Discussion of:

Time Varying Market Efficiency

by:

Ferhat Akbas, Will J. Armstrong, Sorin Sorescu and Avanidhar Subrahmanyam

Kent Daniel[†]

[†]Columbia University, Graduate School of Business

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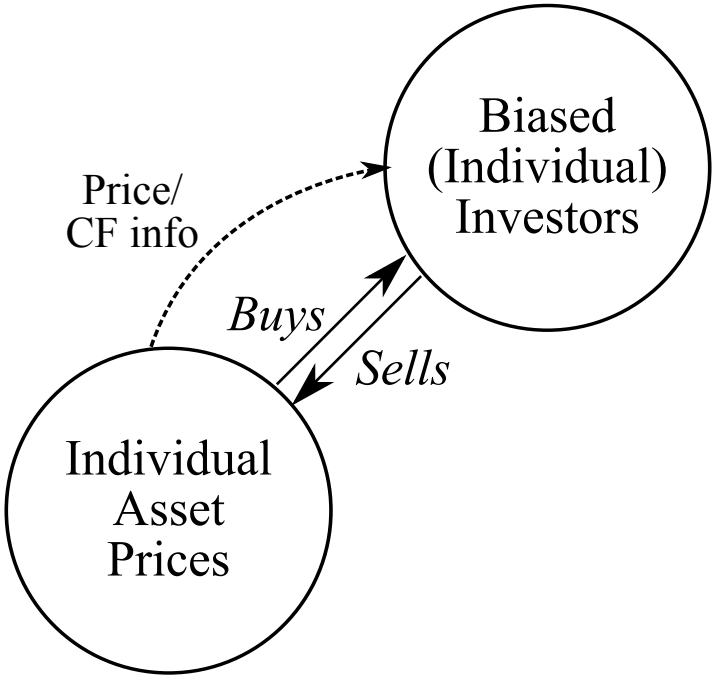
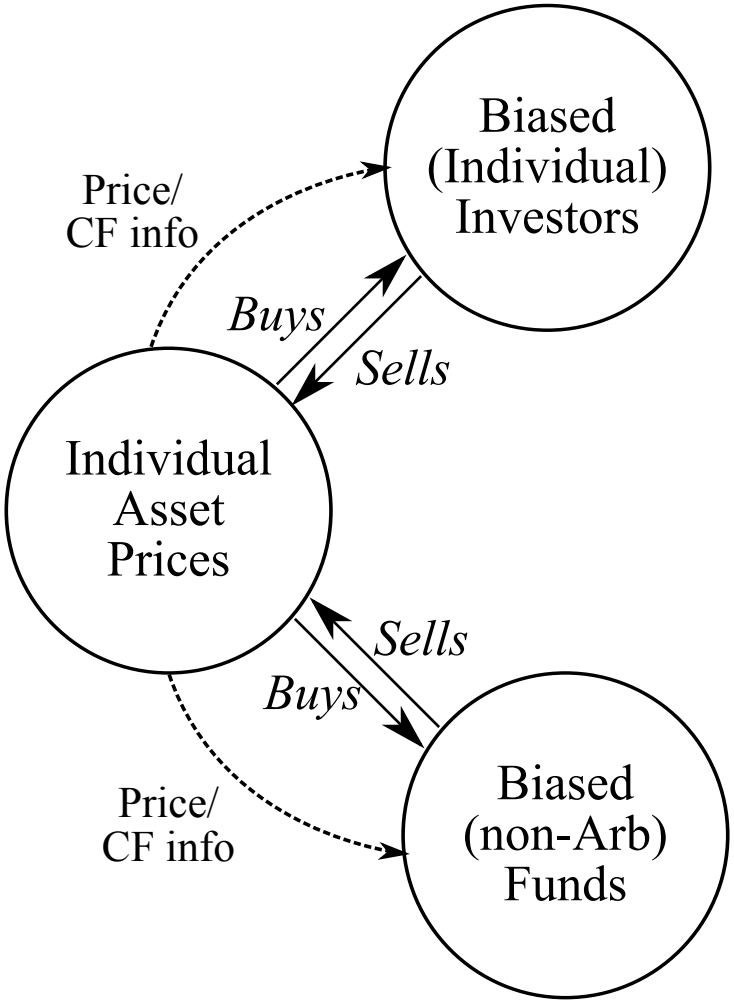
Outline

- Summary & Model
- Related Empirical Results

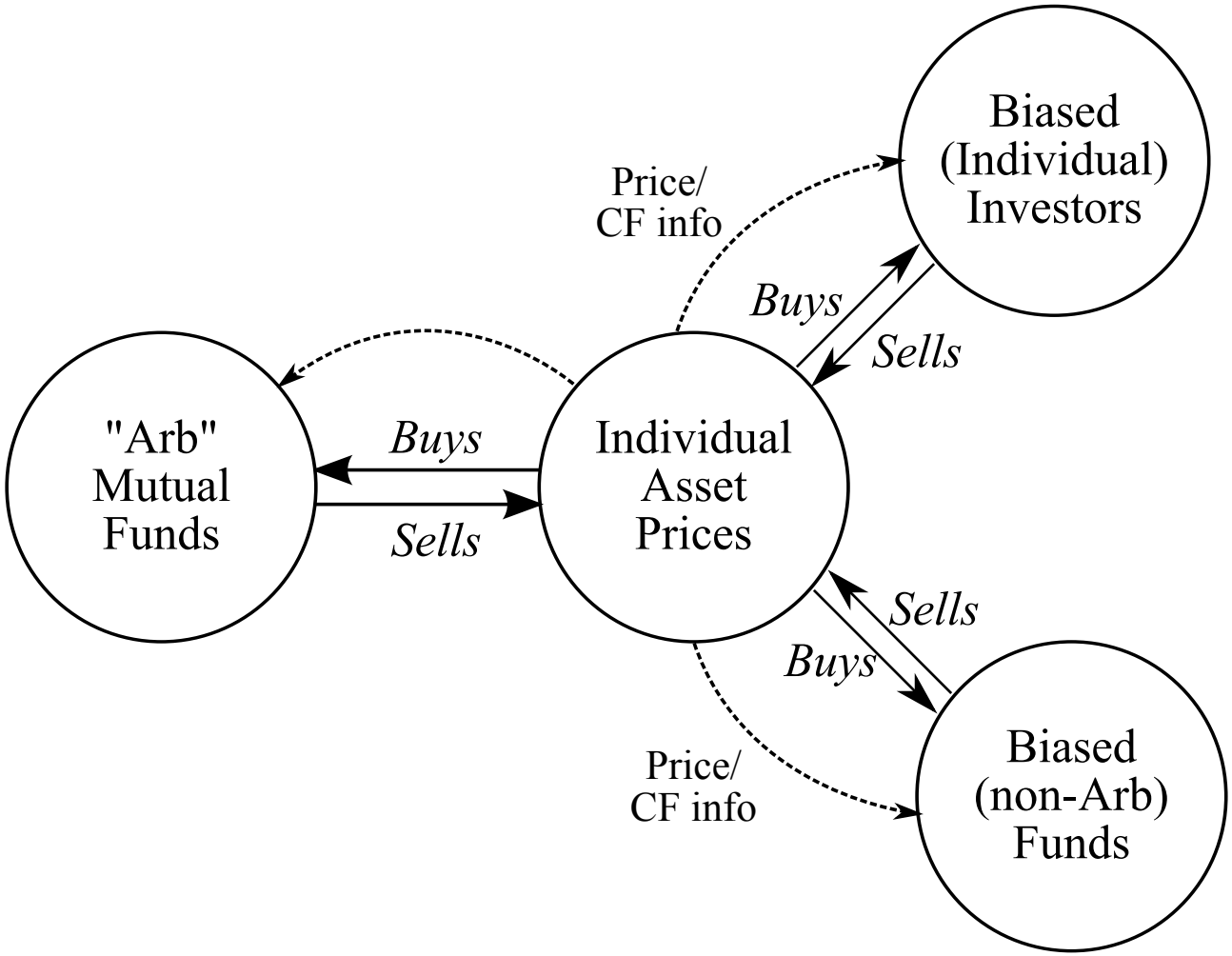
Anomalies "Model"



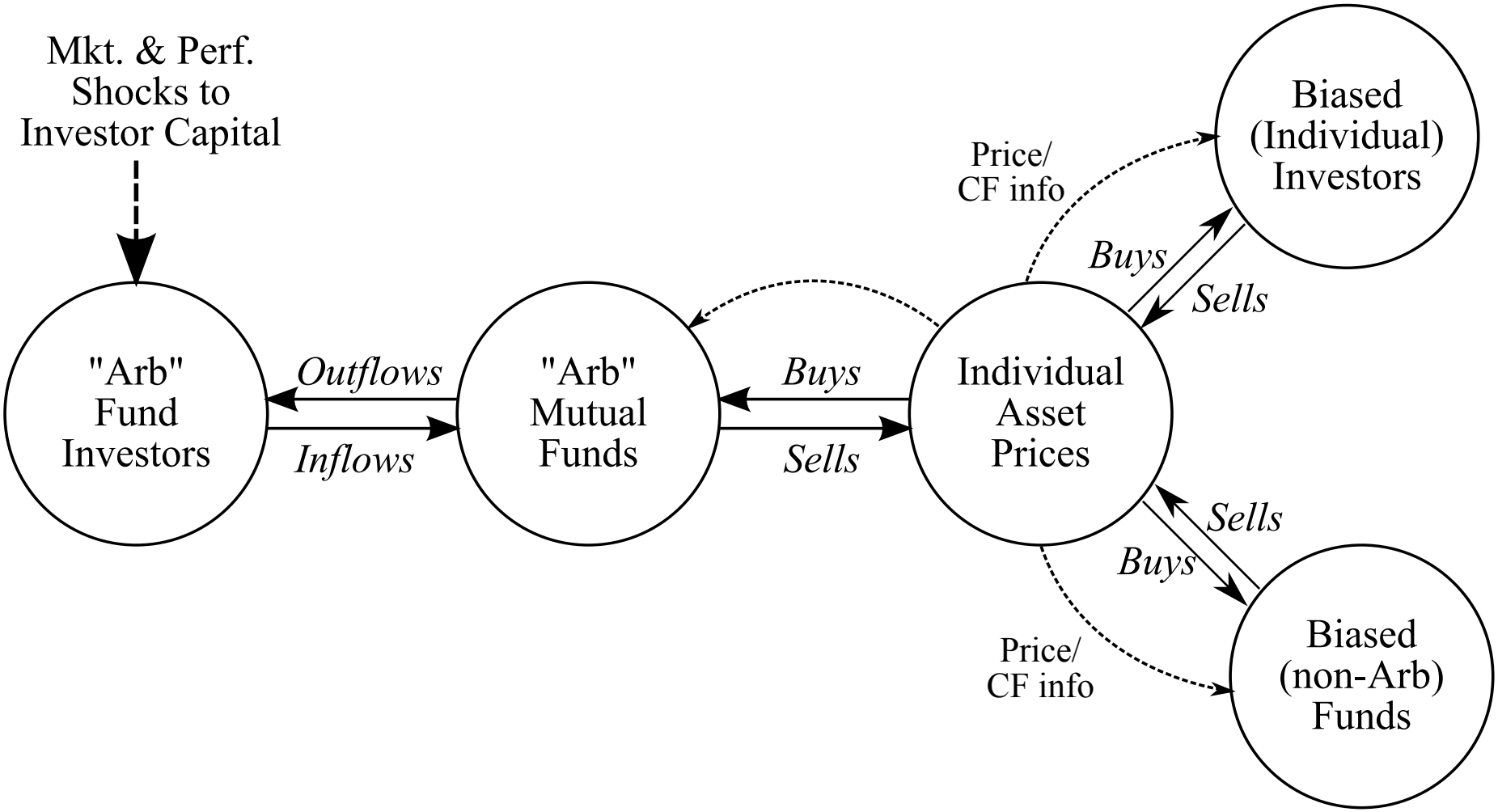
Basic Model


Biased
(Individual)
Investors
Price/
CF info
Buys
Sells
Individual
Asset
Prices
Sells
Buys
Price/
CF info
Biased
(non-Arb)
Funds

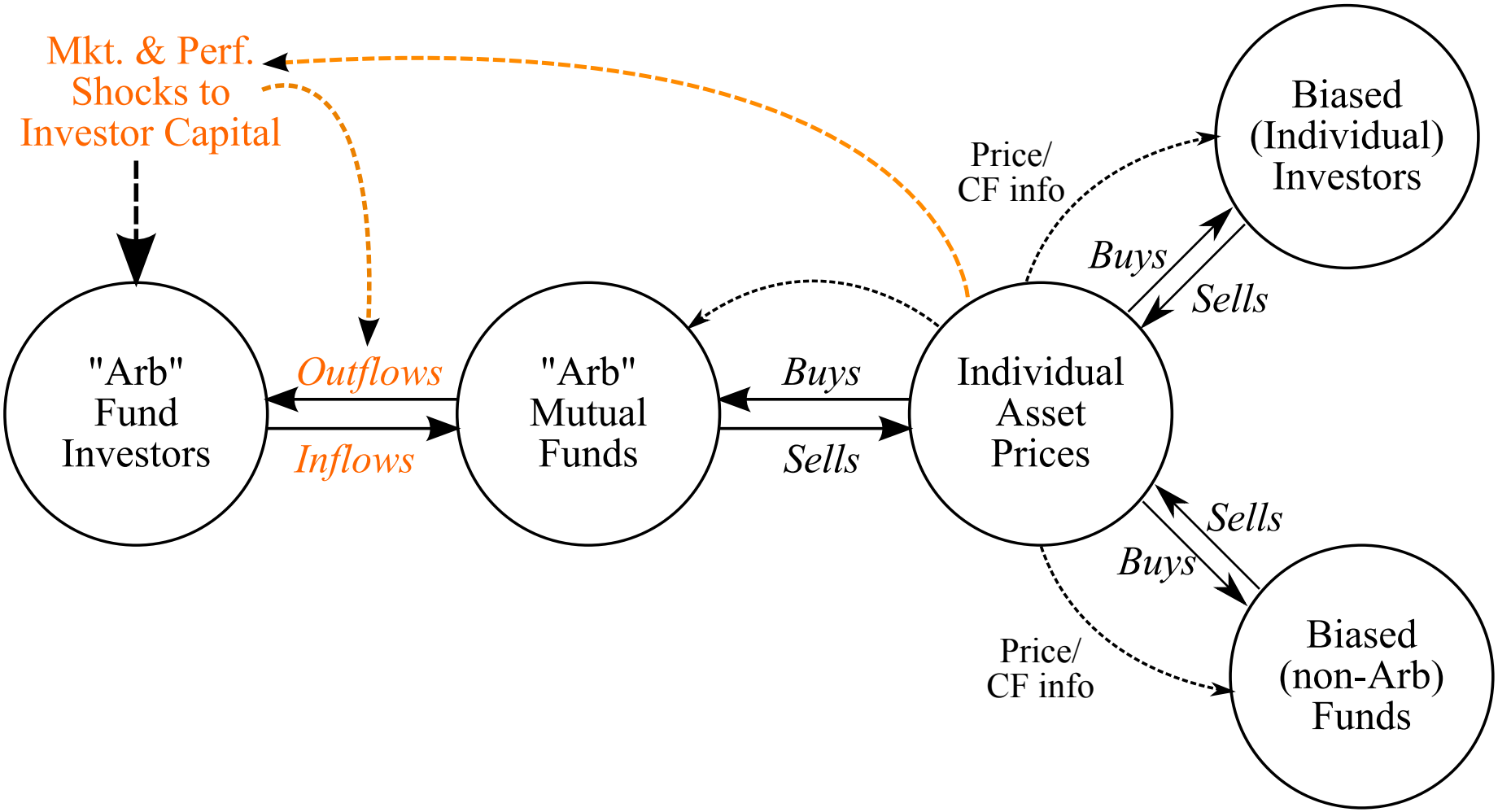
Basic Model - Arbitrage



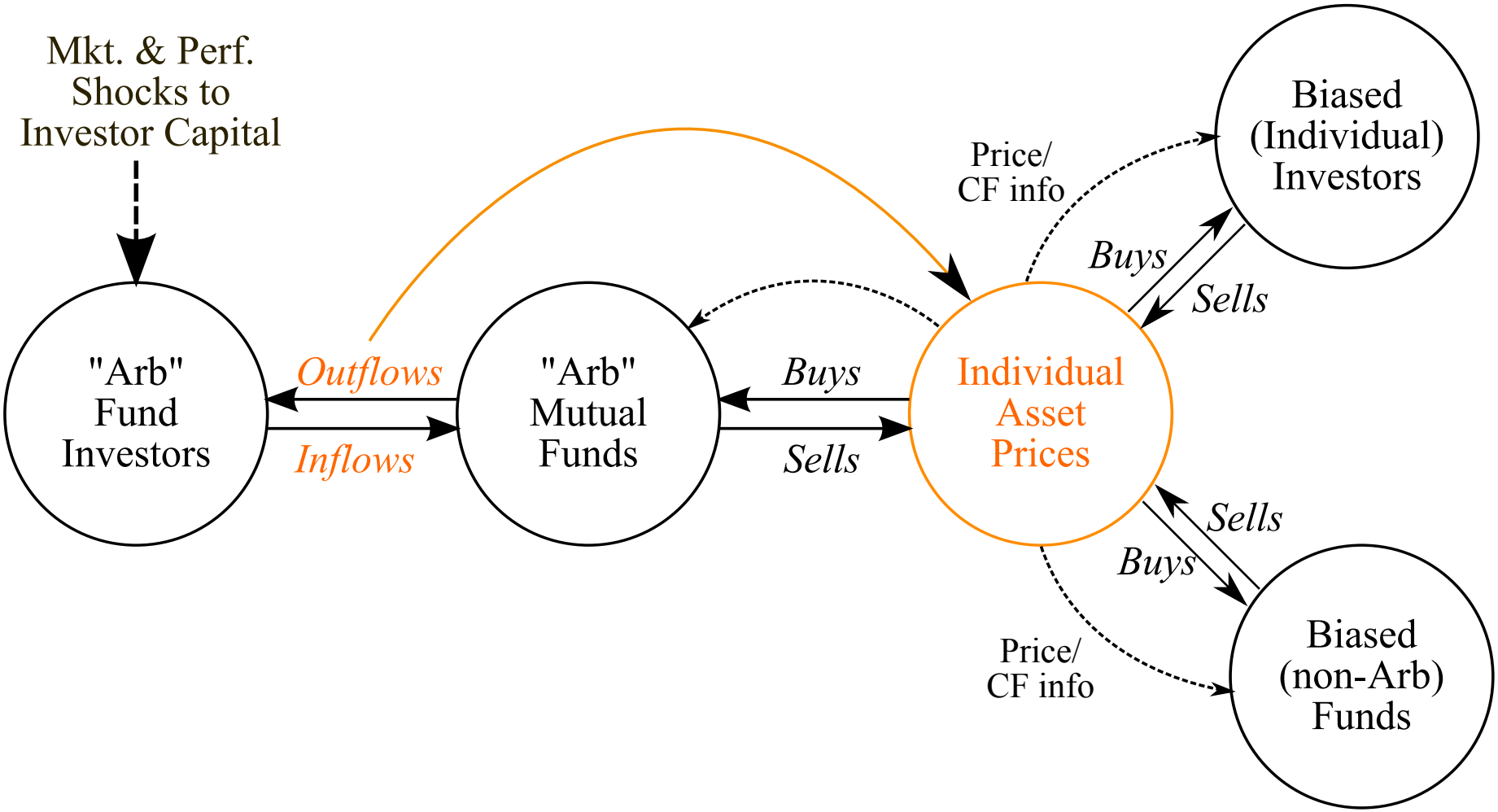
Basic Model - Arbitrage Capital



Flow–Arbitrage Constraint Tests



Fund Flows–Future AMTS Returns Tests



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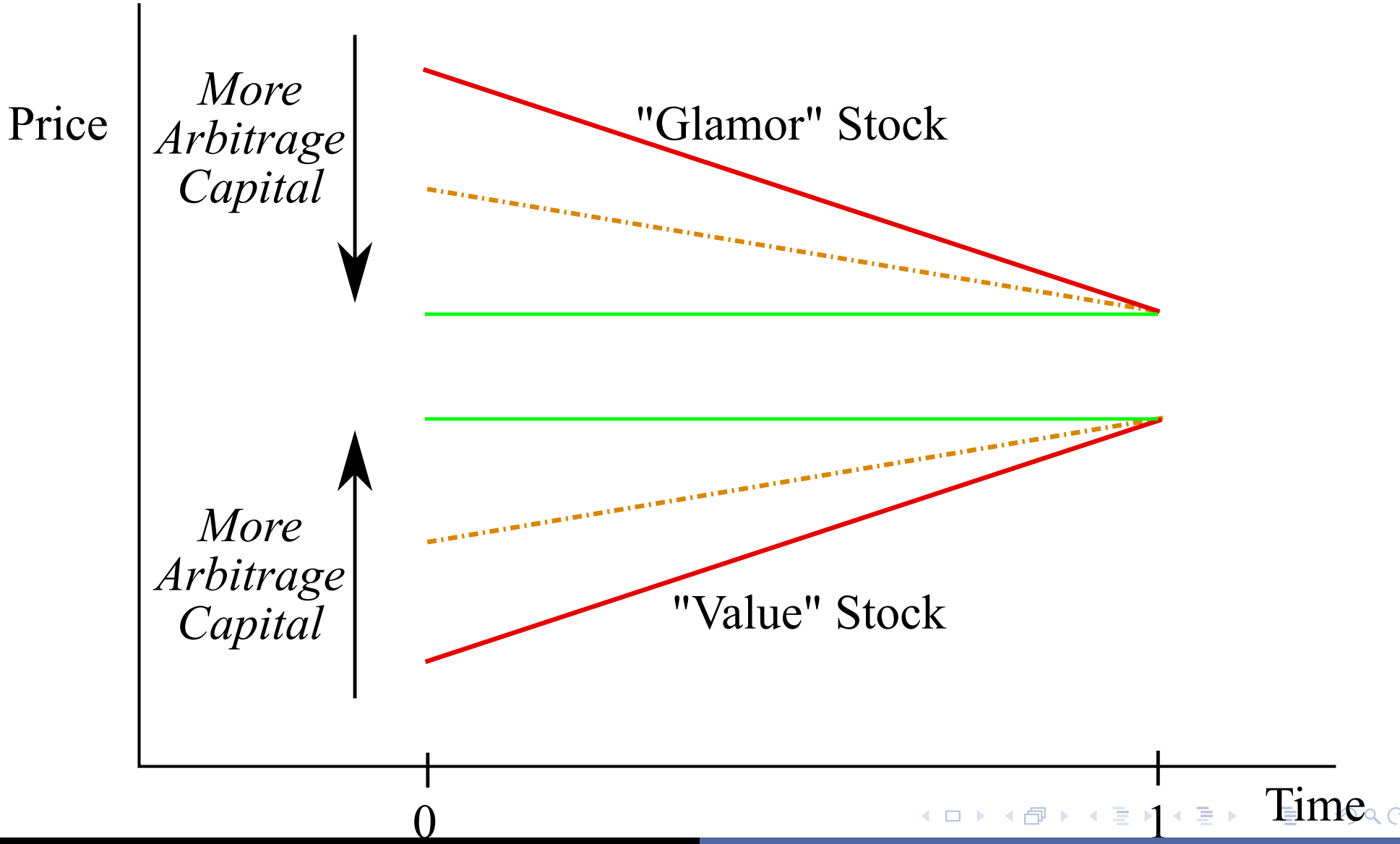
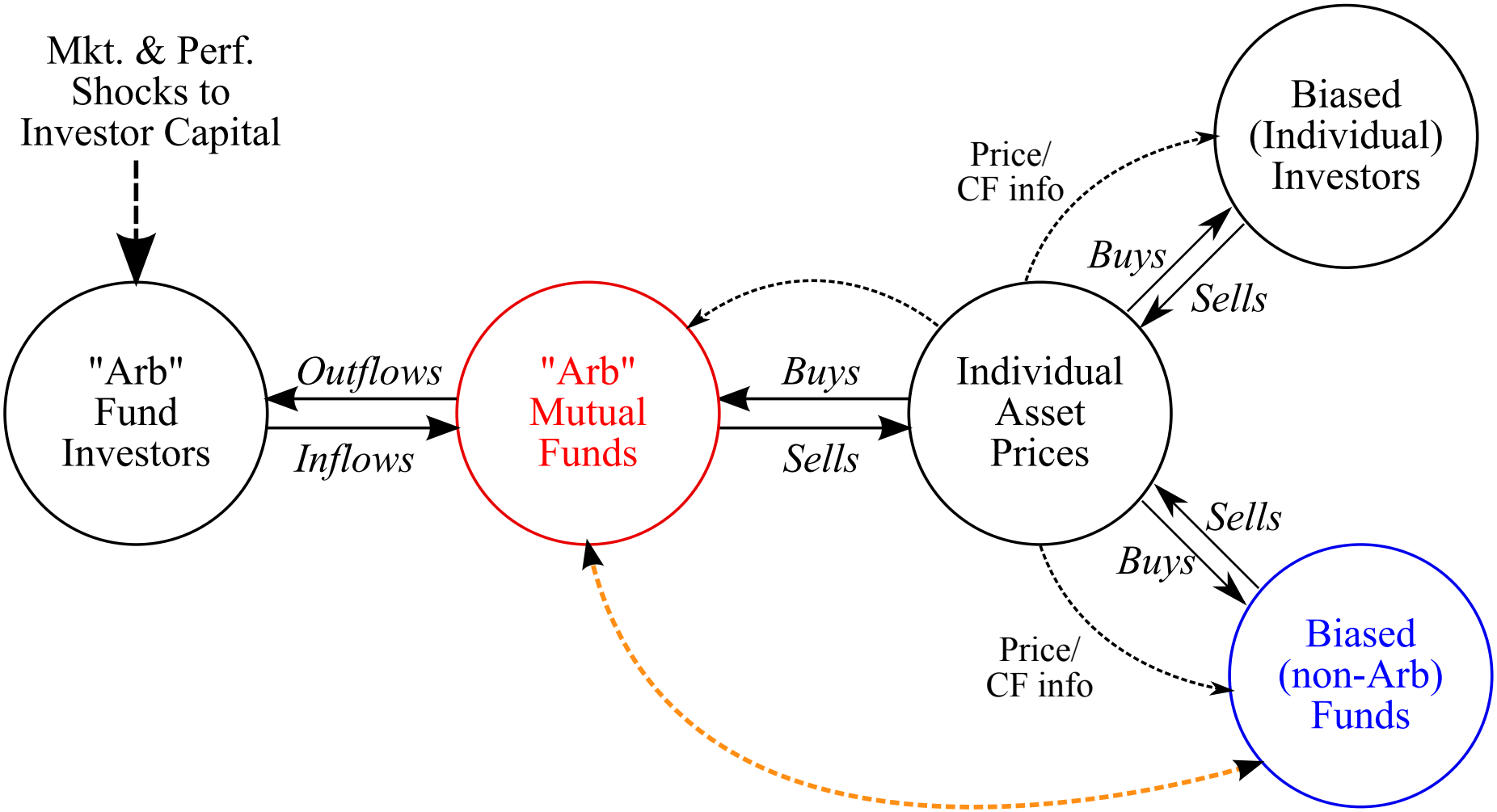


Discriminating Between Arb and Non-Arb Funds



AMTS Speicification

The Actively-Managed Trading Strategy (AMTS) is essentially an industry-neutral strategy utilizing four well known anomalies:

- Value (B/P) – Rosenberg, Reid, and Lanstein (1985), Chan, Hamao, and Lakonishok (1991),Fama and French (1992).
- Momentum – Jegadeesh and Titman (1993)
- Profitability – Haugen and Baker (1996); Cohen, Gompers, and Vuolteenaho (2001); Fama and French (2008)
- Short-Term Reversal – Jegadeesh (1990); Lehmann (1990).

High β_{AMTS} Funds

- The authors determine the identity of "Arb" funds based on their beta w.r.t. the past 60 monthly returns to the AMTS.
- Several things would be useful here:
  - What are the *ex-post* loadings on the AMTS returns of the arb and non-arb funds?
  - Are there any distinguishing funds characteristics?
  - What are the fund βs on the four components of AMTS
    - Are any particularly strong?

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Performance Based Constraints

- AMTS $\equiv r_{\text{AMTS}}(t-2, t-1)$: The return to the AMTS over the preceding two months.
- NSTD $\equiv \sigma^{-}_{\text{AMTS}}(t-2, t-1)$: the Negative STandard-Deviation of daily AMTS returns over the preceding two months.

Market Based Constraints

- 1-MONTH LIBOR
- 3-MONTH TED SPREAD
- CRDSPRD $\equiv y_{\text{BAAA}} - y_{\text{AAA}}$
- AGGIVOL $\equiv \bar{\sigma}_{\epsilon}$: The average idiosyncratic volatility for NYSE common stocks.
- RETDISP $\equiv \bar{\sigma}_{\text{xsec}}$: the cross-sectional return standard deviation of largest 10% of NYSE common stocks.

Flow–Arbitrage Constraint Tests

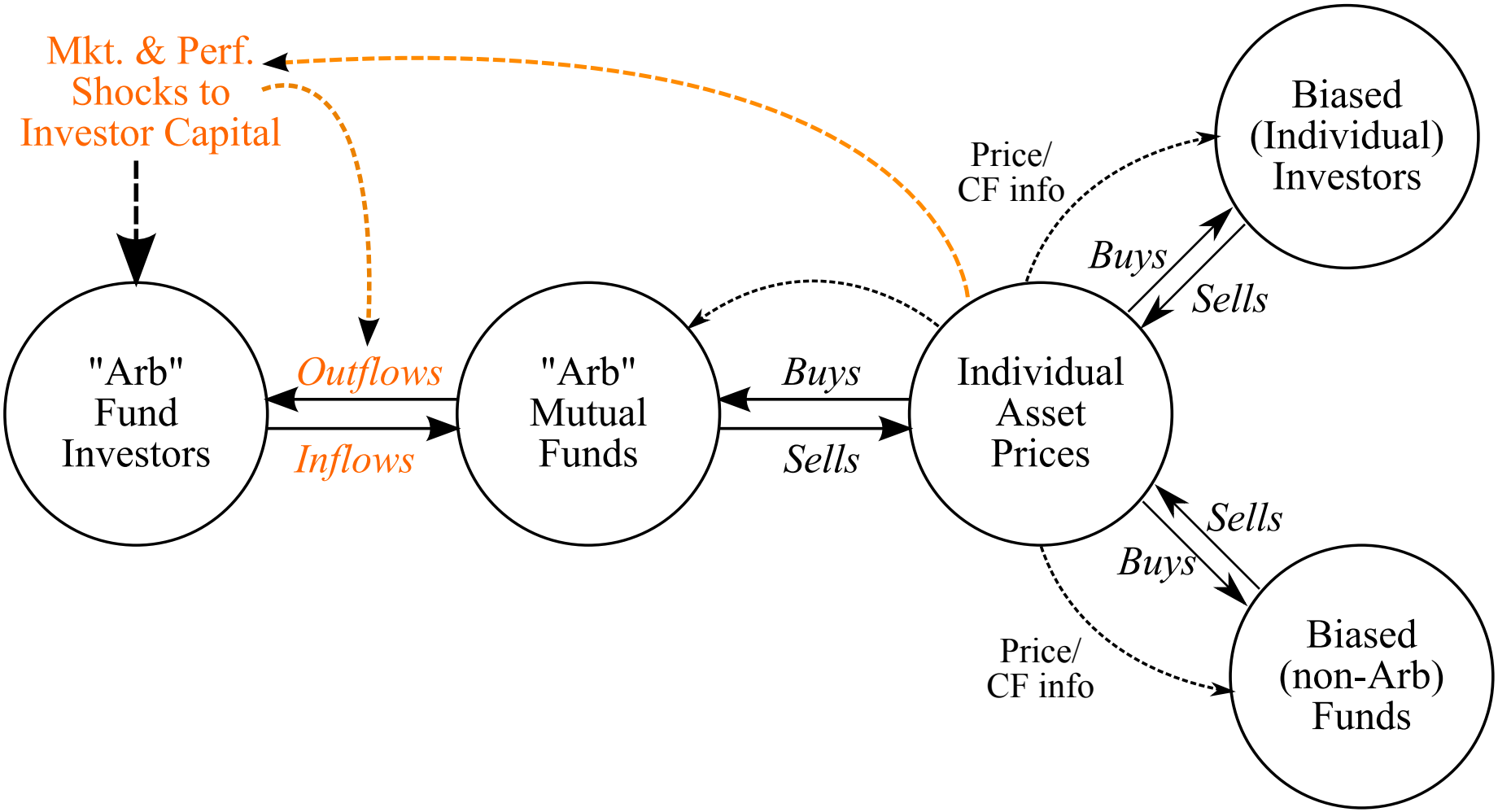


Table 5A

Dependent Variable: MFFLOW(t)
Independent variables are measured as the average over the [t-2,t-1] window

Variable	1991-2009						
AMTS	0.081		0.121	0.070	0.069	0.051	0.055
	2.10		*2.54*	*2.02*	*1.85*	*1.44*	*1.50*
NSTD		-2.320					
		-2.52					
LIBOR			-2.376				
			-1.64				
TED3				-0.008			
				-2.71			
CRDSPRD					-0.190		
					-0.94		
AGGIVOL						-1.156	
						-3.67	
RETDISP							-0.232
							-4.43
MFFLOWX	-0.132	-0.049	0.093	-0.025	-0.146	0.043	0.031
	-0.48	*-0.17*	*0.26*	*-0.08*	*-0.53*	*0.16*	*0.11*
RM-RF	0.094	0.067	0.107	0.063	0.087	0.043	0.055
	2.86	*3.57*	*2.84*	*2.76*	*3.12*	*2.16*	*2.61*
AILLIQ	0.082	0.080	0.106	0.072	0.080	0.097	0.070
	1.68	*1.67*	*2.04*	*1.47*	*1.61*	*2.07*	*1.59*
INTERCEPT	0.002	0.010	0.007	0.007	0.004	0.022	0.019
	0.75	*3.08*	*1.70*	*2.28*	*1.09*	*4.20*	*4.92*
Adj-R2	0.067	0.116	0.108	0.103	0.066	0.164	0.196

Table 5A

- By far the strongest predictors of flows to Arb funds are the individual security volatility measures.
- However, it seems like shocks to the "market" constraints should also drive flows to non-arb funds
  - Is this the case?
- It seems like what is important here is differential shocks to the capital of Arb. vs. non-Arb funds.

Fund Flows–Future AMTS Returns Tests

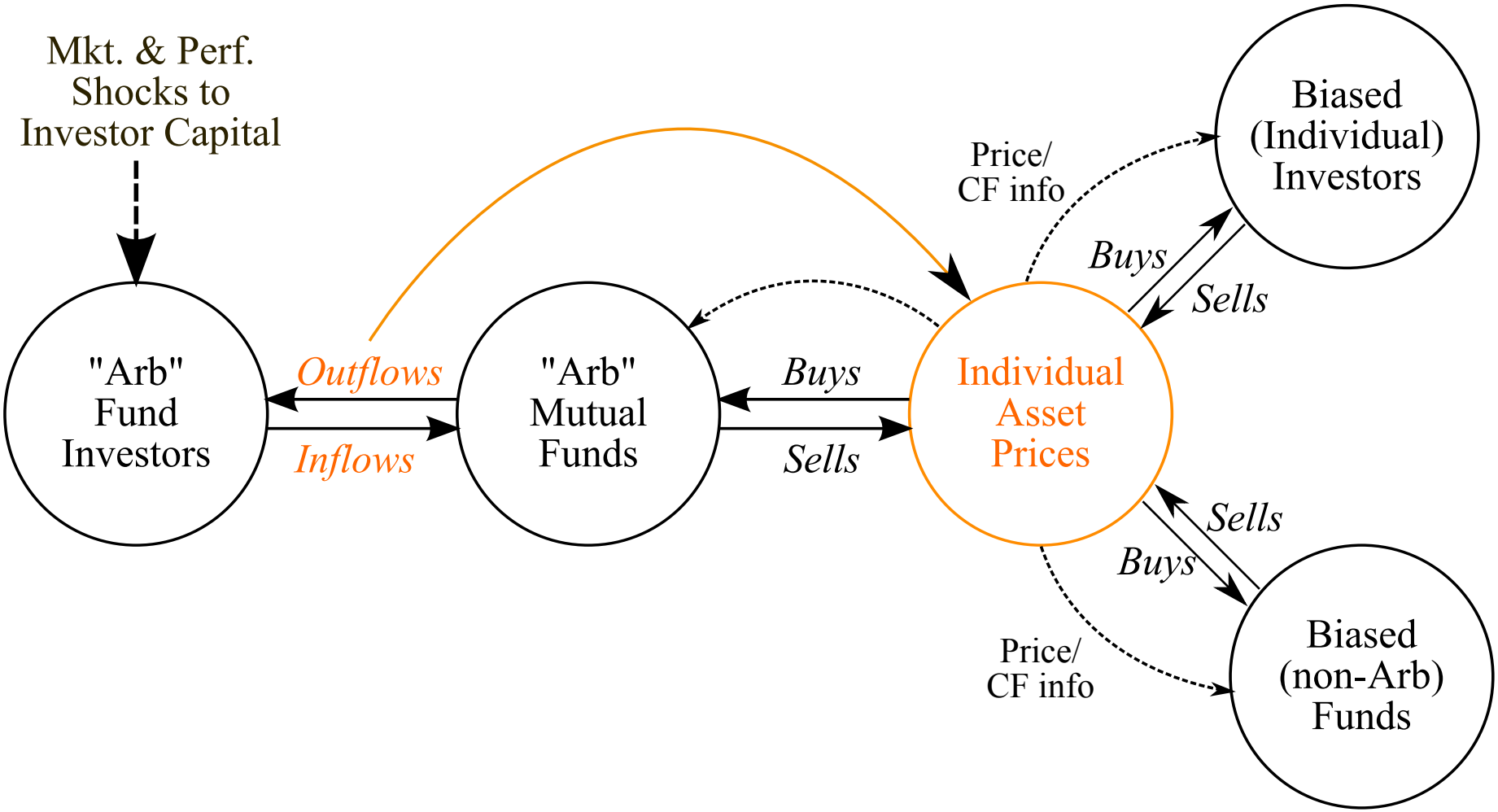


Table 7A

Dependent Variable: AMTS(t)
Independent variables are measured as the average over the [t-2,t-1] window

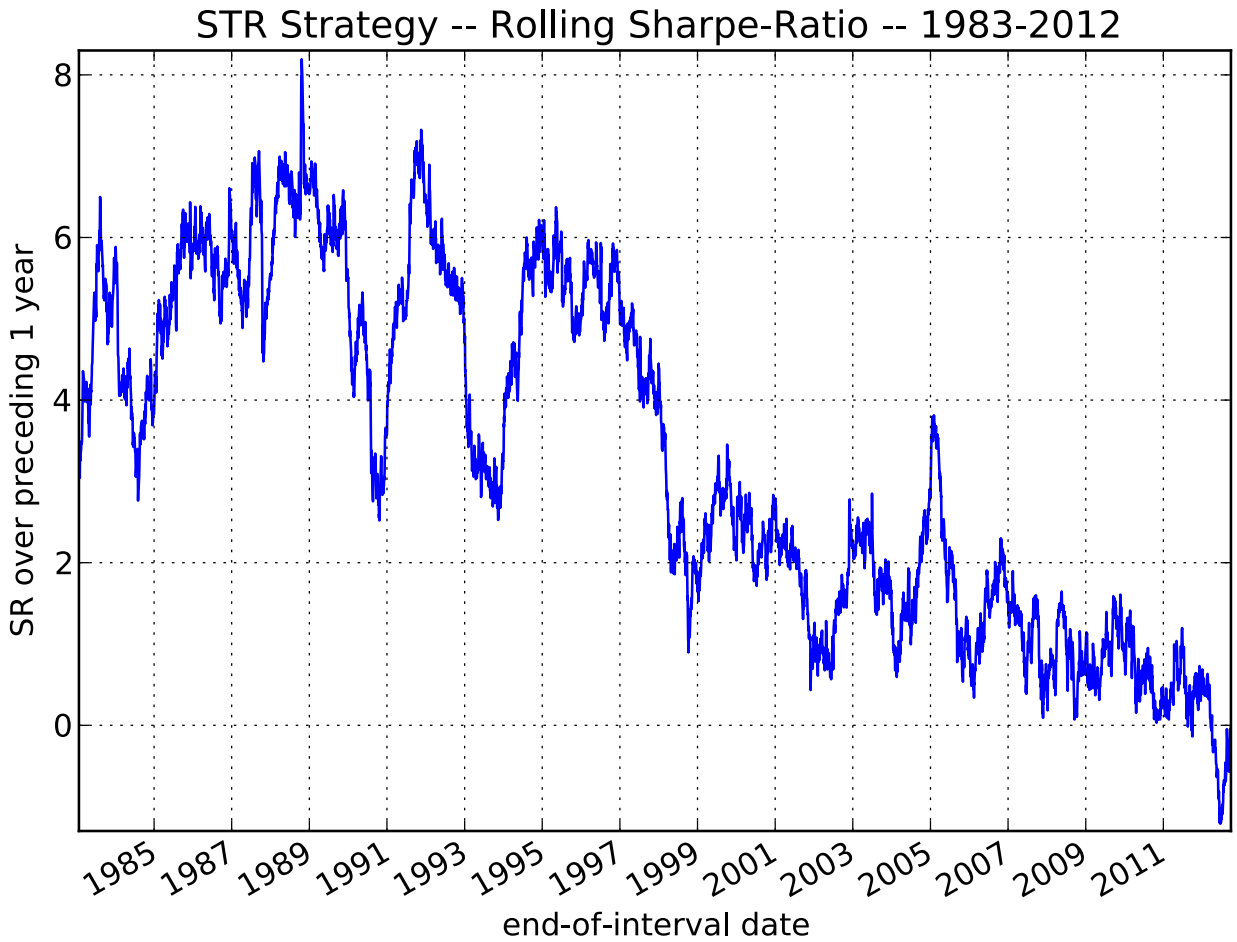
Variable	1991-2009							
ABNMFFLOW6	-0.521	-0.476	-0.493	-0.476	-0.416	-0.503	-0.562	-0.586
	-2.81	*-2.62*	*-2.84*	*-2.49*	*-2.08*	*-2.76*	*-2.91*	*-2.91*
AMTS		-0.170						
		-1.54						
NSTD			0.947					
			0.66					
LIBOR				1.115				
				0.70				
TED3					0.016			
					1.59			
CRDSPRD						-0.783		
						-0.92		
AGGIVOL							-0.393	
							-0.63	
RETDISP								-0.098
								-0.89
TURN	-0.106	-0.130	-0.121	-0.095	-0.168	-0.058	-0.094	-0.098
	-2.03	*-2.10*	*-2.23*	*-1.71*	*-2.62*	*-0.85*	*-1.80*	*-1.96*
MFFLOWX	1.888	1.902	1.838	1.776	1.626	1.840	1.965	1.976
	2.64	*2.62*	*2.51*	*2.41*	*2.26*	*2.62*	*2.62*	*2.68*

Table 7A

- The abnormal flows to the Arb funds are strong negatively related to the future returns of AMTS.
- Interestingly, the flows to the non-Arb funds are strongly *postively* related to the future returns of AMTS.
  - This is at least loosely consistent with the idea that money flowing into non-Arb funds might be making the market *less* efficient.

Technological Shifts

- Rolling Sharpe-ratio for daily short-term-reversal strategy.
  - top 100 firm by market capitalization.
    - from Collin-Dufresne, Daniel, Moallemi, and Saglam (2012).



Differences Across Anomalies

- The short-term reversal return is postively related to VIX (Nagel 2012)
- The momentum return is negatively realated to market volatility and to other market stress measures. (Daniel and Moskowitz (2012))
- The beta anomaly return is negatively related to VIX, but positively related to the TED spread (Frazzini and Pedersen (2010); Hong and Sraer (2011))
  - Note that Frazzini and Pedersen (2010) also find that the *lagged* TED spread is *negatively* related to future returns

13 Other Anomalies

Anomaly	References
Size	Banz (1981), Keim (1983)
Accruals	Sloan (1996), Richardson, Sloan, Soliman, and Tuna (2005)
Issuance	Daniel and Titman (2006), Pontiff and Woodgate (2008)
Net Operating Assets	Hirshleifer, Hou, Teoh, and Zhang (2004)
Idiosyncratic Risk	Ang, Hodrick, Xing, and Zhang (2006)
Trading Volume	Gervais, Kaniel, and Mingelgrin (2001)
Return on Assets	Fama and French (2006)
Investment to Assets	Titman, Wei, and Xie (2009)
Asset Growth	Cooper, Gulen, and Schill (2008)
Financial Distress	Campbell, Hilscher, and Szilagyi (2008)
Beta	Black, Jensen, and Scholes (1972), Black (1972), Daniel and Titman (1997), Frazzini and Pedersen (2010)
Gross Profitabilty	Novy-Marx (2012)
Operating Leverage	Novy-Marx (2011)

- see Stambaugh, Yu, Yuan (2011, 2012), who use many of these anomalies in their analysis of the effects of short sale constraints & idiosyncratic vol. interactions.

Anomaly Horizon

- Rather than aggregating the anomalies together into the AMTS, It might be worthwile to break down the analysis by anomaly.
- The flow/anomlay-return is likely different for long-lived anomalies (value) than for short-lived anomalies (short-term-reversal).
  - One of the things that is puzzling for the authors (and me!) is the lack of a strong positive contemporaneous relation between Arb-fund flows and returns.
  - I'm guessing that such a relation would be considerably more pronounced for longer-horizon factors.
- This might be part of the reason we see such striking differences in the time-series relationships between capital shocks and anomaly returns.

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