## **Financial Markets and Human Behavior**

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## **EXCHANGE TRADED FUNDS (ETFS)**



## WHY SO MANY ETFS?



Source: https://www.etftrends.com/ (2022)



# THE PASSIVE REVOLUTION: INTERPRETATION

### VIEW 1: MARKET COMPLETION

- Investors (finally) adopt Buy-and-Hold strategy
- Investors can access "professional" tools
- ► ETFs democratize investing (Novick, WSJ 2017)

 $\longrightarrow$  Investors' welfare increases

### VIEW 2: COMPETITION FOR ATTENTION

- ► ETF issuers give investors what they want:
  - Performance chasing
  - Trendy/hot topics; Overvalued securities
- ▶ New ETFs  $\sim$  New yogurts
  - $\longrightarrow$  Issuers' welfare increases



## FEE COMPRESSION AND ETF INNOVATION



Ben-David, Franzoni, Kim, and Moussawi, 2023, Competition for Attention in the ETF Space, *Review of Financial Studies* The Ohio State University

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## DISCRIMINATING BETWEEN THE HYPOTHESES

### MARKET COMPLETION

- ▶ **Broad-based ETFs:** Diversification → Improved risk sharing
- **Specialized ETFs:** Superior performance, hedging risks

#### COMPETITION FOR ATTENTION

- **Broad-based ETFs:** Competition on price
- **Specialized ETFs:** Catering to sentiment-prone investors
  - $\implies$  Let's check out Specialized ETFs!



### SPECIALIZED ETFS: HEDGING OR SPECULATION?







## MECHANISM (KINDLEBERGER, 1978)





## MECHANISM (KINDLEBERGER, 1978)





## MECHANISM (KINDLEBERGER, 1978)





### PERFORMANCE OF UNDERLYING INDEXES



Ben-David, Franzoni, Kim, and Moussawi, 2023, Competition for Attention in the ETF Space, *Review of Financial Studies* THE OHIO STATE UNIVERSITY FISHER COLUMERS

### ETFS VS MUTUAL FUNDS

- Continuous trading
- Vehicle for speculation (high trading volume)
- Market capitalization > \$7 trillion

### ETFS INTRODUCE VOLATILITY

- ▶ Demand shock → Price impact
- ▶ Price impact ≠ Price discovery (reverts later)
- ▶ High ETFs ownership  $\longrightarrow$  Risk premium



PRICES ARE RIGHT...

### DEMAND SHOCK HITS THE ETF





#### ARBITRAGE EQUATES PRICES

### MISPRICED UNDERLYING ASSETS





In the Long Run  $\implies$ 

MISPRICING DISCIPATES







### Demand Shock $\perp$ Price Discovery

#### ETF OWNERSHIP AROUND RUSSELL 1000/2000 CUTOFF





## NATURE OF INCREASED VOLATILITY

STOCKS WITH HIGH ETF OWNERSHIP HAVE...

- ▶ Price reversals (negative autocorrelation)  $\rightarrow$  Noise
- Risk premium (56bp/year)

 $\implies$  ETFs introduce an undiversifiable risk



## MUTUAL FUNDS INVESTORS



# HOW DO INVESTORS ALLOCATE FUNDS TO MFS?

### FACTS

- $\triangleright$  > 93% MF AUM held by households
- Performance chasing
- (Largely) lack of performance persistence

### COMPETING VIEWS

- ▶ Rational (Berk–Green, 2004):
  - Learning about managerial skill (=  $\alpha$ )
  - Flows saturate investment opportunities
- Behavioral: Households inattentive, chase noise

Ben-David, Li, Rossi, and Song, 2022, What Do Mutual Fund Investors Really Care About? *Review of Financial Studies* 





# WHAT IS THE INVESTMENT CRITERION OF MF INVESTORS?

### FUND FLOWS ARE A WINDOW TO INVESTORS' SOULS

- Learn about managerial skill
- Concerns about risk
- Asset pricing model
- Rational or unsophisticated?





 $\implies$  Follow the money!

### EXAMPLE

	Fund A	Fund B	Factor returns
Raw return	10%	10%	
Market beta	1	0	7%
CAPM alpha	3%	10%	

BASED ON FLOWS, WE CAN TELL WHAT INVESTORS CARE ABOUT...

- $\blacktriangleright \text{ Fund } A \Longrightarrow CAPM \text{ alpha}$
- Fund  $B \Longrightarrow$  Unadjusted return

Ben-David, Li, Rossi, and Song, 2022, What Do Mutual Fund Investors Really Care About? *Review of Financial Studies* 

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### EXAMPLE

	Fund A	Fund B	Factor returns
Raw return	10%	10%	
Market beta SMB beta HML beta	$egin{array}{c} 1 \ 0 \ -1 \end{array}$	0 0.5 2	7% -2% 6%
CAPM alpha 3FF alpha	3% 9%	$10\% \\ -1\%$	

BASED ON FLOWS, WE CAN TELL WHAT INVESTORS CARE ABOUT...

Fund A  $\implies$  3FF alpha

• Fund  $B \Longrightarrow$  Unadjusted return

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## SUMMARY OF RESULTS

### WHAT DO INVESTORS CARE ABOUT?

- Time-series: Unadjusted returns
- Cross-section: Morningstar + Unadjusted returns

### OTHER STUDIES FOUND CAPM ALPHA

- Replicable results
- Choice across funds is cross-sectional
- ... They use panel regressions
  - $\longrightarrow$  Results driven by time (not cross-section) variation
- Same results in funds with no management: Index funds



Ben-David, Li, Rossi, and Song, 2022, What Do Mutual Fund Investors Really Care About? *Review of Financial Studies* 

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# FLOWS TO TOP 10% (OR 5-STAR MORNINGSTAR)



Ben-David, Li, Rossi, and Song, 2022, What Do Mutual Fund Investors Really Care About? *Review of Financial Studies* 



DEMAND ASSET PRICING (VIA MORNINGSTAR STAR RATINGS)



## PRICE IMPACT OF RATING-CHASING FLOWS

### MORNINGSTAR RATINGS

- Industry leader since 1980s
- ► Five stars
- ► Inputs:
  - Unadjusted returns (past 3/5/10 years)
  - Volatility

Fees

Ben-David, Li, Rossi, and Song, 2022, Ratings-Driven Demand and Systematic Price Fluctuations, *Review of Financial Studies* 

Ben-David, Li, Rossi, and Song, Discontinued Positive Feedback Trading and the Decline of Return Predictability, *Journal of Financial and Quantitative Analysis*, forthcoming



## MORNINGSTAR'S 2002 REFORM



Ben-David, Li, Rossi, and Song, 2022, Ratings-Driven Demand and Systematic Price Fluctuations, *Review of* THERIMAN Studies RESTY

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### FLOWS ALWAYS CHASE 4 & 5 STAR MUTUAL FUNDS



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## IMPACT OF MORNINGSTAR'S 2002 REFORM

#### STYLE RATINGS

#### STYLE FLOWS





## IMPACT OF MORNINGSTAR'S 2002 REFORM

### DISRUPTION OF POSITIVE FEEDBACK LOOP





# **RATING-INDUCED STYLE-LEVEL PRICE PRESSURE**

FLOWS

#### RETURNS





# **RATING-INDUCED STYLE MOMENTUM STRATEGY**

**R**ETURNS

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#### FLOWS





### DISAPPEARANCE OF MOMENTUM

Daniel and Moskowitz (2016, Fig 4b)



Ben-David, Li, Rossi, and Song, Discontinued Positive Feedback Trading and the Decline of Return Predictability, *Journal of Financial and Quantitative Analysis*, forthcoming

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## 49 FACTORS COMBINED



Ben-David, Li, Rossi, and Song, Discontinued Positive Feedback Trading and the Decline of Return Predictability, *Journal of Financial and Quantitative Analysis*, forthcoming



## Hedge Funds



## FINANCIAL CONSTRAINTS OF HEDGE FUNDS

### HEDGE FUND BEHAVIOR

- Subject to financial constraints from investors and lenders
- Financial constraints bind during market stress
- ▶ ... Exactly when investment opportunities are the greatest
- Evidence from the Global Financial Crisis

Ben-David, Franzoni, and Moussawi, 2012, Hedge Fund Stock Trading during the Financial Crisis of 2007–2009, *Review of Financial Studies* 



## **INCENTIVE FEES OF HEDGE FUNDS**

### HEDGE FUND FEE STRUCTURE

- 2-and-20 is the modal fee structure
- Management fee: 2% of assets under management (AUM)
- ▶ Incentive fee: 20% of gains, calculated at the end of each period (year)
- ▶ High-watermark (HWM) provision: Incentive fee paid only on "new profits"
- Mantra: "Hedge fund managers get paid only when investors make money"

#### KEY RESULT

- 2-and-20 becomes 2-and-50
- Most incentive fees are paid on profits are eventually lost

Ben-David, Birru, and Rossi, 2021, The Performance of Hedge Fund Performance Fees



## HOW 2-AND-20 BECOMES 2-AND-50?

### ASYMMETRIC NATURE OF INCENTIVE CONTRACT

#### Gains and losses are not netted across funds:

- Fund A gains  $\implies 20\%$  incentive fees
- Fund B loses  $\implies$  0% incentive fees
- ▶ Overall: Incentive fees > 20% of gains
- Gains and losses are not entirely netted **over time**:
  - t = 1: Fund A gains  $\implies 20\%$  incentive fees
  - t = 2: Fund A loses  $\implies 0\%$  incentive fees
  - Fund liquidates / investor pulls capital
  - Overall: Incentive fees > 20% of gains
- Patterns exacerbated by investment liquidation after losses—both by HF managers and investors

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# INVESTOR AND MANAGER BEHAVIOR AROUND HWM

#### BEHAVIORS INTENSIFY DESTRUCTION OF FEE CREDITS



Return relative to previous high water mark<sub>t</sub>

- Investors chase returns
- Funds close when deep underwater (sometimes intentionally)

Birru, and Rossi, 2021, The Performance of Hedge Fund Performance Fees ISHER COLLEGE OF BUSINESS

## **RETURN CHASING AND FUTURE RETURNS?**

#### **RETURN CHASING DOES NOT PREDICT FUTURE RETURNS**



Ben-David, Birru, and Rossi, 2021, The Performance of Hedge Fund Performance Fees



# Unjustified Incentive Fees Amount to $\sim 1\%$ of AUM

#### FEES ACROSS THE LIFETIME PERFORMANCE SPECTRUM



Ben-David, Birru, and Rossi, 2021, The Performance of Hedge Fund Performance Fees



## MENTAL ACCOUNTING



# HOW DO HOUSEHOLDS MAKE CONSUMPTION DECISIONS?

### **RATIONAL AGENT THEORIES**

- Permanent Income Hypothesis
- Long-term planning
- Considerations: Uncertainty, credit constraints
- Immune from impulsivity

### MENTAL ACCOUNTING

- Shefrin and Thaler (1988): The Behavioral Life Cycle Hypothesis
- Mental accounting: use rules of thumb
- Accounts: current income, future income, assets
- ▶ Uses by source (earmarking): income from labor, windfall



# TAX REFUNDS/PAYMENTS AS LABORATORY

#### PREDICTIONS OF RATIONAL-AGENT THEORIES

- Tax refunds and tax payments differ by sign
- Both adjust income
- Income should respond to both
- Response should be minimal/nonexistent

### PREDICTIONS BY MENTAL ACCOUNTING

- ► Tax refunds are considered "windfall" ⇒ Used for consumption + saving
- ▶ Tax payments *do not* reduce consumption; Financed through savings



# CONSUMPTION RESPONSE TO TAX PAYMENT AND REFUND



Baugh, Ben-David, Park, and Parker, 2021, Asymmetric Consumption Smoothing, American Economic Review



# CONSUMPTION AROUND TAX PAYMENT AND REFUND



Baugh, Ben-David, Park, and Parker, 2021, Asymmetric Consumption Smoothing, American Economic Review



# SAVINGS ACTIVITY AROUND TAX PAYMENT AND REFUND

#### MONTH before PAYMENT/REFUND

MONTH of PAYMENT/REFUND



Baugh, Ben-David, Park, and Parker, 2021, Asymmetric Consumption Smoothing, American Economic Review



## MISCALIBRATION



## MISCALIBRATION

### **OPTIMISM AND OVERCONFIDENCE**

- Two behavioral biases: Optimism + Overconfidence
- Overconfidence:
  - Better than the average
  - Illusion of control
  - Miscalibration

### MISCALIBRATION: OVERESTIMATION OF OWN-CONFIDENCE

- ▶ 80% confidence interval:
  - What is the distribution of the NYTimes?
  - When was the black plague?
  - How many people work at the White House?



# CFO QUARTERLY SURVEY

### SURVEY QUESTION

Over the next year, I expect the annual S&P 500 return will be:

- *–* [*Upper bound*] *There is a 1-in-10 chance the actual return will be less than* \_\_\_%.
- *–* [*Expected return*] I expect the return to be: \_\_\_%.
- [Lower bound] There is a 1-in-10 chance the actual return will be greater than \_\_\_\_%.

 $\implies$  Confidence Interval = Upper Bound - Lower Bound

Ben-David, Graham, and Harvey, 2013, Managerial Miscalibration, *Quarterly Journal of Economics* Boutros, Ben-David, Graham, Harvey, and Payne, The Persistence of Miscalibration



## CFO MISCALIBRATION: CONFIDENCE INTERVALS



Ben-David, Graham, and Harvey, 2013, Managerial Miscalibration, *Quarterly Journal of Economics* Boutros, Ben-David, Graham, Harvey, and Payne, The Persistence of Miscalibration



## CFO MISCALIBRATION: HIT RATE



Ben-David, Graham, and Harvey, 2013, Managerial Miscalibration, *Quarterly Journal of Economics* Boutros, Ben-David, Graham, Harvey, and Payne, The Persistence of Miscalibration



## Asymmetric Response to Economic Stress



#### Note Lower Bound drops in 2002, 2008, 2020

Ben-David, Graham, and Harvey, 2013, Managerial Miscalibration, Quarterly Journal of Economics

Boutros, Ben-David, Graham, Harvey, and Payne, The Persistence of Miscalibration

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## NO MATERIAL LEARNING OVER TIME



Boutros, Ben-David, Graham, Harvey, and Payne, The Persistence of Miscalibration

