

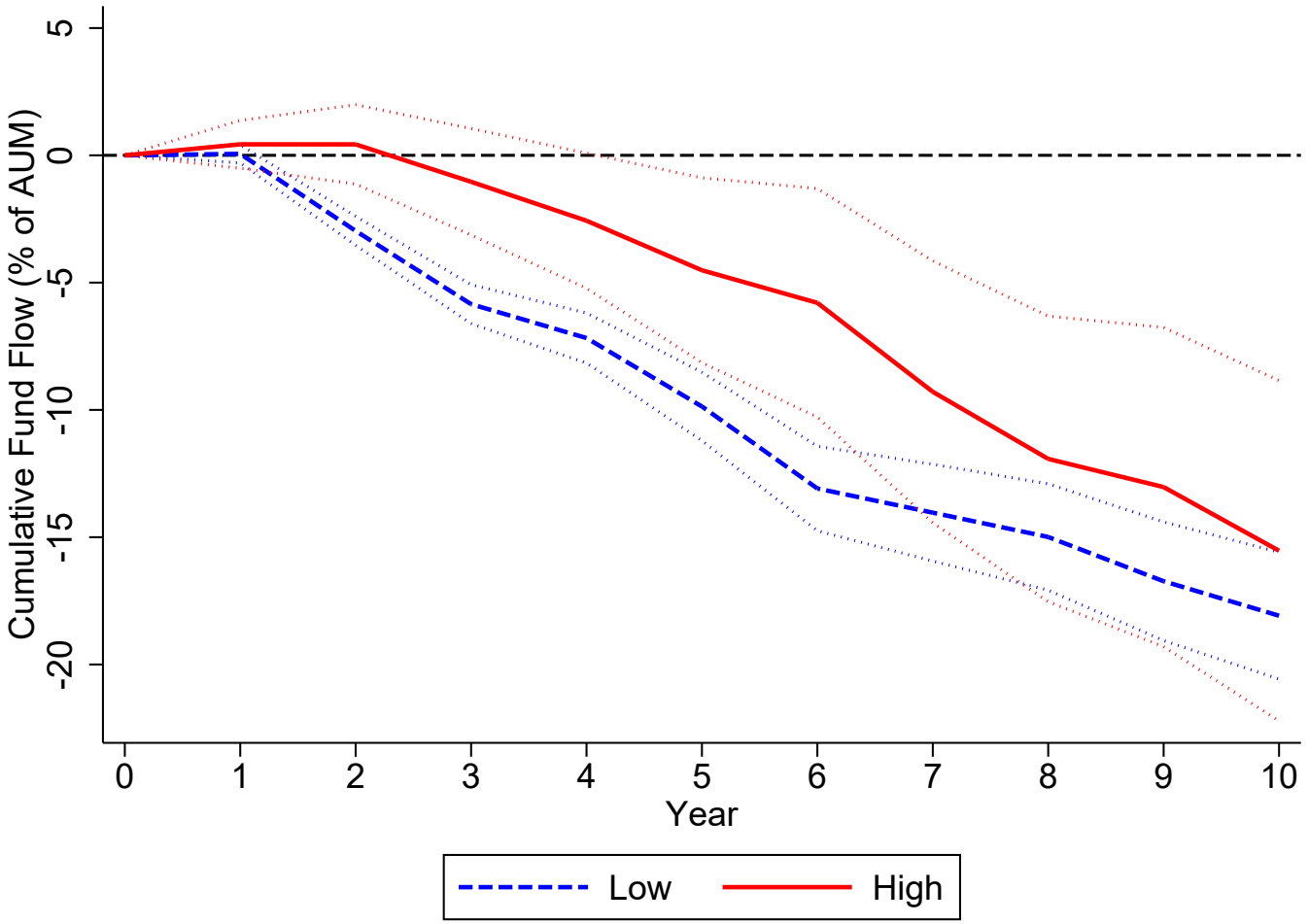
Implications of Reaching for Income

- Low interest rate monetary policy may lead to excessive risk-taking
  - Low interest rate monetary policy
  - Bonds become less attractive in terms of income yields
  - More money flows into risky equity
- Reaching for income (current income) $\neq$ Reaching for yield (total return)

Conclusion

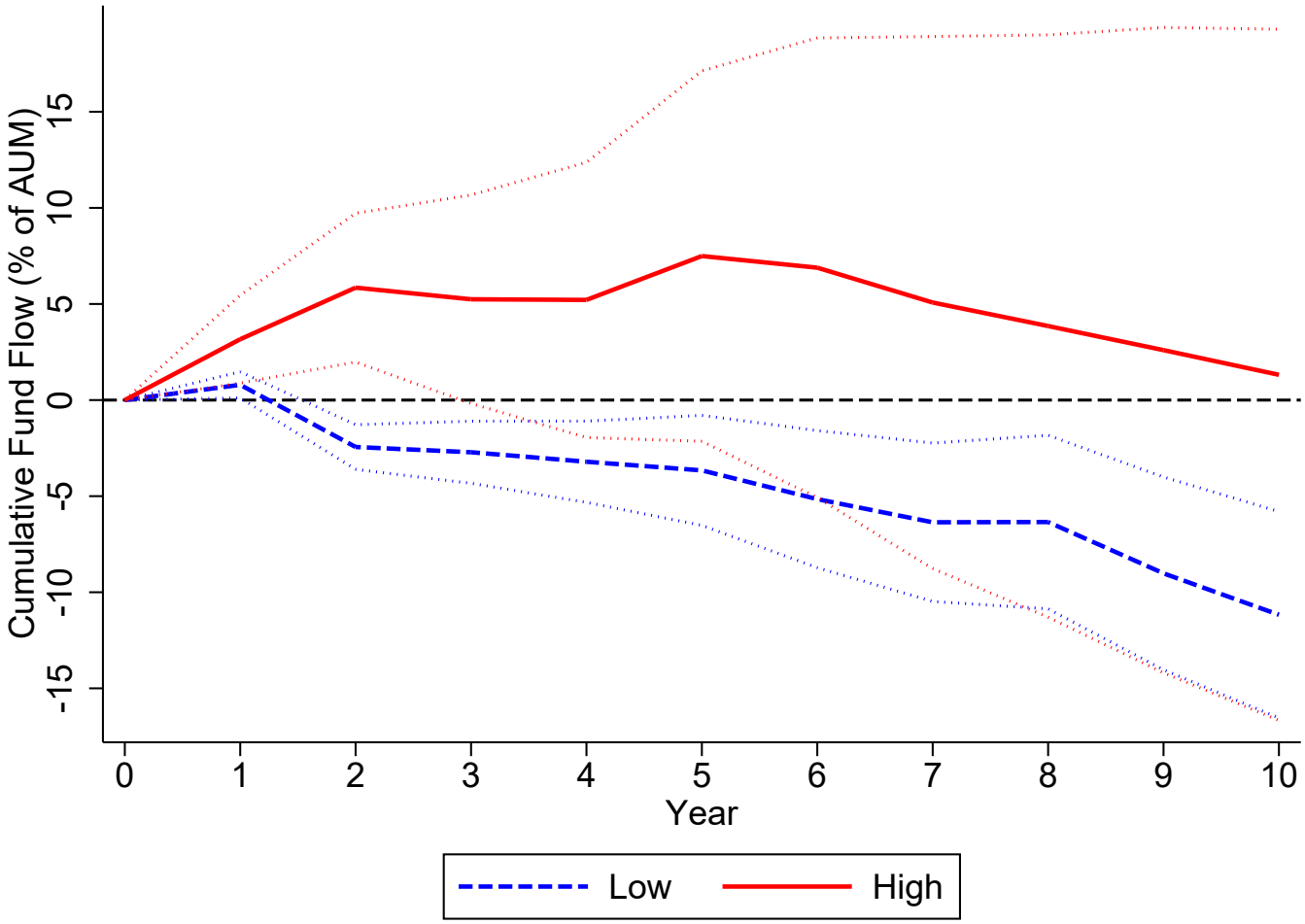
- Empirical evidence
  - "Reaching-for-income" hypothesis: low-interest rate monetary policy increases investors' demand for current income
  - The tendency to reach for income is related to the consumption and savings decisions
- Theoretical model
  - "Live off income, never dip into principal" — a self-control device for a time-inconsistent agent
  - Monetary policy changes interest income — time-varying demand for dividends

Impulse Response of Bond Fund Flows to a 1% Reduction in FFR



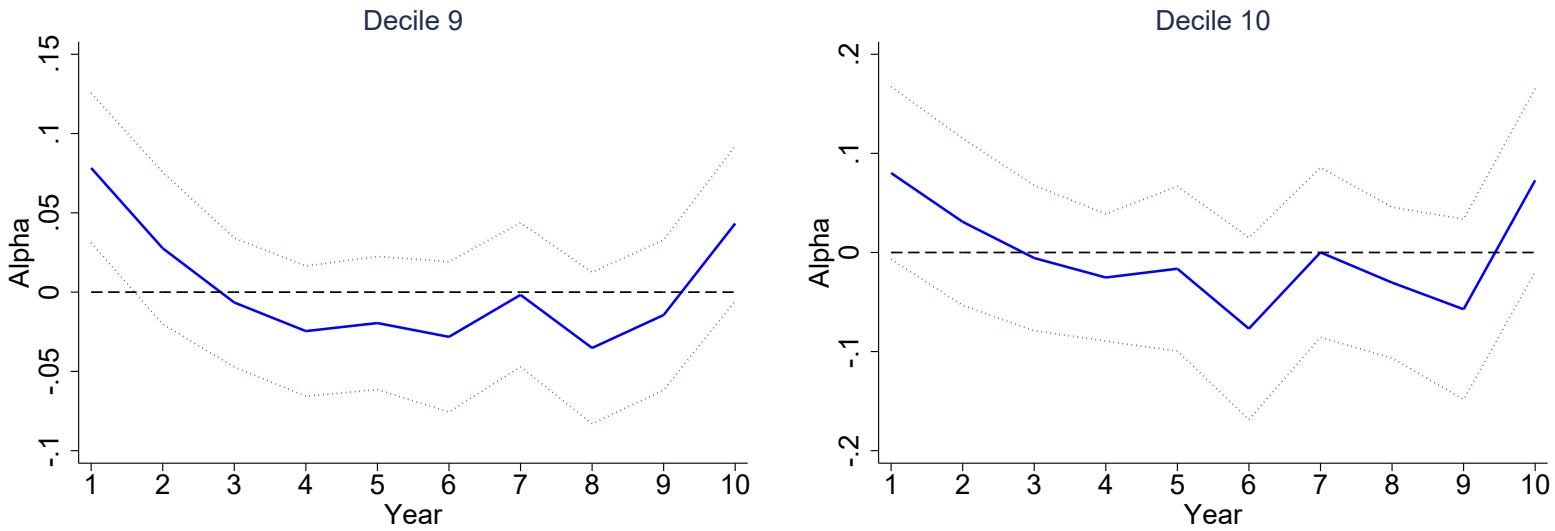
- More outflows from low-income bond funds.

Impulse Response of Balanced Fund Flows to a 1% Reduction in FFR



- Outflows from low-income balanced funds but inflows to high-income balanced funds.

Impulse Response of Alpha to a 1% Reduction in FFR



- Most of alpha occur in the first year

Income Yields of Equity and Bonds